Fledermaus Documentation

9 December, 2025

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- Release Notes, Details on the latest release of Fledermaus;
- Getting Started, Learn Fledermaus quickly and effectively with our guides;
- How-to Articles, Find articles on everything you need to know about using Fledermaus;
- Tutorial Videos, Use our in-depth videos to help guide you in using the more complicated parts of our software packages;
- Webinars, Watch our software experts guide you through processing and tools in Fledermaus;
- Fledermaus Reference Manual, More info on what each dialog an button does;
- Questions & Answers, See what others have asked us about and quickly find the answers you need;
- Technical Information, All technical information about our software.

Release Notes

new release notes

- Fledermaus 8.7.2 Release
- Fledermaus 8.7.1 Release
- Fledermaus 8.7.0 Release
- Fledermaus 8.6.1 Release
- Fledermaus 8.6.0 Release
- Fledermaus 7.11.2 - FMGT Release
- Fledermaus 7.11.1 - FMGT Release
- Fledermaus 7.11.0 - FMGT Release
- Fledermaus 7.10.3 - FMGT Release
- Fledermaus 7.10.2 - FMGT Release
- Fledermaus 7.9.5 - FMMW Release
- Fledermaus 7.9.4 - FMMW Release
- Fledermaus 7.8.13 Release
- Archived Release Notes

Fledermaus 8.7.2 Release

Aug 05, 2025

We're pleased to present Fledermaus version 8.7.2. In this release, we have important updates and improvements. Read below for details.

Improvements

- Improved support for Space Navigator devices.
- Updated a library that had a security vulnerability, which was used for video display.
- The measurement tool will remain active until a new measurement is made or the tool mode is changed.

Bugs

- Fixed an issue with a Qimera loaded Dynamic Cable/Pipe where the smoothing wasn't preserved.
- Fixed an issue with lines in the scene where the position wasn't correct after adjusting the vertical exaggeration and offset.
- Fixed an issue with slide transparency when transitioning between slides.
- Fixed a crash when opening a scene with a dynamic cable pipe object.
- Fixed a licensing issue with *Import from Listing File* for the Fledermaus Offshore license.
- Added a progress bar for CAD import.
- Fixed a crash when draping a CAD file.
- Fixed a crash when displaying a very large CAD file.
- Contours from a .qgf will now be displayed at their height value.
- Fixed an issue with cross profiles displaying not perpendicular to the profile line.
- Fixed a crash when exporting an object using *Export to ASCII/Grid*.
- Added a File Menu entry to open the project folder, which also has a Ctrl+F shortcut.
- Fixed an issue installing Fledermaus 8 where an error message during installation points to missing prerequisites.
- Fixed an issue using the *Reproject* operation on a dynamic grid.
- Added an error message when trying to create a zipped scene, where the scene name was long.

Known Issues

Issue	Summary	Affects Version/s	Expected Fix Version
License Manager - Activate Softlock	**Problem** Our License provider LimeLM needs to have all Network Adapters enabled when trying to activate a softlock license. In some situations, the dialog “Failed to Activate License” with the message *“There are network adapters on the system that are disabled, please enable them and try again.”* might appear when trying to activate the softlock license. This will prevent you from activating the softlock license. **Workaround** Follow the steps on https://qpssoftware.scrollhelp.site/lm/network-adapter-error-troubleshooting-stepsfor potential solutions. **Planned fix** The fix depends on our license provider. When we have an official solution it will be part of our installers	8.6.x	8.7.x

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Fledermaus 8.7.1 Release

February 21, 2025

We're pleased to present Fledermaus version 8.7.1. In this release, we have important updates and improvements. Read below for details.

Improvements

- Improved shading on features
- Added option to create a color map with more than 4 digits to better support magnetometer readings
- Added a compute cell size option when creating a static grid from points
- Added a preference to resize the rectangular selection by moving only the corner or edge
- Improved the cross profile export to text file, they will now be exported ordered by distance
- Fixed a crash when importing point and point cluster objects
- Added option to zoom to QGF line KP and fixed a crash when zooming to KP
- Fixed a bug with the number of vertices displayed in the data viewing panel for QGF files
- Added new options for KP labeling of .dyncablepipe, the size of the marker, the label interval and showing the text
- Addressed an issue where only a single export to image was done if multiple images were selected. Only one image can be selected for export

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Fledermaus 8.7.0 Release

In this release,

- Fledermaus 8.7.0 Important Notes
- Fledermaus 8.7.0 New Functionality
- Fledermaus 8.7.0 Improvements
- Fledermaus 8.7.0 Implemented Feedback
- Fledermaus 8.7.0 Resolved Bugs
- Fledermaus 8.7.0 Documentation
- Fledermaus 8.7.0 Known Issues

Highlights

- **EOMAP**, connect to the EOMAP service that provides satellite derived bathymetry. Fledermaus provides the option to easily import the imagery and allows for gridding of the XYZ files provided by EOMAP. An account with EOMAP is needed.
- **Multilayer Grid**, support has been added for multilayer grids from Qinsy. Different layers can be selected and viewed.
- **WMS import**, imagery from a WMS server can be loaded into Fledermaus as background data.
- **Cable/Pipe view**, for easier reviewing of cable/pipe lines, which centers the view on the cable/pipe and allows for stepping along the route.
- **Cable/Pipe X Point Listing**, import cable/pipe objects and their associated cross point listing files for cable/pipe line review.
- **Dynamic points**, allows points associated with a dynamic grid to be dynamically loaded inside a rectangle and played back in time, following a predefined track or navigation line.

Fledermaus 8.7.0 Important Notes

On this page:

- Licensing
- QPS Project and file format versions
- Colormaps
- Installers
- Support for Fledermaus 7

Licensing

With this release there is a new License Manager version 1.10.0 with several improvements.

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8.7 alongside older versions, using the same license.

QPS Project and file format versions

The QPS project version has been incremented. Projects opened in Qimera 2.7.0 and Fledermaus 8.7.0 are not able to be opened in Fledermaus 8.6.x and previous versions. Both Qimera 2.6 and 2.7 and Fledermaus 8.6 and 8.7 projects are compatible with Qinsy.

The QPS .qpd file has been upgraded with the Qimera 2.7.0 and Qinsy 9.7.0 release to version 2.10. Fledermaus 8.5.3 will be able to read Qimera 2.7.0 and Qinsy 9.7.0 .qpd files, but older versions of Fledermaus will not be able to read the newer .qpd version.

QPD 2.10 is backwards compatible with the following application versions:

- *Qinsy 9.5.5* or greater
- *Qimera 2.5.4* or greater
- *Fledermaus 8.5.3* or greater
- *FMGT 7.10.3* or greater

Colormaps

With the release of Fledermaus 8.7.0 user defined colormaps are prompting users to save in: C:\Users\Public\Documents\QPS\Shared\ColorMaps which allows for sharing colormaps between users. Qinsy and Qimera colormaps can be read by Fledermaus.

Fledermaus default colormaps are still always installed in the Fledermaus install directory.

Installers

The Fledermaus installer will install by default into subdirectories with the 8.7.0 version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus. This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time.
Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.7.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus 7

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications. Support for Fledermaus 7 will continue while the user base continues to transition to work with the new and improved Fledermaus 8.

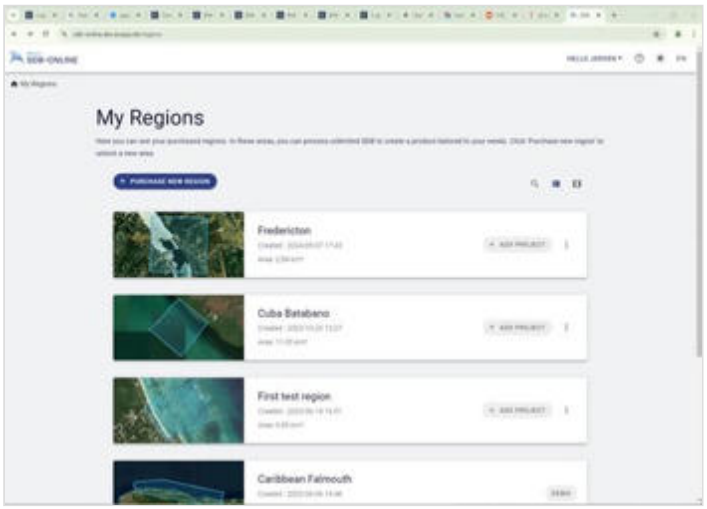
Fledermaus 8.7.0 New Functionality

On this page:

- EOMAP
- Multilayer Grid
- WMS
- Cable/Pipe View
- Cable/Pipe X Point Listings
- Dynamic Points

EOMAP

Fledermaus and EOMAP have worked together to provide easy access to satellite derived bathymetry in both Geotiff and ASCII XYZ formats. Working in Fledermaus, areas of interest can be sent to EOMAP as orders. Once EOMAP has processed the orders, they are automatically downloaded and can be added to the scene. Satellite derived bathymetry can play a crucial role in the planning stages of surveys and also providing bathymetry for hard to survey areas. Visit https://www.eomap.com/ to learn more and set up an account.

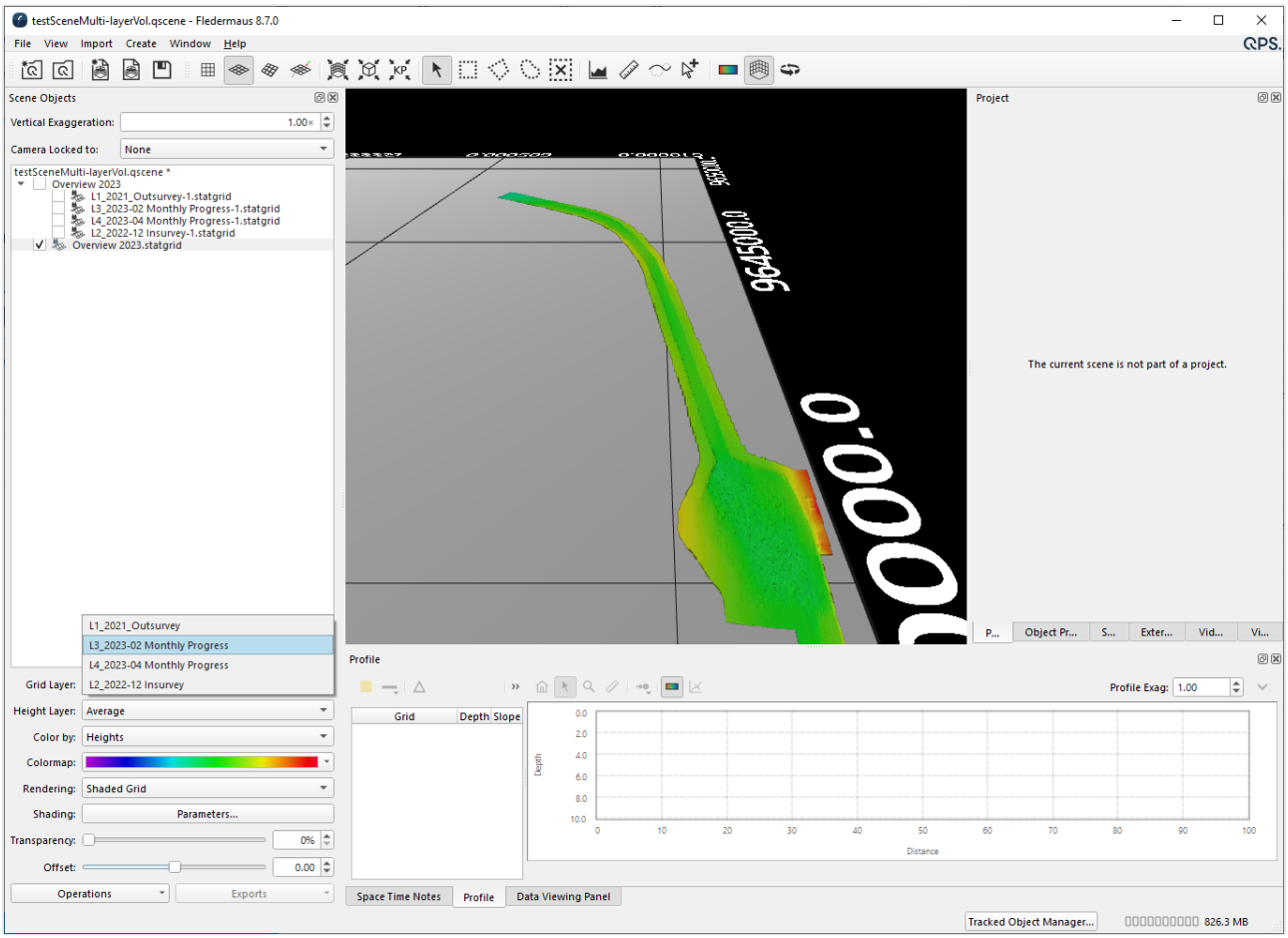


Multilayer Grid

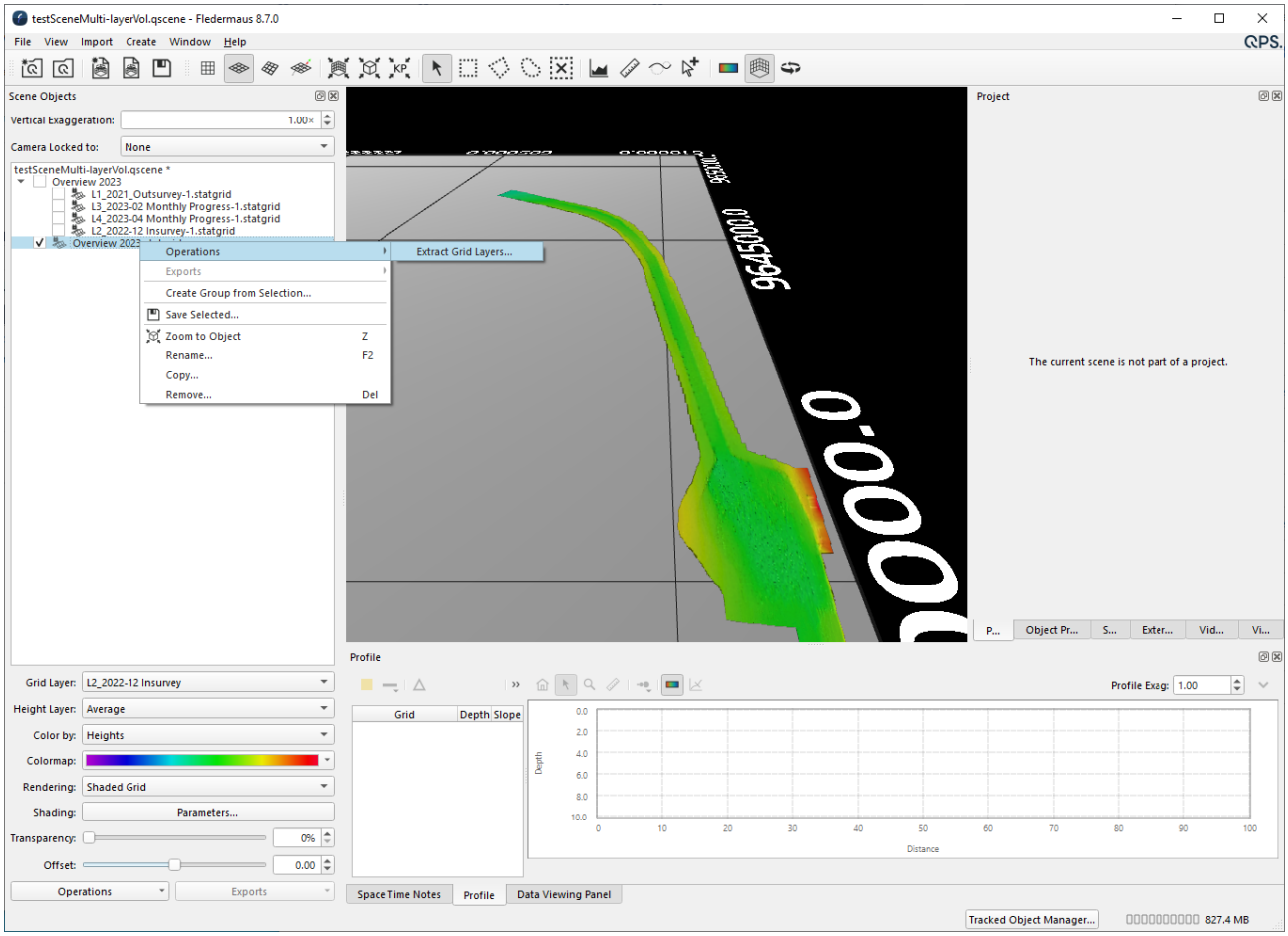
Multilayer grids from Qinsy are now supported in Fledermaus. There are two options to work with them, the first is to select the multilayer grid and pick the *Grid Layer* you want to view. This allows for switching between layers quickly. When working in this way, the operations and exports have been disabled until support for them is added in the next feature release. The second way to work with multilayer grids, is to right-click and *extract*

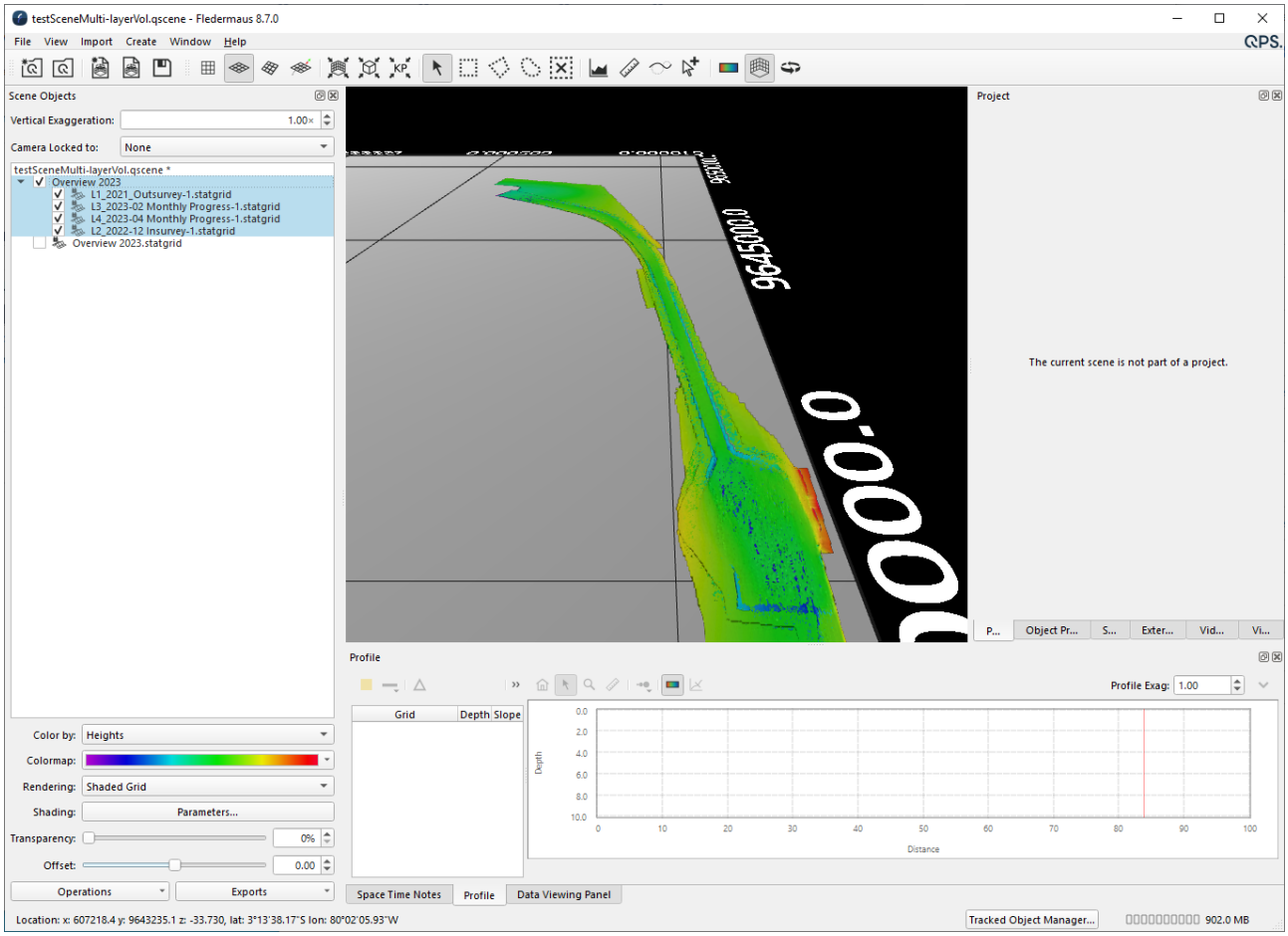
grid layers. This will extract the layers into a single grids and you can use operations and exports on any extracted layer as you normally would.

Selecting the Grid Layer:



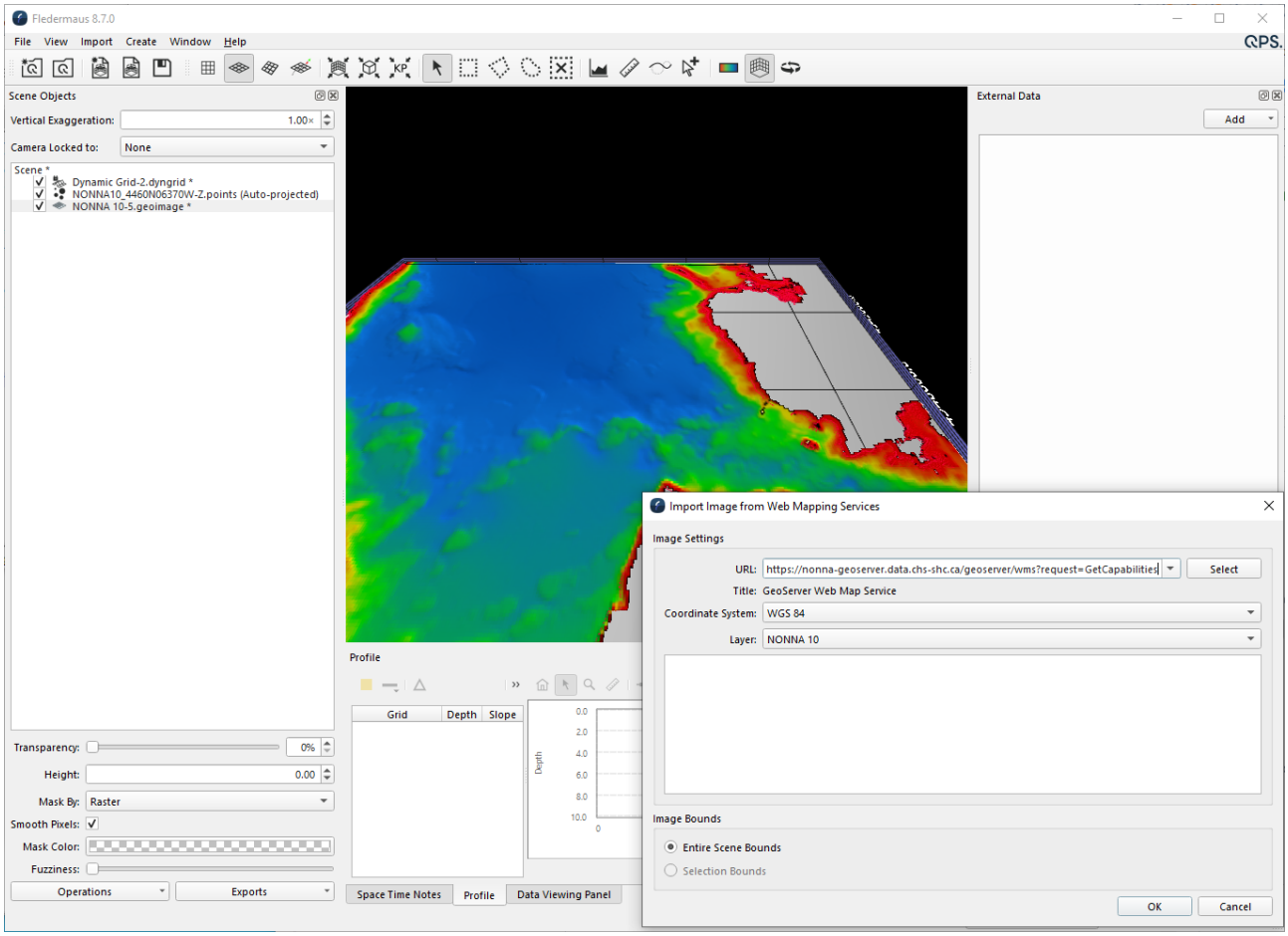
Extract Layers:


testSceneMulti-layerVol.qscene - Fledermaus 8.7.0
File View Import Create Window Help
Scene Objects
Vertical Exaggeration: 1.00×
Camera Locked to: None
testSceneMulti-layerVol.qscene *
Overview 2023
L1_2021_Outsurvey-1.statgrid
L3_2023-02 Monthly Progress-1.statgrid
L4_2023-04 Monthly Progress-1.statgrid
L2_2022-12 Insurvey-1.statgrid
Overview 2023
Operations
Exports
Create Group from Selection...
Save Selected...
Zoom to Object Z
Rename... F2
Copy...
Remove... Del
Extract Grid Layers...
Project
The current scene is not part of a project.
Grid Layer: L2_2022-12 Insurvey
Height Layer: Average
Color by: Heights
Colormap:
Rendering: Shaded Grid
Shading: Parameters...
Transparency: 0%
Offset: 0.00
Operations
Exports
Profile
Profile Exag: 1.00
Grid
Depth
Slope
Depth
Distance
Space Time Notes
Profile
Data Viewing Panel
Tracked Object Manager...
827.4 MB



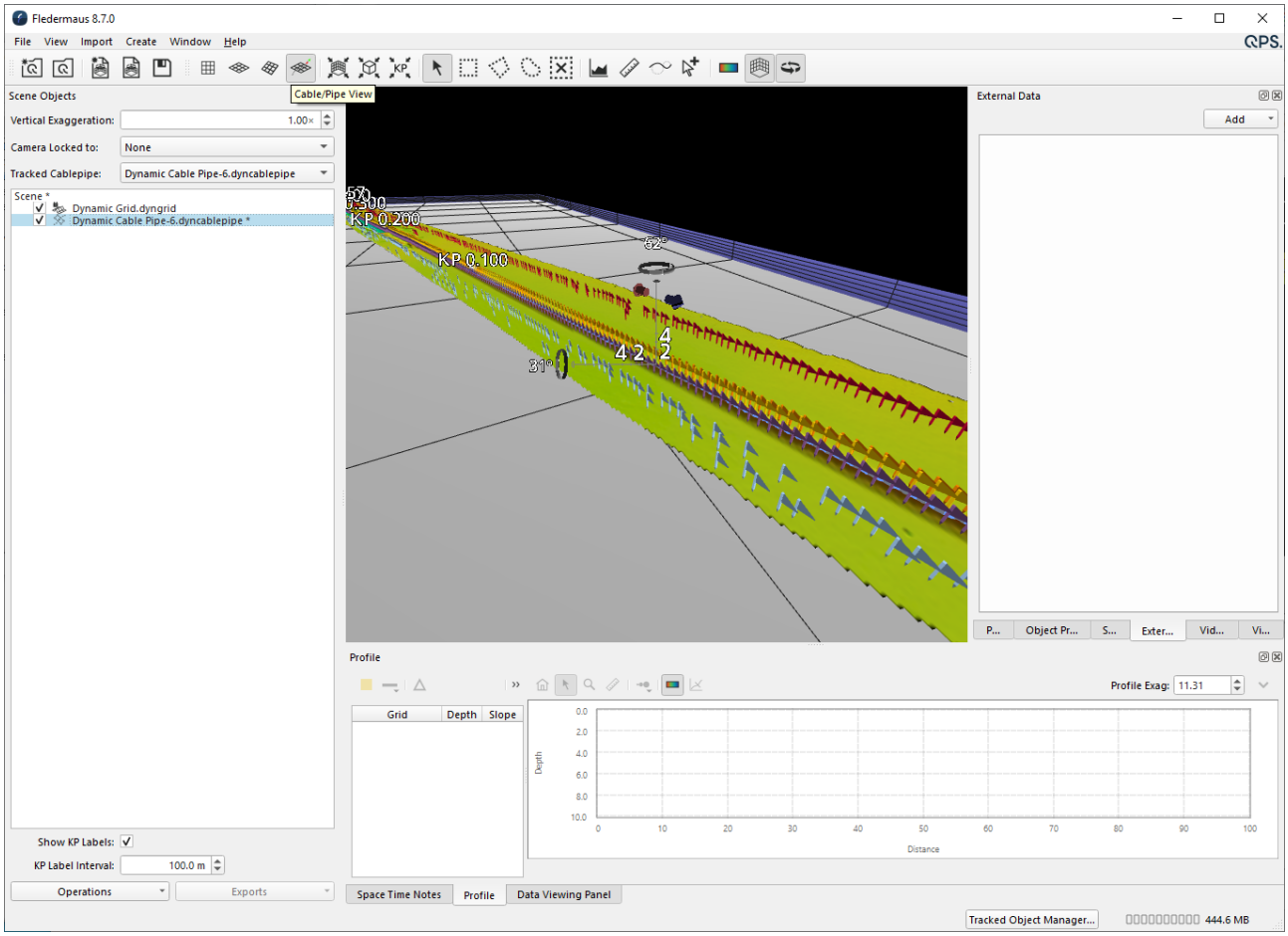
WMS

Support for importing WMS images has been added in this release. You can connect to a WMS server by entering the URL address and then selecting which Layer you want to import into your scene. A geoimage will be created and added to the scene.



Cable/Pipe View

A new view has been added for navigating along a cable/pipe route. The center of the view is attached to the cable/pipe route, allowing for rotation, zooming and movement along the cable/pipe route. Use the *w* and *s* keys or left click and drag the arrow keys displayed on the navigation widget for stepping forward and backward along the route.

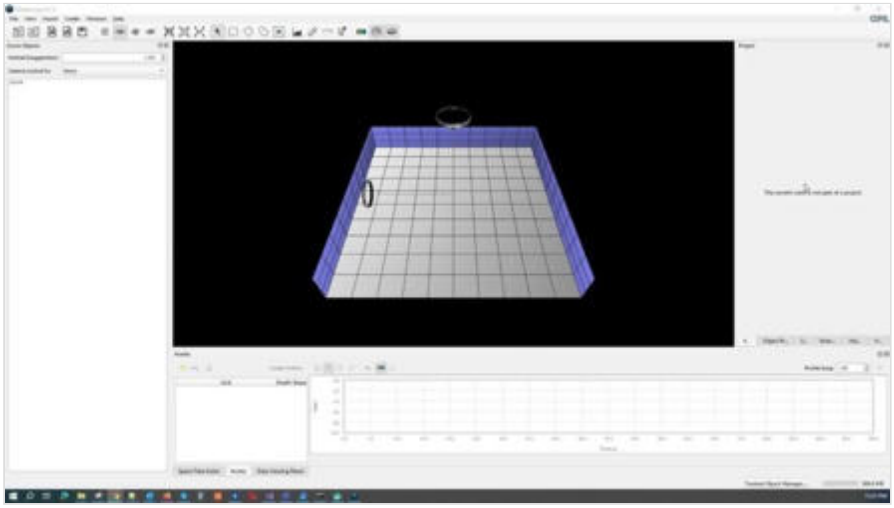


Cable/Pipe X Point Listings

Dynamic Cable/Pipe and the X Point listings created with Qimera's TOP detection tool can now be brought directly into Fledermaus. In addition, exported 5 or 7 point listing files can also be imported, creating a Dynamic Cable/Pipe and X Point listings.

Dynamic Points

Dynamic Points are used to visualize point data (QPD) from the points that contributed to a Dynamic Grid. The points are dynamically loaded inside a defined rectangle and played back in time following a line. The options for line to follow, are from the QPD tracklines, or a line object.



Fledermaus 8.7.0 Improvements

On this page:

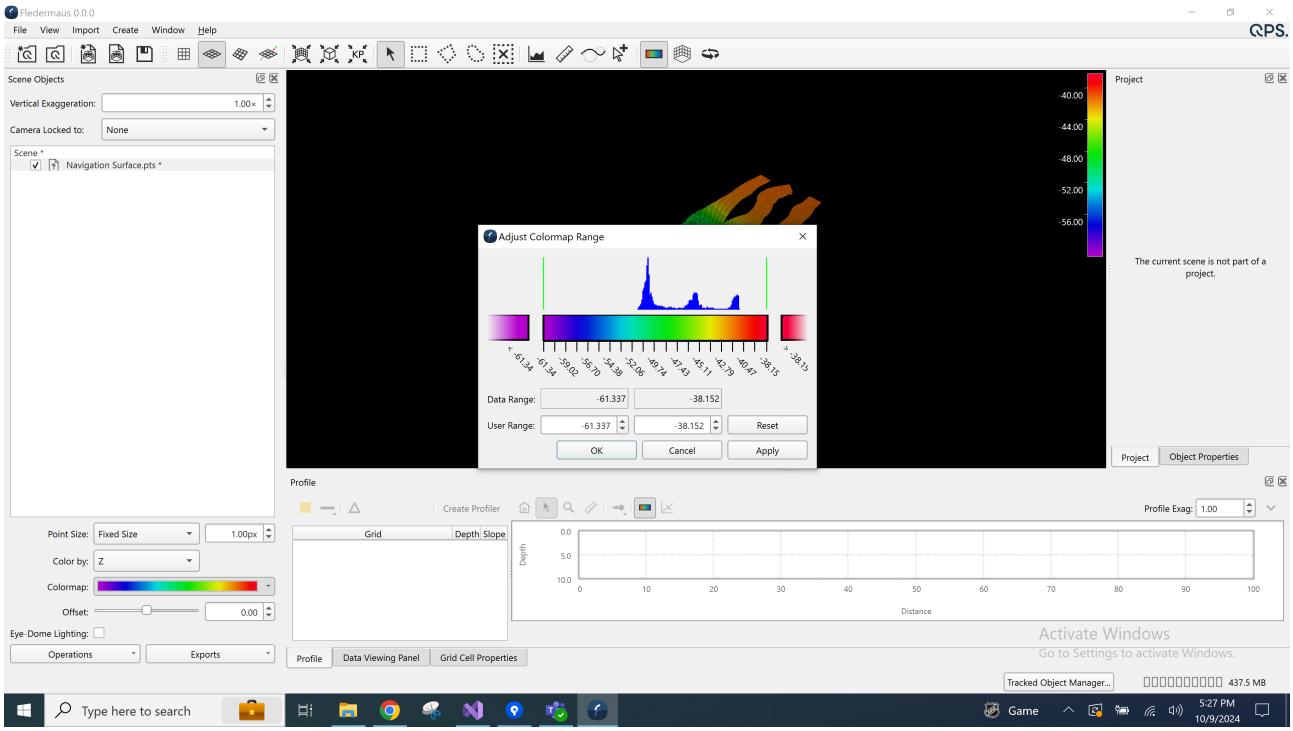
- Survey Manager Sessions
- Colormap histogram for .pts, .qpd and .las
- KP Label updates for dynamic cable/pipe objects
- Space time notes available for viewing in FM Viewer
- Other

Survey Manager Sessions

Survey Manager session files (.svmsessionini) as of Qinsy 9.7.0 can now be opened by Fledermaus. Layers in the Survey Manager session and their visibility will be added to Fledermaus's 4D scene for review and analysis. Use the File > Open Survey Manager Session… to open.

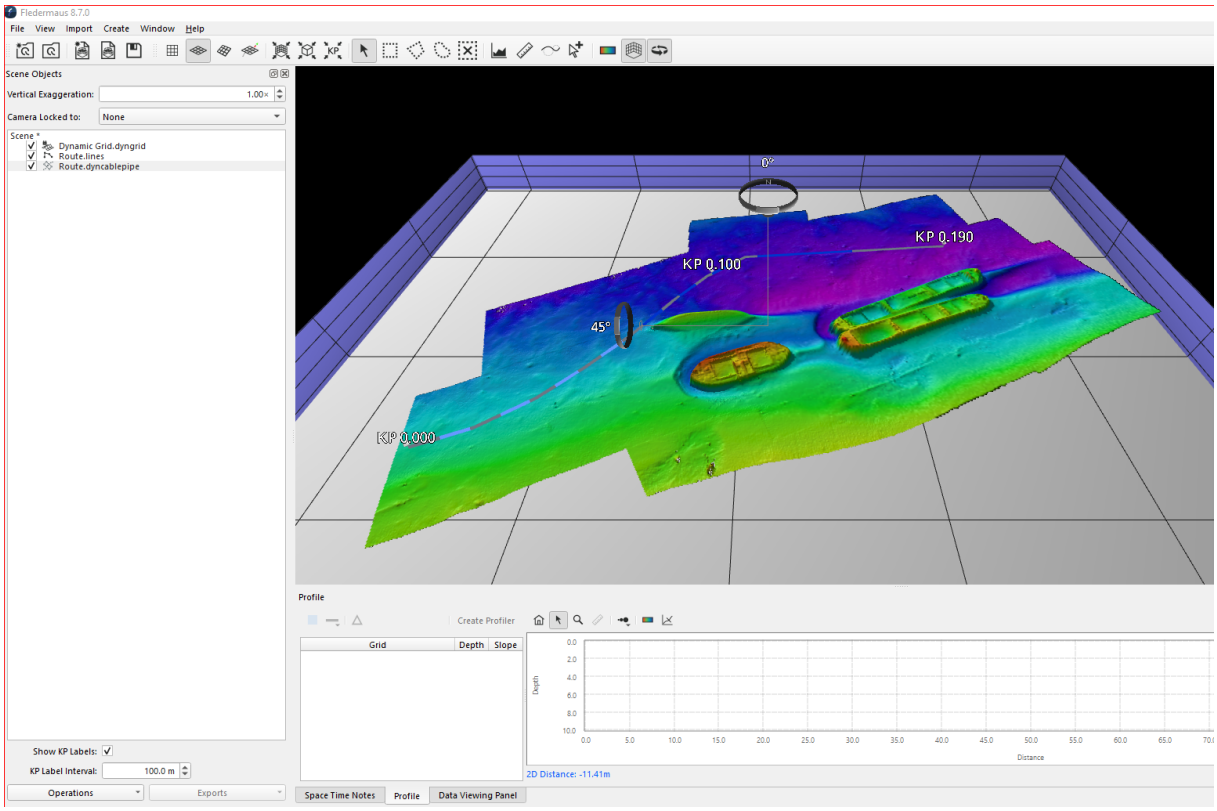
Colormap histogram for .pts, .qpd and .las

Colormap histograms for point files has been added for easier adjustment of colormap range.



KP Label updates for dynamic cable/pipe objects

Improvements to KP labeling in the Scene for dynamic cable/pipe objects. Allows for quickly turning on or off the labels, adjusting the label intervals and automatically adjusting the size.



Space time notes available for viewing in FM Viewer

Space time notes will now be available for viewing in the free FM Viewer.

Other

- FM Viewer now has an option to Reset Window Layout.
- Profile control points are viewable in the data viewing panel.
- Extract Area Tool has been added to extract areas of a Grid.
- Replace Area Tool has been added to replaces areas of a Grid.
- Improved support for Space Navigator devices.

Fledermaus 8.7.0 Implemented Feedback

Feedback Project

In this release, we have completed 4 feedback project items. For more information, see our Voting system Policy and Using the Voting System.

https://qpssoftware.atlassian.net/issues/?jql=project%20in%20(FFM)%20AND%20fixVersion%20%3D%20%22Fledermaus%208.7.0%22%20ORDER%20BY%20created%20DESC

Fledermaus 8.7.0 Resolved Bugs

On this page:

- Bug Fixes

Bug Fixes

Below you will find listings of bugs which have been reported in previous releases and which have been solved for the 8.7.0 release.

Summary	Affects Version/s
Tools and Docks - Video - Add option to render to GIF	8.6.1
CAD - Line Planning - Able to label KPs	8.6.0
The "Color By" attribute is missing for QPD, Las/Laz, and PTS object types.	8.5.3
Objects - Lines - QGF operations - Drape	8.5.2
General - Installation and Setup - Fledermaus not opening on MAC OS X 15.0	Older Versions
General - Configure - Issue with Units and Coordinate System	8.6.1
Scene and View - View Mode - Space Mouse not working as expected	8.6.1
Objects - Operations - Statistics - Survey Area from geographical grid	8.6.1
Tracked Object Manager - How to apply heading for 3D models in realtime?	8.6.1

Summary	Affects Version/s
Tools and Docks - Slides - Export Movie - Flickering result	8.6.0, 8.6.1
Objects - Attributes - Image height always off by 1	8.5.2
Objects - Import - Shp-file - label field needs to be set after import again	8.5.2
Scene and View - Zoom to - 'Zoom to object' in 2D view does not consider the extents of the object, zooms far out	8.6.1
Tools and Docks - External data - Import SHP through Geodatabase connection not working	8.6.1
Tools and Docks - Profile - Vertical exageration value doesn't change when using ctrl+mousewheel	8.6.1
Volume difference between surfaces or statgrids	8.6.1
Tools and Docks - Slides - Vertical exaggeration adjusts camera height	8.6.1
Scene and View - Exaggeration via navigation widget often not working	8.6.1
General - Documentation - Offline manual for MAC not coming with the installer	8.4.4
ROVs on Fledermaus scenes - Latency - change to 10th of sec	8.6.1
Toosl and Docks - Video - Speed with 2.0 or higher results in black video	8.6.0
Objects - Attributes - Color map range on QPD's	8.5.2
Objects - Export - Points to shp	8.5.0

Summary	Affects Version/s
Suggestion: Point object colour map show a histogram that can be adjusted	8.2.0
Import vessel track, including time for keyframe, heading roll and pitch	8.0.1
License Server Install "Fledermaus Offshore" product versus "Fledermaus" product	8.5.2
Fledermaus crashes exporting a dynamic grid/surface as an image crashes	8.5.3
Operation>Surface Statistics: Volume calculation in Surface Statistics Missing	8.5.1
Label of point fields provided in data viewing tab does not render label when properties set to label	7.5.3

×

Fledermaus 8.7.0 Documentation

Documentation has been updated to capture the changes to existing dialogs and workflows for the application. https://qpssoftware.scrollhelp.site/fledermaus/

Fledermaus 8.7.0 Known Issues

On this page:

- Known issues

Below you will find listings of bugs which have been reported in previous releases but have not yet been addressed.

Known issues

Issue	Summary	Affects Version/s	Priority	Notes
Bug	There are situations when mesh creation gets stuck in 3% of the normal calculation of the meshes when working with the PCL algorithm. Workaround is to use the Quick Neighborhood algorithm when working with QPDs	8.2.0	↓ Low	This is a situation with the third-party Library. We are investigating to prevent the situation of unexpected exit.
Bug	When working with multiple passes of MBES data, the differing passes can result in a suboptimal mesh solution. Workaround is to create the mesh with the best resulting one pass mesh.	8.2.0	↓ Low	This is a situation with the third-party Library. We are investigating options to give the user better results when working with these types of datasets.
Limitation	Fledermaus does not support 2018 AutoCAD dxf/dwg files on the Linux platform but Windows and Mac should be fine. Workaround is to export prior versions of dxf and dwg.	8.3.0	↑ High	This is dependent on the Third-Party Library, we are working on upgrading this in the medium term.
Limitations	Tiff compressions not available for Mac and Linux - limiting the builds for Mac and Linux on latest versions	8.4.3	↑ High	We are working on the updates of the Third Party Libraries to be able to get the other OS systems supported in latest release

Issue	Summary	Affects Version/s	Priority	Notes
Limitation	No roll back of QPS Project upgrade for 8.6.0	8.5.3 and prior	↓ Low	If you create a project from scratch in pre 8.6.0, and open it in 8.6.0, there is no upgrade prompt and you cannot open it back in pre 8.6.0. To fix, you need to edit the qps.project file and change <version>200</version> to <version>100</version>.
Limitation	No roll back for .surfaces upgrade for 8.60 to .statgrid	8.5.3 and prior	↓ Low	Additionally, if you want to revert working in a pre 8.6.0, you need to change the file extension of .statgrid to .surface

Issue	Summary	Affects Version/s	Priority	Notes
License Manager - Activate Softlock	**Problem** Our License provider LimeLM needs to have all Network Adapters enabled when trying to activate a softlock license. In some situations, the dialog “Failed to Activate License” with the message *“There are network adapters on the system that are disabled, please enable them and try again.”* might appear when trying to activate the softlock license. This will prevent you from activating the softlock license. **Workaround** Follow the steps on https://qpssoftware.scrollhelp.site/lm/network-adapter-error-troubleshooting-steps for potential solutions. **Planned fix** The fix depends on our license provider. When we have an official solution it will be part of our installers	8.6.x	↑ High	

Fledermaus 8.6.1 Release

We're pleased to present Fledermaus version 8.6.1. In this release, we have important updates and improvements. Read below for details.

Improvement

- Video transitions with slides were addressed. You can now work presentation mode, render movies and set transitions correctly and prior settings will be honored.
- Slide in between transitions have been addressed for smooth transitions between each slide.
- Move camera view has shifted in the user interface to the cross-profiles generation attributes.
- Video loading problems, making video to default to 1 second, is addressed. You can now load videos normally to work in the video dock and scene.
- Video loading now works as expected when closing and opening a project and scene.
- Rugosity scalar export now includes colormap.
- The application of vessel manager now loads normally for high DPI screen units.
- There is an improvement on the default data range of surface for contour interval generation, considering the bounds of files selected.
- Cross profiles now work as expected when enabling and disabling surfaces that are part of the scene

Download

Click on the icon above to download the latest version!

Fledermaus 8.6.1 - Known Issues

License Manager - Activate Softlock

Problem

Our License provider LimeLM needs to have all Network Adapters enabled when trying to activate a softlock license. In some situations, the dialog “Failed to Activate License” with the message *“There are network adapters on the system that are disabled, please enable them and try again.”* might appear when trying to activate the softlock license.

This will prevent you from activating the softlock license.

Workaround

Follow the steps on https://qpssoftware.scrollhelp.site/lm/network-adapter-error-troubleshooting-steps for potential solutions.

Planned fix

The fix depends on our license provider. When we have an official solution it will be part of our installers

Fledermaus 8.6.0 Release

In this release, we introduce the ***Fledermaus Offshore License***, a new product that provides additional analytical functionality to increase their situational awareness for Offshore projects: free span pipe/cable analysis, bend radius of pipe/cable planning and or reviews for a route, scour/siltation scenes and modelling with our multi-dynamic profiling capabilities. This release also comes along with many improvements and fixes for the entire user base on the regular Fledermaus License level.

Highlights

- **Tracked Object**, this is a new Fledermaus object type that allows you to connect to a live navigation stream and optionally anchor the camera view to actual object (vessel, or mobile object) location.
- **Image Series Object** allows you to load a series of time tagged imagery to the 4D scene, and display them over time, create a single geoimage from the collection and see the synchronized and independent views in the 4D scene.
- **Route Planner tool**, create a route, provide angle/bend solutions, provide radius options for pipe/cable planning and installations, allowing you to lock the exaggeration, create pipeline objects from the solution(s) found and select as an active route, once route object is created.
- **Dynamic profiling**, while introduced in prior versions, improvements to the dynamic profiling are part of this version to enhance support analytical workflows with the pipeline/cable objects, cross-profiling options (by hand, or calculated), display pipeline/cable in the cross-profile plot and measure, enhanced measurement information, and support of multilayer profiles for surfaces.

- Fledermaus Offshore, Fledermaus 8.6.0 and Fledermaus v7
- Fledermaus 8.6.0 Important Notes
- Fledermaus 8.6.0 New Functionality
- Fledermaus 8.6.0 Resolved Bugs
- Fledermaus 8.6.0 Documentation
- Fledermaus 8.6.0 Implemented Feedback
- Fledermaus 8.6.0 Transitions from Fledermaus 7
- Fledermaus 8.6.0 Known Issues

Fledermaus Offshore, Fledermaus 8.6.0 and Fledermaus v7

- Dynamic and Static Surfaces now called Grids
- SD and Scene Conversion
- Removed and Significantly Changed Functionality
- Delayed Functionality (coming to FM after v8.0.0)
- Deprecated Applications
- Bundle Transitions
- FMGT and FMMidwater

Fledermaus Offshore and Fledermaus v8 have been major releases that involves a number of changes in the applications and functionality previously bundled with Fledermaus v7. These changes are both to support the new role in the full QPS product suite, and to establish a solid platform for future growth.

Dynamic and Static Surfaces now called Grids

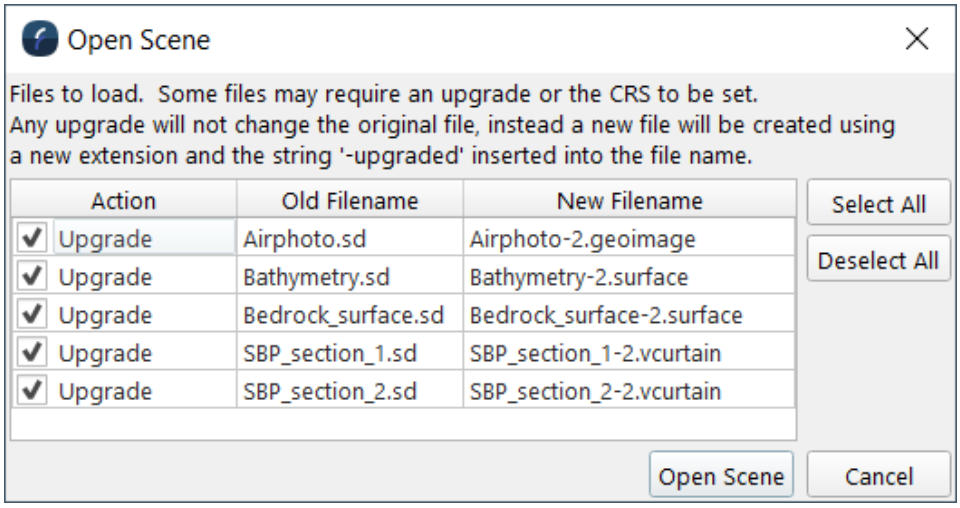
Historically all Fledermaus v8 surfaces and gridded objects were called .surface. In Fledermaus 8.6.0 the .surface files are now either .statgrid for static grids and .dyngrid for dynamic grids. The rest of the objects continue to have individual extensions. The following table explains the transition of each object type:

Fledermaus 7 Object Name	Fledermaus 8 Object Name	Fledermaus 8 New Extension	Fledermaus 8.6.0 Extension Changes
SonarDTM Surface	GRID5 Surface	.surface	.dyngrid .statgrid
Scalar	GRID5 Scalar	.scalar	
Geoimage	GRID5 Geoimage	.geoimage	
Lines	Lines	.lines	
Points	Points	.points	

Fledermaus 7 Object Name	Fledermaus 8 Object Name	Fledermaus 8 New Extension	Fledermaus 8.6.0 Extension Changes
Midwater Beam	MWBeam	.mwbeam	
Midwater Fan	MWFan	.mwfan	
Plane	Plane	.plane	
Solid Model	Solid Model	.model	
Vertical Curtain	Vertical Curtain	.vcurtain	
Grid Lines	Grid Lines	.gridlines	
Labels	Text	.text	
Volume	Volume	.volume	
Pipeline	Pipeline	.pipeline	
	Tracked Object		.vesseltrackline
	Image Collection		.imagecollection

SD and Scene Conversion

When a Fledermaus 8 object that has had updates needs to be upgraded, you will have a question dialog for it. This is case for .surfaces and .statgrid and .dyngrid. When a Fledermaus 7 scene or SD file is opened in Fledermaus 8, the upgrade dialog will be displayed. Each object will then be upgraded to the new format, leaving the original FM7 files alone. For scene files, a new .qscene file is created and each object will be upgraded and saved as a new standalone object.



Removed and Significantly Changed Functionality

Item	Notes
Spherical Rendering Mode	The spherical display is a special render mode that has been used a lot less than the standard render modes. In addition it did not have full feature parity with the standard rendering modes. For now there is no immediate plan to support this in FM8, however this will be evaluated for future releases.
Graphical object transformation tools	The graphical transformation tools allowed an object to be manipulated in 3D space. However they were difficult to use for a lot of object types and with larger scenes. This functionality is being evaluated some functionality has been re-introduced with v8.5.0
Keyframe System	Although powerful, the keyframe system in FM7 was difficult to use and hard to expand with new features. Fledermaus 8 has completely new approach to animation and movie creation with automated flightpaths and the new presentation tools.
Area Based Editing / PFM	All functionality for editing and processing points has moved over to the Qimera application. Note that all existing users who purchased an FMHydro and FMPro license have access to the Qimera Clean application as the new location for point editing.
External Video Player	Video playback has been moved directly into the main application to allow for a better integrated experience

Item	Notes
View Manager	The View Manager functionality has been completely replaced and enhanced by the new Space Time Notes system which goes beyond just recording view
Geopicking	The GeoPicking functionality has also moved into the Space Time Notes system, as well as the new annotation tools

Delayed Functionality (coming to FM after v8.0.0)

Functionality	Notes	Timeframe
Recording with Hardware Flight control	As of FM8.5.0 we support using these tools for navigation and flying around 3D scenes. However we do not yet use them to record a flight path to render a movie.	TDB
Split-Screen Stereo Rendering Mode	We are evaluating our support for Stereo Rendering and how to best support support this going forward.	TBD
Graphical Positioning and Transformation tools	There is now some support in the object operations for this but not the interactive 3D scene transformation tools from fm7.	TBD
Eventing	Eventing for pipeline/cable analysis tools.	TBD

Functionality	Notes	Timeframe
Interpretation Object		TBD

Deprecated Applications

Application	Replacement	Timeframe
DMagic	Functionality moved directly into Fledermaus • PFM Related functionality moved to Qimera	8.0.0
3DEditor	Point editing is now handled by Qimera	8.0.0
Crosscheck independant application	Functionality directly supported in Qimera	8.0.0
Routeplanner independantc application	Functionality will move directly into Fledermaus	8.6.0
FMCommand/cmdop	Scripting options being evaluated for cmdop replacement	8.3.0
iView4D	Fledermaus will be able to run in an "unlicensed" free mode with limited functionality	8.1.0

Bundle Transitions

For Fledermaus 7 users there are a few changes from the original bundles. The table below shows what and where the functionality exists with the release of Fledermaus 8.

If you have any questions, please contact QPS.

FM7 Bundle	FM 8 Equivalent Products
FM Hydro	Fledermaus Qimera Clean
FM Offshore	Fledermaus Offshore
FM Habitat	Fledermaus + FMGIS Addon FMGT
FM Viz4D	Fledermaus
FM Pro	Fledermaus Offshore FMGT Qimera Clean

FMGT and FMMidwater

The FMGT and FMMidwater applications are now released and versioned independently of Fledermaus, FMGT is a Fledermaus Product and FMMW continues to be an Add-on of Fledermaus in. You need to download and install the applications separately from Fledermaus. FMMidwater will in time be integrated into Fledermaus main application.

Fledermaus 8.6.0 Important Notes

On this page:

- The Fledermaus Offshore License
- The Fledermaus 8 Surface format
- QPS Project version
- QPD File Compatibility
- Installers
- Support for Fledermaus v7.X

The Fledermaus Offshore License

Fledermaus offshore License allows users functionality to increase their analytical situational awareness for offshore projects: free span pipe/cable analysis, bend radius of pipe/cable planning and or reviews for a route, Scour/siltation scenes/modeling with our multi dynamic profiling capabilities, and the best visuals (end products).

Existing Fledermaus users with a license that is under maintenance and offshore add-on, will be able to install and run Fledermaus Offshore for one year. There are changes in the License Configuration for Fledermaus in this release.

For details on comparisons for the Fledermaus Product capabilities please see the following table.

The Fledermaus 8 Surface format

There are many important updates about surfaces for the QPS Product Line. Please read the following user manual page to get familiar with the changes to the Fledermaus Create Menu#CreateStaticGridfromPointFiles

When working on a QPS Project that contains the grid surface and loading it from Qimera, you will be prompted for the upgrade, even if the grid was previously opened before with Fledermaus 8.5.3 and prior. If you want to revert working in a pre 8.6.0, you need to change the file extension of <*.statgrid> to <*.surface>.

QPS Project version

Fledermaus 8.6.0 along with the Qimera, and Qinsy X.6 releases comes with a new Project version. This means that when you open your prior projects with 8.6.0, it will ask if you want to upgrade it. Once you say yes you can no longer open the project in prior versions so make a backup first if you want to keep a copy of the older project around.

QPD File Compatibility

The QPS .qpd point file has been upgraded with the x.6.0 Product line releases. The latest release of Fledermaus 8.5.3 is be able to read x.6.0 qps processed point data (.qpd) files,

but older versions of Fledermaus (8.5.2 and earlier) will not be able to read the newer .qpd version.

Installers

The Fledermaus installer will install by default into subdirectories with the 8.6.0 version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus. This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time. The Fledermaus Offshore License, will enable within Fledermaus the features that are governed by that License. For details, please see the following table of features of the Fledermaus Products.
Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.6.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus v7.X

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications. Support for Fledermaus 7 will continue while the user base continues to transition to work with the new and improved Fledermaus 8.

Fledermaus 8.6.0 New Functionality

On this page:

- Tracked Object
- Vessel Tracked Line
- Image Collection
- Route Planner
- Dynamic Profiles object and Plot Improvements
- Pipeline & Cable Objects improvements
- Scene Time improvements
- Draping improvements
- Line Object improvements
- General Object improvements
- Create Grid Wizard improvements
- QPD Object Attribute Improvements
- Fledermaus Viewer - Measurement

Tracked Object

Fledermaus Tracked object allows you to simulate and see real-time (online, live) any tracked object in a scene for situational awareness. You will be able to plan, or follow real-time ROV and/or UAV dives, or vessel operations. You can activate a tracked object, to a logged or live option feed, you can anchor the scene camera to follow the tracked object and see the line in the data viewing panel. You are also able to lock the scene exaggeration to avoid distortions during your work on situational awareness.

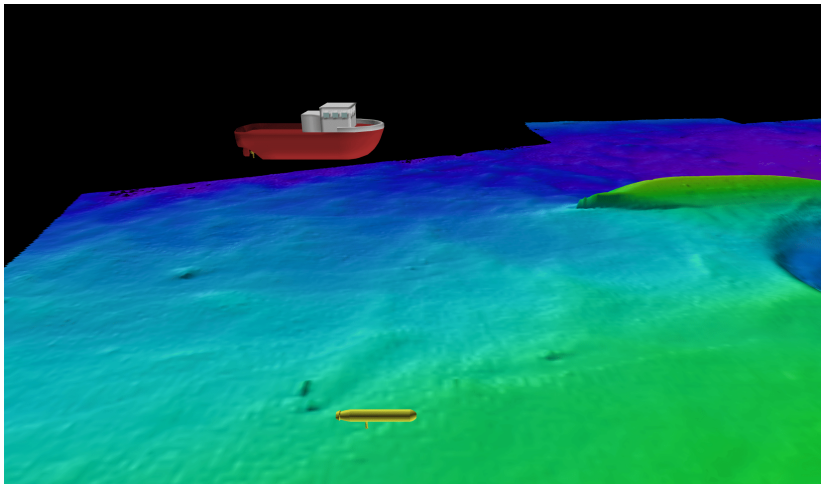


Figure 1. *Tracked Objects, in 4D Scene (via Vessel Manager).*

A tracked object either play's backed recorded navigation or live feed via Vessel Manager with NMEA strings. The Tracked object functionality is only available with Fledermaus Offshore product.

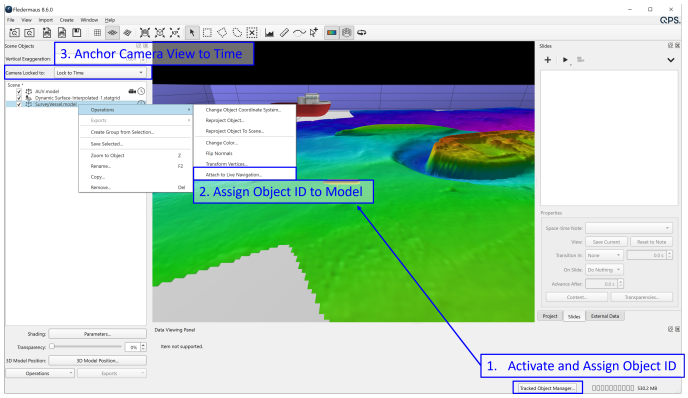


Figure 2. *Tracked Objects setup within Fledermaus, in 4D Scene (via Vessel Manager in the background).*

Vessel Tracked Line

The vessel track line object, available with Fledermaus Offshore, allows you to work with time and location synced images and video that you can embed in the 4D scene for a complete Full Motion Video Support for replay for underwater inspections and analysis.

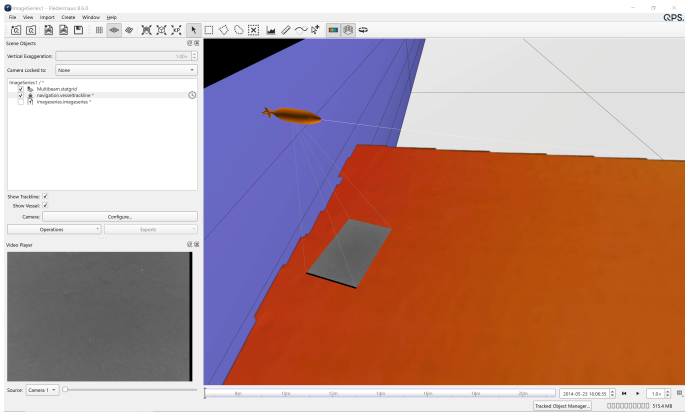


Figure 3. *Screengrab of Vessel Track Line, set with images collection time stamped with Camera view settings in the 4D Scene. Image collection Object. Credit data to: Oceaneering (then C&C Technologies).*

Image Collection

The new Image series object, available with Fledermaus Offshore, allows you to work with time and location synced images for underwater inspections and analysis. You are able to prepare scene with prior data for review of image series.

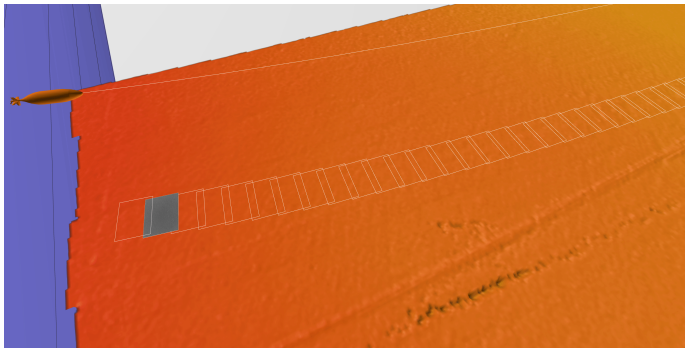


***Figure 4**. Image Collection Object in 4D scene, time synced. Credit data to: Oceaneering (then C&C Technologies).*

You can import your images time series synchronized in time within the 4D scene, create a .geoimage from the image collections, and view the images individually from on the video dock panel, when time dependency is enabled.

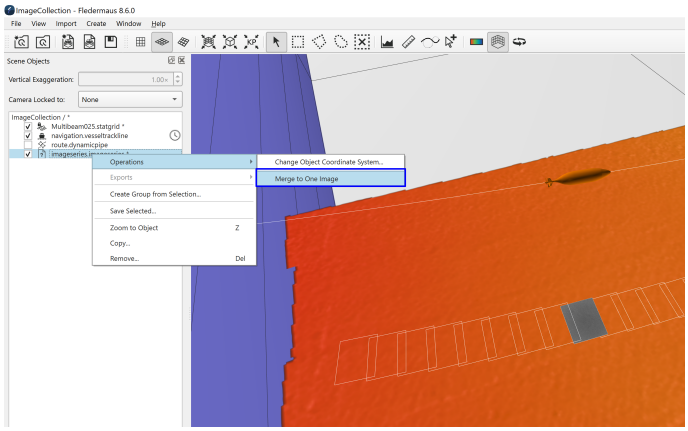


***Figure 5.** Merge Image Series operation highlighted from operation options on Image Series Object. Credit data to: Oceaneering (then C&C Technologies).*

Route Planner

You are now able to plan a route and manage the bending radius for the control points. Once your route is planned over a surface you can then create a pipeline or cable by providing a radius to the interface of the application. This tool integrates the functionality from the route planner application, which was available prior with the Offshore Add-on. The functionality is now in main Fledermaus application, as part of the Offshore License.

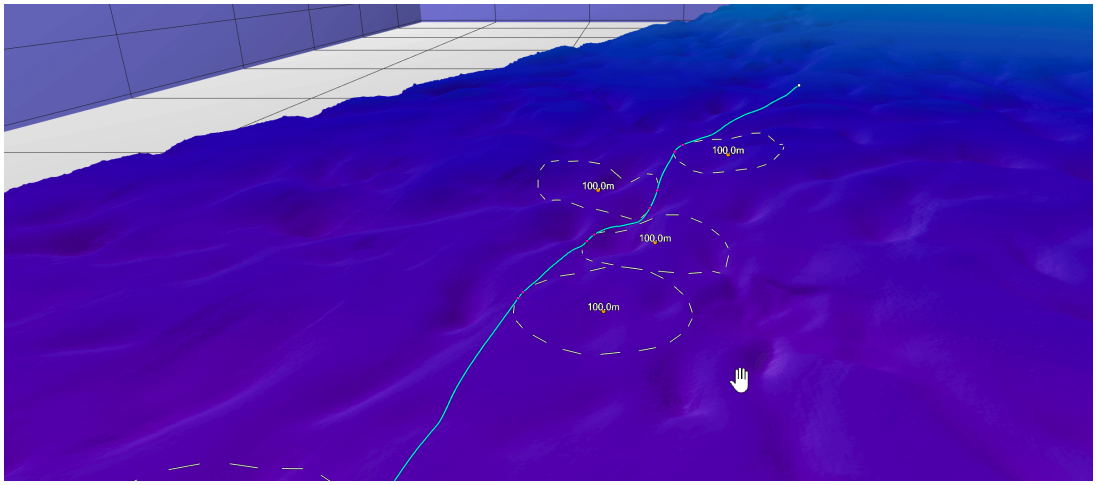


Figure 6. *Screen capture of the Route planner widget mode enabled and bend radius assessments and edits.*

See the resulting profile plot from such route selected upon creation, and also export to a result as ASCII or PFL file formats.

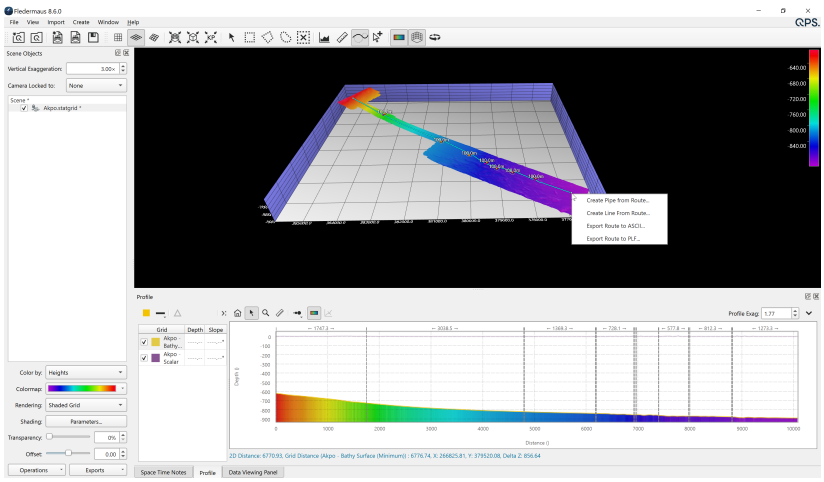


Figure 7. *Screen capture of the create and export options for the resulting route that user has made interactively within the map display.*

Dynamic Profiles object and Plot Improvements

The dynamic profile plot of Fledermaus continues to increase in analytical functionality, now allowing enhanced measurements in the Fledermaus Offshore License.

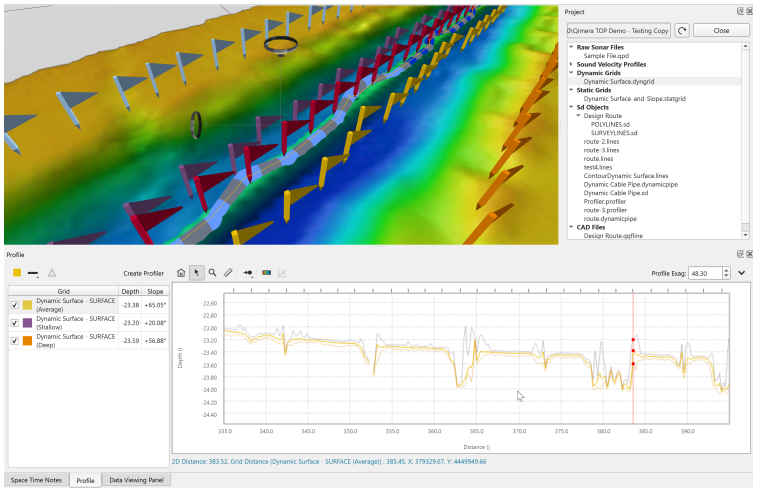


***Figure 8**. Screen capture of the dynamic profile plot, showing the new enhanced measurements for the users along profiles on profile plot.*

Additionally, you can now use the profile plot for analysis and measurements, which will include a defined pipeline object on position on the 4D scene, as it will display in the profile plot along and across profiles. To ensure that you can trust the plots from any distortions you are able to lock the exaggerations on them, independently as depicted in Figure 9.

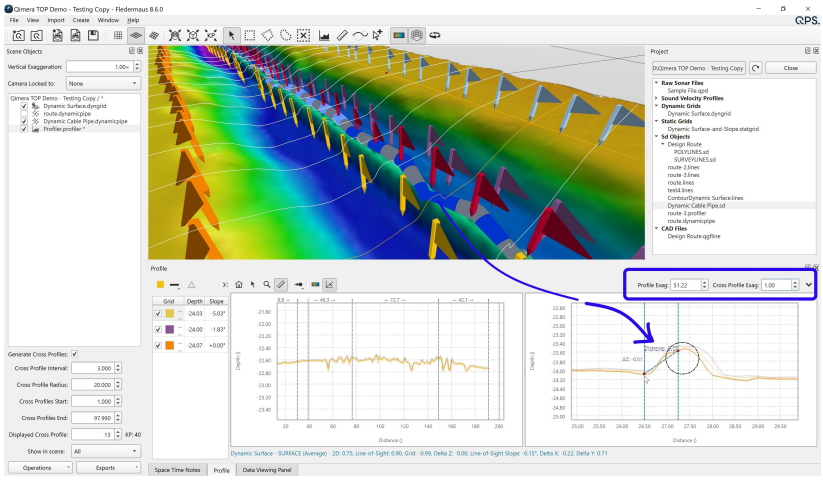


***Figure 9**. Screen capture of the dynamic profile plot with pipeline and/or cable objects, showing up in the along and across profile.*

When working with grids that contain multiple layers, now the profile plot will display multiple layers associate to that surface. This feature is also only available with the Fledermaus Offshore product.

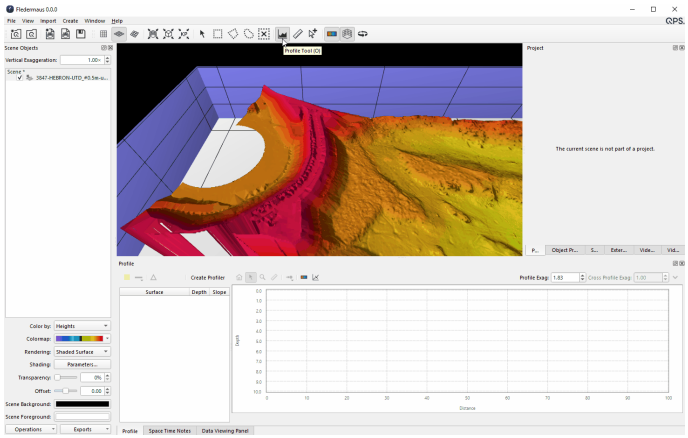


***Figure 10**. Screen capture of the multiple layers on the profile plot for multilayer grids.*

You are now also able to use quick profile with CTRL click and drag, which is now a middle solution for FM 7 to FM 8 users, for profiling.

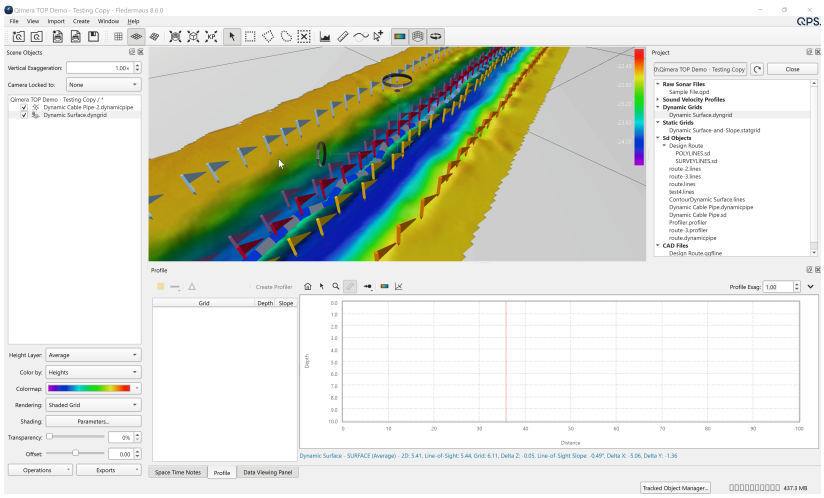


***Figure 11**. Screen capture of the quick profile functionality.*

When working with cross-profiles you can now decide if you want to show or hide other cross-profiles on the 4D scene, as depicted in Figure 12

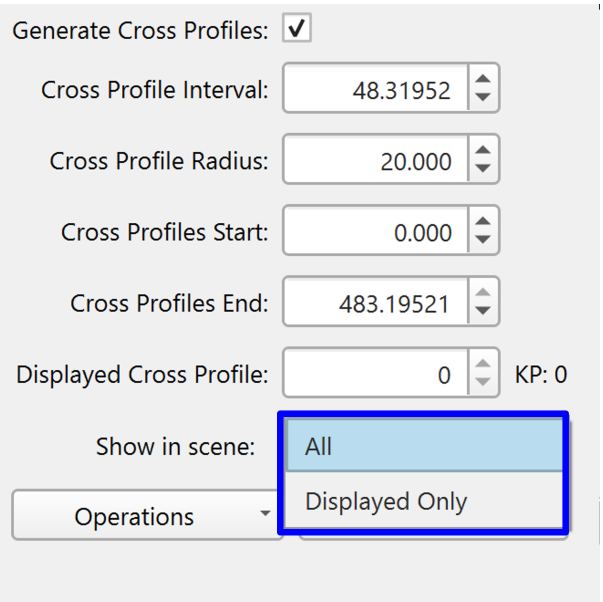


Figure 12. *Screen capture of the cross-profile properties, highlighting Show in scene options.*

You can also work when generating a profiler object, setting to follow with camera, which automatically updates the 4D scene to have the cross-profile centered (See Figure 13)

Figure 13. *Screen capture of the cross-profile plot properties with follow with camera enabled.*

Last not least, you can export the cross-profile series to a series of ascii and also of images titled by KP.

Pipeline & Cable Objects improvements

When working with a line/route object you can define kilometer points (KP), you can see the steps to do so in Figure 14.

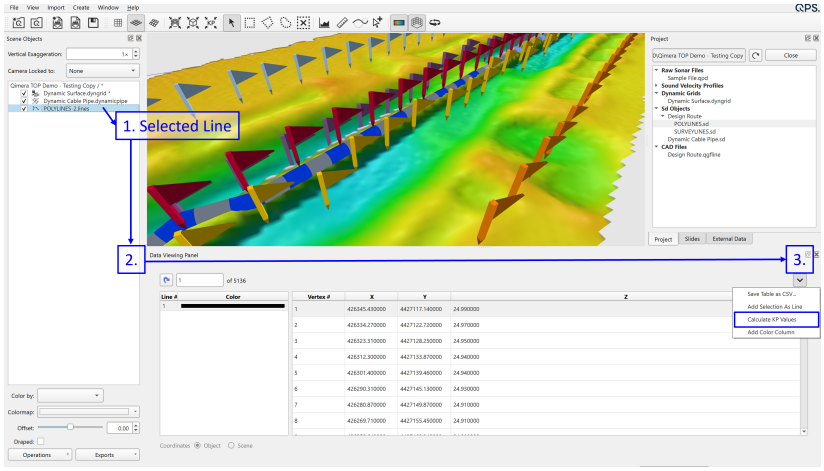


***Figure 14**. Screen capture of pipeline with zoom to KP feature. Credit data: XOcean*

You can also directly use the Zoom to KP functionality for active route and/or pipeline/ cable objects. This functionality is accessible in the scene bar as depicted in Figure 15.

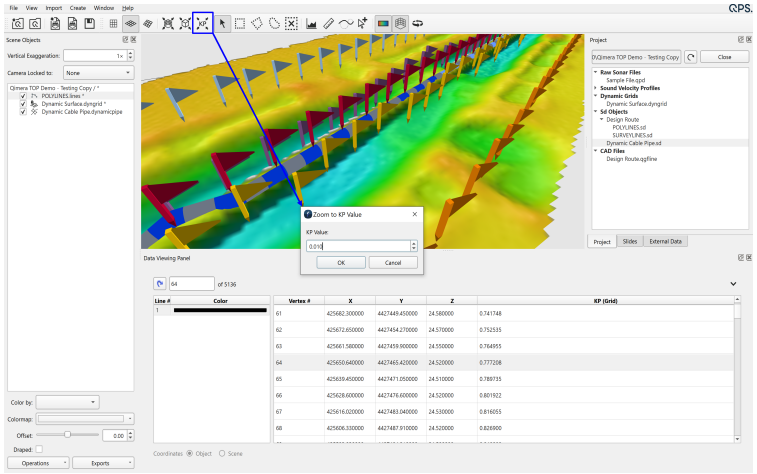


***Figure 15**. Screen capture of pipeline with zoom to KP feature. Credit data: XOcean*

Connect vessel track to pipeline object: This provides the pipeline the information it needs to be able to find and set a scene position based on time. You are also able to lock the scene exaggeration to avoid distortions during your work on situational awareness.

Scene Time improvements

Scene time properties are improved allowing you to keep the time settings and save such state of time to the scene file.

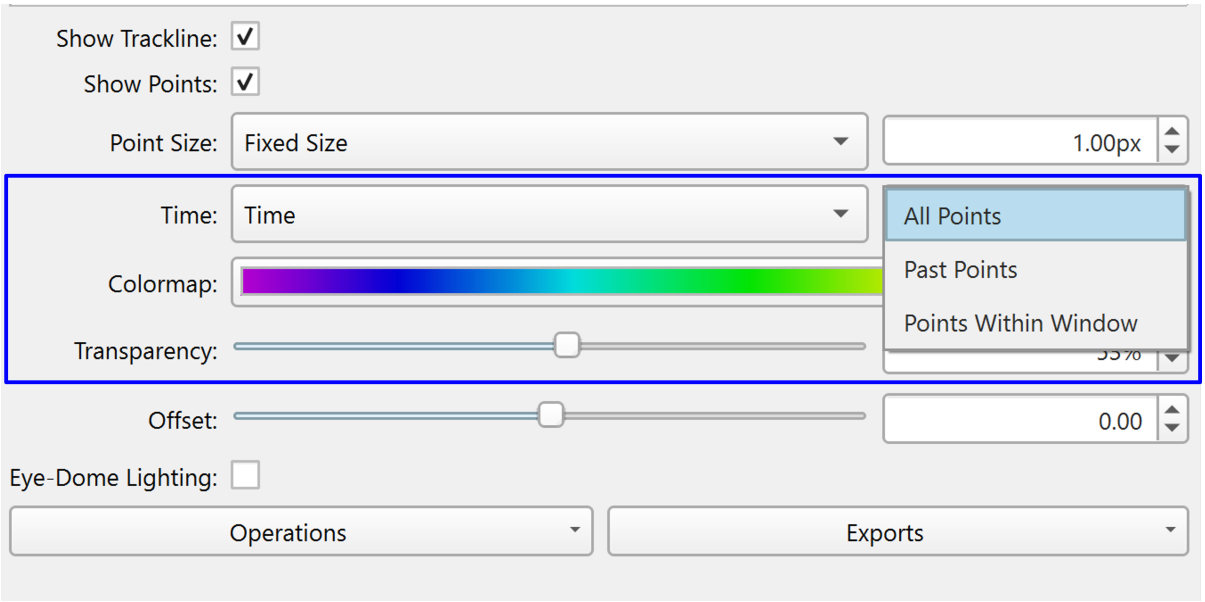


***Figure 16**. Screen capture of settings that are being now saved with the scene file.*

Draping improvements

These draping improvements were made available to the full user base. When you drape an image on a surface you can now optionally choose to crop the results draped image surface to just the area of the image you are draping.

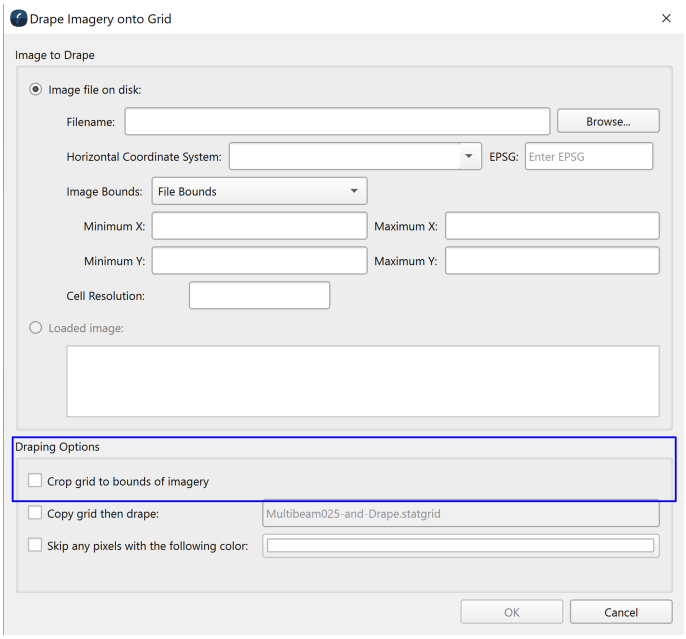


***Figure 17**. Screen capture of drape dialog box enhancing now cookie cutting option for grid to image extents.*

When you drape lines over grids on the scene and these have holidays, your lines will be cropped to only be visible where there is grid data.

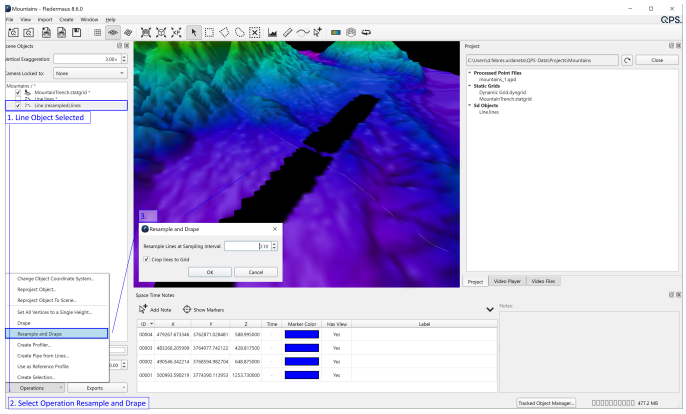


***Figure 18**. Screen capture of drape dialog box enhancing now cookie cutting option for grid to image extents.*

Line Object improvements

As a user you can now create QGFs (QPS Graphic File) from defined Fledermaus line objects, making QPS cross product workflows easier.

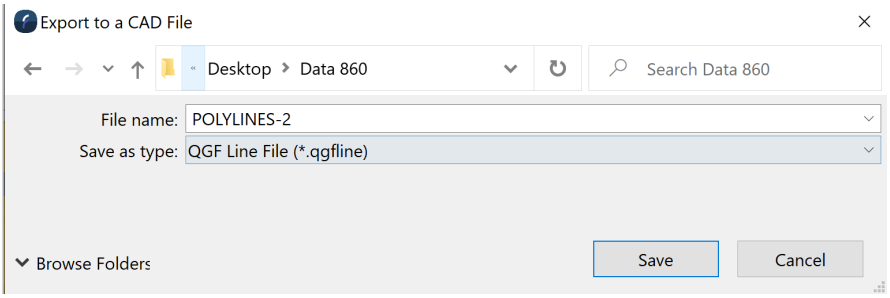


***Figure 19**. Screen capture of QGF option of operations for lines object.*

You can now also color sectioned line objects differently, enhancing the properties that you have control of for the polyline objects.

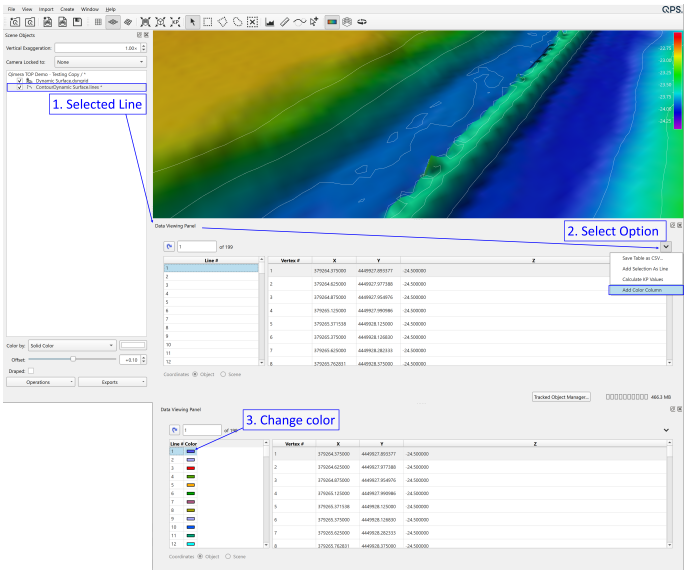


Figure 20. *Screen capture of color lines objects options now available.*

General Object improvements

We continue to make some basic functionality common across products. As a request from users, you can now zoom to object options on right-click operations menu.

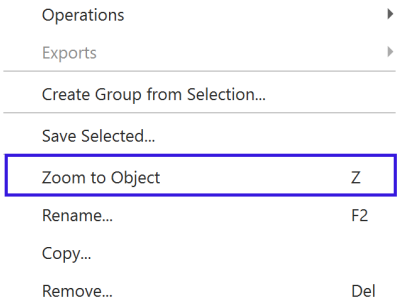


Figure 21*. Screen capture of the right-click option for Zoom to object.*

Create Grid Wizard improvements

Something that our Fledermaus 7 user base missed in Fledermaus 8, was the possibility to create a scalar (a uniform grid of some value other than height/depths), to load and work in Fledermaus. It is now back, and you are able to create scalars from supported formats for many different point cloud data.

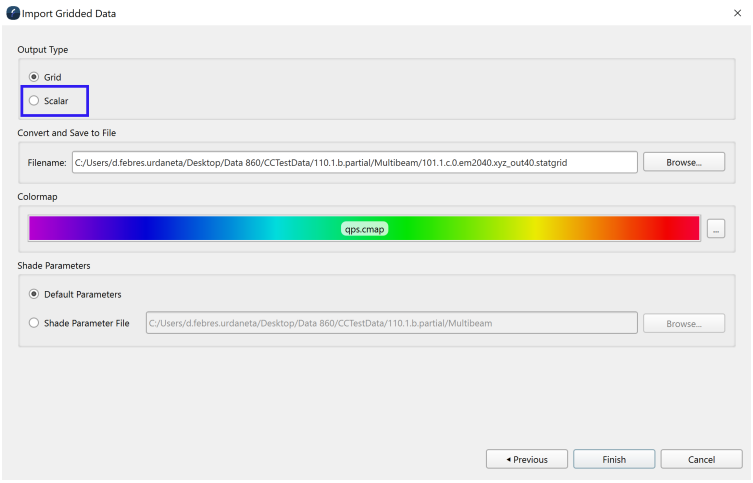


Figure 22*. Dialog of Ungridded data wizard where you can choose scalar creation instead of a grid.*

QPD Object Attribute Improvements

Loaded QPD files now support transparency.

Fledermaus Viewer - Measurement

It is now possible to do quick measurements with the Fledermaus Viewer, as shown in Figure 21. You can create your scenes with a Licensed Fledermaus product and share them with others, that can make use of the Fledermaus Viewer to interact with the scene, more actively now with quick profiles and also do quick measurements at no additional License cost to those you share your scene with.

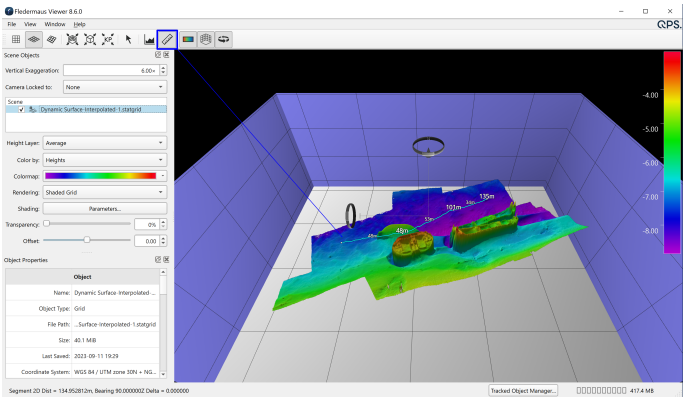


***Figure 23**. Screen capture of the Fledermaus Viewer with measurement mode enabled to show measurements in the map display application.*

Fledermaus 8.6.0 Resolved Bugs

On this page:

- Bug Fixes

Bug Fixes

Below you will find listings of bugs which have been reported in previous releases and which have been solved for the 8.6.0 release.

You can now import vertical images with the ASCII file method.	8.6.0	↑ High
Preferences for background for the bounding box and scene are now being preserved, even after exports.	8.6.0	↓ Low
It is possible now for users to use the cluster function of point clouds	8.6.0	↑ High
Distance in geographic scenes is now more accurate.	8.6.0	↑ High
Compute masks now with groups of files on the object list.	8.6.0	↑ High
When a profiler object is created, and cross profiles are enabled the cross-profile dock persists when selecting an attribute.	8.6.0	↓ Low
QPD points are now visible in presentation mode	8.6.0	↑ High
Space Time Notes (STNs) are now working correctly with geographic scenes	8.6.0	× Urgent
Waypoints is now part of the ASCII profile export	8.6.0	↑ High
CAD objects after loaded are now prevalent on the scene	8.6.0	↑ High
3D models are not possible to scale accordingly when imported from .obj to the 4D Scene	8.6.0	↑ High
Zoom to objects from 2D and 3D views now remain	8.6.0	↑ High
Saving a geoimage is now being saved in the corresponding Project folder when working on a project-based scene	8.6.0	↓ Low
You can now resample line to a larger interval	8.6.0	↑ High
When loading lines that contain KP values on it, these values are listed and	8.6.	↑ High

×

Fledermaus 8.6.0 Documentation

Documentation has been updated to capture the changes to existing dialogs and workflows for the application. Some of the new documentation listed in our reference manual:

- Vessel Trackline
- VesselManager
  - VesselManager Application Window
  - VesselManager Data Flow
- Fledermaus Import Menu
- Fledermaus Import Image Dialog
- Fledermaus Video Files Dock
- Fledermaus 4D Scene
- Dynamic Profiler
- Fledermaus Profile Dock
- Fledermaus Drape Image Dialog
- Fledermaus Data Viewing Panel Dock

Fledermaus 8.6.0 Implemented Feedback

Feedback Project

In this release, we have completed 5 feedback project items, which satisfies many votes from the user base. For more information, see our Voting system Policy and Using the Voting System.

We have review implementations of 20 suggestion cases within our direct customer support stream. We appreciate your engagement and communication with us for helping us build a great product. The suggestions and our public Feedback project help us greatly to prioritize. Please vote on populated feedback and participate in the process by tracking, watching and commenting on issues!

Please contact us within the Support System to Vote and help in the prioritization of feature implementations.

Key	T	Summary
FFM-183	↑	Vessel Manager in FM 8 allowing vessel asignments
FFM-165	↑	Pick a point along a profile line in plan view and show corresponding point on profile object
FFM-162	↑	Support Scene creation with a Custom CRS
FFM-78	↑	KP Support
FFM-75	↑	Export the value of calculate slope along a route/pipeline

5 issues

Fledermaus 8.6.0 Transitions from Fledermaus 7

On this page:

- Fledermaus Offshore and Fledermaus
- Fledermaus Viewer

Fledermaus Offshore and Fledermaus

The commitment to our user base continues with the improvements of 8.6.0 to work in removing workflow barriers for Fledermaus v7 users moving to Fledermaus v8, that now combining prior elements from Fledermaus core and the Offshore add-on into one Licensed product: Fledermaus Offshore. We are working with users as our guides for bug fixing, the new features, and the implementation of key missed functionality. We would greatly appreciate to continue to hear from the user base to know and understand their priorities to work with them. Some of those listed in the Improvements and New Functionality.

Please refer to the information below for initial transition process plans. Further updates on transition functionality will come at a later date. If you have doubts about your workflow and the path to follow using any of the Fledermaus versions and its functionality, please contact us. We will be happy to address your questions.

Fledermaus 8.0.0 - Transitions from Fledermaus v7

Fledermaus Viewer

Please note that since version 8.3.3, the Fledermaus Viewer runs for all Supported Operating system, as a stand-alone installer.

Fledermaus 8.6.0 Known Issues

On this page:

- Known issues

Below you will find listings of bugs which have been reported in previous releases but have not yet been addressed.

Known issues

Issue	Summary	Affects Version/s	Priority	Notes
Bug	There are situations when mesh creation gets stuck in 3% of the normal calculation of the meshes when working with the PCL algorithm. Workaround is to use the Quick Neighborhood algorithm when working with QPDs	8.2.0	↓ Low	This is a situation with the third-party Library. We are investigating to prevent the situation of unexpected exit.
Bug	When working with multiple passes of MBES data, the differing passes can result in a suboptimal mesh solution. Workaround is to create the mesh with the best resulting one pass mesh.	8.2.0	↓ Low	This is a situation with the third-party Library. We are investigating options to give the user better results when working with these types of datasets.
Bug	When working on an ESRI GDB some files are failing at transfer	8.5.2	↑ High	We are working on correcting this, affected also on 3rd party. Plan is to upgrade to support ArcPro
Limitation	Fledermaus does not support 2018 AutoCAD dxf/dwg files on the Linux platform but Windows and Mac should be fine. Workaround is to export prior versions of dxf and dwg.	8.3.0	↑ High	This is dependent on the Third-Party Library, we are working on upgrading this in the medium term.

Issue	Summary	Affects Version/s	Priority	Notes
Limitation	GMT v5 is not currently supported.	8.0.0	↑ High	This is dependent on the Third-Party Library, we are working on upgrading this in the medium term.
Limitations	Tiff compressions not available for Mac and Linux - limiting the builds for Mac and Linux on latest versions	8.4.3	↑ High	We are working on the updates of the Third Party Libraries to be able to get the other OS systems supported in latest release
Limitation	Grid multilayers, not listed or available for view, except on import	8.6.0	↑ High	We are working on implementations on this in the incoming releases. Please if you have need for this, contact our Support team
Limitation	No roll back of QPS Project upgrade for 8.6.0	8.5.3 and prior	↓ Low	If you create a project from scratch in pre 8.6.0, and open it in 8.6.0, there is no upgrade prompt and you cannot open it back in pre 8.6.0. To fix, you need to edit the qps.project file and change <version>200</version> to <version>100</version>.
Limitation	No roll back for .surfaces upgrade for 8.60 to .statgrid	8.5.3 and prior	↓ Low	Additionally, if you want to revert working in a pre 8.6.0, you need to change the file extension of .statgrid to .surface

Issue	Summary	Affects Version/s	Priority	Notes
License Manager - Activate Softlock	**Problem** Our License provider LimeLM needs to have all Network Adapters enabled when trying to activate a softlock license. In some situations, the dialog “Failed to Activate License” with the message *“There are network adapters on the system that are disabled, please enable them and try again.”* might appear when trying to activate the softlock license. This will prevent you from activating the softlock license. **Workaround** Follow the steps on https://qpssoftware.scrollhelp.site/lm/network-adapter-error-troubleshooting-steps for potential solutions. **Planned fix** The fix depends on our license provider. When we have an official solution it will be part of our installers	8.6.x	↑ High	

Fledermaus 7.11.2 - FMGT Release

June 2, 2025

We are pleased to present FMGT 7.11.2

Highlights

- Directory Monitor now supports .kmall files.
- Dual head R2Sonic pairing with GSF is now supported.
- Fixed an issue with the HIPS I/O local license for Caris 12 users.
- Set the system id in the GSF for s7k files containing only beam average. The settings are correctly populated.
- New License Manager version 1.10.0.

Bugs

- Fixed the nominal frequency of the EM304 MKII in kmall format, resulting in a more accurate backscatter correction.
- Fixed an issue with Absorption values for Kongsberg KMALL systems not being correctly populated when merging files to create a GSF.
- Fixed an issue with Override Real-Time Absorption not applying for Kongsberg .kmall systems in GSF format.
- Fixed an issue extracting the correct navigation priorities for kmall files. The bug appeared as smearing in the mosaic.
- Fixed an issue with the map view having a pixel offset when launched on a second monitor. This affected mouse clicking on the mosaic/grid.
- Fixed a gap that appeared between lines, where *Use adjacent lines within time window of* was not working correctly.
- Fixed an issue when importing an EdgeTech 6205 where the second head was not importing for beam average.
- Fixed an issue with FMGT's histogram slider ranges showing valid bounds.
- Fixed a crash when generating a mosaic from .all.mb58 files.
- Fixed an issue with Norbit dual swath GSF pairing ping lookup.
- Fixed an issue with KMALL and HDCS pairing causing an incorrect auto time sync lookup.

Known Issues

Fledermaus 7.11.1 - FMGT Release

February 21, 2024

We are pleased to present FMGT 7.11.1

Highlights

- Improved anti-aliasing filtering. This fix removes some ambiguity between lines that could show up as speckle noise between lines. It will also make the results consistent when adding new lines to the mosaic. If you are working with an existing project created in FMGT version 7.11.0 or earlier, you should clear the filter flag and re-mosaic. Changing the mosaic pixel size will now always prompt you to clear the Filter flag so the anti-aliasing will be re-run.

Bugs

- Fixed an issue with the cascading backscatter normalization tool color map not using the mosaic color map.
- Fixed a crash when exporting a tiled mosaic as a surface or floating point geotif.

Known Issues

- Due to the change in internal backscatter file storage size (made smaller), if you open a project from a previous version of FMGT (version 7.10.3 or earlier) you will need to manually clear the Adjust flag to continue with new processing, such as Mosaic, Statistics / Grid, or ARA layers. This is done by selecting the Manual Processing tab, clicking the Clear Flags button, checking the Adjust checkbox and selecting OK. Similar items like patch selection will not work without clearing the Adjust flag.

Fledermaus 7.11.0 - FMGT Release

December 22, 2023

We are pleased to present FMGT 7.11.0

Important notes

- With the FMGT 7.11.0 release the internal file formats have changed to reduce the amount of storage. This also means that projects created in FMGT version 7.11.0 are not able to be opened in earlier versions of FMGT.
  - **NOTE:** if you open a project from a previous version of FMGT (version 7.10.3 or earlier) you will need to manually clear the Adjust flag to continue with new processing, such as Mosaic, Statistics / Grid, or ARA layers. This is done by clicking on the Manual Processing tab > hitting the Clear Flags button, checking the Adjust checkbox and selecting OK.
- The QPS database (.db) format version has been incremented, .db files recorded in Qinsy 9.6.0 will need to be opened in FMGT 7.11.x and newer versions.
  The database version upgrade includes:
  - Multibeam Record has been upgraded.
  - A new system type for Forward Looking Sonars
- The QPS .qpd file has been upgraded with the Qinsy 9.6.0 and Qimera 2.6.0 release. FMGT version 7.11.0 and newer releases will be able to read the new .qpd files.

Highlights

- Improved support for large projects. An effort was made to improve support for large projects by ensuring all files are extracted and processed during mosaic creation. A few crashes were fixed, files that failed to filter and mosaic will now filter and mosaic correctly, and a speed improvement has been observed in the filtering stage (8x faster filtering on a large project).
- Roll compensated beam pattern correction. There is a new entry in the Processing Parameters > Adjust tab to *Allow Beam Pattern Roll Compensation* which allows for an adjustment of the beam angle by the amount of sonar roll before calculating the beam pattern. This setting works for systems that do not roll stabilize their transmitters (ie. Norbit, R2Sonic, Reson and some Kongsberg shallow water systems). This functionality requires that a beam pattern be selected or created.
- The Absorption correction processing parameter was made clearer by adding a checkbox to indicate that you will override the real-time absorption value when it is checked.
- Gridding backscatter has been improved by using the Statistics / Grid button. New use cases for using a gridded product over the mosaicing would be in areas of heavy overlap, for dealing

with pings stepping forward and backward (ie heavy pitching or the Norbit STX system), and for dealing with interference problems. Here is what's been done:

- An improvement was made to properly georeference snippet pixels for use in the Statistics gridding routine.
- The default statistics / gridding suggested pixel size is now 5x the mosaic pixel size, which can be adjusted independently (ie. 1x) for gridding of backscatter.
- A new option for Gridding Diameter in pixels and Nadir Distance Weighting was added to the pixel size edit window. The *Gridding Diameter* defaults to 1 pixel, meaning a snippet will only contribute to the pixel it lands in, for 3 pixels it could be up to 9 grid cells (3x3 box), and so on. The *Nadir Distance Weighting* applies a lower gridding weight to nadir snippets and increases linearly to the outer beams.
- When gridding backscatter, all the statistics layers are generated. Typically a Mean, Median, or Mode Backscatter layer can be viewed to determine the best result. For instance, a Statistics Grid of backscatter Mode is much less sensitive to interference problems. Areas with heavy overlap can also benefit with improved imagery as you have more samples contributing to each pixel.

- Georegistered Snippet Export. We have added the ability to export georegistered snippet samples with AVG applied to allow for gridding in other packages, like Qimera or Fledermaus.
- Support for EdgeTech 6205 sonars. You will need to manually set the Sonar Type in the *Processing Parameters > Sonar Defaults* tab and use Custom Override All. This should be done before importing the source files to save re-extracting the coverage.
- Support for Kongsberg EM2042 sonars.
- Support creating a multispectral image with only 2 bands.

Bugs

- Processing / Source Files
  - Frequency used in processing is now displayed properly in the Beam Pattern viewer, ARA patch analyzer, and in the ARA creation.
  - Fixed .kmall dual swath loading for single and dual head systems. This has an improvement in resolution for small features.
  - Fixed a bug where the snippet sample lookup relative to the central sample was incorrect, resulting in small loss of resolution for finer features.
  - Fixed an issue when viewing raw Norbit snippets.
  - Fixed an issue when viewing raw Kongsberg beam average intensities.
  - Updated the lookup of absorption coefficients for Kongsberg systems to use the values reported in the sector packet headers per ping. This would only have affected EM2040 users who were attempting to correct for errors in data entry of the absorption in real-

time. This improvement was only necessary for .all and .gsf formats, the .kmall format was not affected.
    - Fixed an across track scaling issue when pairing with HDCS data.
    - Read and apply HDCS ping flags.
    - Fixed a depth resolution issue when creating GSF files during import pairing.
    - Fixed a depth corrector issue when pairing with HDCS files.
    - Support dB offsets for Kongsberg Very Shallow mode
    - Fixed an issue with the ARA layers having an incorrect histogram resulting in a mis-match between the display and histogram.
    - Fixed an issue with Norbit normalized backscatter absorption values being read as 0.
    - Fixed an issue in the pairing file selection if there were more bathy files than snippet files or vice versa.
    - Fixed an issue when pairing R2S and Hypack GSF files when snippets are missing.
    - Fixed an issue with noisy beam average values when pairing R2S and Hypack GSF files.
- Other
    - Changed the HIPS Licensing version selection to be either CARIS 9 / 10 or CARIS 11 / 12 licensing.
    - Improved the speed of the multispectral image creation dialog.
    - Added mosaic name to the status bar to make it clear which mosaic the mouse value came from.

Known Issues

- Due to the change in internal backscatter file storage size (made smaller), if you open a project from a previous version of FMGT (version 7.10.3 or earlier) you will need to manually clear the Adjust flag to continue with new processing, such as Mosaic, Statistics / Grid, or ARA layers. This is done by clicking on the Manual Processing tab > hitting the Clear Flags button, checking the Adjust checkbox and selecting OK. Similar items like patch selection will not work without clearing the Adjust flag.

Fledermaus 7.10.3 - FMGT Release

May 29, 2023

We are pleased to present FMGT 7.10.3

Highlights

- Improved Kongsberg .kmall corrections
- A new opt-in processing parameter *Calculate and apply AVG across line breaks* has been added in the Filter tab. This will allow the AVG to continue across line breaks by using the line before and after the line that is currently being filtered. You might want to consider using this feature if you are in deep water and have short survey lines or you are noticing backscatter differences at line breaks.
- Support has been added for the new Yaw stabilization mode with Norbit Winghead Sonars.

Bugs

- Processing / Source Files
  - Fixed an issue when pairing dual head Kongsberg .kmall format logged in Qinsy. The backscatter processing would fail. Users with existing projects will need to re-pair the .db and .qpd or re-export the GSF from Qimera in order to complete backscatter processing.
  - Fixed an issue with Kongsberg .kmall installation parameters.
  - The snippet scale factor in GSF for Kongsberg systems is now being used by FMGT.
  - Fixed a beam numbering mis-match in particular files between HDCS files and Reson backscatter files in XTF format.
  - Fixed a crash when importing a GSF from NavAQ with missing sensor specific subrecords.
  - Mosaicing Parameter *Fill gaps using adjacency* now correctly works (doesn't fill the gap) when vessel turning is logged, but pings are flagged as rejected.
  - Improved fault tolerance of the code that creates GSF files for dual-head Norbit setups where the FM pulse bandwidth was reported as a negative number. Users with existing projects with dual-head Norbit systems may notice a significant dB shift between the two heads. In this situation, the best course of action is to re-create GSF files since the original GSF files have a corrupt pulse bandwidth.
- Importing / Exporting
  - Exporting a one merged floating point geotiff will now prompt you to select a no-data value.

    - Exporting *One Merged Floating Point Geotiff* and *Export Surface > Export Floating Point GeoTiff Grid* will now product the same backscatter results.
- Other
    - Updated the *Use All Soundings (Rejected and Interpolated)* label found in the Processing Parameter Kongsberg Format tab. If soundings are rejected in .all or .kmall format and you do not want them included in the mosaic, uncheck this box.

New License Manager v1.9.7

- New license manager containing bug fixes and performance improvements.

Fledermaus 7.10.2 - FMGT Release

24 October 2022

We are pleased to present FMGT 7.10.2

Highlights

- Added support for Reson T Series sensor specific subrecords in GSF files.
- KMALL ping mode corrections are now fully supported in FMGT
- Better handling of Kongsberg kmall files where pings are out of order in the .kmall file.
- Fixed gaps between lines in .all and .kmall files that should have been filled with the Fill gaps using adjacency checkbox in the mosaicing parameters.

Bugs

- Fixed an issue where GSF ping flags were not being read in FMGT.
- Removed the dB adjust slider found in the beam pattern correction tool that only had a graphical effect on the beam pattern plot, it did not have any effect on the resulting mosaic.
- Fixed a bug with HDCS / S7K file pairing where the HDCS and S7K file contained different beam numbering.
- Fixed a bug where kmall navigation was not completely extracted.
- Fixed a bug with a gap at nadir in a dual head mosaic where there shouldn't be a gap.
- Fixed a crash during the adjustment phase of an XTF sidescan solo file.
- Fixed an issue with GeoTiff file import into FMGT where the background color was not being correctly set to transparent.

Fledermaus 7.9.5 - FMMW Release

April 1, 2024

We are pleased to present FMMidwater 7.9.5

Important notes

- The QPS database (.db) format version has been incremented, .db files recorded in Qinsy 9.6.0 will need to be opened in FMMW 7.9.5 and newer versions.
  The database version upgrade includes:
  - Multibeam Record has been upgraded.
  - A new system type for Forward Looking Sonars
- The QPS .qpd file has been upgraded with the Qinsy 9.6.0 and Qimera 2.6.0 release. FMMW version 7.9.5 and newer releases will be able to read the new .qpd files.
- FMMidwater will now recognize the Fledermaus Offshore license with the updated license manager.

Highlights

- Dual Head Kongsberg .kmall support has been added.

Bugs

- Fixed a crash when converting a .s7k file.
- Fixed an issue where the sounding filter was not being preserved on export to a stacked curtain.
- Fixed an issue where the beam snapshot export was missing transparency.

Fledermaus 7.9.4 - FMMW Release

05 Jul 2021

We're pleased to present Fledermaus Midwater version 7.9.4. In this release, we fixed and updated the application for supporting the latest Qinsy Database file format and support the latest geodetic resource upgrades. Read below for details.

Click on the icon above and vote on or create a Feedback issue!

Bugs

- Created point SD files from Geo-Picking table land in the adequate location

Other

- Upgraded to the new Geodetic resources
- Support for the latest Qinsy Database file format (.DB), compatible with Qinsy 9.4.x

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

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Fledermaus 7.8.13 Release

09 Sep 2025

We're pleased to present Fledermaus version 7.8.13. In this release, we focused on fixing a Licensing situation and minor bugs. Read below for details.

Bugs

- Fix bug for setting system wide port number for product. The port number is set and read in the system Registry, requiring Admin privileges to set the port number..
- Disable the OpenGL version check. Just prints a warning now.

Improvements

- Enable CrossCheck with the FM7 Hydro addon.
- Rename executable to Fledermaus7
- Update title bar to show the version number.
- Print version number for licensing on startup.
- Fix for pixelated render of menu bar logo at higher DPIs.
- Fledermaus7 now recognizes Fledermaus Offshore licensing product

Changes

- By default, the install directory is now `C:\Program Files\Fledermaus7\`. While this can be changed during the install process, any existing install of Fledermaus that does not use the same path will remain unchanged. Note this for any scripts or command line usage.

Archived Release Notes

- Fledermaus 7.8.7 Release
- Fledermaus 7.8.7 - FMMW Release
- Fledermaus 7.8.8 - Windows 32bit Release
- Fledermaus 7.8.8 Release
- Fledermaus 7.8.9 - Windows 32bit Release
- Fledermaus 7.8.9 Release
- Fledermaus 7.8.10 - FMGT Release
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- Fledermaus 8.4.4 Release
- Fledermaus 8.5.3 Release
- Fledermaus 8.5.1 – Viewer Release
- Fledermaus 8.5.0 Release
- Fledermaus 8.5.0 – Viewer Release
- Fledermaus 8.5.2 Release
- Fledermaus 8.2.3 Release
- Fledermaus 8.3.3 Release
- Fledermaus 8.3.1 Release
- Fledermaus 8.3.2 Release
- Fledermaus 8.5.1 Release
- Fledermaus 7.10.0 – FMGT Release
- Fledermaus 7.10.1 – FMGT Release

Fledermaus 7.8.7 Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.8.7 - FMMW Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.8.8 - Windows 32bit Release

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Fledermaus 7.8.8 Release

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Fledermaus 7.8.9 - Windows 32bit Release

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Fledermaus 7.8.10 - FMGT Release

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Fledermaus 7.8.10 - Windows 32bit Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.8.10 Release

15 October 2019

We are pleased to present Fledermaus 7.8.10. Read below for details.

Highlights

- FMGT and FMMidwater now have their own installers, and are no longer included with the Fledermaus installer.

Bugs

- Improved user messages to clarify supported CRS systems for clustering algorithms.
- Updated attribute operations tab for vessel object interface, removing the reproject option which was not supported
- Fixed issue related to loading floating point tiff images.

Vote

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Fledermaus 7.8.11 Release

27 October 2020

We are pleased to present Fledermaus 7.8.11. Read below for details.

Highlights

- This release focuses on a set of bug fixes and targeted improvements for the Vessel Manager portion of Fledermaus.
- As a reminder, FMGT and FMMidwater now have their own installers and release schedules, and are no longer included with the Fledermaus installer.

Bugs and Improvements

- When displaying a vessel location from Vessel Manager for a long time (over two hours) the Scene will no longer have degraded rendering. This was fixed by limiting the number of locations stored in the history. A warning message will be displayed on the Key Frame tab in Fledermaus, when exceeding the max buffer.
- Vessel Manager now displays key frames in real time units when reading from NMEA data.
- When using the vessel track import, Heading (and roll/pitch) are now decoded from the log file.
- When you select a vessel in Vessel Manager, the time is now shown in hours, minutes, and seconds. Previously it was only displayed in seconds.
- The default interpretation of pitch for custom strings was changed to be positive up. This fixes inconsistencies with other methods of importing navigation data into Fledermaus (ie. the Import > Navigation track option).
- Added a checkbox option when playing data via Vessel Manager to switch the pitch interpretation back to negative up, just in case people happen to have setups that expect this way of functioning.
- Fixed a bug where the Invert Z option was not being read properly from the settings file.

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Fledermaus 7.8.12 Release

29 Jul 2021

We're pleased to present Fledermaus version 7.8.12. In this release, we focused on fixing a Licensing situation and minor bugs. Read below for details.

Bugs

- It now possible to set the port number and setting is persistent for the License Setup with the Fledermaus 7 Server. The port number is now read from the Registry.
- Colormap range settings from the attributes now works as expected

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For more information, see our Voting system Policy and Using the Voting System.

Vote

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Fledermaus iView 4D Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.9.0 – FMMW Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.9.1 – FMMW Release

18 February 2020

We are pleased to present FMMidwater 7.9.1.. Read below for details.

Highlights

- FMMidwater now supports Kmall Kongsberg format files.

Licensing

- License Manager supports new command line arguments to set the license server address and proxy server address.
- Fixed a bug with activating Qinsy 9 Softlock License sometimes when older QPS Software is installed on the same system
- Added a -clearserver option that will remove all server connections. Must be used with -silent to work

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Feedback Project

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Fledermaus 7.9.2 – FMMW Release

29 June 2020

We are pleased to present FMMidwater 7.9.2. Read below for details.

Fixed Bugs

- Fixed a crash when exporting an SD object from the Contact Wizard
- Improved the error message when extracting navigation data from a WCD file fails
- The geo-picking export was not using the correct number of decimal places
- Fixed an issue when no default color map was found, which resulted in a black water column image
- Fixed a Y2K import problem with some SEG-Y files that stored the date as two digits

Vote

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Feedback Project

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Fledermaus 7.9.3 – FMMW Release

27 October 2020

We are pleased to present FMMW 7.9.3, which addresses two critical bugs and one usability annoyance.

Bugs

- On some machine configurations, common operations would cause a crash.
- To prevent a crash, we removed the ability to add .wcd files during the "Convert Sonar Files" wizard.
- When you go between the stacked and beam fan view in the main visualization window, the stacked fan view no longer resets.

Vote

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Fledermaus 7.9.0 – FMGT Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.9.1 – FMGT Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.9.2 – FMGT Release

Unable to render include or excerpt-include. Could not retrieve page.

Fledermaus 7.9.3 – FMGT Release

18 February 2020

We're pleased to present FMGT version 7.9.3. Read below for details.

Highlights

- FMGT now support Kmall file format for EM712 systems.

Improvement

- Fixed issue with coverage estimations for dual head GSFs, where coverage was only in the overlapping area of the two heads. This has been fixed by looking at the max across track for each head and using that to determine which head is port and starboard.
- Fixed issue with specific lines not fully mosaicing. This occurred when a sonar was using a very small pulse length for the depth of water.
- Fixed crash caused by exporting the one merged floating point geotiff.
- Fixed issue with georeferencing of the first tile of the one merged floating point geotiff becoming corrupted, now exports correctly.
- Corrected issue with merging the HDCS and S7K files, which fixed resulting outer beam noise in the mosaic.
- Fixed coverage issue for dual head systems when one head is fully flagged with invalid beams.
- Improved indexing of S7K files, to handle potential or actual corruption of the files.
- Fixed GSF/R2Sonic pairing when snippet records are missing at the start of the file. This fixes the following error message that occurred in this specific situation: "ERROR: Invalid sensor ID for GSF processing".

Other

- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

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Fledermaus 7.9.4 – FMGT Release

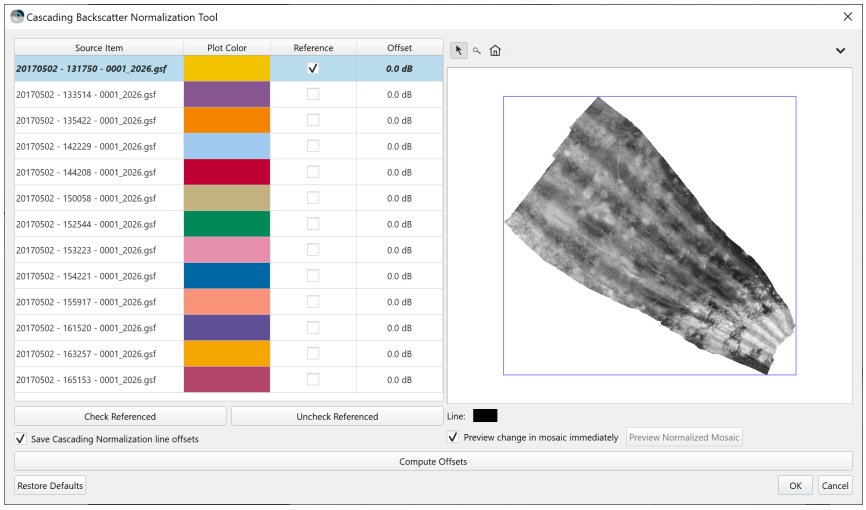
29 June 2020

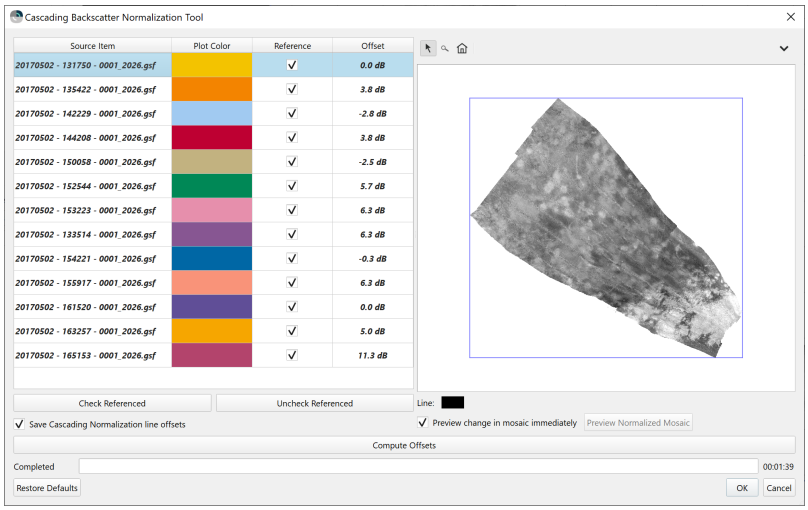
We are pleased to present FMGT 7.9.4

Highlights

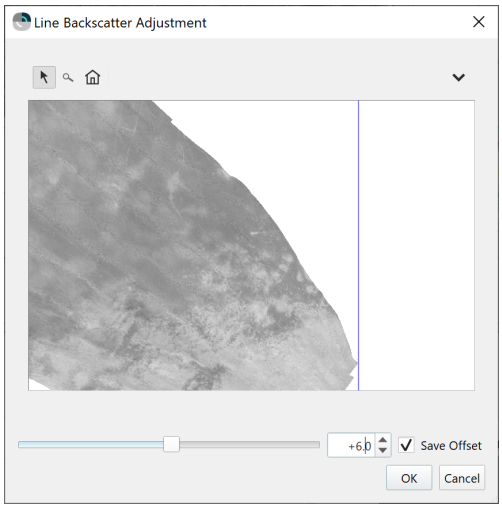
Cascading Backscatter Normalization Tool

We have built a new tool that lets users normalize the backscatter across an entire survey to compensate for occasions when different survey lines have different backscatter levels. The tool is semi-automatic in that the user must select one or more reference lines and then the dB offsets are calculated for all other survey lines relative to the selected reference lines. Once calculated, the user can adjust, tweak or disable offsets for individual lines. This is assisted by a visualization preview of the final mosaic. A snapshot of the tool in action is shown below, with a before and after image showing the result.

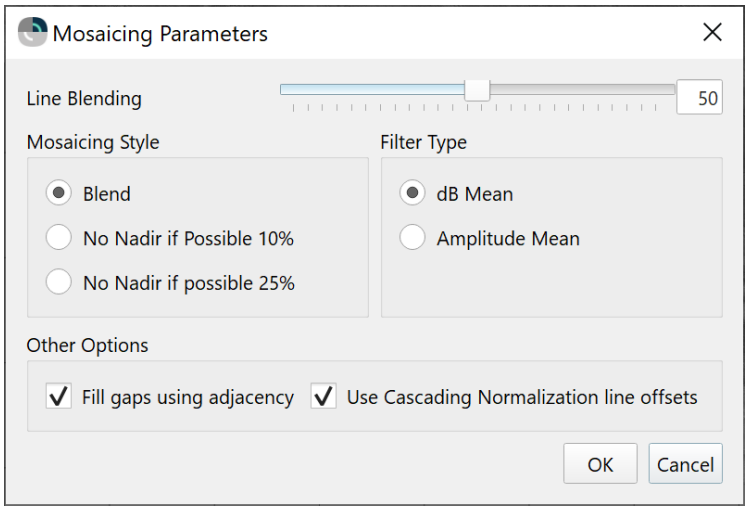




Once satisfied with the results, the dB offsets are saved along side each line in the project folder and they are used by default in the initial mosaic that existed prior to launching the tool. They are also used in any subsequent creation of new mosaics. The user can adjust the offsets individually after this by using the existing "Line Brightness Tool", which has been renamed to "Line Backscatter Adjustment" tool. The renaming was done to clarify the use of the tool, especially now with the arrival of the Cascading Backscatter Normalization Tool. The dB offset that is calculated with the Line Backscatter Adjustment tool is now saved so that the offset is re-applied with new mosaics. Previously, it was only applied to the existing mosaic and would have had to be re-calculated anytime a new mosaic was created. The image below shows the new option to save the offset, it is enabled by default.



There is also now a new setting in the Mosaic menu that allows the user to choose to use the line dB offset results in mosaicing or not. By default, it is off, but it is enabled once the user uses either the new Cascading Backscatter Normalization Tool or the Line Backscatter Adjustment tool.



There are a number of other miscellaneous improvements in this release also:

- The "Backscatter Level Adjustment" menu item has been renamed "Intra-Vessel Backscatter Adjustment" and the title of the tool's dialog has been changed to match. This was done to clarify the intended use of this tool and to make a clear separation on the use case for this tool compared to the Cascading Backscatter Normalization Tool and the Line Backscatter Adjustment tool.
- Processing improvements - When adjusting the mosaic cell size, FMGT will only need to re-run the AVG filter. Previously it was re-processing the backscatter, which made re-mosaic operations take longer after changing the cell size.
- The right-click context menu for mosaics has had the order of the top two menu items switched to have 'Rename' listed first instead of 'Remove'. This was done to help avoid accidental removal.
- Added a safety check when pairing .R2S files with GSF to prevent accidental pairing of dual-head data. Dual head data is not supported for .R2S files from Hypack, but the pairing procedure would attempt to pair anyway, resulting in incorrect results.
- Multi-spectral processing files will now report the frequencies available for processing in the raw files tree. This is also reported in the Datagram Viewer.

Bugs

- Processing / Source Files
  - Fixed a bug with multispectral pseudo-color image creation where color bands were sometimes misaligned
  - Improved the angle calculation for the Statistics layers for GSF file users in very shallow water with large CoG to sonar head offsets across track. It was previously not accounting for the across-track offset for the Statistics calculations. Normal backscatter mosaics were unaffected by this bug since this type of correction is already made for backscatter mosaic and ARA workflows.
  - Fixed a problem where the Coverage processing flag was set even if the Coverage processing did not complete. This affected GSF file users in which the GSF file did not have a sensor ID set, resulting in a need to do a sensor over-ride in the processing settings.
  - KMALL processing has a correction to use the full number of beams in a ping, not just the number of valid beams. The beam processing loop was only examinining the number of valid beams, which left one edge of the coverage to be smaller than expected.
  - KMALL backscatter processing has had a fix to correct for the sonar head offset, relative to the CoG, so that beam angle calculations are improved. This would have affected users with data in shallow water with large offsets between the sensor and the CoG.
- Importing / Exporting

- Improved handling of HDCS/XTF pairing when encountering an incorrect number of beams in the HIPS process.log file and also situations where beams with zero (0.0) depths were influencing the cell size calculation.
- Fixed a problem with Qinsy db/qpd pairing when ADCP records were present. FMGT's .db reading code was not aware of the newer ADCP packet type, this was causing errors in indexing the file and thus access to the raw multibeam backscatter packets.

- Other
  - Fixed color map labeling for reference grids, they were reporting depth range of 0 to 1. It now maps to the correct depth range in the reference grid.

Vote

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Feedback Project

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Fledermaus 7.9.5 – FMGT Release

19 October 2020

We are pleased to present FMGT 7.9.5

Highlights

- New options to choose custom geodetic configurations from Qimera GSFs during import. You can read more about this on this page.

Bugs

- AVG
  - AVG filtering will now be treated the same for port and starboard sides of the swath. Previously, all outer beams (by default, greater than 45 degrees from nadir) were processed beam to beam, starting from port. After this change, the AVG algorithm will process from outer beams towards inner beams for both sides. This change will produce slight differences in AVG filtering results in the outer beams of the starboard side. Some data may also see a little bit of extra data on the outer fringes of the starboard side.
- Mosaic
  - Fixed problem introduced in v7.9.4 for dual-head data coming from Hypack pairing where pings would intermittently drop
  - Fixed issue with source files that were completely flagged. Those files will no longer cause mosaicing to fail, instead, they will be skipped.
  - Fixed issue with filling gaps between lines in the mosaic when the Cascading Backscatter Normalization Tool was run
- Importing / Exporting
  - XTF files for EdgeTech sidescan systems now working correctly, previously this system was not correctly recognized
  - DB/QPD pairing for R2Sonic data with beam average data now works correctly without using Custom Override settings, previously this only worked if snippets data was recorded
  - Fixed problem with coverage calculation of dual head R2Sonic data collected in Qinsy where port/starboard pings were not correctly distinguished, resulting in incorrect coverage and thus reduced mosaic coverage
  - Floating point geotiff exports of mosaics now report the correct metadata range associated with the data

- Wording in menus for import of reference grids has been clarified to make clear the difference between adding a Fledermaus .sd SonarDTM or importing a third party interchange format
- Improved warning text for export of processed backscatter info to help direct users towards the correct setting to enable processed backscatter data

- Tools
  - The Line Backscatter Adjustment tool will now inherit the mosaic histogram stretch so the mosaic contrast in the tool is the same as it was in the main project

Vote

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Fledermaus 7.9.6 – FMGT Release

25 March 2021

We are pleased to present FMGT 7.9.6.

Highlights

- Windows, MacOS and Linux versions are release. The Mac and Linux versions will now support processing Kongsberg .kmall files.

Bugs

- Fixed a crash when running the Cascading Backscatter Normalization Tool
- Fixed an issue where lines were not getting offset values in the Cascading Backscatter Normalization Tool when the project contained more than 256 lines
- Fixed an issue when reading the absorption value from kongsberg .kmall files, which caused the mosaic to be out of backscatter dB range and appear clipped

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

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Fledermaus 7.9.7 – FMGT Release

25 June 2021

We are pleased to present FMGT 7.9.7 which now supports the upgraded .db version released with Qinsy 9.4. The Qinsy .db file database version was updated to support new record types in the Qinsy 9.4 release. FMGT 7.9.7 will support the previous database versions as well as the new version. Older versions of FMGT will not be able to read the newer Qinsy .db files.

Vote

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Feedback Project

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Fledermaus 8.0.0 Release

26 September 2019

We are pleased to present Fledermaus version 8.0.0! This release is the result of many years of rebuilding the core components of the Fledermaus application, and sets a new foundation for us to build on. It also optimizes the main Fledermaus functionality and adds new capability based on many years of feedback from our users.

For Fledermaus 7 users, please read the transition guide to learn about how Fledermaus 7 and 8 can work together, and the transition of certain functionality.

Acquire, Process & Analyze

This release brings Fledermaus fully into the QPS workflow, with a direct support for QPS projects and file formats!

Fledermaus 8 incorporates many feedback items from customers but was started before the QPS feedback project. With this release Fledermaus will now join the other QPS projects in fully using the feedback projects. Please provide feedback and vote on items of interest!

For more information see also Voting System Policy and Using the feedback project

Highlights

- New 3D Rendering Engine
- Direct support for Qinsy and Qimera Projects
- Analysis in 4D Scenes using Space-Time Notes
- Automated flight path generation
- Dedicated Presentation and Reporting Tools
- New high resolution mesh objects and mesh creation
- New User Interface
- Native support for QPS formats such as QPD, QGF, and dynamic surfaces
- New Geodetic User Interface and Capability
- Integrated Video Player

Chapters

- Fledermaus 8.0.0 - New Functionality and Improvements
- Fledermaus 8.0.0 - Documentation
- Fledermaus 8.0.0 - Important Notes

Fledermaus 8.0.0 - New Functionality and Improvements

- New User Interface
  - Modernized UI
  - Scene Object Display
  - Selection Tools
  - Measurement Tool
- New 3D Rendering Engine
  - Streaming from Disk Rasters
  - Improved Image Drapping
  - Solid Models
  - 3D Points
- Space-Time Notes
- Automated flight path generation
- Presentation and Reporting Tools
- High resolution mesh objects and mesh creation
  - Imported Mesh
  - Mesh Creation
- Large geoimage editing in Scene
- Native support for QPS formats
  - QPD Files
  - Dynamic and Static Surfaces
  - QGF (CAD) Files
- Integrated Video Player
- Direct QPS (Qimera and Qinsy) Project Support
  - Opening and Creation Projects
  - Project Dock
- New Geodetic Selection and Configuration Interface
- ESRI Geodatabase Connection (FMGIS Add-on)
- Improved Profiling Tool
- Vertical Curtain (Sub-Bottom Data)
- Improved CAD Import and Display
- Improved Screen Capture Tool

New User Interface

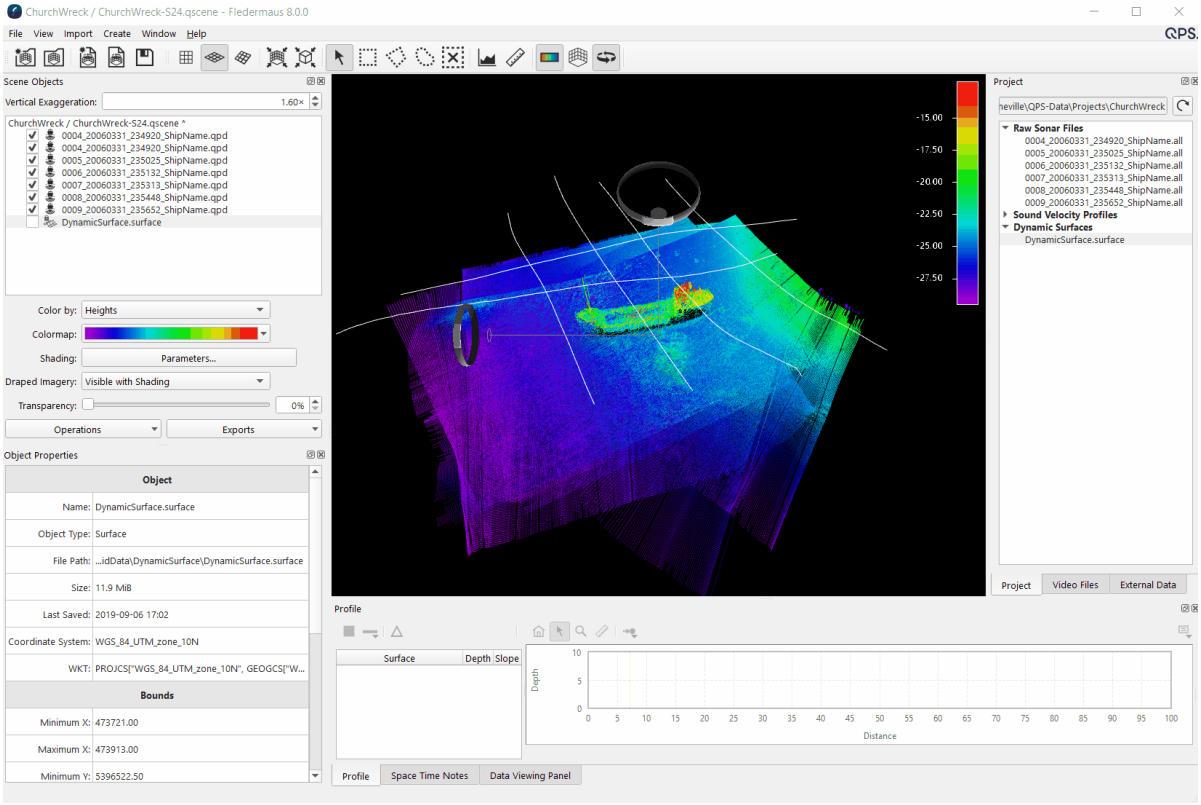
The Fledermaus user interface has been fully updated for version 8. The updates are in response to many feature requests over the years and in response to the now commonplace use of high DPI wide screen monitors. The goal was to build on the ease of use from earlier Fledermaus versions, while improving the overall workflow for common tasks. The user interface also continues the clean design for icons and menus that has been popular with the Qimera application. As much as possible, common operations between Fledermaus and Qimera will have common icons and tools, helping users that move back and forth between the applications.

Modernized UI

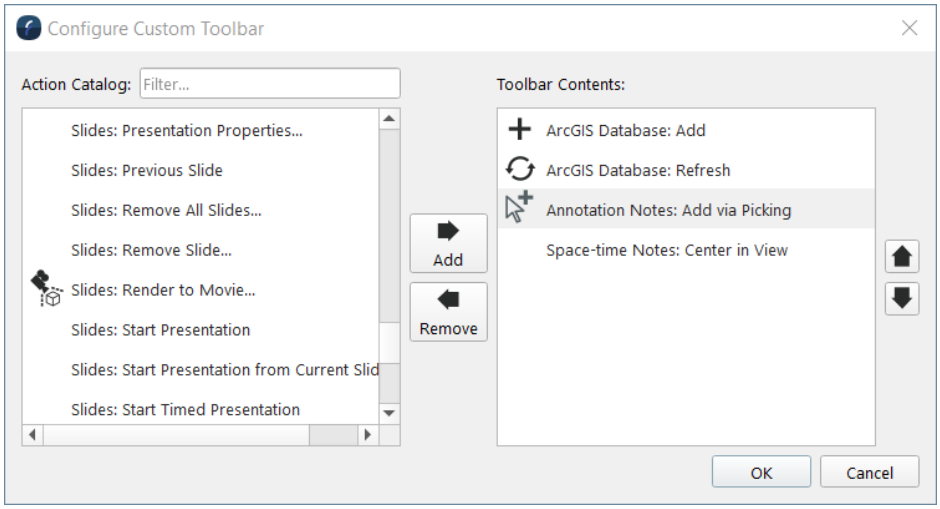
In addition to the general improvements, there are four key areas where the modernized UI has additional functionality:

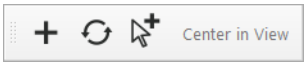
- **Scaling for high DPI displays:** All user interface elements are designed to scale nicely with different resolution displays. This allows the interface to work well when using an HD display, all the way to 4K or higher.

- **Improved docking system:** All tool bars and docks now use a modern docking system that allows them to be easily moved and docked in new locations.

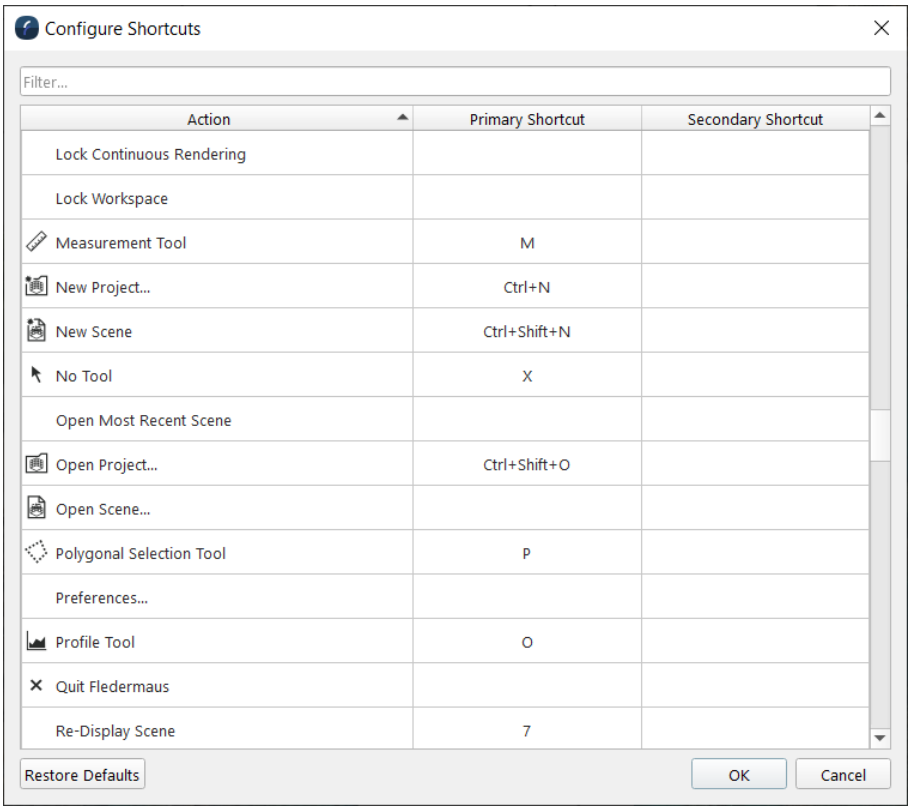


- **Customizable Toolbar:** In addition to default toolbar, a second customizable toolbar can be displayed with any operations you wish to add.



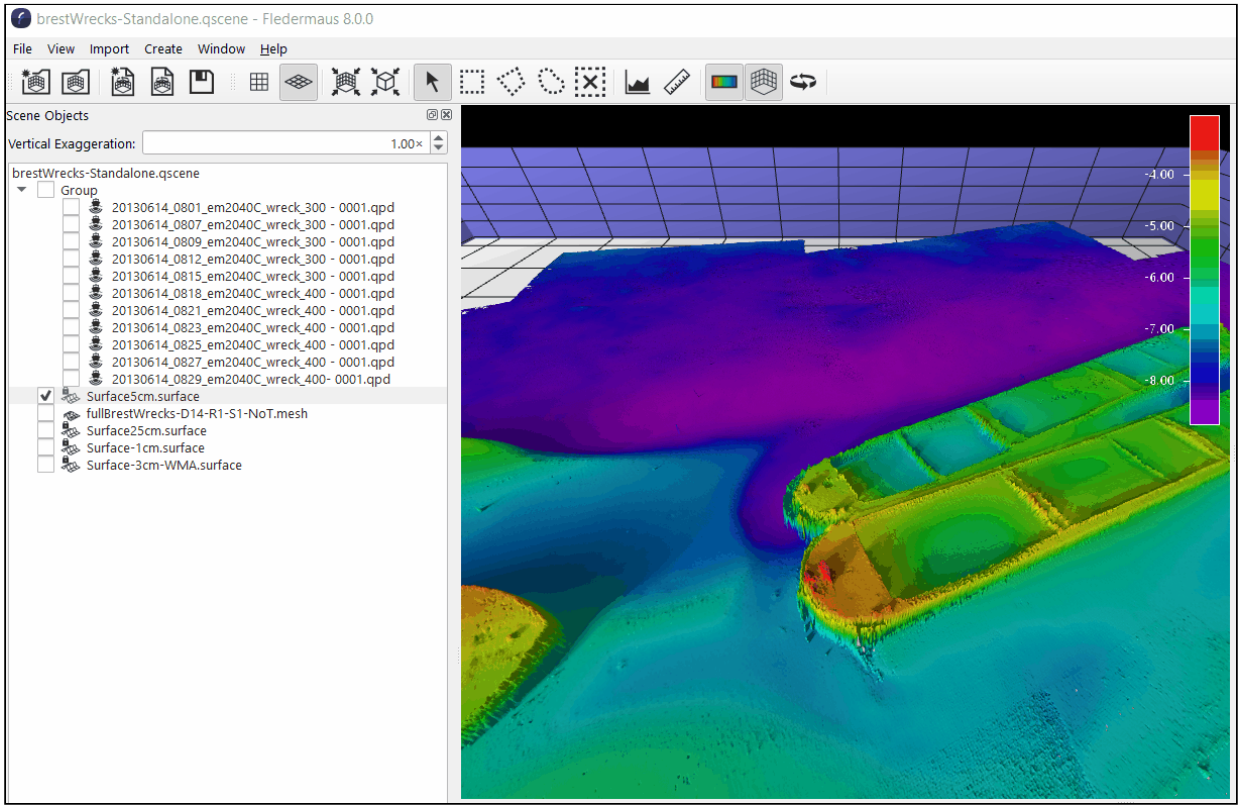
The custom toolbar can be docked or stay as a floating set of tools . 

- **Configurable Shortcuts:** In addition to being added to a custom toolbar, every action in Fledermaus 8 can be assigned to a custom shortcut key.



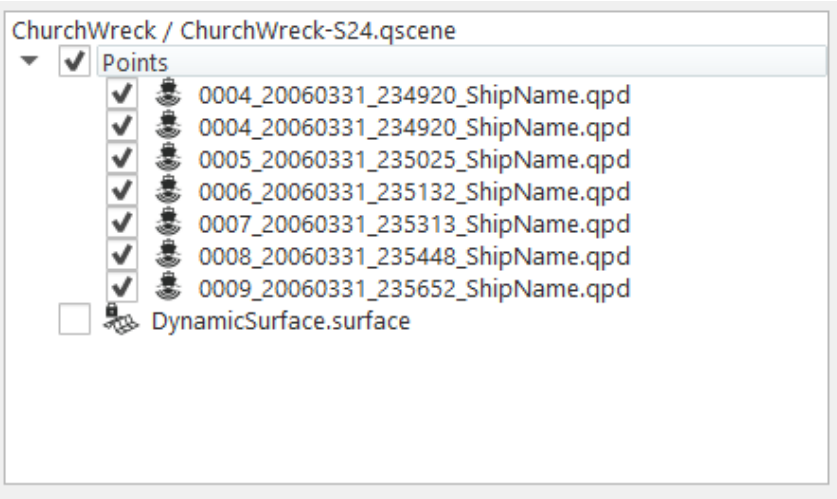
- **Custom Workspaces:** The combination of dock locations and size, toolbar configurations and window layout can all be saved as a "Workspace". You can then quickly switch between the workspaces depending on the task or display setup that is currently being used.

- **Flicker Mode:** Borrowed from Qimera, Flicker Mode allows for quick comparisons between two or more data sets. By selecting two or more objects, the ~ key is used to sequentially turn each on on and then off.

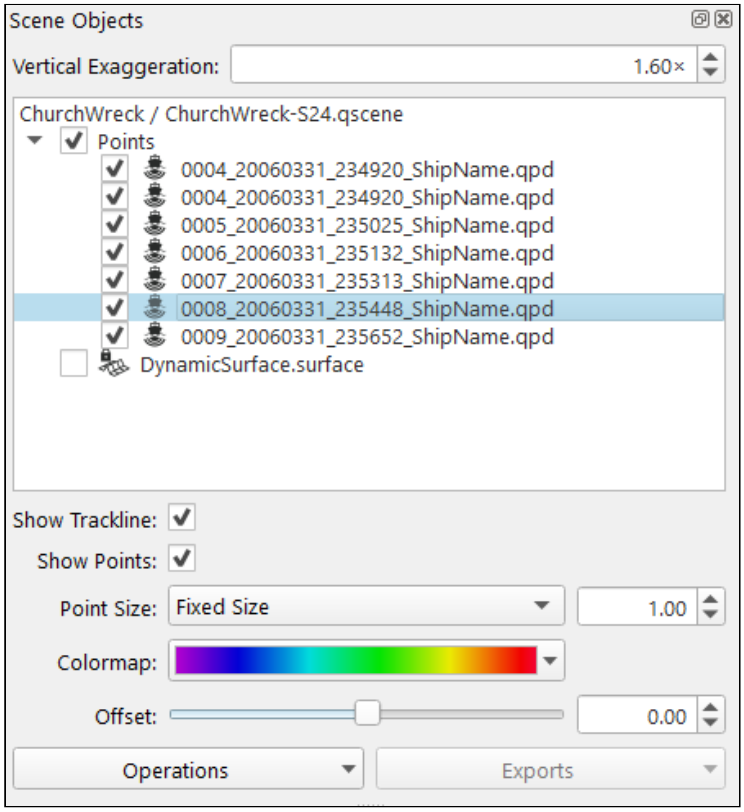


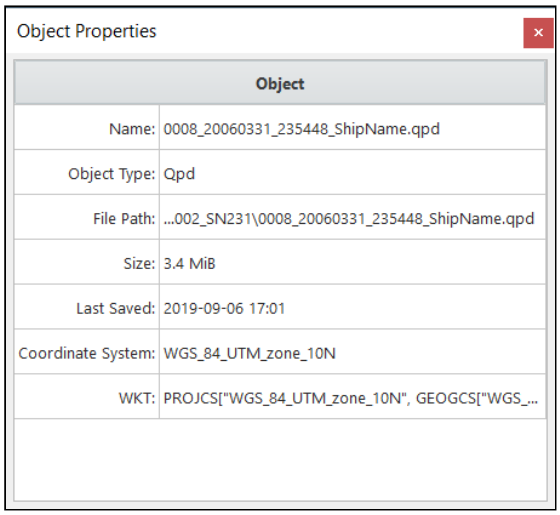
Scene Object Display

- **Object List:** The display of Fledermaus objects has been improved with better grouping capability, an icon to easily see the object type, and the ability to perform operations when multi objects are selected at once



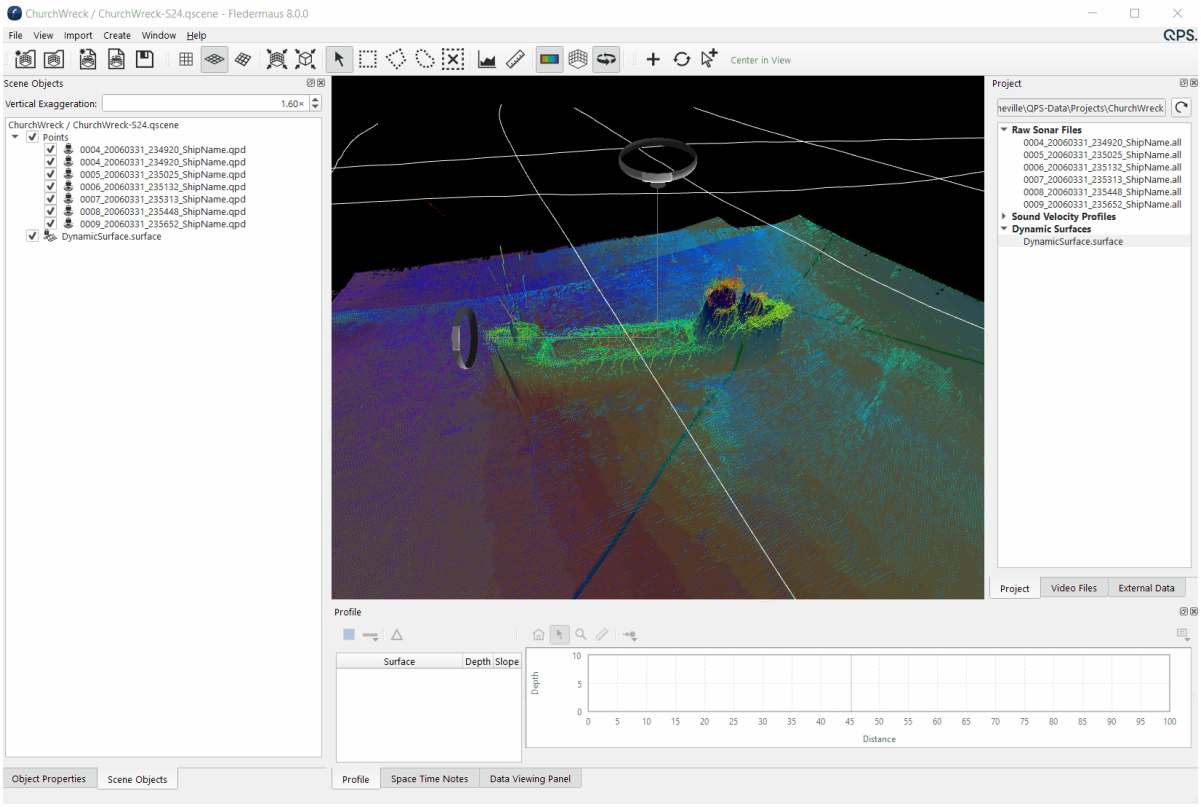
- **Easier to use object controls:** The object controls are now displayed automatically below the scene object list, whenever one or more objects are selected. Object properties are now displayed





- **Object Multi-Select:** A major enhancement in Fledermaus 8 is the ability to select multiple objects and perform batch operations on all selected objects. The Object Properties dialog is also multi-select aware and displays a summary of all selected object. Some common uses for the multiselect would be setting a group of points to have all the same point size, or setting a group of objects to all use the same color map and color map range. When objects of different

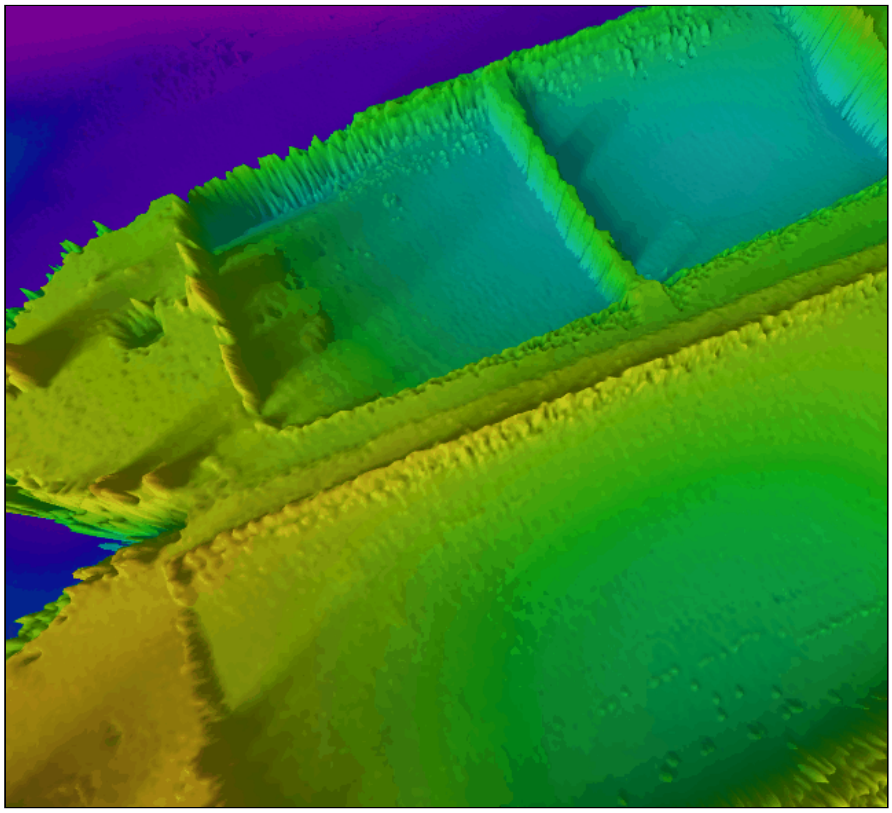
types are selected together, only the attribute options that are common across all object types are displayed. In the example below, after setting all the QPD files to have the same point size, the QPD and the surface are selected and a common color map applied to both object types.



- **Operations and Exports:** In Fledermaus 7 the operations on objects were inconsistently located and spread across multiple different locations. In Fledermaus 8 all Operations and Exports can accessed from the buttons below the attribute controls, or from the objects right click menu.

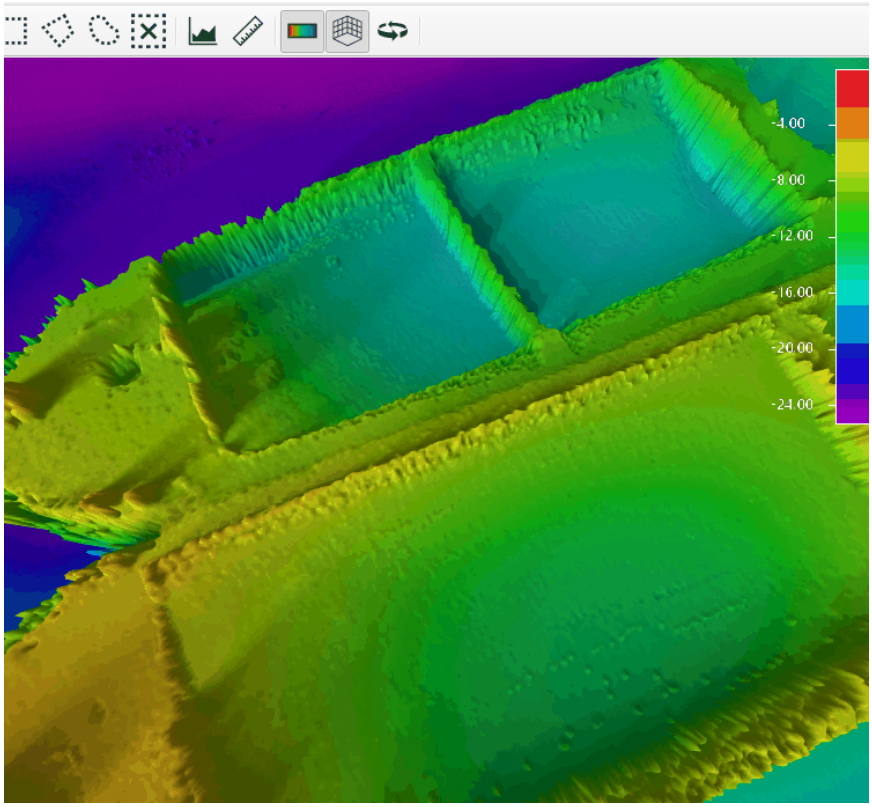
Selection Tools

The selection areas can now be dynamically edited via control points and moved within the scene.



Measurement Tool

A new measurement tool has been added alongside the profile tool, which allows for quick measurement on surface and mesh objects.



New 3D Rendering Engine

The 3D rendering engine in Fledermaus 8 has been completely re-built from scratch, which is the first time this has been done in the 25+ years since the application was first created. The new engine provides a number of immediate benefits and launches a new platform for Fledermaus to build on going forward. The new modern design allows Fledermaus to better take advantage of the latest graphic cards to provide better performance and better visuals.

Streaming from Disk Rasters

All raster objects in Fledermaus 8 are now dynamically streamed from disk, instead of being stored completely in memory. This allows working with much larger data sets as only a subset of the total data is streamed and rendered at any given time. This technology is used for all raster data, including surfaces, scalars and images. Combined with new algorithms for dynamic level of detail, raster data is streamed in as the user moves around the 3D scene, while maintaining a smooth frame rate and minimizing screen flicker.

Improved Image Drapping

Image Drapping is a key tool for visualizing additional data, such as backscatter, or sidescan on top of bathymetry. Build on the new rendering engine, there are a number of significant improvements to the drapping in Fledermaus 8:

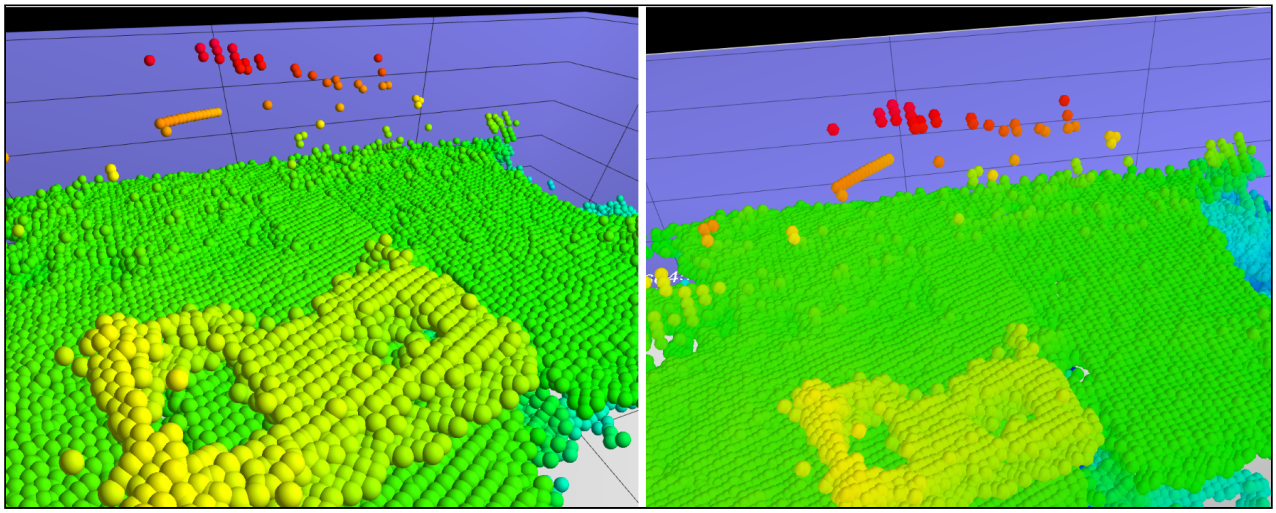
- Better performance
- Support for high resolution textures over low res surface, without creating massive files
- The original image is preserved, and can be later exported
- Shading can be turned on or off for the texture, and the texture itself can be turned off
- Support for multiple images on a single surface
- Shading is applied in real time with blending operations.

Solid Models

There are now many more supported formats for importing a 3d model, along with support for moving parts within a model.

3D Points

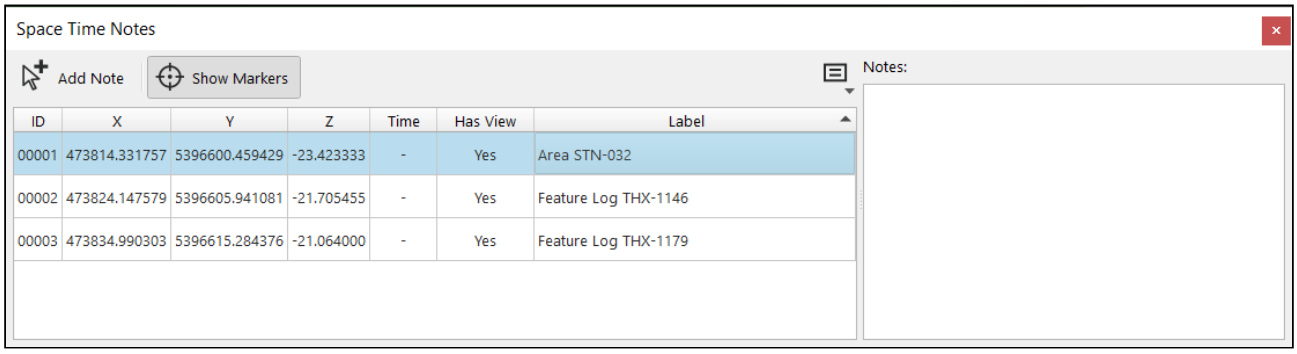
The point object has much faster rendering when using newer graphics cards, along with a much improved spherical render mode with better shading. There is also better support for time attributes, and RGB color. In the example image below, Fledermaus 8 is on the left, with Fledermaus 7 on the right.

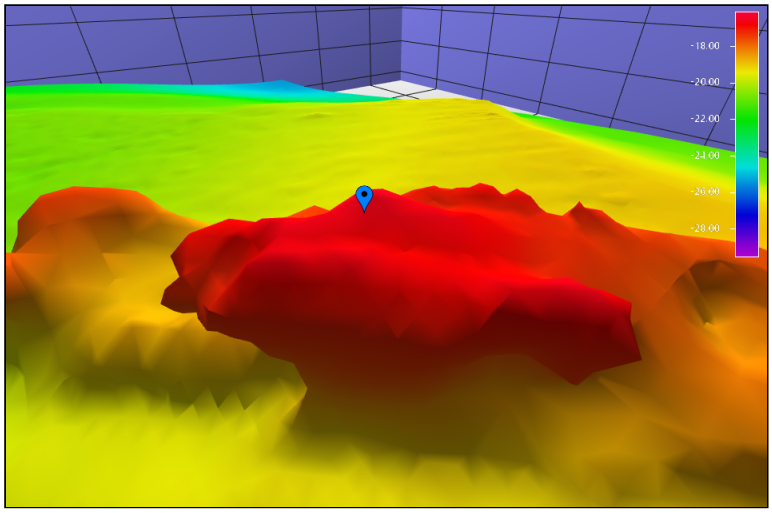


Space-Time Notes

Fledermaus 8 introduces the concept of "Space-Time Notes" which are a powerful concept that unifies elements of traditional eventing, geo-picking, and 3d view management. The ST-Notes system allows a user to navigate within a Scene and record points of interest,

both in 3D space, and it time. These notes are then used to jump back to that point of interest, with all time aware objects updating to the recorded point in time. These notes can be used with a single surface, or in more complex scenes that include watercolumn data, or time synced video from an ROV.





Automated flight path generation

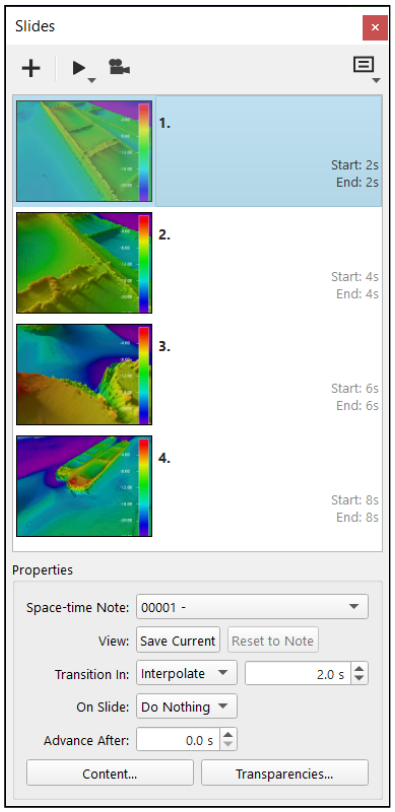
One of the most common reasons people use Fledermaus is for integrating data into a common Scene, and then producing high resolution images and movies of that scene. Historically, the generation of a good flight path can sometimes be challenging and time consuming. Building on the stored viewpoints of the ST-notes, Fledermaus 8 automatically generates flightbaths, focusing on the selected areas of interest. The flight paths can then be used as part of the presentation system to quickly create stand alone movies.

Presentation and Reporting Tools

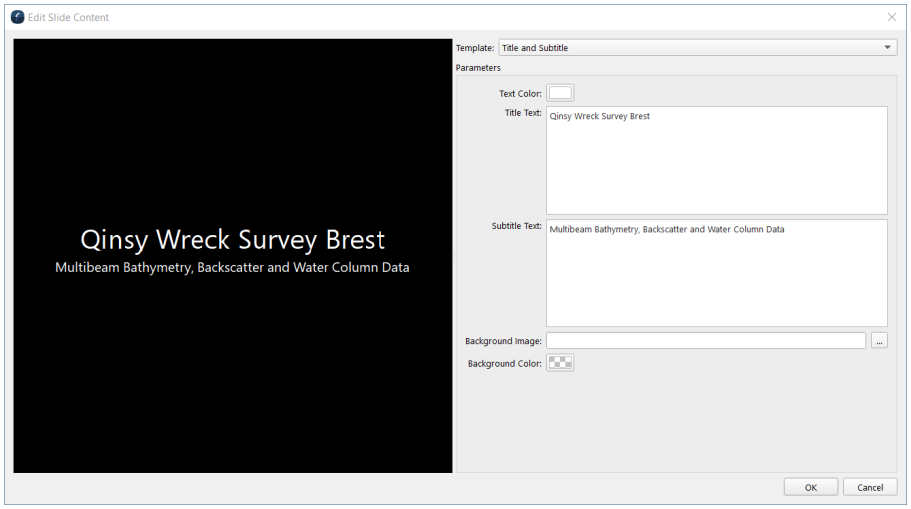
Building on the Space-Time Notes system is a new set of interactive presentation tools. These tools allow for quick generation of presentations directly within Fledermaus, and are the new method for creating stand alone movies. Combined with the direct support for Qinsy/Qimera projects, it provides a very fast workflow for moving from acquisition to 3D

reporting. The goal of the system is to be familiar to anyone who has made a presentation using Powerpoint, but with all the underlying power of a full 4D scene.

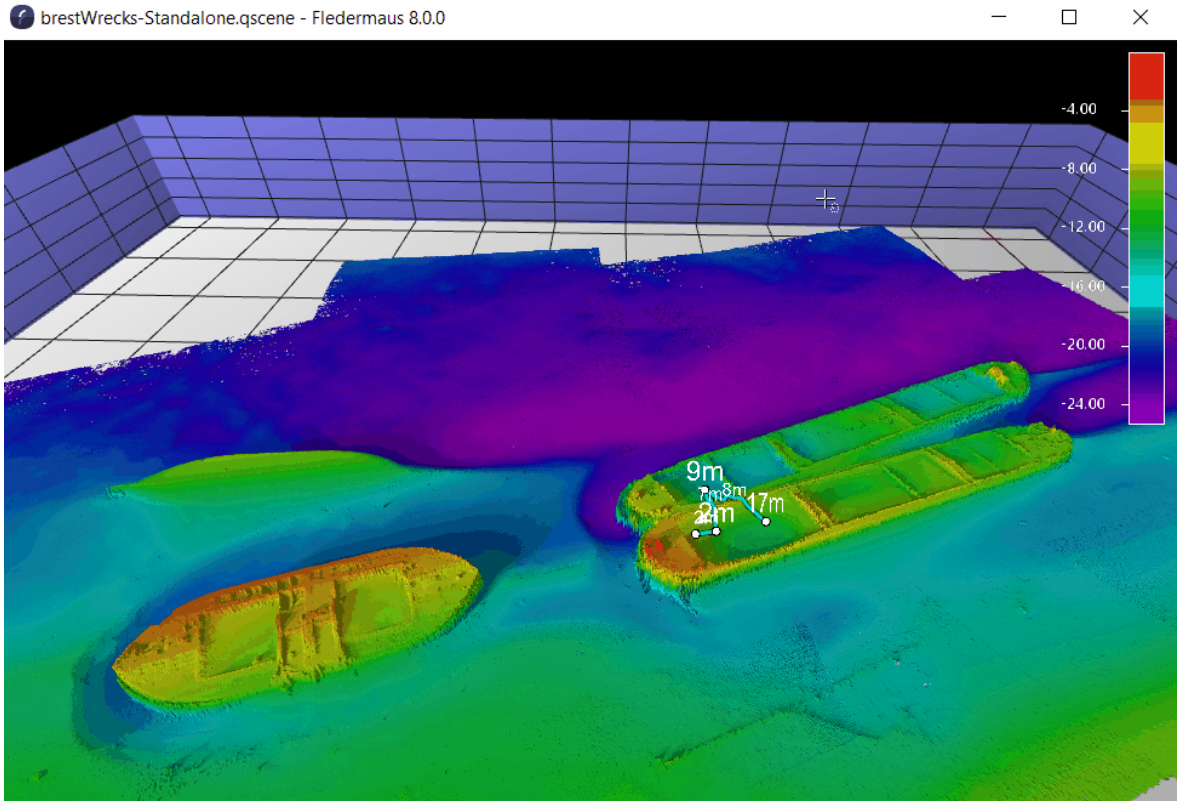
The core of the system is the new Slides dock, which allows for the creation of slides within the scene, as well as control over both the transition to the slide location and the action while on the slide.



Slide content, such as text and images, can be added to each slide and will be displayed in front of the 4D scene.



This content can be displayed in a live report, or rendered to a standalone movie.



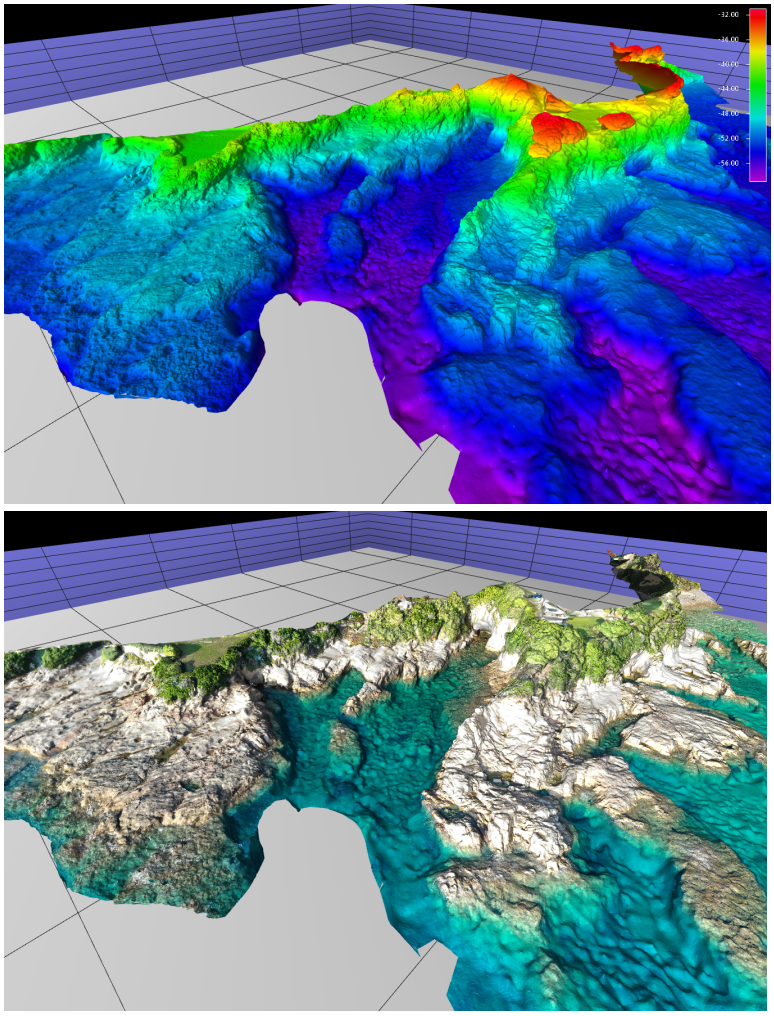
High resolution mesh objects and mesh creation

To help visualize high resolution multibeam and laser data, Fledermaus 8 introduces a new mesh object, along with tools for creating new mesh objects from point data.

Imported Mesh

With the growth of high resolution point and mesh data sets coming from photogrammetry (Structure from Motion) there was a need to directly support these data types in Fledermaus. The new terrain mesh object has a lot of the same functionality as the standard raster surface object, such as applying a colormap, using a texture, and measurement tools. Data created in packages such as Agisoft Metashape, or Pix4D can be imported with georeferencing, or the mesh can be georeferenced during the import process.

Example data with and without texture turned on:

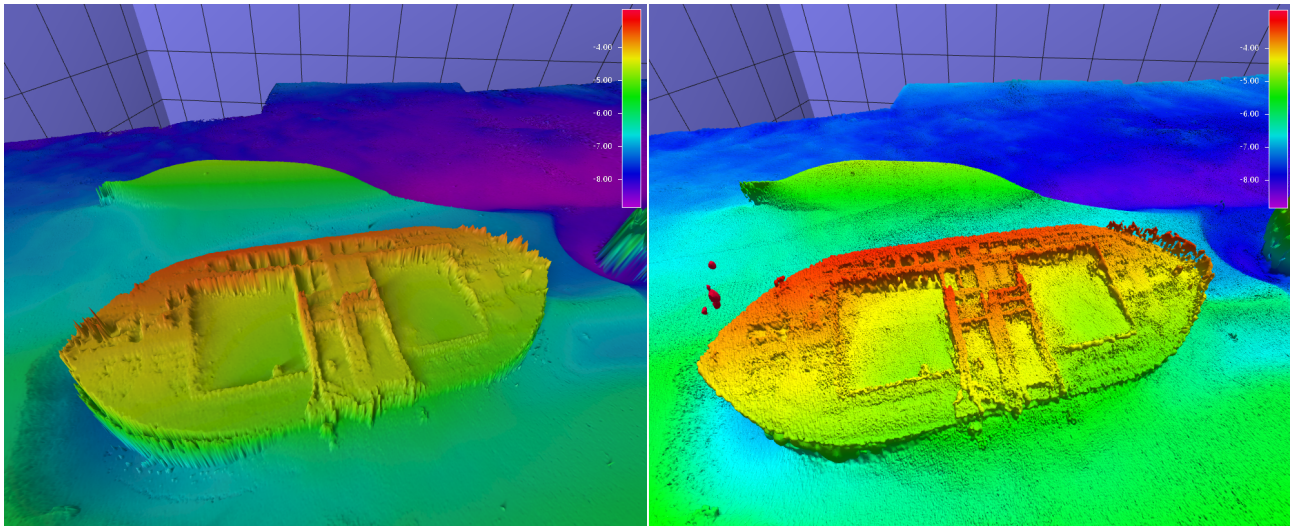


Example data from Dronopilot.com, used under CC License (https://sketchfab.com/3d-models/rocky-coast-in-corsica-near-sagone-ee651b58202949cab874a7c0450e72df)

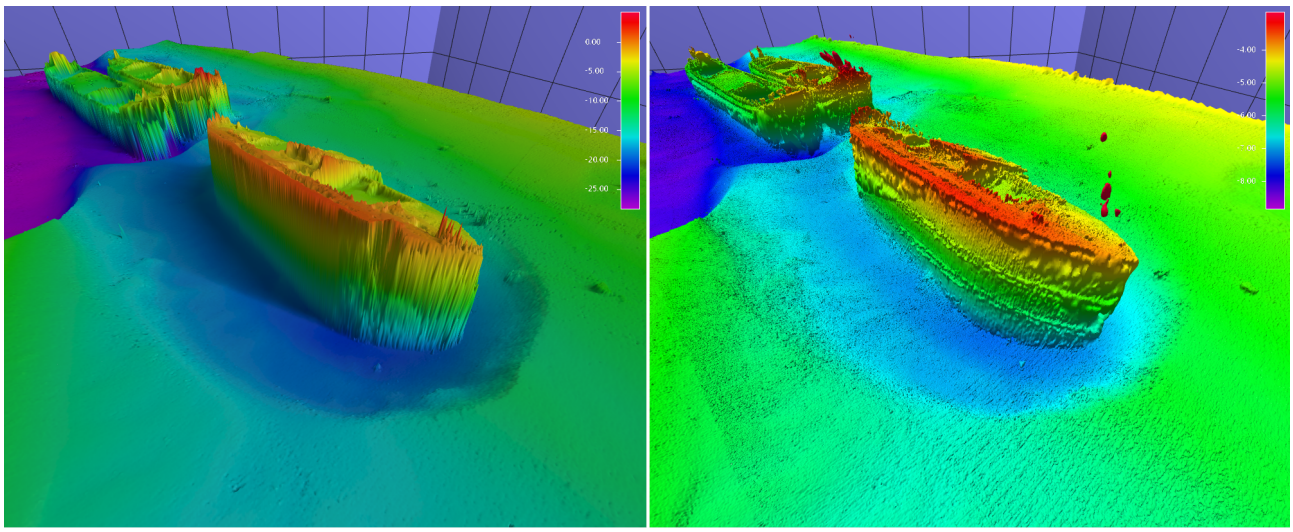
Mesh Creation

In addition to using existing mesh data, you can also create a new mesh from scratch using multibeam or laser data. This works best with clean, high density data and is true 3D surface, allowing for vertical overhangs and overlapping surfaces. Additional points from watercolumn can also be included in the meshing process, creating very detailed results.

Comparison with 5cm grid on the left, and 3d mesh on the right:

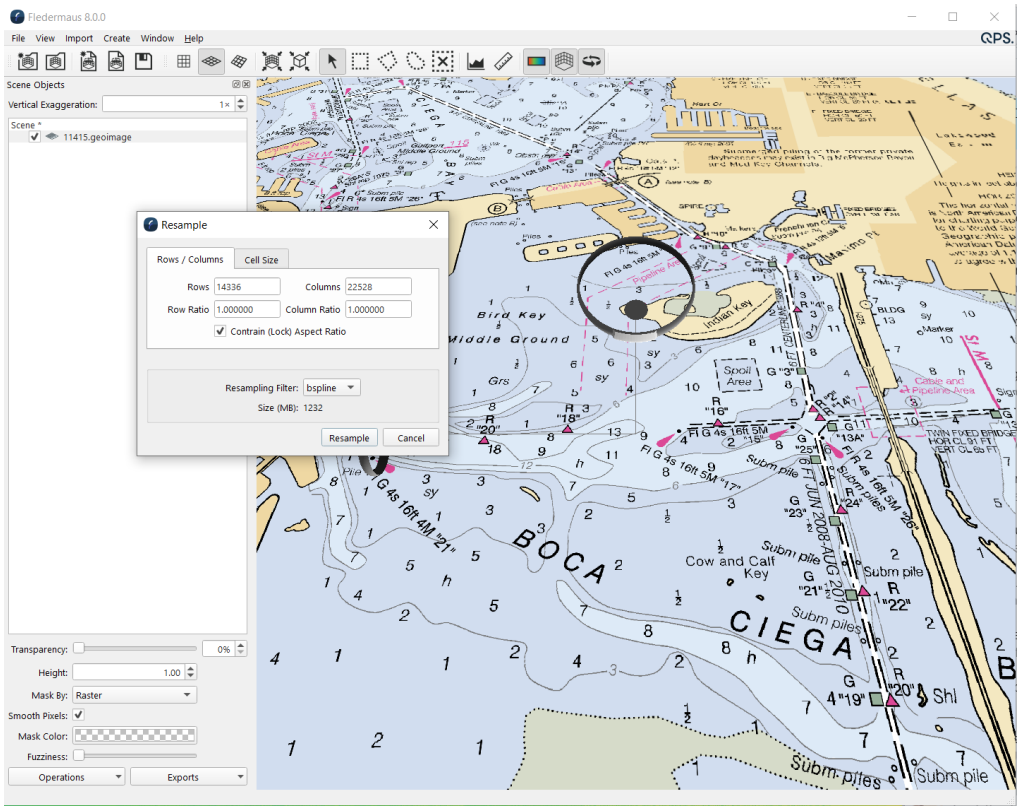


Being a true 3d structure, the mesh is much better than a standard grid for modeling vertical surfaces with fine details, as visible in the example below:



Large geoimage editing in Scene

The DMagic application from Fledermaus 7 provided a number of powerful tools for editing large images while preserving georeferencing. For Fledermaus 8 these tools have been directly integrated into the main application. This allows the tools to be used directly in the scene and in combination with the new streaming from disk image format. Operations such as croping, resampling, and switching color modes are done directly from the Geoimage operations menu.

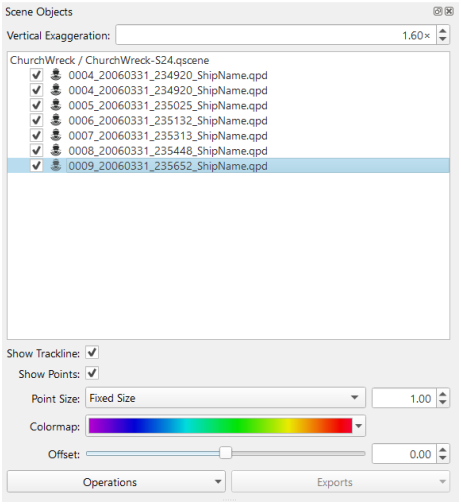


Native support for QPS formats

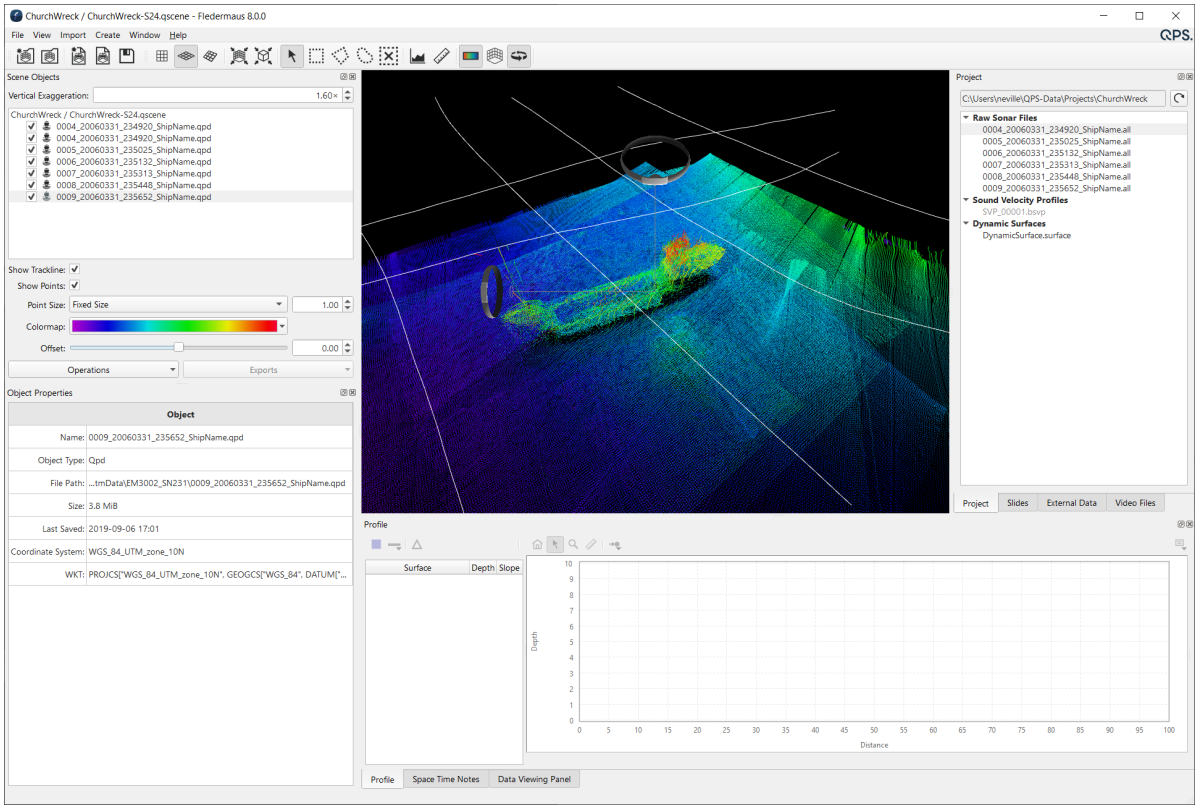
One of the primary design goals for Fledermaus 8 was to directly support the core QPS formats. This makes using Fledermaus alongside Qimera and Qinsy much easier and opens up a lot of new and exciting workflow options.

QPD Files

QPD files can be added directly to a Fledermaus Scene, with the ability to display the data as points. The QPD trackline can also be displayed or turned off.

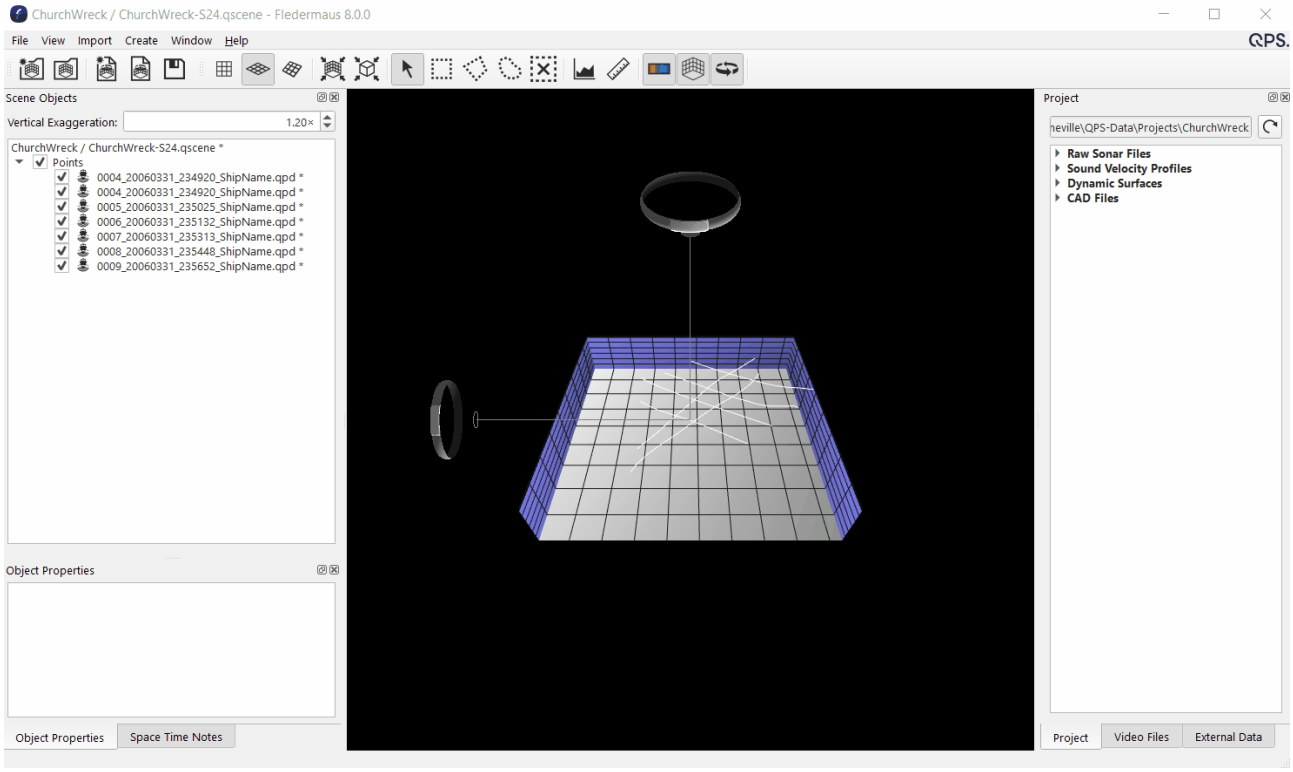


Having direct support for QPD files is very handy when working with a Qimera project, as any raw sonar files that have been processed can be imported directly into the Scene.



Dynamic and Static Surfaces

Dynamic and static surfaces that have been created in either Qinsy or Qimera can now be directly opened with Fledermaus. The new common grid format is also the new default format anytime a grid is imported in Fledermaus or point data is gridded.

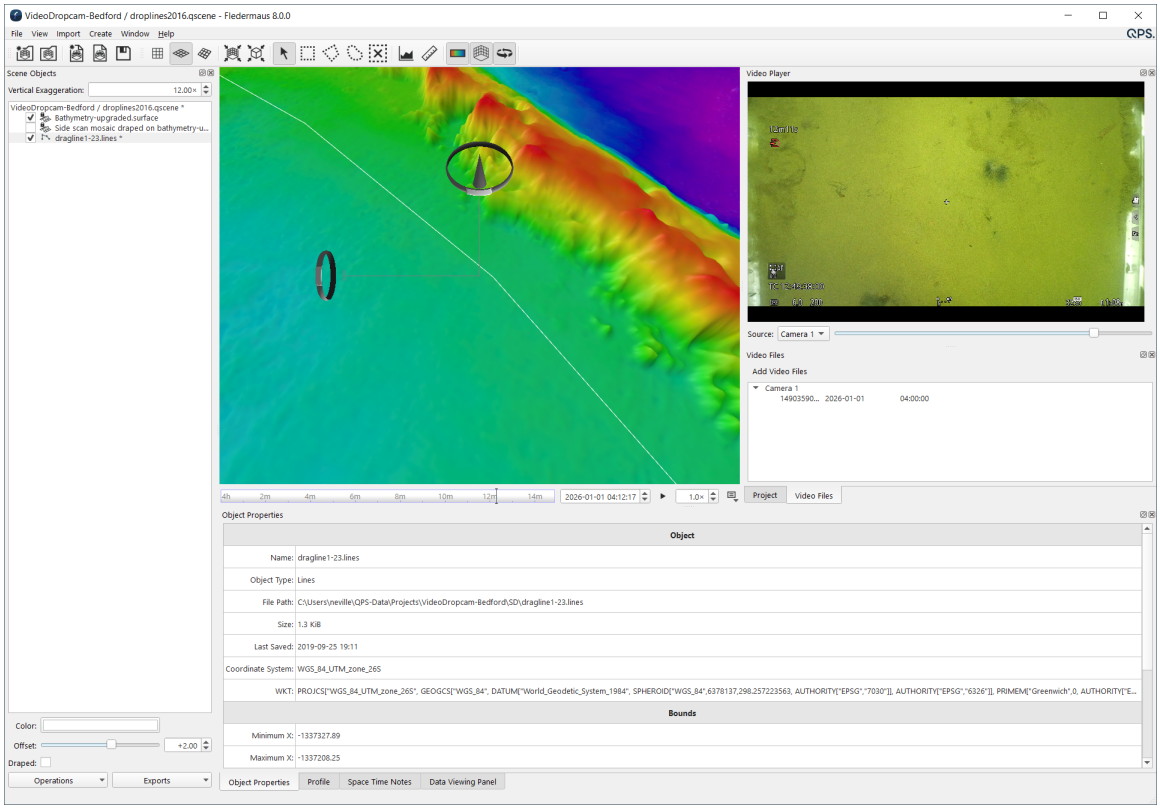


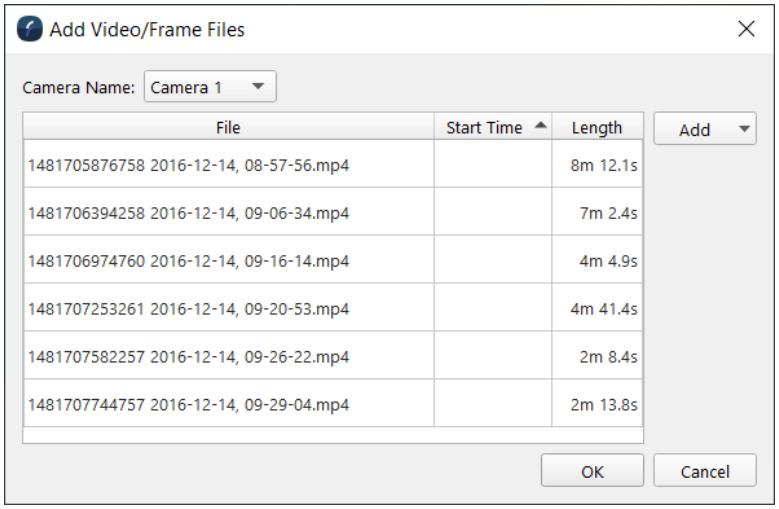
QGF (CAD) Files

The QFG format is used in Qinsy and Qimera to store CAD data, such as design models. These files can be directly used in Fledermaus 8, and are the new default format when CAD files such as a DXF/DWF file, is imported into Fledermaus.

Integrated Video Player

To make working with full motion video easier, Fledermaus 8 now has an integrated video player, along with a dedicated dock to time reference and manage the video files. This allows recorded video from an ROV, AUV, or ASV to be time synchronized with a navigation file for playback in the 4D scene. There is also a dedicated dock for managing video files, with a number of new options for time referencing the files. Within the same scene, multiple source cameras



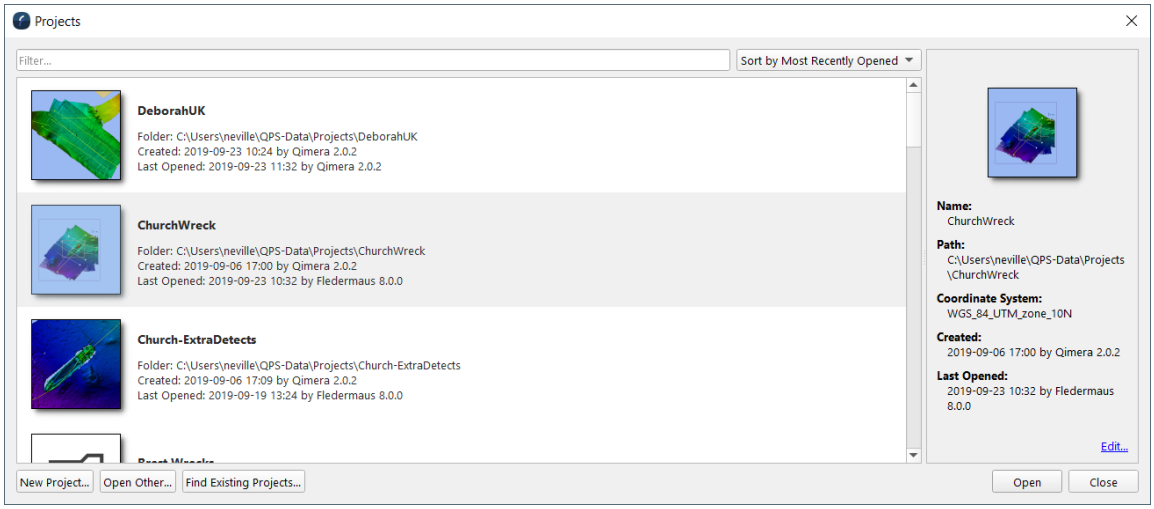


Direct QPS (Qimera and Qinsy) Project Support

Building on top of the native support for QPD, QGF, and Dynamic Surfaces, Fledermaus 8 now directly supports opening projects from Qimera/Qinsy, as well as creating new projects from scratch. This allows for quickly moving between Qinsy/Qimera and Fledermaus without having to import or convert any data. The project support also adds a new level of organization when working with large amounts of source data in Fledermaus. For those who do not need a project however, Fledermaus 8 can still work with just a standalone Scene, or individual files.

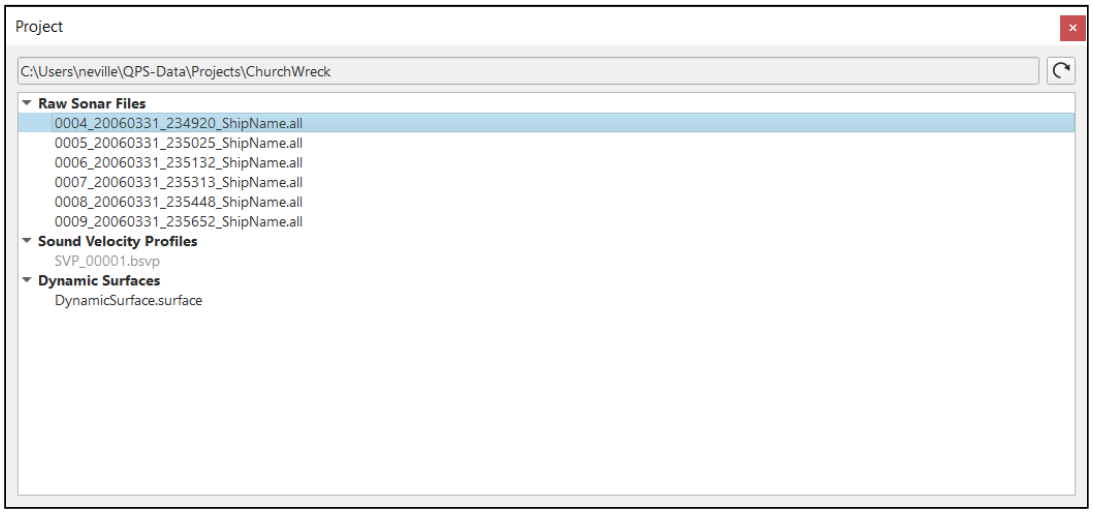
Opening and Creation Projects

To open an existing project, there is a new shared dialog that is now common between Qinsy, Qimera and Fledermaus. This dialog displays thumbnails of each project along with overview data.



Project Dock

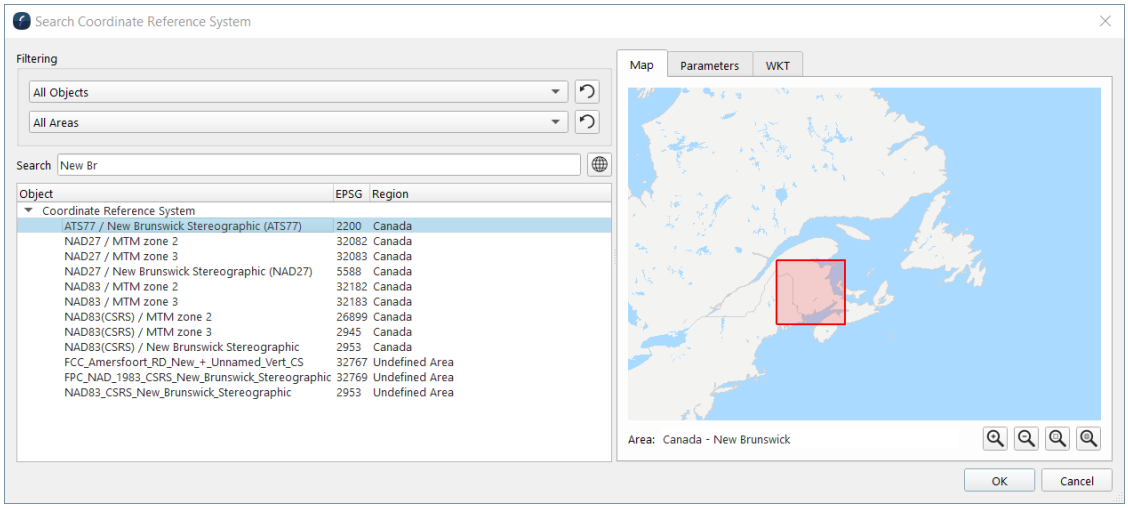
Once a project is loaded, a new dock provides an overview of the currently active Project. This is designed to have a similar look and feel to the Project View in Qimera, and allows the data to be quickly added to your scene.

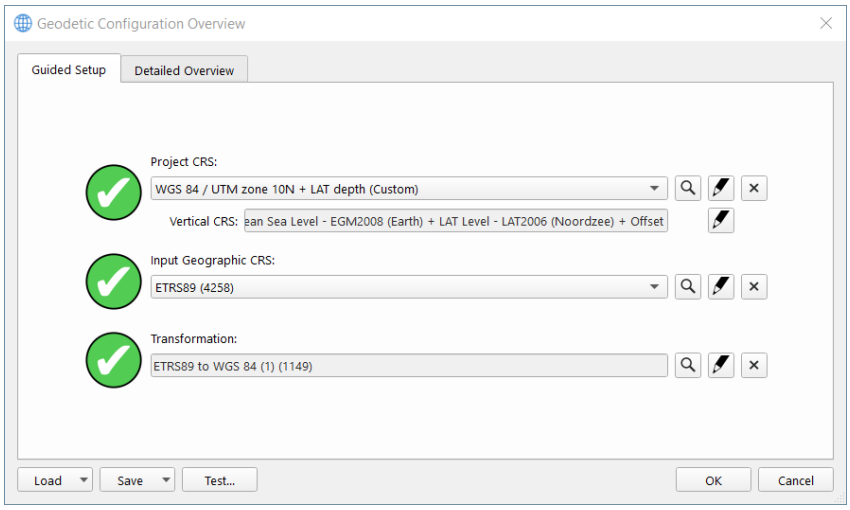


New Geodetic Selection and Configuration Interface

There is a new geodetic configuration interface that brings the full power of Qinsy's geodetic configuration abilities to Fledermaus. The new interface is shared with both Qinsy and Qimera and marks a major improvement in configuring geodetics. For example,

Fledermaus users can now specify vertical separation models, create complex custom geodetic transformations between coordinate frames, create construction grids and more. There are also improvements in searching for an EPSG code and there is a Guided Workflow to configure simple setups quickly or complex setups intuitively.

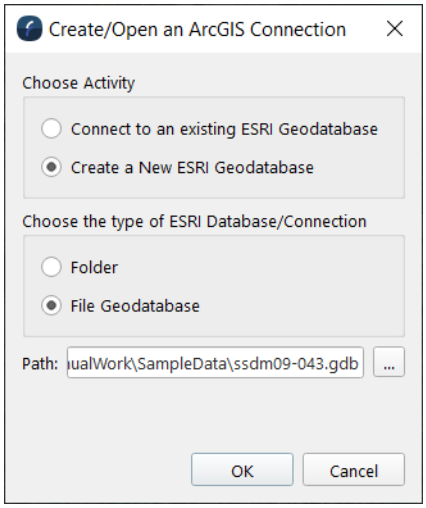




ESRI Geodatabase Connection (FMGIS Add-on)

The technology for connecting to an ESRI geodatabase has been rebuilt and now uses ArcPy scripts to do the connections and data transfers. This provides a number of benefits:

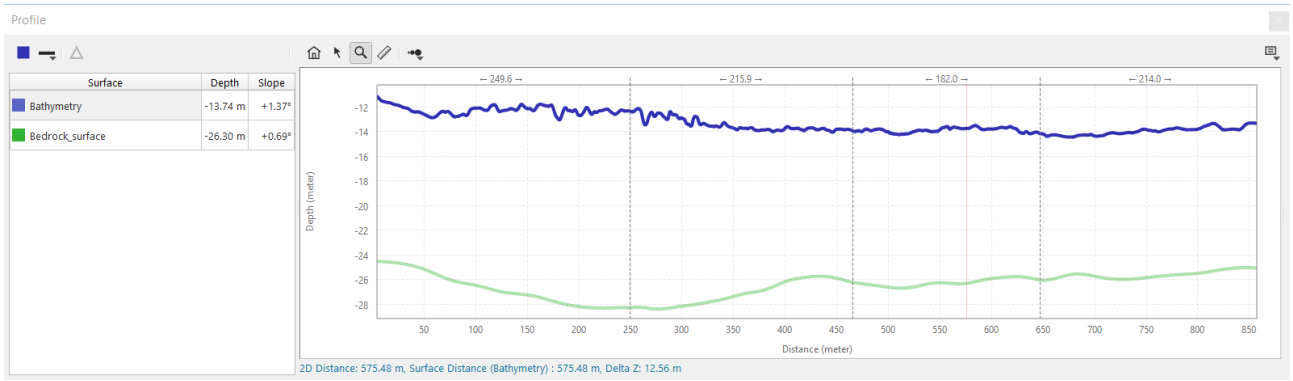
- Now supported for 64-bit Versions of Fledermaus
- No longer coupled with ESRI releases
- Improved user interface with dedicated connection in "External Data" dock
- Multiple connections (to GDB) can be made within the same scene
- Improved attribute support for supported objects



Improved Profiling Tool

The profiling tool has been significantly upgraded:

- Support for multiple surfaces, including dynamic display of difference between the two.
- More quantitative information displayed in the profile.
- You can pan and zoom in the profile display.
- Cross profiles can be adjusted by dragging the edit handles in the main 3D display.



Vertical Curtain (Sub-Bottom Data)

Using the new rendering engine, the performance of the vertical curtain object has been significantly increased. In Fledermaus 7 there were significant speed slow downs when a lot of curtains where used in the same display. With Fledermaus 8 you can display more curtains without loss of performance, and at higher resolutions (less degradation).

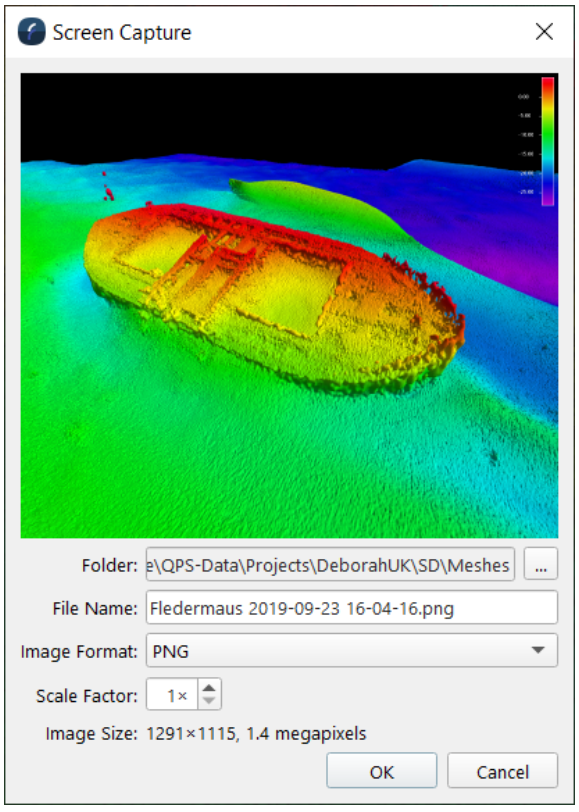
Improved CAD Import and Display

CAD files (DXF/DWG) are often used in Fledermaus as important reference information alongside the core bathy data. Fledermaus 8 has greatly improved the support for CAD files, including:

- Support for colors in the original files
- Support for many more entities in the CAD files
- Better display of entity attributes
- Support for rendering CAD text entities

Improved Screen Capture Tool

The screen capture tool has been improved with a thumbnail image showing a preview of the screen capture, and the default filename is changed to a name with date and time. Users can also now copy the image directly to the clipboard, in addition to the file formats previously available.



Fledermaus 8.0.0 - Documentation

The Fledermaus documentation has been updated to cover all the new v8 functionality, plus:

- Fledermaus 7 documentation will continue to be available and maintained as users transition from FM7 to FM8
- The Geodetic User interface has its own documentation including a quick start guide.

Fledermaus 8.0.0 - Important Notes

- Licensing
- 64-Bit Only
- Linux and Mac
- Installers
- QPS Project and file format versions
- Functionality and Applications from Fledermaus v7
- Support for Fledermaus v7

Licensing

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8 alongside Fledermaus 7, using the same license. No changes to the license configuration have been made with this release.

64-Bit Only

Going forward, Fledermaus 8 will be released only as a 64-bit package. Fledermaus 7 has a 32-bit version only to support the ESRI GDB connections. With this technology being rebuilt and 64-bit ready in FM8, there is no longer a reason for us to release FM8 as a 32-bit version.

Linux and Mac

Fledermaus 8 has been built to support Linux and Mac versions, however the first 8.0.0 release will be Windows only. We will release versions for Mac and Linux within a few months of the FM8 release.

Installers

The Fledermaus installer will install by default into sub-directories with the version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus. This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time. Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.0.0 sub-directory of the Fledermaus 7 installation folder.

QPS Project and file format versions

Fledermaus 8 uses all new formats for Scenes and data objects. Please see the section on Fledermaus 8 - Transitions from Fledermaus v7 for more details.

Functionality and Applications from Fledermaus v7

There are also significant changes in what applications are included in the Fledermaus 8 package. Please see the section on Fledermaus 8 - Transitions from Fledermaus v7 for more details.

Support for Fledermaus v7

Fledermaus 8 is continuation of the new alignment of products and applications that we started with the launch of Qimera. This release sets a new foundation for Fledermaus to grow and support new and existing workflows. Some of these transitions will take time, so not all functionality from Fledermaus 7 will be available in the first versions of Fledermaus 8. As a result, QPS will continue to support Fledermaus v7 until the remaining functionality from v7 has been migrated into Fledermaus v8 (or other QPS products). Once this migration is complete, QPS will announce an end of life for the v7 products. During this transition period, Fledermaus users can run v7 and v8 side-by-side.

For users of functionality that has not yet been migrated to Fledermaus v8, it is best to continue working with v7 until the transition has been completed. Users are encouraged to try Fledermaus 8 either way.

Fledermaus 8.0.1 Release

10 October 2019

We are pleased to present Fledermaus version 8.0.1. The Fledermaus team is committed to provide updates to users with improvements within the application.

For Fledermaus 7 users, please read the transition guide to learn about how Fledermaus 7 and 8 can work together, and the transition of certain functionality.

Releases

- Fledermaus 8.0.0 Release

Highlights

- **The movie rendering has been optimized to use much less memory. This allows rendering of longer movies without running out of memory.**

Bugs

- **Fixed issue with incorrect parameters being applied when creating objects from external point files**
- **Fixed contour exports of DXF and DWG/CAD to preserve user specified colours**
- **Draping for already loaded images now works**
- **3D models now render properly when changing vertical exaggeration**
- **Fixed abrupt exiting operation when exporting a surface to image**
- **Images geographically projected now import without issues.**
- **Fixed issue with scalar object imports and their properties**

- **Resolved incorrect exit of application when updating colormap properties**

Fledermaus 8 incorporates many feedback items from customers but was started before the QPS feedback project. With this release Fledermaus will now join the other QPS projects in fully using the feedback projects. Please provide feedback and vote on items of interest!

For more information see also Voting System Policy and Using the feedback project

Fledermaus 8.1.0 Release

Click on the icon above and vote on or create a Feedback issue!

20 November 2019

We're pleased to present Fledermaus version 8.1.0. The Fledermaus 8.1 release is a quick release to continue the momentum from the FM8 launch, and join together as a joint release with Qimera 2.1 and Qinsy 9.1. It is focused on improving new features from 8.0 and to respond to the most immediate feedback from users who started using the new Fledermaus 8.0.... Read below for details.

Highlights

- Fledermaus Free Viewer (Replacement for iView4D)
- Improved Mesh Creation Options
- Improved Movie Rendering
- QPD Time and Location Display

Feedback Project

Our biggest feedback from 8.0 was to update iView4D to support the new tools and formats. This has been addressed with the launch of the new Fledermaus Free Viewer.

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

- Fledermaus 8.1.0 - Important Notes
- Fledermaus 8.1.0 - New Functionality and Improvements
- Fledermaus 8.1.0 - Bugs
- Fledermaus 8.1.0 - Transitions from Fledermaus v7

Fledermaus 8.1.0 - Important Notes

- Licensing
- Installers
- Support for Fledermaus v7.X

Licensing

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8.1 alongside Fledermaus 7.8 or newer, using the same license. No changes to the license configuration have been made with this release.This allows trying out the new features of FM 8.1, while continuing to use Fledermaus 7 on the same machine.

Installers

The Fledermaus installer will install by default into subdirectories with the version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus. This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time. Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.1.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus v7.X

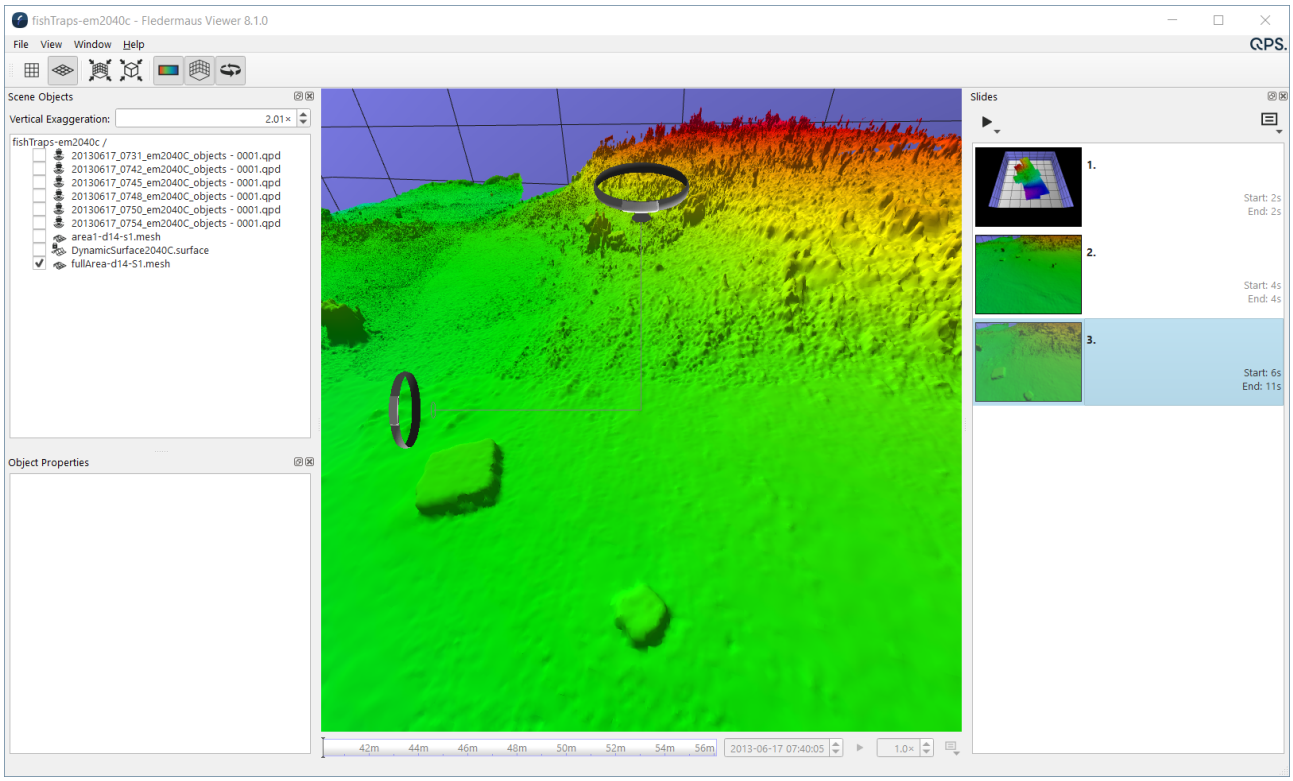
Summary:

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications. Support for Fledermaus 7 will continue, and a end-of-life announcement will be made well in advance.

Fledermaus 8.1.0 - New Functionality and Improvements

- Fledermaus Free Viewer (Replacement for iView4D)
- Improved Mesh Creation and Use
- Improved Movie Rendering
- QPD Time and Location Display

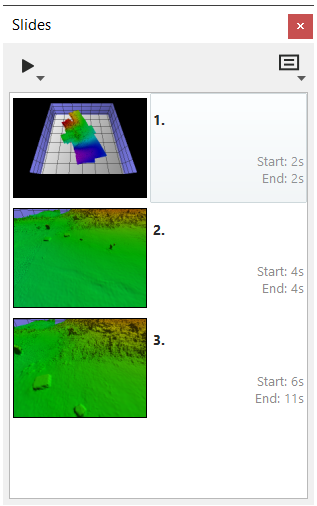
Fledermaus Free Viewer (Replacement for iView4D)



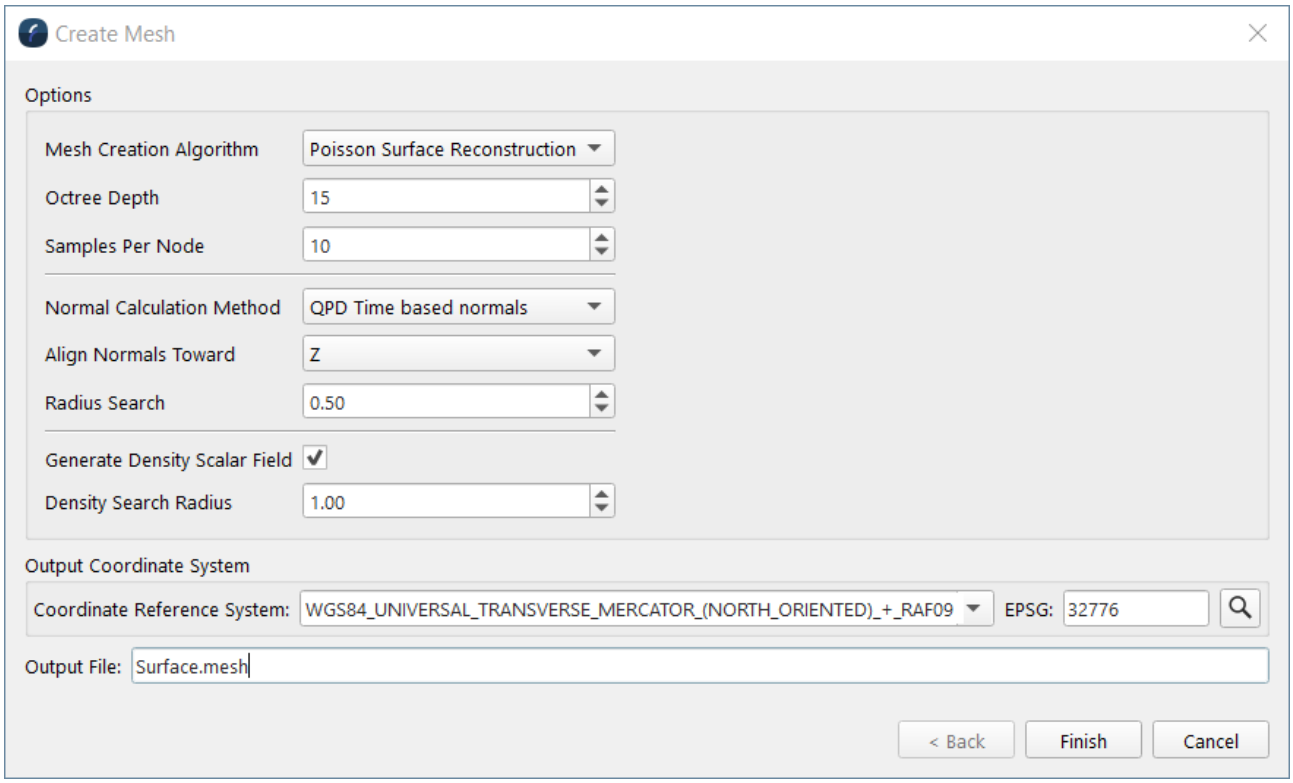
Originally released in 2003, iView4D has been a key part of the Fledermaus workflow for many years. The free tool allows the distribution and viewing of 4D scenes created in the main Fledermaus application. This allows delivering a data set to a 3rd party with the same viewing capability as when the data was created. Going forward, we are replacing the standalone iView4D application with a new "Free Viewer" mode for the primary Fledermaus Application. Having a single installation makes distributing the application easier and helps switching between the licensed and free versions on the same machine.

- After installation, two desktop links are created; one for the standard Fledermaus, and one for the new Fledermaus Viewer, which does not require a license to use.

- A new feature of the Fledermaus Viewer is the ability to playback presentations created in Fledermaus



Improved Mesh Creation and Use



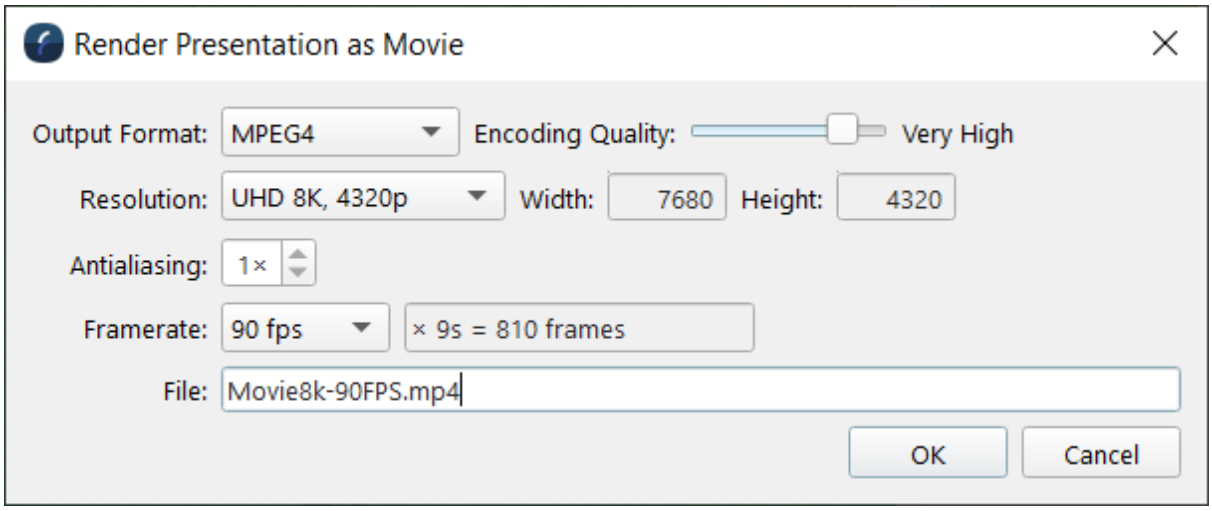
A major part of the Fledermaus 8.0 release was the introduction of the new mesh object. We have continued to invest in this capability with a number improvements for Fledermaus 8.1:

- Increased speed when creating a mesh
  - The improved mesh creation algorithm is better designed to take advantage of multi-core systems
  - Creation is now a minimum of 10% faster, with a reduction of 50% for creation time using a mid-level desktop machine
- Higher resolution option
  - Max Octree Depth has been increased to 18, allowing very high resolution mesh objects
- Automatic clipping has been added to remove any parts of the mesh with no points contributing to the surface
- Mesh creation is improved for vertical areas by using the orientation of the acquisition sensor (QPD files only)
- Improved the user interface for the mesh creation dialog
- In addition to improving the creation process, we have added better support for importing mesh objects in FBX format. This improves the import of textured meshes from 3rd party

applications, such as Pix4D.

NOTE: Mesh creation from large data sets is a CPU and memory intensive operation. When creating high resolution meshes (Octree Depth of 12 or more), it is best to do mesh creation in a smaller areas using the selection tools.

Improved Movie Rendering



Creating high quality stand-alone movies is a key output from Fledermaus, and we have added a number of big improvements and enhancements in this release:

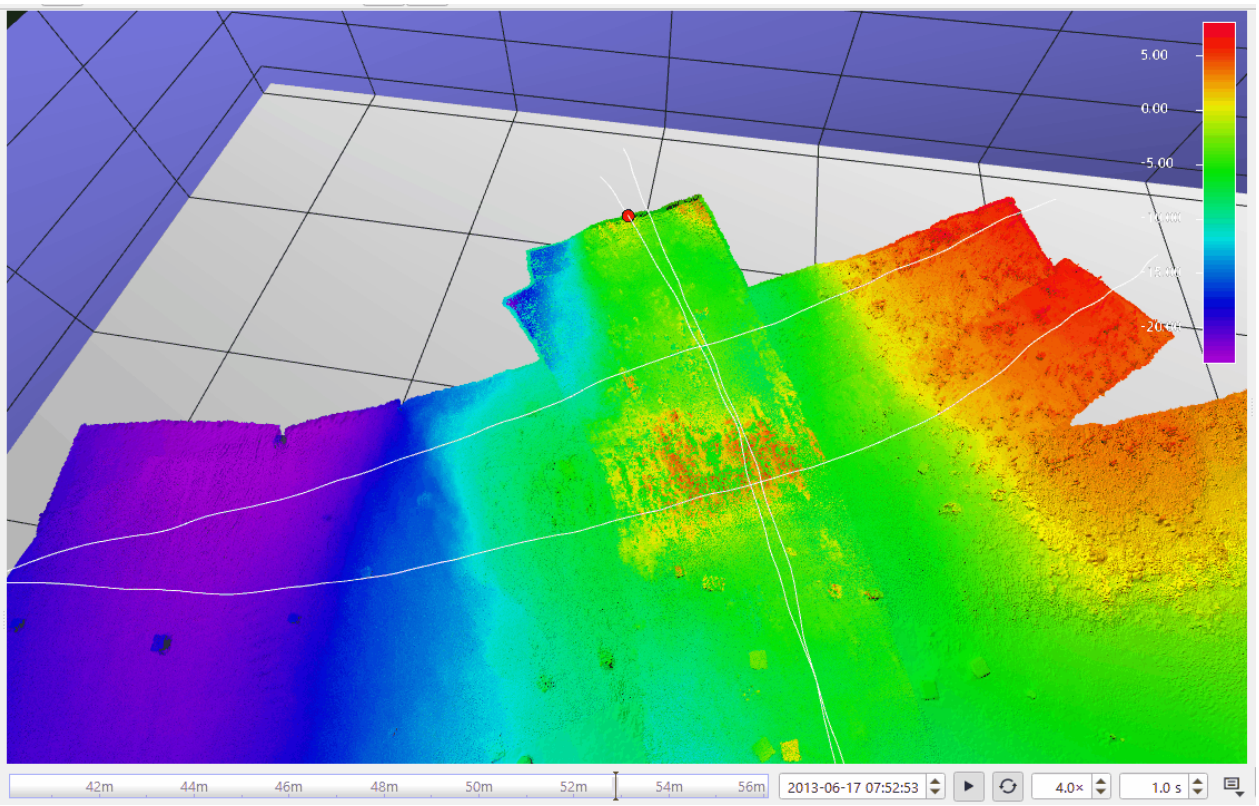
- You can set the "Encoding Quality" using a slider to adjust between low and high compression.
  - This is much easier to use than the previous method of specifying a bit rate
- Added ability to render 4K and 8K movies.
- Added high-frame rate rendering (60, 90, 120 frames/sec to the standard list of 25, 29.97, and 30)

NOTE: Similar to mesh creation, rendering high resolution / high frame rate movies can be very resource intensive. It is better to render short segments first to get a feel for the overall rendering and encoding speed of your setup.

QPD Time and Location Display

When opening any QPD files in Fledermaus, the Scene uses the full time information from the files. This allows the time controls to be used in conjunction with other time aware

tools, such as the Video playback dock. In addition, the current QPD vessel location is displayed on the track line, based on the current scene time. The time can be played back linearly, or the time bar control can be used to jump to specific point in time.



Fledermaus 8.1.0 - Bugs

T	Summary
	Terrain Mesh "Color By" attribute is not being stored with the data
	Terrain Mesh "Color By" attribute is not properly updating when changing from object to another
	Importing points and lines was not using the Z orientation properly
	Importing and rendering vertical curtains results in a black object
	Crash when opening project from FMGT in Fledermaus
	Converting an image from RGBA to greyscale adds an extra row of data
	WGS84 Web Mercator EPSG-3857 not recognized

Fledermaus 8.1.0 - Transitions from Fledermaus v7

With the launch of the Fledermaus Free Viewer, the 8.1.0 release addresses a major item from our v7 to v8 transition process. Please refer to the page bellow for full details on the transition process.

Fledermaus 8 - Transitions from Fledermaus v7

Fledermaus 8.1.1 Release

13 February 2020

We are pleased to present Fledermaus 8.1.1, which holds numerous small improvements to the user interface and operations.

Bugs

- Fixed unexpected application exit when loading a BAG file, when there are issues with the file an error is reported.
- Fixed rendering issue with objects when vertical exaggeration was different from 1x.
- Improved support for Geotiff with world files that contain rotation
- Improvements to the space time note transitions
- Fixed issue for Kraken sidescan generated GeoTIFF, now overlapping correctly with corresponding surface.
- Fixed incorrect column mappings when importing binary files as points

Other

- Please note that FMGT and FMMW are independently released, respective release notes can be found here:
  - FMGT Release Notes
  - FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

Our biggest feedback from 8.0 was to update iView4D to support the new tools and formats. This has been addressed with the launch of the new Fledermaus Free Viewer.

For more information, see our Voting System Policy and Using the feedback project.

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Fledermaus 8.2.0 Release

28 May 2020

We're pleased to present Fledermaus version 8.2.0. Read below for details.

Highlights

- Improved Mesh Creation Options
- New Mesh Display Tools
- New Scene Sharing Tool
- Surface Improvements

Vote

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

- Fledermaus 8.2.0 - Important Notes
- Fledermaus 8.2.0 - New Functionality
- Fledermaus 8.2.0 - Improvements
- Fledermaus 8.2.0 - Resolved Bugs
- Fledermaus 8.2.0 - Known Issues
- Fledermaus 8.2.0 - Transitions from Fledermaus v7

Fledermaus 8.2.0 - Important Notes

On this page:

- Licensing
- Installers
- Support for Fledermaus v7.X
- End of support for Fledermaus on Windows 7

Licensing

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8.2 alongside Fledermaus 7.8 or newer, using the same license.
No changes to the license configuration have been made with this release. This allows trying out the new features of FM 8.2, while continuing to use Fledermaus 7.8 on the same machine.

Installers

The Fledermaus installer will install by default into subdirectories with the version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus.
This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time.
Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.2.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus v7.X

Summary:

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications.

Support for Fledermaus 7 will continue, and an end-of-life announcement will be made well in advance.

End of support for Fledermaus on Windows 7

Microsoft has ended Support for Windows 7 in January 2020 and QPS will also stop supporting Windows 7. For now Fledermaus 8.2 has been tested on Windows 7 without a problem.
Any problems with this version related to the Operating System will not be solved. Future releases will not be tested on Windows 7.

It is highly recommended to switch to Windows 10.

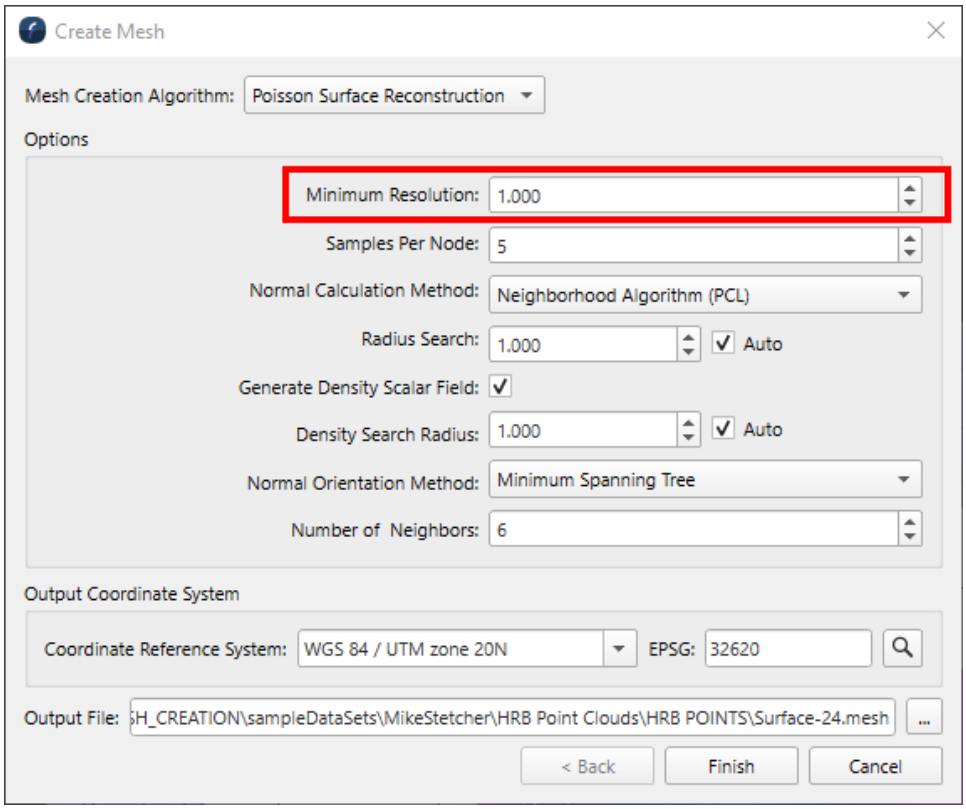
Fledermaus 8.2.0 - New Functionality

On this page:

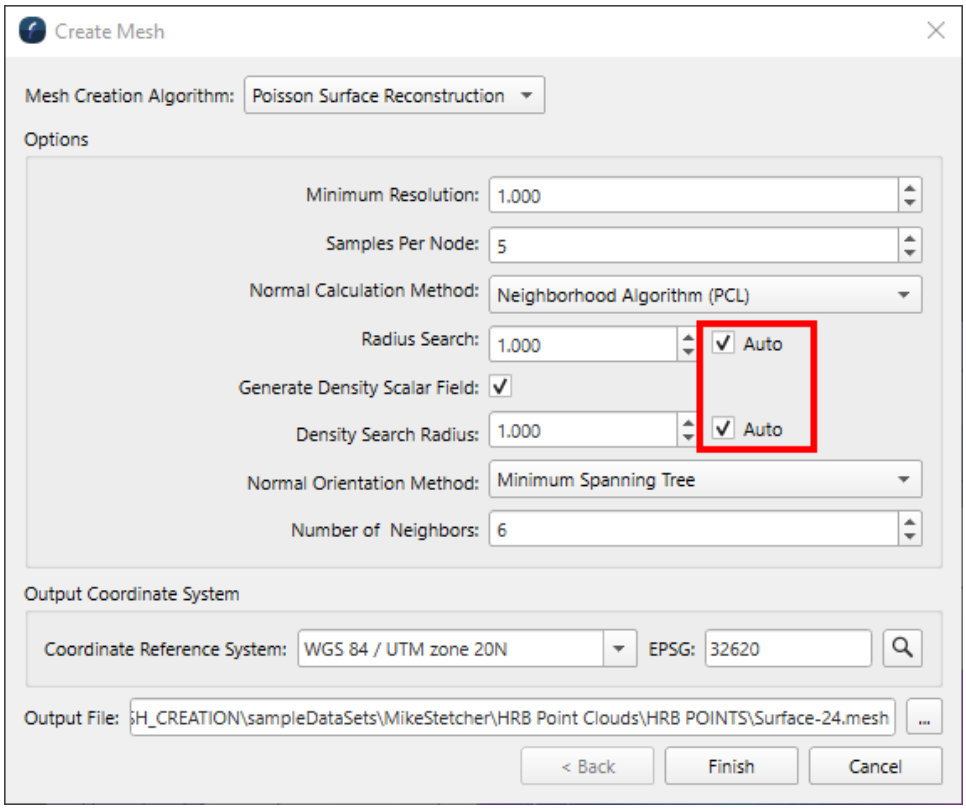
- New Mesh Creation Options
- New Wireframe Mesh Display
- Mesh Slicing Tool
- Scene Sharing Tool

New Mesh Creation Options

A primary goal for this release was to make mesh creation easier to use. A key part of this work was replacing the "Octree Depth" parameter with "Minimum Resolution". This is an easier parameter to work with since it deals directly with the concept of a spatial resolution of the desired end product, and brings the creation process closer to the same as building a grid. This value is used to specify the smallest triangular segment in the mesh being created. As this is a variable resolution structure, the mesh will only go to that minimum resolution in areas that the data supports it. In areas where point data is more sparse, the triangular facets will grow larger. As the mesh adjusts to the differing point distribution, the finest resolution will be limited by this new parameter.



The construction of meshes revolves around the idea of creating vectors that point away perpendicularly from the point cloud, these are referred to as normal vectors, or "normals" for shorthand. The "Radius Search" for calculating point normals, as well as the "Density Search Radius", now have a new default "Auto" setting. When this is enabled, appropriate values will be calculated automatically during the creation process. You would only set these values manually in special circumstances or when trying to investigate a problem. More information on when to adjust these from the default setting can be found in the documentation.

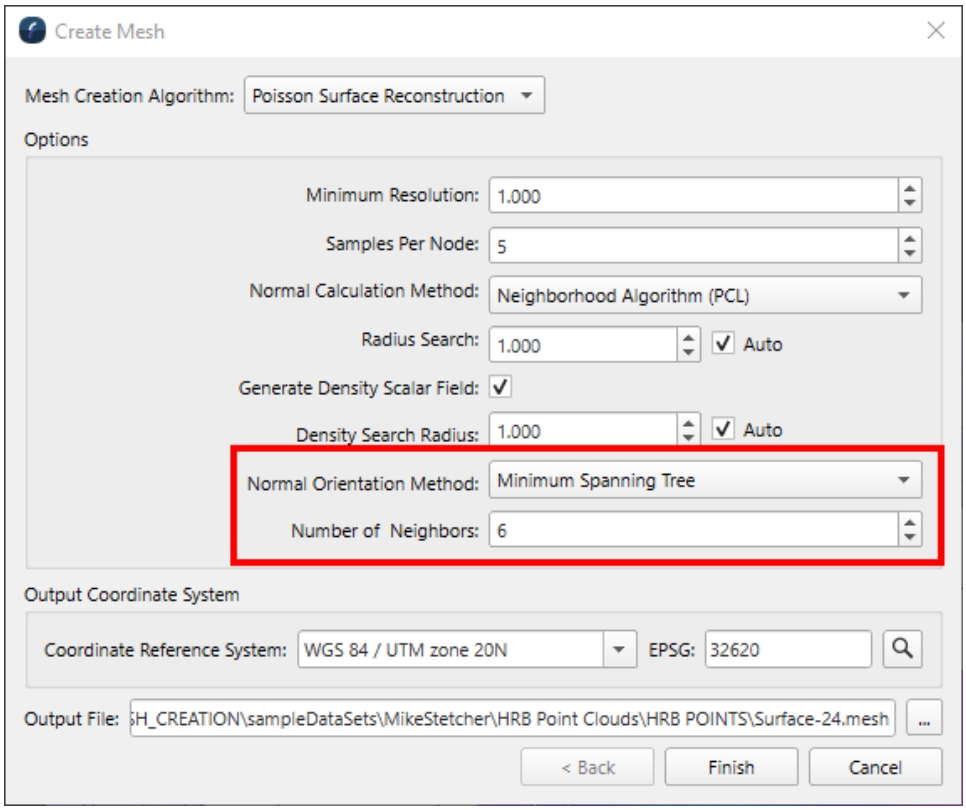


A new general purpose normal orientation algorithm has been added to help improve consistency of the calculated point normals. Inconsistent normals result in the mesh being created with a surface overlapping on itself, which often look like large bubbles on the mesh.

There are now three options for normal orientation:

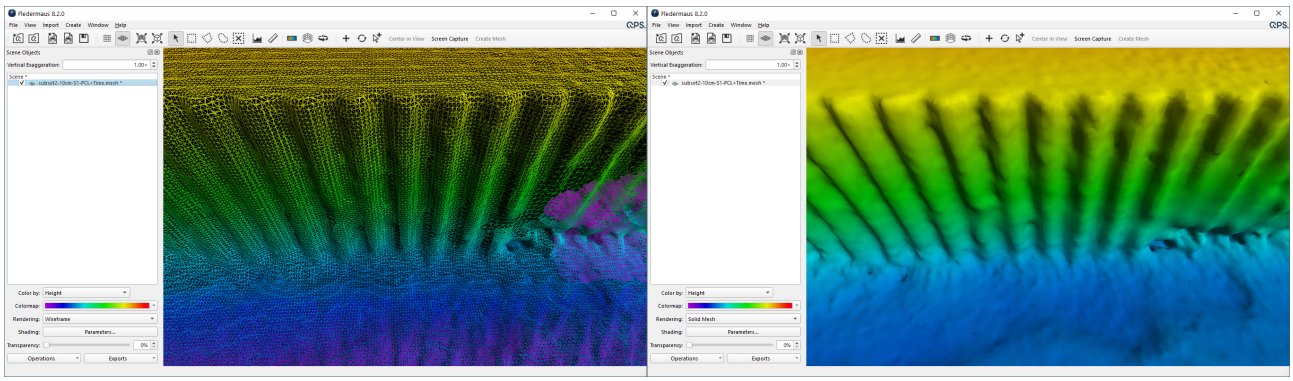
- Minimum Spanning Tree - A general purpose algorithm that works well for data sets with varying vertical and horizontal surfaces. This is the new default option for processed point files that do NOT come from Qinsy or Qimera (these other applications produce QPD point files).
- QPD Time Based - When building a mesh from QPD files, this option uses the sensor location to orient the point normals. This is the default when using QPD files from Qinsy or Qimera.
- Fixed Direction - If all other options are failing, you can specify a fixed direction (in X, Y, or Z) to enforce a general alignment to the normals. This would usually be used in combination with

segmenting the point data into primarily horizontal and vertical subsets, using point editing software such as Qimera.



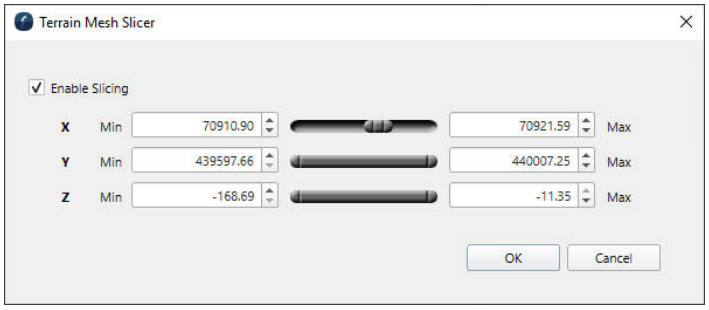
New Wireframe Mesh Display

The mesh object has a new wireframe display mode that can be set using the "Rendering" drop down menu in the attribute display. This mode displays the individual triangles that form the mesh and can provide insight into the variable density of the structure. Not only is this a useful for a visualization option, it can also be used to fine tune mesh creation parameters and also to troubleshoot problems that sometimes occur with mesh creation.

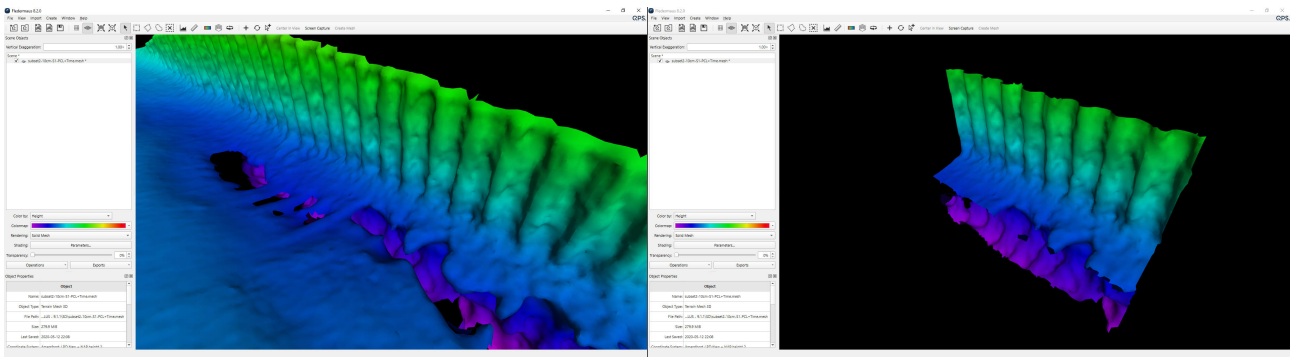


Mesh Slicing Tool

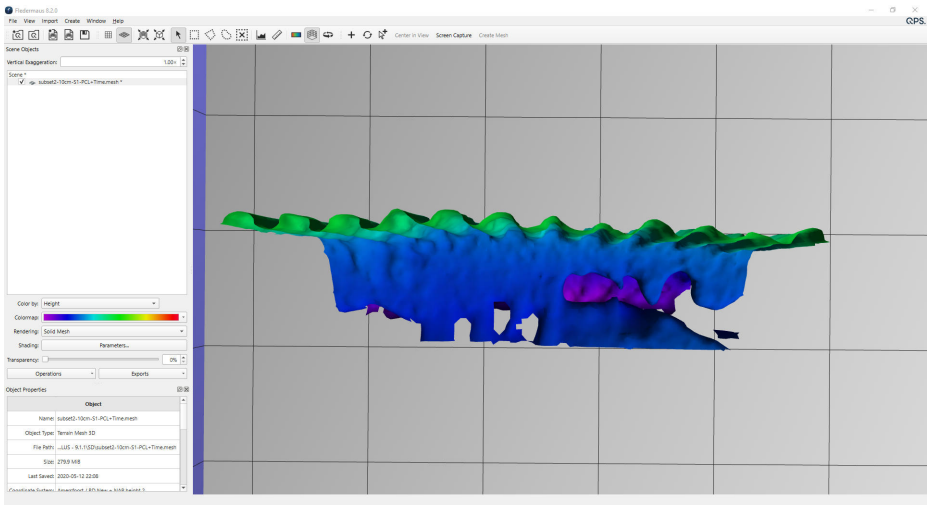
As the mesh is a true 3D object, it can represent complex shapes, including overhands and protruding objects. The new slicing tool provides the ability to hide a portion of the mesh to better display certain areas, and improve analysis. The mesh slicing tool has options to slice in X,Y, or Z directions, either using a slider or by entering a value manually.



The example below shows a mesh with no slicing on the left, and the same data set sliced in each direction.

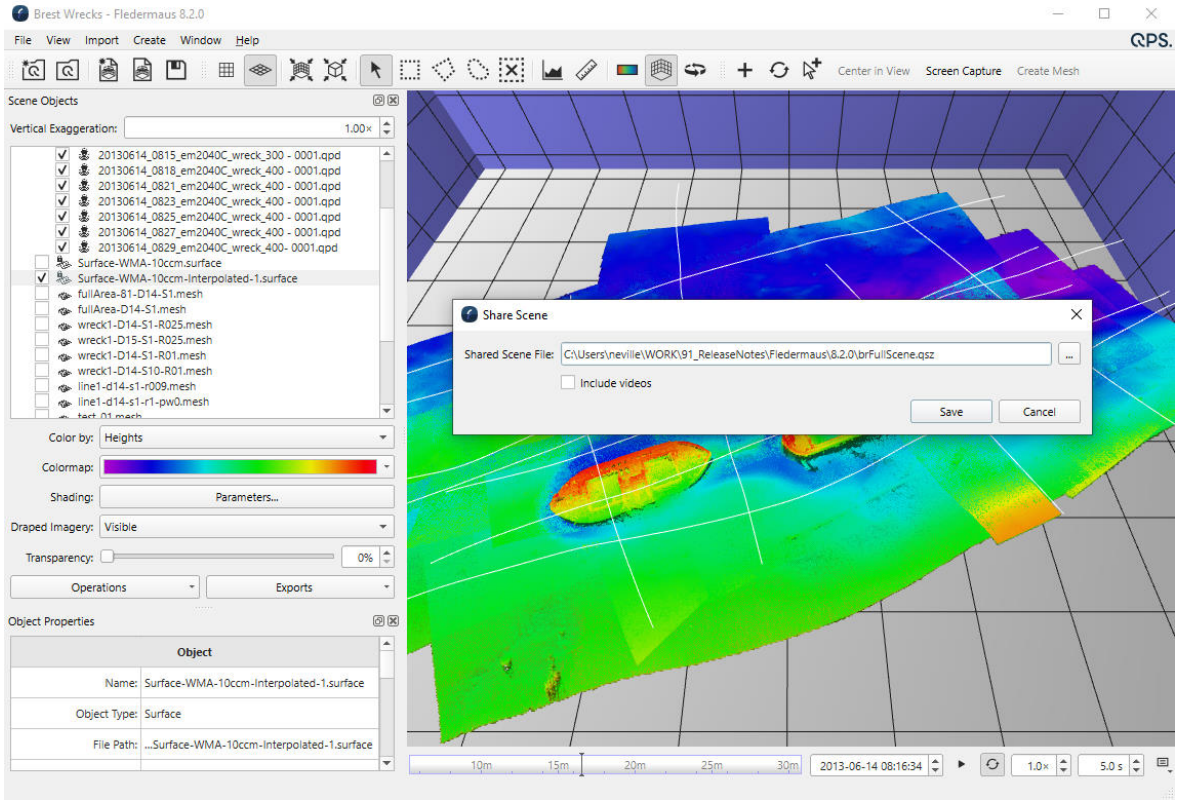


Looking from above, the sliced mesh provides a better view of the structure.



Scene Sharing Tool

When working with Fledermaus, it is very common to share the created Scenes with other Fledermaus users or those using the Free Viewer. However, with the switch to lightweight scenes in Fledermaus 8.0. the process of sharing a Scene became more complicated. To help with sharing Fledermaus Scenes, we have added a new "Share Scene" tool that will collect all the files into a single compressed Scene file (.qsz extension). The compressed Scene can be given to other Fledermaus users where it will be uncompressed on first use.



Fledermaus 8.2.0 - Improvements

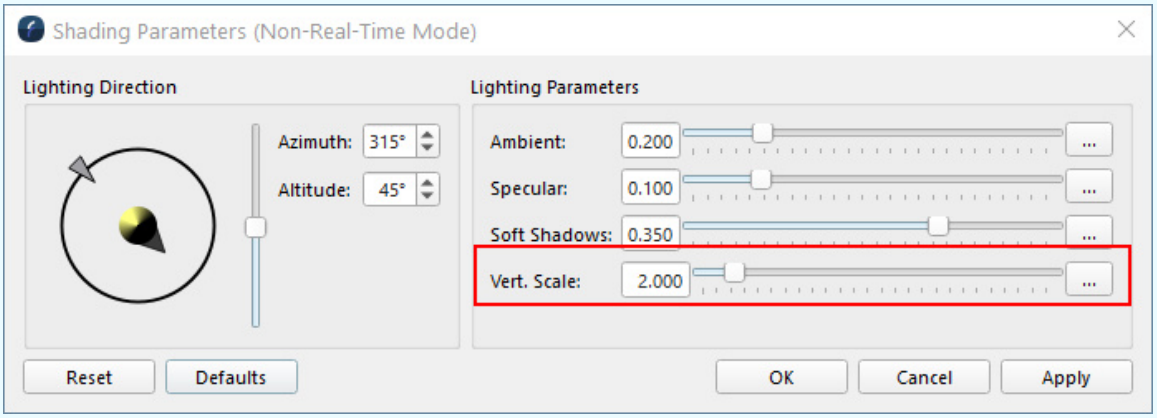
On this page:

- Surface Shading
- Geodetics
- Optimized Video Playback
- Video File Management
- Mesh Creation Error Reporting and Stats
- Improved measurement tool and geo-pick display
- Dynamic Surface Improvements
- Translations, Rotations, and Scaling are now properly applied when importing FM7 data
- Scalar Improvements

New Shading Defaults

Please note that the shading controls have new defaults that now match those in Qinsy and Qimera. This improves consistency when adjusting shading and moving between the three applications. However it is important to be aware of the changes when moving from FM7 to FM8.0/8.1 and to FM8.2

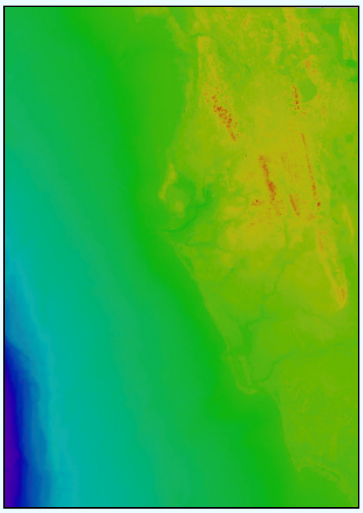
The largest changes are in the default value for the Vertical Scale shading parameter, and how it is used across surfaces. Note that if you have an existing version of Fledermaus installed, you will still see the old default values. To use the new values, you can reset your preferences by going to "File > Preferences...", and pressing the "Reset" button.



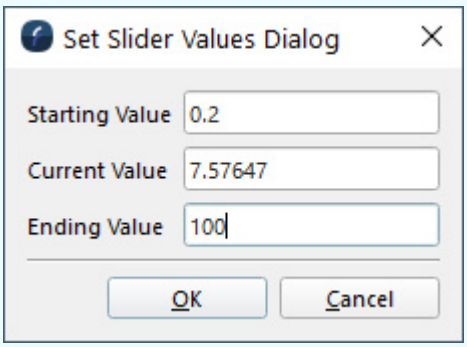
In addition to the change in default values, there are also changes in how the vertical scale is applied. In Fledermaus 7 the shading was automatically scaled based on the total Z range of the data set. The downside of this approach was that it made comparing shadows between data sets impossible to do. In Fledermaus 8.2, a 1 meter high feature

will now produce the same shadow (when using the same shading parameters), regardless of the Z-range of the data set. This greatly improves the ability to do comparisons and analysis across different data sets.

Please note that because of these changes, data sets with large Z ranges (such as a regional overview from the GEBCO data set) will look like they have little or no shadows when using the default parameters. In this situation, the shadows are correct, but are not visible at the large scale, as shown below. In these situations, you can increase the vertical scale to achieve shading results similar to the default output from Fledermaus 7, with a similar data set.



To increase beyond the default slider max of 20, press the button on the right labeled "...". This will display the "Set Slider Values" dialog, where you can set a new maximum value, such as 100.

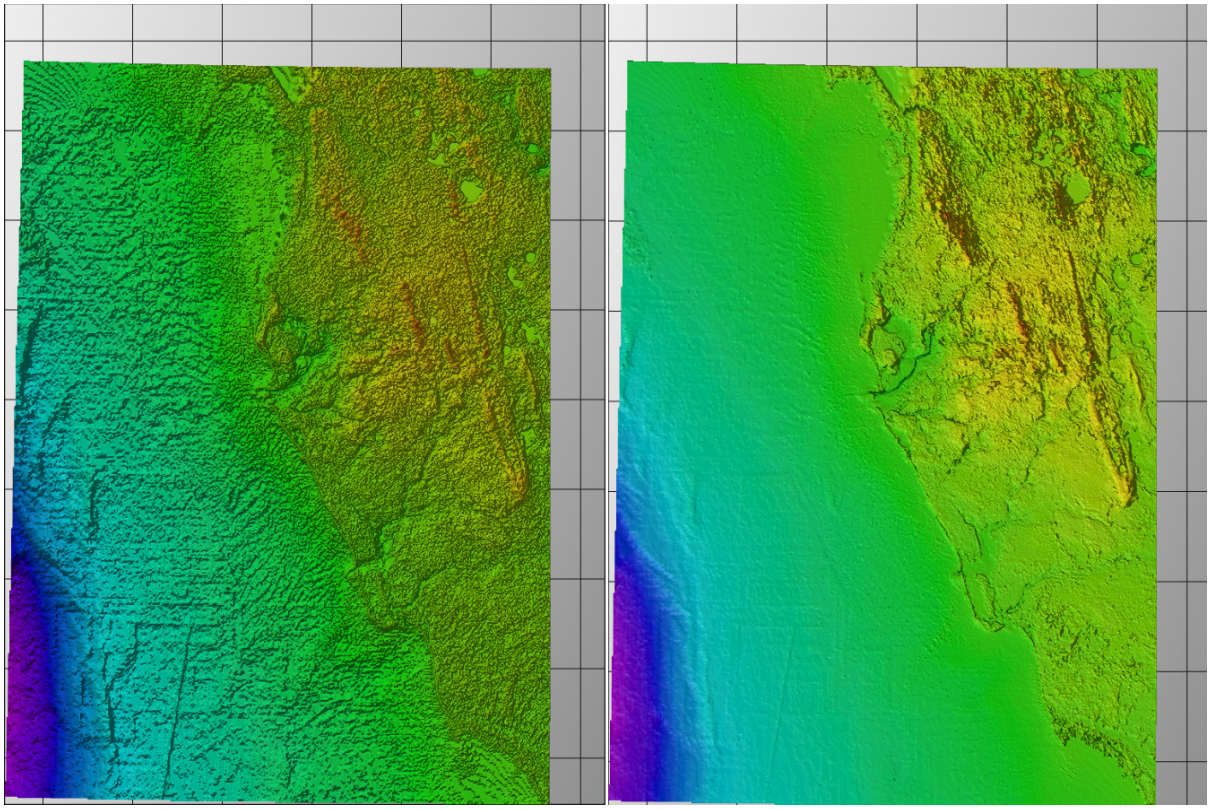


Surface Shading

Significant improvements have been made to improve the consistency of shading between data sets, as well as to address issues with shading data with a large Z-range. In

Fledermaus 7, the shadows had an automatic scaling, which provided a good result across multiple data sets, but prevented direct comparison between shadows when the Z-rage between data sets were different. Fledermaus 8.2 now has consistent shadows for equivalent features across data sets, independent of the actual Z-range.

The improvements for large Z-range data sets are visible in the image below, with FM8.1 on the left, and FM8.2 on the right. Note the FM8.2 shading is using a vertical scale of 100x to achieve a similar result to the defaults in Fledermaus 7.



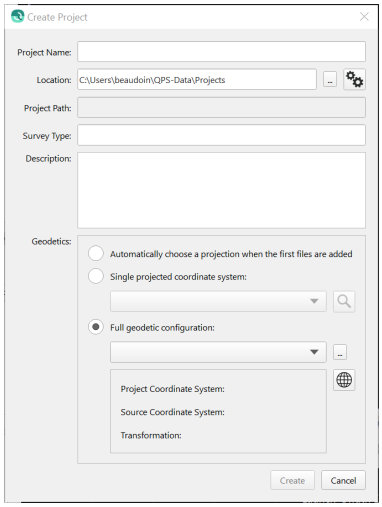
NOTE: The shading problems with large Z-range data sets was often visible with geographic data in FM 8.2, however the coordinate system was not the source of the problem.

Geodetics

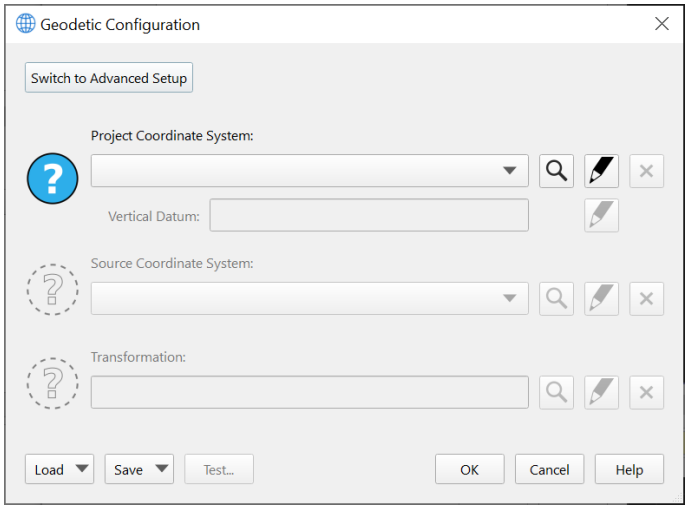
Several changes were made to the New Project dialog and the Geodetic configuration dialog based on user feedback on the new interfaces that were launched with Fledermaus version 8.1.0. Terminology has been improved in various dialogs, with the primary aim being to enhance clarity and reduce use of acronyms. Care has been taken to use terminology that is most commonly used and in some areas tool-tips have been added with further explanation. The behavior and layout of various dialogs has been improved for

a cleaner and simpler user experience and workflow. All changes combined give an improved user experience. In addition a number of bug fixes have been made.

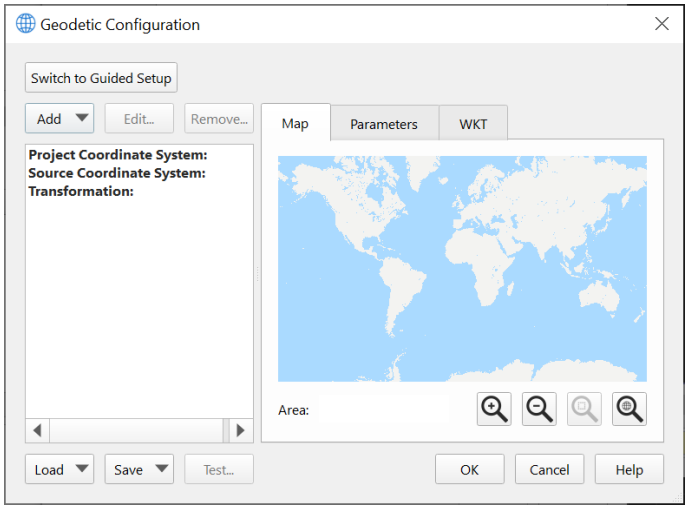
Starting with the project creation dialog, the previously used acronym CRS has been dropped in favor of full text.



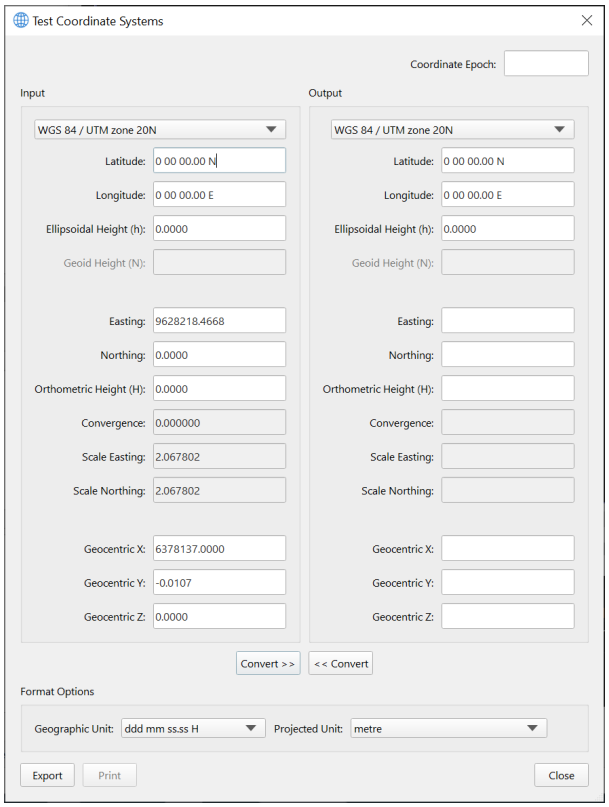
Moving next to the Geodetic Configuration dialog, there are several minor improvements as well. In particular, it is much clearer now that the Guided Setup and Advanced Setup options are mutually exclusive workflows: the Detailed Overview tab has been removed in favor of having to specifically click a button to switch to an advanced setup. Acronyms have been removed and clearer terminology has been used to make it clear what is required from the user. A help button has been added that will launch a web browser with the manual for the Geodetic User Interface.



The Advanced Configuration has improved as well, largely with a review of terminology to ensure consistency and clarity, and also removing acronyms in favor of full text to help users with limited geodetic knowledge. Action buttons are at the top left to guide the user to the logical first step to take when coming to this mode.

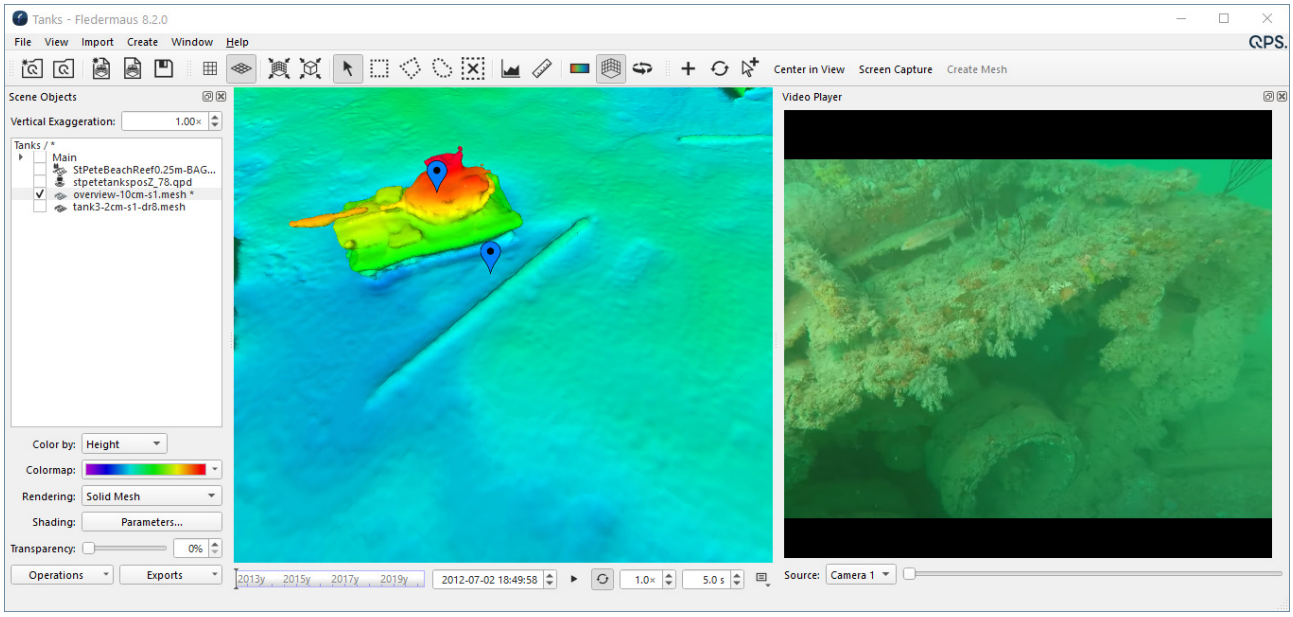


Lastly, the layout of the Test dialog has been improved as well to make it easier to compare geodetic test points with the current configuration, transform, vertical offsets, etc. We have used standard geodetic terms like "Ellipsoidal Height", "Geoid Height" and "Orthometric Height", along with the usual symbolic terms for these (h, N and H, respectively). As with the other dialogs, acronyms have been removed as much as possible. The vertical layout makes it easy to visually scan and compare between Input and Output systems, the previous layout of this dialog made it difficult to visually compare results between the Input and Output systems.



Optimized Video Playback

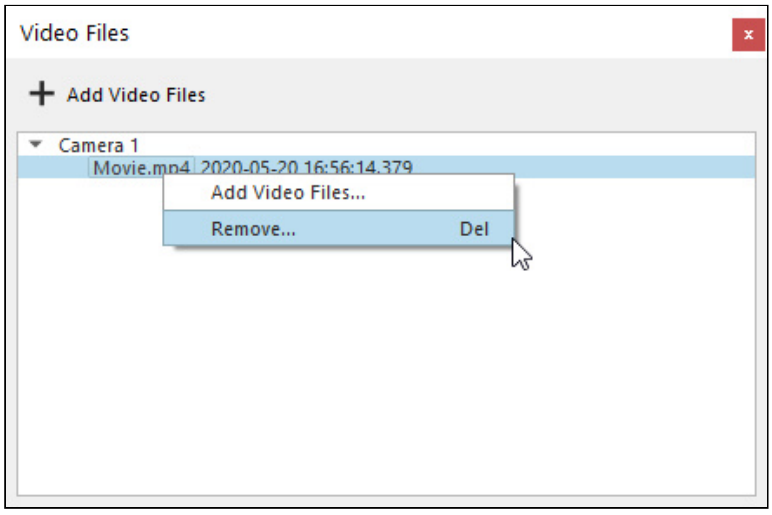
In Fledermaus 8.0 we introduced an integrated video player as part of the main application. One downside of the player was that quick transitions in time (for example jumping from one Space-Time Note to another) could result in lag in the primary 3d display. To address this issue, when doing large jumps in time, the video player will pause play back until arriving at the new scene location. During smaller jumps, or with accelerated time play back, the video will continue to play.



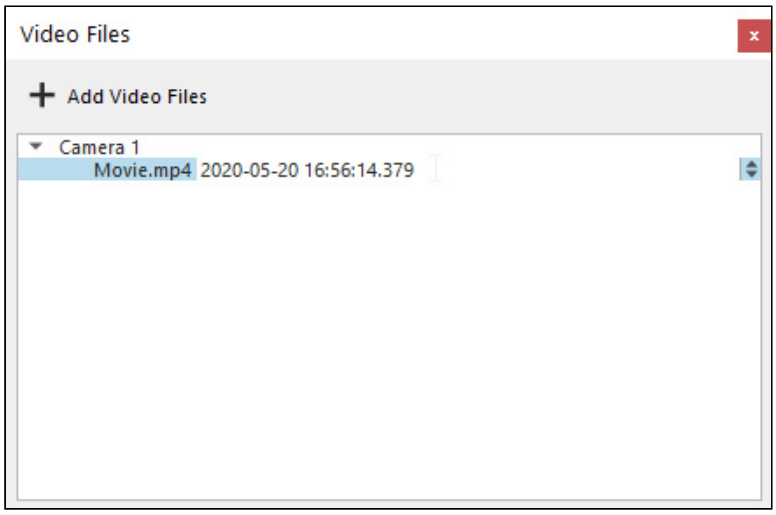
*Data from R2Sonic Sonic 2024 multibeam operated in UHR (700kHz) mode

Video File Management

Video files in a project can now be removed by right-clicking on the selected file in the video files docks, and choosing the "Remove" option.

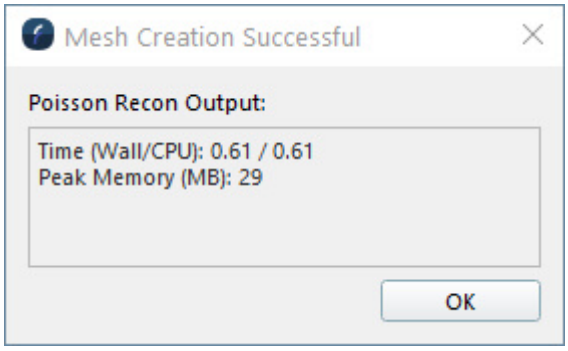


After a video has been added to a project, you can now double click on the object to modify the starting timestamp.



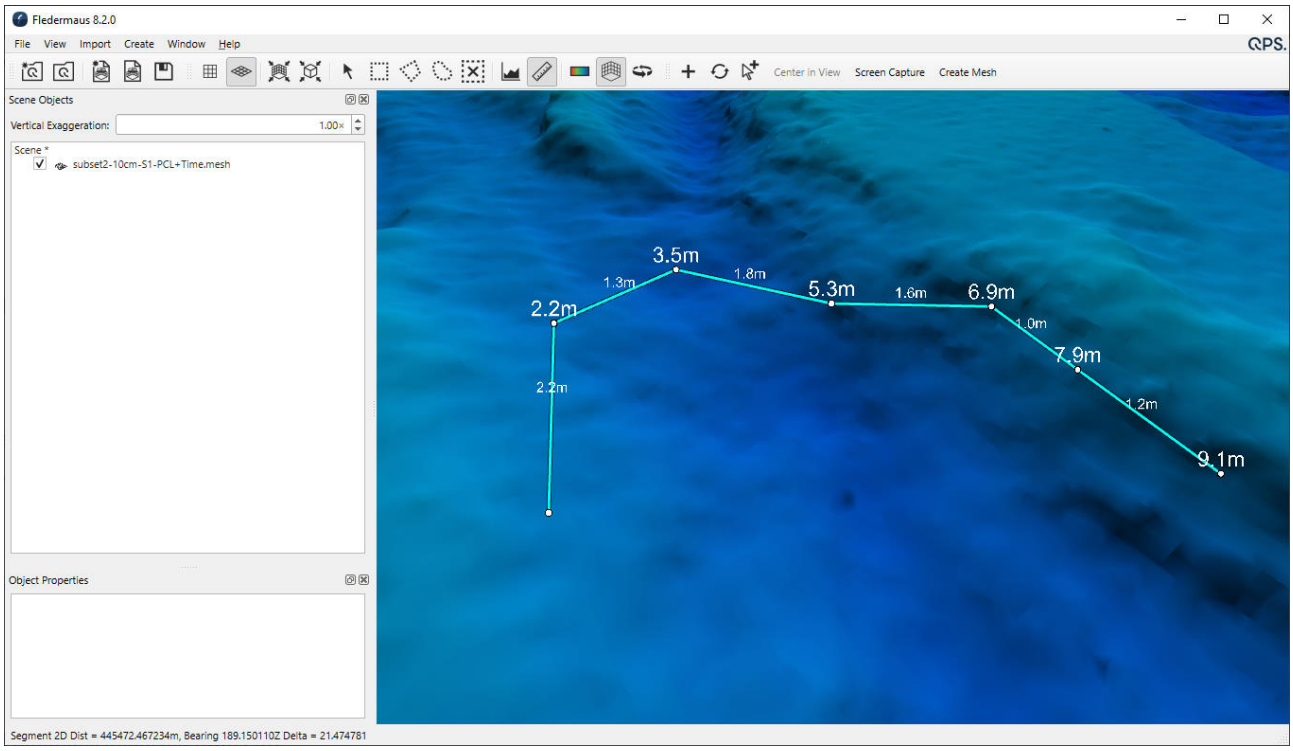
Mesh Creation Error Reporting and Stats

To provide feedback on the time and resources used during the creation of a mesh, we have added a stats summary dialog after the creation process completes. In addition to reporting running time, the dialog will display any errors that occurred during the creation process.

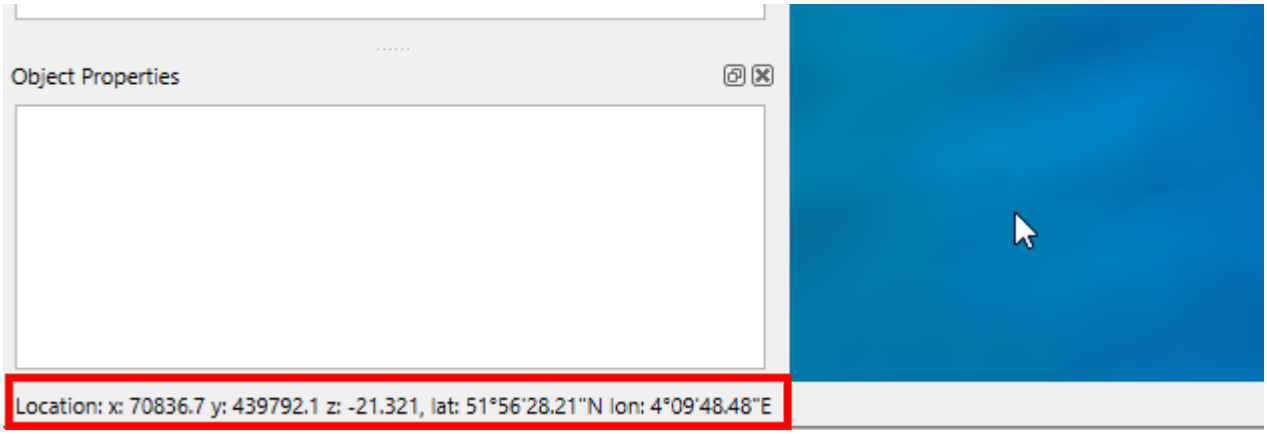


Improved measurement tool and geo-pick display

With mesh data sets often having resolutions well below 1m, the measurement tool was improved to display sub-meter values.



In addition, the geo-picking display located at the bottom left of the main window, will now display co-ordinates for mesh objects.



Dynamic Surface Improvements

The size of surfaces created in Fledermaus 8.2 (including those imported from FM7) are now considerably smaller on disk. The more efficient storage produces files that are on average 30% smaller than in previous versions of Fledermaus 8. There are also a number of general stability improvements when working with Dynamic Surfaces.

Translations, Rotations, and Scaling are now properly applied when importing FM7 data

Data objects such as solid models, and geoimages, often have manual adjustments applied to them in Fledermaus 7. These object were capable of being imported into Fledermaus 8.0 and 8.1, however support for the manual translations, rotations and scaling was not implemented in the first phases of support for these types of adjustments. This has now been implemented for Fledermaus 8.2, and imported scenes will have all objects in the correct location, with correct scaling and rotation.

Scalar Improvements

There are a number of critical bug fixes for using Scalars in Fledermaus 8.2. In addition, a number of missing features, such as being able to set the color map range, have been implemented. Scalars are important for working with a number of derived data types, such as slope, or uncertainty.

Fledermaus 8.2.0 - Resolved Bugs

The following bugs were solved in this release.

T	Summary
	Path for video files was hard coded and wouldn't play if the Scene or Project was moved to a new machine
	Scalar colormap ranges were incorrect and could not be modified
	Importing an FM7 scene to FM8 with 2 objects of the same name only loaded 1 object
	Solid model objects were not being saved in the correct location
	Fledermaus crashed when loading Midwater beam fans with more than 256 beams
	Fledermaus could not load Dynamic Surfaces created in Survey Manager
	Point cloud objects were displaying an incorrect color legend for some "Color By" options
	Geographic vertical curtains were not loading in Fledermaus 8
	Vertical curtains with greater than 8192 rows would not load in Fledermaus 8
	Crash when adjusting the color map range for a surface, using the histogram
	Fixed export of contours as DXF files
	Could not create projects or scenes with non-ASCII characters in the name
	Creating a mesh with some coordinate references systems (CRS) caused a crash

T	Summary
	Exporting a 3D PDF did not honor the scene vertical exaggeration
	Exporting a 3D PDF did not properly export the draped imagery
	Grid importer for ASCII XYZ data was limited to 65,535 rows and columns
	Double clicking on the data viewing panel caused a crash
	Loading OBJ files was extremely slow
	Importing a BAG file was not properly creating the uncertainty scalar object
	The screen would go black when zooming to an object or removing an object from the scene
	The time displayed for video files was incorrectly being converted to local time in the video dock
	Import and invert of floating point geotiff surfaces resulted in incorrect results
	Surface difference operation would ignore polygon selection
	Rapidly clicking the refresh button on the ArcGIS external data dock duplicated the displayed databases
	There was no way to remove ArcGIS database folders from the external data dock
	Transferring a surface to a newly created AcrGIS database caused naming issues
	Importing shapefiles did not properly transform

T	Summary
	Line and point objects imported from an ArcGIS database were not showing the correct properties
	Exporting a TIFF image from a surface was not properly exporting the shading

Fledermaus 8.2.0 - Known Issues

For this release, the following are known issues which we plan to address in upcoming releases.

Issue	Description	Affects Version	Expected Fix Version
Bug	Draping an image on a surface will result in a band of missing data when the image is spatially smaller then the surface	8.0,8.1,8.2	8.2.1

Fledermaus 8.2.0 - Transitions from Fledermaus v7

With the addition of the new Scene sharing tool, the 8.2.0 release addresses another major item from our v7 to v8 transition process.
Please refer to the page below for full details on the transition process:

Fledermaus 8 - Transitions from Fledermaus v7

Fledermaus 8.2.1 Release

22nd July 2020

We are pleased to present Fledermaus 8.2.1, which addresses a number of bugs and adds a few small improvements to the user interface and operations.

Known Issues

- Grids with different cell sizes in X and Y are not yet fully supported in Fledermaus 8, which most often occurs when importing geographic data. Versions 8.2.0 and earlier were incorrectly importing these grids, which resulted in alignment issues when combined with other data. To prevent this, Fledermaus 8.2.1 will present a warning message and not allow grids with different X and Y cell size to be imported. A proper fix is being developed for future release.

Bugs and Small Features

Draping Images on Surfaces

- Draping an image using custom bounds was not placing the image in the correct location
- Images that were not covering the full surface had white areas on the edges
- Performance of streaming draped surface tiles was improved

Scalars

- Fixed
- A histogram is now displayed when adjusting the colormap range for standalone scalars
- Attached colormaps were not being read and used. Instead it would use the default colormap

Surfaces

- Draped images were not rendering correctly on Static surfaces
- Colormap changes were not always being applied correctly
- The Dynamic Surface object now allows selection of the "shallow", "average", or "deep" surface
- Fledermaus application would hang when importing certain variations of GMT grids
- Added support for 16-bit GeoTIFF surfaces
- Fixed problem exporting some GRID5 surfaces to ASCII XYZ
- Surface difference operations where not properly using the bounds from the "Load Polygon from File"

BAG (Bathymetric Attributed Grids)

- BAG export was failing when using a Dynamic Surface without an uncertainty layer created in Qimera
- Imported BAG files had incorrect data added at the extents of the surface

- Export to a different grid format was padding the bounds
- Importing BAG files is now twice as fast
- A progress bar is displayed during the import process

Mesh

- Delauney Triangulation algorithm for mesh creation can now be used on points in a scene and restricted by the polygon selection
- Fixed crash when using the Poisson algorithm and choosing "Use Existing Normals" and there are no normals in the source files
- Terrain meshes now use "two-sided" lighting to improve the visualization

Camera and View Controls

- The Z-Key for "Zoom to Object" was not functioning properly in Plan view
- Zooming in and out by holding down the middle mouse button was broken in Fledermaus 8.1.1
- Scene goes black when changing the vertical exaggeration in plan view
- After removing an object from the scene, the camera does not properly reset the view
- Markers for Space Time Notes would disappear when viewing the scene from above

Additional Fixes

- Rendering a movie would fail if the destination directory had a dot (.) in the path, such as C:\users\danny.neville
- The height for the Plane object was not correctly set in the Scene
- When profiling multiple surfaces, all profiles where blue instead of a unique color
- Clear Transparency tool for Images was launching the incorrect dialog
- The time bar would disappear when videos are re-ordered
- Changing a date in the data viewing table for the Point Object would revert the value to 01/01/1970
- "Open Project..." and "Open Recent Scene" where not properly asking to save the Scene if changes had occurred
- Some operations where not properly flagging the Scene as modified
- The color map legend now stays the same size, regardless of the screen capture scale
- In some cases, the color map legend was rendered behind the data
- The number of transparent objects counter, in the slide display, was not updating when a file is removed
- Importing an FMGT backscater mosaic into Fledermaus was changing the color map

Other

- Please note that FMGT and FMMW are independently released, respective release notes can be found here:
  - FMGT Release Notes

- FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Fledermaus 8.2.2 Release

17th September 2020

We are pleased to present Fledermaus 8.2.2, which addresses a number of bugs and adds a few small improvements. One big addition is that for the first time, we are releasing versions of Fledermaus 8 for Linux and macOS.

Highlights

- This release adds support for both **Linux** and **macOS**
- The Fledermaus free viewer now has a **standalone installer** on Windows
  - The shortcut to the free viewer will still be added when doing an install of the full version
- The Export Surface tool has been updated to match all options that the Fledermaus 7 had

Known Issues

- Grids with different cell sizes in X and Y are not yet fully supported in Fledermaus 8, which most often occurs when importing geographic data. Versions 8.2.0 and earlier were incorrectly importing these grids, which resulted in alignment issues when combined with other data. To prevent this, Fledermaus 8.2.1 will present a warning message and not allow grids with different X and Y cell size to be imported. A proper fix is being developed for a future release.

Bugs and Small Features

General

- Additional checks have been added to help prevent crashes with low powered graphics cards, such as built-in Intel cards

Space-Time Notes

- There is now an option to specify a color for each Space-Time Note marker

LAS Point Clouds

- Data imported from LAS files, or opened directly would have problems when a single file had more then 62 million points

Surfaces

- Creating a new surface directly from .point files would cause a crash
- Surfaces that had an attached scalar (such as calculated slope), would sometimes crash on open
- Exporting the calculated Rugosity values to an ASCII file would produce incorrect results

Color Map Legend

- The color map legend will dynamically adjust in size to match the size of the display window. Previously it could be either too large, or too small for the scene

Other

- Please note that FMGT and FMMW are independently released, respective release notes can be found here:
  - FMGT Release Notes
  - FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

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Fledermaus 8.3.0 Release

December 2, 2020

We're pleased to present Fledermaus version 8.3.0 In this release, we introduce a few new features, with a focus on addressing workflow gaps for users migrating from Fledermaus 7 to Fledermaus 8. Read below for details.

Highlights

- 3D Device support for Space Navigation and BAT devices
- Eye-dome lighting for better point cloud display
- Improved Text Rendering in 3D Scenes
- Key workflow improvements for users moving from FM7 to FM8
- Command Line Scripting Tool

Voting System

In this release, we have completed 1 Suggestion from users. For more information, see our Voting system Policy and Using the Voting System.

The Voting System helps us to continue improving our software products. Vote or provide feedback and participate in the process by tracking, watching and commenting on issues!

Please click on the Vote button to the right to go to the Fledermaus Feedback Page and implement or find the item you want to vote for.

Vote

Click on the icon above and vote on or create a Suggestion issue!

- Fledermaus 8.3.0 - Important Notes

- Fledermaus 8.3.0 - New Functionality
- Fledermaus 8.3.0 - Improvements
- Fledermaus 8.3.0 - Resolved Bugs
- Fledermaus 8.3.0 - Known Issues
- Fledermaus 8.3.0 - Transitions from Fledermaus v7
- Fledermaus 8.3.0 - All Implemented Feedback

Fledermaus 8.3.0 - Important Notes

On this page:

- Licensing
- Installers
- Support for Fledermaus v7.X
- End of support for Fledermaus on Windows 7

Licensing

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8.3 alongside Fledermaus 7.8 or newer, using the same license.
No changes to the license configuration have been made with this release. This allows trying out the new features of FM 8.3, while continuing to use Fledermaus 7.8 on the same machine.

Installers

The Fledermaus installer will install by default into subdirectories with the version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus.
This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time.
Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.3.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus v7.X

Summary:

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications.

Support for Fledermaus 7 will continue, and an end-of-life announcement will be made well in advance.

End of support for Fledermaus on Windows 7

Microsoft has ended Support for Windows 7 in January 2020 and QPS will also stop supporting Windows 7. It is not recommended to run 8.3.0 on Windows 7.

It is highly recommended to switch to Windows 10.

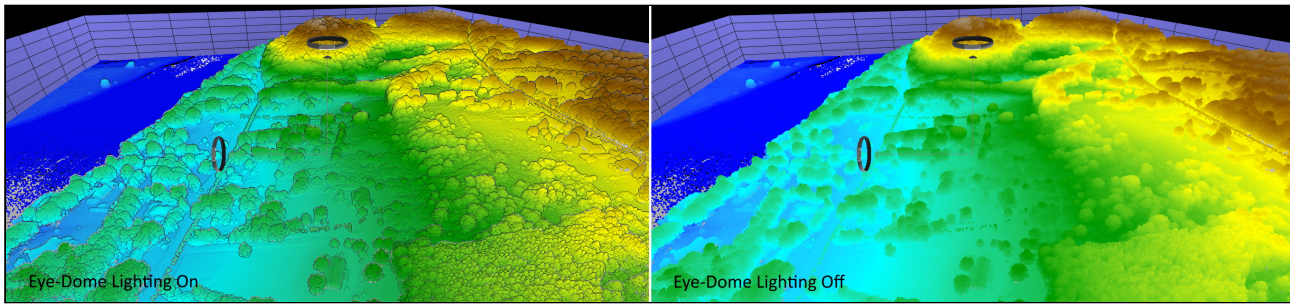
Fledermaus 8.3.0 - New Functionality

On this page:

- Eye-Dome Lighting for Points
- 3D Device Support
- Export Scene to a Georeferenced Image
- Command Line Scripting

Eye-Dome Lighting for Points

Eye-Dome Lighting (EDL) is a shading technique for points that improves depth perception and shape recognition. In addition, the technique is very fast and scales well with large point clouds.

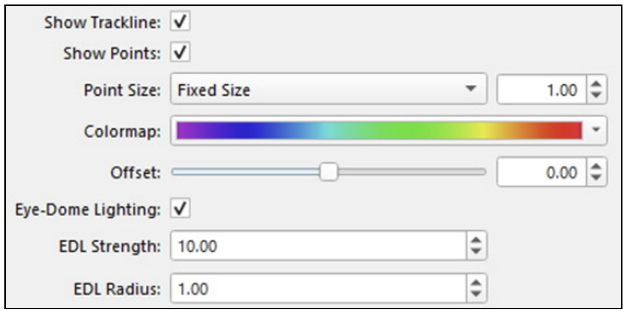


The EDL option is available for the following data objects:

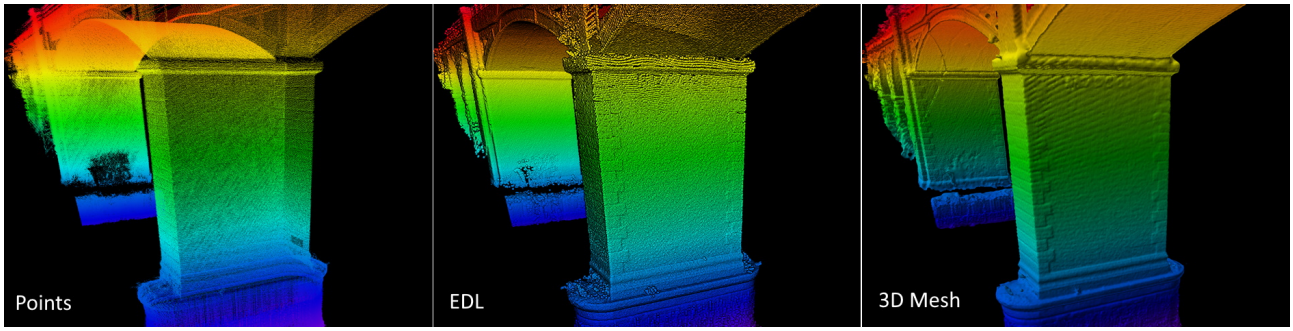
- Points (when using the pixel marker)
- QPD files
- LAS and LAZ files

When using EDL, it is important to increase the point size so that there are little to no gap between each point. There are also two options:

- EDL Strength: The intensity of the EDL depth effect
- EDL Radius: The size of the shadow effect in pixels



The EDL shading works very well in combination with the 3D mesh creation tools in Fledermaus. Using EDL you can get a quickly improve the depth perception and shape recognition within a point cloud, without having to wait for the creation of a 3D mesh. When further perception is needed, or quantitative analysis is required, a mesh can be created.

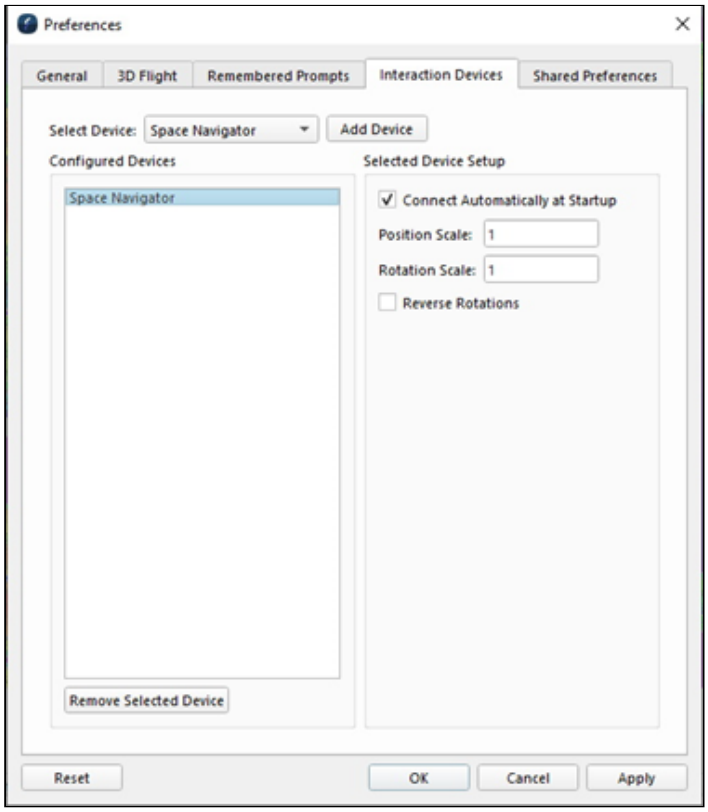


NOTE: For smaller point clouds, the "Sphere" marker can provide a similar shading effect, but with full control on the shading angle. Please see the **Improvements** section of the release notes for more information.

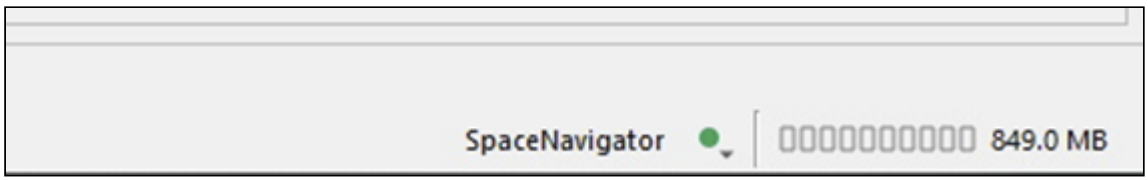
3D Device Support

Fledermaus 8.3.0 adds a brand new system for using 3D devices to navigate within the main 3D window. These devices improve navigation within a 3D scene, and can be used in combination with a mouse, and the keyboard controls (A,S,D,W). By having a multi-input capability, you can quickly switch between devices (such as a mouse and a SpaceNavigator) to use the more optimal device. Supported devices are the Space Navigator (and similar devices), the Patriot BAT, and the HTC VIVE controller (via an emulation tool).

The new system is easier to use and provides clear feedback on the state of your connection to the device. Any connected device can be used right away, without needing to go into any special flight modes. In upcoming releases we will add the ability to record the flight path to be used with the Presentation mode slides. To add a device, there is a new "Interaction Devices" tab in the Preferences dialog.



Once a device has been added and configured in the preferences, it will show up on the right side of the status bar in the main window.

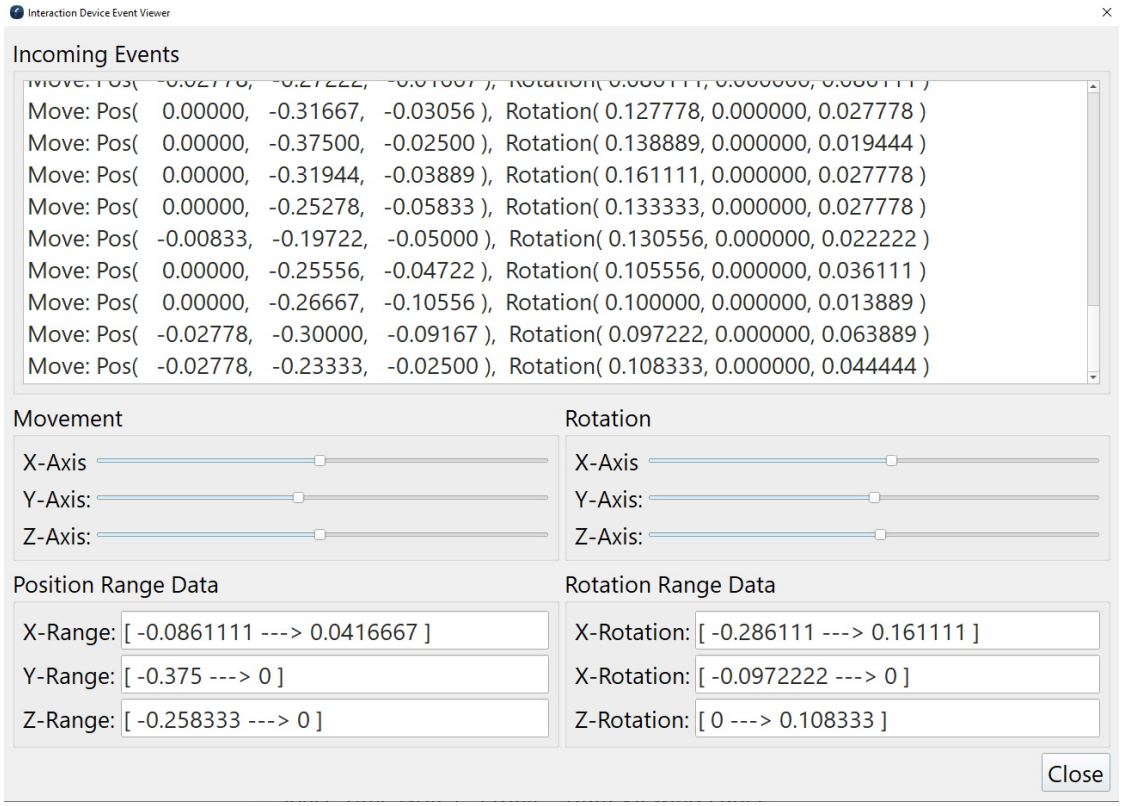


The device status can be changed manually with the popup menu, or will the status change based on certain events, such as starting the application when a device is not connected to the computer. Multiple devices can be configured and easily switched between when using different devices.

Icon	Status	What it means
	Connected & Active	Device is connected and being used

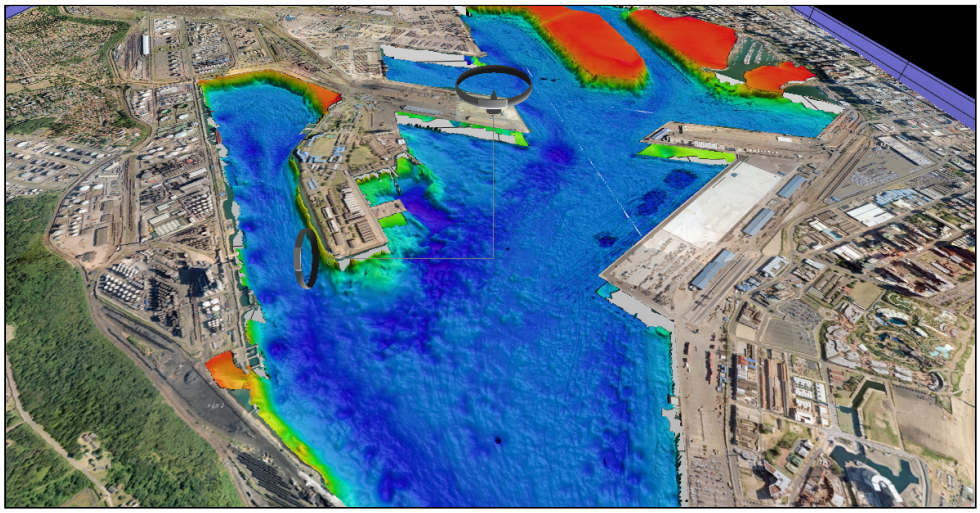
Icon	Status	What it means
	Connected & Not-Active	Device is connected but not being used
	Disconnected & Non-Active	Device is not currently connected to your machine

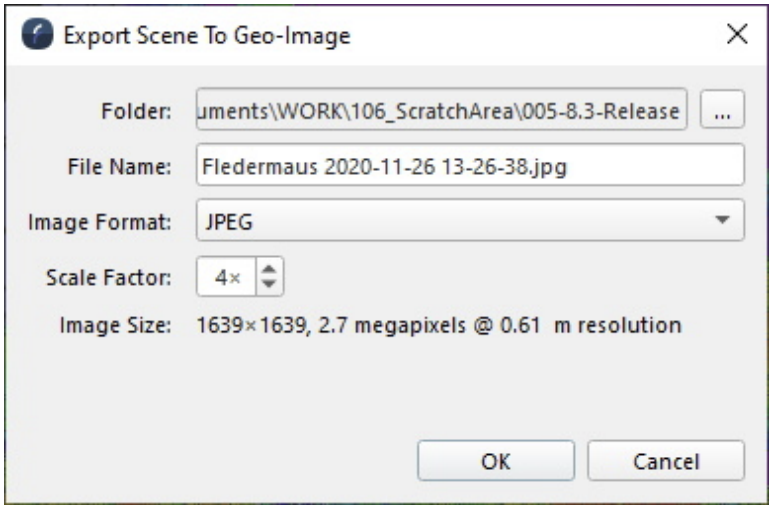
There is also a new device event log, which can help troubleshoot problems with connected devices. This is a display only window that shows all the incoming events from connected and active devices.



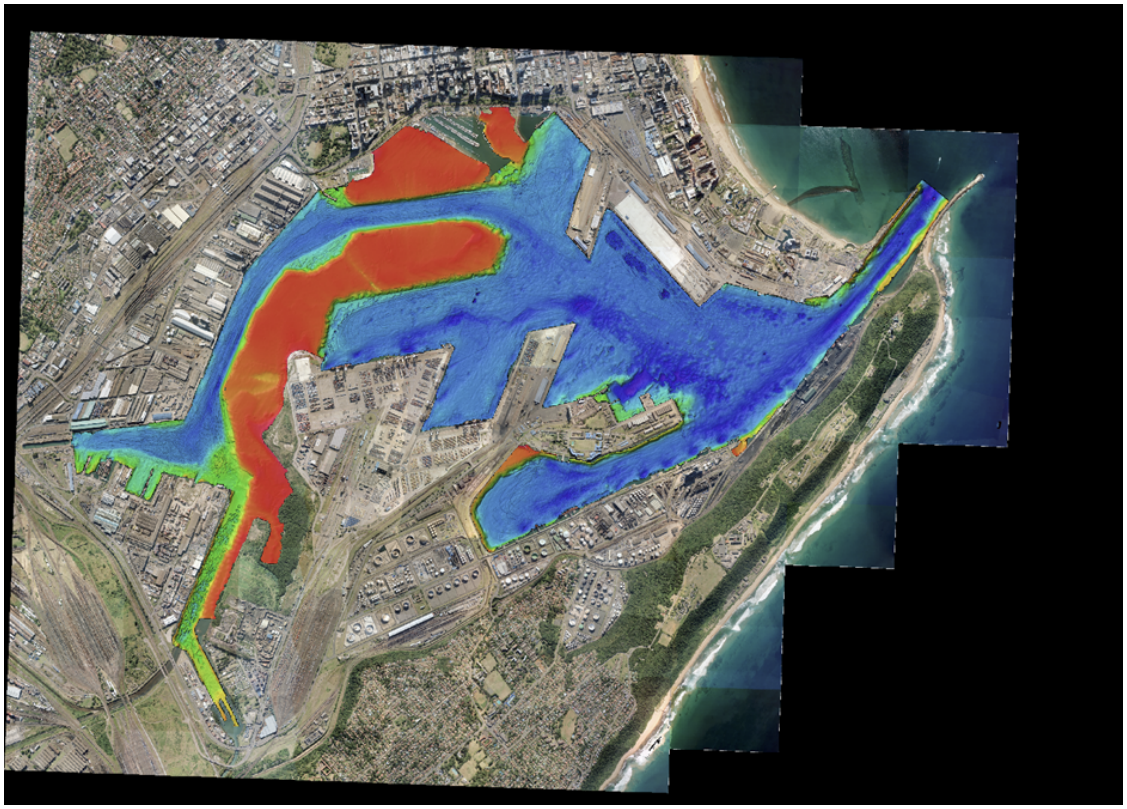
Export Scene to a Georeferenced Image

One important capability that has been missing from Fledermaus 8 so far, is the ability to export a georeferenced image of the entire scene. This new option is located in "File > Export Scene to Image" and produces either a GeoTIFF or other common image formats with a companion world file for bounds. There is also the same scaling option to create high resolution images, that is available in the standard screen capture tool.



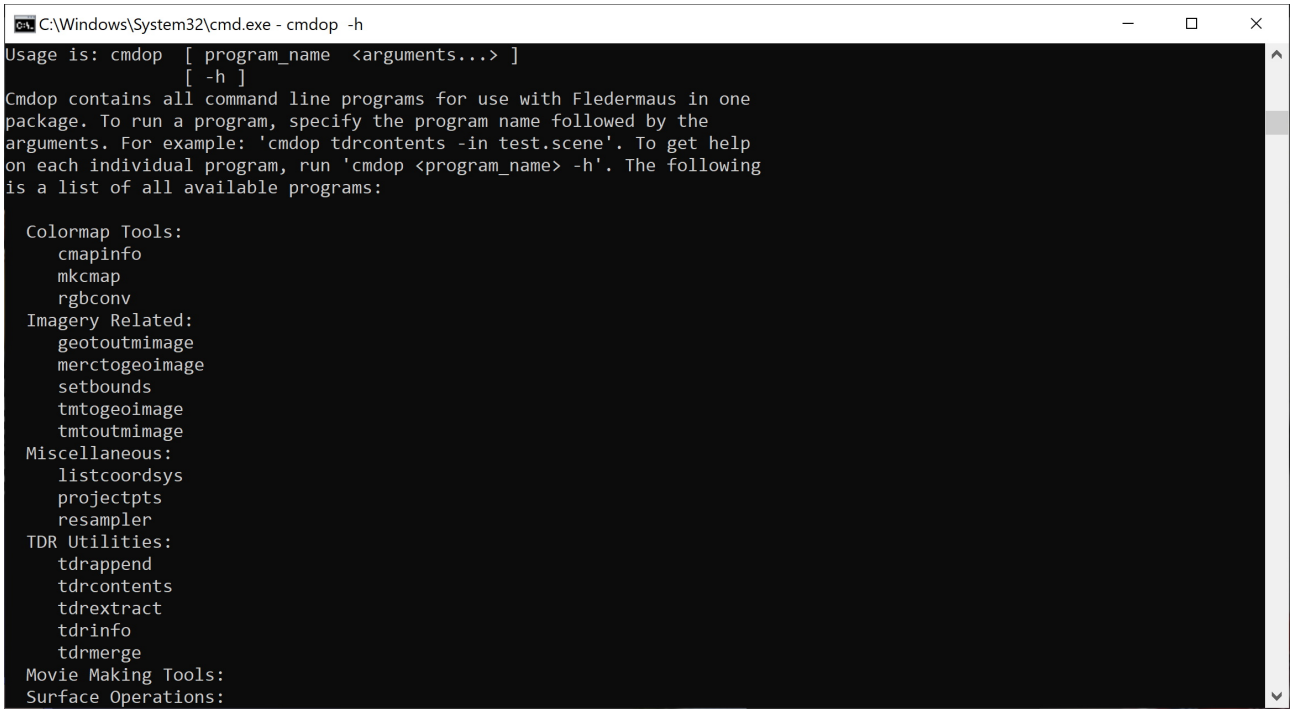


A sample output from the above scene, is displayed below:



Command Line Scripting

A new tool for scripting operations on the command line has been added to Fledermaus 8.3.0. This tool is an optimized version of the "cmdop" tool that Fledermaus 7 users may be familiar with. This tool allows common operations, such as importing and grid operations, to be run as part of script. By using a script to perform these operations, large numbers of files can be processed in batch.



The FM8 cmdop includes a set of utilities optimized for the new file formats, including three new tools for operations on QPS surfaces:

surfacecontour: For creating contours from a surface file
surfaceextract: For extracting a subset of a larger surface file
surfacediff: For doing a surface difference between two surface files

Each of these operations use the same algorithms and options as the versions directly in Fledermaus.

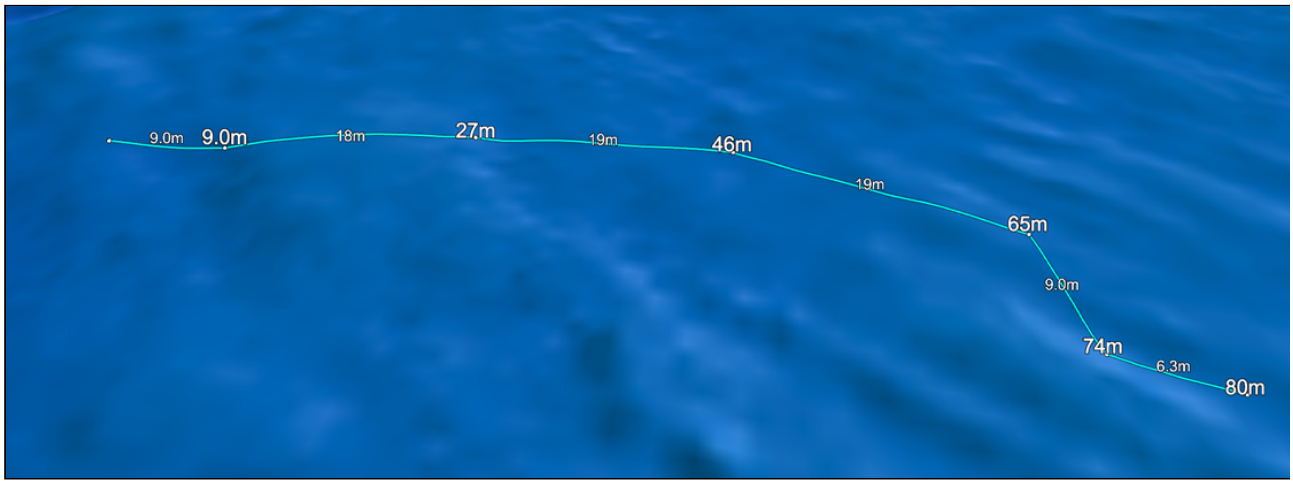
Fledermaus 8.3.0 - Improvements

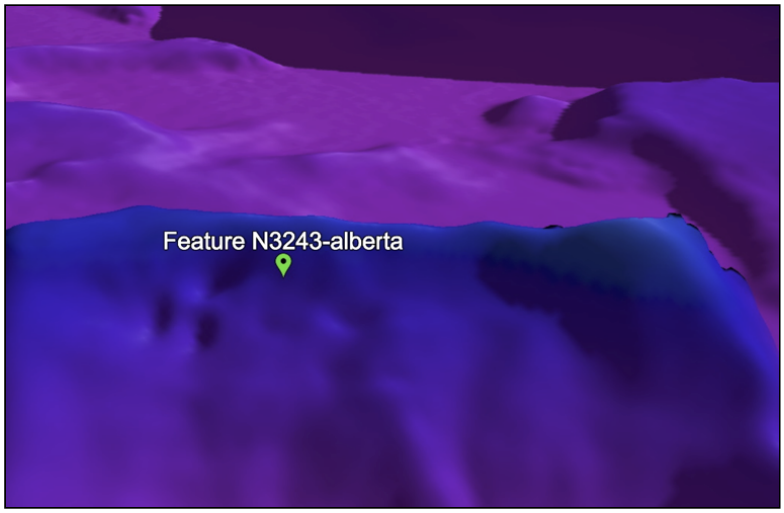
On this page:

- Improved text rendering in 3D Scenes
- Shading for Point Spheres
- Memory Usage Tracking
- Grid Export options for Surfaces
- Image Export options for Surfaces
- Scalar Improvements
- Improved Error Detection on Intel Based GPU

Improved text rendering in 3D Scenes

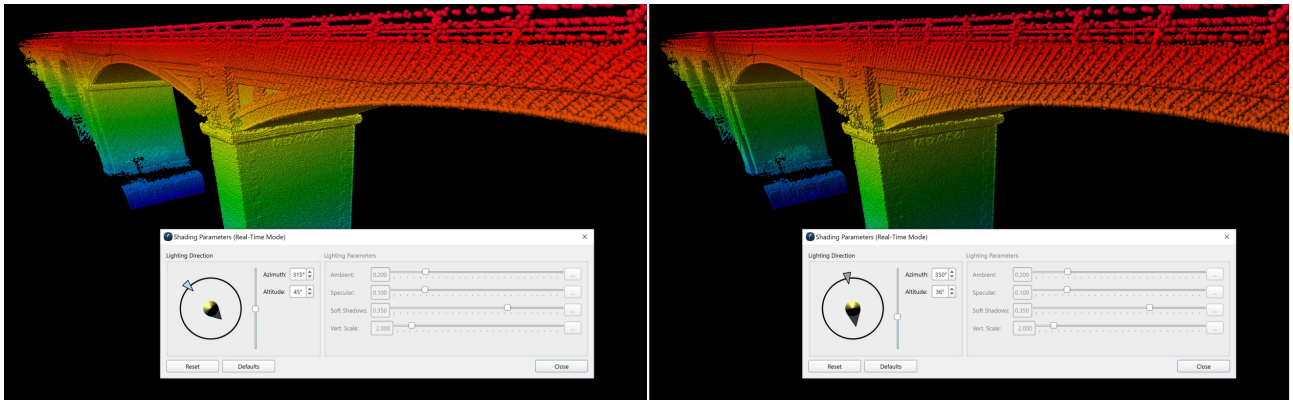
The method of drawing text within the 3D scenes has been greatly improved, with better readability, crisper text, and better sizing. This applies to all areas where text is used in a scene, such as the measurement tool, space-time note labels, and imported CAD files.





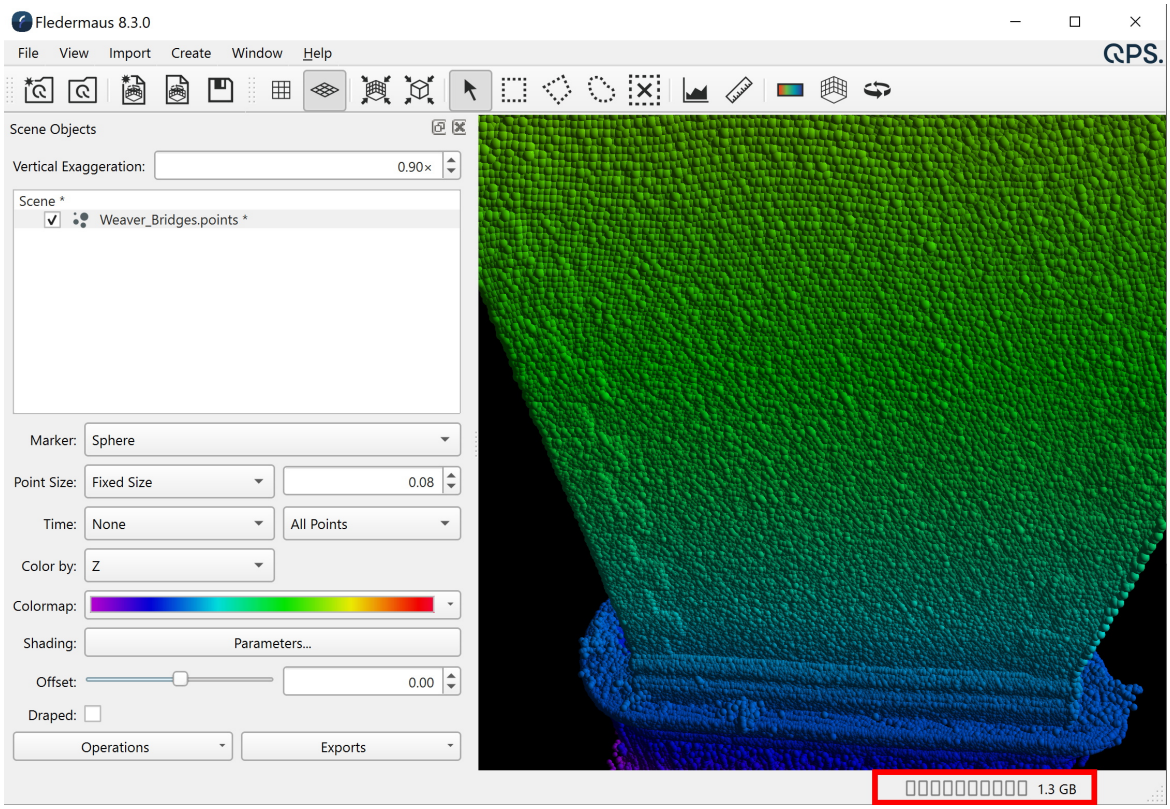
Shading for Point Spheres

When using the Fledermaus point object, there a number of options of how to draw each individual point. The "Sphere" option uses a fully shaded sphere for each point, which is now shaded using the standard lighting controls. This is a good option when looking for more control on the shading then Eye-Dome Lighting, and have a powerful graphics card. The downside is that the sphere shading is resource intensive, especial with large point clouds.



Memory Usage Tracking

A memory usage tracker has been added to the status bar of Fledermaus, bringing it in line with the same widget in Qimera. This display shows the current memory usage by Fledermaus, and the overall percentage compared to total memory.



Grid Export options for Surfaces

Additional export options have been added for surfaces, matching the options from Qimera and Fledermaus 7.

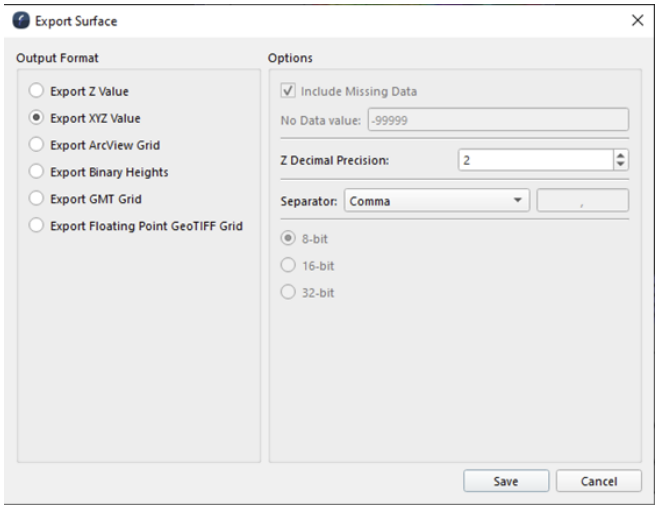
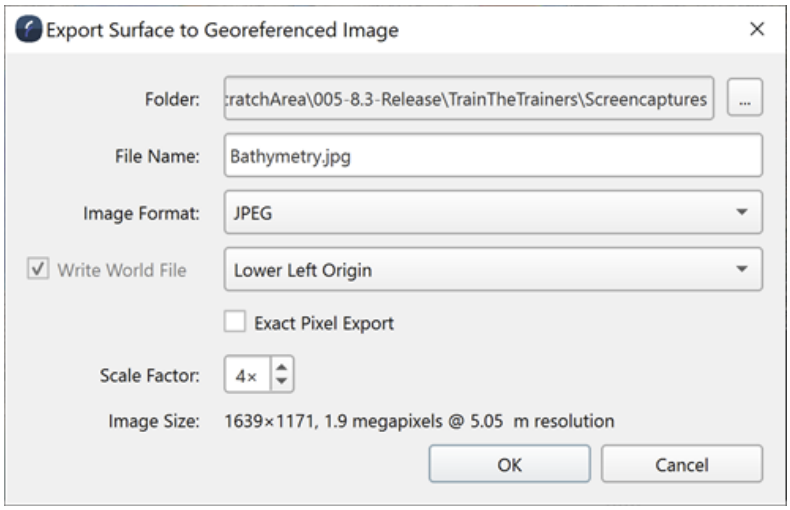
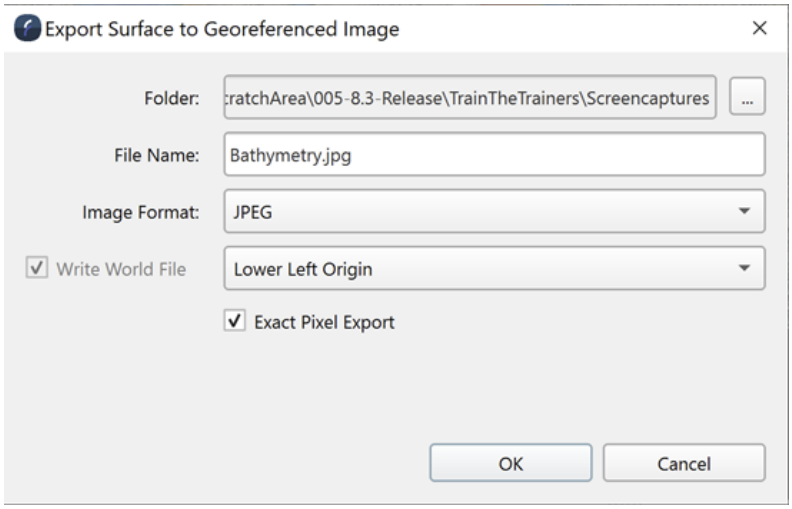


Image Export options for Surfaces

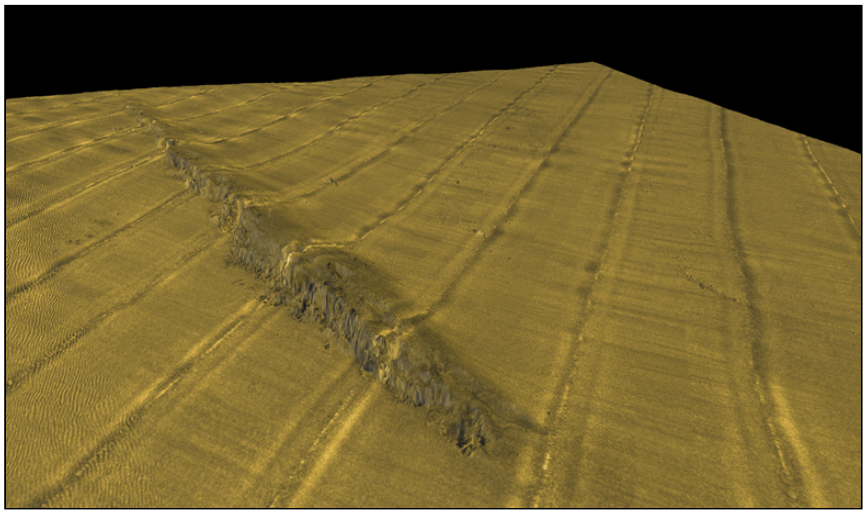
The image export for surfaces now defaults to a rendered surfaces that can be dynamically scaled up, similar to a 3D screen capture or the new Export Scene to Image function.

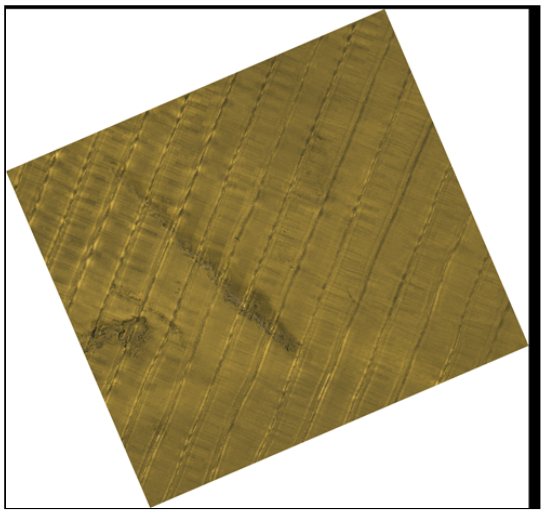


The exact pixel option is used to create an output image that exactly matches the resolution and dimensions of the original source grid. It is a 1:1 match for the source, and can be used when this is a requirement of the output product.



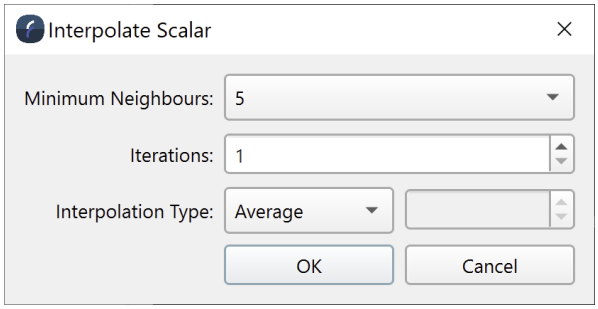
It is important to note that there is also the option to export the draped texture of a surface to an image. This option is labelled "Export Texture to Image", and will re-create the exact image used before draping. This can be handy when the original image has been lost, or is not easily accessible. Below is an example of a 3d scene with draped sidescan, and the export texture as an georeferenced image:



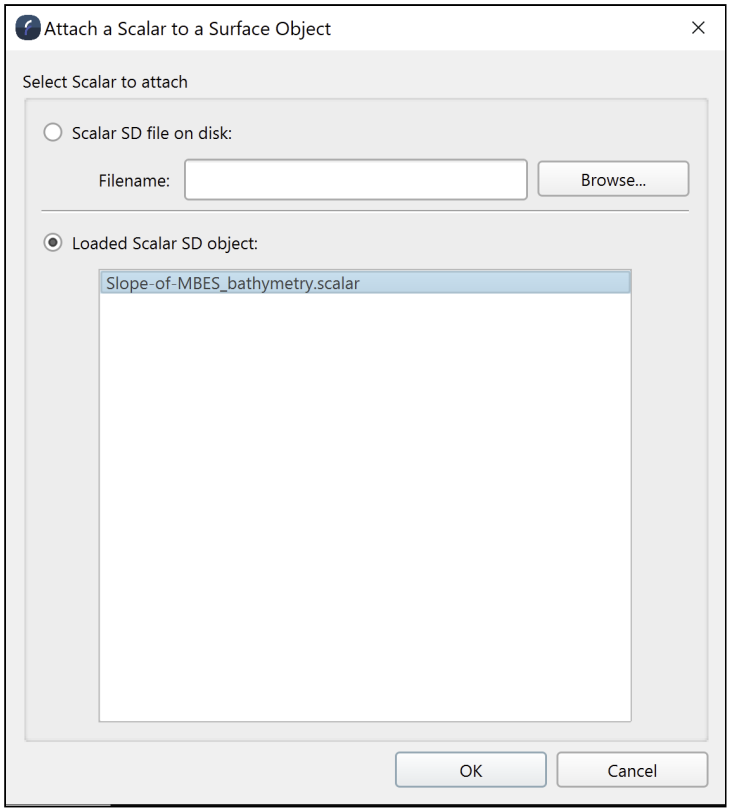


Scalar Improvements

In addition to general speed and stability improvements, the scalar tools have been further improved to address missing functionality. The two new tools are interpolation, and attaching a standalone scalar to a surface.



The Interpolate Scalar tool uses the same algorithm as the Interpolate Surface tool, and allows small holes in the scalar surface to be filled in. This tool is not designed for large area interpolation.



The Attach Scalar tool allows selecting a Scalar file that is in the scene or from an exterior file. The scalar to attach must be in the Fledermaus 8 Scalar format, so any Fledermaus 7 scalars need to be updated before attaching. Once a Scalar is attached to a surface, the scalar values will be displayed in the geopick point area of the status bar, and the scalar can be used for draping on the surface. Although a generic format, the Scalar surface is often used for data such as a backscatter mosaic, or a grid of magnetometer data.

Improved Error Detection on Intel Based GPU

Embedded Intel graphics cards have considerable more limitations then dedicated cards from Nvidia or AMD. As a result, certain operations are limited when using an integrated Intel GPU (graphics processing unit). Fledermaus 8.3.0 has better error messages to help identify when a problem has occurred with an Intel GPU.

Fledermaus 8.3.0 - Resolved Bugs

The following bugs were solved in this release.

Summary	Issue Key	Priority	Affects Version/s	Component/s
Importing an FM7 Vertical Curtain object would ignore the transparency	SFM-4491	☐	8.2.2	Import - Image
Importing newer DXF files could cause a crash	SFM-4469	☐	8.2.2	Import - CAD (vector)
Resampling of surface objects created gaps between grid tiles	SFM-3973	☐	8.0.0	Operations - Surface
Saving a compressed scene file in a non default path would prevent opening the file	IFM-922	☐	8.2.0	Export - Compressed Scene File
When opening a .grd file from Qimera or Qinsy, the surface was not automatically shaded	SFM-4529	☐	8.2.0	Import - Grid
Creating a new colormap and then trying to use it right away, would not work	IFM-898	☐	8.0.0	Color Maps
Changing the colormap range for a Static surface was not applying the changes		☐	8.0.0	Color Maps
Could not create Surfaces (or projects) with special characters, such as "umlaut" as part of the name	FM-8104	☐	8.0.0	Fledermaus - General

Summary	Issue Key	Priority	Affects Version/s	Component/s
Screen captures and movies had default shading compared to the actual 3D scene	FM-8018	☐	8.0.0	Export - Screen Captures
Translations, Rotations, Scales and Pivot changes applied to objects in FM7, where not appearing correctly	FM-7783	☐	8.0.0	Import
WaterColumn rendering was incrementing at 1 second intervals	FM-7227	☐	8.0.0	Objects - Watercolumn

Fledermaus 8.3.0 - Known Issues

For this release, the following are known issues which we plan to address in upcoming releases.

Issue	Description	Affects Version	Expected Fix Version
Importing geographic data with non-square cell sizes	The current QPS surface only supports grids with square cell sizes, so surfaces that have rectangular cell sizes will be detected and not imported	8.0-8.3	TBD

Fledermaus 8.3.0 - Transitions from Fledermaus v7

A major focus for 8.3.0 was removing workflow barriers for Fledermaus v7 users moving to Fledermaus v8. This guided the bug fixing, the new features, and the implementation of key missing functionality.
Please refer to the page below for full details on the transition process:

Fledermaus 8 - Transitions from Fledermaus v7

Fledermaus 8.3.0 - All Implemented Feedback

Our current focus for Fledermaus is to address workflow concerns for users moving from Fledermaus v7 to Fledermaus v8. Once the bulk of users have moved to Fledermaus v8, we will more actively implement functionality from the Feedback project.

Key	T	Summary	Votes
FFM-96	↑	Support of GeoImage export in Fledermaus 8	1

1 issue

Fledermaus 8.4.0 Release

June 16th, 2021

We're pleased to present Fledermaus version 8.4.0. In this release, we introduce new features, with a focus on new interactive 4D analysis using profile tools along with many improvements that were requested by the active Fledermaus user group to ease their migration from Fledermaus 7 workflows. Read below for details.

Highlights

- New and empowered profiling object and functions
- You are able to export Terrain Meshes with colors
- Pipeline object rendering and sharing
- Improvements for scalar and surface data management and handling
- Improvements in signature Turntable and bounding box labels
- Improvements on objects CRS handling and reprojections

Voting System

In this release, we have focused on migration blockers for Fledermaus 7 users and did not consider items from the Voting System as these are all new functionality. We will look to the Voting System in the coming releases as the migration path for Fledermaus 7 improves. For more information, see our Voting system Policy and Using the Voting System.

The Feedback Project helps us to continue improving our software products. At the moment, our Voting System is down as described at the top of the Voting system Policy page. Despite the system being inaccessible for voting for a short period, we still use it to prioritize developments while we await a solution from our provider, Atlassian.

- Fledermaus 8.4.0 Important Notes
- Fledermaus 8.4.0 Improvements
- Fledermaus 8.4.0 Resolved Bugs
- Fledermaus 8.4.0 Known issues
- Fledermaus 8.4.0 Transitions from Fledermaus 7
- Fledermaus 8.4.0 New Functionality

Fledermaus 8.4.0 Important Notes

On this page:

- The Fledermaus 8 Surface format
- Licensing
- Installers
- Support for Fledermaus v7.X
- End of support for Fledermaus on Linux RHEL 6

The Fledermaus 8 Surface format

There are many improvements and changes as to how the Fledermaus surfaces work. Please read the following Technical Document to get familiar with the changes to the Fledermaus surface formats.

Licensing

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8.4 alongside Fledermaus 7.8 or newer, using the same license.
No changes to the license configuration have been made with this release. This allows trying out the new features of FM 8.4, while continuing to use Fledermaus 7.8 on the same machine.

Installers

The Fledermaus installer will install by default into subdirectories with the 8.4.0 version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus.
This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time.
Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.4.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus v7.X

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications. Support for Fledermaus 7 will continue while the user base continues to transition to work with the new and improved Fledermaus 8.

End of support for Fledermaus on Linux RHEL 6

Please note that Fledermaus has dropped support for Linux RHEL 6 in all versions. The minimum supported version is now RHEL 7.

Fledermaus 8.4.0 Improvements

On this page:

- Surfaces data management
- Scalar data management
- Turntable Widgets and Scene guides
- Geographic Data objects
- Reprojections & Coordinate Reference System Management

Surfaces data management

You can now adjust the visuals (colormap scheme and shading and illumination) of several surfaces at the same time, allowing you to adjust the colormap and range to the selected set of surfaces. Figure 1 shows several geographic surfaces, loaded one at a time, before adjustment, each one has its own colormap and then after adjustment.

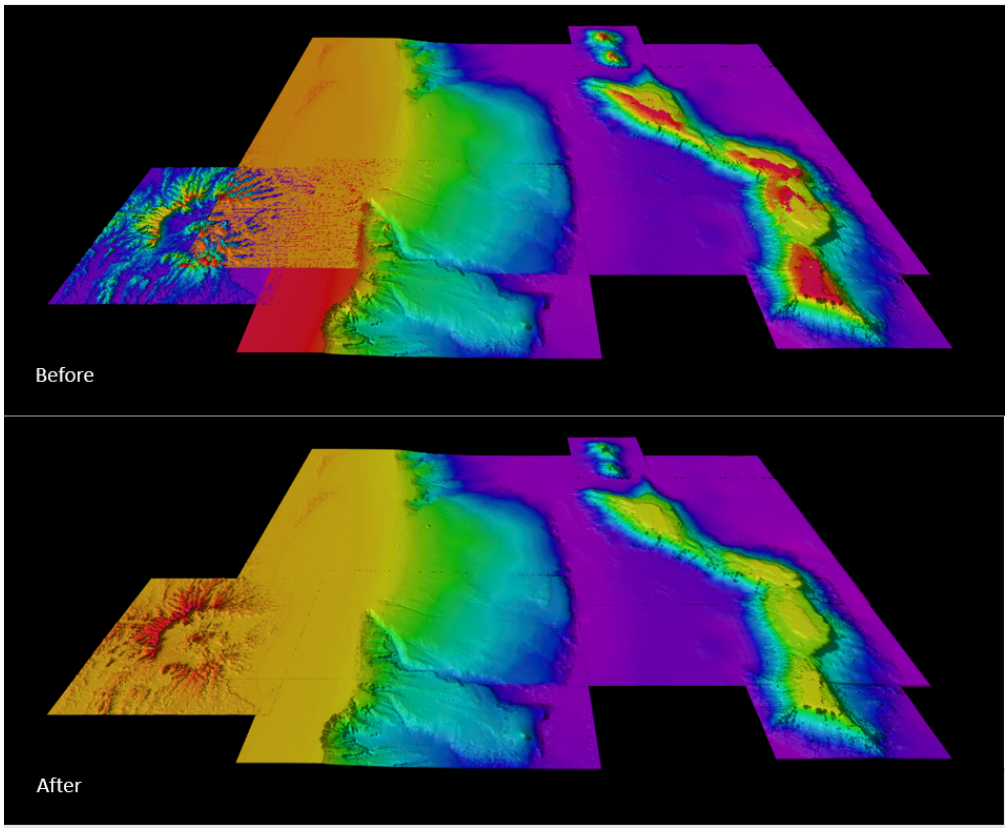


Figure 1. *Surfaces loaded before and after color and total data histogram for the group of them.*

The histogram loads for the entire selected dataset, allowing to work with the set in one go. See figure 2 with the histogram populated for all surfaces loaded in the 4D Scene.

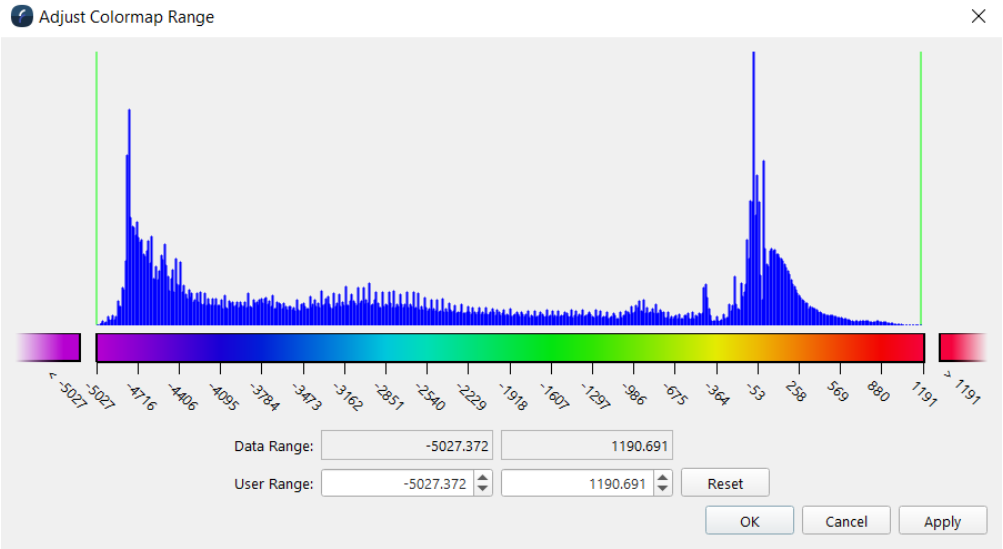
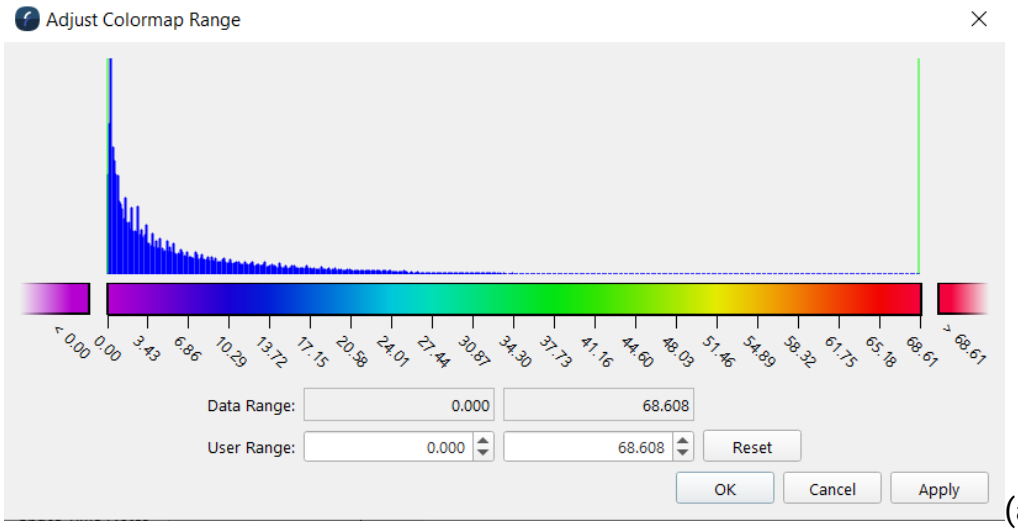


Figure 2. *Adjust Colormap Range Dialog*

Additional surface exports fixes and improvements were done: adequate empty cell values handling and the data fusion functionality released in 8.3.0 with the Export scene to geoimage, now supports transparencies. With the release of Fledermaus 8 there were a number of improvements and changes on how Fledermaus works with surfaces, these are explained in detailed in the Understand Surfaces in Fledermaus 8 technical note.

Scalar data management

You can now work, select and establish range with the colormap and histogram of the scalar object files, as well as that of the attached scalars through the Adjust Colormap Range dialog (Figure 3a). As with surfaces, you can work with several objects at the same time and they would be included in the total of the histogram adjust dialog. See figure 3b)



(a)

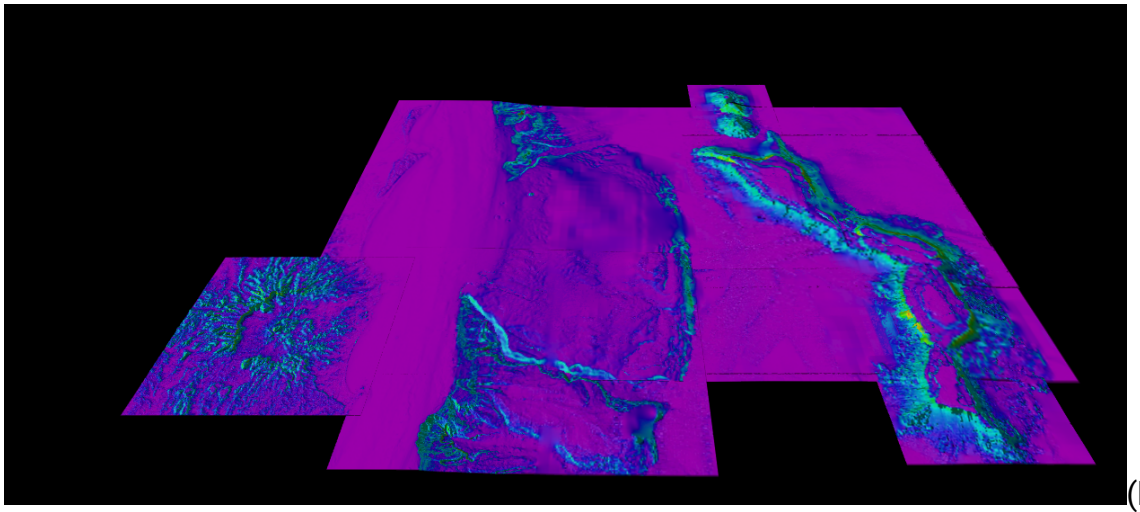

(b)

Figure 3. *Scalar colormap and histogram adjust dialog*

Turntable Widgets and Scene guides

Bounding box and Turntable widgets now have labels for guidance, as well as a North (N) label for having cardinal directions within a scene (as shown in Figure 4 and 5).

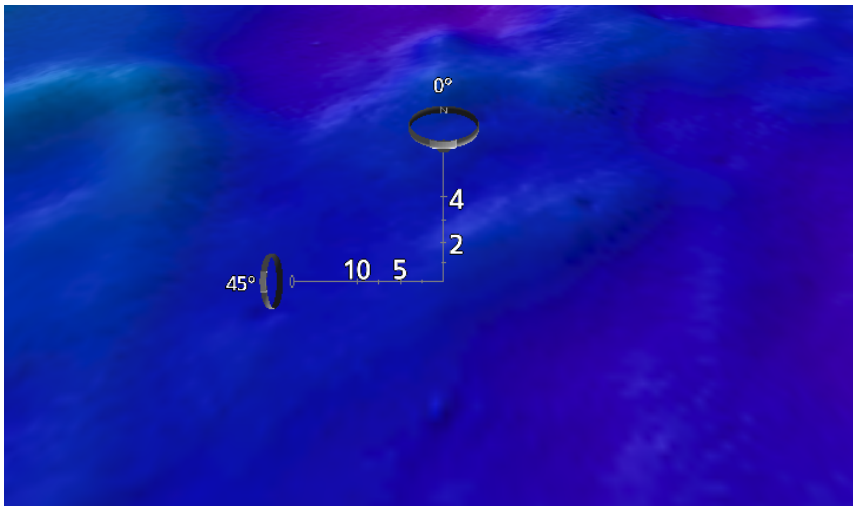


Figure 4. *Turntable widgets with labels and N for reference*

Note that units are that derived from the Coordinate Reference System (CRS) of the Scene and it is reported in the Scene properties Dock.

Geographic Data objects

It is now possible to work with geographic datasets by resampling non-uniform cells, as original data is in degrees, as such datasets that are geographic will align better, and now load. This was a known limitation from the last feature release of 8.3.0. See Figure 6 the 4D Scene with with a scene composition of several geographic datasets on Fledermaus 8.

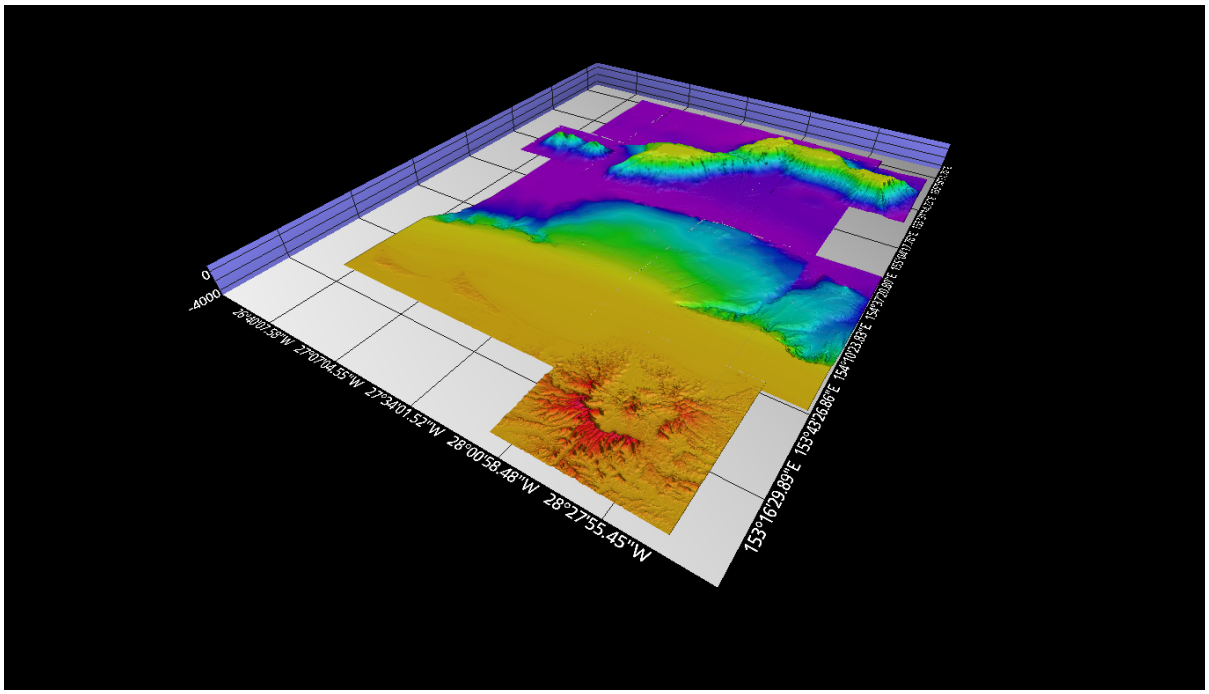


Figure 5. *Fledermaus Scene with geographic datasets. Credits to* DeepReef.org

Reprojections & Coordinate Reference System Management

You can now load data that has a different Coordinate Reference System (CRS) and reproject it. The application will give you a warning and provide guidance to the steps that you have to take to load the data successfully to the 4D Scene map display. . Similarly, if you change the Scene CRS, the application will ask you if you want to reproject the objects that are part of the scene to be able to display them.

You can change the CRS after import. While the data is not loadable, you will see a red bounds polygon of where the data would sit in the scene. You can find the reproject option or change CRS on the right-click of the object or Operations.

Fledermaus 8.4.0 Resolved Bugs

On this page:

- Surface Object Management and Operations/ Bugs
- Scalar Object Management / Bug
- Miscellaneous / Bugs

Bug Fixes

Below you will find listings of bugs which have been reported in previous releases and which have been solved for the 8.4.0 release.

Surface Object Management and Operations/ Bugs

You can now load surfaces from QPS project objects from any layer	8.4.0	☐
You can export surfaces as Geotiff with empty cells values and expect 3rd party applications to handle them properly	8.4.0	☐
Improved accuracy of volume calculations between surfaces	8.4.0	☐
Summary	**Fix Versions**	**P**
Fixed timing issues with projected scenes	8.4.0	☐
Geotiff exports from surface now works as intended and contains also hillshade from rendered image	8.4.0	☐
The transparent background option for Create GeoImage now works as expected	8.4.0	☐
Surface differences now works for geographic datasets	8.4.0	☐

You can now load surfaces from QPS project objects from any layer	8.4.0	☐
You can export surfaces as Geotiff with empty cells values and expect 3rd party applications to handle them properly	8.4.0	☐
Improved accuracy of volume calculations between surfaces	8.4.0	☐

Summary	**Fix Versions**	**P**
Profile surface differences plot as expected	8.4.0	☐

Scalar Object Management / Bug

Summary	**Fix Versions**	**P**
User input for setting the histogram scale for attached scalars now works correctly	8.4.0	☐
Editing the color map range works now for attached scalars	8.4.0	☐
Histograms for the scalar color map range are now visible in the histogram adjustment dialog	8.4.0	☐
Cropping geographic images works as expected	8.4.0	☐

Miscellaneous / Bugs

You are now able to create contours without a shift resulting from an incorrect gridding with height or height and statistics	8.4.0	☐
It is now possible to work with eye dome lighting without the row appearing in the display	8.4.0	☐
Average calculated slope from profile plot works as expected remaining constant regardless of plot size and aspect ratio	8.4.0	☐
Summary	**Fix Versio n/s**	**P**
It is now possible to reproject objects that failed to load correctly, with ability to configure the geodetics settings	8.4.0	☐
Profile tool ignores geoimages as it should when profiling surfaces	8.4.0	☐
ASCII parser configuration file now saves the configuration with all the information to load files	8.4.0	☐
Zoom to object function 2D view does now performs as expected	8.4.0	☐
Slideshow Transparency settings causing an unintended exit were addressed	8.4.0	
Points and line objects import dialogs have the scene geodetic configuration set as the default for improved user experience	8.4.0	☐

Fledermaus 8.4.0 Known issues

On this page:

- Known issues

Known Issues

Below you will find listings of bugs which have been reported in previous releases but have not yet been addressed.

Known issues

Issue	Summary	Affects Version/s	P
Bug	There are situations when mesh creation gets stuck in 3% of the normal calculation of the meshes when working with the PCL algorithm. Workaround is to use the Quick Neighborhood algorithm when working with QPDs	8.2.0	☐
Bug	When working with multiple passes of MBES data, the differing passes can result in a suboptimal mesh solution. Workaround is to create the mesh with the best resulting one pass mesh.	8.2.0	☐
Limitation	Fledermaus does not support 2018 AutoCAD dxf/dwg files. Workaround is to export prior versions of dxf and dwg.	8.3.0	☐
Limitation	GMT v5 is not currently supported	8.0.0	☐

Issue	Summary	Affects Version/s	P
Limitation	It is not possible to establish a custom CRS for the scene that has no known EPSG code within the Fledermaus graphical user interface. Workaround is to continue to work with Fledermaus 7 for this workflow if needed. Once you have an object with the custom coordinate system you can load it into FM8.	8.0.0	☐

Fledermaus 8.4.0 Transitions from Fledermaus 7

On this page:

- Fledermaus Core users
- Fledermaus Viewer

Fledermaus Core users

The commitment to our user base continues, the improvements of 8.5.0 continue to be work in removing workflow barriers for Fledermaus v7 users moving to Fledermaus v8. We are working with as our guides for bug fixing, the new features, and the implementation of key missed functionality. We would greatly appreciated to continue to hear from the user base to know and understand your priorities to work with you. Some of those listed in the Improvements and New Functionality are: Image repositioning, Draping complete operations improvements, Contouring coloring options, Labelling, QPS Project based workflows, renaming, Statistics and exports of created elements within Fledermaus.

Please refer to the page below for initial transition process plans, further updates on transition functionality will come at a later date. If you have doubts about your workflow and the path to follow using any of the Fledermaus versions and its functionality, please contact us. We will be happy to address your questions.

Fledermaus 8 - Transitions from Fledermaus v7

Fledermaus Viewer

Please note that since version 8.3.3, the Fledermaus Viewer runs for all Supported Operating system, as a stand-alone installer.

Fledermaus 8.4.0 New Functionality

On this page:

- Dynamic Profiling Objects and Improved Cross-Profiling Support
- Meshing Exports improvement
- Pipeline object
- Fledermaus Viewer supports loading of Lidar Ascii PTS Files
- Locate a point by editing a Space Time Note
- Surface Masking

Dynamic Profiling Objects and Improved Cross-Profiling Support

In addition to standard profile tools, Fledermaus 8.4 now provides you the ability to create a Profiler object that can be saved. Profiler objects remain if saved in a scene and can be shared as part of the scene. They will also dynamically update as the scene changes. Once the profile path is set, any visible surfaces will show a profile in the profile dock where they can be interactively analyzed, and compared.

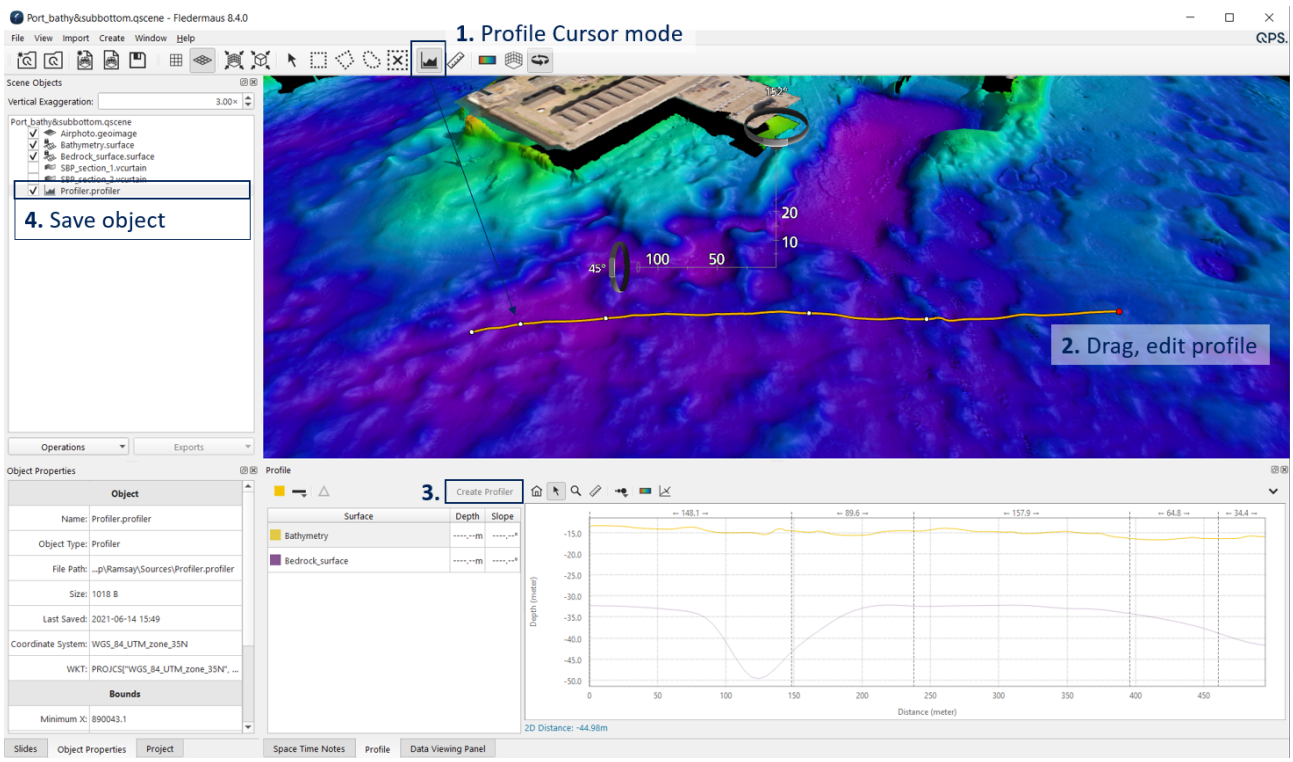


Figure 1. Profile Object, Scene Toolbar cursor mode & Profile Dock

You can create the profile object by working with the Profile tool cursor mode from the Scene Toolbar or you can also import a profiler object by loading a path of control points to the 4D Scene. You can now also work with 3D line and make it a Reference profile to be

plotted on the profile dock for your own analysis and comparisons with surface profiles sampled from the same path.

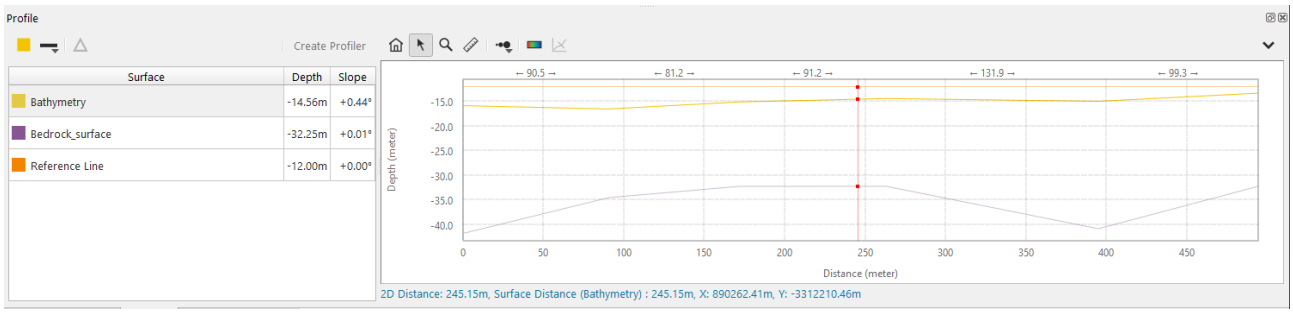


Figure 2. Multiple Surfaces for profile and Reference profile

The profile dock has a built-in cross profile analysis tool which can be shown or hidden as desired, as shown in step 1 of Figure 3. You can edit the profile path and cross profile position and radius, meaning extent from main profile to each end of the cross profile, interactively in the 4D Scene for ease of visual interpretation, as shown in step 2a of Figure 3. Finally, you can work with spaced intervals as seen in step 2b of Figure 3.

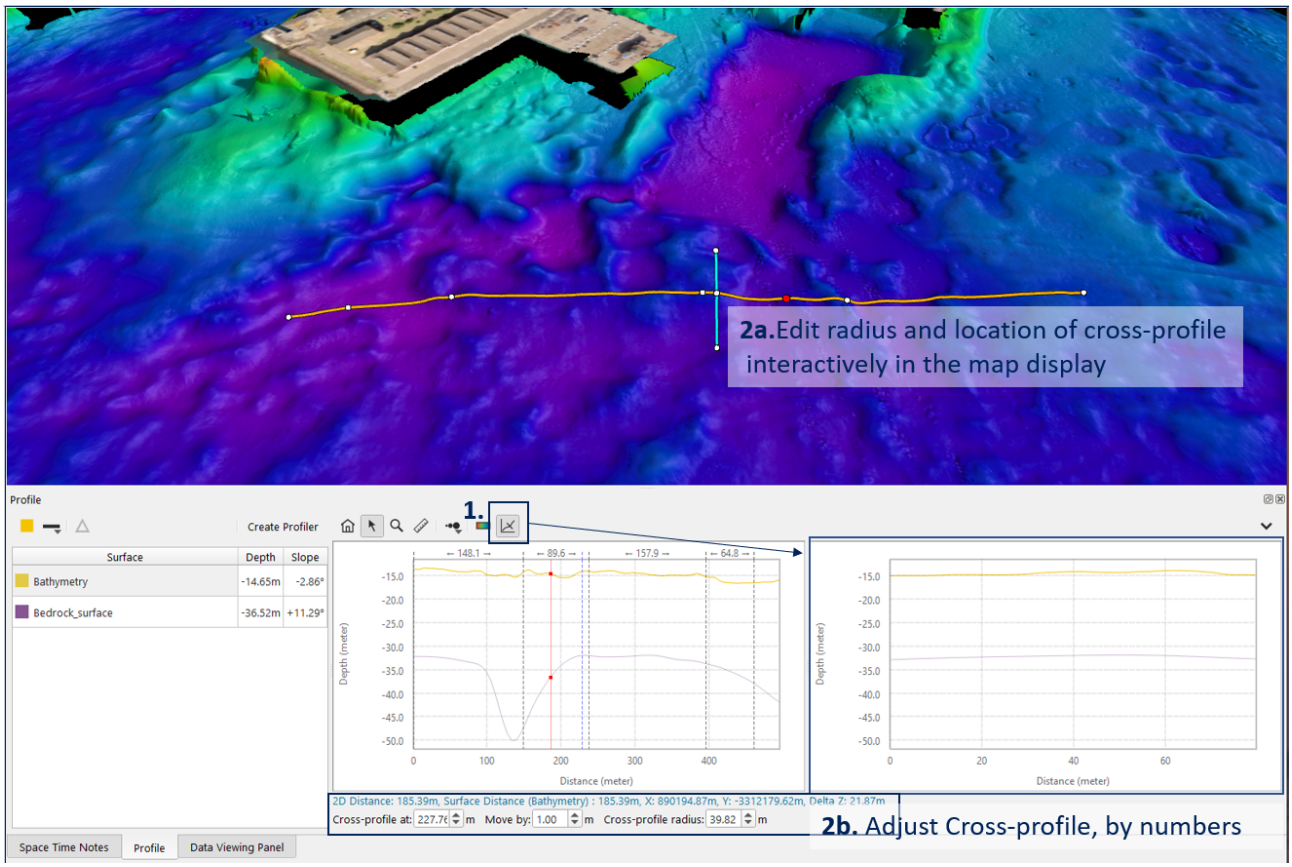


Figure 3. Cross profile plot and dynamic editing mode for it on 4D Scene highlighting steps of how to work with them.

Working with the cross-files allows you to create a cross-profiler object series to add to the scene, you set desired the control points intervals.

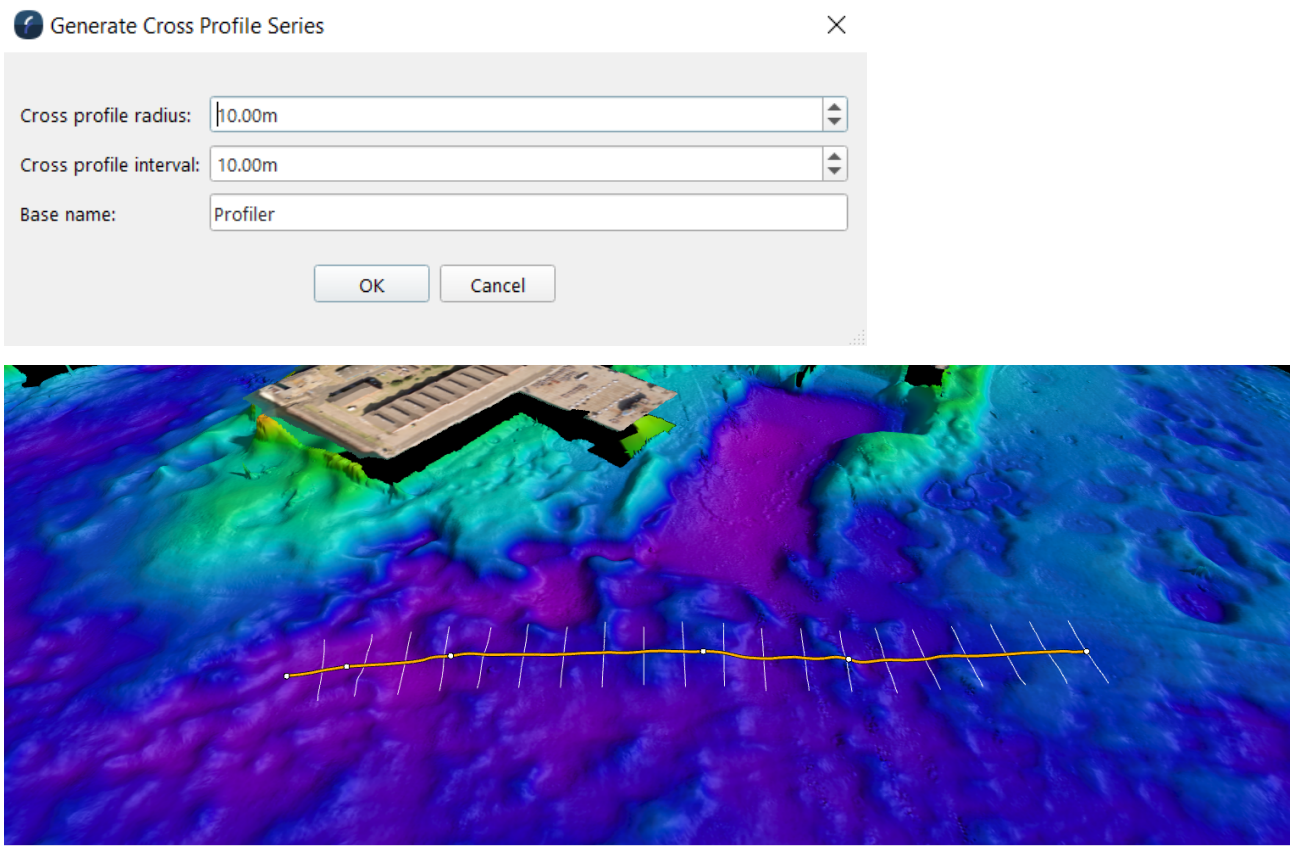


Figure 4. Cross Profile Series generated

Meshing Exports improvement

Since the release of Fledermaus 8.0 you have been able to create mesh objects from point clouds. Since then, with each release you are able to work more and get more details and also adjust each of the variables that affect the mesh creation. Meshes allow you to visualize and inspect with a finer level of detail features that would be averaged out with other 3D representation models such as grids. With this release, you are able to export a selected area from a mesh which also includes colors, as shown below in Figure 5.

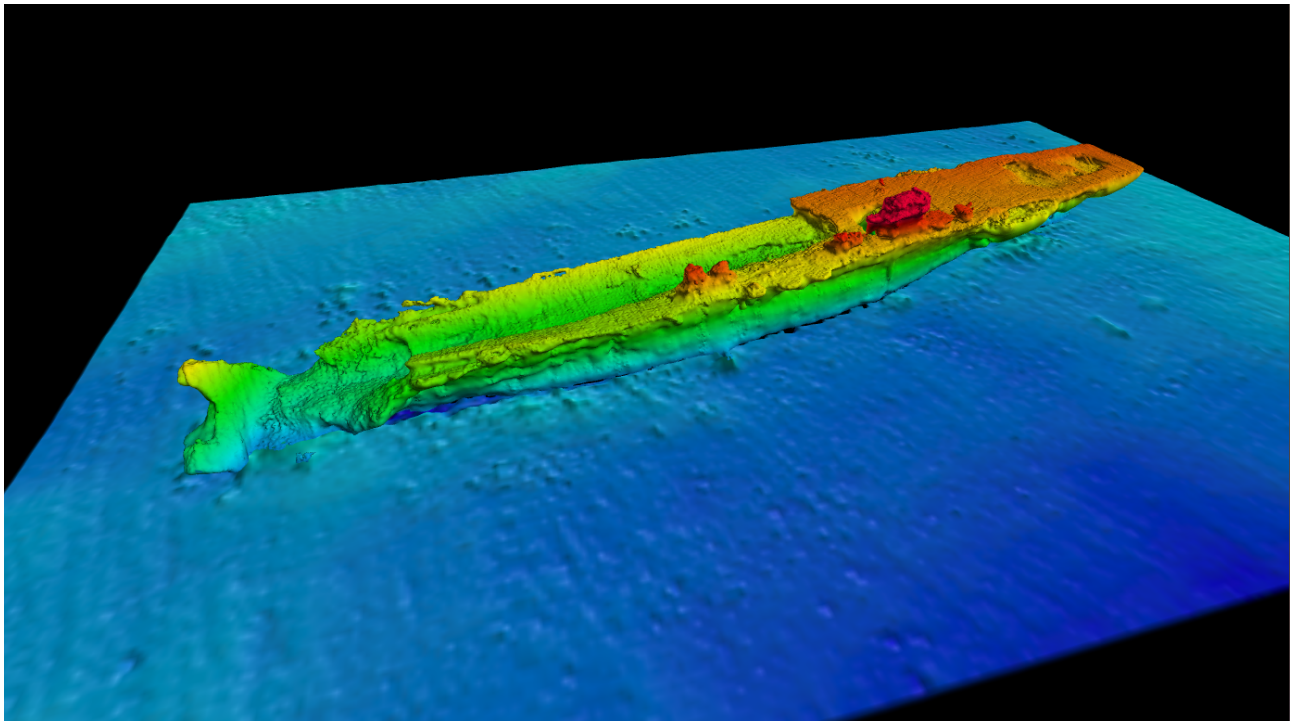


Figure 5. Mesh export object (.OBJ) imported in Fledermaus. USS Saratoga - Data Credits. Dr. Trembanis University of Delaware.

Pipeline object

If you open a Qimera TOP (Top of Product) project in Fledermaus 8 you will be able to load and visualized the cable/pipe objects in the 4D Scene (Figure 6). This adds to the ability of Fledermaus to be used as a way to prepare a Scene as an additional deliverable that is easy to share with end recipients who then can load the Scene in the Fledermaus Viewer (Figure 7). For this release, the cable/pipe objects are supported. In a future release, we will add the flag markers associated with x-point listings that are also generated in Qimera.

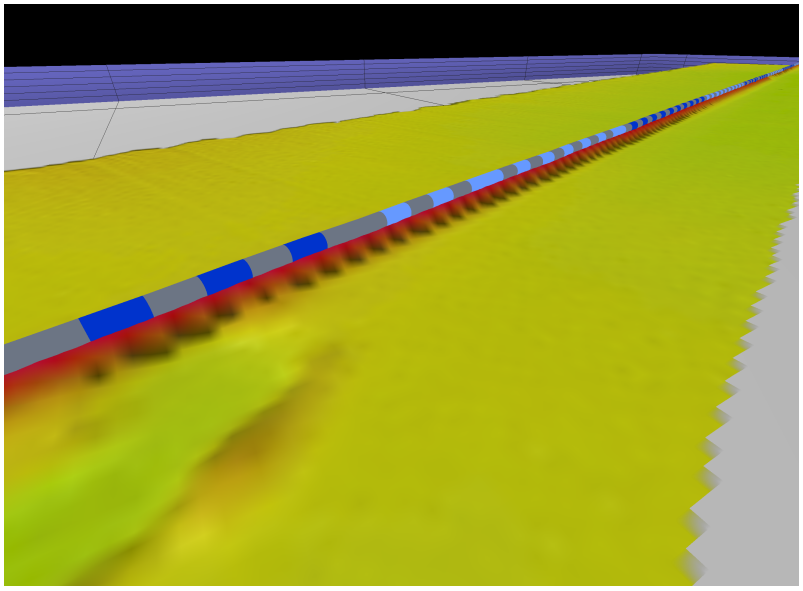


Figure 6. Pipeline object loaded on Scene 4D of Fledermaus

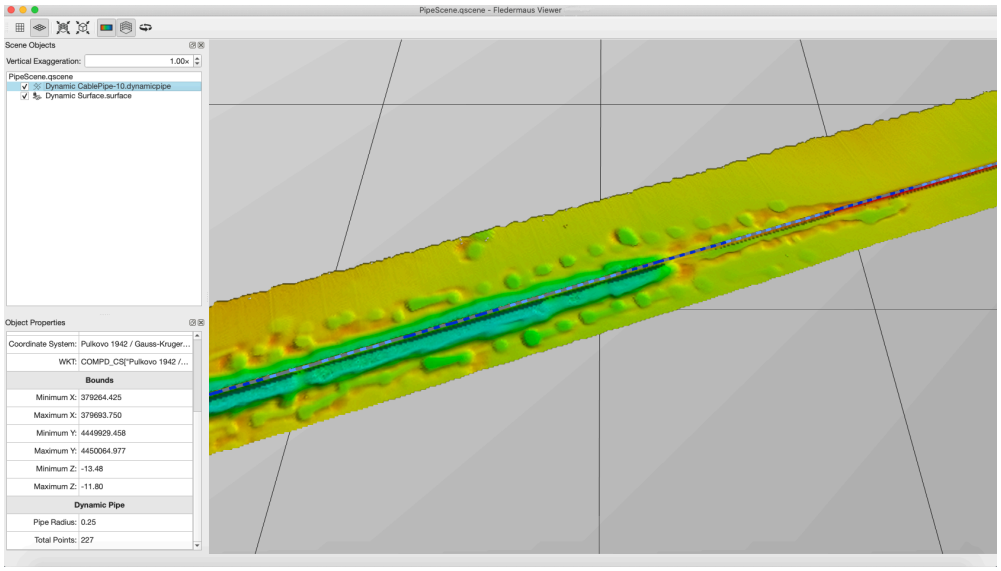


Figure 7. Pipeline object opened on the Fledermaus Viewer.

Fledermaus Viewer supports loading of Lidar Ascii PTS Files

This allows users to quickly load and visualize these kinds of point cloud data with the Fledermaus Viewer alone, enhancing the use of the shareable scenes to supporting data that is available to users to whom you share share scenes with. Recipients of your Scenes can now load in point files to augment the scene, but they won't be able to save it since the Viewer specifically blocks saving.

Locate a point by editing a Space Time Note

You can now locate or navigate automatically to a known location (X,Y,Z) within the 4D Scene by editing a Space Time Note. You can also set and edit the view once you achieved the desired Scene 4D perspective.

Surface Masking

It is possible now to mask surfaces based on other surfaces and as well as images. See Figure 8 for an example of the visual of bedrock from a masked bathymetric surface.

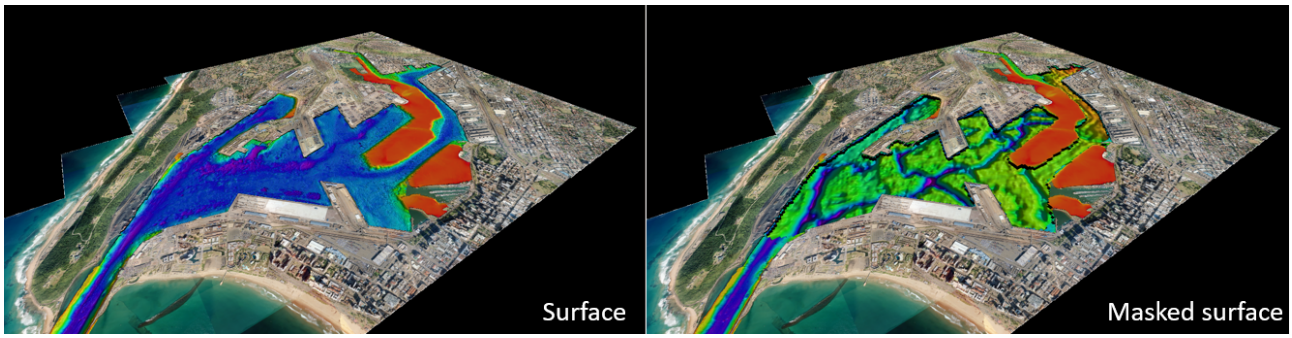


Figure 8. *Bathymetric Surface masked by Bedrock surface examples*

Fledermaus 8.4.1 Release

27 Jul 2021

We're pleased to present Fledermaus version 8.4.1. In this release, provide improvements that were requested. Read below for details.

Bugs

- It is now possible to initialize a 3D device and work with it within the Fledermaus preferences
- You can now activate the 3D flight mode in the explore menu and use the 3D flight mode when working with a SpaceNavigator or Patriot device.
- You can now load subsequent images and expect the georeferencing set to adequate defaults and scene CRS for input and output CRS settings.
- You are able to change the scene CRS, and the application will prompt you to reproject the visual objects that would need it to be able to render in the map display
- Contour loading speed and data management has improved, as it was optimized
- Fixed a small potential offset within a cell size when generating contours.
- You will not receive a false error on the ArcGIS project and geodatabase connection
- You can now copy surfaces and attach scalars and not cause a shift in the surface
- You can now change the zoom in 2D and 3D when working with the selection mode widgets
- It is possible for Fledermaus 8 to render Fledermaus 7 labels.
- QPS processed point format QPD now can re-projects on the fly
- Addressed issue with labels of the bounding box with Latitude and Longitude, North/South axis showing E/W
- You can now share a scene as a qsz which will include images from the presentation
- You are able to work transparencies for all types of point markers

Other

- Fledermaus will now warn you when you are going to run out of maintenance

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Fledermaus 8.4.2 Release

27 Sep 2021

We're pleased to present Fledermaus version 8.4.2. In this release, we In this release, provide improvements that were requested. Read below for details.

Highlights

- Added support for HIPS I/O SDK version 11 licensing. We now support HIPS licenses for versions 9, 10 and 11

Bugs

- Improved naming and management of movie file sequences output
- Fixed an issue in the profile tool editing to avoid a potential exit of the application
- Fixed an issue with creation of profile object when working with geographic data input
- Improved import gridded data dialog to report cell size estimated for the load for users to have a reference of what will result
- Fixed issue with importing 3rd party grids that contained special characters in the filename
- Improved messaging for read only exported grid files
- Space Navigator calibration routine has improved
- Fixed black strip of padding for images upon export of images
- Improved transparency visualizations of plane surfaces in presentation mode
- Playback of scene for point and transparencies in scene has been fixed

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

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Fledermaus 8.4.3 Release

2021.11.18

Highlights

- New merge surface operation which allows fusing together several loaded surfaces to make one single .surface file, with 3 different methods available: Shallow, average and deep
- New merge scalar operation which allows fusing together several loaded scalars to make one single .scalar.
- New merge image operation which allows fusing together several loaded images to make one single .geoimage.
- New ability to load a profile of a pipeline object in the profile plot
- New batch profiler object exports option is now available and with the option of file naming by label given.
- Profile plot now has a vertical scale exaggeration option.
- Digit label number now allows decimal places precision for point data
- QGF Area and QGF Design triangulated representations are now supported.
- It is now possible to do Scene to image exports that exceed the 8K x 8K limitation given before, enabling working with larger exports for this function.
- Free hand selection mode now respects the area within the polygon selected, enhancing selection abilities to perform operations on different object types (i.e. meshing)

Bug Fixes

- Pipeline object now renders accordingly in right place aligned with related dynamic surface.
- Plotting widget display is not over cluttered when working with a line import for loading in the profile plot, showing all of the samples.
- It is now possible to load Fledermaus 7 profiler objects on Fledermaus 8 without issues
- Exporting a geographic coordinate based data profiler object now results in expected values
- Geotiff (grid surfaces and scalar) import improvements with very significant time reduction of time loads
- You can now make a rectangular selection and it will be represented by it, and not resulting in a square of the selection.
- Rendered movies and imagery products now make sure they are always rendered with the full resolution data for the best quality results possible.
- Improvements on the opening of an older scene and objects handlings and naming conventions.

- Improved object mesh and surface transparencies handling when working with presentation mode and movie renderings
- Surface bounds and populated rows now report exact size of object rows and columns populated, for a step wise process improvement.
- Rendering a movie keeps and works with point pixel data with eye dome lighting
- Fixed an unexpected exit of the application that was happening while setting surface object transparencies during presentation mode.
- Fixed screen capture unexpected behaviour causing freezing of the application.

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

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Click on the icon above and vote on or create a Feedback issue!

Fledermaus 8.4.4 Release

20 Jan 2022

We're pleased to present Fledermaus version 8.4.4. In this release, we have improvements and resolved bugs. Read below for details.

Highlights

- In the shading preferences you can now set the default dynamic lighting mode on/off. When on this gives you the fm7 style dynamic shading.
- When you use the profiler batch create process from it names resulting profiler objects with input object base name.
- It is now possible to import and export terrain mesh and solid model objects with different axis layouts to create a workflow of 3D objects to third party software.
- 3D Model objects now have a right click *Transformations* operation to rotate, scale, and translate models.
- You can now create a mesh directly from QPDs from a QPS project dock without needing to load the them in the scene
- You can now create a new scene even if you have several scenes saved within a QPS project without losing the QPS project connection at project dock
- You can a create a selection from a line object

Resolved Bugs

- When saving QPD, Laser, and Pts files the color map used is now saved as well.
- You can now use textures for colouring 3D model and expect alignment from texture image and model
- When meshing with QPDs and using the QPD for normal aiming, an empty QPD no longer causes an unexpected exit of the application.
- Changing colormap on a drape surface now remains within a scene
- You can now specify the point attribute size better according to type of shape for point selected
- Fledermaus LAZ/LAS objects now reports the total number of points in the properties display.
- When working a reprojection, you will be prompted only once for the copy of the object now reprojected
- Users can now do a correct transform between EPSG 32616 and EPSG 32066
- QPD, LAS/LAZ and PTS can be exported to ArcGIS ASCII, Google Earth KML or XYZ ASCII
- Addressed an error message with KML export about read only file.
- Fixed an issue when reading companion TFWs files with rotation when loading an image.

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Download

Click on the icon to download the latest version of Fledermaus!

Fledermaus 8.5.3 Release

We're pleased to present Fledermaus version 8.5.3. In this release, we have one important update. Read below for details.

Improvement

- Support for reading the new version QPDs written by Qimera 2.6 and Qinsy 9.6

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Fledermaus 8.5.1 – Viewer Release

For Fledermaus Viewer 8.5.1 Release notes, please click on this link Fledermaus 8.5.1 – Viewer Release to be redirected to the correct page. Sorry for the inconvenience.

Fledermaus 8.5.0 Release

We're pleased to present Fledermaus version 8.5.0. In this release, we introduce the Point Cloud Streaming object, an object that supports Entwine based point streaming from local or network data sources. This release also comes along with many improvements that were requested by our users. Read below for details.

Highlights

- New streamed point cloud object - Connect to and stream points from local or network Entwine datasets.
- Support to show X - Point listings associated with a cable/pipe object.
- Numerous profile object and cross profiling improvements - especially dynamic cross profiling.
- Added an image object translation/reposition operation.
- Project workflow improvements.

Feedback Project

In this release, we have completed 1 feedback project item, which satisfies 2 votes. For more information, see our Voting system Policy and Using the Voting System.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Please contact us within the Support System to Vote and help in the prioritization of feature implementations.

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- Fledermaus 8.5.0 Important Notes

- Fledermaus 8.5.0 New Functionality
- Fledermaus 8.5.0 Known Issues
- Fledermaus 8.5.0 Documentation
- Fledermaus 8.5.0 Resolved Bugs
- Fledermaus 8.5.0 Implemented Feedback
- Fledermaus 8.5.0 Transitions from Fledermaus 7

Fledermaus 8.5.0 Important Notes

On this page:

- The Fledermaus 8 Point Cloud
- The Fledermaus 8 Surface format
- Licensing
- Installers
- Support for Fledermaus v7.X

The Fledermaus 8 Point Cloud

The Point Cloud Streaming object at the moment can be created by loading an existing EPT (entwine point tiles) data source(file) from a network or local files. To build your own LAS/LAZ based EPT files you can follow the instructions provided here in the Entwine Quick Start.

The Fledermaus 8 Surface format

There are many improvements and changes as to how the Fledermaus surfaces work. Please read the following Technical Document to get familiar with the changes to the Fledermaus surface formats.

Licensing

Existing Fledermaus users with a license that is under maintenance will be able to install and run Fledermaus 8.5.0 alongside Fledermaus 7.8.X or newer, using the same license.
No changes to the license configuration have been made with this release. This allows trying out the new features of FM 8.5.0, while continuing to use Fledermaus 7.8.X on the same machine.

Installers

The Fledermaus installer will install by default into subdirectories with the 8.5.0 version name under the typical install path, which is usually C:\Program Files\QPS\Fledermaus.
This allows multiple installations quite easily and follows the trend that Qinsy has been using for some time.
Users with Fledermaus 7.X already installed will find that Fledermaus 8 will install into the Fledermaus 7 directory, but in the 8.5.0 subdirectory of the Fledermaus 7 installation folder.

Support for Fledermaus v7.X

Fledermaus 7 will be maintained alongside Fledermaus 8, as functionality is moved over to the new applications. Support for Fledermaus 7 will continue while the user base continues to transition to work with the new and improved Fledermaus 8.

Fledermaus 8.5.0 New Functionality

On this page:

- Point Cloud Streaming - Entwine Point Tiles
- X - Point Listings
- Cross Profiles Series improvements
- File renaming
- Image repositioning
- Surface Statistics improvements
- Project Workflow improvements
- QGFs Support improvement
- Contours Improvements
- Draping improvements
- Fledermaus Viewer - Profiling

Point Cloud Streaming - Entwine Point Tiles

Fledermaus now supports a robust Point Cloud object that allows streaming data from disk or via a network, using the Entwine. This elegant solution for huge point cloud files allows managing big data within the scene, and responding to the level of detail of need when working within the 4D map display. You can load several of your favorite EPTs and start working with them. Figure 1 shows more than 5 million points been streamed directly from the network and scaling visually in the map display as specified for streaming point budget. You can colour coat with any of our colour palettes or with the RGB's if the point cloud has it. See an example in Figure 2, Mount Baker, Washington State.

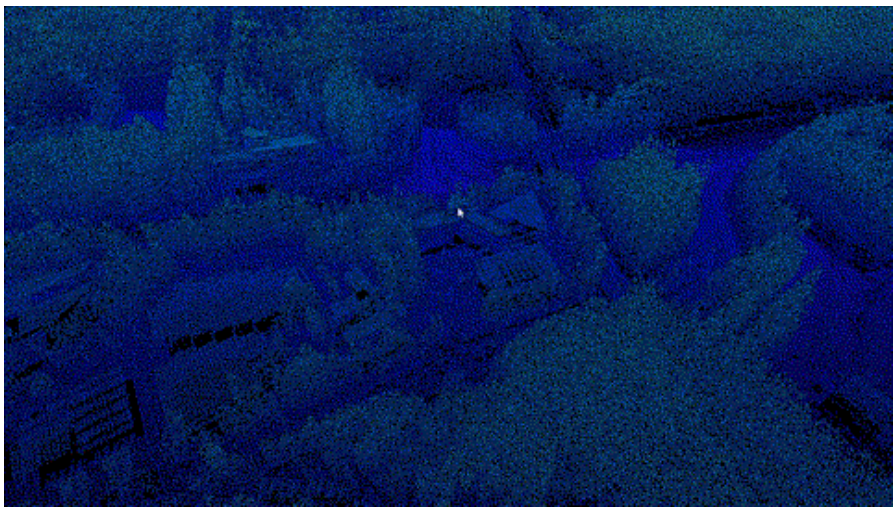

Figure 1. *Point Cloud Stream from The Netherland AHN dataset from network. Loading more than 5.9 million points, with budget for 6 million. Credit data to:* Datasets - PDOK.

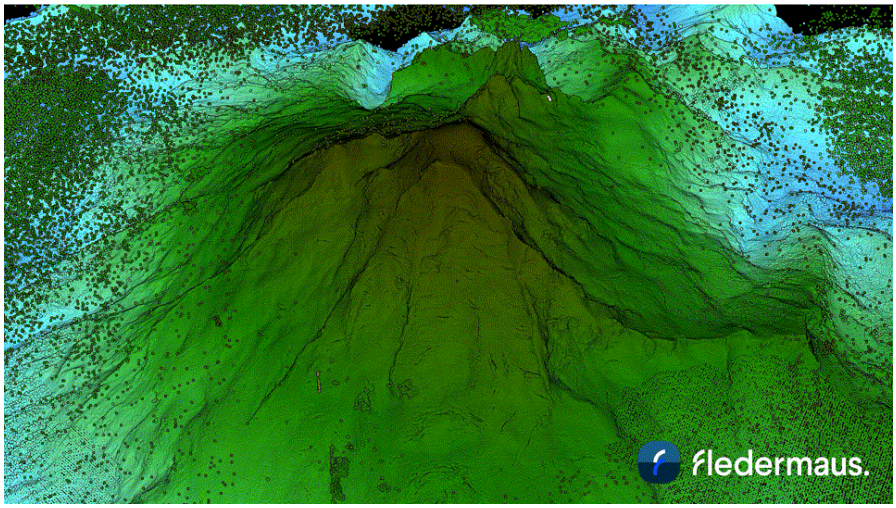

Figure 2*. Mount Baker, Washington State EPT from network. Credit data to:* USGS & Entwine

Work your point budgets to needs and capacity of your unit, within the preferences, under the file menu. You can monitor total loaded points and have budget allocation present at right-low side of your map display, making your computer hardware and software optimizations possible depending on your needs.

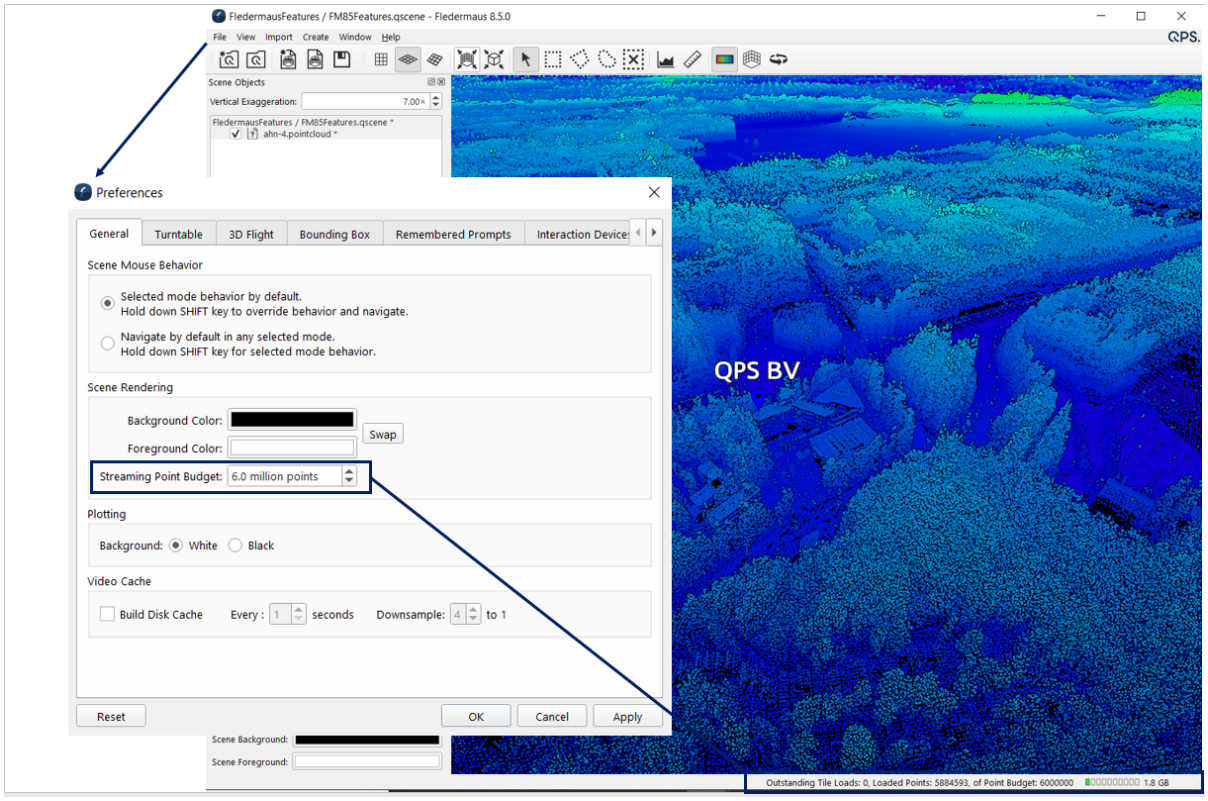

Figure 3. *Stream Point budget management for Fledermaus point clounds. Credit data to:* Datasets - PDOK

X - Point Listings

Fledermaus 8.4.x supported the cable/pipe object, now Fledermaus 8.5.0 there is support for the cable/pipe X - point listings created in the Qimera TOP projects. We will continue to work support for other sources in future releases. Figure 4 depicts the flags of the X-Point listings for a cable/pipe object within the map display of Fledermaus.

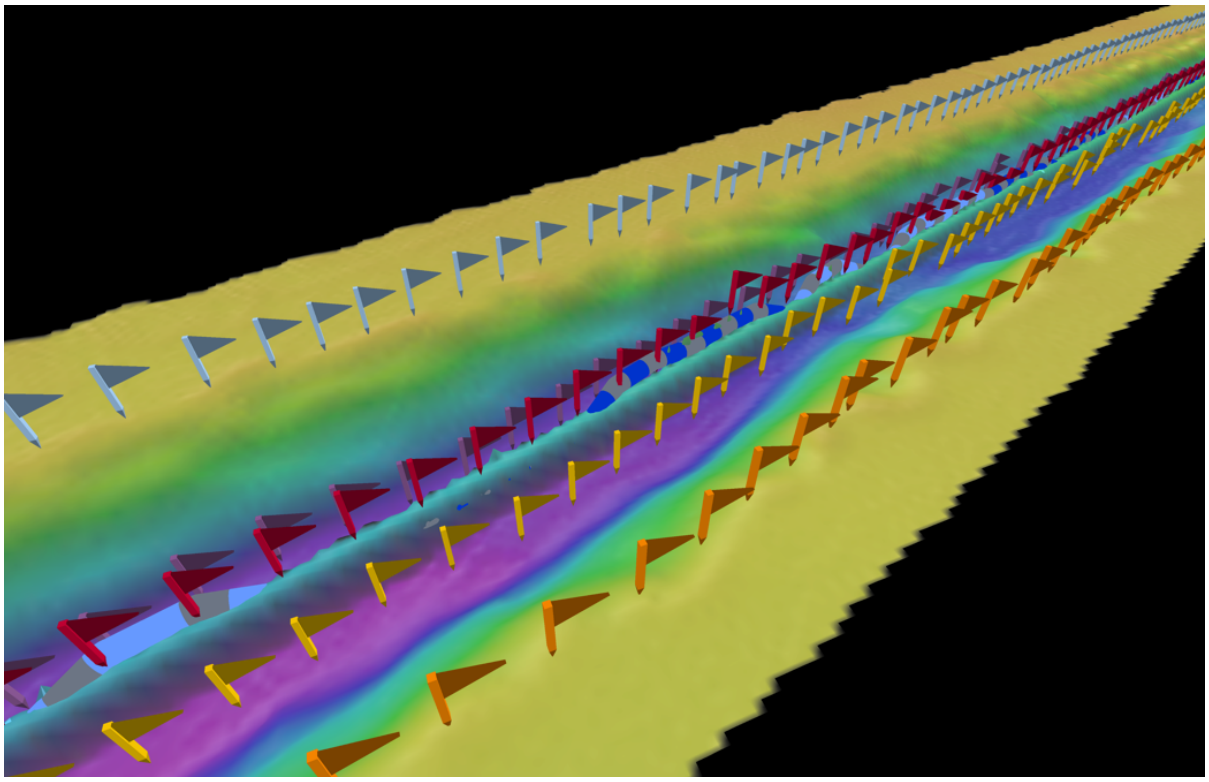

Figure 4*. Screen capture of cable/pipe route with X-Point Listings. Credit data: XOcean*

Cross Profiles Series improvements

Cross profiling support was greatly improved in FM 8.5.0. Any saved profile can now dynamically create and perform a cross profile analysis simply by turning on the cross profile option in its attribute panel. This will expose options to generate a series of profiles which are added to the main profile and you can dynamically select the cross profiles at various KP points for analysis in the profile/cross profile display. These cross profiles will be maintained as part of a saved scene or saved profile object. Simple investigative cross

profiling can be done interactively via the profile editing tool and turning on the cross profile option to dynamically explore cross profiles at various points along the route. Figure 5 depicts the 4 steps to take to start interacting with your data immediately within the 4D scene to skip to a specific KP of your route.

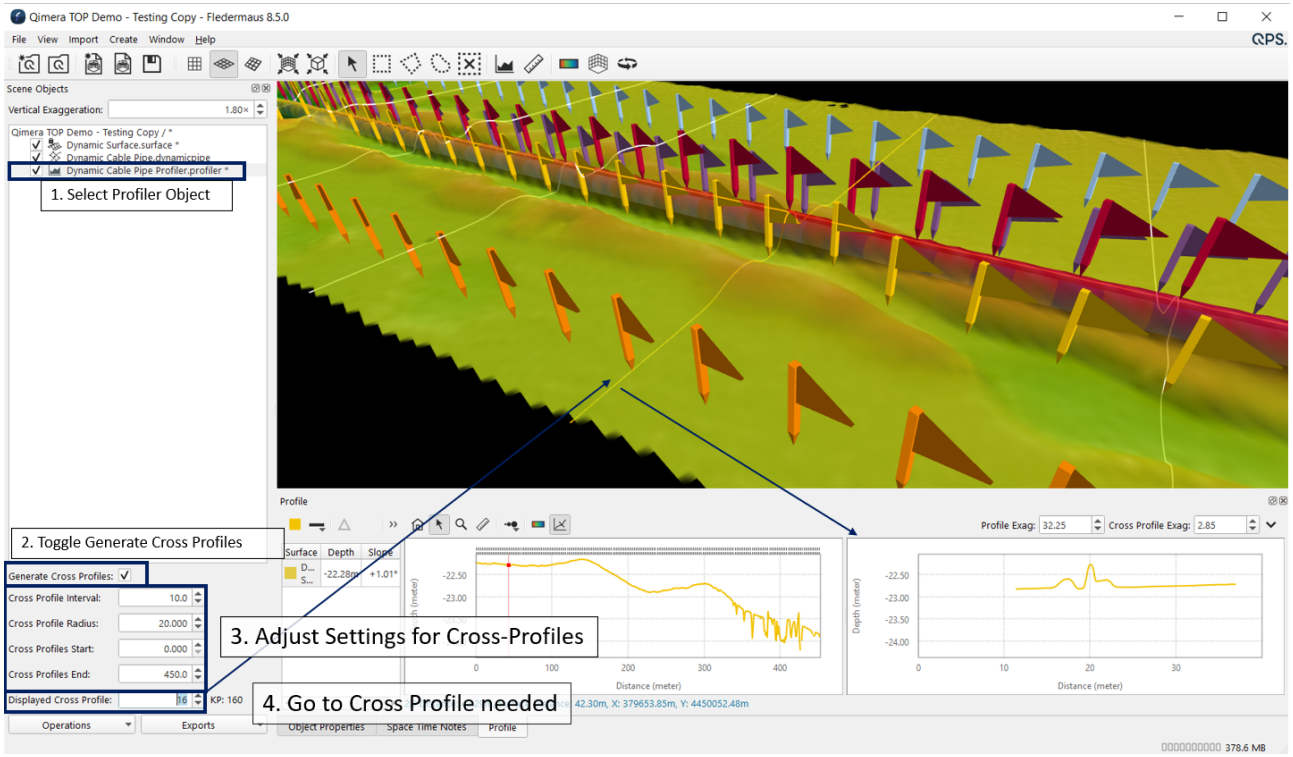

***Figure 5**. Screen capture of pipeline route with N-Point Listings and generated Cross-profiles at each KP. Credit data: XOcean*

File renaming

It is now possible to rename Fledermaus objects created within the scene. Figure 6 depicts the listed Rename options for the selected object. Note that when working on a project, this will not be available and will not be listed, as the renaming will break project link to the Scene object. We will continue to work more on Project and Scene workflows as Qimera and Fledermaus continue to align project workflows.

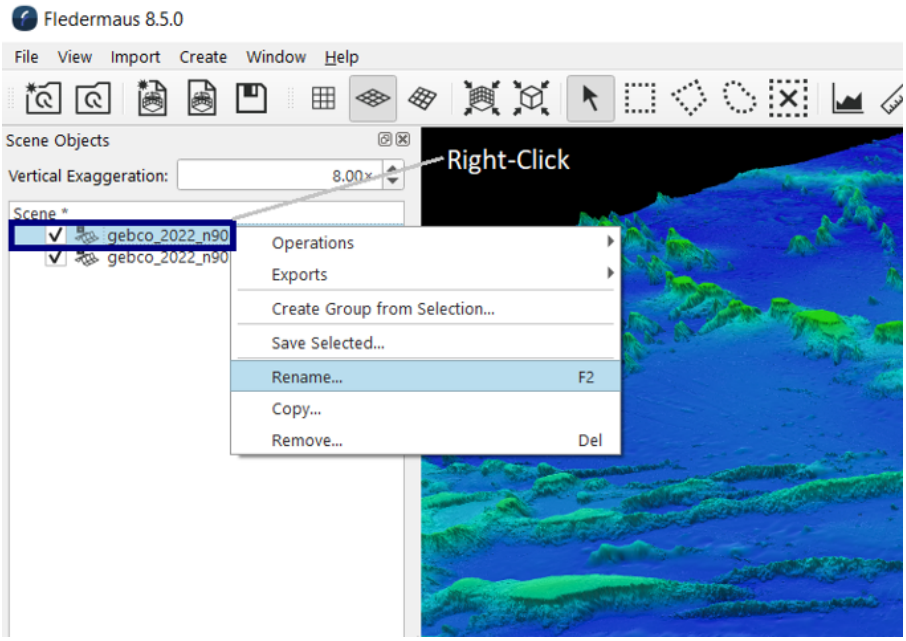

***Figure 6**. Screen capture for renaming scene objects within the application. It is available within the right-click option for the selected object.*

Image repositioning

You can now reposition and shift images (vertical and horizontal ones) within the 4D map display to be able to adjust to fit and overlay and drape on surfaces or other image operations needed. Figure 7 shows the right-click operations that are enabled, highlighting Reposition with X & Y for geoimages. You will find it listed in the Operations drop down for those object type formats.

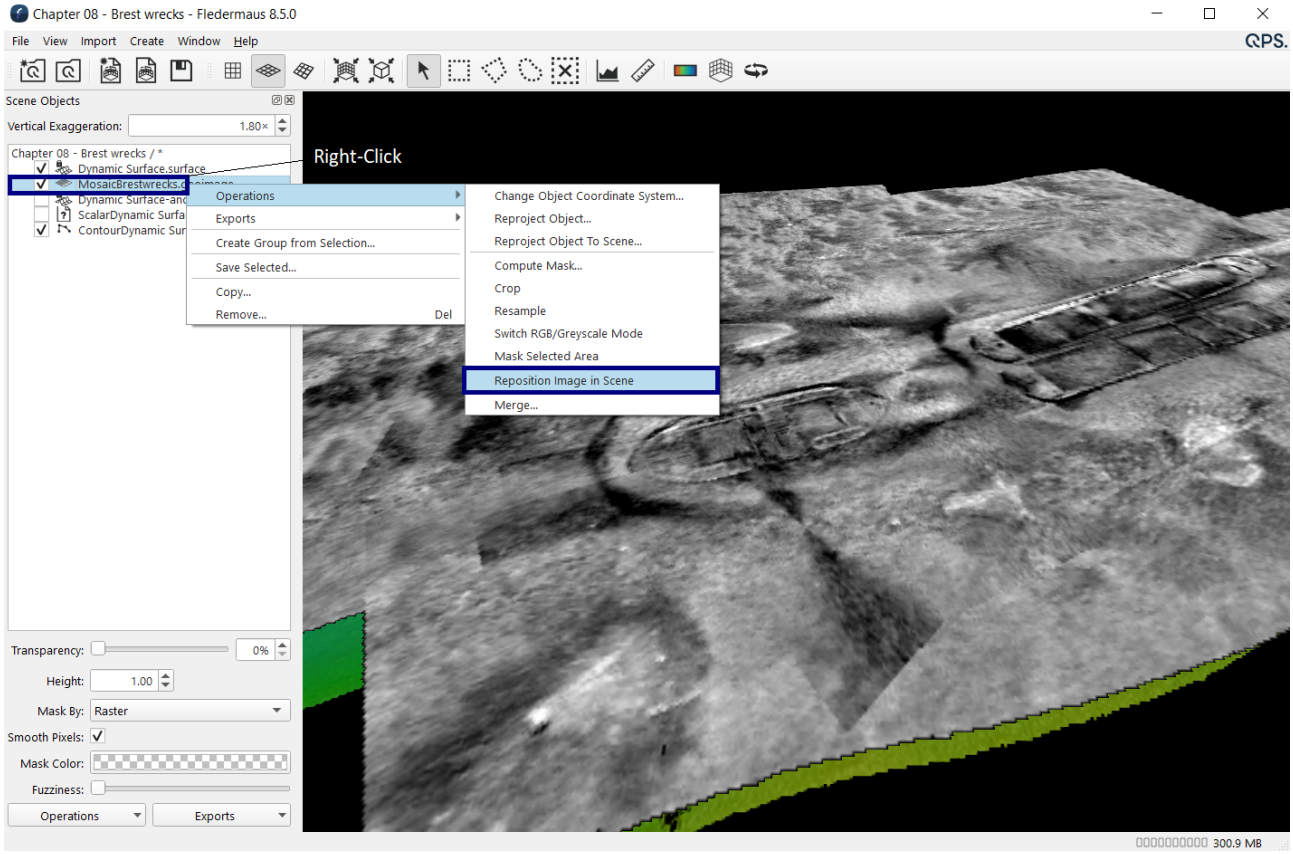

***Figure 7**. Screen capture for renaming scene objects within the application. It is available within the right-click option for the selected object.*

Surface Statistics improvements

There are improvements on the statistics calculations dialog
You now get a complete total result that can has the following options as shown in Figures 8 to 10.

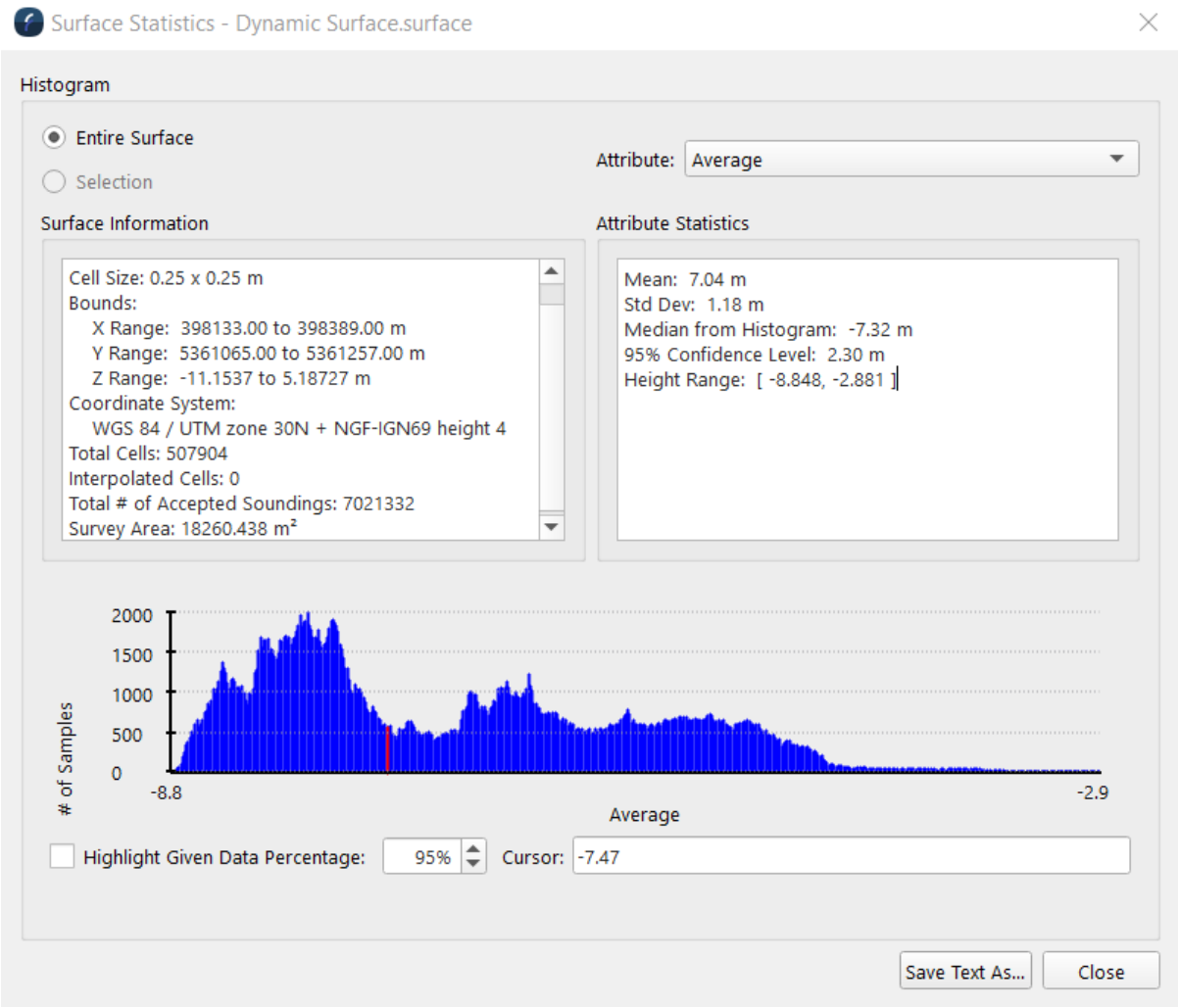

***Figure 8**. Screen capture of Statistics Operation results for Average layer.*

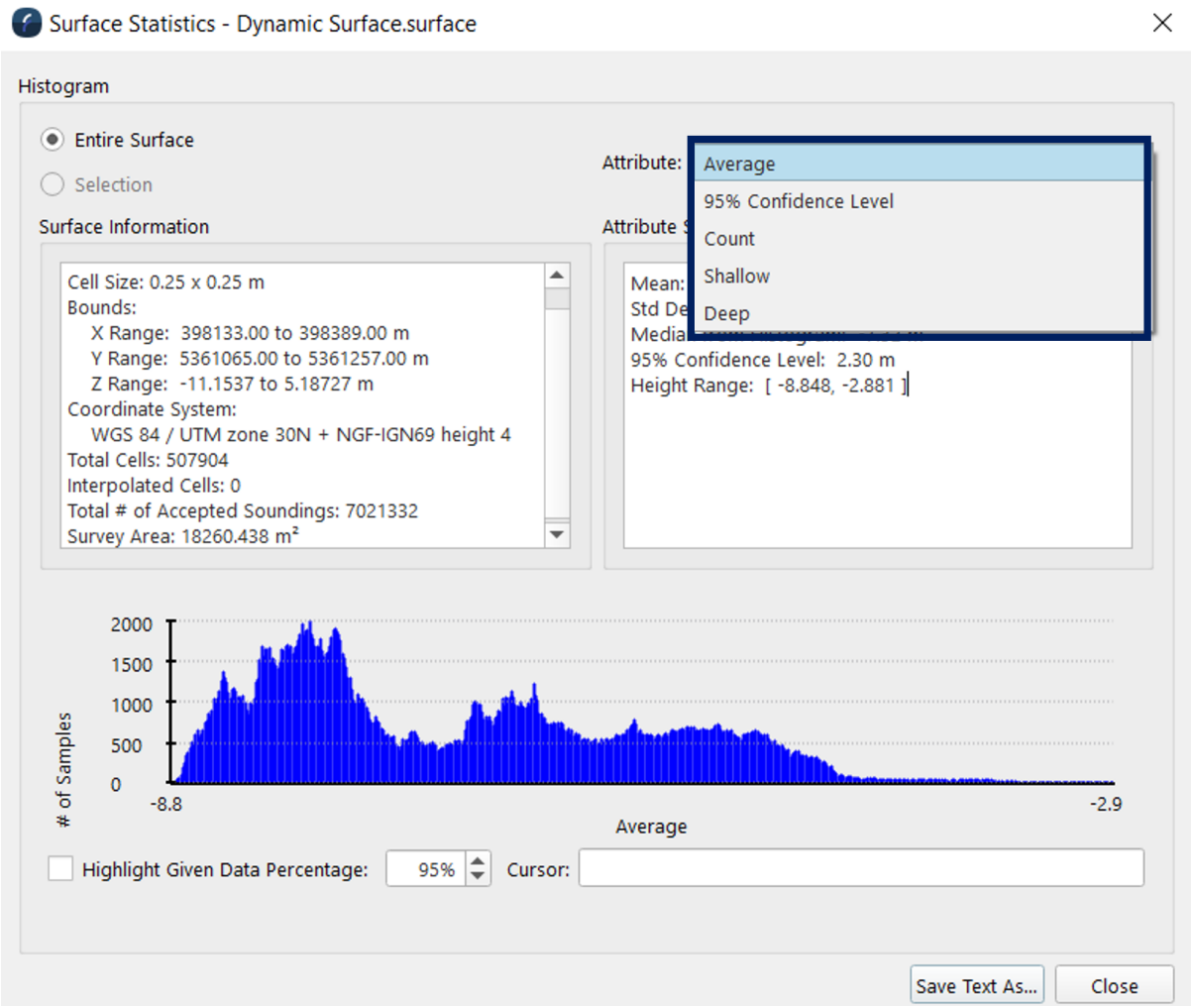

Figure 9. *Screen capture of Statistics Operation results with options of what layer generate statistics.*

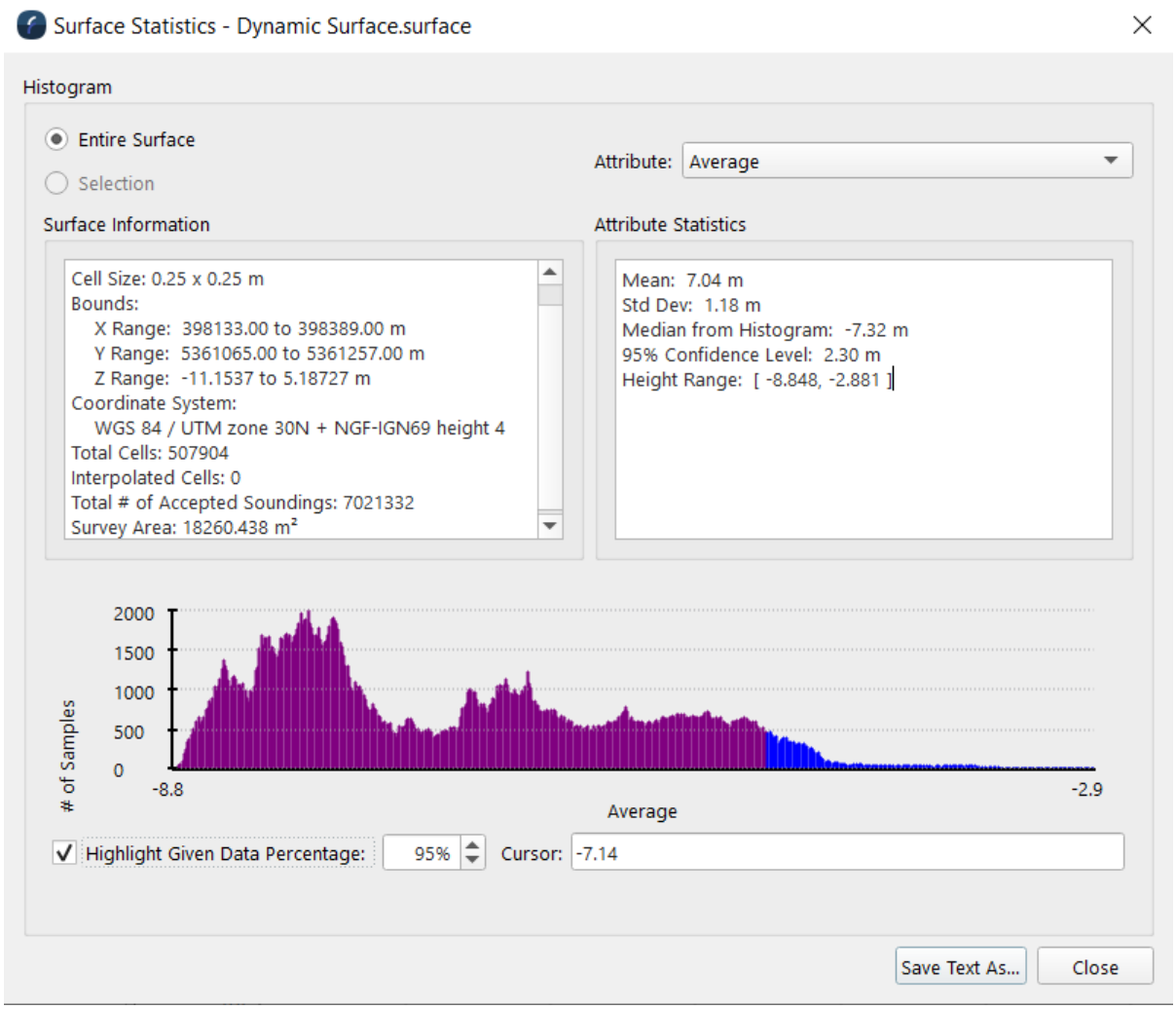

***Figure 10**. Screen capture of Statistics Operation results, with Highlights Given Data Percentage toggle-on.*

Project Workflow improvements

Working with a QPS project is now easier. You can create a new scene and remain connected to the established project. You can drag and drop project elements into the 4D map display, a way to compose your scene with desired elements. You can also close a project and keep on working with objects in a composed scene. Figure 11 shows the dialog that allows to open one of the scenes linked to the project or creating a new scene. Figure 11 shows the new close project option when working with a project.

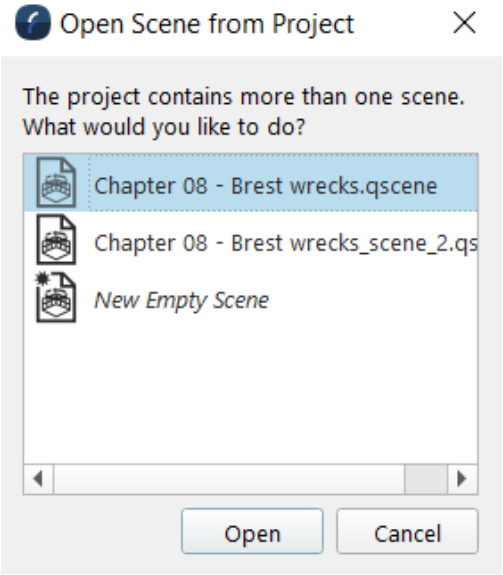

***Figure 11**. When you open a project that contains more than one scene, you are prompt to select which of the scenes you want to work with, or make a new one.*

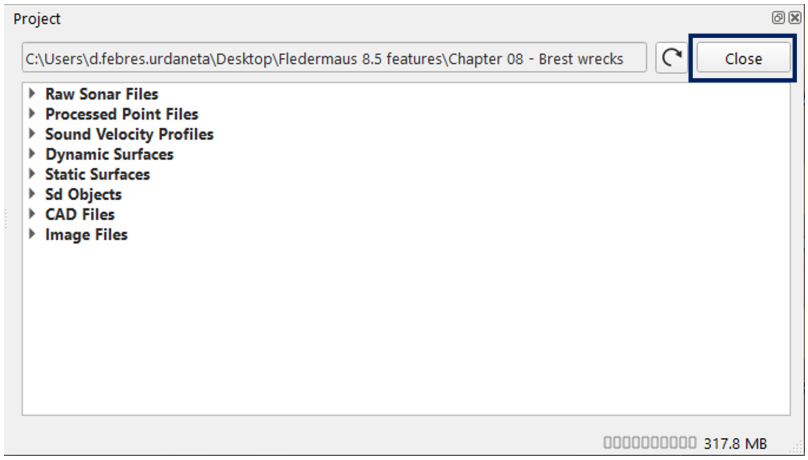

***Figure 11**. The Fledermaus Project Dock now has the option of closing the project.*

QGFs Support improvement

There is native support for QPS QGFs design files. Load your created QGFs to work in the Fledermaus 4D Scene. Figure 12 shows a loaded object Design and how it is read directly with its properties.

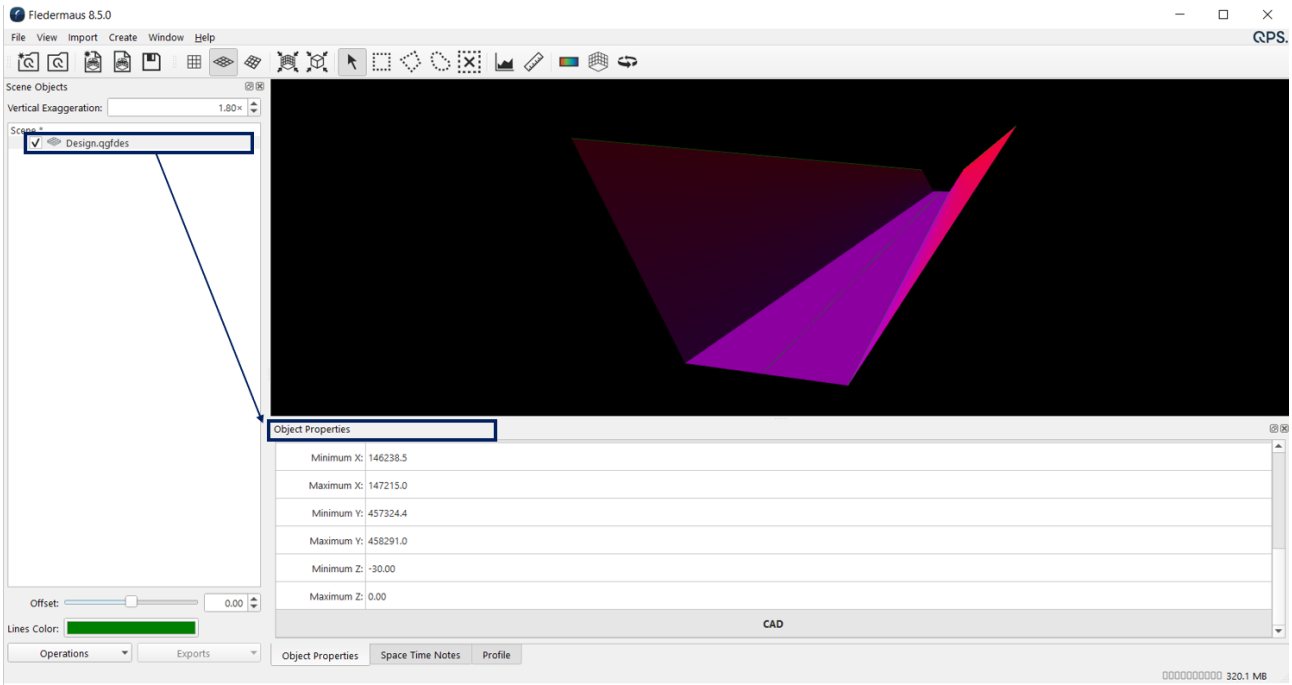

Figure 12. *Screen capture of Fledermaus 8 map display with a QPS QGF design, natively supported.*

Contours Improvements

Colouring contours by depth is now back in Fledermaus. You can choose color by z, from the drop down menu. Figure 13 shows Jarvis Island data with contours in white for 500 m intervals with colour by depth for the 50 m intervals from 100 metres to surface

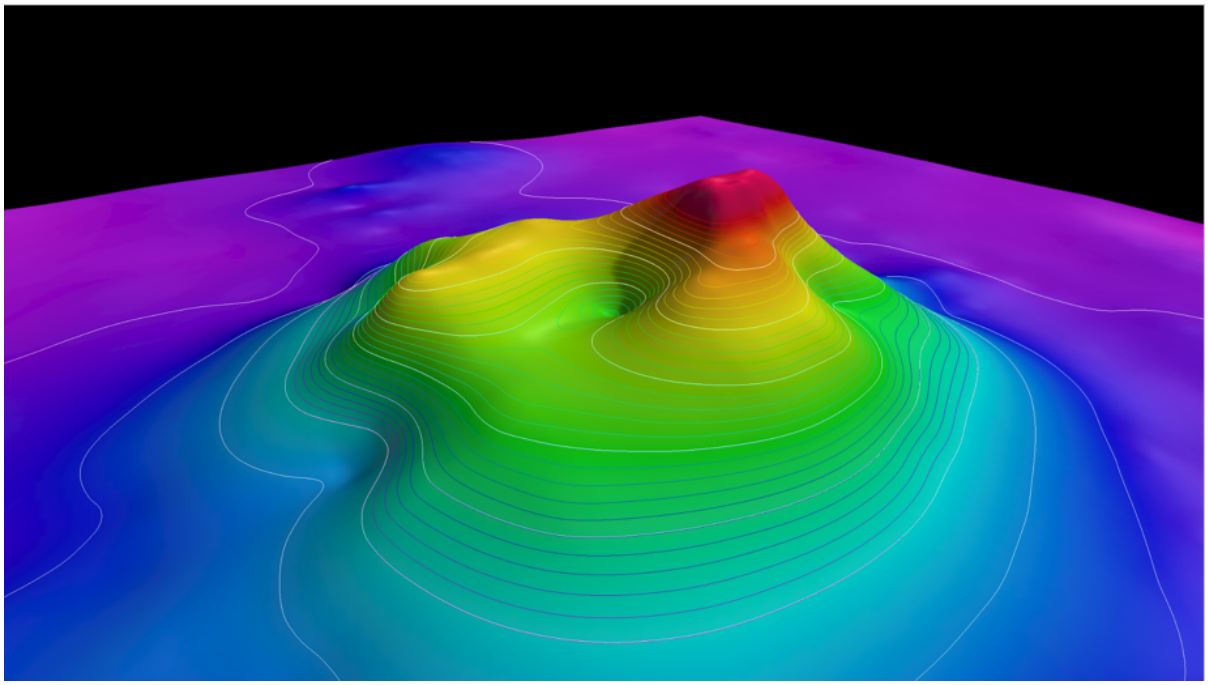

Figure 13. *Screen capture of Fledermaus contours by colour and by depth, for Jarvis Island. Credit data to:* Earthref.org

Draping improvements

The draping operationin Fm8 has been sped up by more than 100 time faster, making it from an overnight operation to a minute operation.

Fledermaus Viewer - Profiling

It is now possible to do quick profiles with the Fledermaus Viewer. You can create your scenes with profilers on them or set specific points of interest, and Fledermaus Viewer users can create a single quick review of the profile by use of the profiler widget, as shown in Figure 14.

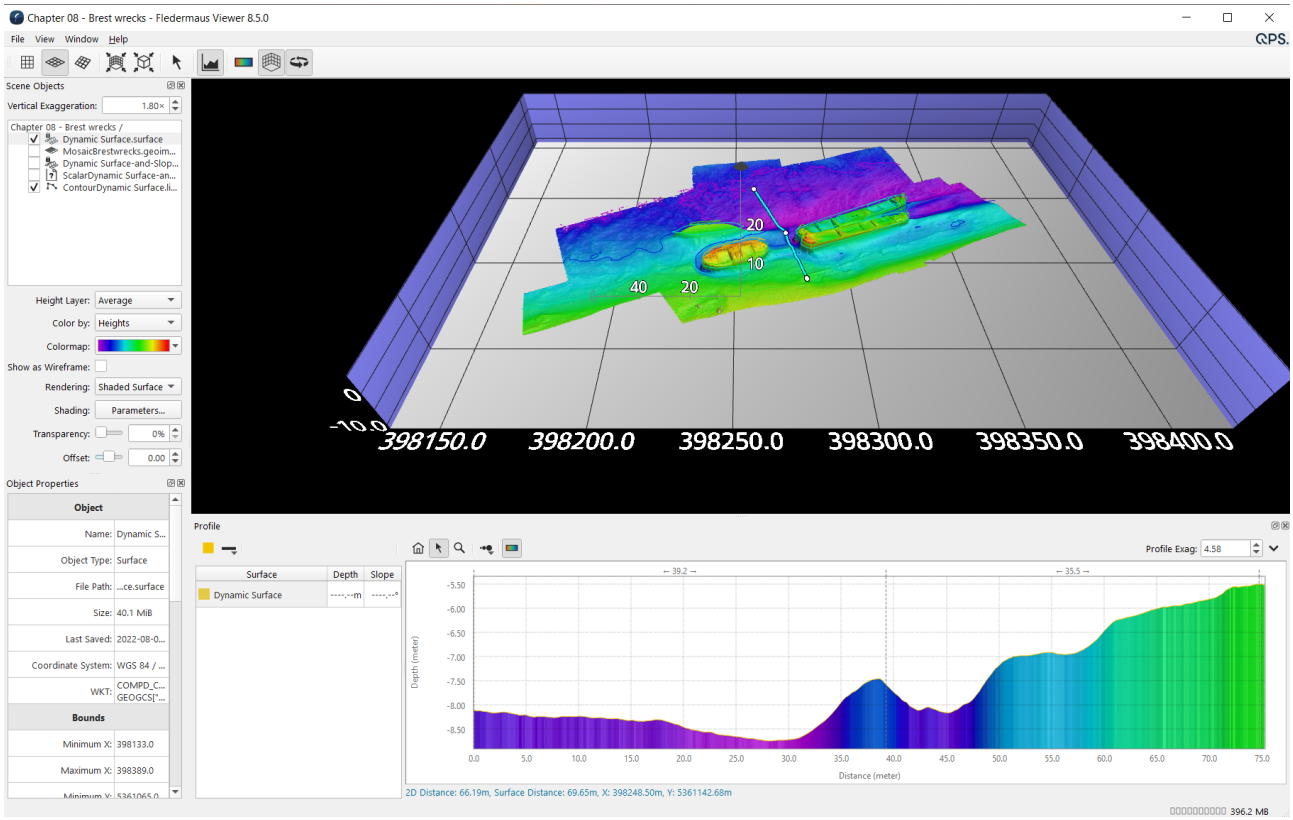

***Figure 14**. Screen capture of the Fledermaus Viewer with Profiler mode enabled to plot a profile on the profile dock of the application.*

Fledermaus 8.5.0 Known Issues

On this page:

- Known issues

Below you will find listings of bugs which have been reported in previous releases but have not yet been addressed.

Known issues

Issue	Summary	Affects Version/s	P
Bug	There are situations when mesh creation gets stuck in 3% of the normal calculation of the meshes when working with the PCL algorithm. Workaround is to use the Quick Neighborhood algorithm when working with QPDs	8.2.0	☐
Bug	When working with multiple passes of MBES data, the differing passes can result in a suboptimal mesh solution. Workaround is to create the mesh with the best resulting one pass mesh.	8.2.0	☐
Limitation	Fledermaus does not support 2018 AutoCAD dxf/dwg files on the Linux platform but Windows and Mac should be fine. Workaround is to export prior versions of dxf and dwg.	8.3.0	☐
Limitation	GMT v5 is not currently supported	8.0.0	☐

Issue	Summary	Affects Version/s	P
Limitation	It is not possible to establish a custom CRS for the scene that has no known EPSG code within the Fledermaus graphical user interface. Workaround is to continue to work with Fledermaus 7 for this workflow if needed. Once you have an object with the custom coordinate system you can load it into FM8.	8.0.0	☐

Fledermaus 8.5.0 Documentation

Documentation has been updated to capture the changes to existing dialogs and workflows for the application. Some of the new documentation listed in our reference manual is:

Point Cloud - Fledermaus

GeoImage - Fledermaus

Fledermaus Visual Objects, Operations, & Exports - Fledermaus

Fledermaus Drape Image Dialog - Fledermaus

Fledermaus Scene - Fledermaus

Fledermaus Video Files Dock - Fledermaus

Fledermaus Profile Dock - Fledermaus

Scalar - Fledermaus

Fledermaus Surface Statistics Dialog - Fledermaus

Lines - Fledermaus

Vertical Curtain - Fledermaus

Fledermaus Import Menu - Fledermaus

Fledermaus Scene - Fledermaus

Fledermaus 8.5.0 Resolved Bugs

On this page:

- Bug Fixes

Bug Fixes

Below you will find listings of bugs which have been reported in previous releases and which have been solved for the 8.5.0 release.

You can now adjust and reduce labelling for points on the point object	8.5.0	☐
Removing video from the video dock will not cause an unexpected exit	8.5.0	☐
You can now load files with no Z assigned in ASCII configuration	8.5.0	☐
Summary	**Fix Versio n/s**	**P**
Geographic vertical curtains now render in the 4D map display	8.5.0	☐
It is now possible to use the reprojection operation without an unintended exit	8.5.0	☐
It is now possible to export scalars as 32 bit floating points	8.5.0	☐
Contours created can now be colorized by Z values	8.5.0	☐
Adding contours from a QPS project does not cause unexpected exit	8.5.0	☐
Contours created can now be colorized by Z values	8.5.0	☐

You can now adjust and reduce labelling for points on the point object	8.5.0	☐
Removing video from the video dock will not cause an unexpected exit	8.5.0	☐
You can now load files with no Z assigned in ASCII configuration	8.5.0	☐
Summary	**Fix Versio n/s**	**P**
Coordinate reference grid labels are now sharp and easily readable	8.5.0	☐
Fixed issues exporting color maps to some formats (.xml, .ascii, and .clr)	8.5.0	☐
Draping operation was improved in efficiency of time, from hours to seconds or minutes.	8.5.0	☐
Statistics now report median value	8.5.0	☐
Fixed a bug with showing statistics on a geographic dataset when a user defined selection is active.	8.5.0	☐
Fledermaus Viewer does not exit unintendedly when loading data	8.5.0	☐
Labels are now part of the rendered video when created	8.5.0	☐
Resample operation is working now and not causing unintended exit	8.5.0	☐
Fixed a potential issue zooming to space times notes when the vertical exaggeration is not 1.0.	8.5.0	☐
When using the measurement tool one can now use shift & +/- to increase or decrease the size of the labels on the tool.	8.5.0	☐

You can now adjust and reduce labelling for points on the point object	8.5.0	☐
Removing video from the video dock will not cause an unexpected exit	8.5.0	☐
You can now load files with no Z assigned in ASCII configuration	8.5.0	☐
Summary	**Fix Versio n/s**	**P**
When rendering points using a time window past points were not hidden properly (they showed up as black points)	8.5.0	☐
In presentation mode add a slide template for a full screen image to the available templates.	8.5.0	☐
Removed the ColorBy X and Y attribute for PointClouds and 3D line objects as they are not useful and adds GUI clutter.	8.5.0	☐
Add support for 3D lines to color by an associated attribute (which can be specified when importing line data).	8.5.0	☐
Fixed slide background color selection and support setting the background transparent.	8.5.0	☐
Fixed an issue saving scenes with a QGF CAD object which caused the object to be left out.	8.5.0	☐
Fixed a bug exporting a surface with an attached scalar to a Google Earth KMZ file.	8.5.0	☐

Fledermaus 8.5.0 Implemented Feedback

Key	T	Summary	Votes
FFM-191	↑	Surface cut of by drape bounds	0
FFM-27	↑	Surface Properties of Selected area	0

2 issues

Fledermaus 8.5.0 Transitions from Fledermaus 7

On this page:

- Fledermaus Core users
- Fledermaus Viewer

Fledermaus Core users

The commitment to our user base continues with the improvements of 8.5.0 to work in removing workflow barriers for Fledermaus v7 users moving to Fledermaus v8. We are working with users as our guides for bug fixing, the new features, and the implementation of key missed functionality. We would greatly appreciated to continue to hear from the user base to know and understand their priorities to work with them. Some of those listed in the Improvements and New Functionality are: Image repositioning, Draping complete operations improvements, Contouring coloring options, Labelling, QPS Project based workflows, renaming, Statistics and exports of created elements within Fledermaus.

Please refer to the page below for initial transition process plans,. Further updates on transition functionality will come at a later date. If you have doubts about your workflow and the path to follow using any of the Fledermaus versions and its functionality, please contact us. We will be happy to address your questions.

Fledermaus 8 - Transitions from Fledermaus v7

Fledermaus Viewer

Please note that since version 8.3.3, the Fledermaus Viewer runs for all Supported Operating system, as a stand-alone installer.

Fledermaus 8.5.0 – Viewer Release

For Fledermaus Viewer 8.5.0 Release notes, please click on this link Fledermaus 8.5.0 Release to be redirected to the correct page. Sorry for the inconvenience.

Fledermaus 8.5.2 Release

We're pleased to present Fledermaus version 8.5.2. In this release, have important updates and encourage our user base to upgrade to this release. Read below for details.

Highlights

- You can now select areas of interest on point cloud objects to perform mesh, gridding, and export operations and have only the points within the selection contribute. You can choose the point density level that you want to perform the operation on the selection
- You can now make specific colours be transparent for vertical curtains objects.
- Use the jump to KP option to quickly navigate to a specific KP and zoom scene to such a location.
- You can now create a line object from a selection in the 3D scene.
- You can now create line objects from the established Space Time Notes in a scene.
- You can now create point objects from the established Space Time Notes in a scene.
- The Data View panel now supports Line objects much more completely.

Improvements

- A new Geo-picking tool mode can be used to easily create a continuous set of Space-Time Notes.
- Calculating point clusters are now much faster than in prior versions.
- The BAG export operation is no longer losing any precision upon export.
- Applying shading to draped images now smooths the application of the shadows as expected.
- Vertical images are now completely displayed in movie rendering operations.
- The transparency object settings drop-down list was not allowing proper selections.
- Beam fan time series objects that have depth offsets are now applied as expected.
- You can now render movies with text selections.
- QPD point views on the slides and in presentation modes are now enabled.

Feedback Project

In this release, we have completed 1 feedback item, which satisfies 2 votes. For more information, see our Voting system Policy and Using the Voting System.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Download

Click on the icon above to download the latest version!

Fledermaus 8.2.3 Release

Click on the icon above and vote on or create a Feedback issue!

29 October 2020

We are pleased to present Fledermaus 8.2.3, which is a maintenance release addressing critical bugs, with a specific focus on alignment issues when importing and exporting surfaces.

Known Issues

- Fledermaus 8.2.3 does not fully support SD line objects containing polygon entity types
- Grids with different cell sizes in X and Y are not yet fully supported in Fledermaus 8, which most often occurs when importing geographic data. Versions 8.2.0 and earlier were incorrectly importing these grids, which resulted in alignment issues when combined with other data. To prevent this, Fledermaus 8.2.1 (and newer) will present a warning message and not allow grids with different X and Y cell size to be imported. A proper fix is being developed for a future release.

Bugs and Small Features

General

- Added back the ability to change sun-illumination direction when using point objects (sphere marker type only)
- Creating a timed presentation could potentially crash with certain slides
- Compressed Scene (.qsz) files now work if the file is renamed before opening
- SD line objects containing 2D polylines are now properly supported for import in Fledermaus 8

Surfaces

- When exporting a surface the bounds were not always adjusted for the populated area.
- Grid data had a Z-shift when exporting or importing using ArcView, GMT, and floating-point GeoTiff grids

- Scalar data exported to XYZ did not line up when re-imported as points

Other

- Please note that FMGT and FMMW are independently released, respective release notes can be found here:
  - FMGT Release Notes
  - FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Fledermaus 8.3.3 Release

29 Apr 2021

We're pleased to present Fledermaus version 8.3.3. In this release, we provide improvements and important bug fixes. Read below for details.

Highlights

- We now support loading/importing surfaces in geographic coordinate systems that have cell sizes that were square in meters but not square in decimal degrees.
- Improvements to the File > Export Scene to image to handle geographic coordianate system scenes.
- It is now possible to invert in Z axes the vertical curtain images loaded in Fledermaus

Resolved Bugs

- You are now able to work with a delimited area with the surface difference operation, the area has be predetermined as an object first.
- There is better handling of reprojection on the fly for supported objects such as points and have operations work with the set Coordinate Reference System given there after.
- QGF format objects (CAD files) now keep all edited parameters after importing them.
- Contour dialog start and end values are interchangeable in increasing and decreasing, error given for testing start and end values was addressed
- Fixed occasional issues loading objects from a Qimera project coordinate reference system (CRS) when the scene and objects was the same but named differently.
- Transparency settings on presentation slides are now persistent between different working scene sessions.
- The resulting image from the Scene to Image functionality, no longer has any padding along the right/top edges in the resulting image.
- Exported Scene to Image, when working with a very large resolution a shift was addressed.
- When points are modified with the vertical offset attribute, the offset now applies to point labels if present.
- Surface difference data inclusions are now addressed, requiring user input as to how they will be handled
- The surface gridder and point importer now handle ascii files with NaN (not a number) values skipping over those records.
- Import QPDs as .points now handles RGB values in the QPD files properly
- Fixed issue with loading vertical curtains zooms and edits.

Other

- Please note that FMGT and FMMW are independently released, respective release notes can be found here:
  - FMGT Release Notes
  - FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

Feature Release Notes: Fledermaus 8.3.0 Release

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Fledermaus 8.3.1 Release

16 December 2020

We are pleased to present Fledermaus 8.3.1 which is a maintenance release addressing a number of bugs and a few small enhancements.

Known Issues

- Grids with different cell sizes in X and Y are not yet fully supported in Fledermaus 8, which most often occurs when importing geographic data. Versions 8.2.0 and earlier were incorrectly importing these grids, which resulted in alignment issues when combined with other data. To prevent this, Fledermaus 8.2.1 (and newer) will present a warning message and not allow grids with different X and Y cell size to be imported. A proper fix is being developed for a future release.
- The standalone Free Viewer is currently only available for Windows. The MacOS and Linux versions will be available as part of the next release.

Enhancements

- You can now make copies of surfaces when attaching images or scalars
- This release includes Windows, MacOS and Linux versions of Fledermaus

Resolved Bugs

- Created new project's resulting Scene did not retain the defined Project coordinate system
- Colour maps were not retained with surfaces when imported from raw grids
- Created a new project and Scene did not retain the defined Project coordinate system
- Colour maps were not retained with surfaces when imported from Qimera
- The ambient, specular, and soft shadow sliders where not triggering an automatic reshade when adjusted
- Attribute files (.*atb) where incorrectly showing up under "CAD Files" group in the Project file list
- Export Scene to Geo-Image was attempting to save to a non-existing folder, when using a Project
- Attached Scalar values were displayed as a single static value

Other

- Please note that FMGT and FMMW are independently released, respective release notes can be found here:

  - FMGT Release Notes
  - FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

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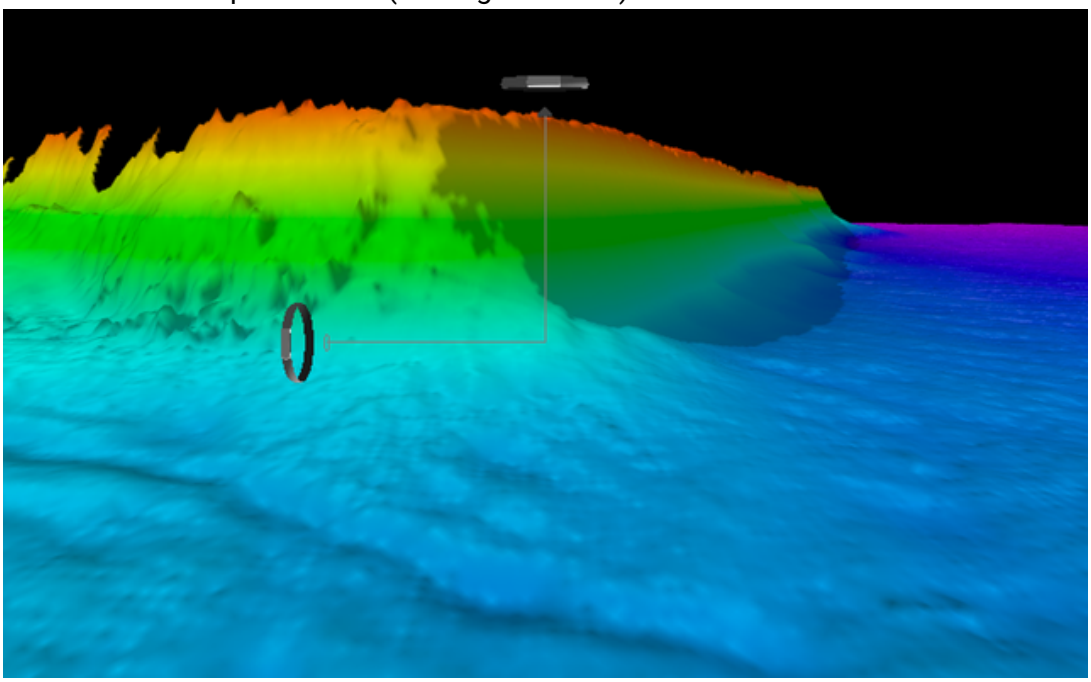
Fledermaus 8.3.2 Release

3 March 2021

We are pleased to present Fledermaus 8.3.2 which is a maintenance release addressing a number of bugs and a few small enhancements.

Highlights

- You can chose to use Dynamic Lighting in the shading options for surfaces. Dynamic Lighting gives users the option to very quickly visually improve the appearance of the surface object loaded to Fledermaus map display. This features gives the surface the look and feel of the Fledermaus 7 default parameters (See Figure below).

a. 

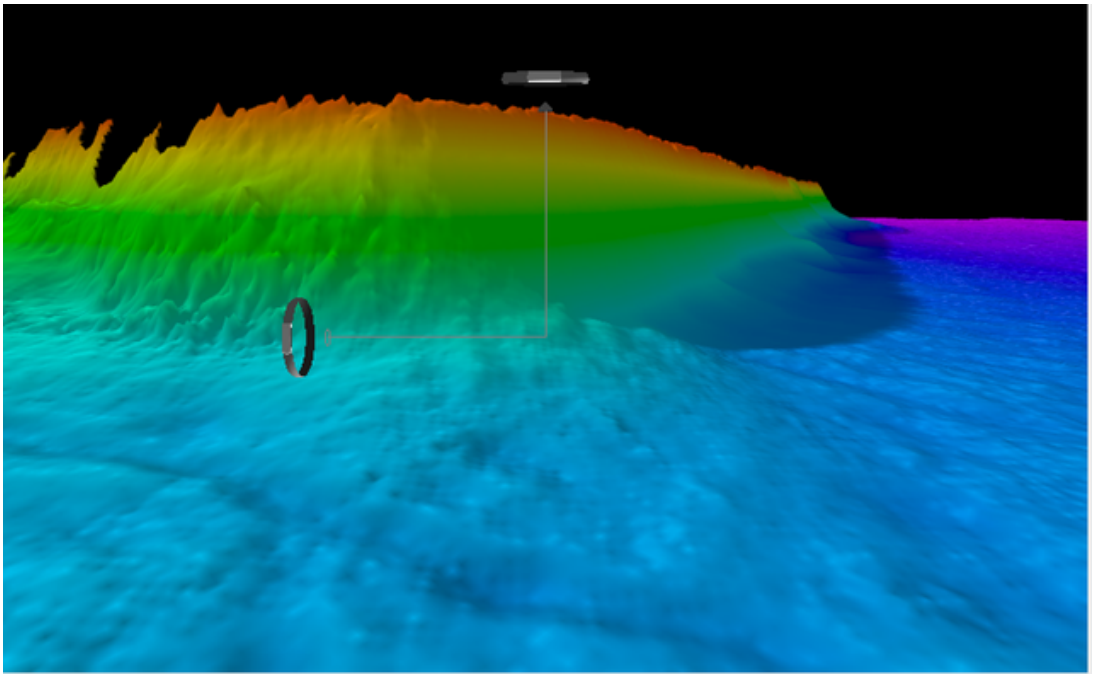
b. 

Figure 1. *Screen captures of Surfaces with different Shading options. (A) Surface with QPS default shading (real physical shading), and (B) Same surface and location with Dynamic Lighting enabled.*

The default shading parameters and options for QPS products is real physical shading. If you want to make use of the relative lighting solution, you need to go to the Shading options on the object attributes dock and toggle on Dynamic Lighting (See Figure 2). Note that the altitude and vertical scale variables from the lighting parameters, would then be relative values too. Please go to the Fledermaus 8 Reference manual to learn more about the shading parameters dialog.

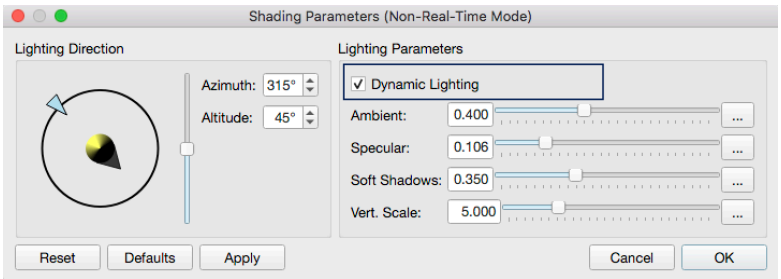


Figure 2. *Shading parameters dialog highlighting Dynamic Lighting enabled.*

Enhancements

- The Fledermaus Viewer (accompanying freeware of Fledermaus) is now available for MacOS and Linux based operating systems.

- You are able to set labels to point objects, including handling points without labels specified at load
- You are able to load points and set labels

Resolved Bugs

- When you create a plane, set depth is now reported congruently through-out the application (set depth, profiles and rendering on map display).
- As a user you are prevented from adding transparencies to points, as it is not currently supported.
- Navigation functions that were not working well when changing background color are now addressed.
- Changing background and vertical exaggeration is now persistent when saving the scene.
- Contours created now correspond to the layer of the surface that you select: Deep, Shallow or Average
- Panning in 2D now will not lock on you.
- You can apply a colormap to a scalar and will not incur in a shift in the object.
- Improved draping for images and surfaces that have different cell sizes.
- Exporting the a surface to ASCII now respects the layer selected: Deep, Shallow, Average)
- Export Scene to Geoimage has improvements so that you can include lines and points in the export and ensure their visibility.
- Static Surface graphic user interface dock is improved.
- Contours error in shift created is now fixed.
- Contour created with single height will persist in rendering after you set an offset.
- Selecting the colormap for gridded data will now be applied when you select it in the import dialog.
- Colormap banded adjustments are now being applied consistently with other products for version 8
- Exported .OBJ files will carry over your set clipped settings.
- The Shared Scene operation will now successfully copy your scene without giving you a temporary directory error.
- When you import processed points and build a surface with the Weighting Moving Average (height only) the resulting surface will not have added artifacts that could occur when greatly oversampling the point set.
- When you created plane in Fledermaus 8 it now does not have a 1m offset in the display of it.
- Selected preferences will now persist within sessions.
- Movie making logo watermark now exports properly with the movie rendering.

Other

- Fledermaus Viewer will not give you Licensing errors, these are now addressed
- Fledermaus Viewer crash for a point file specific was addressed.
- There are improvements to the License errors reported to users
- Please note that FMGT and FMMW are independently released, respective release notes can be found here:
  - FMGT Release Notes
  - FMMW Release Notes
- If you are a Caris/QPS workflow please read this information as QPS products do not currently support Caris 11 Licensing.

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

For more information, see our Voting System Policy and Using the feedback project.

The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Fledermaus 8.5.1 Release

21 Sep 2022

We're pleased to present Fledermaus version 8.5.1. In this release, we introduce a few new features, with a focus on building further on our point cloud, along with many improvements requested. Read below for details.

Improvements

- You can now use the time attribute on QPDs on the 4D scene and make use of the time bar to narrow your loaded points to a time frame.
- Default settings of the eye dome lighting were improved to support the EPT-based point cloud objects.
- You can now render movies in less time.
- The playback presentation mode also has improvements, to make the sharing experience better.
- It is possible to work labels onto all axis of the bounding box, and they are in the right orientation.
- There are improvements in the handling of images in TIFF formats images.
- Beam Fan Time series Object now renders and scales correctly on the 4D map display.
- You can now select different options for the total vertical uncertainty associated with the BAG export file: theoretical calculated, CUBE uncertainty resulting calculated from a Dynamic Surface or attached scalar.

Download

Click on the icon to download the latest version of Fledermaus!

Feedback Project

In this release, we have completed 1 feedback item, which satisfies 2 votes. For more information, see our Voting system Policy and Using the Voting System.

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Fledermaus 7.10.0 – FMGT Release

5 August 2021

We are pleased to present FMGT 7.10 which now supports Caris HIPS version 11 and earlier HDCS formats via the latest HIPS I/O library. Using HIPS I/O requires a valid Caris license to run and a new FMGT HIPS I/O licensing add-on.

Vote

Click on the icon above and vote on or create a Feedback issue!

Feedback Project

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The Feedback Project helps us to continue improving our software products. Vote or implement feedback and participate in the process by tracking, watching and commenting on issues!

Fledermaus 7.10.1 – FMGT Release

14 March 2022

We are pleased to present FMGT 7.10.1.

Highlights

- Custom CRS creation when creating a FMGT project
- Dual head Kongsberg kmall support
- Multi-Frequency Kongsberg kmall support
- HDCS - KMALL pairing support, including dual head
- Added an option to treat the HDCS suppressed flag as rejected during HDCS pairing
- Reson T-51 sonar support
- Added a file counter to the processing messages to show processing progress

Bugs

- Processing / Source Files
  - Added support for mosaicing transducers with a 90 degree heading offset
  - Fixed an issue where un-checking the reference grid, clearing the coverage flag and re-mosaicing would lead to an empty mosaic
- Tools and Editors
  - Fixed an issue where the cascading backscatter normalization tool values were not being saved when creating a new mosaic with a smaller mosaic cell size than what was originally computed
  - Added a new prompt when closing the cascading backscatter normalization tool with un-saved edits
- Importing / Exporting
  - Fixed an issue when pairing dual head Reson T50 with HDCS where the max beams listed in the HDCS metadata was 1999 vs the actual 1024 beams
  - Fixed an issue when pairing dual head Reson T50 / T20 with system enumerators of 1 and 2. This error was shown as a *Merge matching failed time lookup for ping: nnnn* warning message and FMGT would only extract one head.
  - Fixed a crash when exporting source file beam details when the source file was un-checked
- Other
  - Added a warning when selecting a project CRS that is non-meter based

Vote

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Getting Started

Welcome to the Fledermaus 8 quick start guide. As a new user, please follow this guide to help you get familiar with the Fledermaus 8 functionality to make a movie in few steps.

To start working with Fledermaus, you need to have it installed. For information on installing, please refer to Fledermaus Hardware requirements and Fledermaus Operating Systems Requirements. For Licensing installation and usage please refer to How-to Softlock Licenses Technical for QPS products.

Working with Fledermaus 8 you will be prompted to work with a Scene or a Project. This guide explains how to work with Scene, which is the traditional way of working with Fledermaus.

The data used for this guide is the single head EM2040C data from Brest, France, that was acquired using Qinsy and was provided to QPS by Université de Brest; these files are available for download.

- Step-by-Step
  - Step 1: Create a Scene
  - Step 2: Importing Data and Creating a Surface
  - Step 4: Create a Presentation
  - Step 5: Render a Movie
  - Step 6: Save the Scene

Step-by-Step

Step 1: Create a Scene

1. When you open Fledermaus 8 you will have a choice of making Scene or selecting any of the available QPS projects on your computer.
2. To make a Scene click Close in the dialog as shown in ***Figure 1.***

Figure 1. *Create a new scene Project Browser*

Step 2: Importing Data and Creating a Surface

Importing Point Cloud data

1. Using the Create Menu, select the Create Surface from Point Files as shown in ***Figure 2***. For more information on the Create menu, please refer to the *Create Menu*.

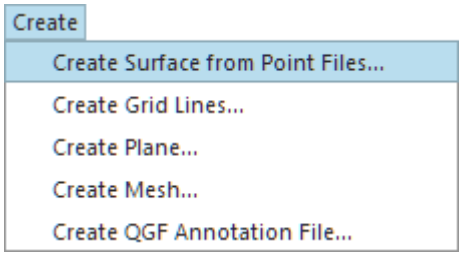
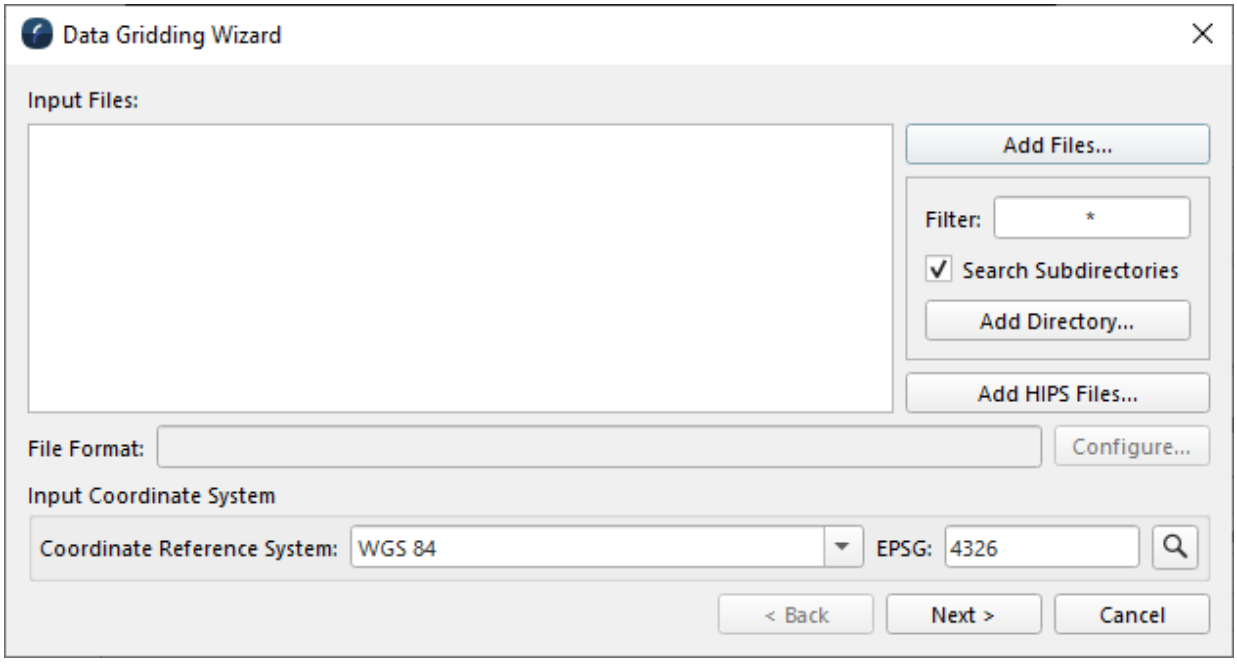
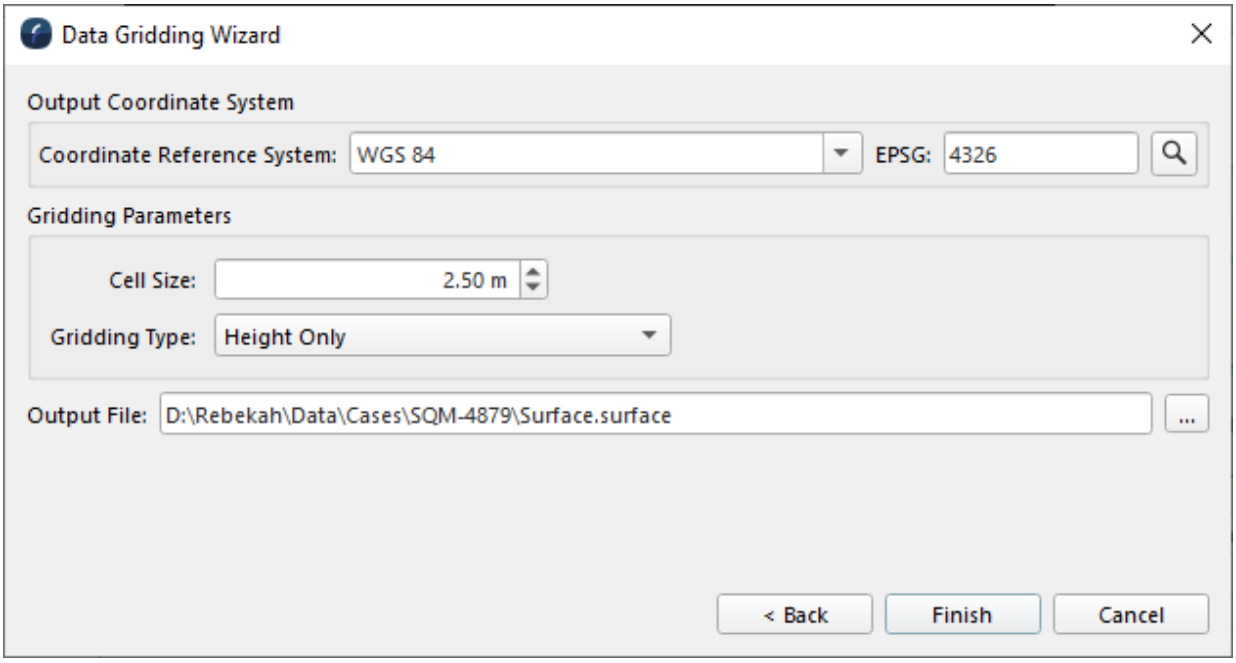


Figure 2. *Image of the Create Menu drop down options.*

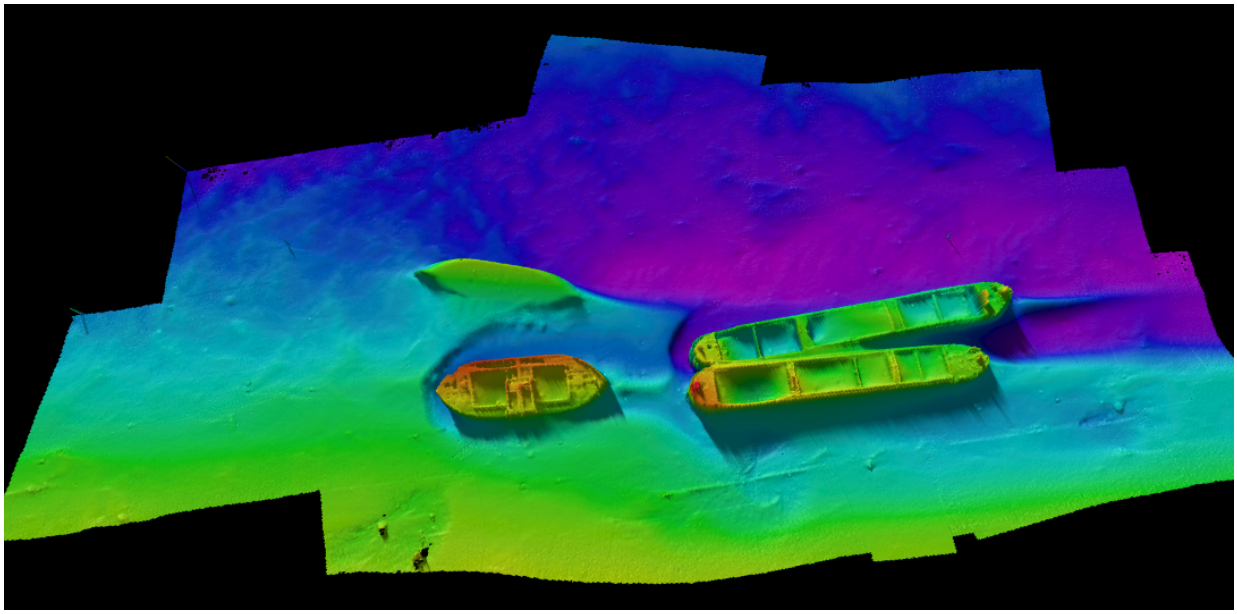
2. In the data gridding Wizard as shown in ***Figure 3,*** select the Add Files or Add Directory option, navigate to the folder containing your xyz files and select. Click Open



3. Once the files have been added set the input coordinate system and click Next, and the second page of the wizard comes up, as depicted in ***Figure 4.***



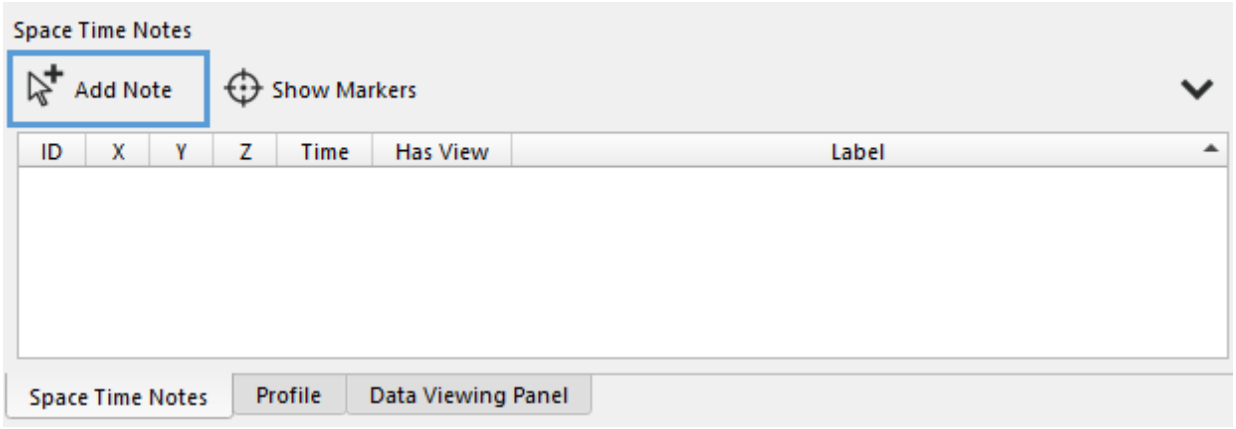
4. Set the output coordinate system, if you are working with a project, it will default to Project's CRS. Check the EPSG code looks correct
5. Check the cell size and gridding type are adequate for your needs. Name the output file and click Finish. You will get a grid as the one below in ***Figure 5.***



Space Time Notes are used to denote an X,Y,Z position in the scene and can have additional attributes such as labels and Notes. You can read more on the Space Time Notes dock here.

1. To create a Space Time Note first select the Space Time Notes Dock, as shown in ***Figure 6***.

2. To create Notes on the surface Click the Add Note icon. Click on the surface to select the view point.



3. To view the Notes you can click the Show Markers icon.
4. To add additional Notes, click the Add Note button again.

Step 4: Create a Presentation

Adding Space Time Notes to the Slides Dock is the first step in creating a presentation. You can find additional information on the Slide Dock here.

1. Select the Space time notes in the dock as shown in ***Figure 7***. You can select additional notes by holding down the Shift or Ctrl keys. Make sure to select the first note first other wise the Slides will be reversed.
2. Right Click and select Add to Presentation

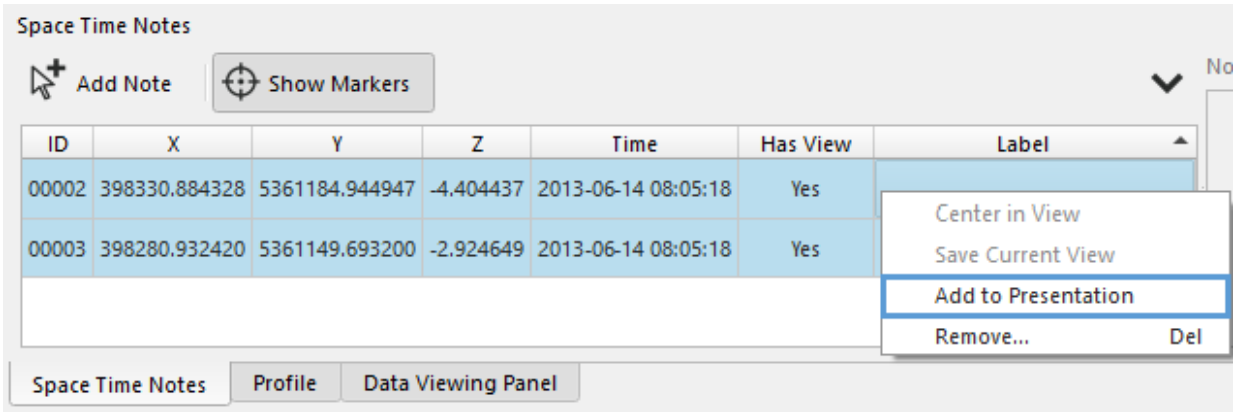


Figure 7. Exporting Space Time Notes to slides.

3. This will add the Space Time Notes with associated images to the Slides Dock, as shown in ***Figure 8.***

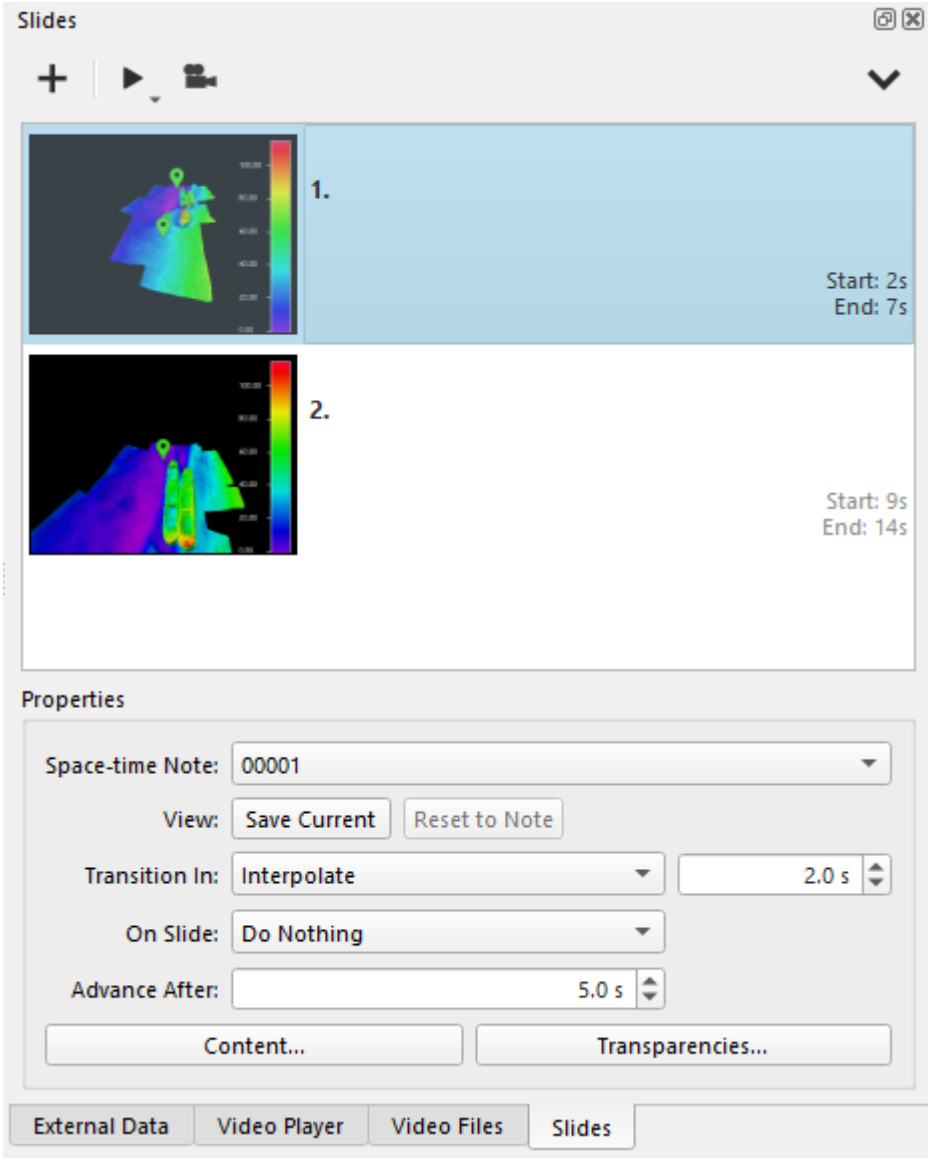


Figure 8. *Slides Dock window with slides created per Space Time Note.*

4. You can adjust the view for each slide using the View option, click Save current to change the view.
5. For each slide you can add text and images using the Content option, as shown in ***Figure 9***.

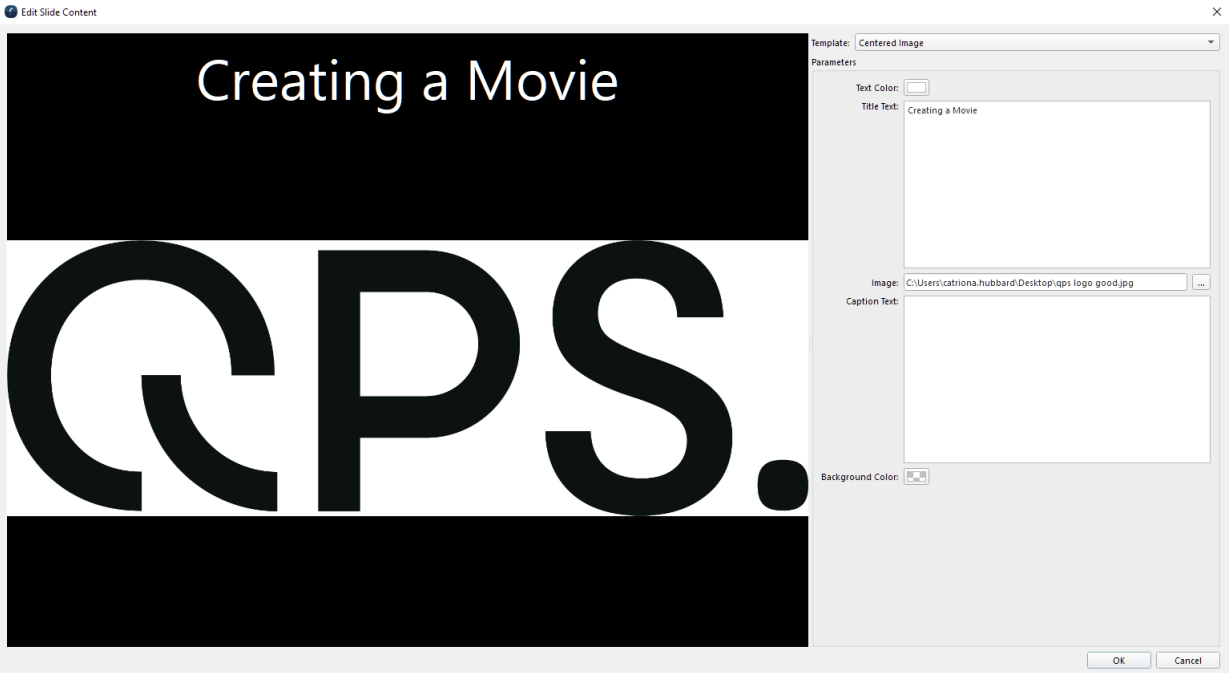


Figure 9. *Content Options window.*

6. You can also change the presentation options, by default Fledermaus will interpolate between the Slides but you can change that to have no interpolation
7. On Slide options allow you to either do nothing or to rotate, an additional option will be activated at the this point which will allow you to choose the direction and speed of orbiting. You can also add Transparencies to any loaded object in the scene.
8. To view the Presentation you can use the *play* icon and drop down menu, as shown in ***Figure 10.***

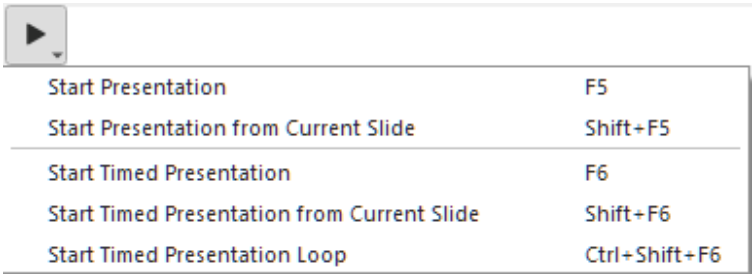


Figure 10. *Play Presentation Menu from drop down.*

Step 5: Render a Movie

Once you are happy with the presentation you can either save the project or render it into MPEG4 format.

1. Click the following icon to begin rendering your presentation to a movie:

The Render presentation window, as seen in ***Figure 11*** below, will appear.

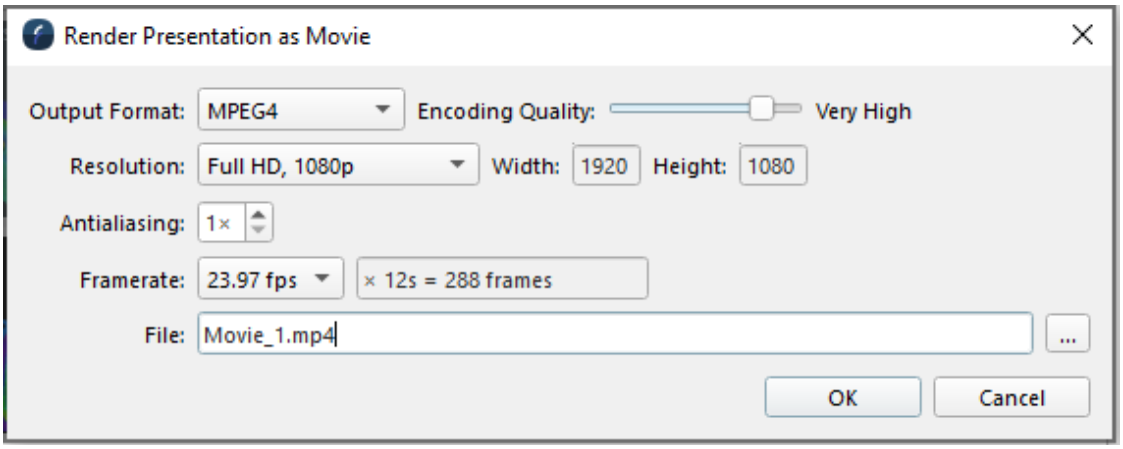


Figure 11: Render Presentation as Movie Wizard

More information about the rendering process can be found here.

Step 6: Save the Scene

Once you have completed creating your scene and adding data it is possible to save the scene for future use or distribution

1. Select the File dropdown menu and the Save Scene... option, from the File drop down menu as shown in ***Figure 12***.

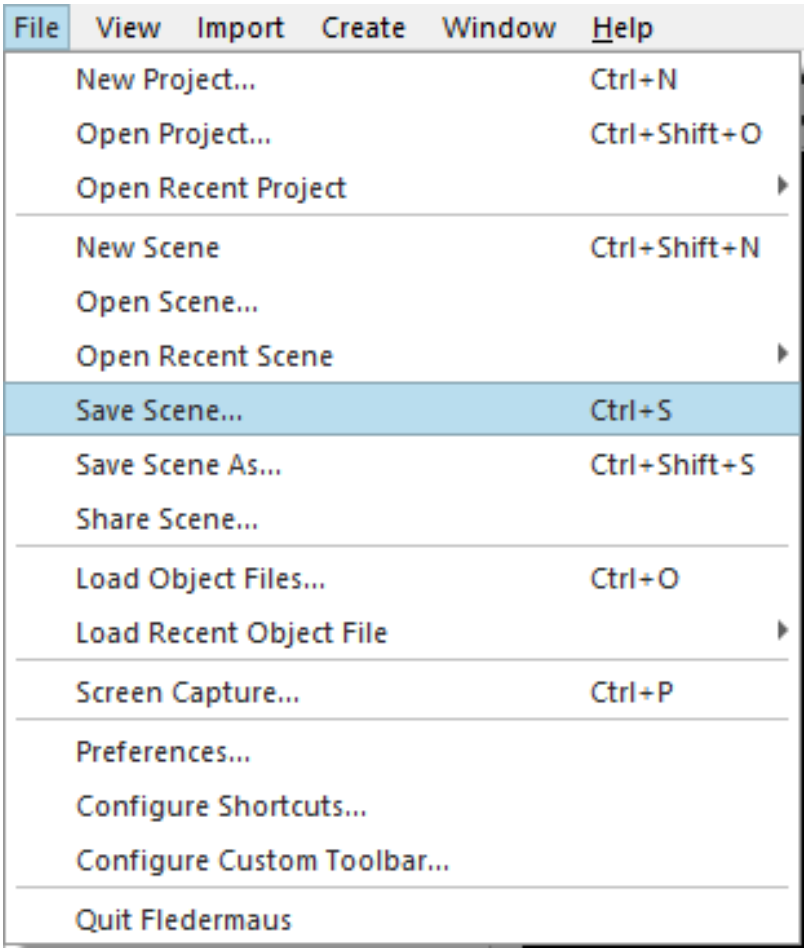


Figure 12. *Fledermaus 8 File Drop Down menu options.*

Once you have a saved scene this can then either be opened in Fledermaus or in the Fledermaus viewer. Please be aware it is not backwards compatible to version 7.

How-to Articles

- How-to Create a Mesh
- How-to Drape a Geoimage onto a Surface
- How-to Licensing Manager Fledermaus 8
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- How-to External Data Dock
- How-to Import a 3D Terrain Mesh
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- How-to Screen Capture
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- How-to work with interaction devices
- How-to Obect Tracking/Vessel Manager
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How-to Create a Mesh

This how-to briefly explains how a Fledermaus mesh can be created, used, and analyzed.

This functionality is only available in Fledermaus version 8.0, and described for 8.2 and above.

On this page:

- Introduction
- Creating a Mesh
  - Step-by-step
    - Step 1: Determine which files you are using and select them.
    - Step 2: Open the Meshing Wizard.
    - Step 4: Create your mesh.
    - Step 5: Working with the resulting mesh.

Introduction

A mesh can represent more than one height value per cell, allowing better representation of a 3D object than a regular surface. If you inspect ***Figure 1a,*** there are some overhanging features on the wreck that are well represented Vs. ***Figure 1b*** a regular surface (that we could call 2.5D) of the same region of interest. It is apparent the detail would be lost by the one height value per cell limitation.

How is this achieved? Meshing in Fledermaus uses polygonal meshing techniques, which are created from a collection of vertices and triangles to make up a shape. The resulting mesh object will have a variable resolution (which means that the resolution of number of vertices and facets varies along the areas inspected), based on the point density, parameters set, and the shapes in the region of interest itself.

Due to these characteristics, a mesh can be a better option to model 3D objects that surfaces may have trouble representing truthfully, including data containing wrecks or vertical surfaces like a retaining wall.

For example, a Mesh vs a Surface of a wreck:

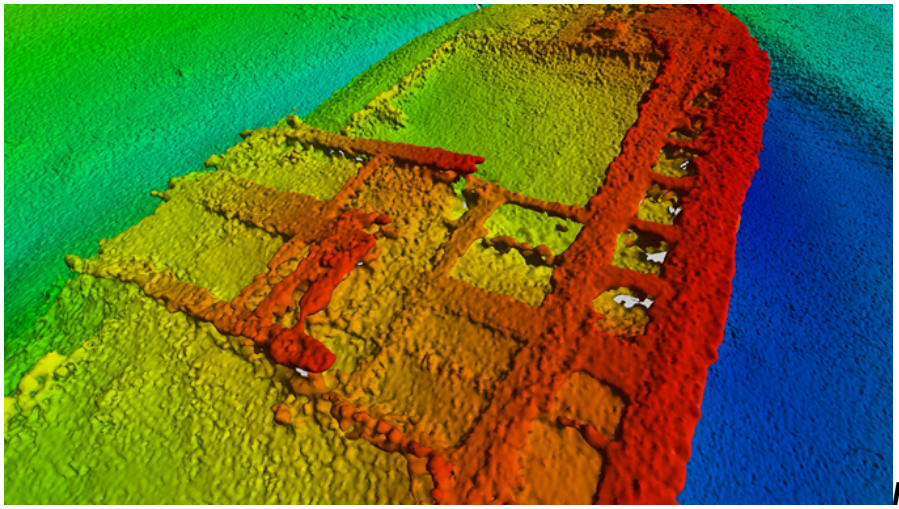


Figure 1a. *5cm Mesh - Brest Wrecks Data set*

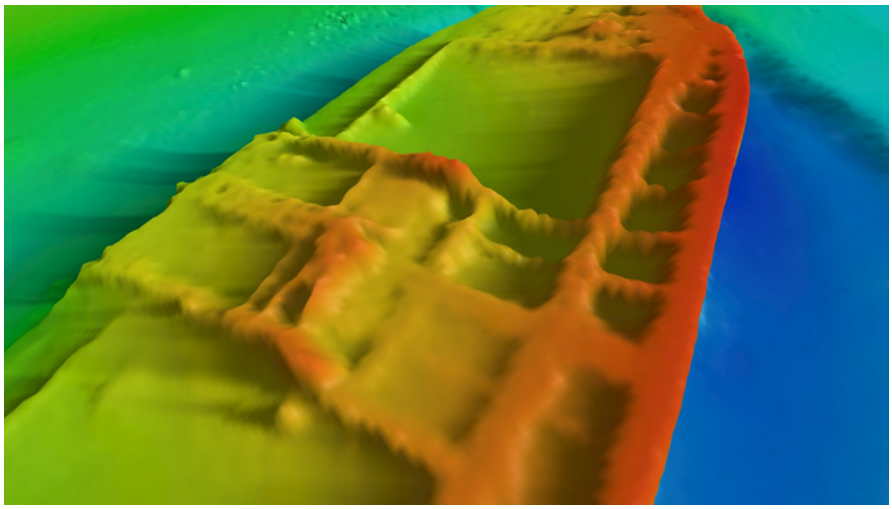


Figure 1b. *10cm surface - Brest Wrecks dataset*

Creating a Mesh

A mesh is created from point files, including file types such as .qpd's and .points files.

There are a a few ways that you can begin the meshing process. You can create from previously imported points files, or create upon import of external points files.

However this how-to will focus on the steps to create a mesh from previously imported files, that are already part of a scene.

Step-by-step

Step 1: Determine which files you are using and select them.

With the imported point files in the scene, you will need to select the specific files that you would to create a mesh from. Meshing is an intensive operation, we do not recommend that you run full datasets. First select a region of interest to try parameters and ensure you have a selection around the desired area in the scene. For more information on importing data in Fledermaus 8, please visit Fledermaus File Menu or Fledermaus Import Menu.

Step 2: Open the Meshing Wizard.

From the *Operations* menu in the Objects dock:

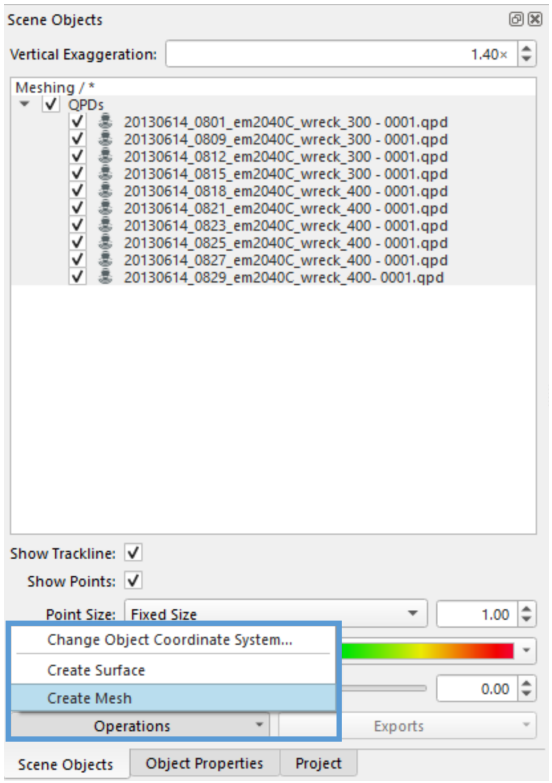


Figure 3. *Operations Menu - Create Mesh*

You can also access the Operations > Create Mesh wizard through the right click menu options on the selected files, as shown in ***Figure 4***:

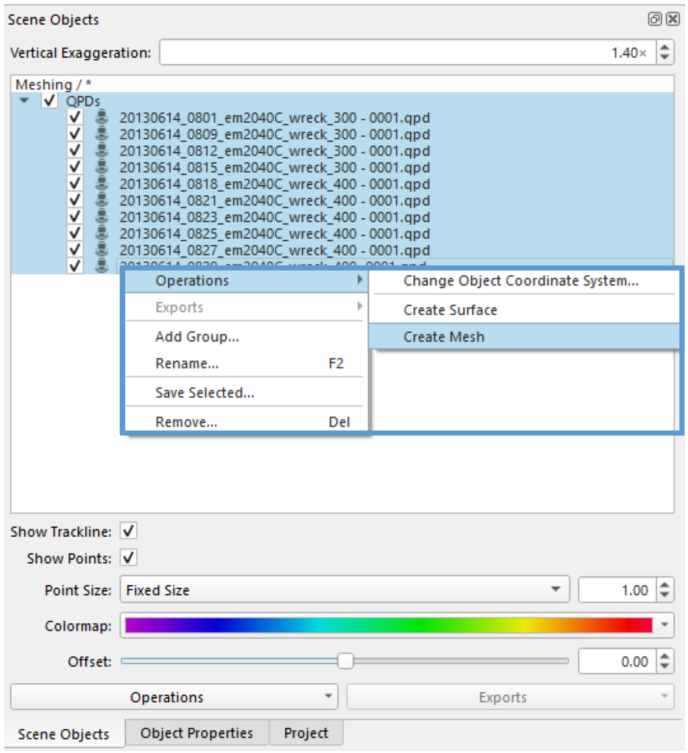


Figure 4. *Right click menu options, guided to Operations > Create Mesh.*

Step 3: Set up required parameters.

When you first open the meshing wizard, select the type of algorithm that you are going to use from the *Mesh Creation Algorithm* drop down menu. There are two options here: *Poisson Surface Reconstruction* as seen in ***Figures 5*** and the *Delauney Triangulation* depicted with parameters in ***Figure 6***, and each option will give you a different set of parameters to establish. Below some example parameters that you can try if you use the sample dataset. You can find the detailed explanation of the parameters for the meshing algorithms in Fledermaus Create Mesh Wizard which is part of the Fledermaus 8.x reference manual.

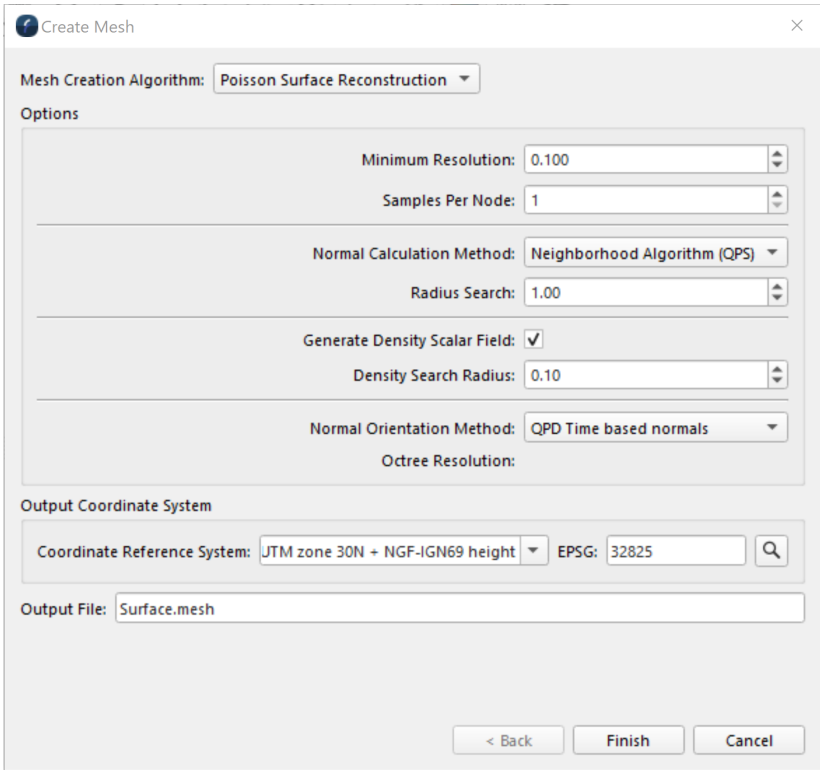


Figure 5. *Create Mesh Wizard - Poisson Surface Reconstruction*

By default this algorithm will be selected when the wizard is first opened. It is the true 3D option, and allows more for more customization of the parameters used. However the trade off here is that this method often has longer processing times, and higher hardware requirements.

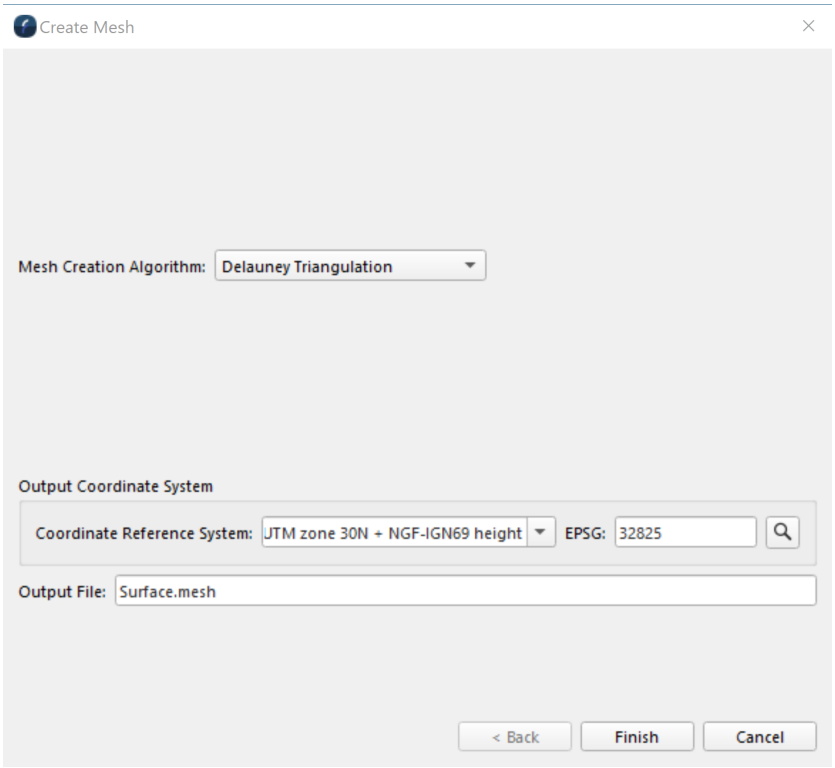


Figure 6. *Create Mesh Wizard - Delauney Triangulation*

This algorithm produces a surface which does not represent objects in 3D, but does represent steep slopes and 3D objects better than a regular 2.5D surface. This option may have fewer parameters to customize, but is a much faster and less demanding process

Step 4: **Create your mesh.**

Select 'Finish' once you are happy with the parameters to be set. Fledermaus will then proceed to create a mesh. Depending on the parameters chosen by user you could have an end result as depicted in ***Figure 7.***

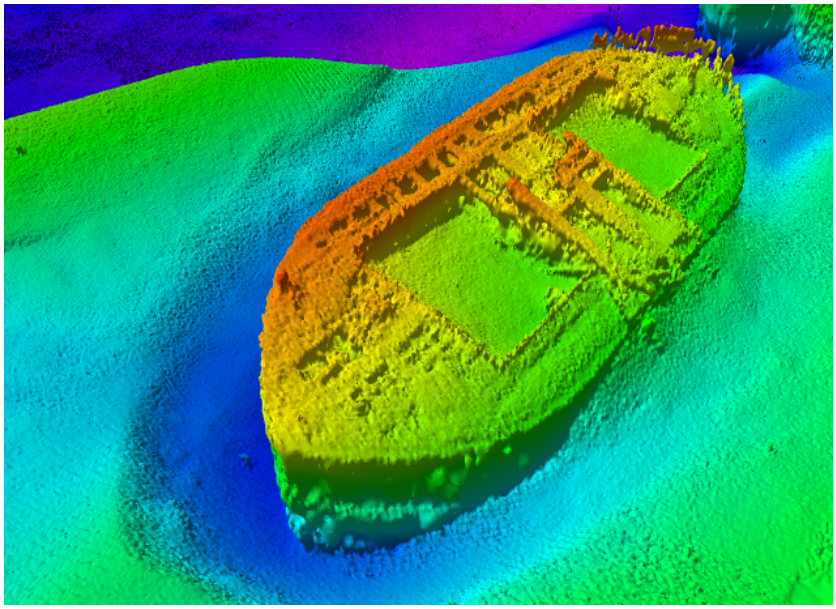


Figure 7. *Resulting 5cm mesh - Brest wrecks dataset*

> To keep in mind:
>
> - You may need to go through a couple of iterations to find the best parameters, it will depend on your dataset.
> - The meshing process is a computing intensive process with high memory requirements, it will require time and memory available in the computer. Therefore in many cases a small selection containing a feature of interest may be all that is needed, paired together with a regular 2.5D surface to model a general seafloor around the feature.

Step 5: Working with the resulting mesh.

Once a mesh object is part of the scene, it will be displayed in the Fledermaus Scene Objects Dock with all other objects in the scene.

Aside from the ability to change the object coordinate system of your mesh, there are two mesh specific operations that can be done: clip mesh (a) and slice mesh (b). These can be found in the Operations drop down menu on the object docks.

a. Clip Mesh

The *Mesh Clipping* dialog, as seen in ***Figure 8*** below, can be used to clip the selected mesh according to the sounding density along its surface.

Figure 8. *Mesh Clipping Range dialog*

As seen in Figure 8 above, by default the minimum sounding density is set to 1, so as to hide areas that have 1 or fewer soundings in them.

For example, ***Figures 9a-c*** show this funtionality, comparing the default range (***Figure 9a***) to a reduced range (***Figure 9b***):

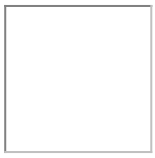


Figure 9a. *Default Range*

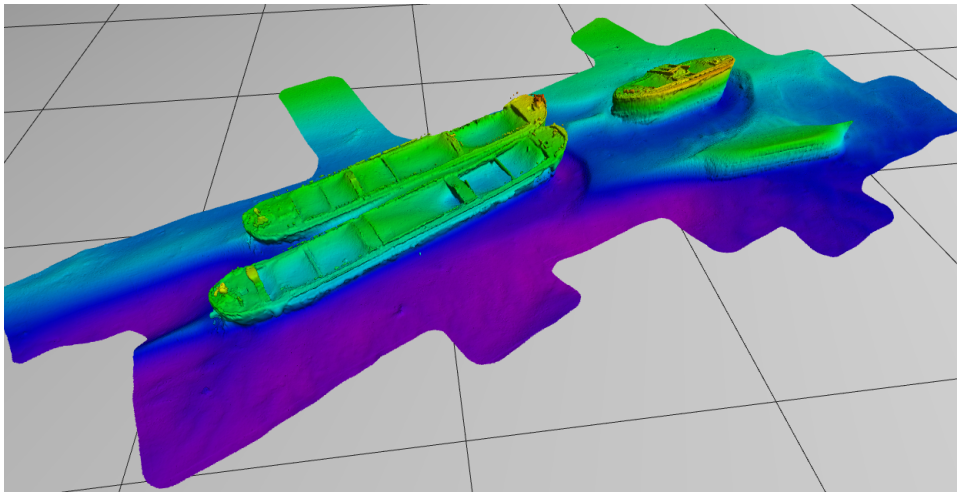


Figure 9b. *Reduced Range*

Detailed information on the mesh clipping parameters can be found here Fledermaus Mesh Clipping Dialog.

b. Slice mesh

The Mesh Slicer dialog, as seen in ***Figure 10*** below, allows the user to slice the selected terrain mesh on X,Y and/or Z axis.

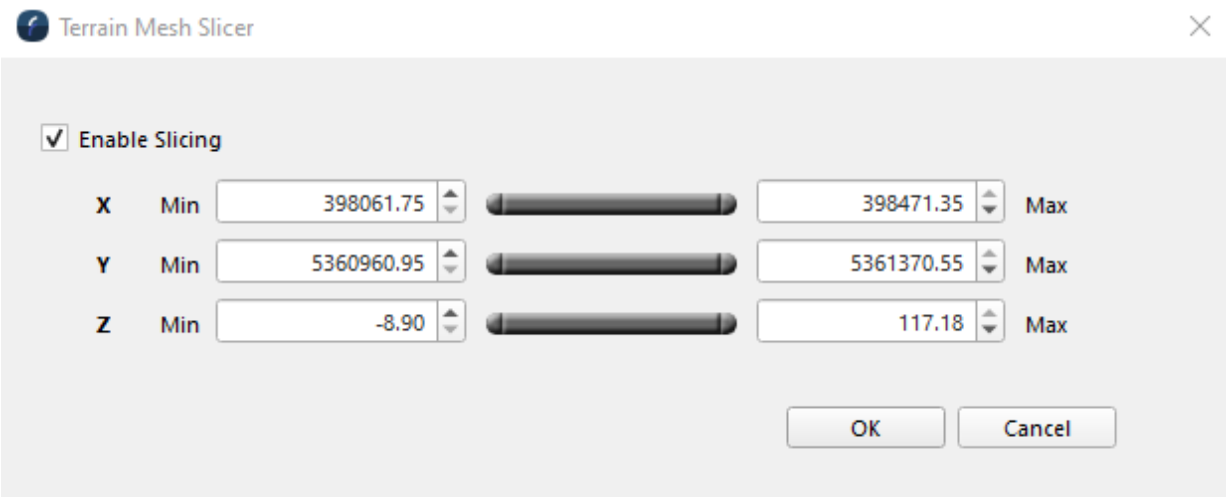


Figure 10. *Terrain Mesh Slicer Dialog*

For example, in ***Figure 11a*** *is the mesh before slicing, and in* ***Figure 11b*** *is the mesh after slicing:*

Figure 11a. *Mesh before slicing*

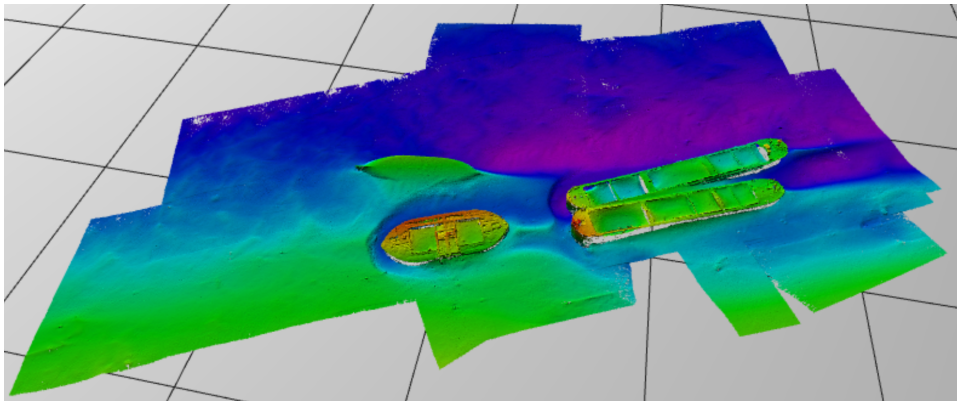
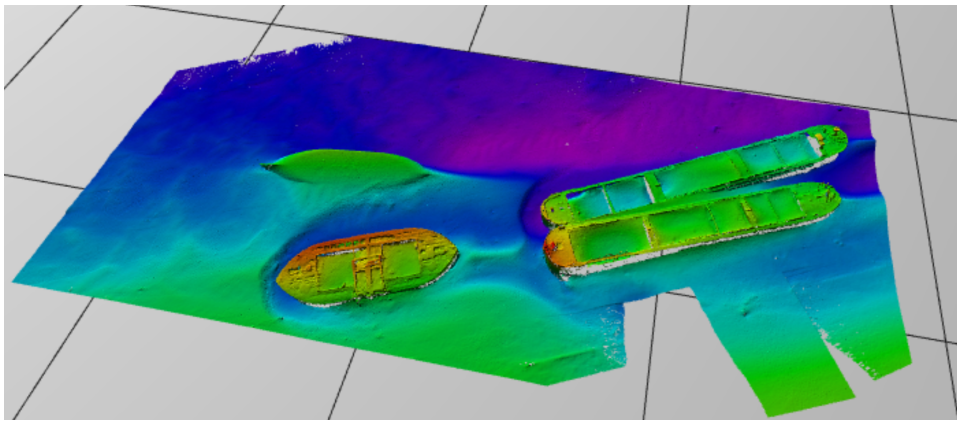


Figure 11b. *Mesh after slicing*



For more information on the Slice mesh window please visit Fledermaus Mesh Slicer Dialog

Return to:

Fledermaus How-to Articles

Fledermaus Documentation

How-to Drape a Geoimage onto a Surface

This how-to briefly explains how to drape a geoimage onto a surface to view a GeoTIFF as a 3D surface.

On this page:

- Introduction
  - Step-by-step
    - Step 1: Select Which Files to Use
    - Step 2: Open Draping Wizard
    - Step 2: Setup Draping Parameters
    - Step 3: Create Draped Geoimage
- Additional Information

Introduction

In Fledermaus, you can import a geoimage file to drape onto a SonarDTM surface, making the image look more realistic.

If you inspect *Figure 1*, it shows the flat GeoTIFF and the surface file Vs. *Figure 2* with the draped GeoTIFF now on the surface.

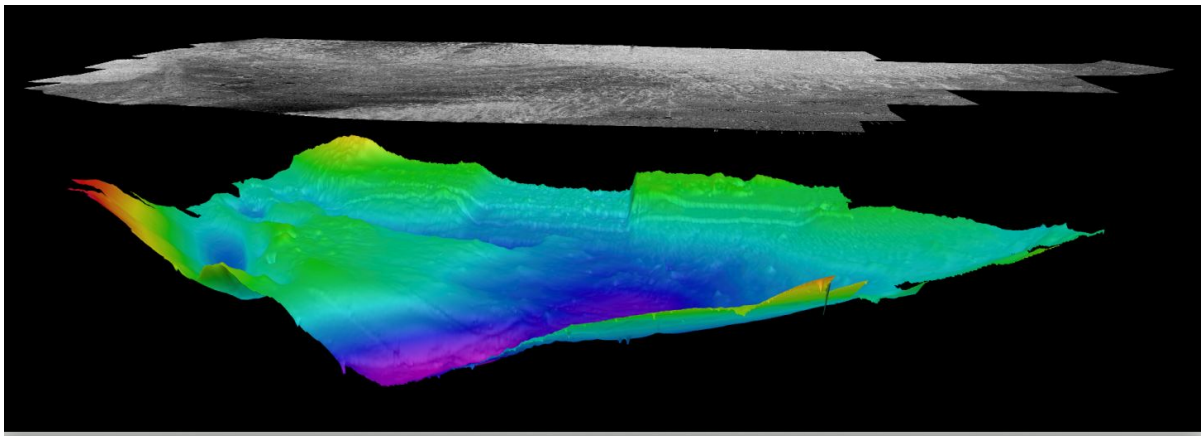


***Figure 1**. GeoTIFF displaying as a flat surface and a dynamic surface underneath.*

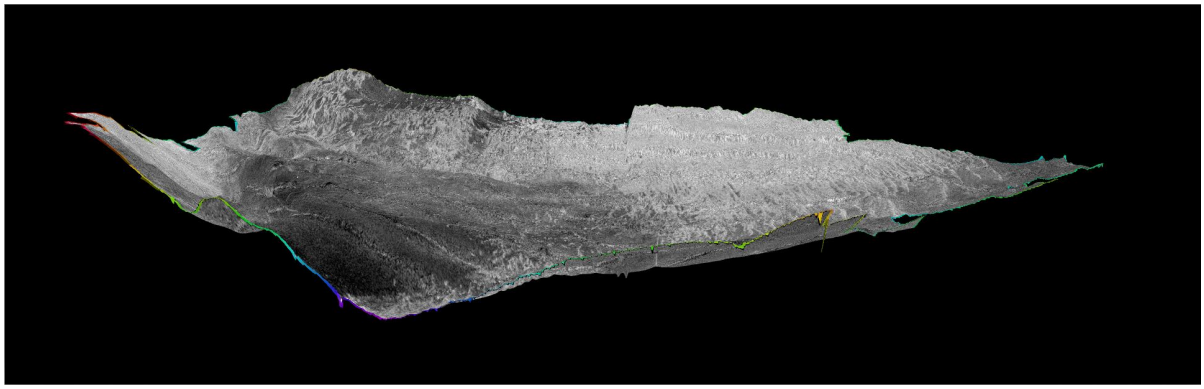


Figure 2. *GeoTIFF draped onto the surface.*

Step-by-step

Step 1: Select Which Files to Use

In the Scene Objects select the surface file you will be draping the Geoimage on.

Step 2: Open Draping Wizard

From the *Operations* menu in the Objects dock access the Drape Image Wizard (see Figure 3).

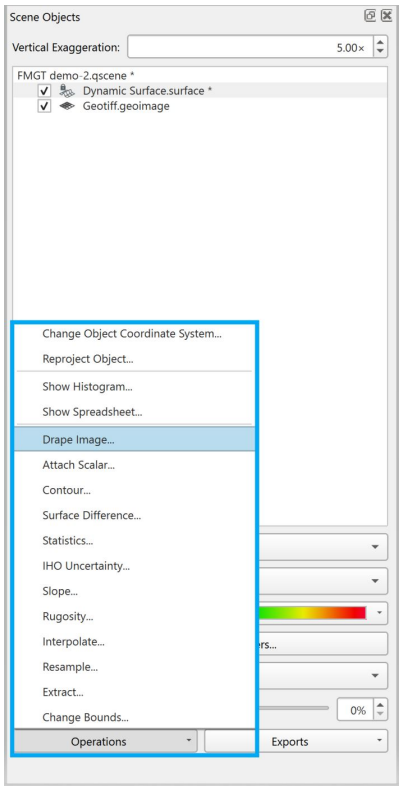


***Figure 3**. Operations Menu - Drape Image*

You can also access the Operations > Drape Image Wizard through the right-click menu options on the selected files (see Figure 4).

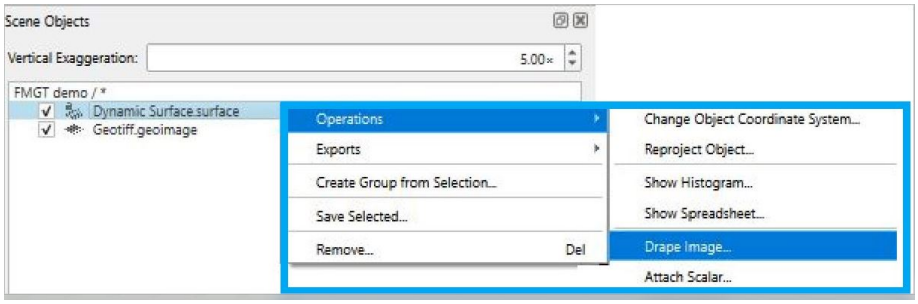


***Figure 4.** Right-click menu options, guided to Operations > Drape Image.*

Step 2: Setup Draping Parameters

When you first open the draping wizard, select the image you are going to use. Click the *Browse* button to specify the path and name of the image file using the standard file selection dialog, or select from the list of available loaded images. When importing an image, the software first cuts out regions from both the image and the DTM that overlap. In order to match areas of the DTM and image, georeferencing must be given for the image in the *Georeferencing for image* fields. Draping Options when selected will create a copy of the draped surface (see Figure 5).

When bringing file on disk, you have the option for the Image Bounds to keep the File Bounds, Surface Bounds, Selection Bounds, or Custom Bounds (see Figure 6).

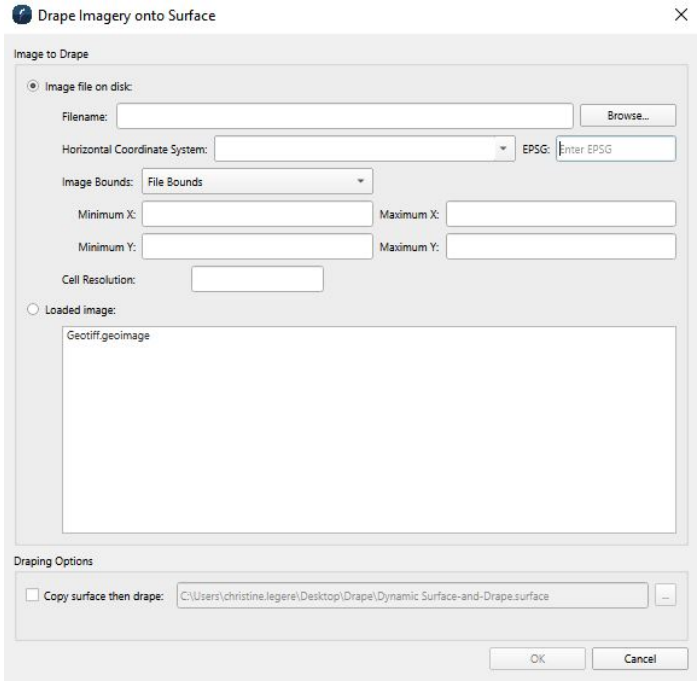


Figure 5. *Drape Image onto Surface Wizard*

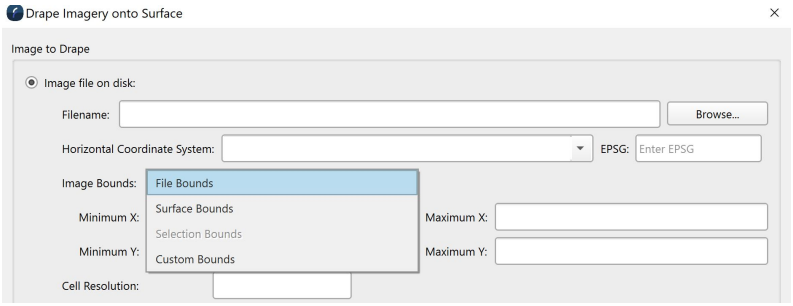


Figure 6. *Drape Image onto Surface Wizard options for image bounds.*

Step 3: Create Draped Geoimage

Select "Ok" once you have set the parameters in the Draping Imagery onto Surface Wizard. Fledermaus will then proceed to create the draped Image. To make the draped visible or hidden go to Draped Imagery dropdown menu in the attributes table (see Figure 7).

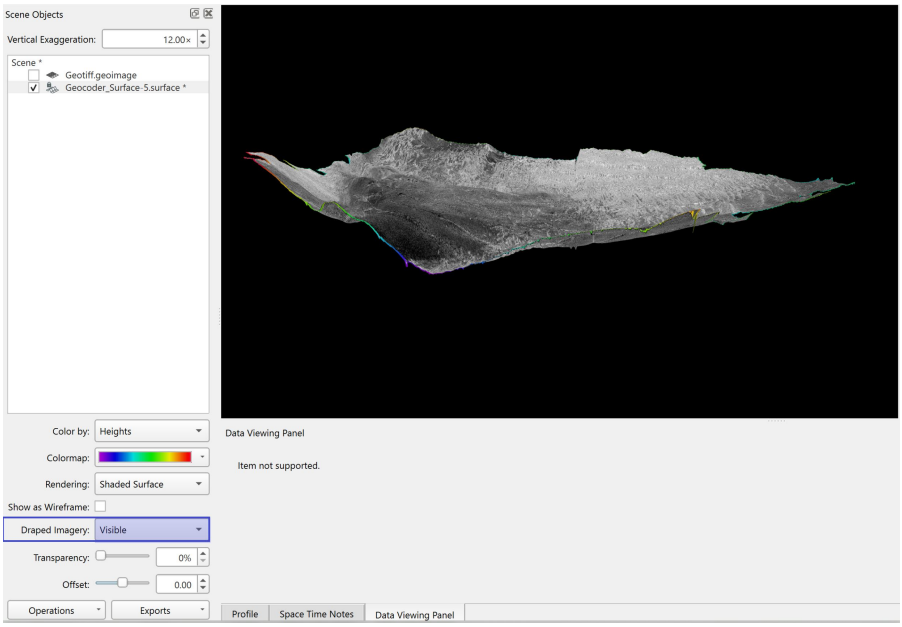


Figure 7. *Drape Imagery visible.*

Additional Information

- Fledermaus Drape Image Dialog
- GeoImage Introduction

How-to Licensing Manager Fledermaus 8

This document explains how to use the License Manager utility.

This is a copy of the page found here:
License Manager Reference

On this page:

- How to Start
- What it Does
- General Description
  - License status
    - License Information
    - Product
    - Add-Ons
  - Copy License ID
  - Upgrade Dongle
  - Add Activation Code
  - Update Softlocks
  - Offline Activation
  - Connect to Server
  - Disconnect from server
  - SET CUSTOM Proxy
  - COMMANDLINE ACTIVATION
  - Help

How to Start

1. Launch the standalone license-manager.exe located in C:\Program Files\Common Files\QPS\License-Manager OR
2. Launch the License Manager from each QPS Application
   a. Window/Linux - View License Status... under Help Menu in the Menu Bar
   b. macOS - View License Status... under the Application Name in the Menu Bar

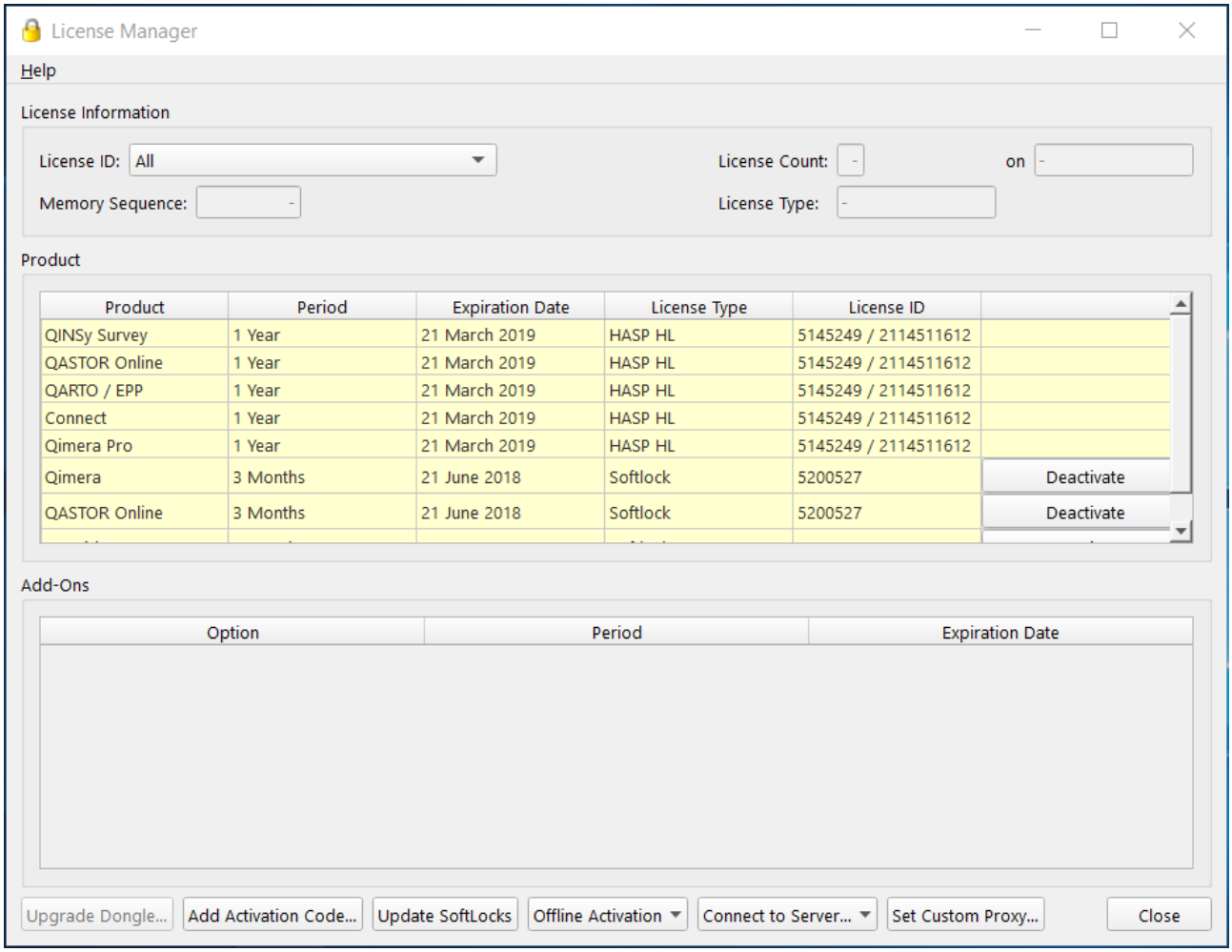
What it Does

This dialog manages QPS product licenses across its entire software suite.

General Description

In order to run any software in the QPS Suite, a valid license must be available for the software application.
QPS applications currently support Softlock and HASP Dongle licenses that are fully integrated into the License Status Dialog.
When you purchase a QPS software application you will be provided with licenses of your choosing.

License status



License Information

The *License Information* group contains information for the currently selected license in *License ID* combo box.
Selecting a License in in the *License ID* combo box will filter the *Product* table to only contain that license.

Product

The *Product* table contains information for all HASP and Softlock product licenses attached to the device.
If a Softlock license is no longer needed on the device it can be deactivated using the *Deactivate* combo box cell and selecting online or offline deactivation.

Add-Ons

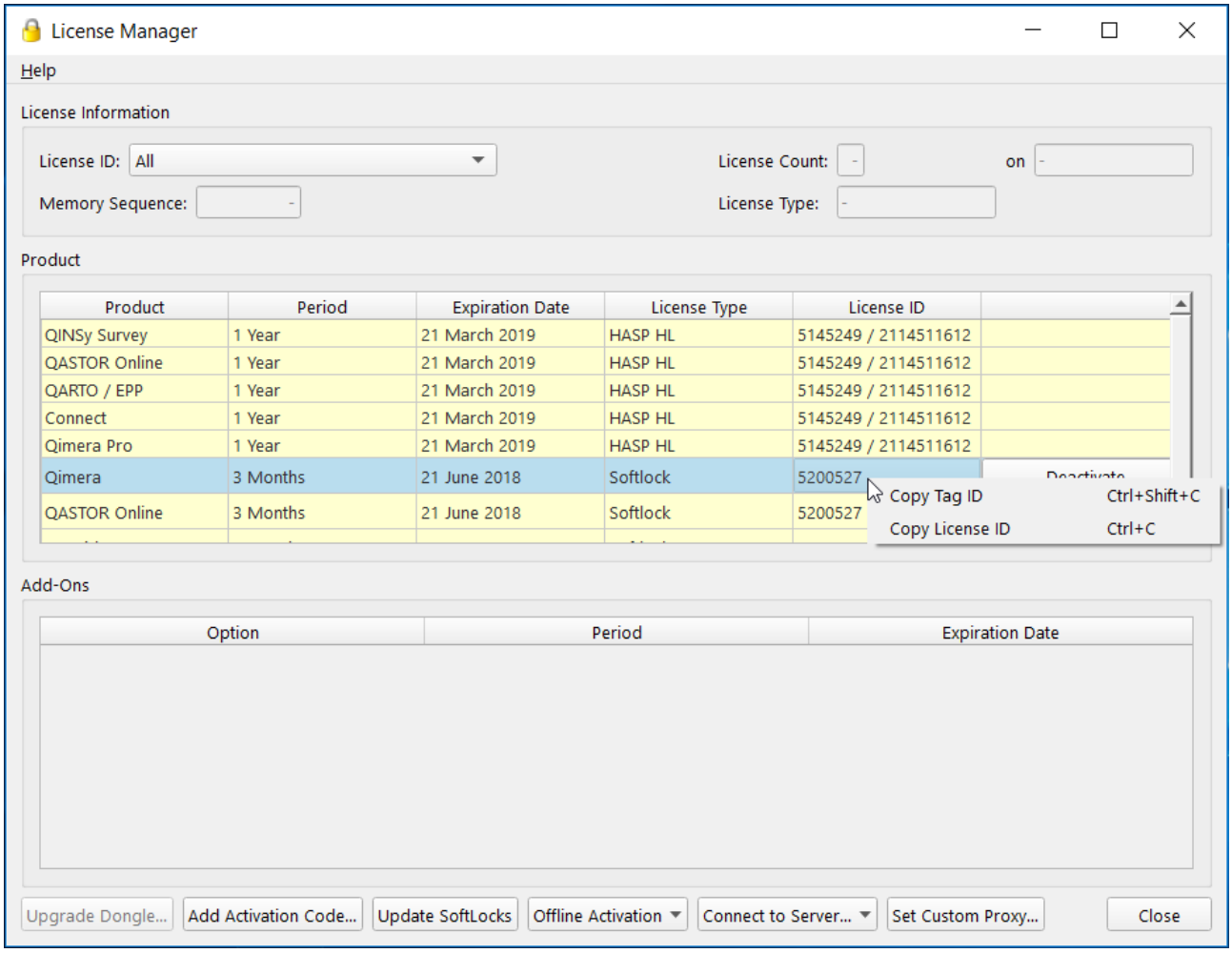
The *Add-Ons* table displays any additional functionality your License may offer for a particular product line.
Selecting a License in the *Product* table will filter the *Add-Ons* for the selected License.

Copy License ID

In the case that a license ID needs to be conveniently copied from the License Manager, simply right click (click with the right mouse button) on the product for which the license ID is to be copied, then select one of Copy License ID or Copy Tag ID. The option to select depends on what is to be copied. The Tag ID is one of the following: for dongles, it is the number that appears on the printed tag attached to the physical dongle, for softlocks, it is the 7 digit number like a virtual tag ID starting with the digits 520, for servers, this is the same as the license ID. The license ID is one of the following: for dongles, it is the number electronically associated with a dongle, shown in tandem with the tag ID in the display separated by a slash; for softlocks, it is the 28 character activation code separated with dashes, not including the product number or name' for server licenses, this is the location of the server for that product.

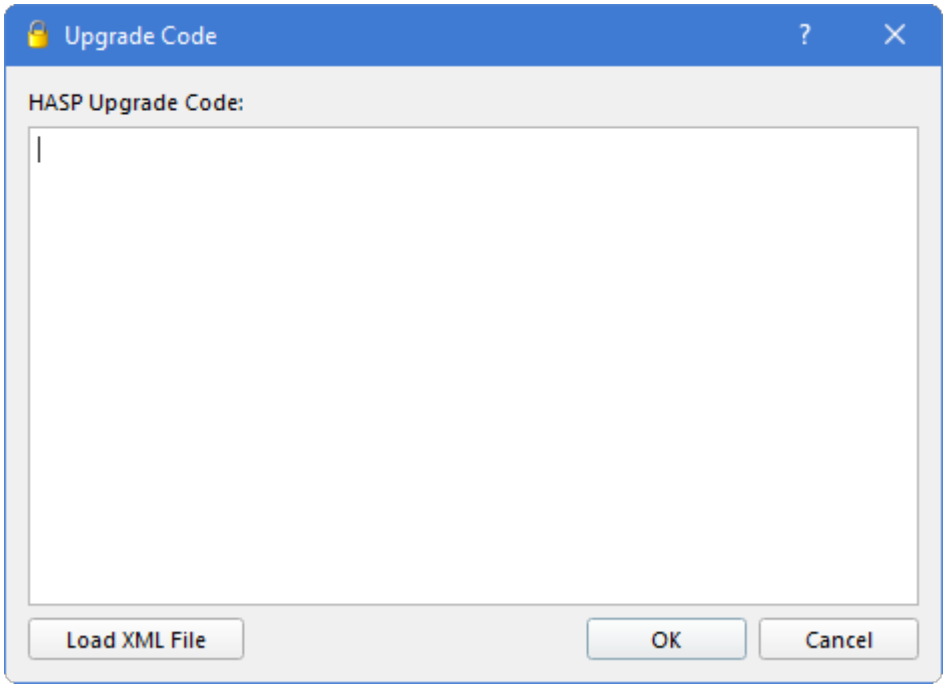
Shortcut keys are available. It is sufficient to click on the product row, then press the control, shift and C keys together (Ctrl+Shift+C) to copy the tag ID. The license ID may be copied as before in v1.2 by pressing Ctrl+C.

See an example of the right click menu in the following.



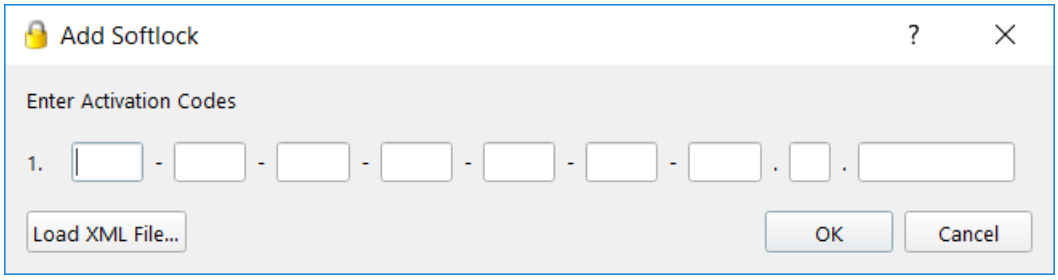
Upgrade Dongle

Selecting a HASP dongle from the License ID combo box will enable the button to *Upgrade Dongle*.
QPS will provide a HASP Upgrade code that will have to be entered or loaded into the Upgrade Code Dialog Window.



Press *Load XML File* to browse for the file. When you open it, the code will automatically be loaded into this window.
After pressing *OK* the dongle will be upgraded and will be ready for use.

Add Activation Code



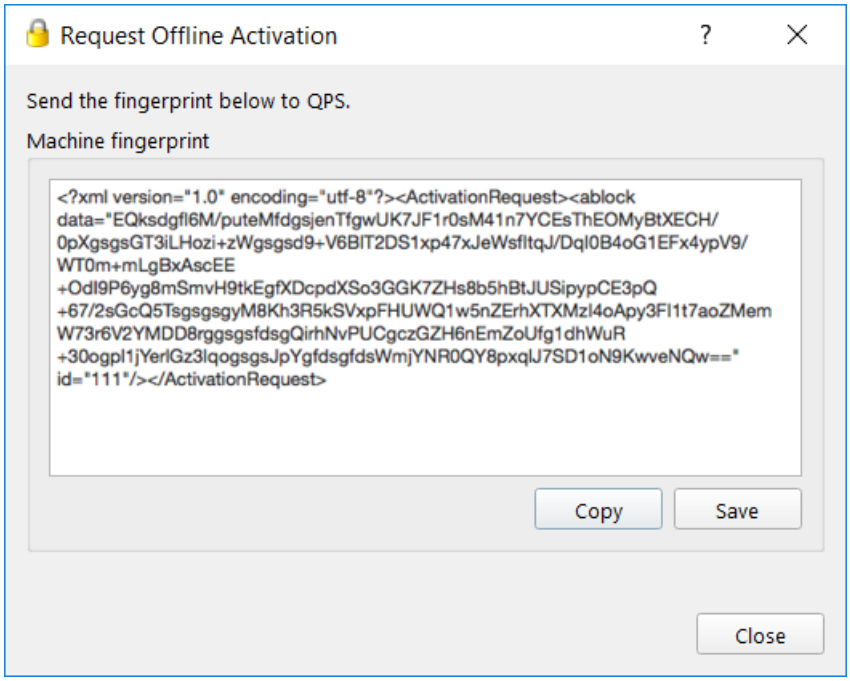
Selecting the *Add Activation Code...* button launches a new dialog to add a new Softlock License obtained through QPS.
The Softlock license key can be entered manually, pasted into the first text field, or loaded with an appropriate XML file using the *Load XML File* button.
Clicking *OK* will apply the new Softlock License for use.

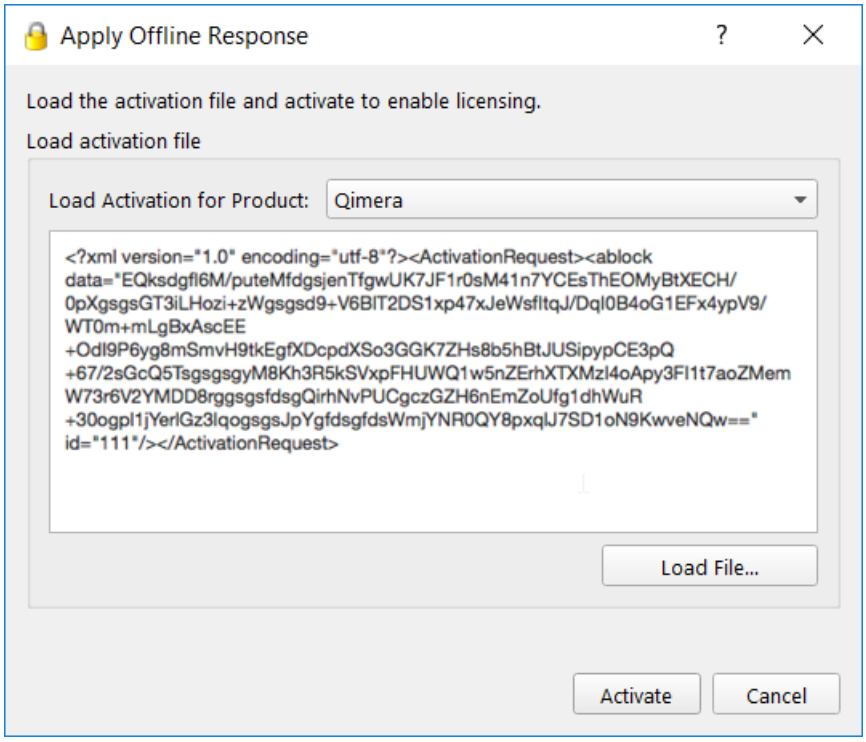
Update Softlocks

If changes have been made to a Softlock License, for example new Add-Ons requested, the local Softlock License will have to be updated.
This can be done manually using the *Update Softlocks...* button.
Softlocks are automatically updated on a regular basis during the routine softlock check or a restart of the licensed application.

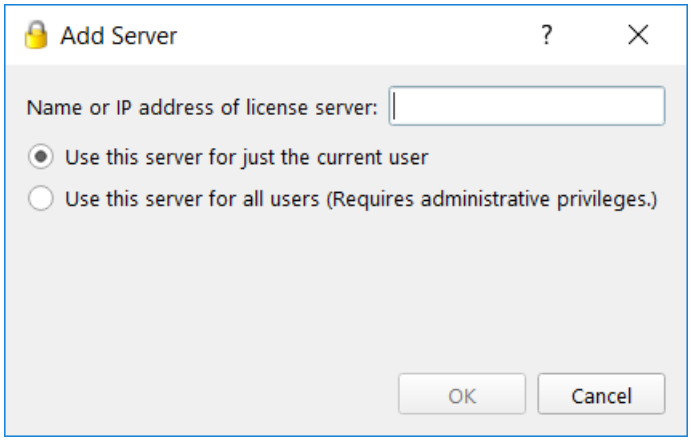
Offline Activation

In the event of limited internet connectivity *Offline Activation* can be performed by clicking the *Offline Activation* button.
After selecting *Generate Request...* you will be required to enter your QPS supplied Softlock Product Key which will generate an XML formatted machine fingerprint that must be provided to QPS.
QPS will then provide an XML formatted activation string that can be applied using the *Apply Response...* option of the *Offline Activation* button.





Connect to Server



If a license server has been configured it can be used to distribute licenses over a network. Enter the IP address of the license server and select the appropriate user option and select *OK*.

Disconnect from server

If a license server has been connected to in the past this option will become available even if the server is offline.
Disconnecting from a server will prompt the user to confirm the requested disconnect. It should be noted that the licenses will remain active until the application is closed.

SET CUSTOM Proxy

By default, License Manager uses whatever proxies your users have set for their system. Where License Manager reads these proxy settings from differs between operating systems:

- Windows: The proxy settings are read from Internet Explorer.
- Mac OS X: The proxy settings are read from the system internet settings.
- Linux: The proxy settings are read from the environment variables `http_proxy` or `all_proxy`.

You can overwrite the default system proxy settings by specifying a proxy server address. When using custom proxies they must be in the form Proxy in the form: http://username:password@host:port/

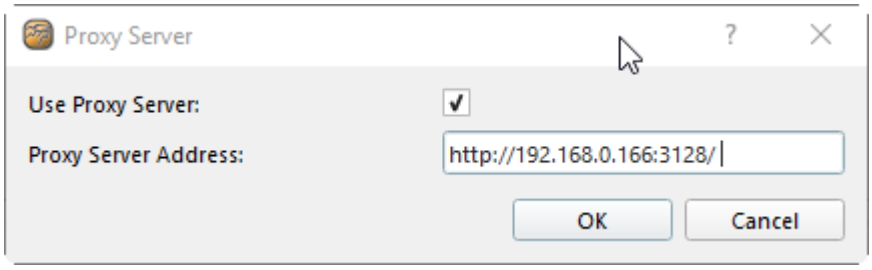
- Example 1 (just a host): http://127.0.0.1/
- Example 2 (host and port): http://127.0.0.1:8080/
- Example 3 (all 3): http://user:pass@127.0.0.1:8080/

Note: If the port is not specified, License Manager will default to using port 1080 for proxies.

- To set a custom proxy simply check 'Use Proxy Server' and specify a proxy server address and press OK.
- To clear a previously set custom proxy simply uncheck 'Use Proxy Server' and press OK.

License Manager also support NTLM proxies on Windows. To use NTLM proxies you must also specify the domain. For example:

http://DOMAIN\username:password@host:port/



COMMANDLINE ACTIVATION

The commandline can be used to activate a softlock license in an automated manner. The -silent option in conjunction with the -activate option can be used to activate a single activation code. It is an error to specify either of these options without the other.

Usage is: license-manager
[-silent]
[-activate <activation-code>]

- "-silent" tells the LicenseManager not to show the GUI.
- "-activate <activation-code>" tells the LicenseManager to activate the specified code.
- "-h" displays the usage information.
- "-ver" displays the version information.
- The exit code indicates if the activation was successful or not.

Help

Clicking the *Help* menu item will give you online and offline options for viewing *'How-to'* manuals for the License Manager and HASP Dongles.

How-to Fledermaus Viewer

This how-to briefly explains how to work with Fledermaus Viewer.

On this page:

- Introduction
- Step-by-Step
  - Step 1: Install Fledermaus Viewer
  - Step 2: Load QPS data
  - Step 3: Navigate the Scene
  - Step 4: Change Visual Settings (Optional)
  - Step 5: Present the Scene (Optional)
- Additional Information

Introduction

Fledermaus Viewer is an application that is installed alongside Fledermaus, which is very useful for sharing data, deliverables and presentations with customers. This application does not require a license to run, thus allowing free access to a limited range of Fledermaus' viewing capabilities with the same look and feel as the full Fledermaus install. Capabilities available in the Viewer include opening scenes, loading object files, exploring those files in 4D, and playing presentations.

For the example scene shown below, Bathymetry Data used is from the Fisheries and Oceans Canada Non-Navigational Bathymetry Data, and the Geo-images used are from the New Brunswick GeoNB Data Catalog, the area used was the Mactaquac dam Headpond, N.B., Canada.

Step-by-Step

Step 1: Install Fledermaus Viewer

Fledermaus Viewer (see Figure 1) is installed automatically with Fledermaus but can also be downloaded individually from the QPS Website.

Figure 1. Fledermaus Viewer desktop icon.

Once the viewer is installed, open the application.

Step 2: Load QPS data

Fledermaus Viewer is limited to either loading QPS object files or opening an existing scene. For the purposes of this how to, a scene will be opened.

To import the pre-existing Fledermaus Scene into Fledermaus Viewer go to "File" and select "Open Scene" (see figure 2), and chose the prepared scene. You can also open a recent scene, or load in Object files from the File dropdown menu.

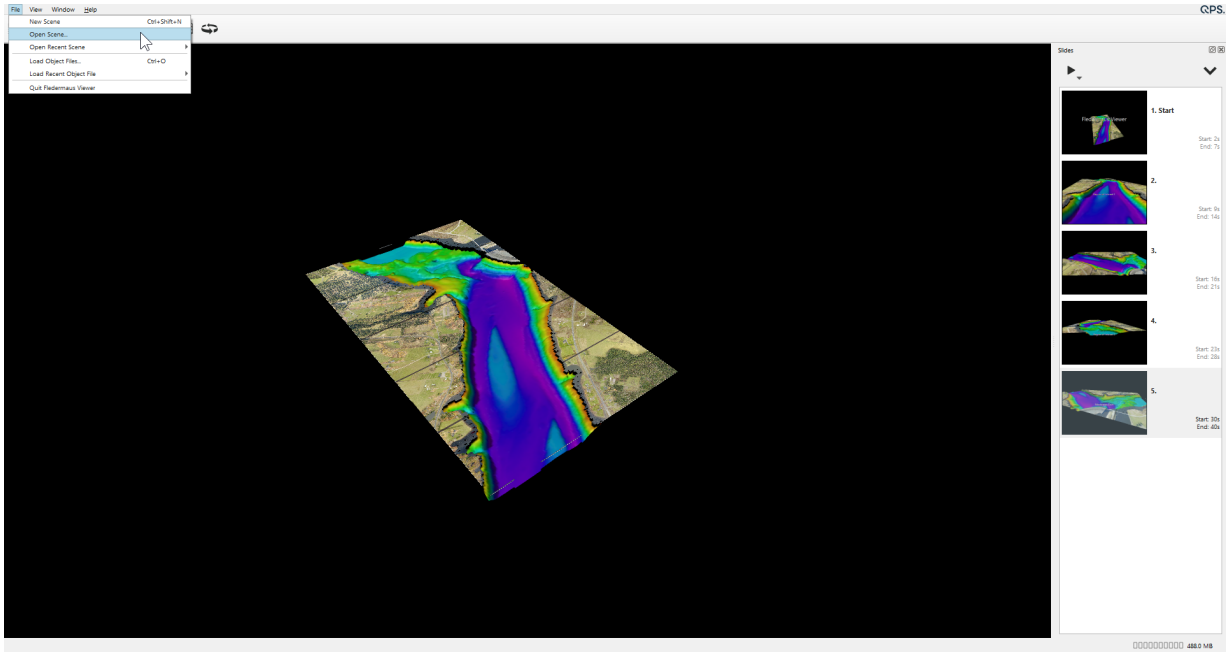


Figure 2. In Fledermaus Viewer, "File" > "Open Scene", opens a scene.

The ability to load Fledermaus 7 files (.sd, .scene) remains in the Viewer! These files are upgraded to to the corresponding Fledermaus 8 file type upon import.

Please note that this upgrade does not replace the original file! The new, upgraded version of the file is stored in the same location as the Fledermaus 7 file it was created with.

Step 3: Navigate the Scene

After loading, the scene should be in the view port, otherwise zoom to scene using:

This is where you can view and explore the presented data, using the Navigation Widgets (see figure 3). You can also navigate around your scene in 4D with the left (rotate) and middle click (pan) buttons on your mouse.

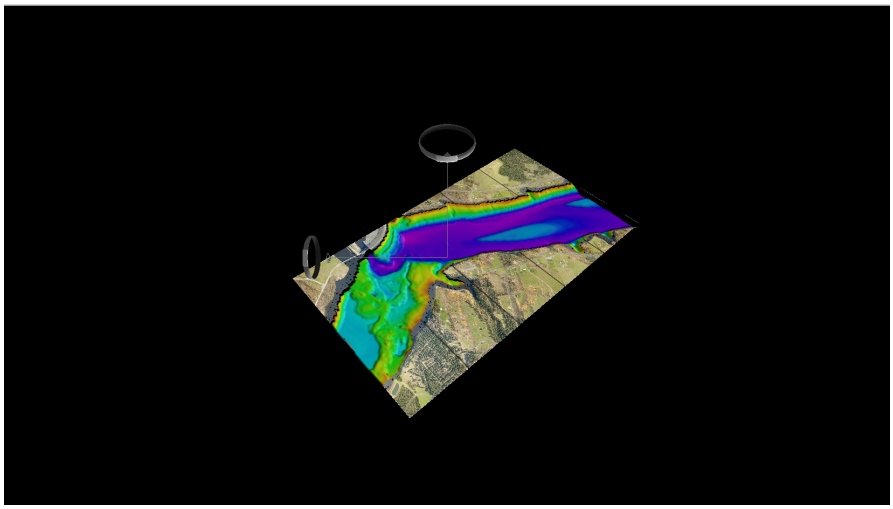


Figure 3. The scene shown in the view port.

Step 4: Change Visual Settings (Optional)

This is an optional step, should you wish to change the visual aspects of a loaded file.

True to it's name, the Viewer is restricted to viewing, and only allows for changes to the visual parameters of the loaded files. For example in ***Figure 4*** below, there are no operations or exports available for the mesh object, but you can change the colormap and shading of the selected mesh.

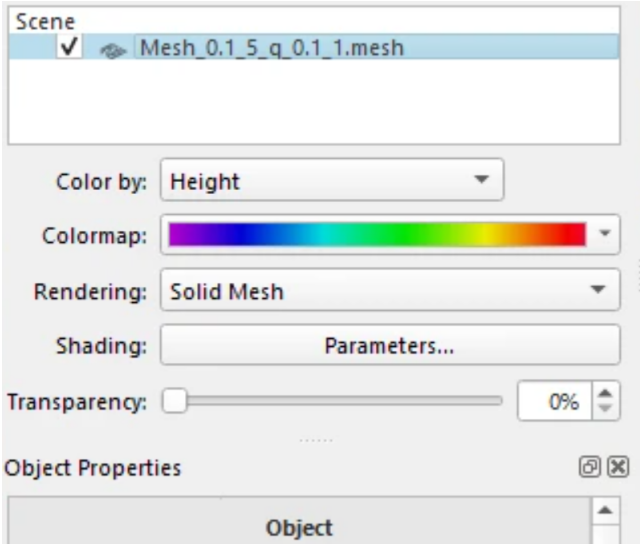


Figure 4. Object Settings

Step 5: Present the Scene (Optional)

This is an optional step, available if the loaded scene contains a saved presentation. If there is a presentation in the scene, an additional window will be available to you, as shown in figure 5:

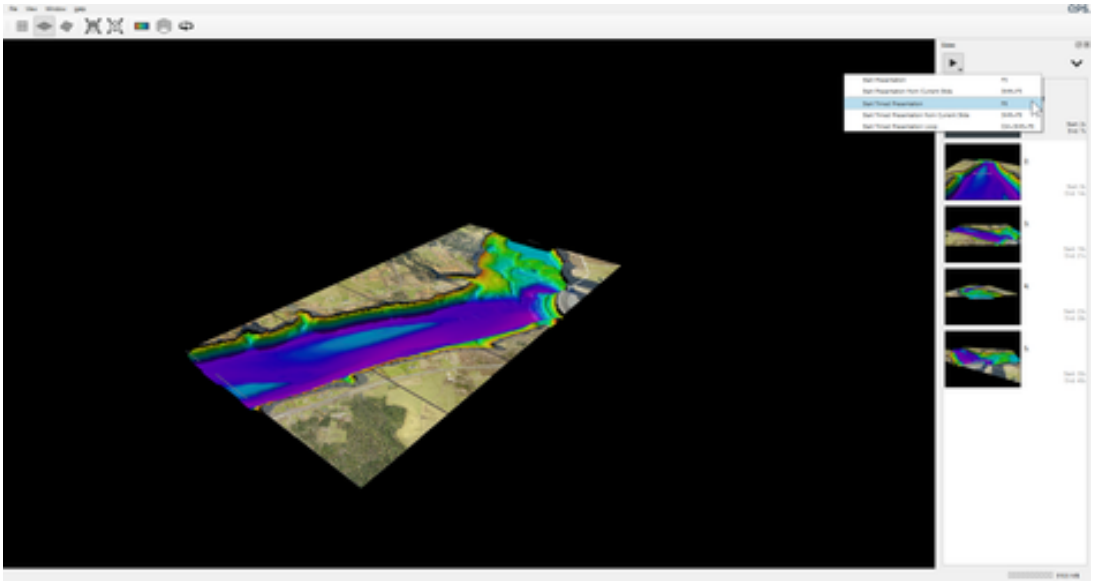


Figure 5. The view of the first slide of the presentation and the slide dock showing each slide, where that time-note is positioned, and the start presentation options.

From this window, you have access to the following functionalities:

- Start Presentation - Starts from first slide and the mouse or space bar can be used to go through slides manually.
- Start Timed Presentation - Starts from first slide and goes through slides automatically based on the times set.
- Start Timed Presentation Loop - When you need the presentation to loop, based on set times.
    - For more information see the Reference Manual.

Additional Information

- Fledermaus Viewer User Guide

How-to Image Editing

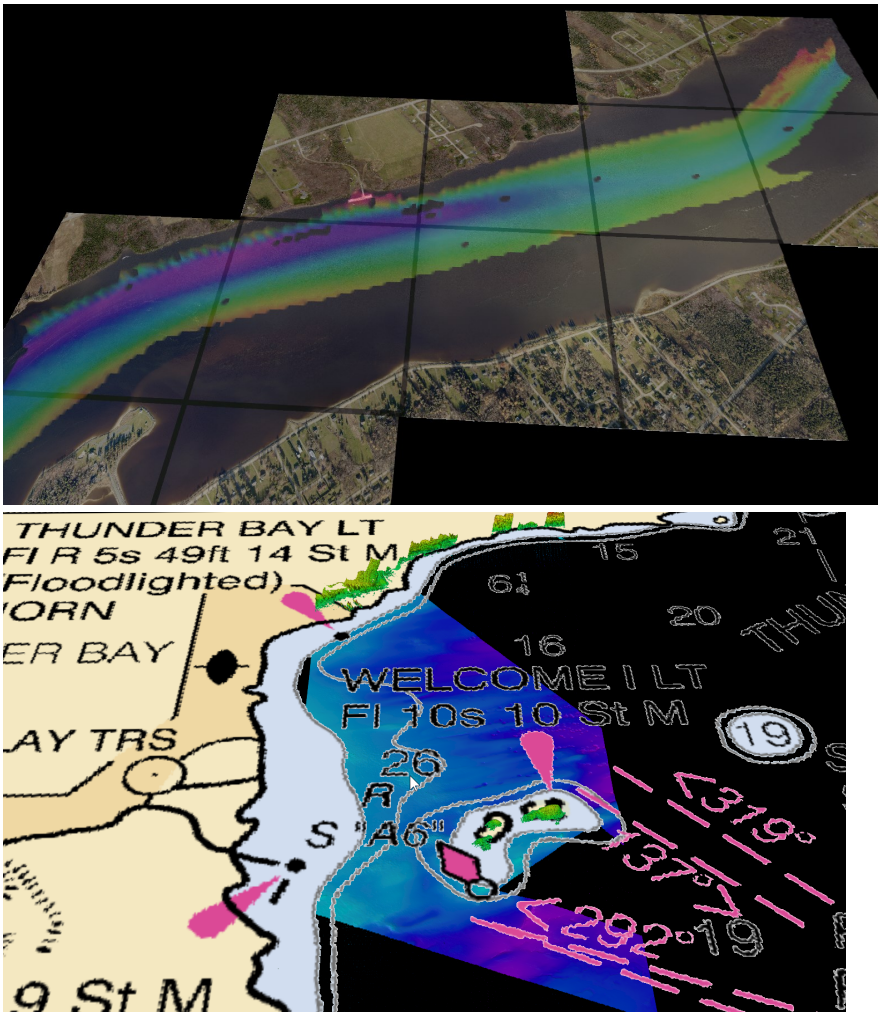
This How-to briefly explains two ways to edit the transparency of images in Fledermaus.

On this page:

- Introduction
  - Making an Image Transparent
  - Using Masking Transparency Channel to Make an Image Transparent
- Additional Information

Introduction

The transparency functionality in Fledermaus is useful to show data underneath images or planes (see Figure 1a) without masking the image around the data. Another way to use transparency with images is to use the masking transparency channel, this technique makes parts of the images transparent based on the color channel chosen (see Figure 1b). For the Image Transparency example scene the Bathymetry Data used is from the Fisheries and Oceans Canada Non-Navigational Bathymetry Data, and the Geo-images used are from the New Brunswick GeoNB Data Catalog on part of the Miramichi River in N.B., Canada. For the masking transparency channel scene the raster chart is from NOAA and the data is from the Fisheries and Oceans Canada Non-Navigational Bathymetry Data in the Thunder Bay, ON, Canada area.



Figures 1a and b. *The Image Transparency function and the Masking Transparency Channel function that can used on images to show the surface underneath.*

Making an Image Transparent

Create a Fledermaus Scene with images and other data, where you would like to make the images transparent. To make an image transparent select the image in the Scene Objects dock. In the Attribute Panel, change the transparency with the slide bar or the toggle box (see Figure 2). The image transparency can be changed from 0% to 100% transparent (see Figures 3a, b, and c) depending on how much of the data needs to be seen underneath.

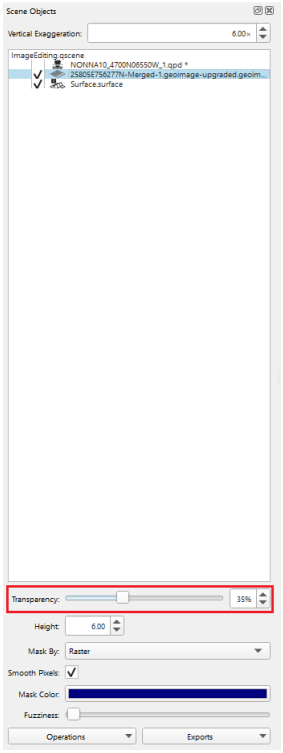
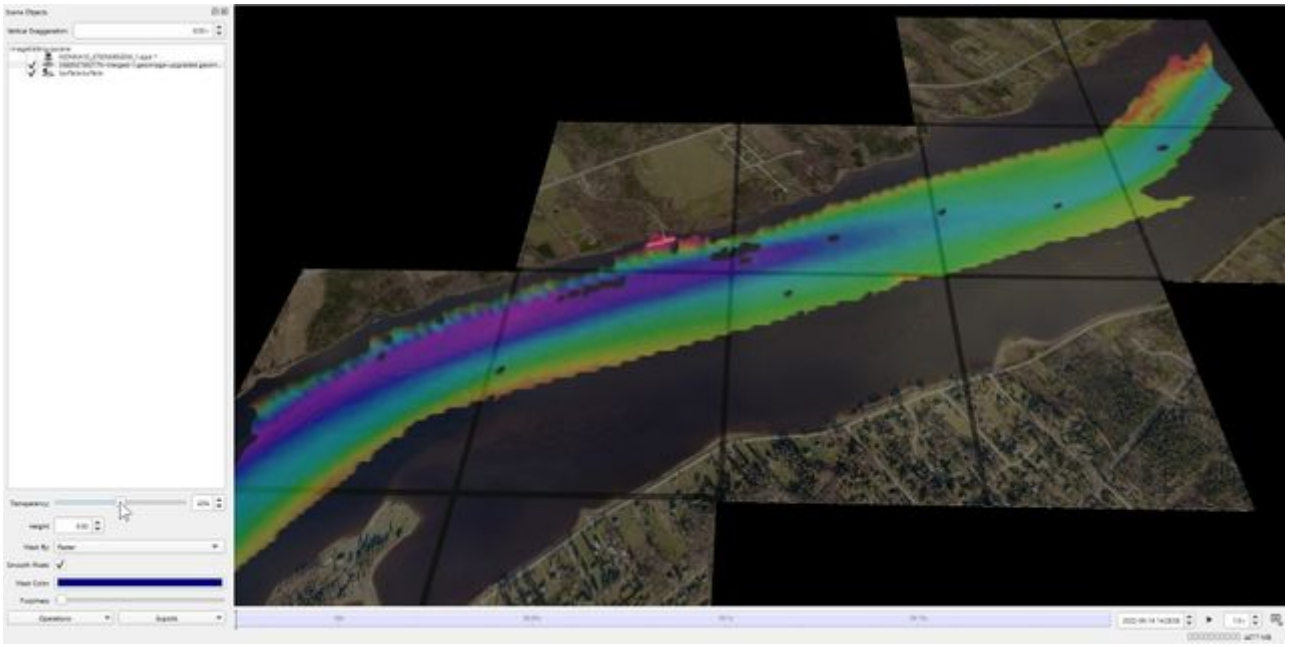
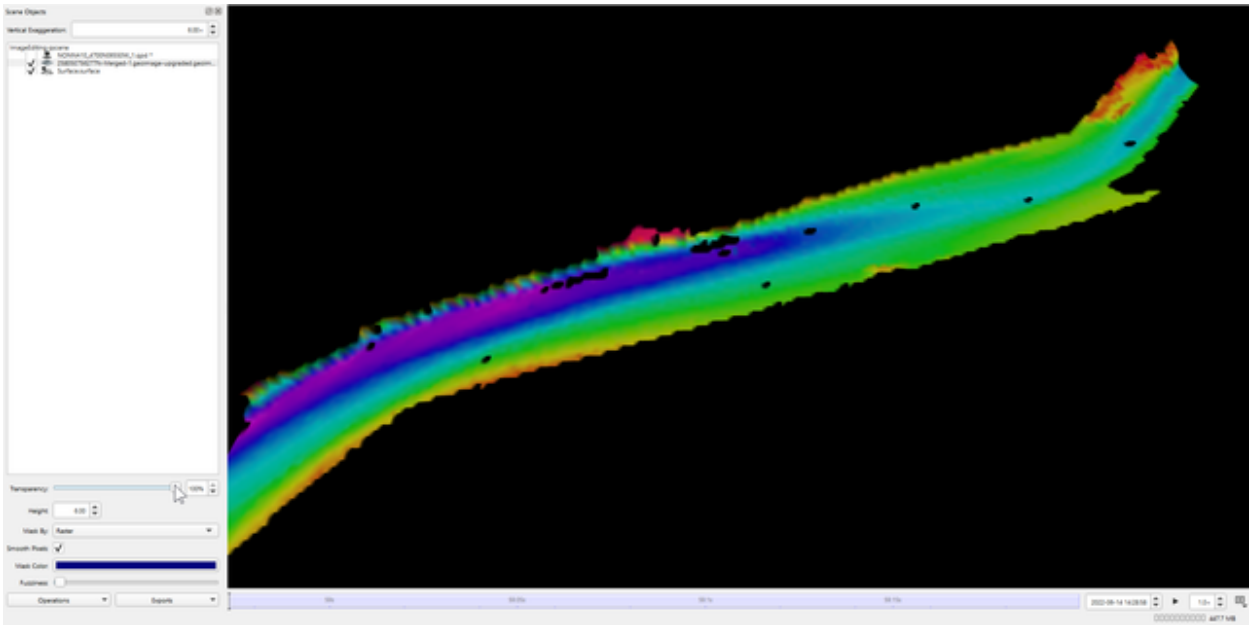


Figure 2. *The red rectangle indicates where the Transparency function is in the attribute panel.*

3a: Transparency 0%



3b: Transparency 50%



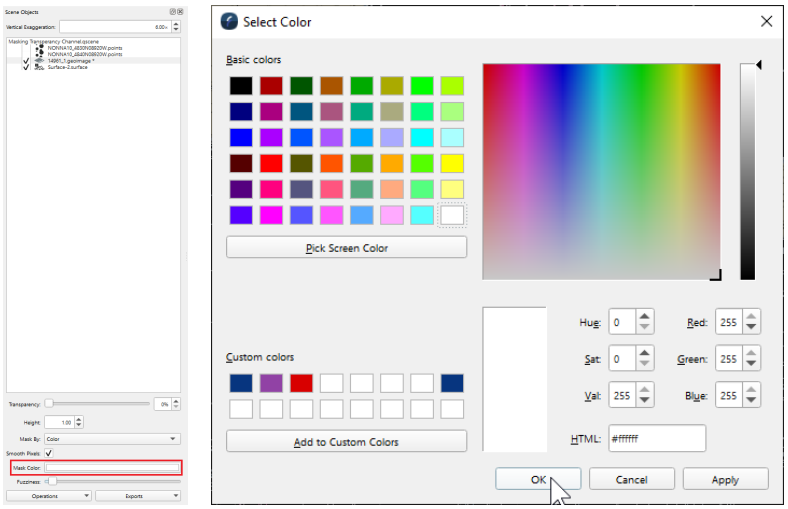
3c: Transparency 100%

Using Masking Transparency Channel to Make an Image Transparent

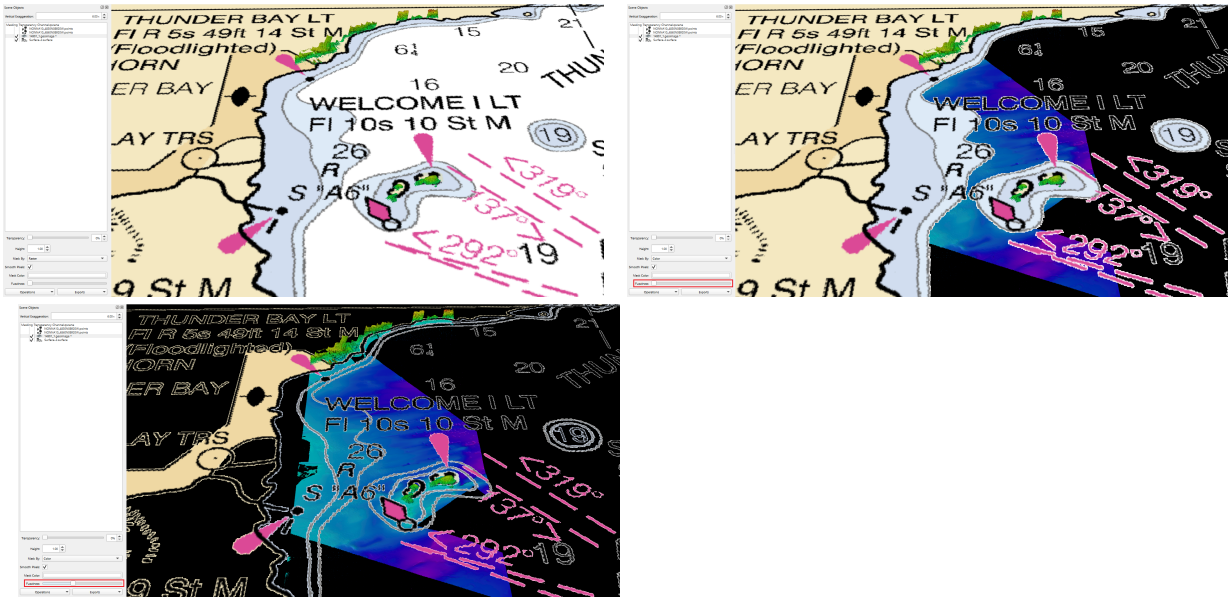
The Masking Transparency Channel can be used to make part of the image transparent based on the color channel chosen. To use this technique change the "Mask by" channel to color in the dropdown menu (see Figure 4). Select the "Mask Color" (see Figure 5a) to open the Select Color dialog box and choose the color you would like to make transparent in the image (see Figure 5b). Use the "Fuzziness" slide bar to change the transparency of that color channel. For some color channels, like those in Figures 6a and b, the color channel

will become transparent when the "Masked by" is changed to that color. When the color is chosen in the "Mask Color" the color will disappear from the chart making it easier to see the features on a raster chart (see Figure 6c).

Figure 4. Change the "Mask by" Channel.



Figures 5a and b. *Choose the color channel to mask.*



Figures 6a, b, and c. *The masked transparency channel with raster and white as the color to mask by, and using the "Fuzziness" scalebar to show details.*

Additional Information

- Image Files
- Geo Image

How-to External Data Dock

This How-to briefly describes the External Data Dock and the capabilities associated with it.

On this page:

- Introduction
  - Step-by-Step
    - Step 1: Adding additional QPS Project
    - Step 2: Adding a Folder
    - Step 3: Adding a Arc Geodatabase
    - Step 4: Adding Data to the Scene
    - Step 5: Refreshing and Removing Linked Data from the External Data Dock
- Additional Information

Introduction

The External Data Dock is used to link a QPS project, folder, or Arc Geodatabase to a Fledermaus Scene. Allowing you to to add only the data you want from different projects, folders and databases. The data used in this How-to Article was provided from The University of New Brunswick's Ocean Mapping Group, the data is from the Mactaquac Dam Headpond, N.B., Canada.

Step-by-Step

Step 1: Adding additional QPS Project

To add a QPS project to the External Data Dock navigate to the dock, click on the "Add" dropdown menu and select "Add QPS Project" (see Figure 1). This links the QPS Project to the External Data Dock so that the data from the project can be loaded into the scene. Multiple projects can be added to the External Dock at the same time to allow for more data input.

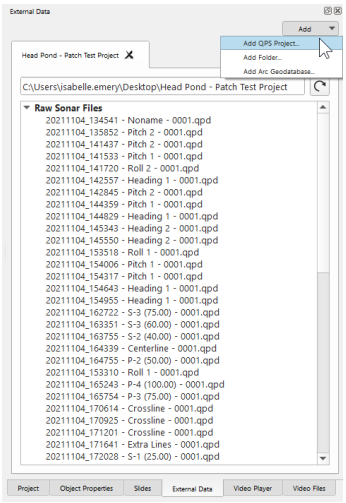


Figure 1. *Adding a QPS Project to the External Data Dock.*

Step 2: Adding a Folder

To add a Folder to the External Data Dock click on the "Add" dropdown menu and select "Add Folder" (see Figure 2). This links the Folder to the External Data Dock so that the data from the folders can be loaded into the scene. Multiple Folders can be added to the External Dock at the same time to allow for more data input.

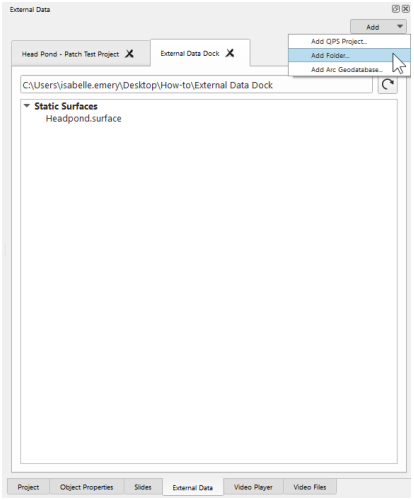


Figure 2. *Adding a Folder to the External Data Dock*

Step 3: Adding a Arc Geodatabase

To add an Arc Geodatabase to the External Data Dock click on the "Add" dropdown menu and select "Add Arc Geodatabase" (see Figure 3). This links the database to the External Data Dock so that the data from the database can be loaded into the scene.

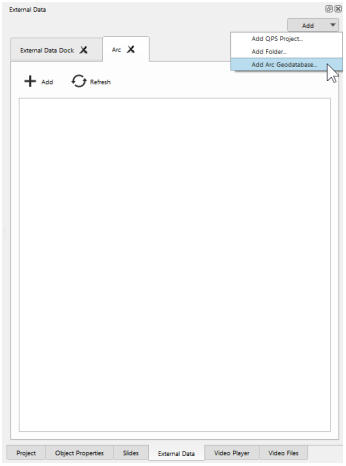


Figure 3. *Adding a Arc Geodatabase to the External Data Dock*

Step 4: Adding Data to the Scene

The external data dock will list in order the type of files that are recognized that can be imported. These are:

1. Raw Sonar Files
    a. Processed Point Files
    b. Dynamic Surfaces
    c. Static Surfaces
    d. Image Files
    e. Sd Objects (Fledermaus Objects)

- To import an object from the External Data Dock right click on the file you want to add and select "Add to Scene" (see Figure 4). Add to scene will launch the import dialog, or load it into the scene in the case of QPS format data.

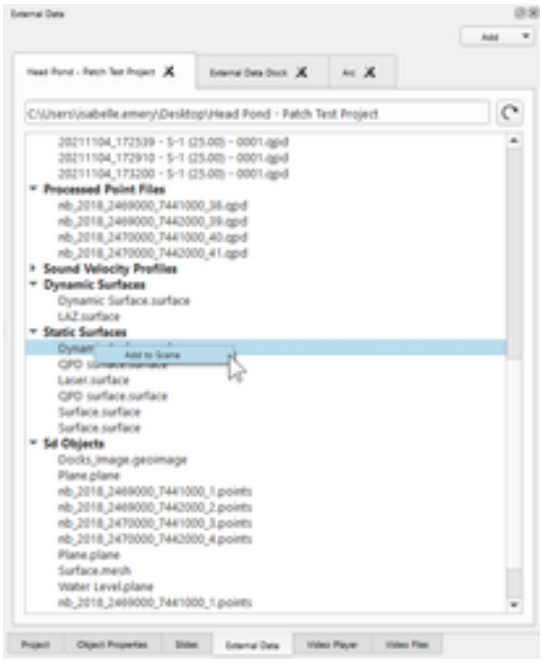


Figure 4. Importing data the External Data Dock to the scene.

Step 5: Refreshing and Removing Linked Data from the External Data Dock

The linked Folders, QPS Projects, and Arc Geodatabases can be refreshed and removed from the External Data Dock.

- To refresh the data select the refresh button at the top of the dock beside the folder or QPS project location (see Figure 5a).

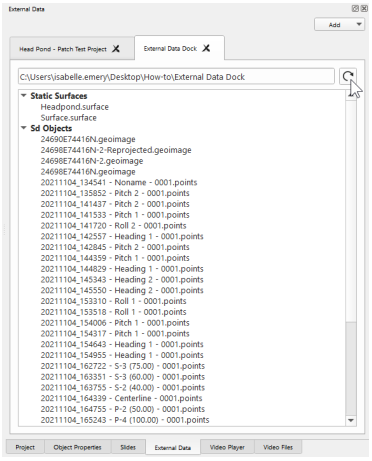


Figure 5a. Refreshing the Folder in the External Data Dock.

- To remove the data select the remove button at the top of the dock beside the folder, QPS project or Arc Geodatabase name, this will not remove the imported data from the scene (see Figure 5b).

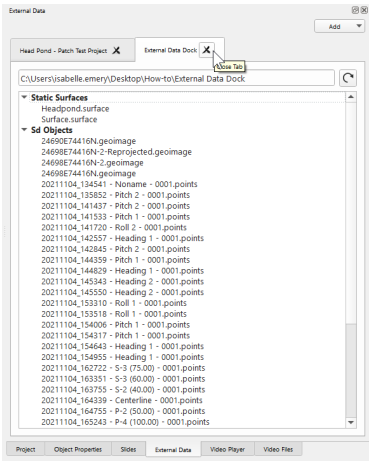


Figure 5b. *Removing the Folder from the External Data Dock.*

Additional Information

- Fledermaus External Data Dock

How-to Import a 3D Terrain Mesh

This functionality is only available in Fledermaus version 8.0, and described for 8.2 and above.

This document will help you use a mesh file.

On this page:

- Introduction
  - Step-by-step
    - Step 1: Open import wizard
    - Step 2: Setup Import Parameters
    - Step 3: Create a .mesh
    - Step 4: Working with the resulting mesh

Introduction

In Fledermaus you can import 3D Terrain file types, which will be converted to a *.mesh file and loaded as scene or saved in a QPS project.

File types supported are:

From	File Extension
OpenGL Transmission Files	.gl, .glb, .gltf
Model files	.obj
Autodesk	.3ds, .fbx

Step-by-step

Step 1: Open import wizard

To start the import process, access the wizard through the *Import* menu, as shown in ***Figure 1***.

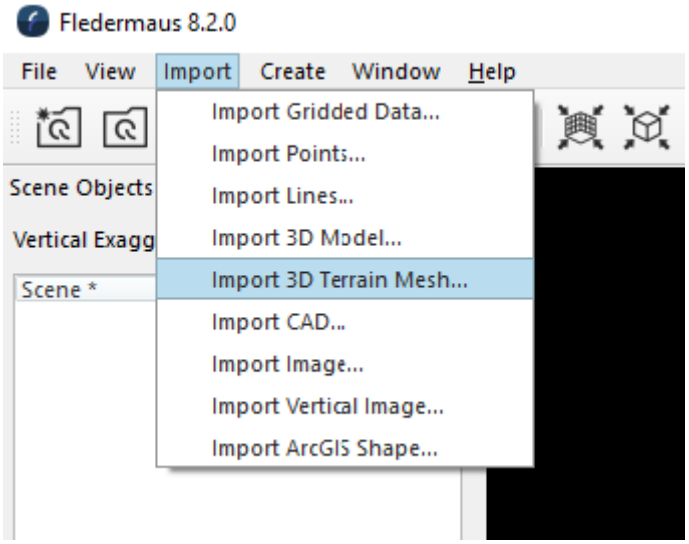


Figure 1. *Import 3D Terrain Mesh*

Step 2: Setup Import Parameters

Once you select this option, you will be presented with an import wizard, where you can confirm various parameters, seen in ***Figure 2*** below:

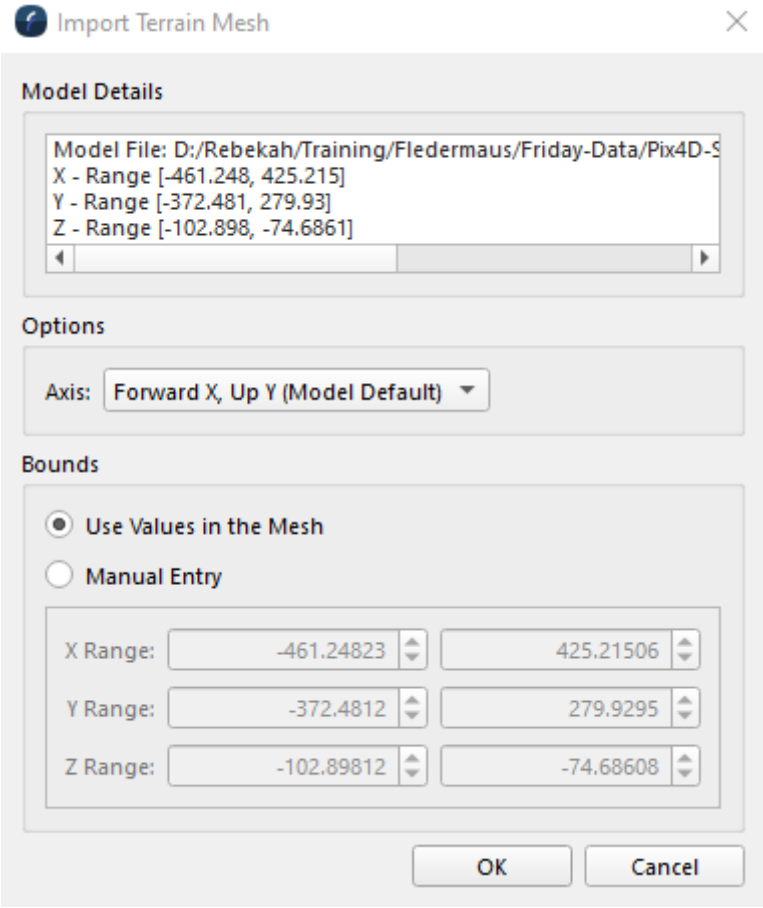


Figure 2: Import Terrain Mesh Wizard

Step 3: Create a .mesh

Once you are happy with the set parameters, click ok for your file to be converted to a .mesh Fledermaus object in the scene as depicted in ***Figure 3.***

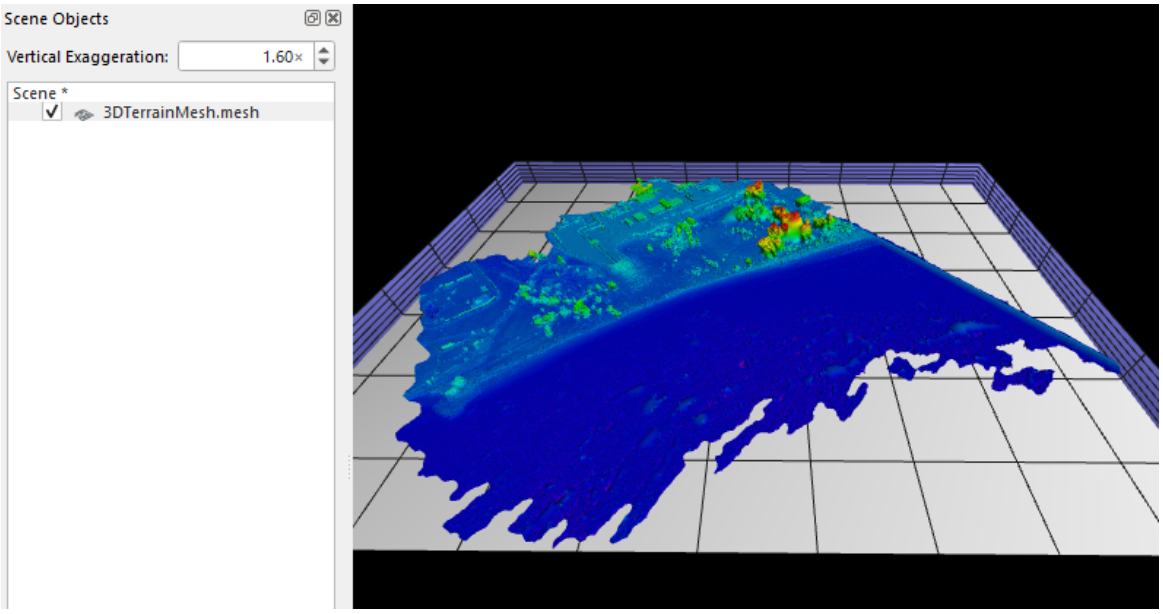


Figure 3: Pix4D 3D Terrain imported as a mesh

Step 4: Working with the resulting mesh

Once a mesh object is part of the scene, it will be displayed in the Fledermaus Scene Objects Dock with all other objects in the scene.

Aside from the ability to change the object coordinate system of your mesh, there are two mesh specific operations that can be done: clip mesh and slice mesh. These can be found in the Operations drop down menu on the object docks.

However, in importing a 3D Terrain mesh, only one of these options are available; this is because the sounding density is not usually included in the files being imported. For this reason only the slice mesh option will be looked at in this page. For information on mesh clipping, please visit Fledermaus Mesh Clipping Dialog.

Slice mesh

The Mesh Slicer dialog, as seen in ***Figure 6*** below, allows the user to slice the selected terrain mesh on X,Y and/or Z axis.

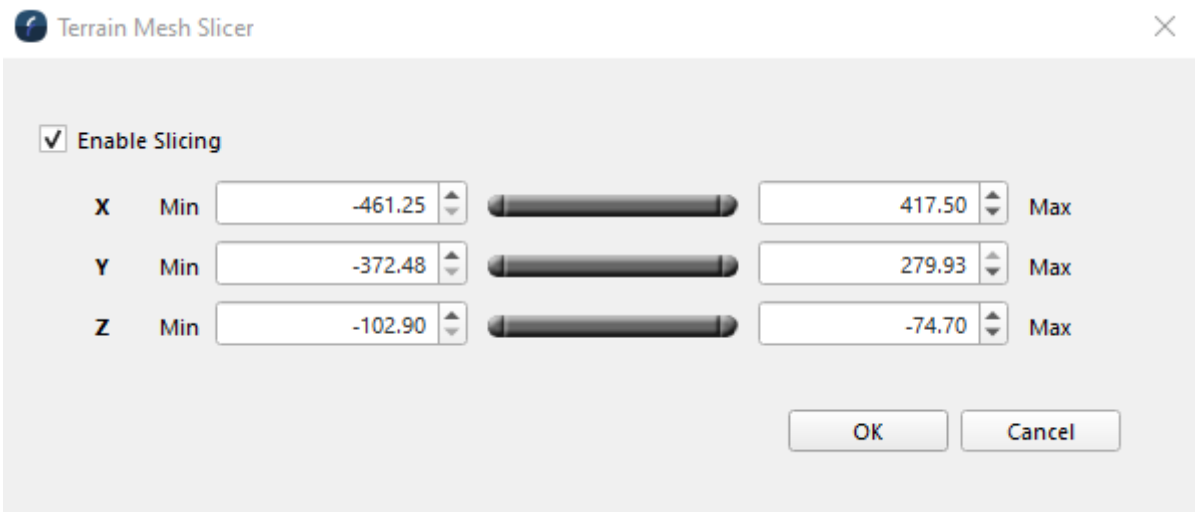


Figure 4. Terrain Mesh Slicer Dialog

For example, in ***Figure 5a*** is the mesh before slicing, and in ***Figure 5b*** is the mesh after slicing:

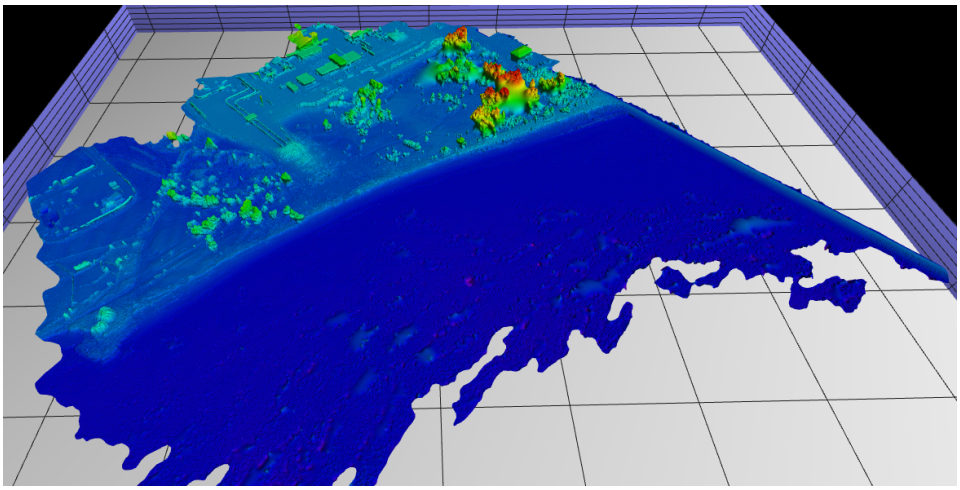


Figure 5a. Mesh before slicing

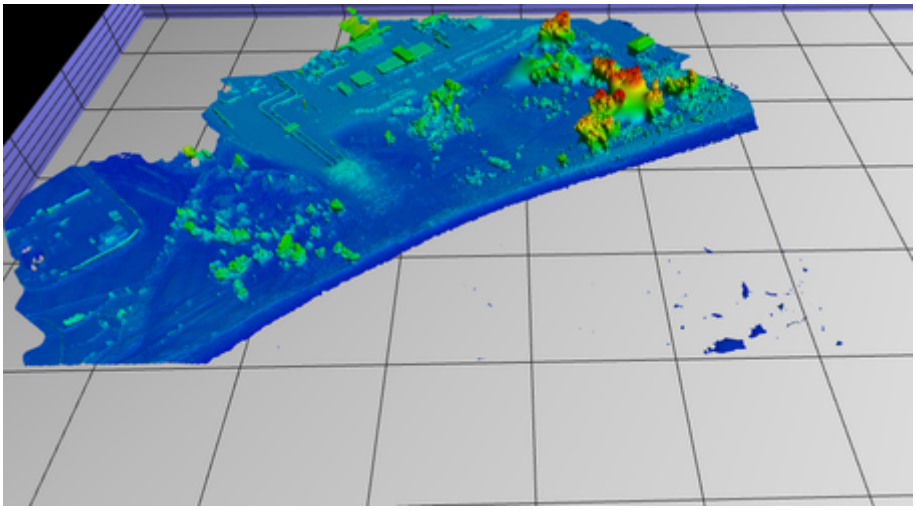


Figure 5b. Mesh after slicing

For more information on the Slice mesh window please visit Fledermaus Mesh Slicer Dialog.

Return to:

- How to Articles
- Fledermaus Reference Manual

How-to Space Time Notes

This How-to briefly introduced Space Time Notes and the capabilities associated with them.

On this page:

- Introduction
  - Step-by-Step
    - Step 1: Create Space Time Notes
    - Step 2: Edit Space Time Notes
- Additional Information

Introduction

Space Time Notes can be used to identity and tag a point location in Time within the Fledermaus Scene. Examples are any points of interest or to make notes on features in the data. The space time notes dock (see Figure 1) is used to view and edit the space time notes. The Space Time Notes dock can be used to add Space Time Notes, add labels and notes to Space Time Notes, and show the Space Time Notes markers. By moving the time in the time bar, the space time notes will be placed on the surface at a certain time within the observation times.

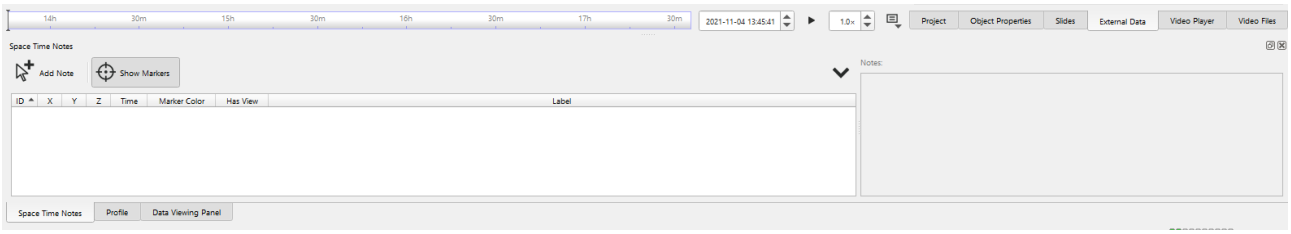


Figure 1. *The Space Time Notes Dock.*

The data used in this How-to Article has a time attribute that will be used and was provided from The University of New Brunswick's Ocean Mapping Group, the data is from the Mactaquac Dam Headpond, N.B., Canada.

Step-by-Step

Step 1: Create Space Time Notes

There are two different ways to add Space Time Notes, Adding By Picking or Importing an ASCII.

To add Space Time Notes by Picking, select "Add Note" in the Space Time Notes Dock or use the short key "N"(see Figure 2a). Navigate and click on the surface where you want the Note to be (see Figure 2b).

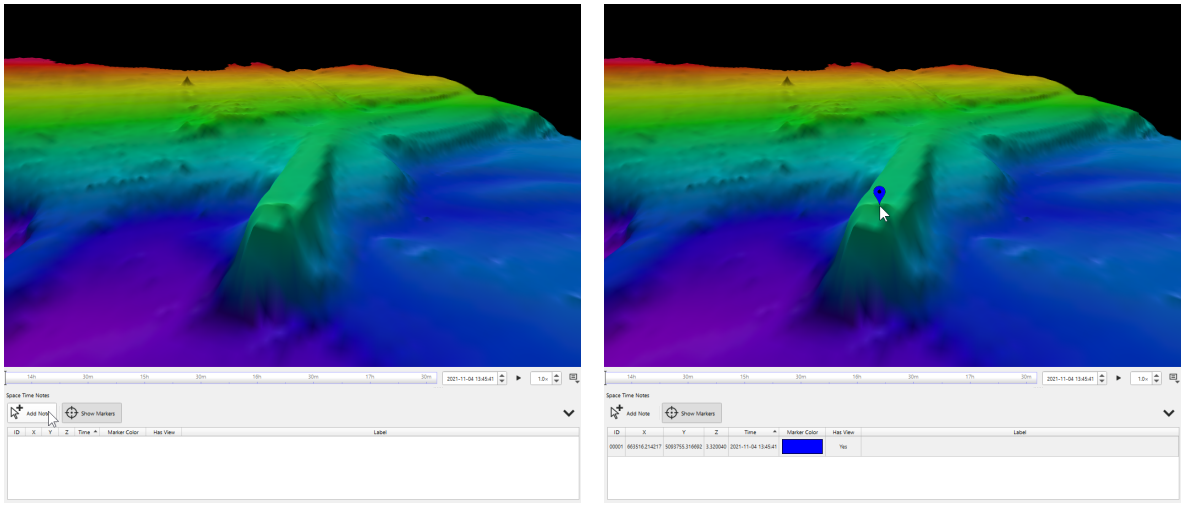


Figure 2a and b: *The Space Time Notes dock, showing how to add a new note to a surface.*

Step 2: Edit Space Time Notes

Once the Space Time Note has been made it is automatically given an unique ID, and the XYZ Time coordinates are recorded along with the time chosen in the time bar (see Figure 3). There are multiple parts of a Space Time Note that can be specialized like the Label, Color, Note, and View, they can be specialized by double clicking on them in the Space Time Notes dock. You can also double click on the space time note to move to it's saved view.

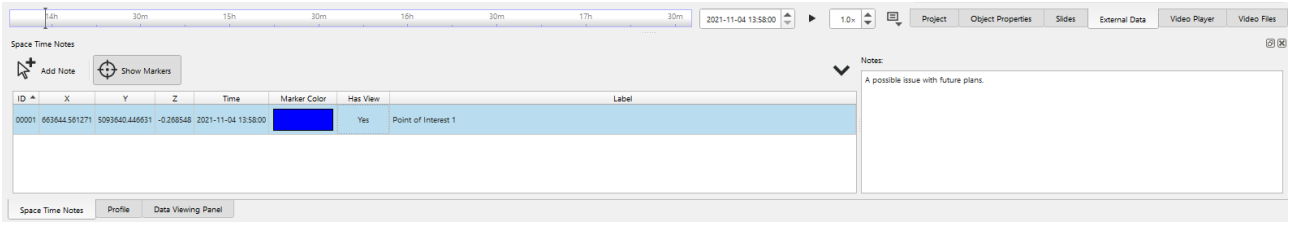


Figure 3. The Space Time Notes Dock showing ID, label, notes, color, and XYZ Time coordinates of a Space Time Note.

Additional Information

- Fledermaus Space Time Notes Dock
- How-to Space Time Notes

How-to Screen Capture

This How-to article briefly introduces the Screen Captures Tool in Fledermaus, and how to get the best resolution for the screen capture.

On this page:

- Introduction
  - Step-by-Step
    - Step 1: Starting the Screen Capture Dialog Box
    - Step 2: Screen Capture Tool Dialog Box
  - Higher Resolution
- Additional Information

Introduction

Screen Captures (see Figure 1) are useful to quickly share a view of the data or to compare with clean data.

The Bathymetry Data used in this How-to article is from the Fisheries and Oceans Canada Non-Navigational Bathymetry Data, in the Murray Harbour and Murray River area of P.E.I., Canada.

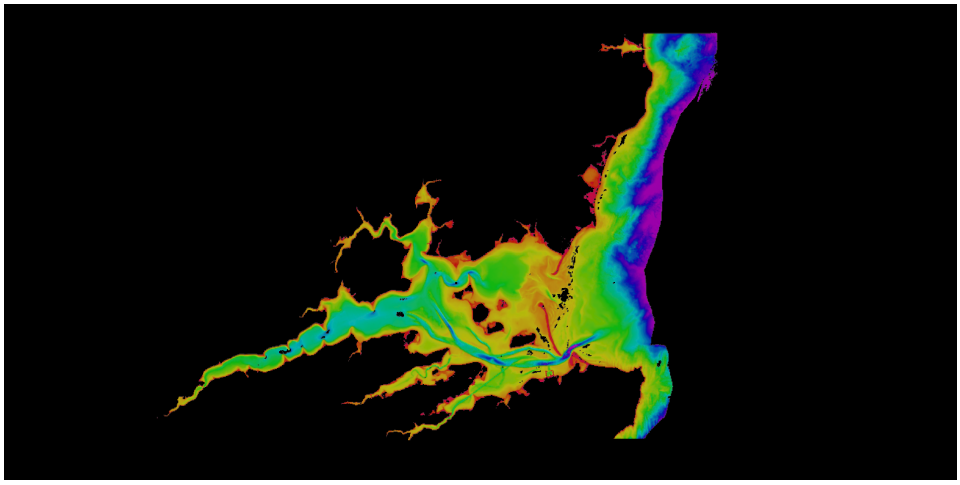


Figure 1. *An example Screen Capture taken in Figure 4..*

Step-by-Step

Step 1: Starting the Screen Capture Dialog Box

Open the Screen Capture dialog box by selecting "Screen Capture..." under "File" in the menu bar (see Figure 2).

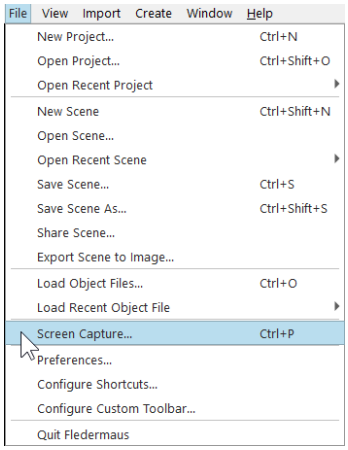


Figure 2. *How to start the Screen Capture tool.*

Step 2: Screen Capture Tool Dialog Box

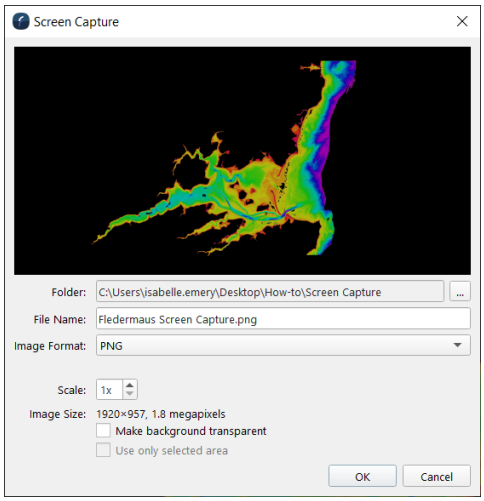


Figure 3. *The Screen Capture Tool Dialog Box.*

The Screen Capture Dialog Box (see Figure 3) allows you to choose where the screen capture is saved under by selecting the "..." button and choosing the desired folder.

You can also type a new name in the "File Name" box and choose the image format in the "Image Format" dropdown menu.

The Scale can also be changed in the "Scale" box.

The "Image Size" states the resolution size of the scene.

There are check boxes to decided if you want the background invisible or to only use a selected area.

Higher Resolution

To get higher resolution on your screen capture (see Figure 4) there are a few tips:

- Have the Height:Width Ratio of you Qimera window at 1:2
- Use a higher resolution Monitor
- Scale factor should be close to 1 to minimize distortion
- The less zoomed on the surface, the less distortion on the final screen capture
- The surface should be created with the smallest cell size possible
- Take away all the docks to make the view port is as large as possible

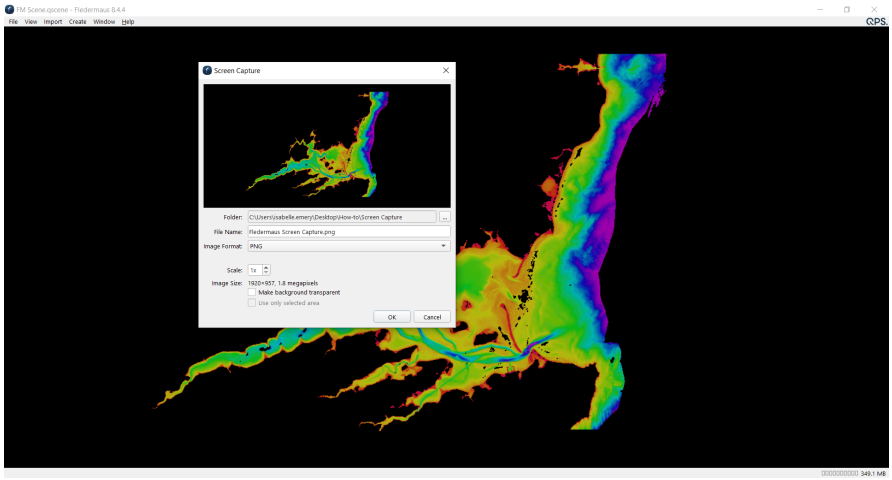


Figure 4. *An example of the best way to set up a Screen Capture.*

Additional Information

- Screen Capture Dialog
- How-to Screen Capture (Qimera)

How-to Import Data from Project

- Introduction
- Importing from a project
  - Step-by-step
    - Step 1: Importing Raw Sonar Files to surface
    - Step 2: Importing Raw Files as Points
    - Step 3: Importing Dynamic Surface
    - Step 4: Importing SD Objects
    - Step 5: Importing CAD Files
    - Step 6: Importing Image

Introduction

This How-to will walk through the import of data types from the project dock into Fledermaus 8.
To import data from the external data dock see https://qpssoftware.scrollhelp.site/fledermaus/how-to-external-data-dock

Importing from a project

This section will require a project to be loaded before proceeding.

Step-by-step

Step 1: Importing Raw Sonar Files to surface

1. In the project window right click on the Raw Sonar Files and select 'Create Surface from Points...'

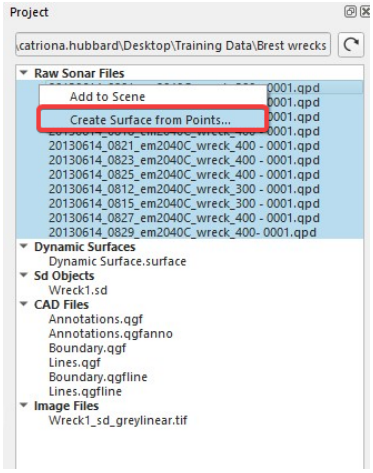


Figure 1: Create Surface option

2. The Data Gridding window will launch
3. Check that the Import co-ordinate reference system is correct and click Next

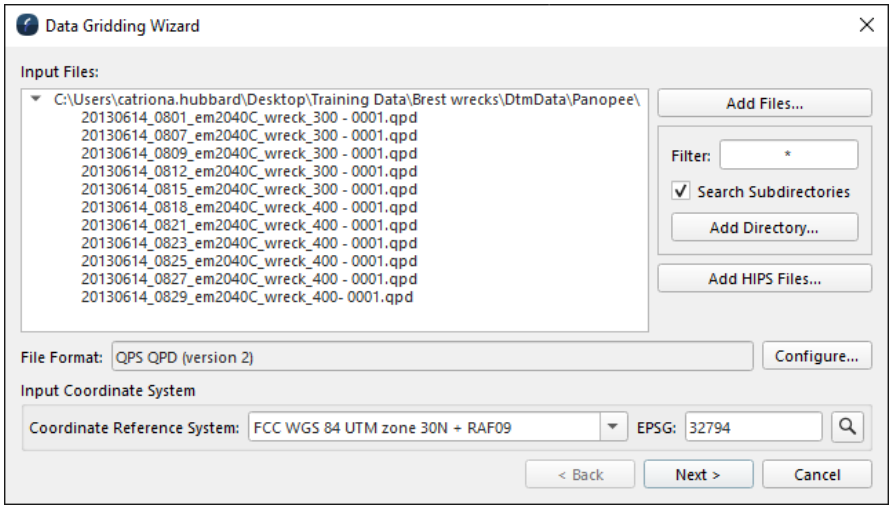


Figure 2: Data Gridding Wizard, input Files

4. Set the output coordinate if it is different from the input coordinate system
5. Select the gridding parameters required for your surface, including the cell size, gridding type and file name.

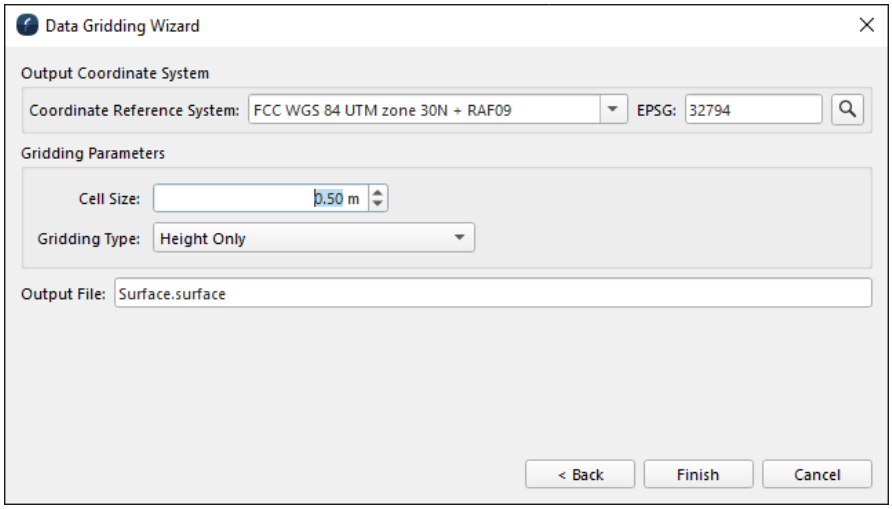


Figure 3: Data Gridding Wizard, gridding options

6. Click Finish

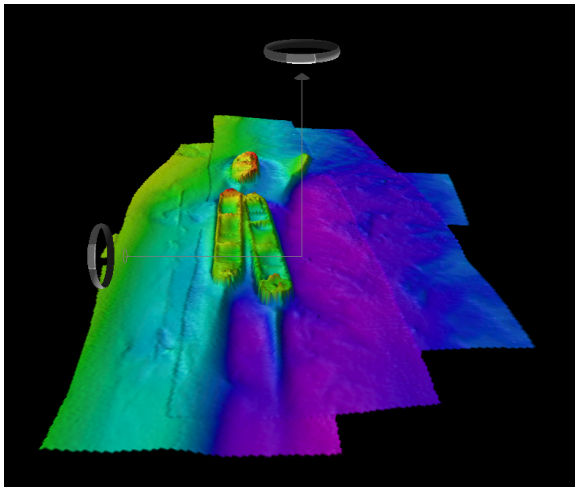


Figure 4: Imported Grid

Step 2: Importing Raw Files as Points

1. In the project window right click on

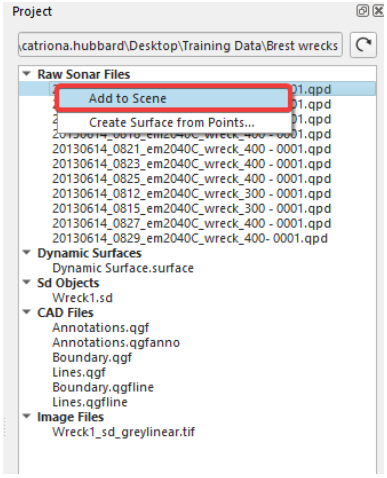


Figure 5: Project window, add to scene

2. The point file(s) will be loaded to the scene

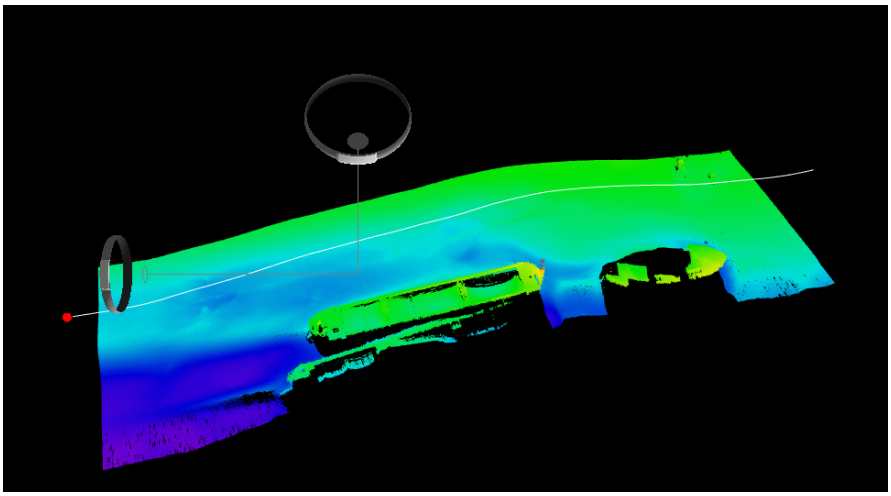


Figure 6: Loaded .points file

Step 3: Importing Dynamic Surface

1. Right click on the Dynamic Surface in the Project window and select 'Add to Scene...'

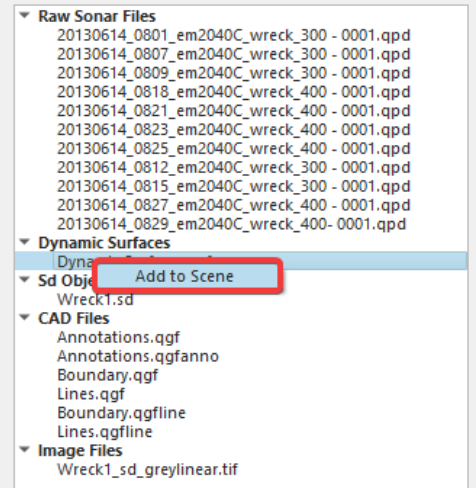


Figure 7: Load Dynamic Surface

2. The Dynamic Surface will be loaded to the Scene

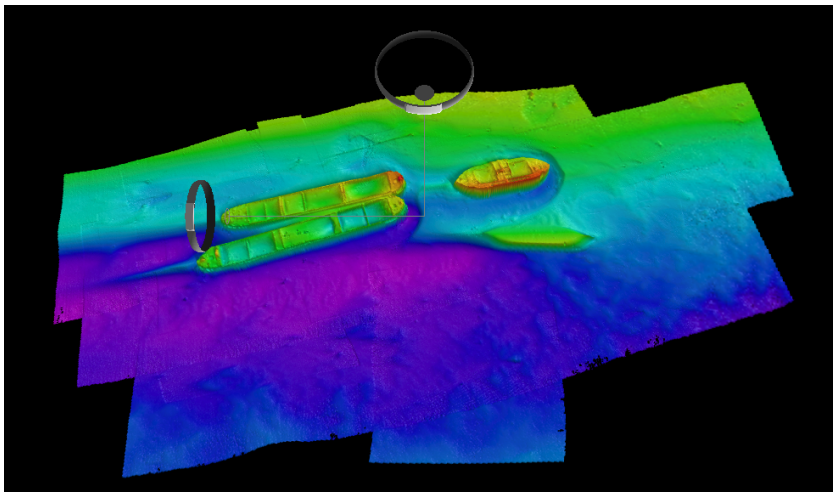


Figure 8: Loaded Dynamic Surface

Step 4: Importing SD Objects

1. Right Click on the SD object(s) and select Import into Scene

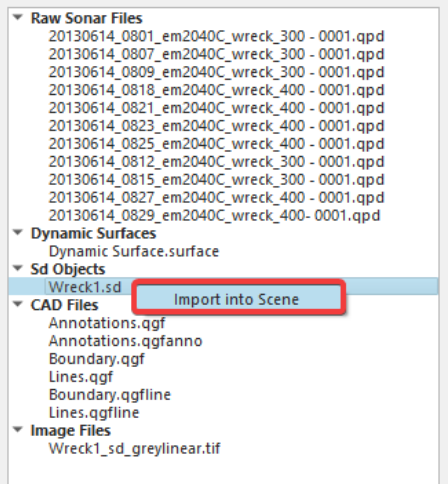


Figure 9: Project window, load SD files

2. The SD file will need to be upgraded. Select the Load Object(s)

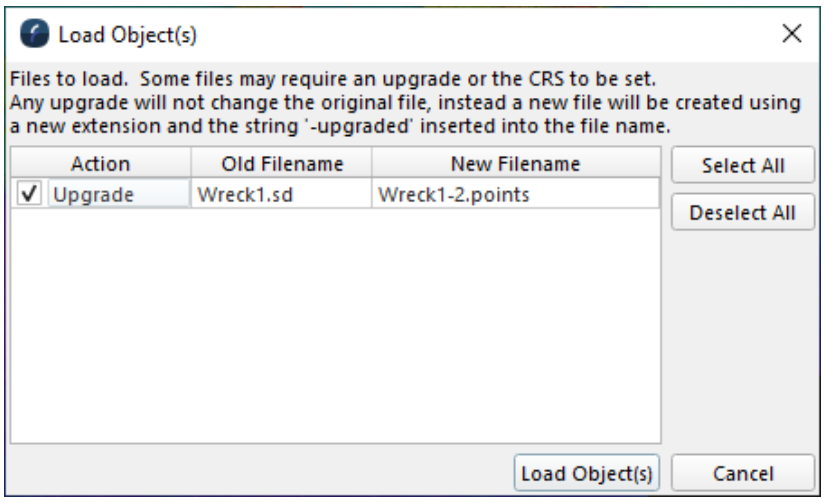


Figure 10: Upgrade objects window

Step 5: Importing CAD Files

1. Right Click on the CAD file and select 'Add to Scene'

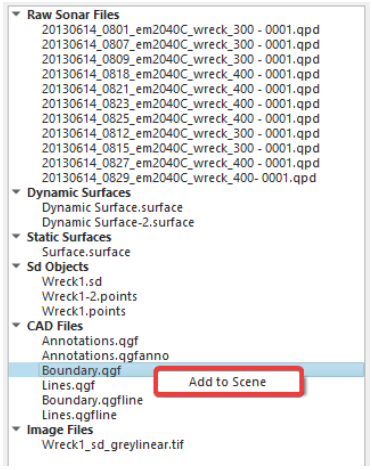


Figure 11: Add CAD files to scene

2. Ensure that the coordinate reference system is correct if required and select Load Object(s)

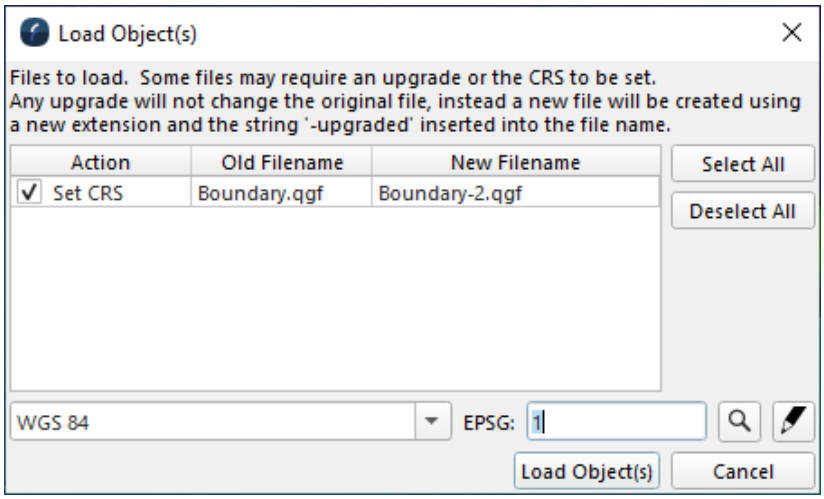


Figure 12: Load Objects window

3. The line object will then be loaded to the scene.

Step 6: Importing Image

1. Right click on the image file to load

Figure 13: Load Image file

2. Check that the file name, geodetics and bounds are correct

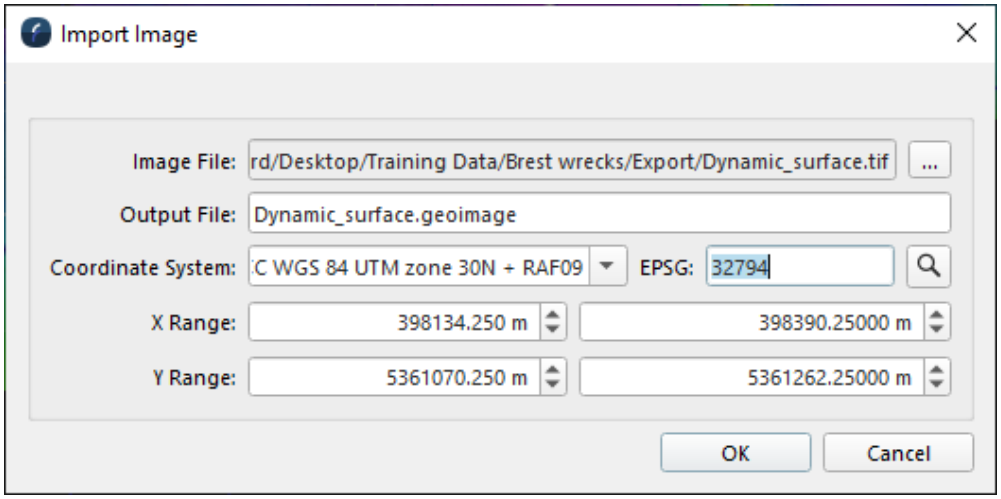


Figure 14: Import Image dialog

3. Once happy, click OK to load the image file to the scene.

How-to Create Presentations and Movies

This how-to walks through creating presentations and movies in Fledermaus 8.

> The functionality discussed here differs from movie creation in Fledermaus 7. If you would like to make a movie using Fledermaus 7, please visit: How-to Fledermaus - Create a flightpath for movie making in the offline Fledermaus 7 documentation.

- Introduction
- Creating and working with slides
  - Step-by-Step
    - Step 1: Create Space Time notes (Optional)
    - Step 2: Create slides
      - From Space Time Notes
      - From Slides Dock
    - Step 3: Define specific viewing parameters
    - Step 4: Producing Deliverables
      - Presentation Options
      - Movie Creation

Introduction

Presentations and movies are a good way to show off your data without having to move large datasets around.

Creating and working with slides

Step-by-Step

> This how-to begins after data import, inspection, and any necessary customization.

Step 1: Create Space Time notes (Optional)

This step is not mandatory, but it is recommended. Step-by-step instructions on how to create space time notes can be found here: How-to Space Time Notes

Step 2: Create slides

There are two main ways to create new slides, which will be the base of your presentation or movie:

From Space Time Notes

Created space time notes will be listed in the Space Time Notes Dock. From there they can be selected and added to the presentation from the right-click menu:

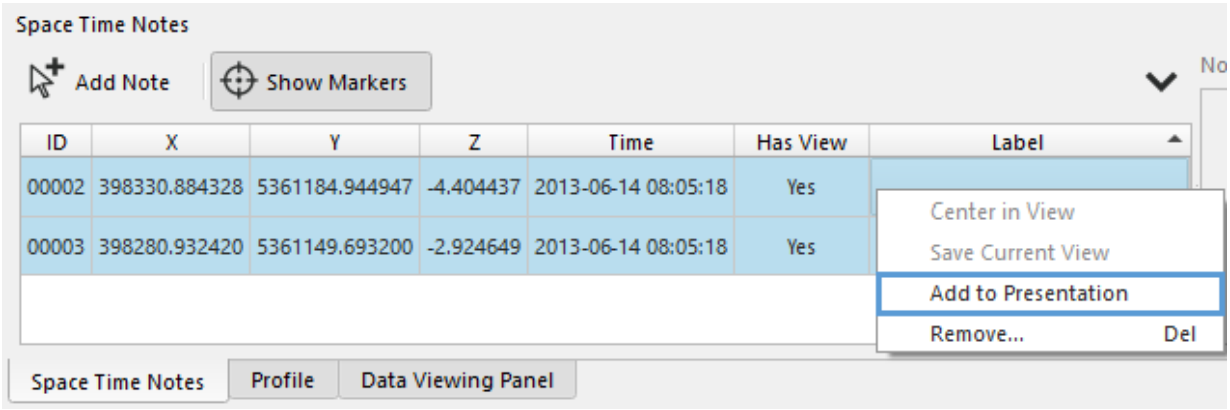


Figure 1. Space time notes dock, populated

Navigating to the Slides tab, you will see that a new slide is created for each Space Time Note that was selected:

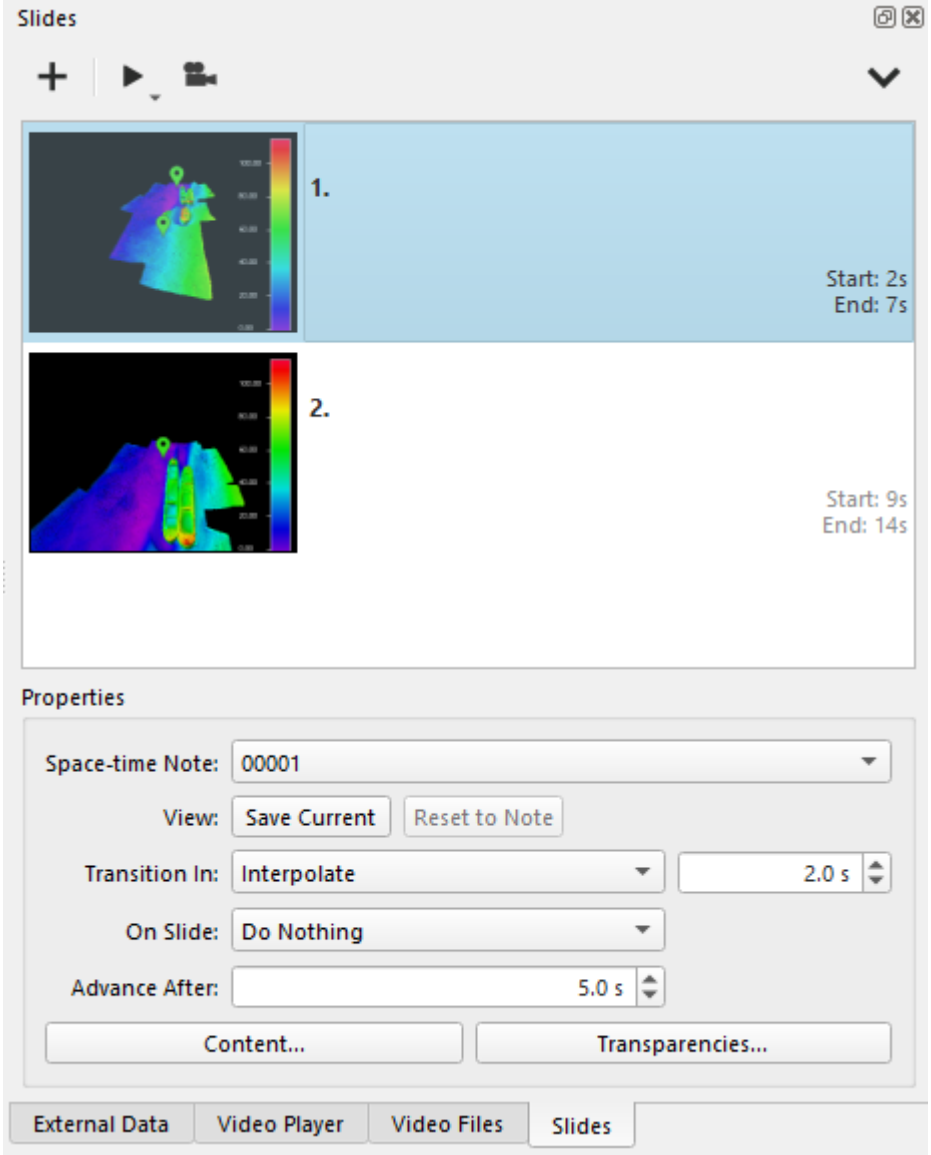


Figure 2. *Slides dock, populated*

From Slides Dock

You can also create slides from the current view in your scene by using the plus button in the top left of the Slides dock, and selecting 'Create from current view' in the resulting window. This will not create a space time note.

For more information on the slides dock, please visit: .Fledermaus Slides Dock v8.0

Step 3: Define specific viewing parameters

Once a slide is created, it can be selected to view and edit it's specific parameters.

These parameters include the name and view, transition type and time between slides, text and layout settings, as well as transparencies of certain layers within your scene.

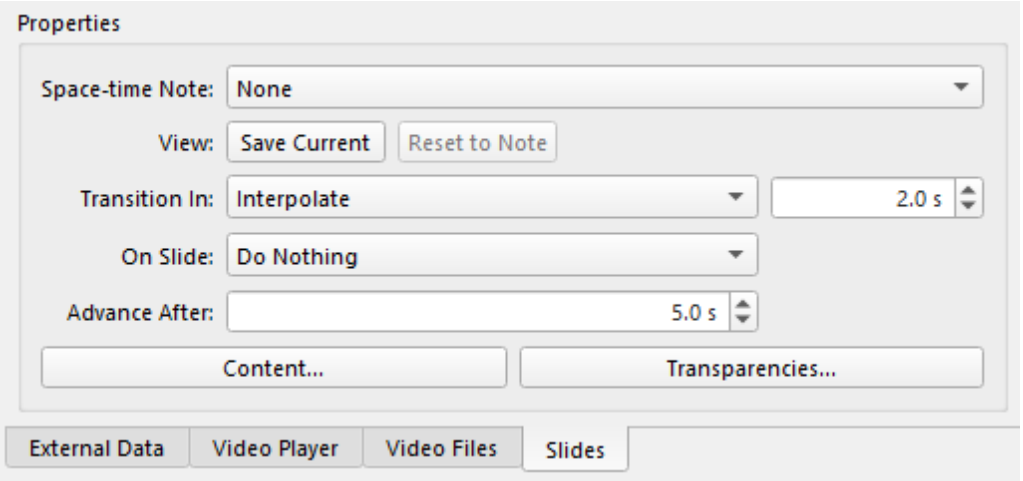


Figure 3. Slide Properties

> If you wish to change which layers are visible during the presentation or video, you can change the transparencies in order to only see what you want during specific slides.
>
> Please note that if you change which layers are visible in your scene (using the checkboxes next to the file in the) during slide creation or edits, the previously visible layer(s) are not saved in earlier slides!

Step 4: Producing Deliverables

Once your slides are created and edited, there are two options in Fledermaus to use them to present your data.

Presentation Options

The first of these options is to use the presentation controls available in Fledermaus.

These controls are accessed directly from the Slides Dock, by selecting the 'Play' icon located in the top left toolbar:

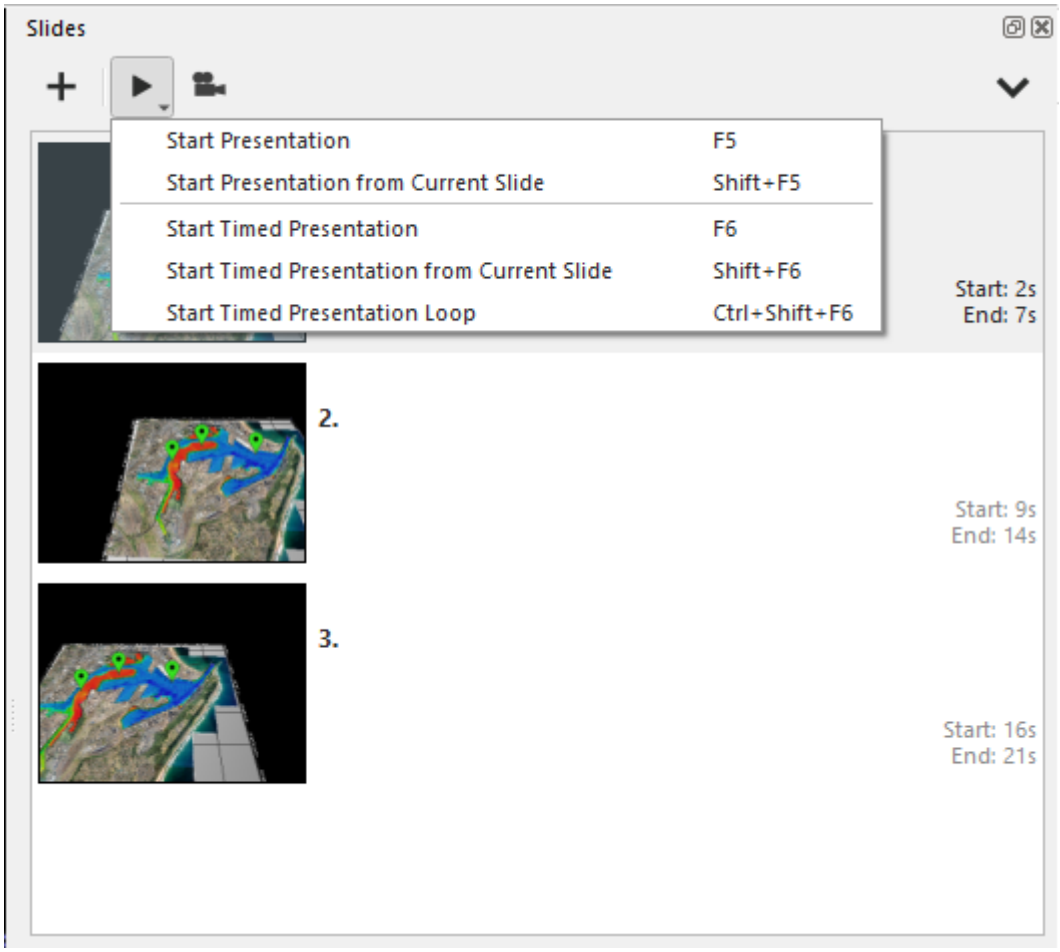


Figure 4. Slides Dock - Presentation options

From this menu, a presentation can be started either as a manual presentation (proceed to next slide on click), or a timed presentation (proceed after set time).

These options will play your presentation in the selected format directly within Fledermaus.

> These presentation options are also available in Fledermaus Viewer, if the loaded .scene file contains slides.
>
> For more information on the Fledermaus Viewer, please visit: How-to Fledermaus Viewer

Movie Creation

Another option is to export your timed presentation as a movie.

This option is also accessed through the Slides tab, from the film projector icon, and brings up the following window:

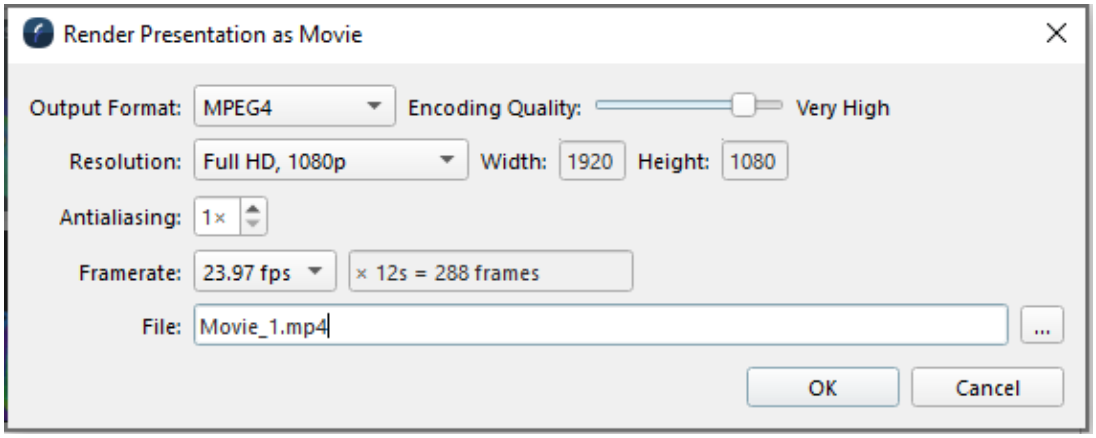


Figure 5. Render Presentation as Movie Window

In this window, you can set up the video parameters according to your needs. The available settings that can be customized include the output format, resolution, and frame rate, as well as file name and location.

Please note that the render process may take some time, depending on the settings selected and number of slides.

How-to work with interaction devices

This document explains how an interaction device, like a 3D mouse, can be configured in Fledermaus and how it can be used to interact with the data.

On this page:

- Introduction
- Step-by-step
  - Step 1: Add a device
  - Step 2: Make a connection
  - Step 3: Adjust settings in preferred
- Additional information

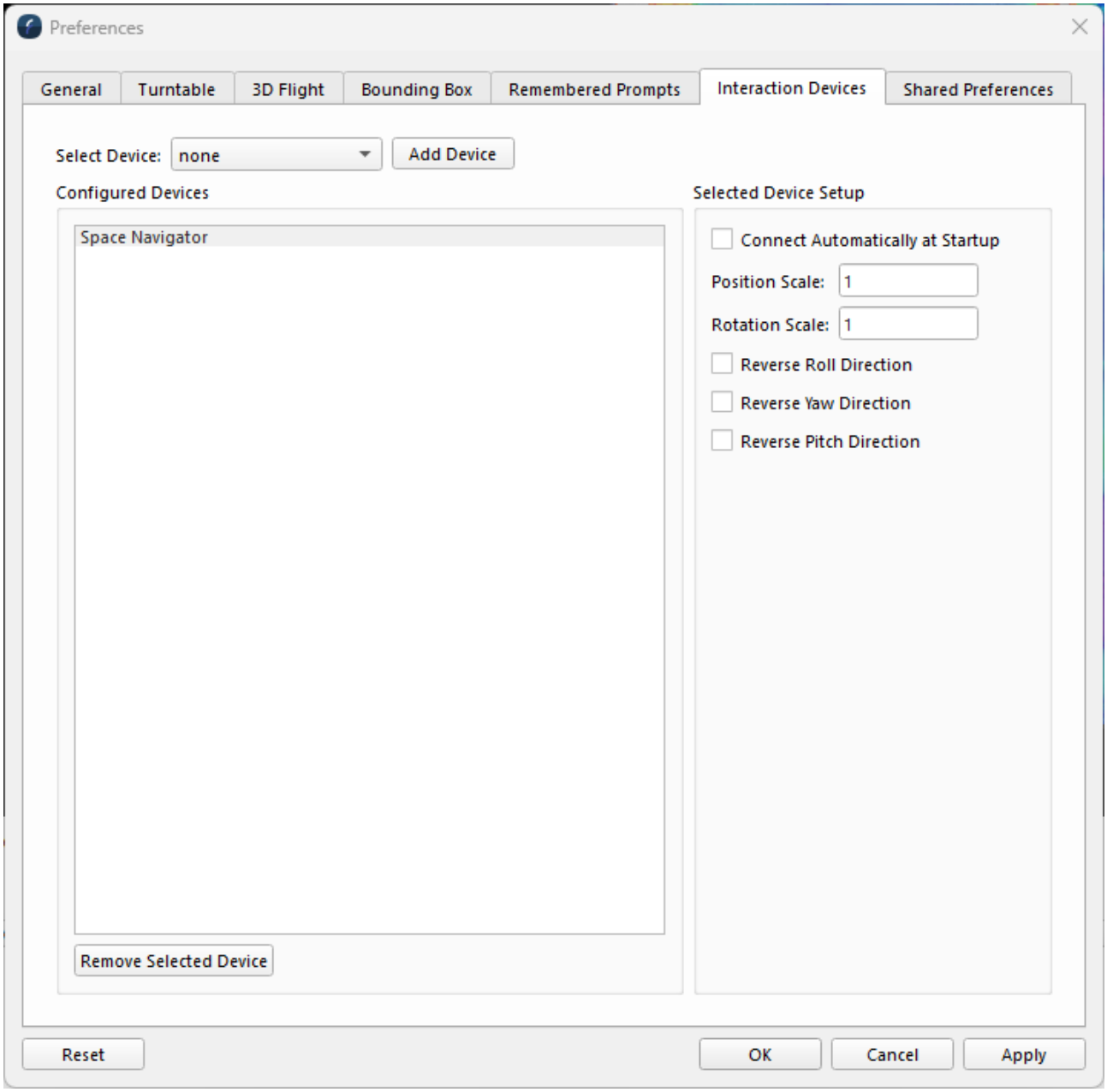
Introduction

Interaction devices, such as the Connexion SpaceNavigator and the Patriot Bat, enable users to engage with the 3D scene effectively. These devices allow users to "fly" through the data presented in the 3D environment of Fledermaus.

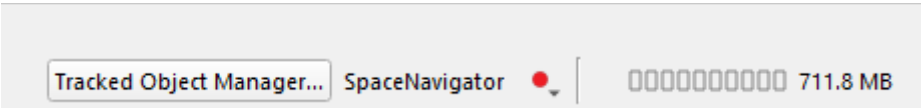
Step-by-step

Step 1: Add a device

Once the device is connected to the computer and any necessary drivers are installed, it must be added in the “Interaction Devices” tab within the preferences of Fledermaus. In this tab, select the device you wish to add and proceed with the addition. After successfully adding the device, you can specify additional options for its configuration.

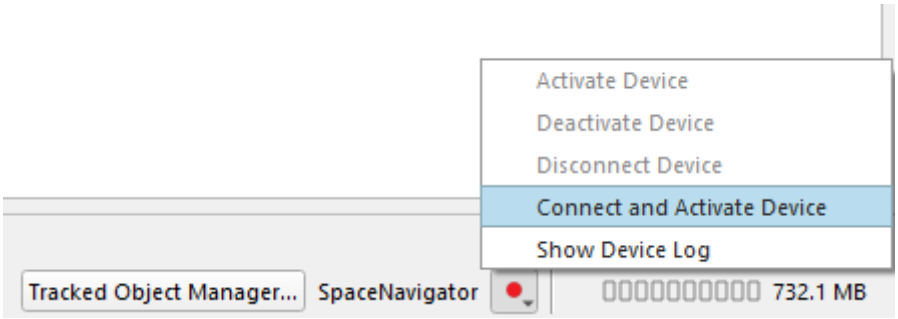


Once all specifications are completed and the “Ok” or “Apply” button is clicked, the newly configured device will be displayed in the Fledermaus Status Bar located at the bottom right corner.

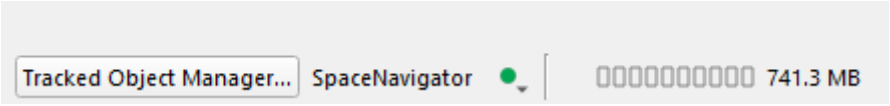


Step 2: Make a connection

Access the “Device controls” from the Fledermaus Status Bar. This section allows you to connect to the added device and activate or deactivate it as needed.



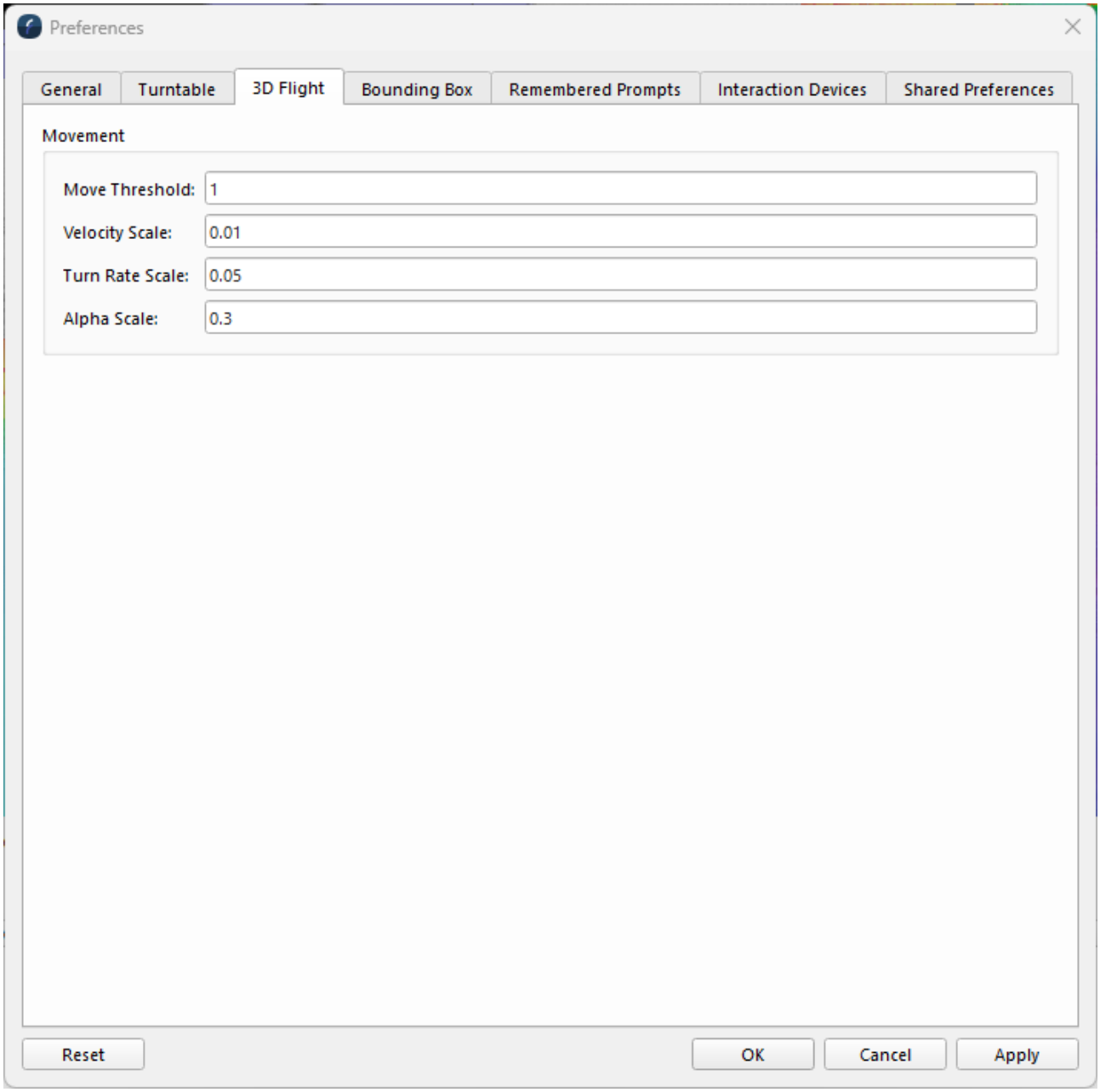
Upon clicking “Connect and Activate Device,” the status indicator will turn green, indicating a successful connection. At this point, the 3D device is ready for use, allowing interaction with the 3D scene.



Step 3: Adjust settings in preferred

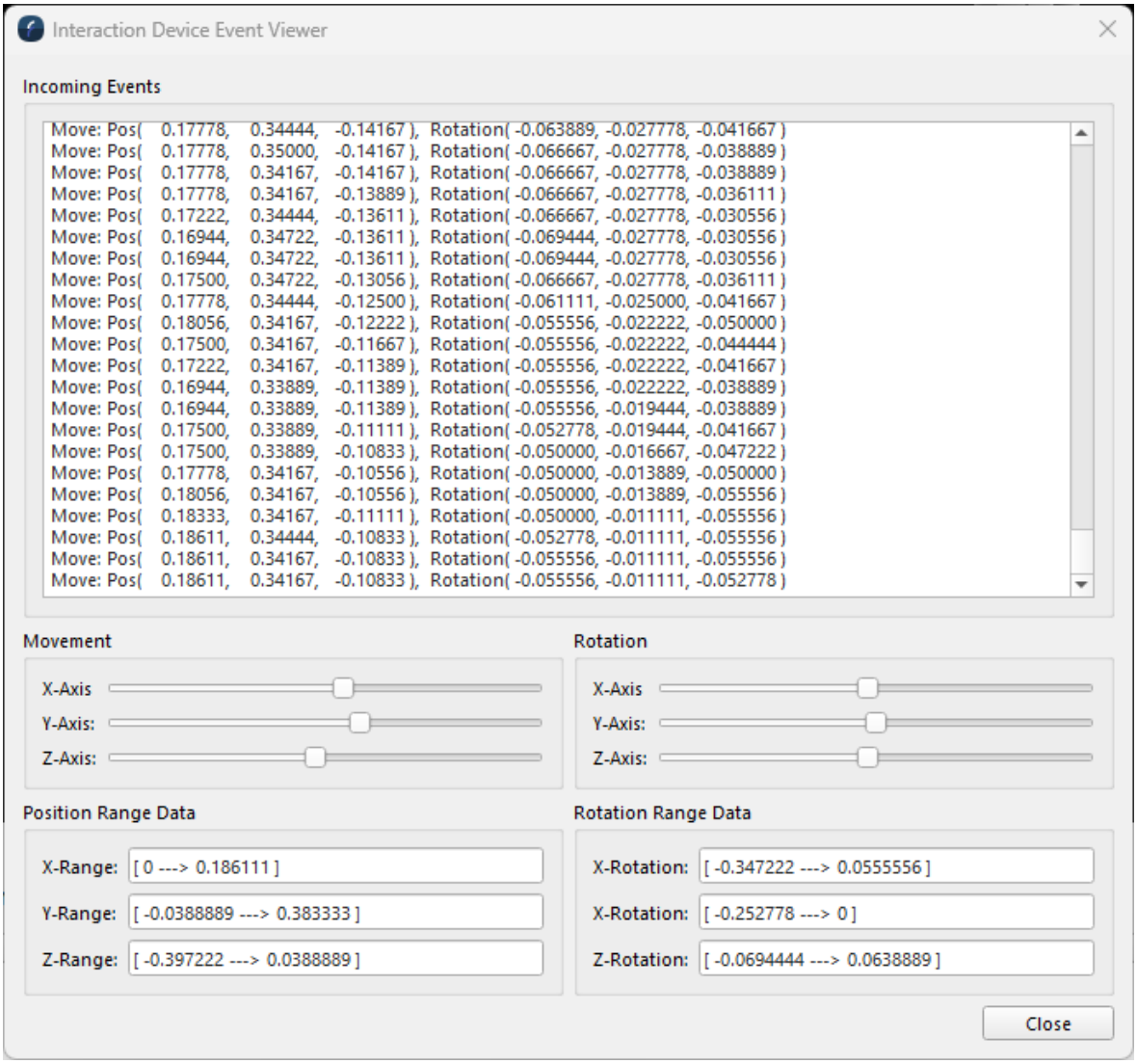
Once a connection is established in step 2 and the status indicator turns green, mouse interactions will lead to adjustments within the 3D scene.

If desired, you can modify parameters to tailor the 3D device interaction with Fledermaus. These customizable parameters are located in the “3D Flight” tab within the preferences of Fledermaus.

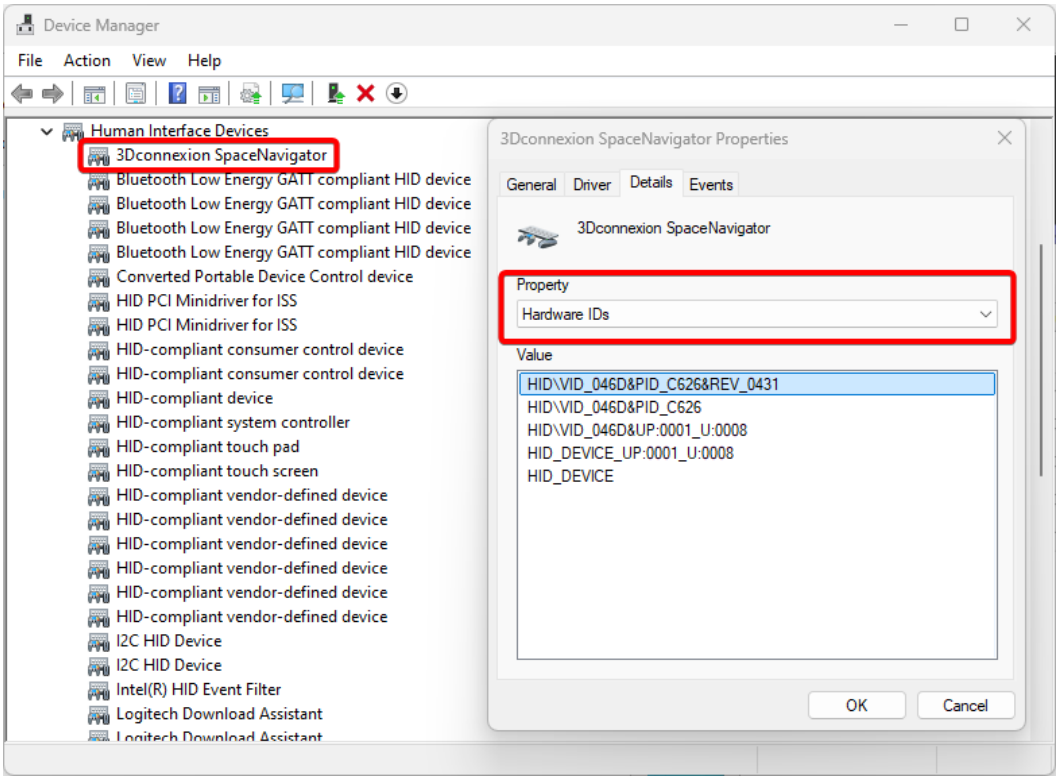


Additional information

- When behaviour in Fledermaus does not meet expectations, adjusting the 3D flight parameters in the preferences can often help resolve the issue.
  - Additionally, the **“Device Controls”** section provides access to the Devicelog, which allows users to review mouse input. This feature can assist with calibrations and verify the functionality of the 3D device.



- Currently, Fledermaus is compatible with a range of device types. If you encounter any connection issues or if the mouse does not function as anticipated, please reach out to QPS support and include your device ID for assistance.



- *Example of hardware ID overview*

- The following hardware ID's are currently supported within Fledermaus.
  - C626
  - C62F
  - C62E
  - C635
  - C62B

  Note that we don't test these devices.

How-to Obect Tracking/Vessel Manager

This how-to briefly explains how to work with Tracked Object Manager in Fledermaus 8 alongside the Vessel Manager program.

On this page:

- Introduction
- Step-by-Step
  - Step 1: Set up data output
  - Step 2: Communication Setup
  - Step 3: Vehicle Setup
  - Step 4: Object ID/Assignment in Fledermaus
  - Step 5: Start Data Acquisition
- Additional Information

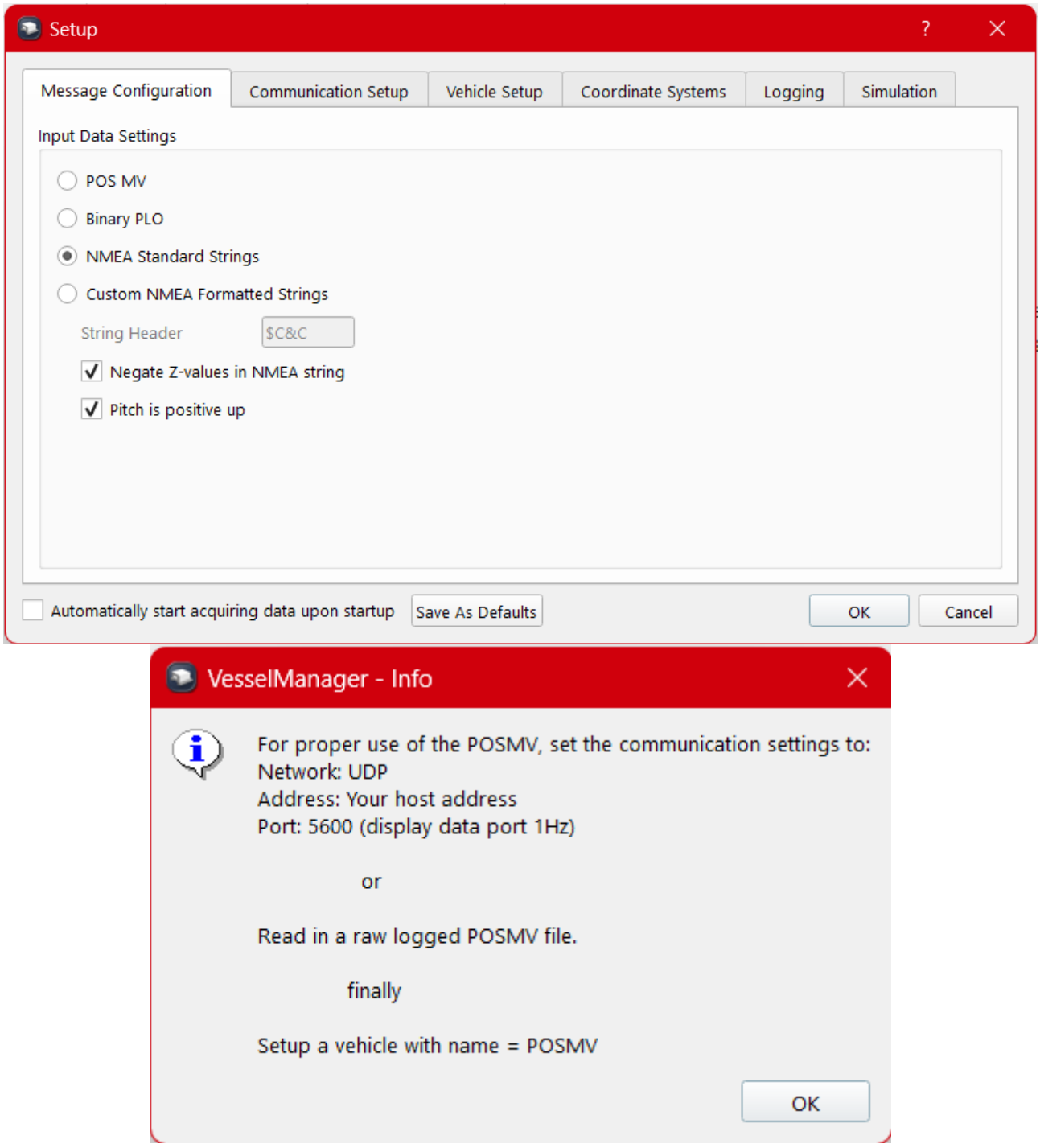
Introduction

Vessel Manager allows for a user to use real-time navigation data to track objects, such as surface vessels or remotely operated vehicles, within a Fledermaus scene. There are many options for configuring the transmittance between the outgoing data and the vessel or object within Fledermaus.

Step-by-Step

Step 1: Set up data I/O

First, open the vessel manager application, which can be found in the following location: C:\Program Files\QPS\Fledermaus\8.7.2\bin. The navigation data can be input in many formats. See Utilities > Setup/Preferences to select which message configuration is applicable to your setup. Options include POS MV, Binary PLO, NMEA Standard, and Custom NMEA Formatted.

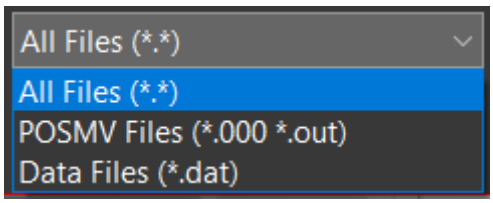


POS MV Setup

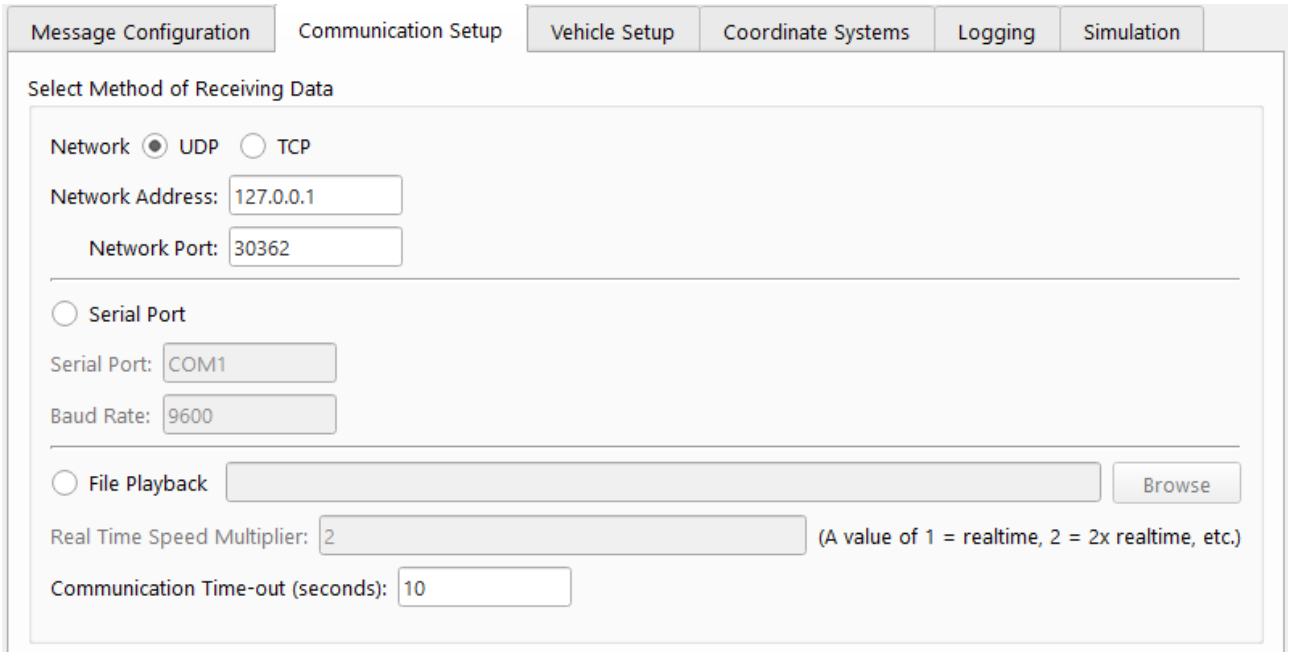
Step 2: Communication Setup

Next, you will select your method of receiving data. These options include via Network (UDP or TCP connection), Serial, or File Playback. For UDP/TCP connections the network

IP address and port in which the data string(s) are arriving on will need to be defined. For a serial connection, the port and baud rate of the system should be entered. File playback allows for any recorded navigation data to be played back in real-time.

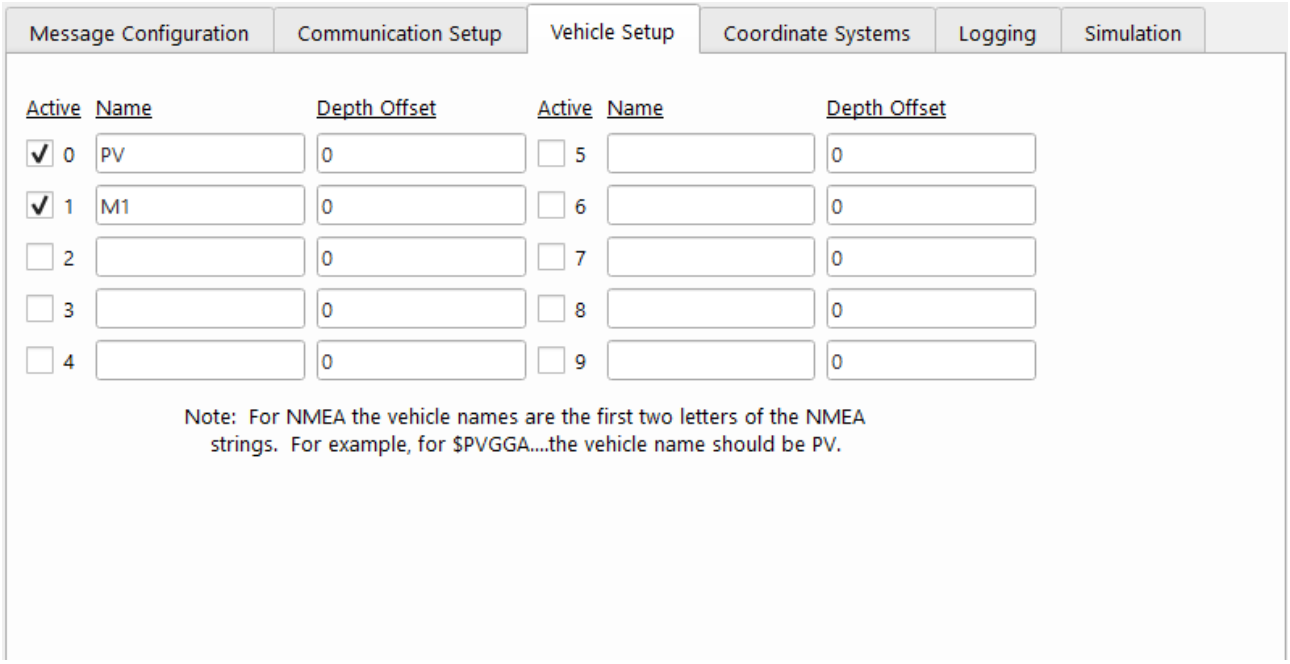


File types available for playback



Step 3: Vehicle Setup

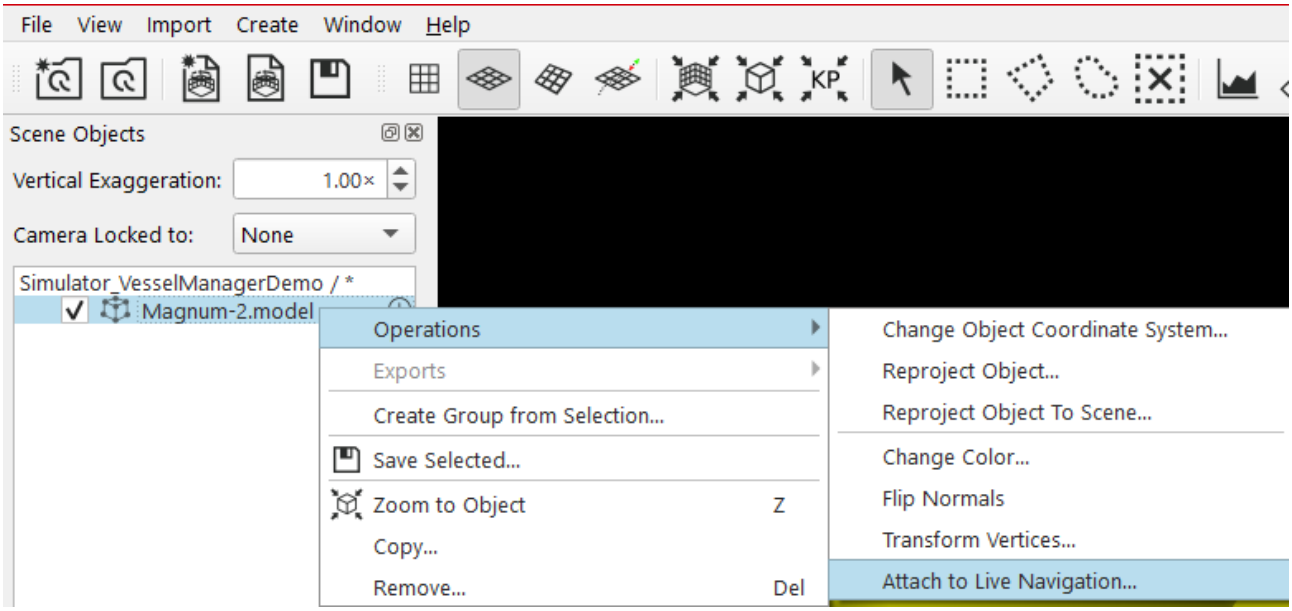
The third tab in Vessel Manager is for vehicle setup, where vehicles can be activated and assigned a numerical ID based on the vessel name identified by the first two letters of the NMEA strings. This object ID will later be referenced in Fledermaus and assigned to whichever models you have imported.

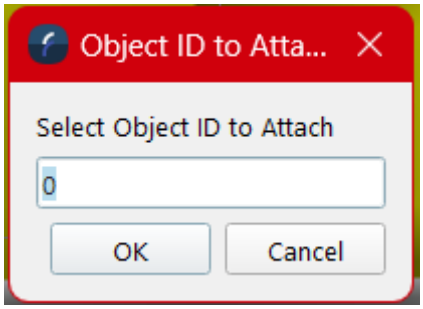


A depth offset can also be applied to any object in the Vehicle Setup tab.

Step 4: Object ID/Assignment in Fledermaus

Open the project in Fledermaus and assign each Object ID to it's representative object as defined in Step 3. To do so select the object > Operations > Attach to Live Navigation…

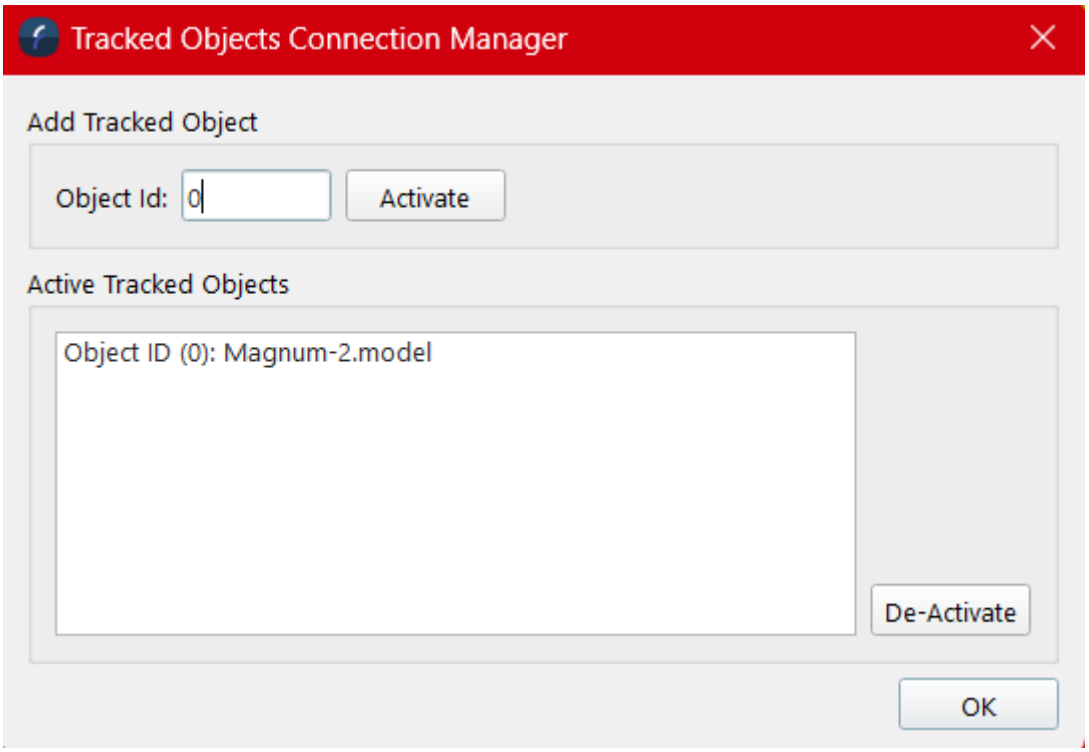




Here you will enter in the Object ID

Next, select ‘Tracked Object Manager’ in the lower right corner of the UI.

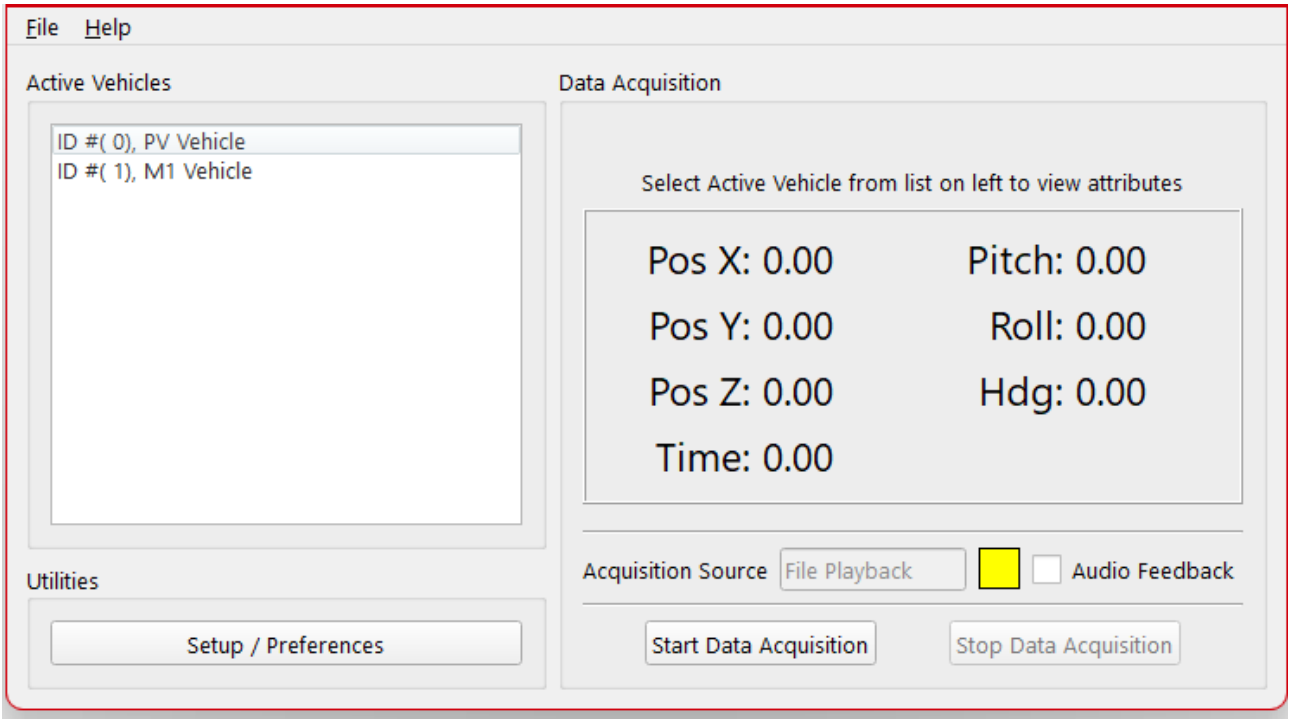
The following dialog will pop up:



This is where you can activate the object so that it is now being tracked real time in Fledermaus

Step 5: Start Data Acquisition

Finally, select ‘Start Data Acquisition’ in Vessel Manager. This will establish the connection between the data input and output. Selecting each ID in the Active Vehicles box will provide the data attributes on the right side including XYZ, Pitch, Roll, Heading, and Time (if available).



Additional Information

- https://qpssoftware.scrollhelp.site/fledermaus/vesselmanager-data-flow

Demo Video:

How-to work with ArcGIS Geodatabase

Introduction

This how-to explains the connection to an ESRI Geodatabase (gdb) in order to import Feature Class into a Fledermaus scene as well as export scene layers into Feature Class to be visualized in ArcMap.

Background Information

Difference between Feature Class and SHP:

SHP (shapefile) was the first format used by ArcGIS to display georeferenced data in an ArcMap project. One shapefile is made of many different files with there own extension:

- shp: Store the coordinates that define the shape of the feature. This one can be either points, lines or polygons
- shx: Shape index, helps a more efficient random access to the feature geometries
- dbf files: It is the attribute table of the shapefile. This one can be open in Excel (drag and drop) to be able to see what's inside the attribute table
- prj files: This file holds the coordinate system set for the shapefile
- sbn and sbx: Optional spatial index, to help spatial queries speed
- cpg: Holds the character encoding used for the attribute data (dbf file)
- xml: Gather the metadata on the shapefile, providing information about its content and structure

To this day, the SHP format is still used as a transfer format and can be easily read by other softwares than ArcGIS/ArcMap (Qinsy, Qimera, Fledermaus, QGIS, Global Mapper)

The Geodatabase (gdb) is proprietary to ESRI. It represents a container in which Feature Class, Feature Dataset (sub-container for Feature Class) and rasters can be stored. Usually, data stored into a Geodatabase all share something common, from the topic, to the coordinates system. Having data stored in Geodatabase helps keeping it organised as well as facilitating its sharing within ESRI users. A Feature Class (equivalent of a SHP) can't be read outside of ArcMap/ArcGIS Pro: it has to be converted into a SHP or other generic format in order to be open.

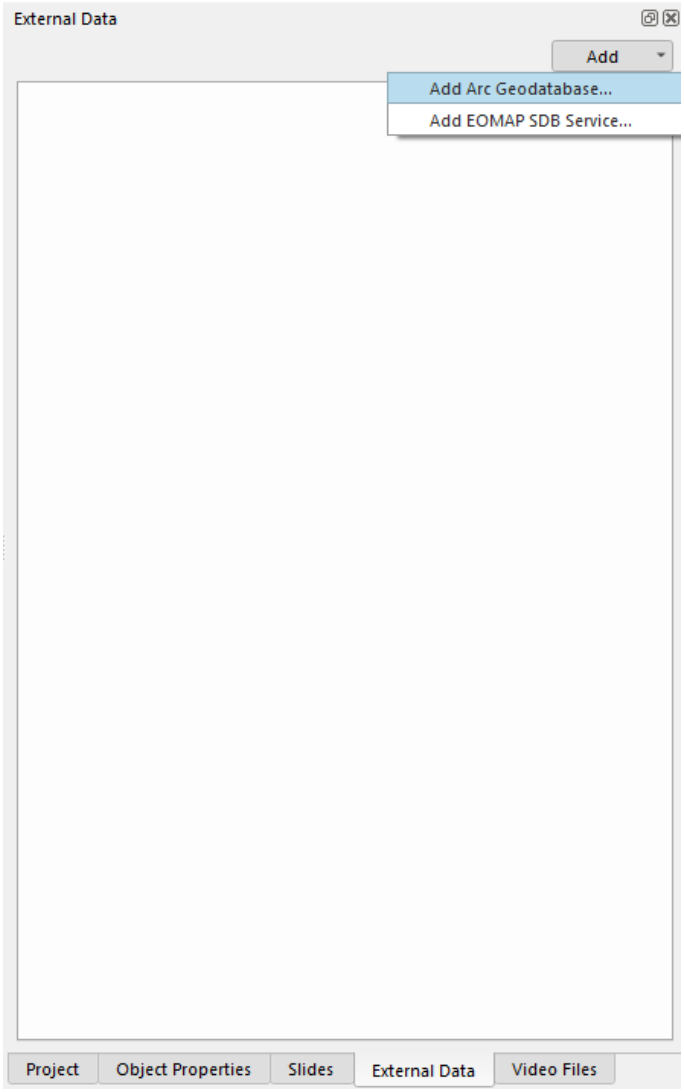
Step-by-step

*An ArcGIS license is necessary in order to connect to a GDB from Fledermaus

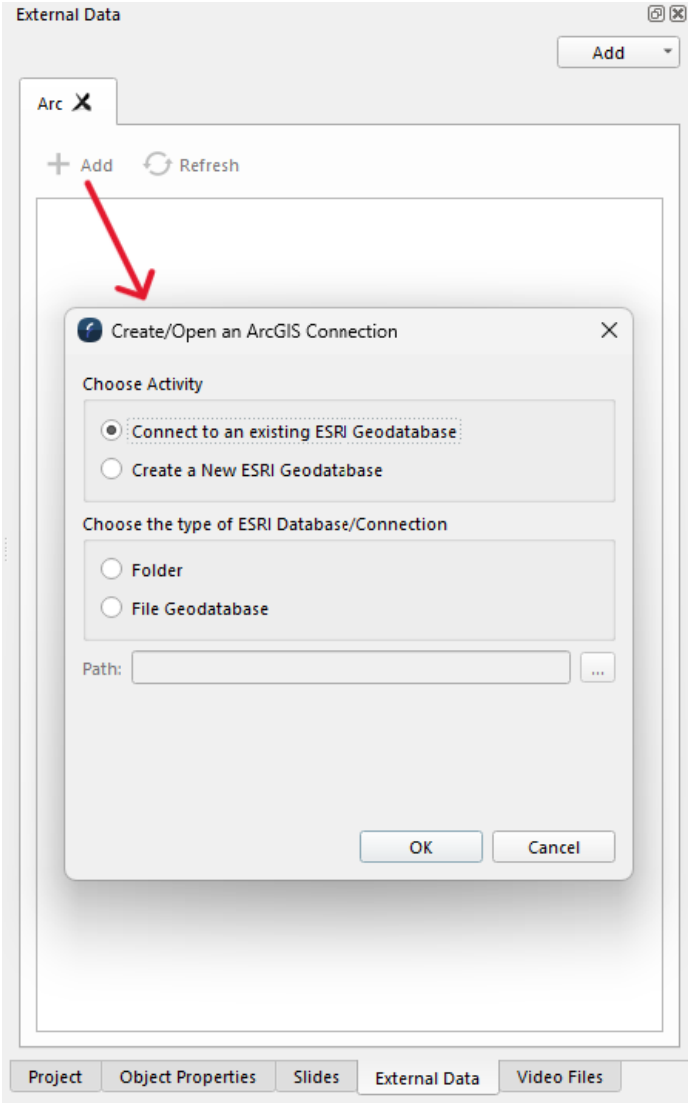
Import a Feature Class in a FM8 scene:

Step 1: Connect to the GDB

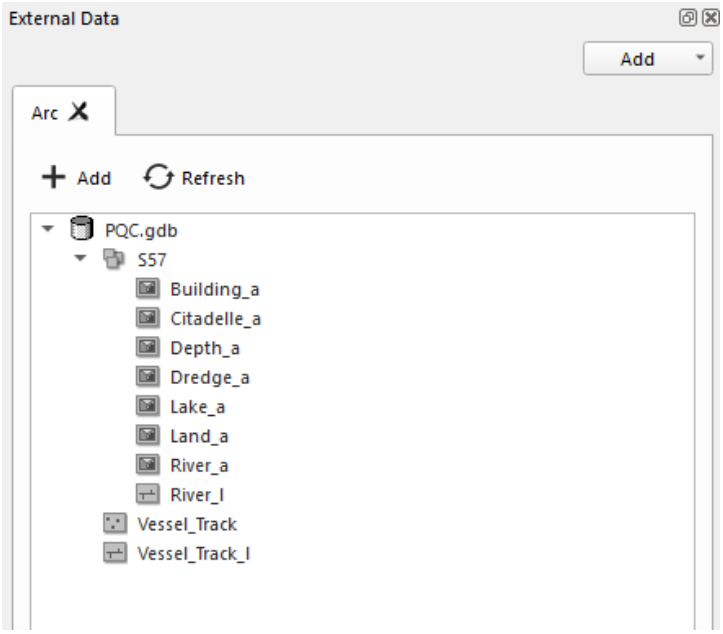
Open your Fledermaus Scene and go to the External Data tab



Once a connection tab is added, click on Add and select the either to connect to an existing GDB or to create a new one. Two type of GDB are available: the type doesn't change anything in the case of a connection to an existing GDB. Navigate to the folder where the GDB is and connect to it.

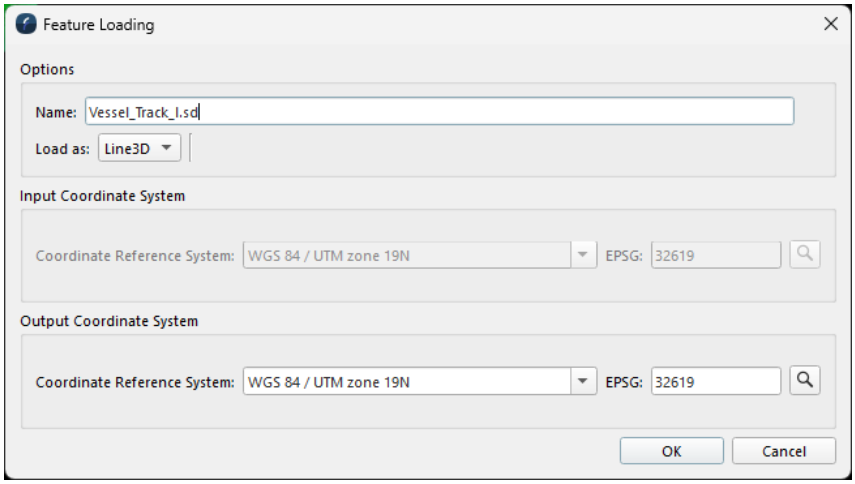


A license check will be done prior to connect to the selected GDB. Once connected, the elements in the GDB will be visible From the External Data tab:



Step 2: Adding Feature Class

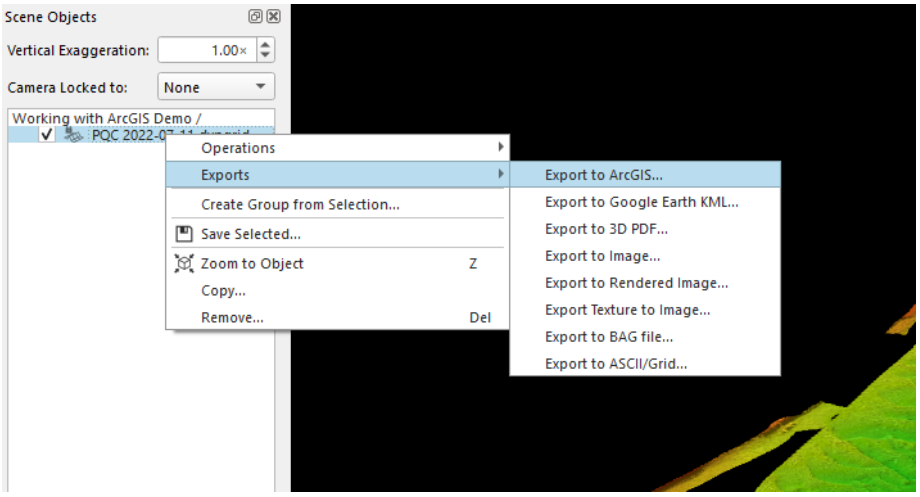
To add a Feature Class to the scene, right-click on it and select Add to scene… A Feature loading menu will open, in which the user have to type a name for the SD file which will be created from the Feature Class as well as select the output coordinate system. *Input coordinate system can't be changed, as it is set in the GDB/Feature Dataset.



Export a scene layer to a GDB Feature Class:

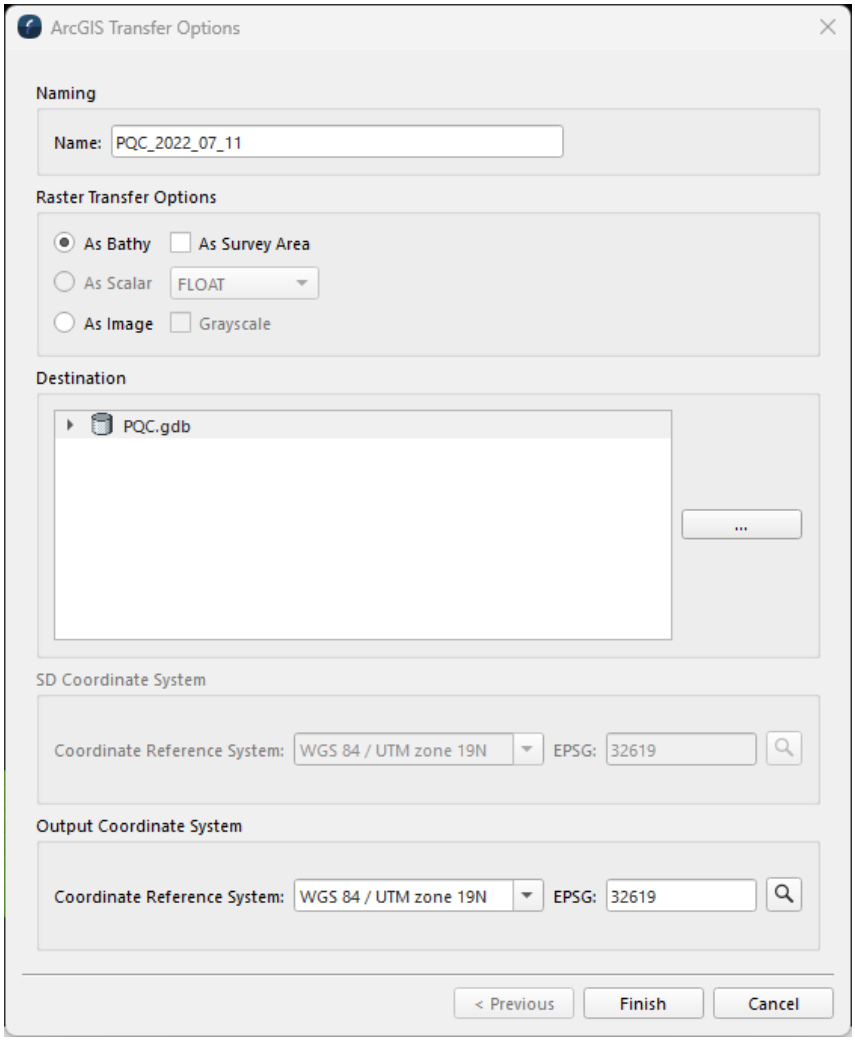
Step 1: Select the Layer to Export

Right-click on the layer and select Export to ArcGIS



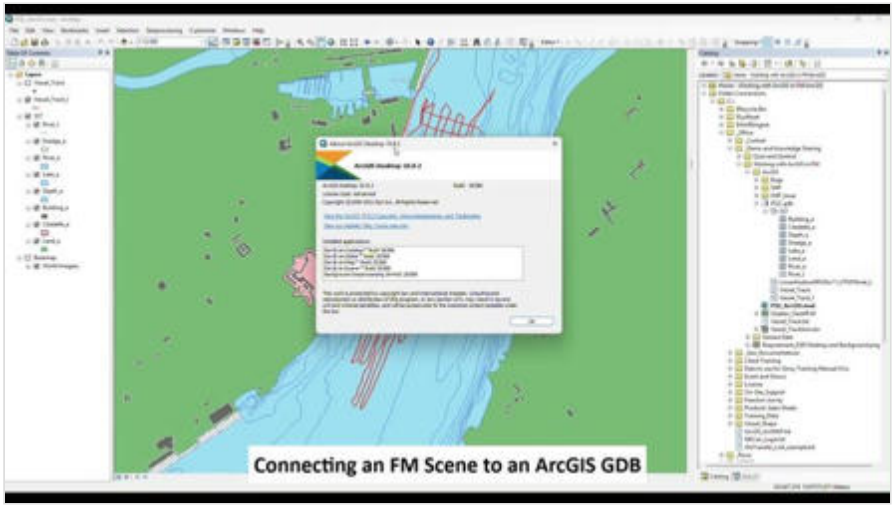
Step 2: Transfer Options

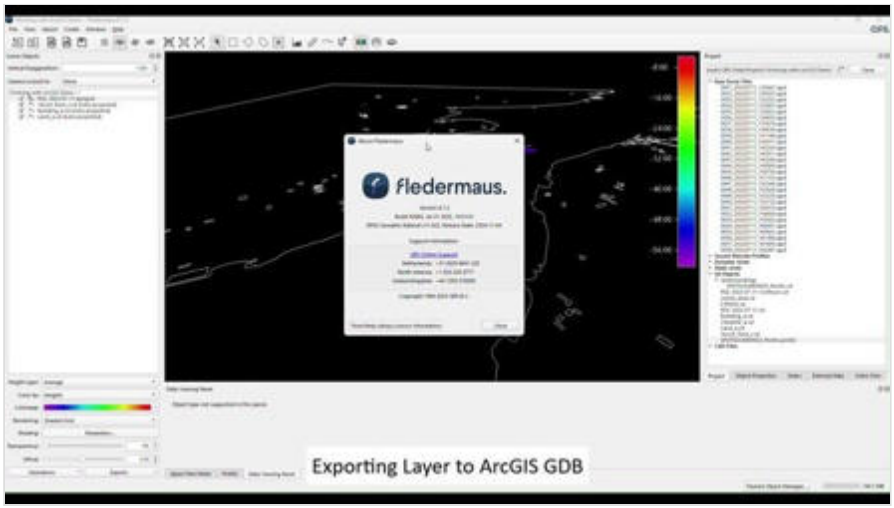
A transfer menu will open, giving different export options depending on the layer type (grid, point, SD lines). If no GDB is connected to the scene, the user have the option to connect or create a new GDB prior to transfer the data by clicking on the 3 Dots button. *Note on naming, Feature Class names have to be maximum 13 characters long.



Once the transfer is complete, the new Feature Class will be visible in the GDB and accessible to load in the ArcMap project.

Demo Videos





Pending Question:

Is the same connection system still available with ArcGIS Pro?

ArcMap is the “older” product from ESRI, which is now moving to support only ArcGIS Pro.

Creating a Mesh

Sorry, the widget is not supported in this export.
But you can reach it using the following URL:
https://vimeo.com/438909660/bea5b24f61

This tutorial explains how a mesh can be created in Fledermaus. This can be useful visualization of an object.

Related Tutorials

- Compute Mask
- SD Files

Related Documentation

- Getting Started - Fledermaus
- How-to Import a 3D Terrain Mesh
- How-to Create a Mesh

Fledermaus Reference Manual

Did we miss documenting something? Please let us know by reaching out to our Support Team Help DeskIssue tracking

Introduction to Fledermaus

The Fledermaus application provides a powerful set of interactive 4D visualization tools for data preparation, analysis and presentation. It allows one to assemble and explore a virtual 4D world containing many object types including surfaces, images, points, lines, midwater data, cross-sections and many more. The software is tailored for but not limited to the display of marine geospatial data, and can handle both projected and geographic data sources for most object types.

Fledermaus has been designed specifically to allow near real-time, interactive display of very large complex 3D objects at their full resolution. Fledermaus features a custom

rendering engine, which automatically adjusts the amount of detail in a scene based on the performance of your hardware. Two visualization interfaces are provided that allow you to literally fly through the virtual 3D-exploration space. This makes the exploration of data a simple and intuitive process. The exploration environment is closely coupled with intuitive data analysis tools, which help delve into the information behind the imagery for detailed analysis and understanding.

The Fledermaus package allows the import of a wide variety of data formats and creates richly featured 3D models. For examples: one can generate a simple 3D surface color banded by height; or a high-resolution satellite image can be draped over the same 3D surface producing a combined 3D model. Many objects can be visualized in the same 4D scene main visualization space, such as, two 3D surfaces show a shipping channel, one from before a dredging operation and one after the completed operation; add a model of the channel design and you have a complete, obvious representation of the design and the results of the dredging work all in a single 4D scene. Additional tools provide quantitative analysis such as queries to determine how much material was dredged. Data files produced in Fledermaus can be distributed to anyone along with an unlicensed Fledermaus Viewer version which provides a free interactive 3D viewer for these data sets.

Fledermaus Reference Manual Table of Contents:

- Fledermaus Visual Objects, Operations, & Exports
- Fledermaus Interface
- Fledermaus Wizards and Dialogs
- Command Line Operations
- Fledermaus Scene
- VesselManager

Shortcuts for other Fledermaus Product and Add-on Documentation:

Fledermaus Geocoder Toolkit Reference Manual and How-to FMGT

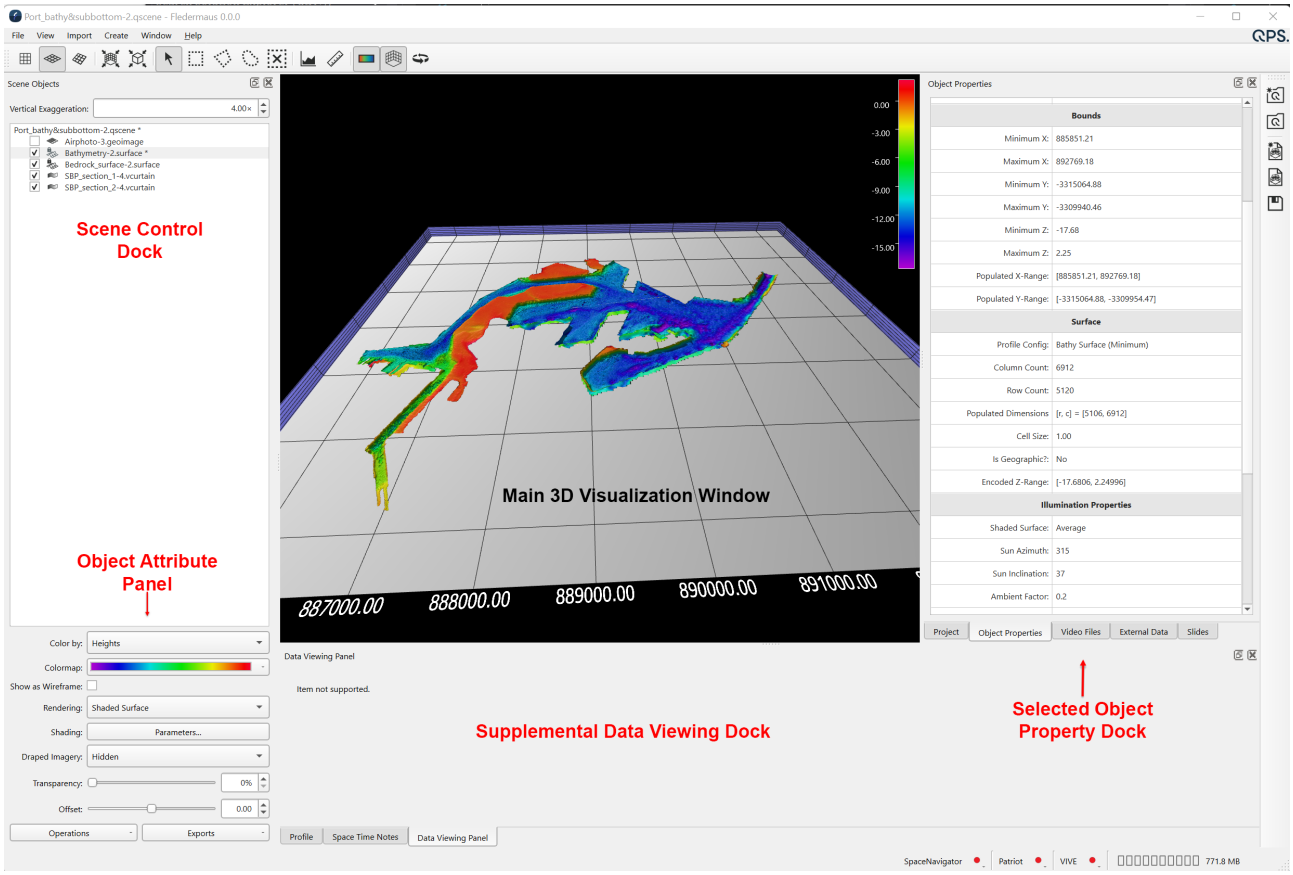
Fledermaus Midwater Add-on Reference Manual and How-to FMMW

Fledermaus 7.8.X reference manual

Fledermaus Visual Objects, Operations, & Exports

Fledermaus supports many different types of objects which can be loaded for visualization and analysis. When an object file is loaded it is added to the scene object dock. Each object has a visual presentation in the main display, properties that show up in the properties dock, attributes in the attributes panel that affect how the object is displayed, right click operations that can be done on the object, and right click export options if the object supports any exports. Finally there is also a data viewing panel which for some objects shows a window of textual information related to the object's internal data. For example for point cloud objects it shows the actual point data information.

Here is an example the shows these various areas. Whenever you select and object from the scene object control the attribute panel will update to show attributes that are relevant to that object type. The property dock and supplemental data viewing dock will immediately update as well to show relevant information. The object's operations and exports can be accessed by right clicking on the object. The information in the property panel and the attributes also work when you select multiple objects from the scene control. The attribute panel will show any attributes that the object's have in common and make it easy to change the properties of multiple objects in one operation.



The right-click context menu for objects can be found in the documentation for Scene Objects Dock

Click on the individual objects below for detailed information about them along with specific attributes, operations, and exports.

- GeoImage
- Scalar
- Vessel Trackline
- Text
- Grids (Digital Terrain Models)
- Gridlines
- Volume
- Points
- Dynamic Profiler
- Terrain Mesh 3D
- CAD (QGF)
- Vertical Curtain
- Solid Model
- Plane
- Lines
- Dynamic Cable/Pipeline
- Lidar LAS/LAZ
- Point Cloud
- QPDs
- Midwater Ping Fan
- Midwater Beam Curtain
- Pts
- Route

Return to Fledermaus Reference Manual

GeoImage

Introduction

The GeoImage object visualizes a geo-referenced image in the x/y plane where you can control the height the image is placed at. Imagery has many uses within the Fledermaus visualization system and it is commonly draped on related surfaces. It is often very useful to be able to bring 2D imagery into the 3D scene to complement the 3D data currently loaded. For example, one might have a bathymetric map showing the depths of a lake or a river channel and want to bring in a satellite image of the region. The 2D image can be added to the scene as a geoimage object properly geo-referenced within the scene .

To add a Geoimage to the scene, select the *Import > Import Image...* menu option. Some of the image file formats supported include:

- tiff
- jpeg/jpeg2000
- png
- bmp
- shade
- kap

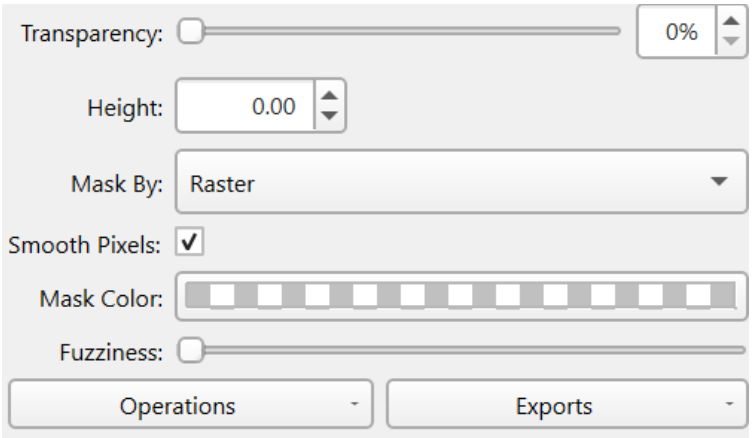
Storage Format

All Fledermaus GeoImage files have the file extension .geoimage.

Properties

Name	Description
Column Count	The number of columns of pixels in the image.
Row Count	The number of rows of pixels in the image.
Cell Size	The pixel resolution (pixels are square).

Attributes



The *Transparency* slider applies the percentage of transparency to the whole GeoImage object allowing data from objects behind the image to blend with the Image.

The *Height* operation specifies the vertical (Z) position of the image.

The *Mask By* option includes *None*, *Color*, and *Raster* options. When *None* is selected all the image's pixels are displayed. When *Raster* is selected any pixels in the image whose alpha value is zero will not be rendered allowing one to mask out portions of the image. An alpha value of zero means to mask (hide) the pixel, whereas the default 255 value means show the pixel. The final *Color* option allows for some simple dynamic masking where you can select a color and have any part of the image with the same color have its pixel hidden. This is done dynamically and does not actually modify the imagery data. For example you may have a chart which normally has a white background. The mask by Color makes it trivial to select the white background and remove it from the image displayed. To set the mask color click on the Mask Color option below the Mask By control. This will bring up a dialog to select the color and a control to pick the color from the scene if desired.

The *Fuzziness* slider works with the mask by color option to make it so it selects similar colors to the set mask color widening the mask selection based on the slider bars value.

Operations

To see the operations available for the surface object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System...

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just

telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object...

Generally there are better ways to handle (re)projection work but if you really just want to convert this image into a new projection this will work. The *Reproject Object* option will produce a new surface by transforming the existing one into the new projection you have chosen then adds the result to the current scene.

Reproject Object To Scene...

If an object is current marked as Undisplayable in the Scene control dock this is normally because it is in a different projection than the scene is. As images don't dynamically auto-project if you want to see this object in the current scene's CRS than one can use this option. It will result in a new surface being produced that can be displayed in the current Scene.

Compute Mask

This operation lets you knock a hole in the selected image based on any other surfaces that are visible in the scene by setting any overlapping pixels transparency to 100%. You can see the results by change the *Mask By* attribute to *Raster* which eliminates any image pixels whose alpha value is 0 (i.e transparent).

Crop

If you have a selection drawn on the surface the Crop operation will create a new GeoImage object with any data outside of the selection removed.

Resample

This operation provides a tool for resampling an image to a different resolution based on several methods. Click here for details.

Switch RGB/Greyscale Mode

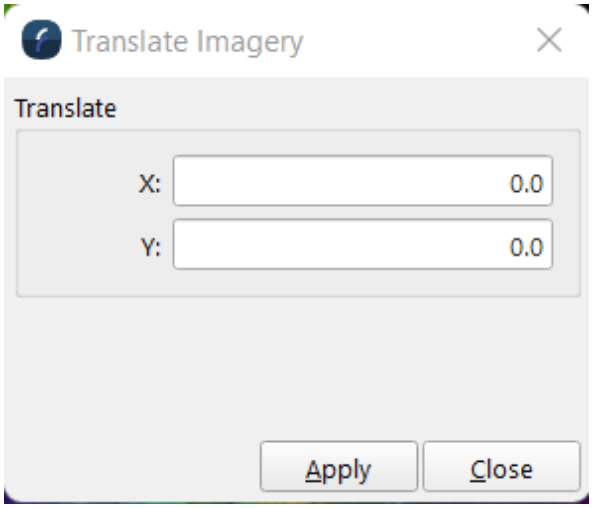
If one happens to have a RGB color image and one wants greyscale simply choose this operation and a new image copy will be created and loaded with a greyscale representation of the image.

Mask Selected Area

If you have made a selection on an image one can utilize this operation to make the area of the selection transparent so you can "see-through" this portion of the image. This can be useful for example if you have other more important data under a part of the image and you want to knock a hole in the image in that area so the underlying area can be seen.

Reposition Image in Scene

This operation is used to apply a translation to the image object. A dialog box is shown to enter a positive or negative amount by which the image should be moved. This operation permanently changes the coordinates of the image so if you apply a shift and want to change the object back you would need to apply an opposite shift. For objects with a projected coordinate system the shifts are in units of the data, normally meters or feet. If you have a geographic object the expected shifts are assumed to be meters which is turned into an approximate shift in degrees based on the average latitude of the object. Shifts are only supported in the Easting/Northing or Longitude/Latitude directions. Shifts in height/depth are not supported by this operation.



To apply a shift click the *Apply* button. You can apply the same shift multiple times by just clicking the *Apply* button again while you watch the results of your shift. Each time you apply a shift the image file is modified and saved with the new shifted coordinates. Click Close dismisses the dialog box.

Merge

The merge tool is a data fusion tool which allows one to merge multiple selected images into a single new image with a specified resolution and various option for how to merge overlapping cells from multiple surfaces. This is a very handy tool if one needs to deliver a single final image built from separate individual ones. Click here for details.

Exports

Export to ArcGIS...

Assuming you have the ESRI GIS Engine setup this tool lets you push data into ESRI geodata sets. The tool is described in detail here.

Export to Google Earth KML...

Exports the image to a Google Earth KML file which can be easily loaded into Google Earth. Click here for details.

Export to 3D PDF...

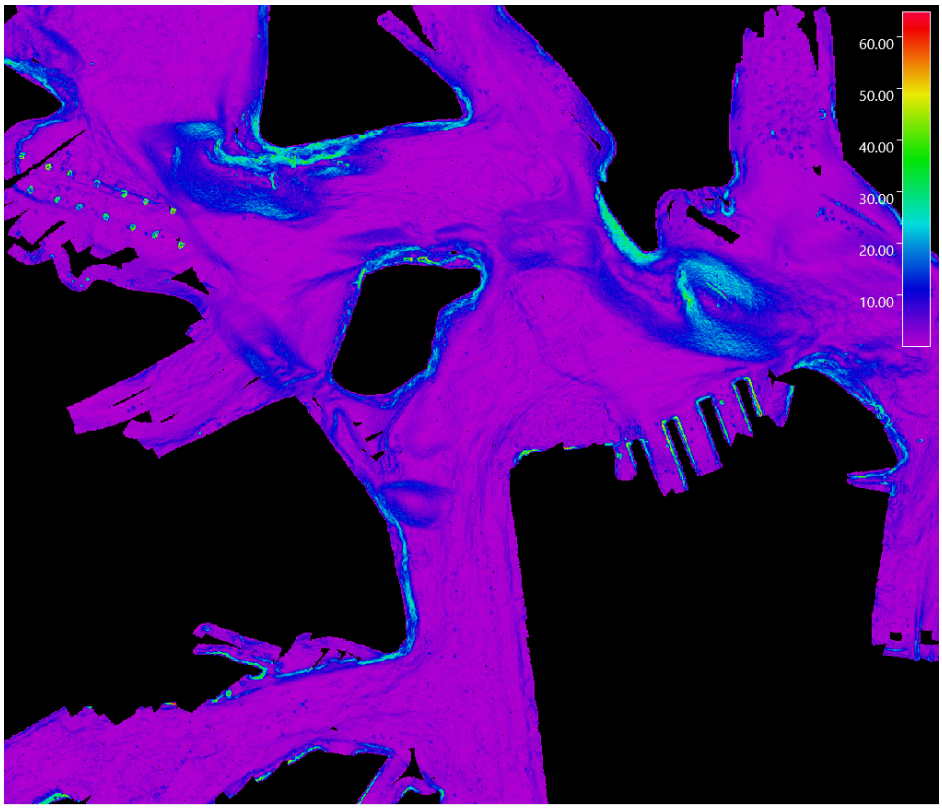
Exports a copy of the image as a 3D PDF file for use in Adobe Acrobat. There are limitations of the size of the file as Fledermaus can easily generate surfaces much larger than the capability of PDF viewers so you may have to break the area up if it large. Click here for details.

Export to Image...

Used to export the image data to various imagery formats. Click here for details.

Return to Fledermaus Visual Objects
Return to Fledermaus Reference Manual

Scalar



Sample slope scalar produced from Sydney Harbour, Australia bathymetry data. Color is slope in degrees.

Introduction

The Scalar object type is used to represent any particular value that is sampled on a uniform grid. i.e. scalar = f(x, y) where x and y are sampled on a uniform grid. Typical it is used for items like Slope, Rugosity, Pressure, Temperature, Classification, Geologic classes, etc. Often this scalars are combined with surface to shade a surface based on the scalar value. The visualization of the scalar object is done on a plane in the x/y space at a specified height (z value). The color of each cell is based on mapping the scalar value through a color map to select the color used in the visualization of that cell. Like the surface the scalar is also dynamically streamed off disk as its size grows and more higher resolution data will be pulled in as needed when you zoom in or move around the data space.

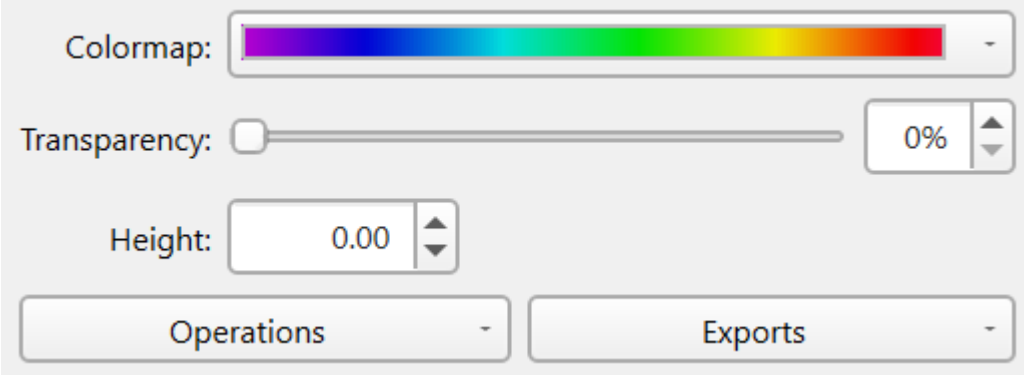
Storage Format

Fledermaus scalar objects are stores in files with the .***scalar*** extension.

Properties

Name	Description
Column Count	Number of columns in the scalar array.
Row Count	Number of rows in the scalar array.
Cell Size	The base resolution of each cell in the scalar array.
Scalar Minimum	The minimum scalar value (minimum slope in the example above)
Scalar Maximum	The maximum scalar value (maximum slope in the example above)

Attributes



The *ColorMap* widget provides the standard color map tool including the ability to select a color map, edit the color map, and control how the scalar values are mapped to color map values.

The *Transparency* control how transparent the rendering of the scalar surface is and how much data behind the scalar may blend with the scalar colors.

Finally the *Height* control specifies that height (Z-value) for the plane that the scalar is rendered onto.

Operations

To see the operations available for the scalar object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System...

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object...

Generally there are better ways to handle (re)projection work but if you really just want to convert this scalar into a new projection this will work. The *Reproject Object* option will produce a new scalar by transforming the existing one into the new projection you have chosen then adds the result to the current scene.

Reproject Object To Scene...

If an object is current marked as Undisplayable in the Scene control dock this is normally because it is in a different projection than the scene is. As scalars don't dynamically auto-project if you want to see this object in the current scene's CRS than one can use this option. It will result in a new surface being produced that can be displayed in the current Scene.

Statistics

This option computes a number of statistics based on the information contained within the scalar object and presents the results. Click here for details.

Interpolate

Does a basic interpolation of the scalar which can be used to fill in small holes based on the neighboring cell scalar values. When cells are filled by interpolation they are flagged as such so they can be differentiated from real cell data for certain other operations. Click here for details.

Extract

Use this operation to extract a sub-area from the selected scalar to make a new surface with the given area. The area can be specified directly by coordinates or it can use selections that have been made on the scalar. Click here for details.

Merge

The merge tool is a data fusion tool which allows one to merge multiple selected scalars into a single new scalar object with a specified resolution and various option for how to merge overlapping cells from multiple surfaces. This is a very handy tool if one needs to deliver a single final surface built from separate individual ones. Click here for details.

Exports

Export to ArcGIS...

Assuming you have the ESRI GIS Engine setup this tool lets you push data into ESRI geodata sets. The tool is described in detail here.

Export to Google Earth KML...

Exports the surface to a Google Earth KML file which can be easily loaded into Google Earth. Click here for details.

Export to Image...

This exports the colored scalar data to various imagery formats. Click here for details.

Export to XYZ...

This options supports exporting the data to an x, y, z, scalar ascii file.

Export to Floating Point TIFF Grid...

This exports the scalar data to a floating point TIFF. This can be used to load the data as values in other software or Fledermaus.

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Vessel Trackline

Introduction

The Vessel Trackline object provides a method to add a vessel and the path (trackline) associated with it. The object may include an optional 3D model that can be used to represent the vessel.

Storage Format

The extension associated with Vessel Tracklines is: **.vesseltrackline**.

Properties

Along with the standard properties that all objects share, the Vessel Trackline adds one more of its own, the point count for the trackline, and another set for the solid model. See the solid model documentation for more details of the latter: Solid Model .

Property Name	Description
Point Count	The number of nodes in the path for the trackline.

Data Viewing Panel

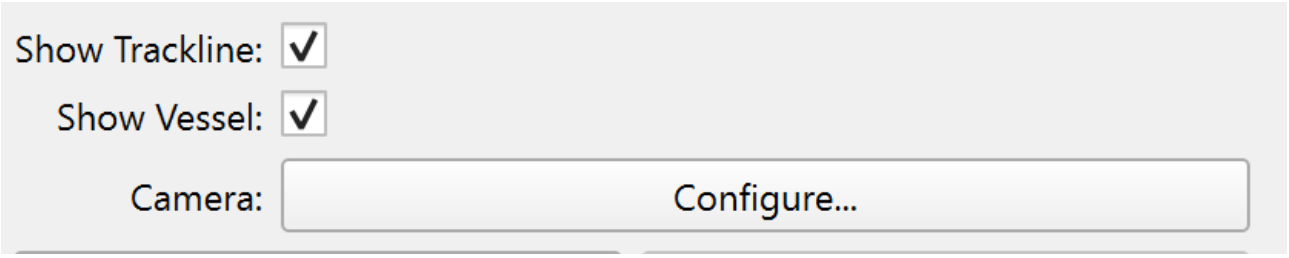
The vertices in the vessel trackline can be viewed in the Data Viewing Panel.

Attributes

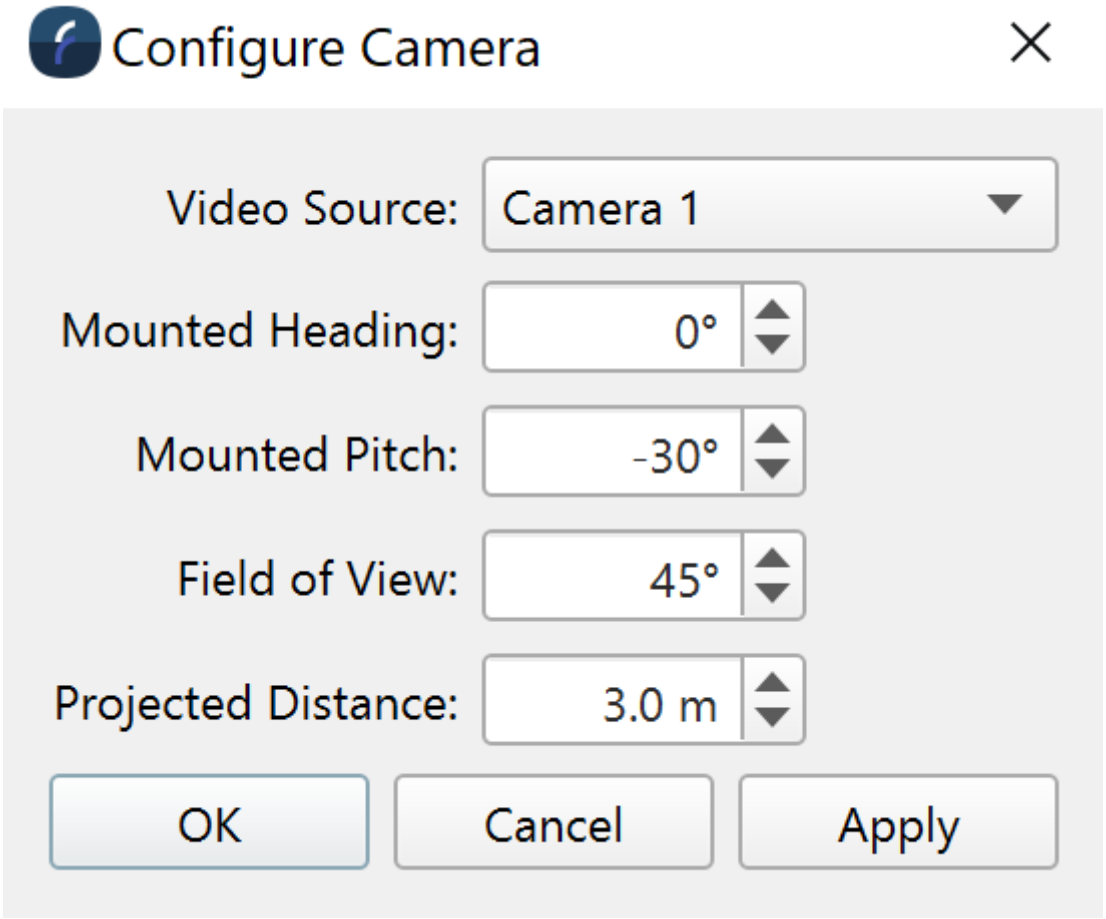
The options available as attributes to the Vessel Trackline object include

- Show Trackline
- Show Vessel
- Camera

The first two are options to either display the related part of the Vessel Trackline object or not. If there is no model associated with the object (it is optional), the Show Vessel option will not be available. The attributes are illustrated here:



The Camera option gives a method to choose a video source, if present in a project with the Vessel Trackline object. Video sources are only available in projects. Clicking Configure… presents a dialog similar to the following:



Select a video source then enter the desired heading, pitch, field of view and projected distance for the camera visualization. The latter is the position from the center of the model for the presentation of the video. The field of view is 45 degrees for a normal lens, narrower for telephoto lenses and wider for wide angle lenses. Adjust the parameters as desired for appearance or to the specification of the vessel.

Operations

To see the operations available for the surface object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System...

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Exports

The Vessel Trackline object does not support any exports at this time.

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Text

Introduction

Fledermaus 8 allows users to load labels created in version 7 or older. The new way of annotating a scene is using the Billboard functionality implemented in Fledermaus 8. Fledermaus text objects files are stored in files with the *.text* extension. If one wants to bring in lots of text with different sizes and orientations then using a CAD object is a better approach. If one wants to do something like loading in a list of City names on a geographic map then using a Point object with the city names as the labels is likely the best approach.

Storage Format

Fledermaus Text object files are stored in files with the ***.text*** extension.

Properties

There are no object specific properties for the text object.

Attributes

Operations

There are no operations for this object type.

Exports

There are no exports for this object type.

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Grids (Digital Terrain Models)

Introduction

Grids are one of the primary object types in Fledermaus and are used to represent uniformly gridded surfaces. For example, a surface that represents Z = f(x, y) where x and y are sampled on a uniform grid. Grids in Fledermaus are dynamically streamed from the .statgrid/.dyngrid file. If the Grid is small it may be fully loaded in memory but for larger Grids more data is pulled in as you zoom in and move around the scene. The Grid object type in Fledermaus supports both Static and Dynamic Grids, although not all the features associated with Dynamic Grids in Qimera are supported. As of Fledermaus version 8.7.0 multilayer grids are now supported. Previously you could only have either a surface or a surface with an attached scalar layer. You can now have an arbitrary number of surface and scalar layers in a single grid object. All of the surface layers must have the same base resolution of the Grid. A single optional texture layer can be associated with the surface and have a different (usually higher) resolution.

Storage Format

In Fledermaus, the file extension for Grids is **.statgrid** for a Static Grid, and **.dyngrid** for a Dynamic Grid.

Properties

Along with the standard properties that all object share, the Grid object adds the populated X and Y bounds as well as the overall object bounds. Grid objects are always padding out to an even multiple of 128 cells in the rows and columns, and the populated range identifies the actual Grid bounds not counting any of the extra padding cells along the right and top edges. When you do things like exporting a Grid, only the populated area will be exported. The normal properties for the Grid object include:

Property Name	Description
Profile Config	
Column Count	The total cell columns in the Grid padded to an even multiple of 128.
Row Count	The total cell rows in the Grid padded to an even multiple of 128.
Populated Dimensions	As above but without the padding included.

Property Name	Description
Cell Size	The base resolution of the Grid
Is Geographic?	Yes if the object's x and y coordinates are Longitude and Latitude in degrees.
Encoded Z-Range	The overall Z-Range of the Grid object

In addition to the base properties the Grid also includes a set of illumination properties which show the values used to shade the Grid. These include:

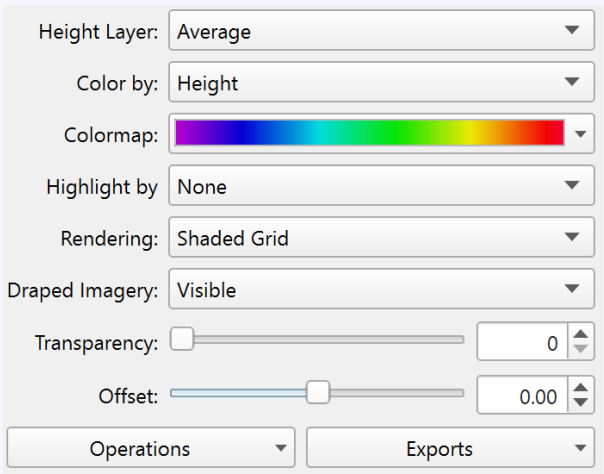
Illumination Property Name	Description
Shaded Surface	Which of the possible surfaces is illuminated (one of Shallow, Average, Deep, CUBE).
Sun Azimuth	The compass angle towards the sun in degrees. (0 = North, 90 = East, 180 = South, 270 = West)
Sun Inclination	The angle looking up towards the sun's position.
Ambient Factor	A basic background amount of light (0.20 is 20%)
Specular Factor	How much do you want to highlight the specular components (parts of the Grid facing the light source very closely.)
Soft Shadow Factor	How soft/hard are the shadows edges.
Vertical Light Scale	How much the Grid is vertically exaggerated for the purpose of lighting.
Is Illum Dirty	If this is true than the parameters shown here are out of date.

There is an additional property specific to grids with multiple surface layers:

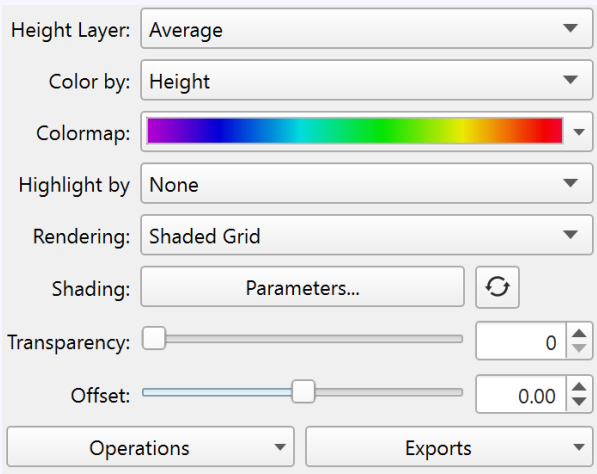
Property Name	Description
Layer ID	Unique identifier for the selected surface layer.

Attributes

The attributes control how the Grid is displayed and includes the options shown below. Note that some options only show when the Grid has certain properties as shown in the two examples below. The *Height Layer* drop down will show which surface layer property is displayed. All grids contain at least an average surface but some may have shallow, average, deep and CUBE options which can be selected. The *Draped Imagery* drop down menu will only show if the Grid in question has imagery available to be draped onto the surface. Finally the *Shading Parameters* button is not shown when the shaded surface is covered by a draped imagery texture, or for individual layers in a multilayer grid.

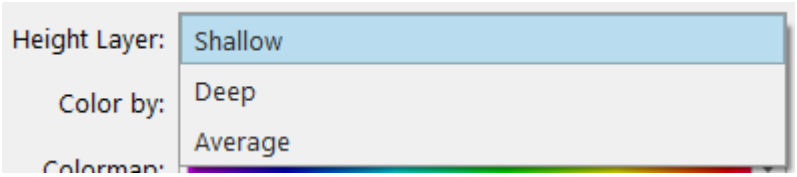


Grid object with visible draped imagery

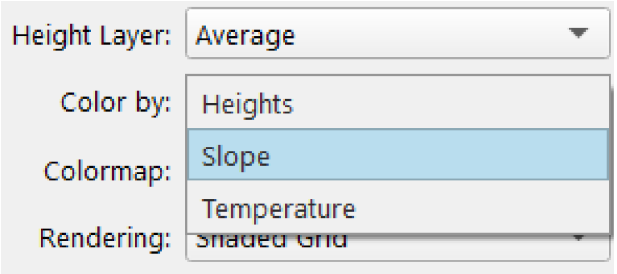


Grid object without draped imagery

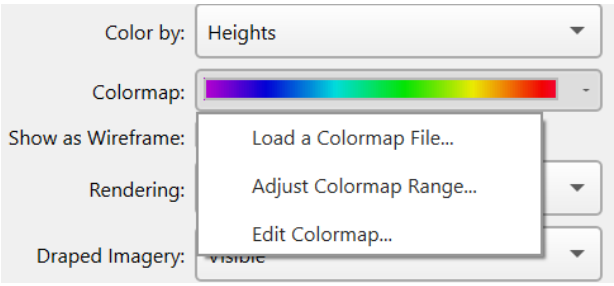
The *Height Layer* popup menu lets you select which grid height property you want to render for Grids that contain multiple surface properties. For example, if you have a dynamic grid you can select from the *Shallow*, *Average*, *Deep* and, if present, the *CUBE* grid.



The *Color by* is normally Heights, but if the Grid object contain one or more scalar layers then these will also be shown as options to color the surface by. For example, if you have a grid with a height layer and two scalar layers called slope and temperature, the color by will have the option to color by the grid heights, slope scalar, or the temperature.

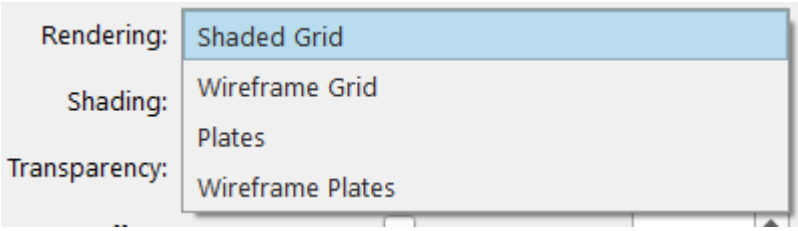


The *Colormap* option lets one choose which color map to use for the surface and the the widget itself shows the colors from the selected color map being used.



In addition to loading a new colormap file you can also adjust how the color map is applied to the surface. You can also choose to edit and/or create new colormaps via the *Edit Colormap* option.

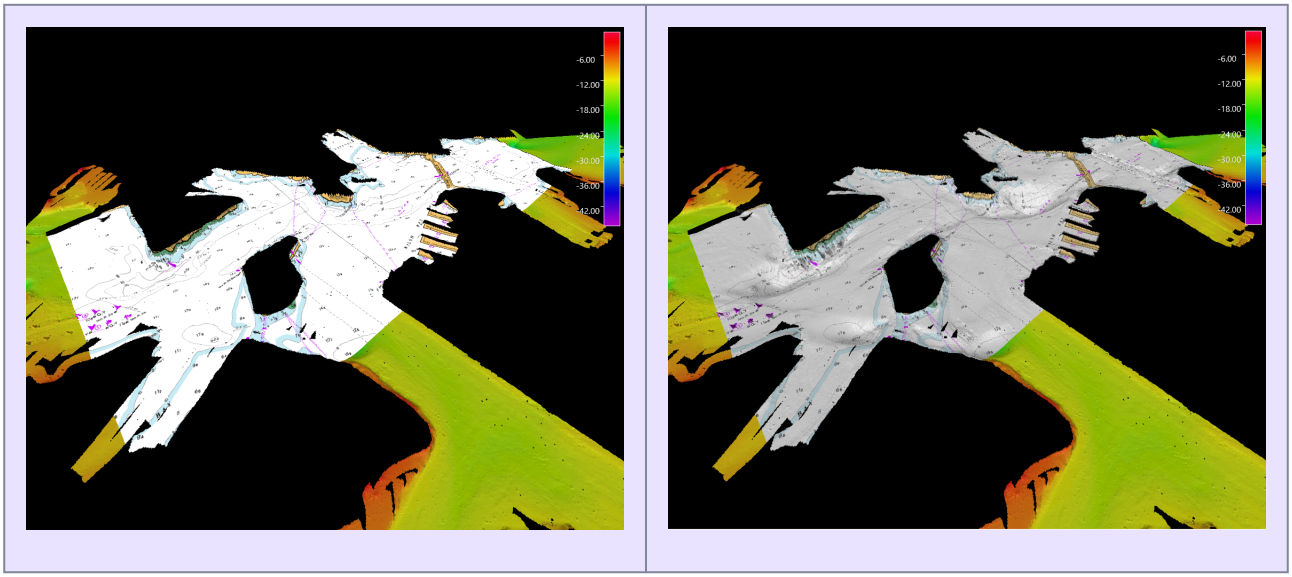
The *Rendering* dropdown is used to control how the Grid is displayed. The default is the *Shaded Grid* option which rendering the grid from cell center to cell center smoothly blending the colors across the Grid. The *Wireframe Grid* is the same as the *Shaded Grid* but doesn't fill in the triangles so you can see the surface as a wireframe. The *Plates* and *Wireframe Plates* are similar but they render each grid cell as a disjoint plate from edge to edge so you see the exact grid cell coverage and structure/size of the grid cell elements.



The *Shading* option lets you bring up the lighting control dialog to change the illumination used to shade the surface. Note that this option is hidden if the *Draped Imagery* option is set to Visible.

The *Draped Imagery* dropdown controls how any texture associated with the surface will be applied. When set to the default Visible state any texture available will be rendered. When set to Hidden no texture will be shown on the surface whether available or not.

Finally the Visible with Shading option will apply the same lighting that the surface has to the colors of the texture when available. See the examples below to compare the *Visible* and *Visible with Shading* options.



The *Transparency* slider controls the overall opacity of the Grid, when set to 0% the Grid is fully opaque (the default) and when 100% transparent you will see nothing from the Grid. Values in between will blend the Grid with other objects behind it.

The *Offset* slider applies a basic vertical offset to move the Grid up or down by a small amount. This offset does not change the data in any way it is purely applied in the visual presentation. It can be very useful when you have Grids or other object exactly on the top of the surface and want to move it a little vertically to control which object appears on the bottom or top.

As well as right clicking on the object to access the Operations and Exports they are also available from the *Operations* and *Exports* drop down menus at the bottom of the attribute panel.

Operations

To see the operations available for the Grid object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System...

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object...

Generally there are better ways to handle (re)projection work but if you really just want to convert this Grid into a new projection this will work. The *Reproject Object* option will produce a new Grid by transforming the existing one into the new projection you have chosen then adds the result to the current scene.

Reproject Object To Scene...

If an object is current marked as Undisplayable in the Scene control dock this is normally because it is in a different projection than the scene is. As Grids don't dynamically auto-project if you want to see this object in the current scene's CRS than one can use this option. It will result in a new Grid being produced that can be displayed in the current Scene.

Show Histogram...

Computes a histogram of the height values for the Grid and displays the results. See here for details.

Show Spreadsheet...

Show a spreadsheet view of the Grid, showing the particular values of each bin. Only a limited area can be viewed at once but the area can be moved around the entire Grid. Click here for details.

Attach Scalar...

This option is used to attach an existing scalar object to the selected Grid. If necessary the scalar will be resampled to match the resolution of the Grid cells. Click here for details.

Compute Mask...

This option can be used to knock holes in the Grid based on other Grids or imagery objects. For example say you have a land dataset where a lake is filled in with zero heights and you also have a bathymetry Grid from a lake survey. One could use this option to knock out the lake cells from the land surface using the bathymetry Grid you have allowing the bathy surface to show through. Click here for details.

Contour...

Select the contour operation to produce contours for the selected Grids. Click here for details.

Create Dynamic Points…

This operations creates a series of dynamic points that follow a selected line on a particular Dynamic Grid. Click here for details.

Create Survey Area...

This operation creates a series of polygons that outline the area covered by a particular Grid. Click here for details.

Drape Image...

This option is used to drape images files as textures onto the surface. If the surface doesn't already have a texture the 1st image you drape will add one. You can drape additional images to build on an existing texture although if the images cover the same area than the last pixels added are the ones shown. You can also clear an existing texture when adding a new image. See here for detailed documentation on draping.

Detach Scalar...

If you have a Grid object with an attached scalar you can utilize this option to detach it from the Grid and make it a separate scalar object. Click here for details.

Starting v8.7.0 the Detach Scalar operation as been replaced with Extract Grid Layers.

Extract Area...

Use this operation to extract a sub-area from the selected Grid to make a new Grid with the given area. The area can be specified directly by coordinates or it can use selections that have been made on the Grid. Click here for details.

Extract Grid Layers…

If a surface has multiple layers the extract grid layers operation can be used to pull out any individual layers from the multilayer grid file into separate grid files for the selected layers. This operation launches the grid layer extraction dialog. Click here for details.

Grid Difference...

This options lets one compute Grid difference from the selected object to another Grid or plane and produce a difference Grid along with appropriate statistics. Click here for details.

IHO Uncertainty...

This is used to compute an uncertainty scalar for a Grid based on the standard IHO uncertainty algorithm which computes an uncertainty based on the depth of the surface elements. Click here for details.

Interpolate...

Does a basic interpolation of the Grid which can be used to fill in small holes based on the neighboring cell heights. When cells are filled by interpolation they are flagged as such so they can be differentiated from real cell data for certain other operations. Click here for details.

Merge...

The merge tool is a data fusion tool which allows one to merge multiple selected Grids into a single new Grid with a specified resolution and various option for how to merge overlapping cells from multiple Grids. This is a very handy tool if one needs to deliver a single final Grid built from separate individual ones. Click here for details.

Replace Value...

This operation can replace all depth values in a specified area and depth range of the Grid with a custom or no-data value. Click here for details.

Resample...

This operation provides a tool for resampling a Grid to a different resolution based on several methods. Click here for details.

Rugosity

Similar to the slope option but for computing surface rugosity. Click here for details.

Slope...

This is used to compute a slope scalar based on the heights in the Grid object. Click here for details.

Statistics...

This option computes a number of statistics based on the information contained within the Grid object and presents the results. Click here for details.

Change Bounds...

Click here for details.

!! DO NOT REMOVE THIS MACRO FOR 8.8.0 RELEASE !! - This feature is currently disabled until we fix it

Exports

Export to ArcGIS...

Assuming you have the ESRI GIS Engine setup this tool lets you push data into ESRI geodata sets. The tool is described in detail here.

Export to Google Earth KML...

Exports the Grid to a Google Earth KML file which can be easily loaded into Google Earth. Click here for details.

Export to 3D PDF...

Exports a copy of the Grid as a 3D PDF file for use in Adobe Acrobat. There are limitations of the size of the file as Fledermaus can easily generate Grids much larger than the capability of PDF viewers so you may have to break the area up if it large. Click here for details.

Export to Image...

This exports the colored height data to various imagery formats. Click here for details.

Export Texture to Image...

If a Grid has an attached texture this option can be used to specifically save the texture component out to a variety of standard image formats. Click here for details.

Export to BAG file...

This will launch the Export BAG Surface Wizard. Click here for details.

Export to Surface...

This options supports exporting the Grid data itself to various 3rd party formats. Click here for details.

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Gridlines

Starting Fledermaus v8.7.0 the *Gridlines* object has been removed. For information about creating grid lines, see Create Grid Lines Dialog

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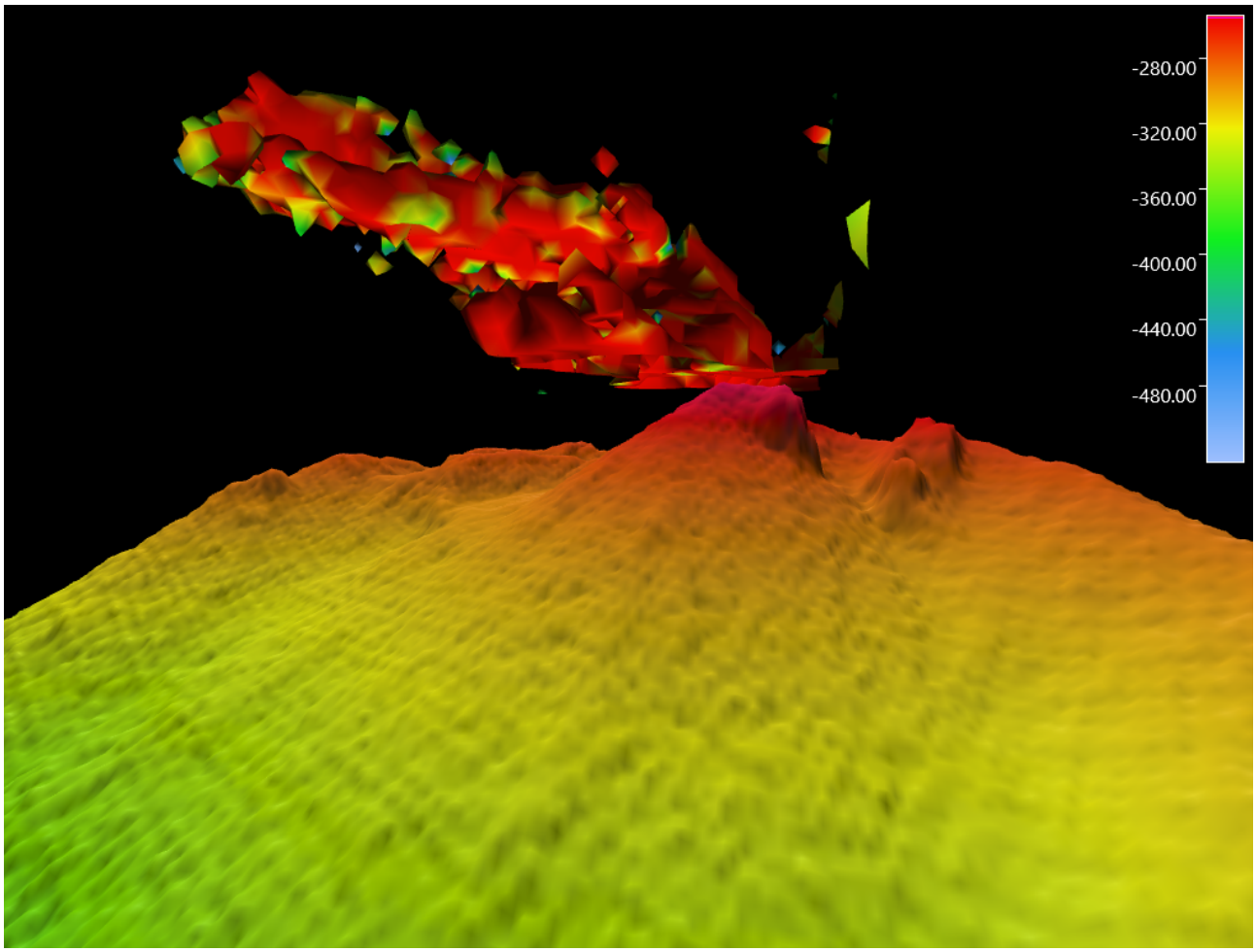
Volume



Hydrate Seek Volume Object

Introduction

The volume object represents an isosurface visualization from a 3D uniformly gridded density field.

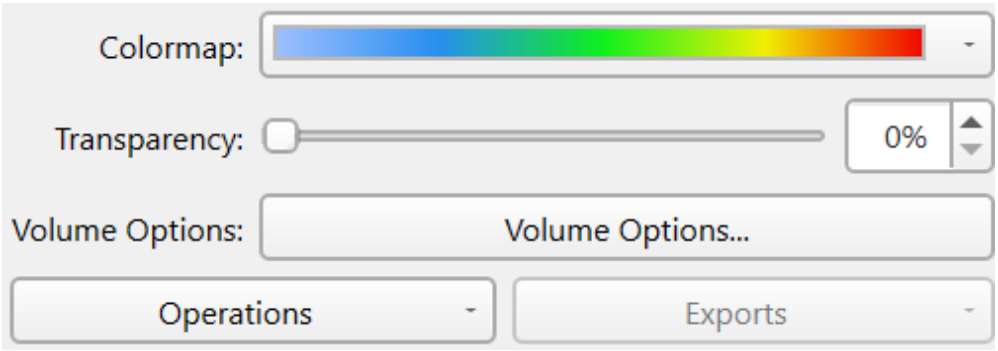
Storage Format

Fledermaus volume objects are stored in files with the **.volume** extension.

Properties

Name	Description
Vertices Count	The total number of triangle vertices for the isosurface visualization.

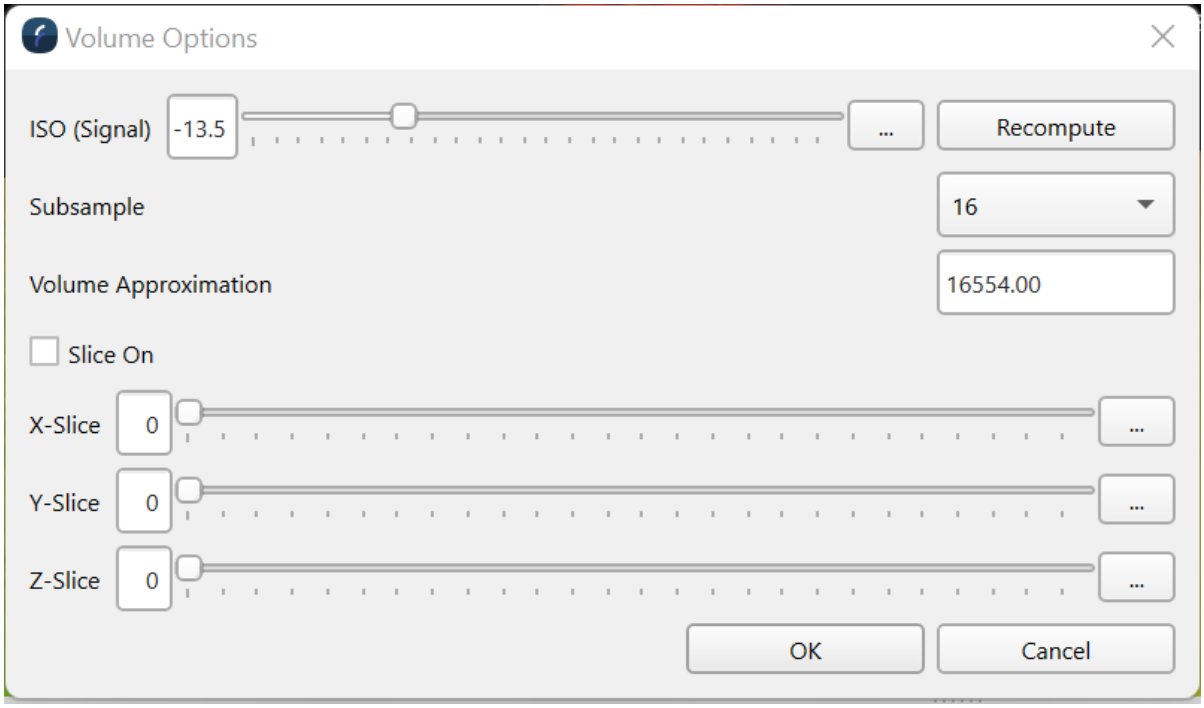
Attributes



The *Colormap* drop down control includes the common set of color mapping options to select, edit and control the mapping of the density to color for visualizing the object's isosurface.

The *Transparency* slider allows one to have the curtain rendered with some blending of object behind the curtain based on the amount of object transparency set.

The *Volume Options* control brings up a dialog with controls to manage how the isosurface is created for the volume object along with other visualization options.



The *ISO Signal* control is the value of the 3D density field that is used to form the 3D contour (isosurface). In the above example the value stored is the dB signal strength of midwater data. The slider lets you select any value between the minimum and maximum values stored. Clicking on the *Recompute* button regenerates a new isosurface and displays the result.

The Volume Approximation is a computation of the volume of space inside the selected isosurface.

It is also possible to generate visualizations on a slice plane through the 3D lattice along any of the 3 major axis. To see the slices toggle on the *Slice On* option. The X Y and Z slice controls let one select which slices within the volume to display.

Operations

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Exports

There are no additional exports for the volume object.

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Points

Introduction

The Point type the can visualize 2D and 3D point data with optional labels attached to them. This object type can be used for many purposes, from labeling points of interest in a 3D scene (which could also be done with the billboards feature) or for displaying a large point clouds. A points object can have any number of attributes beyond just the required x, y, and z values.

3D points can be imported into Fledermaus 8 using the Import > Import Points... menu option.

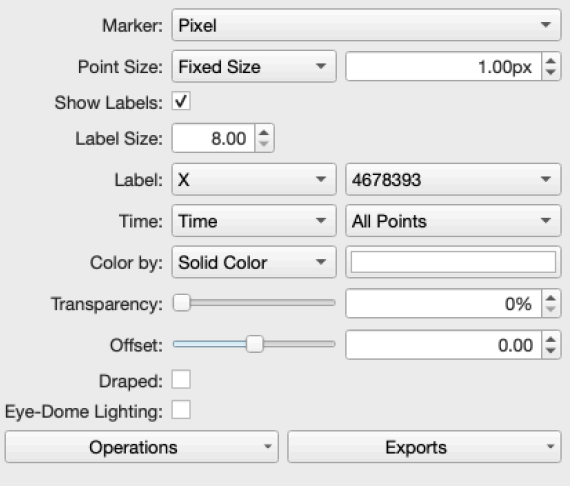
Storage Format

Fledermaus Point objects are stored in files with the **.points** extension.

Properties

Name	Description
Point Count	Shows how many points make up the point object.

Attributes



At a minimum point objects have an X, Y, and Z coordinate but they can have many other attributes as well which can include a time field, a label for the point, and other numeric

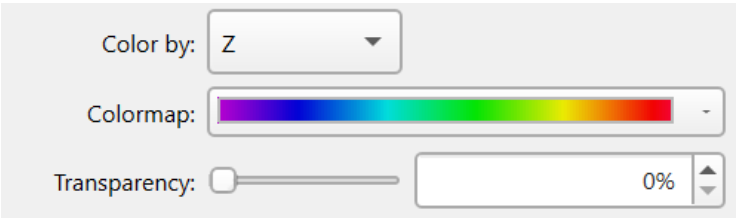
attributes. At the top of the attributes is a choice or marker type to display for each point that can be as simple as a screen pixel, or more complex types including a sphere, Cube, Diamond, Cylinder, 3D Flag, Circle, Square, Crosshair, and None if you don't want to display the point at all. There are a number of ways to control the point size the default Fixed Size option make each point the same size. If the marker type is pixel then the size is how big a point is drawn in pixels. For any of the other marker type the size is in units of data, normally meters. In addition to the fixed size you can have the points depend on one of the other attributes in your table. Any numeric field will be an option to select here and the point will be relatively scaled based on the range of the selected attribute. In this case the size field becomes a scaling factor applied to all the points.

When the Marker is in Pixel mode and Fixed Size is selected, the size field represents the size of the points in pixels. When the size is changed to X, Y or Z, the range of the data is used for the size, and the size field is a multiplier. Furthermore, when the mode is set to one of the point shapes: cube, sphere, etc., the size field represents meters.

Toggling on the *Show Labels* option will turn on the display of any selected label field. The *Label Size* controls the size of the text in units of the scene (usually meters). Point objects can have text fields as part of the point data itself but the system can also create labels automatically for display from any selected numeric field which can be selected from the *Label* drop down menu. To the right of the selected field is a set of formatting options which can be used when numeric fields are specified to set the number of decimal places to show. The *Label Size* and *Label* fields will only be shown when the *Show Labels* option is checked on.

The *Time* field dropdown menu lets one specify a field to use as time for the point objects or None if there is no time field. Once one depending on the time options dropdown to the right one can choose to show all points regardless of their time, or just the point from the past to the current time set by the time bar, or show only points within a time window around the current time. The time window length is set from the time bars dropdown menu. See here for details.

The *Color by* option chooses how the points are colored with the options available depending on the data. You can always choose to color all the points by a single fixed color, or by choosing any numeric field in which case the color is mapped through the color map to get the resulting color. Finally if the points data contains an RGBA color field then it can be chosen and the point will get the associated color given in that field. When a field is selected to color by then the *Colormap* widget will be shown to control the color map selection and mapping.

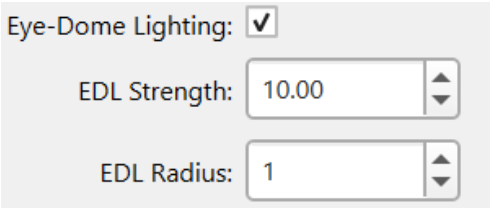


Transparency controls how transparent the points are rendered. Note given points are not depth sorted that effectiveness of rendering the points transparently may be limited especially for large point sets.

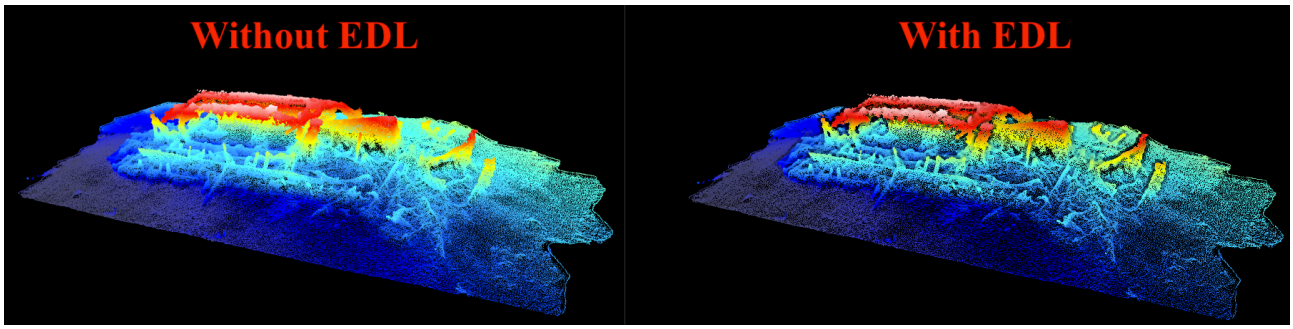
The offset is a simple vertical offset applied to the visualization of the points, the internal data is not modified by this offset.

If one ran the Draping operation then a new "Draped Z" field will be added to the point object. When the draped toggle is turned on that field will be used as the z values for the points rather than the normal z field. This is useful when for example you load a set of 2D points and want to drape them on a surface in the scene.

Finally to enable the eye dome lighting algorithm toggle on this option which only applies to the pixel marker type.



When enabled two extra options are available which control how the algorithm illuminates the points. An example of points with and with EDL applied looks like:



Operations

To see the operations available for the point object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object

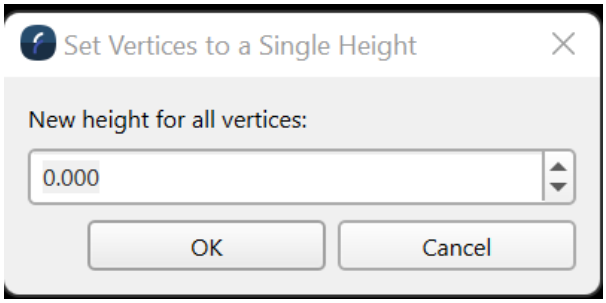
Generally there are better ways to handle (re)projection work but if you really just want to convert this surface into a new projection this will work. The *Reproject Object* option will produce a new surface by transforming the existing one into the new projection you have chosen then adds the result to the current scene.

Reproject Object to Scene

If an object is current marked as Undisplayable in the Scene control dock this is normally because it is in a different projection than the scene is. As surfaces don't dynamically auto-project if you want to see this object in the current scene's CRS than one can use this option. It will result in a new surface being produced that can be displayed in the current Scene.

Set All Vertices to a Single Height

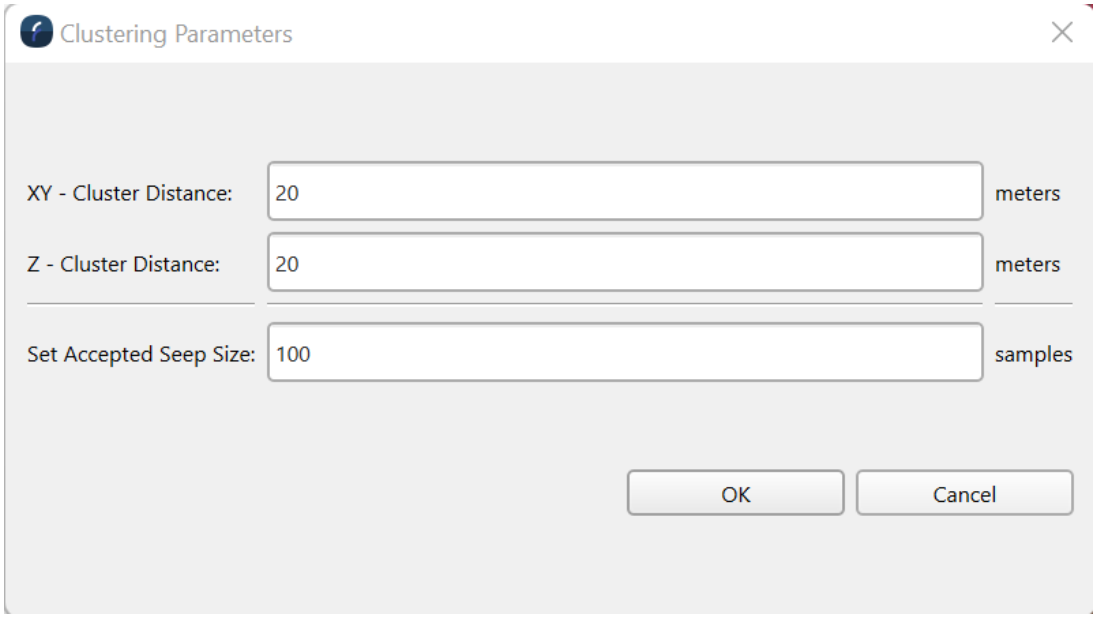
This option brings up a simple dialog to enter a desired height (z) value and it will set all points to have that particular height value.



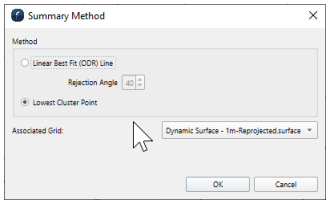
Drape

Attempts to drop the points onto any surfaces currently shown in the 3D scene.

Run Clustering Algorithm



Create A Cluster Summary Object



Export Cluster Information

Filter Clusters

Delete Filtered Clusters

Delete Selected Cluster

Verify Selected Cluster

Create Surface

This operation provides a convenient method to create a surface for any selected point objects. See the gridding documentation for details on making a surface from points.

Create Mesh

This provides a quick way to start the mesh creation process on any selected point object. See the Meshing documentation for details on the processing.

Exports

Export to ArcGIS

Assuming you have the ESRI GIS Engine setup this tool lets you push data into ESRI geodata sets. The tool is described in detail here.

Export to Google Earth KML

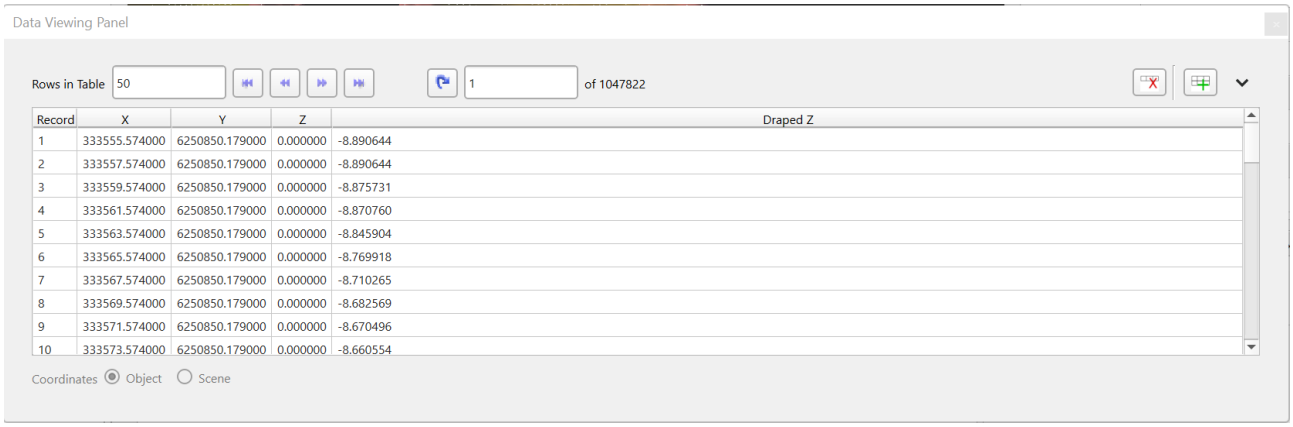
Exports the point data to a Google Earth KML file which can be easily loaded into Google Earth. Click here for details.

Export to XYZ File

Gives you an option to export the points to a basic ascii XYZ file.

Data Viewing Dock

When you select a Point object the data viewing dock will be automatically filled with a spreadsheet like viewing window into the point data. Only a small portion of the data will be loaded but all the attributes of each point will be shown and the tools at the top left let you walk though or jump to various parts of the point set as shown below. Click here for more details about the data viewing dock.



Record	X	Y	Z	Draped Z
1	333555.574000	6250850.179000	0.000000	-8.890644
2	333557.574000	6250850.179000	0.000000	-8.890644
3	333559.574000	6250850.179000	0.000000	-8.875731
4	333561.574000	6250850.179000	0.000000	-8.870760
5	333563.574000	6250850.179000	0.000000	-8.845904
6	333565.574000	6250850.179000	0.000000	-8.769918
7	333567.574000	6250850.179000	0.000000	-8.710265
8	333569.574000	6250850.179000	0.000000	-8.682569
9	333571.574000	6250850.179000	0.000000	-8.670496
10	333573.574000	6250850.179000	0.000000	-8.660554

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Dynamic Profiler

Introduction

Profilers are a way of storing a path along which the profile of underlying surfaces can be viewed via the Profile Dock.

Profilers are created either by importing a list of control points or by using the Profiling Tool. When a profiler is selected, the path is highlighted and profiles are loaded into the Profile Dock. If the profiler is selected and the Profiling Tool is activated, you can use the Profiling Tool controls to edit the profiler in the Scene View. Be aware that if you are using Fledermaus Viewer, you will not be able to edit profilers in this way.

Profilers only know their path, so they can automatically update when the surfaces below change and even be used in other scenes to profile the same location with different data. However, they cannot store the depth information of the profiled surfaces. For comparing with profile data generated outside Fledermaus, it is recommended to import that data as a lines object and use the lines object's reference profile operation to compare with Fledermaus profiles in the Profile Dock.

Properties

Profiler objects only have standard object properties and bounds.

Attributes

Generate Cross Profiles

Enabling this attribute allows you to setup parameters for generating cross profiles at regular intervals along the main profile line, and see these cross profiles in the profile dock.

Cross Profile Interval

Only shown when Generate Cross Profiles is enabled. This allows you to set the interval in meters between each cross profile.

Cross Profile Radius

Only shown when Generate Cross Profiles is enabled. This allows you to set the radius or width of the generated cross profiles in meters.

Cross Profiles Start

Only shown when Generate Cross Profiles is enabled. This sets the starting position of the cross profile series along the main profile line. This is also where the first cross profile will be placed.

Cross Profiles End

Only shown when Generate Cross Profiles is enabled. This sets the ending position of the cross profile series along the main profile line. No cross profiles will be generated past this distance.

Displayed Cross Profile

Only shown when Generate Cross Profiles is enabled. This controls which cross profile in the series is shown in the cross profile graph on the profile dock, with profile 0 being the first profile in the series. The KP label next to the spin box shows the distance along the main profile where the displayed profile is located. You can also change which cross profile is selected by clicking on the main profile graph in the profile dock. This will select the cross profile nearest to the location clicked.

Operations

Change Object Coordinate System...

Allows you to manually set the coordinate system of the object. This should only be used if the object somehow ended up with the wrong coordinate system for its data. No re-projection is done, you are just telling it that this new coordinate system is what the object should have been in in the first place.

Exports

Export to ASCII...

Allows export of one or more profilers to ASCII text files. To export multiple profilers at once, select all the profilers you want to export in the scene tree and use the export on any one of them. When exporting multiple profilers you will be asked to choose a folder in which the profiler files will be saved instead of saving each file individually.

Export to Image...

Allows the user to select exports and then see a button to Export Profilers To Image. Then all the cross-profile graphs are exported to a .png image file

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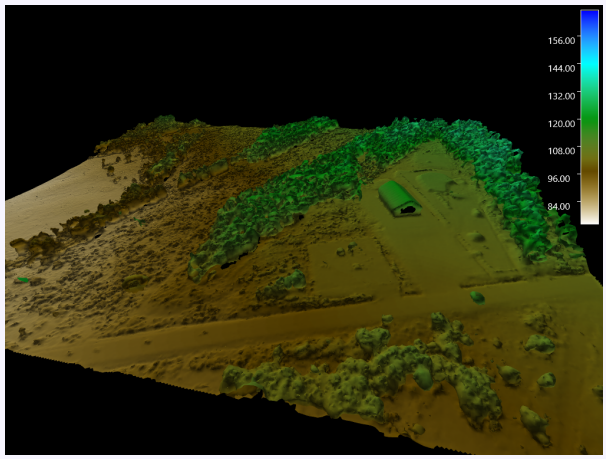
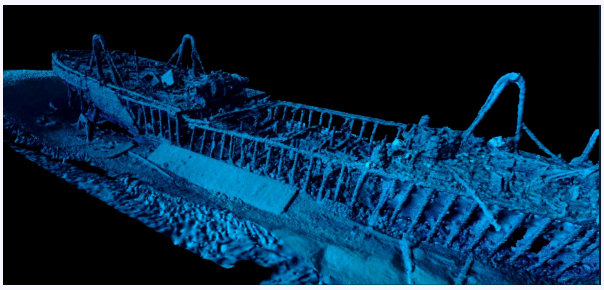
Terrain Mesh 3D





Introduction

The Terrain Mesh object is similar to the solid model object but designed to represent models of a surface represented as a set of shaded triangles and is normally produced using one of the Fledermaus meshing methods. In addition to the terrain triangles a scalar of point density associated with each triangle is also stored which can help separate the real data from extraneous noise or artifacts from the meshing computation process. Terrain meshes can also have imagery texture mapped onto the surface for display.

Storage Format

Fledermaus Terrain Meshes are stored in files with the ***.mesh*** extension

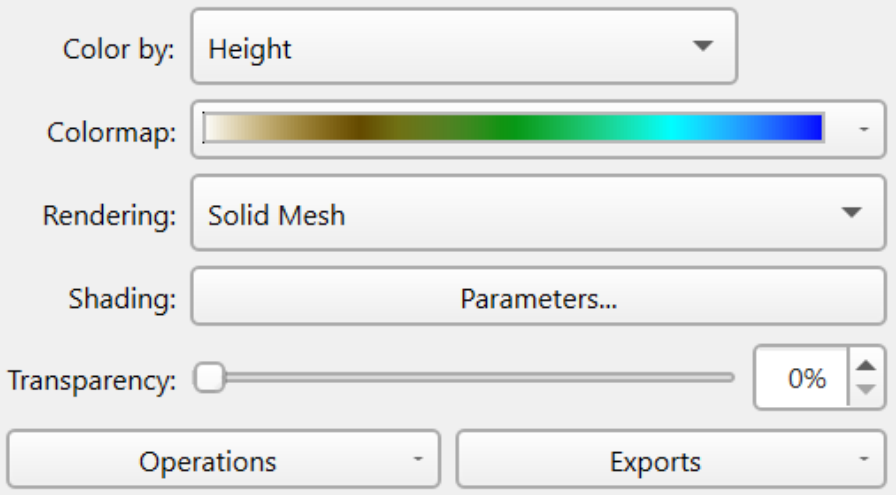
Properties

In addition to the standard object properties and bounds, solid models have additional properties regarding the 3D model:

Property Name	Description
Indices Count	The number of indices used to organize the vertices into faces.
Meshes Count	The number of distinct meshes used by the model.

Property Name	Description
Vertices Count	The total number of vertices in the model.

Attributes



The *Color by* attribute can be one of *Height*, *Single Color*, *Texture* or *Scalar*. The height simply maps the height of the vertices through the given color map to determine the color of each triangle vertex. The single color gives each vertex the same color although the mesh is still illuminated based on a lighting model. The Texture option if present applies the texture onto the mesh and illuminates it as well. The scalar option maps the triangle face density through the color map to shade the surface based on how many source points contributed to each mesh face. This is very useful when combined with the Clip Mesh operation.

The *Colormap* allows the selection of the color map to use for rendering the object along with control over the mapping range.

The terrain mesh can either be rendered in the default shading as a solid mesh or a wire frame mesh.

The *Shading Parameters* button brings up the illumination control dialog as described here.

Operations

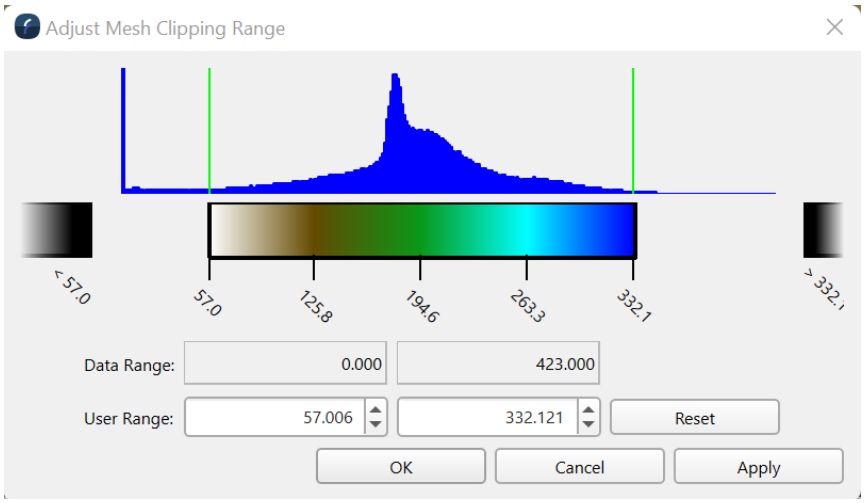
Change Object Coordinate System...

Allows you to manually set the coordinate system of the object. This should only be used if the object somehow ended up with the wrong coordinate system for its data. No re-

projection is done, you are just telling it that this new coordinate system is what the object should have been in in the first place.

Clip Mesh

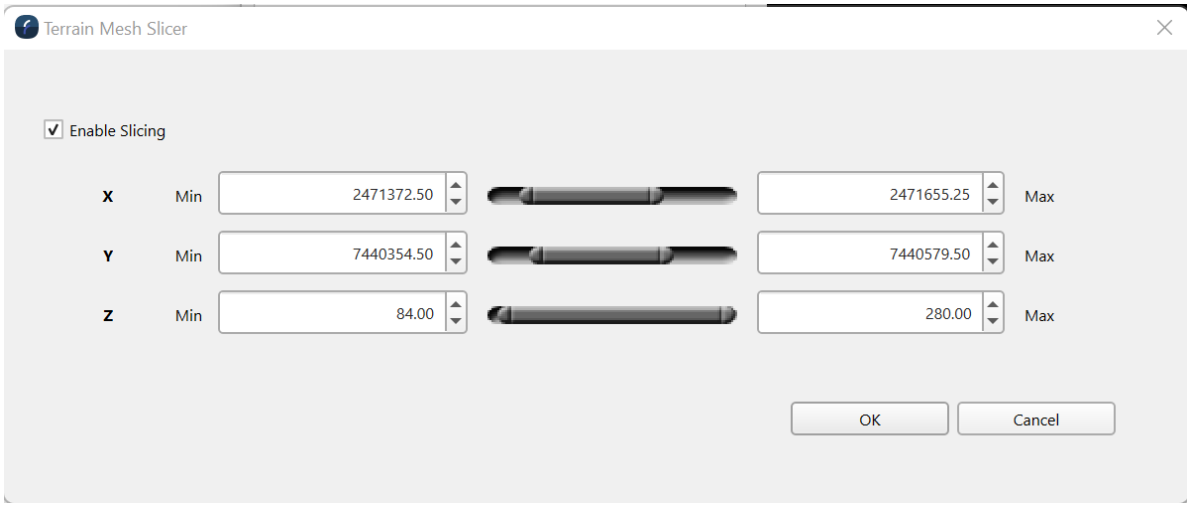
When a terrain mesh is produced with the Poisson reconstruction algorithm it generally creates some interpolated triangles especially near the edges of the model that don't actually have any points associated with them. The density scalar produced at the same time will have a zero count for these triangles and by default the mesh is clipped to [1.0, maxDensity] which hides these triangles. The *Clip Mesh* operation allows one to control this mapping to clip out a portion of the density range. It uses the standard color map range mapping tool to do this. If you want to see the entire model without any clipping click the *Reset* button in the dialog. One can set the minimum clip bound by left clicking the mouse on the density histogram and set the maximum by right clicking on the histogram. If you know the values you want you can directly enter them into the *User Range* input fields.



Clicking the *Apply* button with apply any changes you have made so you can see the results without having to close the clipping dialog. When you have the desired adjustment click the *Ok* button to apply and close the dialog.

Slice Mesh

The slicing tool dynamically applies the slicing operation to the terrain mesh as long as the Enable Slicing control is checked on.

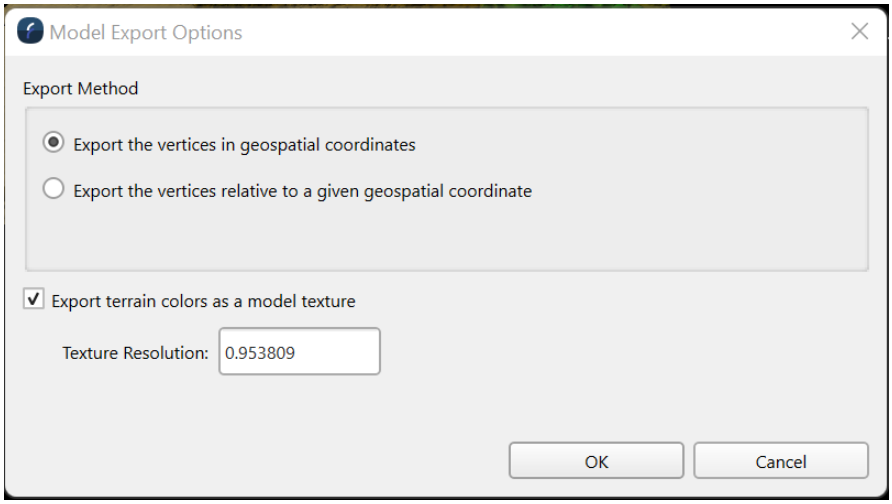


You can use the doubled ended slider to crop parts of the mesh based on the axis. Left click the left end of the slider and drag to adjust the minimum value and left click and drag the right end of the slider to adjust the maximum value. As you adjust the sliders the terrain mesh will dynamically show the effect of one's changes. Click *Ok* to set the slicing amounts.

Exports

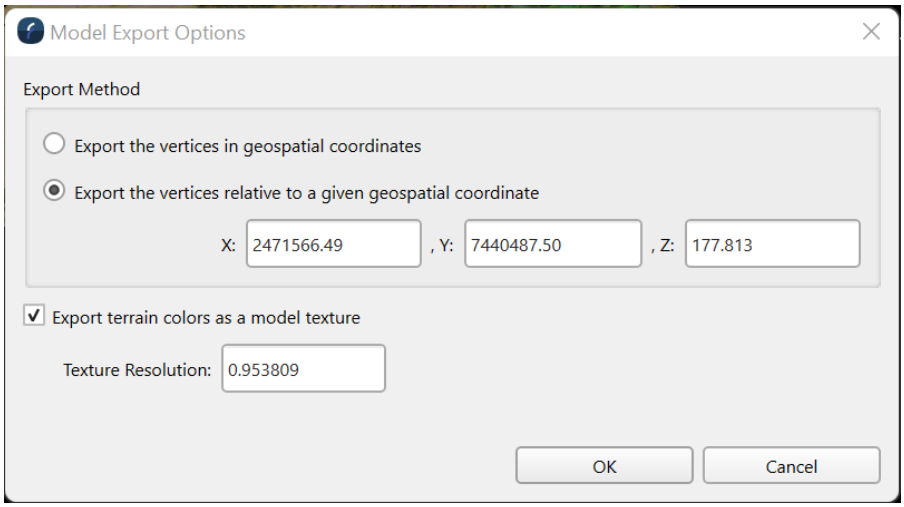
Export to 3D Model File

The terrain mesh object can be written out in a variety of standard 3D modelling formats which makes it possible to bring terrain mesh objects into other 3D modelling packages such as Blender. The File > Import Terrain Mesh option lets one re-import the exported terrain mesh.



By default the *Export the vertices in geospatial coordinates* option exports the model as it says with its actual geo-spatial coordinates. However, if the goal is to import the model into Blender or some other modelling package then those packages generally cannot

handle geo-spatial coordinates. Normally they want the model to be around (0.0, 0.0, 0.0) and in a basic metric such as meters. This can be done using the *Export the vertices relative to a given geospatial coordinate* option as shown below. By default the dialog will have the coordinate of the lower left corner of the model but one can enter any desired coordinate. When the vertices are exported this value is subtracted from the actual vertex geospatial coordinate. If one want to later re-import the model back into Fledermaus the offset can be re-applied as long as one remembers what offset coordinates where used in the export.



If the Export terrain colors as a model texture is off then no color values are assigned to the exported vertices. If one wants to see the terrain mesh in a package like Blender when this option will need to be one. In this instance during the export Fledermaus will create a colored texture based on the current visualization settings and save that will the model. By default the system will guess at the resolution to make the texture based on the average size of the triangles in the terrain mesh model although one can control it as desired. The maximum size of the texture that can be created is currently 8192 x 8192 pixels.

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CAD (QGF)

Introduction

The CAD object allows you to import CAD diagrams with points, labels, lines, models etc. from *.dxf and *.dwg files to view in your Fledermaus scenes. The CAD objects are saved as *.qgf files, and are able to automatically re-project to the scene coordinate system if different from the object's coordinate reference system. A QGF file can be created in Fledermaus by importing a CAD file thought the *Import > Import CAD...* menu option.

Storage Format

The native CAD format for Fledermaus are QPS Geometry Files (**.qgf** files). Also directly supported are QPS's specific usage files which are all QGF files at heart and include **.qgfanno, .qgfarea, .qgfback, .qgfcont, .qgfdgs, .qgfvom, .qgfline, .qgfhom**.

Properties

CAD objects only contain the basic object properties and bounds.

Attributes

Offset

Offsets the Z position of the CAD object by the set amount. Note that this is only a visual offset, it does not affect the underlying data and will not change the results of operations.

Points Color

Allows you to change the color of all the point elements in the CAD object.

Labels Color

Allows you to change the text color of all the label elements in the CAD object.

Lines Color

Allows you to change the color of all the line elements in the CAD object.

Operations

Change Object Coordinate System...

Allows you to manually set the coordinate system of the object. This should only be used if the object somehow ended up with the wrong coordinate system for its data. No re-projection is done, you are just telling it that this new coordinate system is what the object should have been in in the first place.

Exports

CAD objects have no export options.

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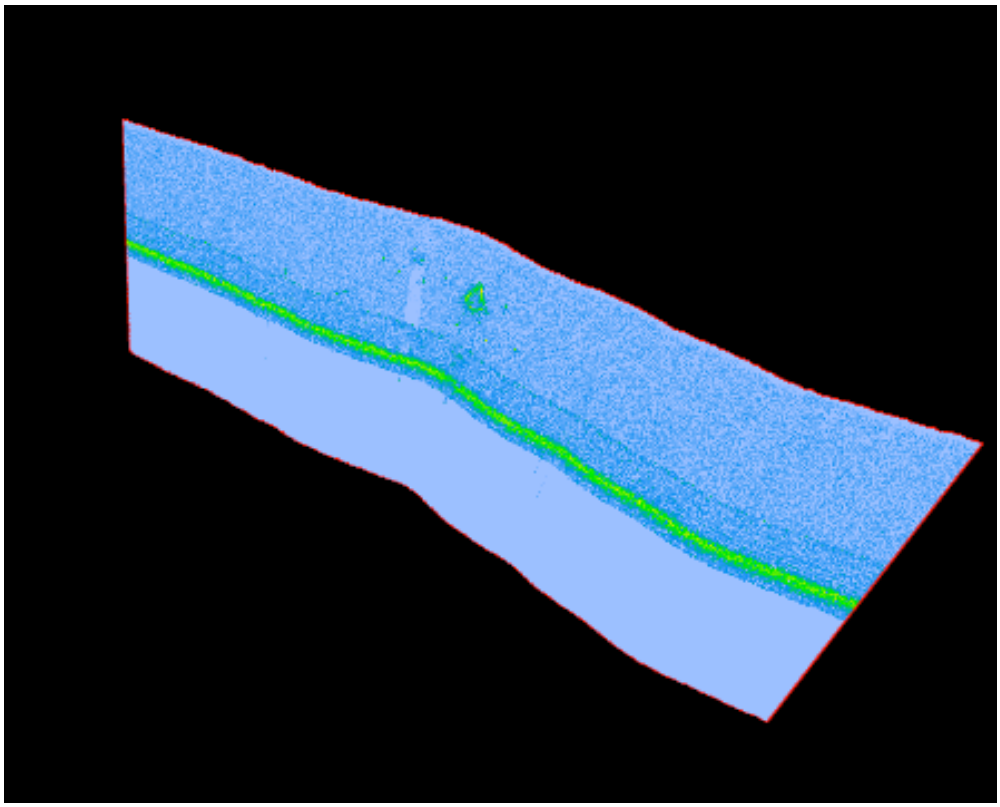
Vertical Curtain



Introduction

Vertical curtains are images with a fixed vertical Z range for the data. Each column of pixels is rendered at a given geospatial position. Thus the vertical imagery will follow the path given allowing the imagery to weave in and out according to the locations specified. A good example where this object type is useful is in the visualization of processed seismic or midwater imagery where the image follows the track of the ship that collected it.

Storage Format

Vertical Curtains are stored in Fledermaus in files with the .***vcurtain*** extension.

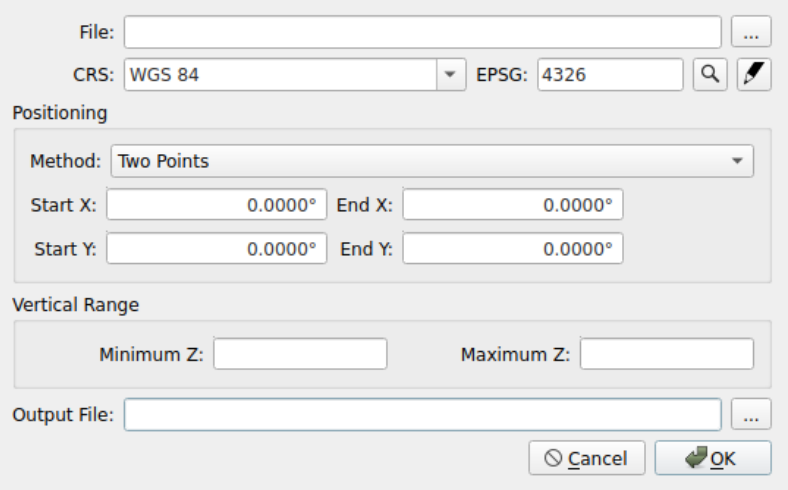
Properties

Name	Description
Column Count	The horizontal pixel count in the image.

Name	Description
Row Count	The vertical pixel count in the image.

Importing a Vertical Curtain

A vertical curtain or vertical image requires specific inputs on importing the image. There are two options, specified by the method option in the dialog, under Positioning. The first method is the Two Points method, whereby two coordinates in the XY plane are specified. The image is then evenly distributed in the vertical orientation between the coordinates along the image. The second method is the ASCII File method, where a file is read and applied according one of the three methods listed: Simple, Distance or Geomatch. See below for a discussion of the ASCII File method.



For the ASCII File method, there are three options as mentioned. They are:

The Simple method which evenly distributes the coordinates along the image.

The Distance method which properly distributes the points based on the relative distances between XY points listed in the file.

The Geomatch method which is similar to the Distance method, except the ASCII file of XY points must have a third parameter which forces the coordinates to be fixed to the particular pixel column specified with the remaining points evenly distributed.

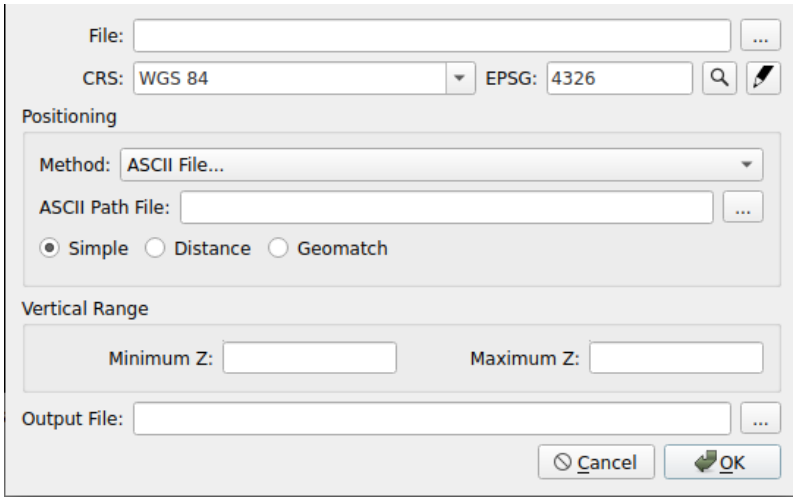
To help explain how the ASCII file option works, assume we have an image to be visualized as a vertical curtain and that image has a width of 1000 pixels. To geo position the vertical curtain we need to provide a file of x and y coordinates along with a z-range. The most basic way to position your vertical curtain is to supply a file of 1000 XY coordinates, one position for each column of pixels in the input image. However, to simplify things you can provide less points and still properly geo-reference the image.

For example, if the vertical image path is a straight line you need only two XY coordinates. There are provides three modes as mentioned. The Simple mode just takes however many input (x, y) points you provide sets the first column of pixels to be at the first position given and the last coordinate to the last column of pixels and evenly distributes the other positions along the image. The Distance mode examines the distance between each point and distributes the positions to pixel columns accordingly. So for example if you gave the XY file three points and the distance between the first and second point was 50% of the distance between the 2nd and 3rd point. Then the in resulting curtain the two points would be positioned at column 333 of the 1000 column wide image and the remaining points computed accordingly. When the Geomatch option is specified and you include a third value in the input XY file matching can be more precisely controlled. For example, if an XY file like the following is provided:

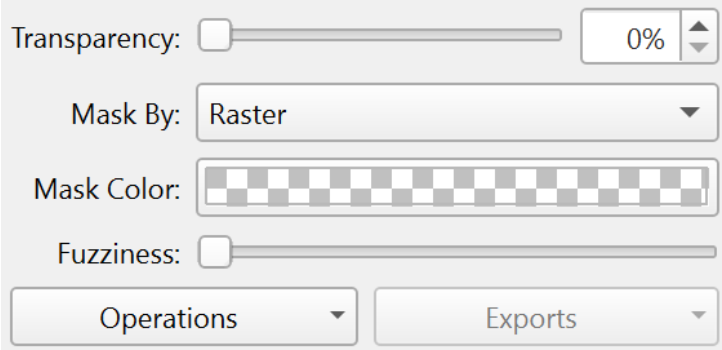
```
400000.0 500000.0 0
400050.0 500000.0 500
400200.0 500000.0 1000
```

In this case, the third parameter specifies the column of pixels the given position should be mapped to. The second point will be the position of the 500th pixel column with the remaining points distributed accordingly even through the distance between the second two points is much greater. Given this same file with the Distance option used the second coordinate would be given to 250th pixel position instead. Note you can specify -1 as the position of the last point and the system will automatically substitute the position of the final column of pixels.

So, the stretching you see is the assignation of the pixels to the XYZ values for it, for the scene as mentioned.



Attributes



The *Transparency* slider allows one to have the curtain rendered with some blending of object behind the curtain based on the amount of object transparency set.

The *Mask By* option includes *None*, *Color*, and *Raster* options. When *None* is selected all the image's pixels are displayed. When *Raster* is selected any pixels in the image whose alpha value is zero will not be rendered allowing one to mask out portions of the image. An alpha value of zero means to mask (hide) the pixel, whereas the default 255 value means show the pixel. The final *Color* option allows for some simple dynamic masking where you can select a color and have any part of the image with the same color have its pixel hidden. This is done dynamically and does not actually modify the imagery data. For example you may have a chart which normally has a white background. The mask by Color makes it trivial to select the white background and remove it from the image displayed. To set the mask color click on the Mask Color option below the Mask By control. This will bring up a dialog to select the color and a control to pick the color from the scene if desired.

The *Fuzziness* slider works with the mask by color option to make it so it selects similar colors to the set mask color widening the mask selection based on the slider bars value.

Operations

Change Object Coordinate System...

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object...

Generally there are better ways to handle (re)projection work but if you really just want to convert this image into a new projection this will work. The *Reproject Object* option will

produce a new surface by transforming the existing one into the new projection you have chosen then adds the result to the current scene.

Reproject Object To Scene...

If an object is current marked as Undisplayable in the Scene control dock this is normally because it is in a different projection than the scene is. As images don't dynamically auto-project if you want to see this object in the current scene's CRS than one can use this option. It will result in a new surface being produced that can be displayed in the current Scene.

Invert Z Imagery

This option simply inverts the imagery in the vertical plane so the bottom of the image becomes the top and vice-versa. Some packages write out the imagery reversed so this option can be used to fix it up.

Compute Mask

To mask out the black areas of the curtain, click the *Compute Mask* button and select the *Mask Out Areas* check box. Note that some VCurtains are generated with a mask so it will not have to be calculated.

Exports

The are not additional exports for the vertical curtain object.

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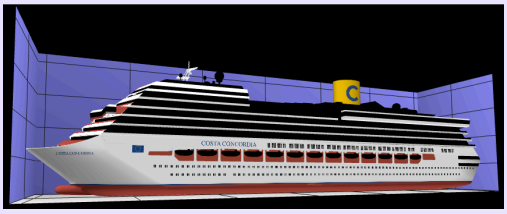
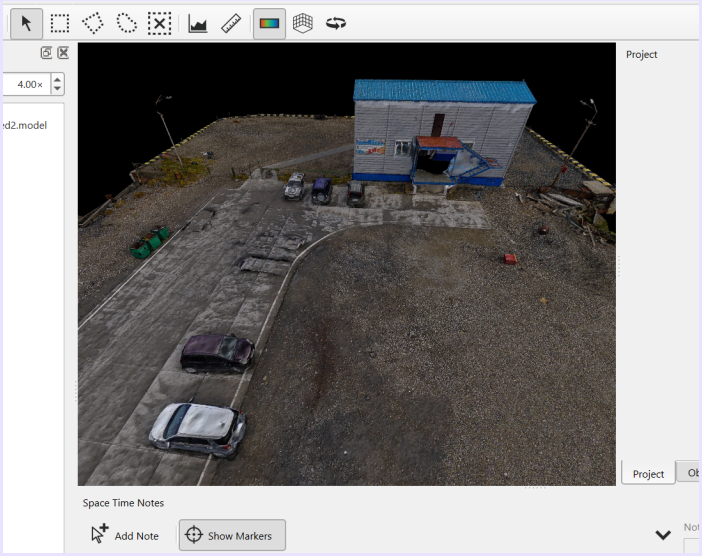
Solid Model



Sample 3D model of the Costa Concordia cruise ship.



Textured Model provided courtesy of Aleksey Kiprushin.

Introduction

The solid model object is Fledermaus' format for general purpose 3D models. Many different 3D model formats can be imported into Fledermaus as solid models. Each solid model is comprised of a set of meshes, each with its own material. The meshes store a subsection of the model's vertices, and a reference to a material. The materials define the look and properties of the surface. This includes the ambient and diffuse colors of the surface, as well as the texture if one exists. Currently, if there are other material properties in the original model, the will be ignored as they are not supported. Applying the materials to their respective meshes and drawing all the meshes results in the model you see. One can import common common model formats (like 3ds, fbx, blend, or obj) into Fledermaus by using the *Import > Import 3D Model...* option.

Storage Format

Fledermaus solid model objects are stored in files with the ***.model*** extension.

Properties

In addition to the standard object properties and bounds, solid models have additional properties regarding the 3D model:

Property Name	Description
Directory	The last known location of the original model file from which this model object was created.
Indices Count	The number of indices used to organize the vertices into faces.
Meshes Count	The number of distinct meshes used by the model.
Vertices Count	The total number of vertices in the model.

Attributes

Shading

Determines the shading parameters for the model. See the Shading Parameters Dialog page for more information on shading.

Transparency

Allows you to change the transparency of the whole model from 0% (fully opaque) to 100% (fully transparent).

3D Model Position

Allows you to adjust the position of the model in the scene. This is a visual transformation so the model's data is not changed.

Operations

Change Object Coordinate System...

Allows you to manually set the coordinate system of the object. This should only be used if the object somehow ended up with the wrong coordinate system for its data. No re-projection is done, you are just telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object...

Converts the model to a different coordinate system, transforming its position to the new coordinate system.

Reproject Object To Scene...

Re-projects the model into the scene's coordinate system.

Change Color...

Allows you to change the default diffuse color of the model, applying a color tint to the whole model.

Flip Normals

Flips the normal vector of each vertex to be facing in the opposite direction. This will cause the lighting engine to see the front of the surface as the back, and vice versa. Useful if the model you imported has backwards normals that make the lighting look wrong.

Transform Vertices...

Allows you to transform the vertices of the model, changing the model data. You can rotate the model around its origin, scale it relative to the origin and translate (offset it) relative to the origin. Keep in mind that a model offset from the origin using this operation will still rotate and scale relative to the origin, which may no longer be what you expect. Unlike the 3D Model Position attribute, this changes the model's data.

Exports

Solid Model objects have no export options.

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Plane

Introduction

The Fledermaus plane objects add a simple 2D colored plane (rectangle) into the 3D scene. For example, a blue pane with some applied transparency level could be added to a scene to represent the sea surface.

This type of object is useful in applications such as dredging where there is a 3D surface loaded and it is required that the channel is deeper than a specified depth. In this case adding a plane at the required depth makes it easier to see any parts of the surface are higher than the plane.

The user can create a plane in Fledermaus 8 by clicking the *Create* > *Create Plane*... menu option.

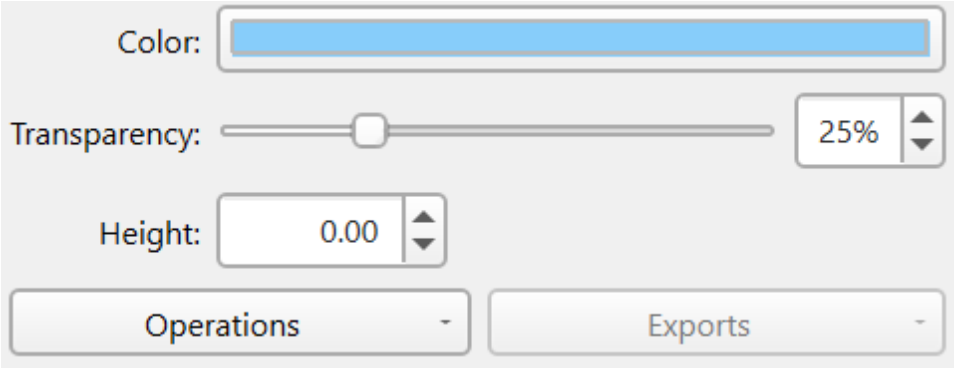
Storage Format

Fledermaus plane object files are stored in files with the ***.plane*** extension.

Properties

The plane does not show any object specific properties in the property dock.

Attributes



The three properties of a plane object are it color, transparency, and z value or height which are controlled as shown in the panel above.

Operations

Change Object Coordinate System

Allows you to manually set the coordinate system of the object. This should only be used if the object somehow ended up with the wrong coordinate system for its data. No re-

projection is done, you are just telling it that this new coordinate system is what the object should have been in in the first place.

Exports

There are now export options for a plane.

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Lines

Introduction

The Fledermaus line object type is used to represent information that has been broken down into 2D and 3D lines. Lines objects are poly-lines and can consist of any number of line segments. Polygons can also be represented as line objects by making closed poly lines. Thus lines, poly-lines and polygons can all be represented by this object type. For each continuous line segment, the object stores an index and the points that define the line. The indices are used to select a particular line for certain operations and are visible in the Data Viewing Panel.

Common line and shape files like ArcView .shp or Ascii files could be easily be imported into Fledermaus through the *Import > Import Lines ... menu* option.

Storage Format

Fledermaus lines object are stored in files with the *.lines* extensions.

Properties

In addition to the standard object properties and bounds, lines objects have a couple additional properties:

Property Name	Description
Polyline Count	The number of continuous line segments contained in the object. Each line segment has its own index.
Total Point Count	The number of points stored by the lines object as a sum of the number of points in each line segment.

Attributes

Color By

Solid Color

The color of the lines in the scene. This applies to all lines in the object.

Z

Color the lines by Z. The color of the lines will be shaded by the colormap selected according to the height of the line at its vertices.

Attributes

Color the lines by the selected attribute. When lines are imported, it is possible to select columns as attributes. Those columns may be used to color the lines according to the colormap selected.

Offset

Offsets the Z position of all lines by the set amount. Note that this is only a visual offset, it does not affect the underlying data and will not change the results of operations.

Draped

Used to toggle between the original and draped Z coordinates. This only applies after using either the Drape operation or the Drape and Resample operation to generate draped Z coordinates for the line.

Data Viewing Panel

A column to add a color for each line may be added to lines object in the Data Viewing Panel. Refer to documentation there for details.

Operations

Change Object Coordinate System...

Allows you to manually set the coordinate system of the object. This should only be used if the object somehow ended up with the wrong coordinate system for its data. No re-projection is done, you are just telling it that this new coordinate system is what the object should have been in in the first place.

Reproject Object...

Converts the lines into a new coordinate system. This is usually not needed since lines objects are able to automatically re-project themselves to the scene coordinate system. If a lines object is automatically re-projecting itself, you will see "(Auto-projected)" at the end of the object name in the Scene Tree View.

Reproject Object To Scene...

Re-projects the lines into the scene coordinate system. This is rarely needed since lines objects are able to do this automatically. If a lines object is automatically re-projecting itself, you will see "(Auto-projected)" at the end of the object name in the Scene Tree View.

Set All Vertices to a Single Height...

Sets the Z coordinate of every point in every line to the same value. When clicked, a dialog box will open to ask you what Z value to set the points to. After choosing a value and clicking OK, you will be asked if you want to preserve the current Z values.

Drape

Drapes the lines on the surface immediately below by setting the Z coordinate of each point to the height of the topmost surface under that point. The lines themselves will not rest on the surface, only the control points.

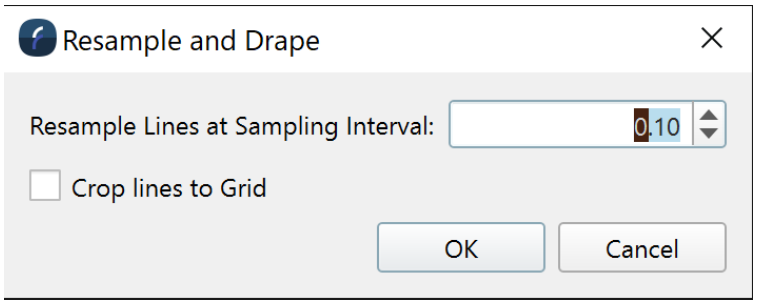
The draped Z coordinates are stored separately from the original Z values so they can be toggled on and off using the Draped check box in the attributes panel.

Resample and Drape

Similar to Drape except that the lines are resampled between the control points so that the line rests on the surface for its full length rather than just at the corners.

The draped Z coordinates are stored separately from the original Z values so they can be toggled on and off using the Draped check box in the attributes panel.

The Resample and Drape dialog, illustrated, has a field to enter the sampling interval and a checkbox to crop the lines to visible or selected grids only. When not checked, the dialog has the traditional behavior of Fledermaus to drape the lines between grids (surfaces) on the base plate. When checked, the lines will be cropped between grids. The last choice will be remembered.



Resample and Drape DIalog

Create Profiler...

Uses one or more of the line segments to make profiler objects. When clicked, a dialog will open where you can choose to make a profiler for each line segment or pick one line segment by index to make a profiler from. You can also choose to use the name of the lines object as the name of the profiler, otherwise the default name "Profiler" will be used.

If you are creating more than one profiler, instead of being asked to save each profiler file you will be asked for a folder in which all the profiler files will be created. If you choose a folder with profiler files sharing the same name as the ones you are generating, those files will not be overwritten.

Create Pipe From Lines...

Uses a line object in a scene to create a Dynamic Pipe object. When a line object is selected and the operations button is clicked an option to Create Pipe From Lines... appears and converts the .lines file to a .dynamicpipe file. The .dynamicpipe is then added to the scene.

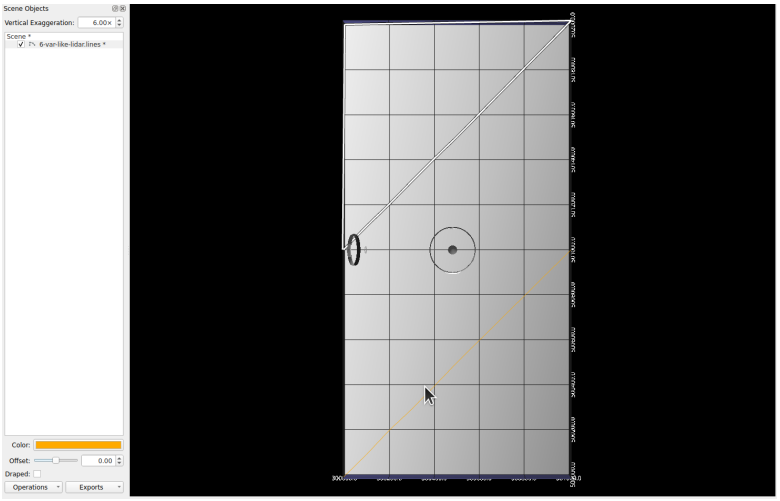
Use as Reference Profile

This operation allows you to use line data in the Profile Dock to compare the line with the surfaces in the scene. When clicked, this operation opens the Profile Dock and generates a graph of height data for all surfaces and the line object it was used on. However, it only samples surfaces at the control points of the line. This means you will only get data points in the graph where there are data points in the line, the rest of the graph is a linear interpolation. This operation does not work well with lines that have only a few control points, rather it is meant to be used with profile data gathered outside Fledermaus imported as a lines object. Since Fledermaus profiles are automatically updated according to the surfaces in the scene, a line object is the only way to keep static profile data in a scene. This operation lets you use those line objects to compare the static profile data with surfaces in Fledermaus.

Create Selection

Creates a selected area based on one of the line segments. When clicked you will be asked to choose which line to use by inputting an index number. After creating the selection you can use the selection tools to edit the selection if need be.

Example of a selected line. There are two lines in the scene. The upper, triangular shaped line is selected and is shown in selected mode. The lower, slanted line is in orange. Both lines are orange, as can be seen in the line properties panel in the lower left, however the selected line shows the selection mode marking.



Calculate KP Values

This is the same *Calculate KP Values* operation found in the Data Viewing Panel for lines objects. For convenience, it is available in the operations menu. The same procedures and restrictions listed there apply here, also.

Exports

Export to ArcGIS...

Allows export of a lines object to an ArcGIS line, polygon or contour.

Export to Google Earth KML...

Allows export of a lines object to a *.kml file.

Export to 3D PDF...

Allows export of a lines object to a PDF file with an embedded 3D model of the object.

Export to XYZ file...

Allows export of a lines object to a simple *.xyz text file containing the coordinates of the control points for each line. Line segments are separated by a sentinel value of 9999.

Export to XYZ+Attributes file...

Allows export of a lines object, including any loaded attributes, to a *.xyz text file similarly to an XYZ file, except with the extra attributes written out along with the XYZ data. Only attributes that were included in the import dialog will be written out.

Export to CAD (Qgf/Dwg) file...

Brings up a dialog that allows export of a line object to various CAD formats including AutoCAD's DWG and DXF formats along with QPS vector formats including .qgfline, .qgback, .qgfarea, .qgfanno, and .qgfdes.

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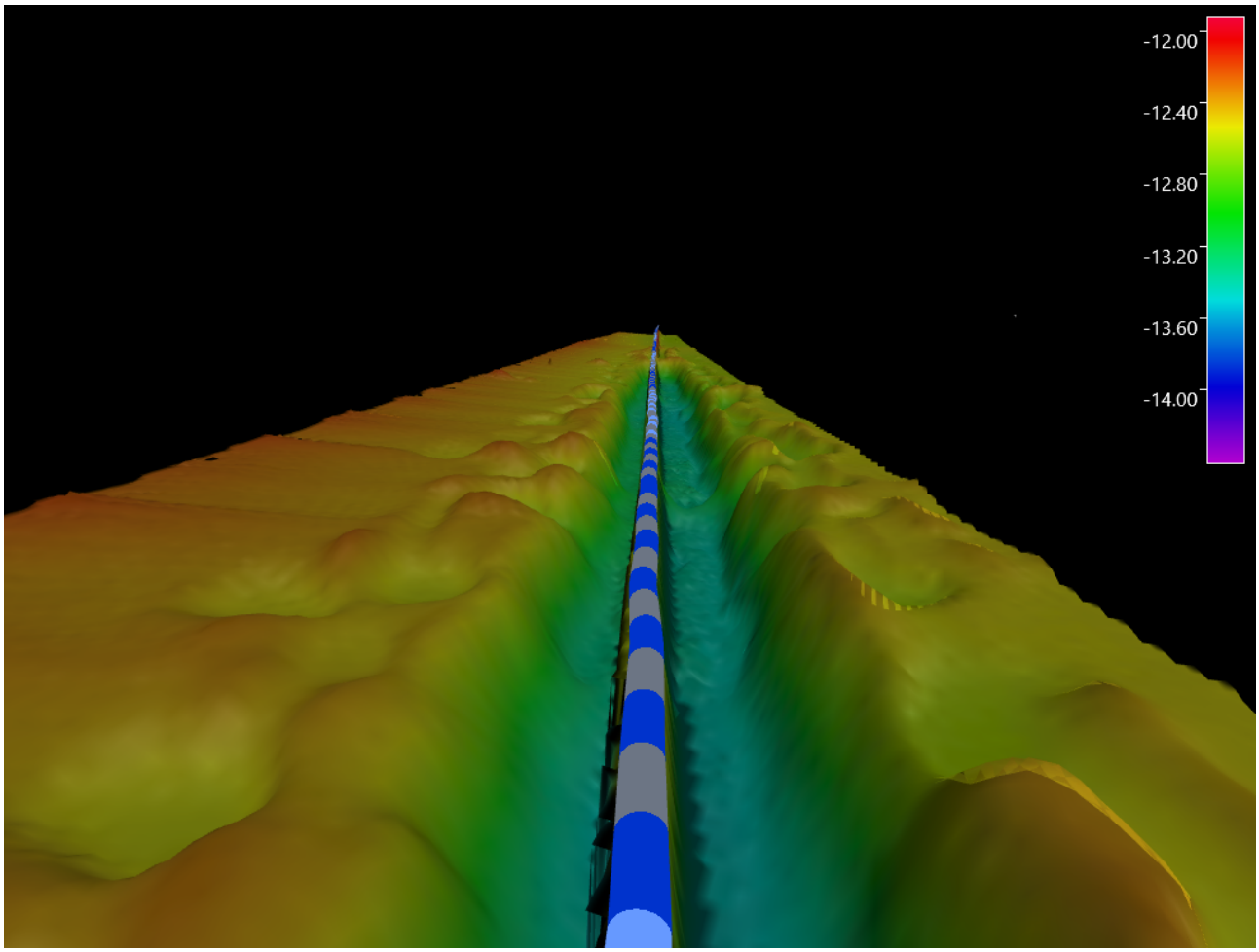
Dynamic Cable/Pipeline



Introduction

The dynamic cable/pipeline object is used to visualize cables/pipelines in the 3D scene and is one of the outputs from Qimera TOP (Top of Pipe) tools.

If X-Point Listings are defined in Qimera they will also show up in Fledermaus, but are not editable from within Fledermaus.

Properties

No additional properties.

Attributes

No additional Attributes.

Operations

Create Profile...

Creates a new Dynamic Profiler object along the length of the cable/pipe. The control points of the profiler are created from the control points of the cable/pipeline. The cable/pipe control points are determined when creating the cable/pipe and cannot be edited in Fledermaus; however, the profiler control points can be freely edited like any other profiler. Once created, the new Profiler is loaded into the Profile Dock for viewing.

Exports

There are no exports operations for this object.

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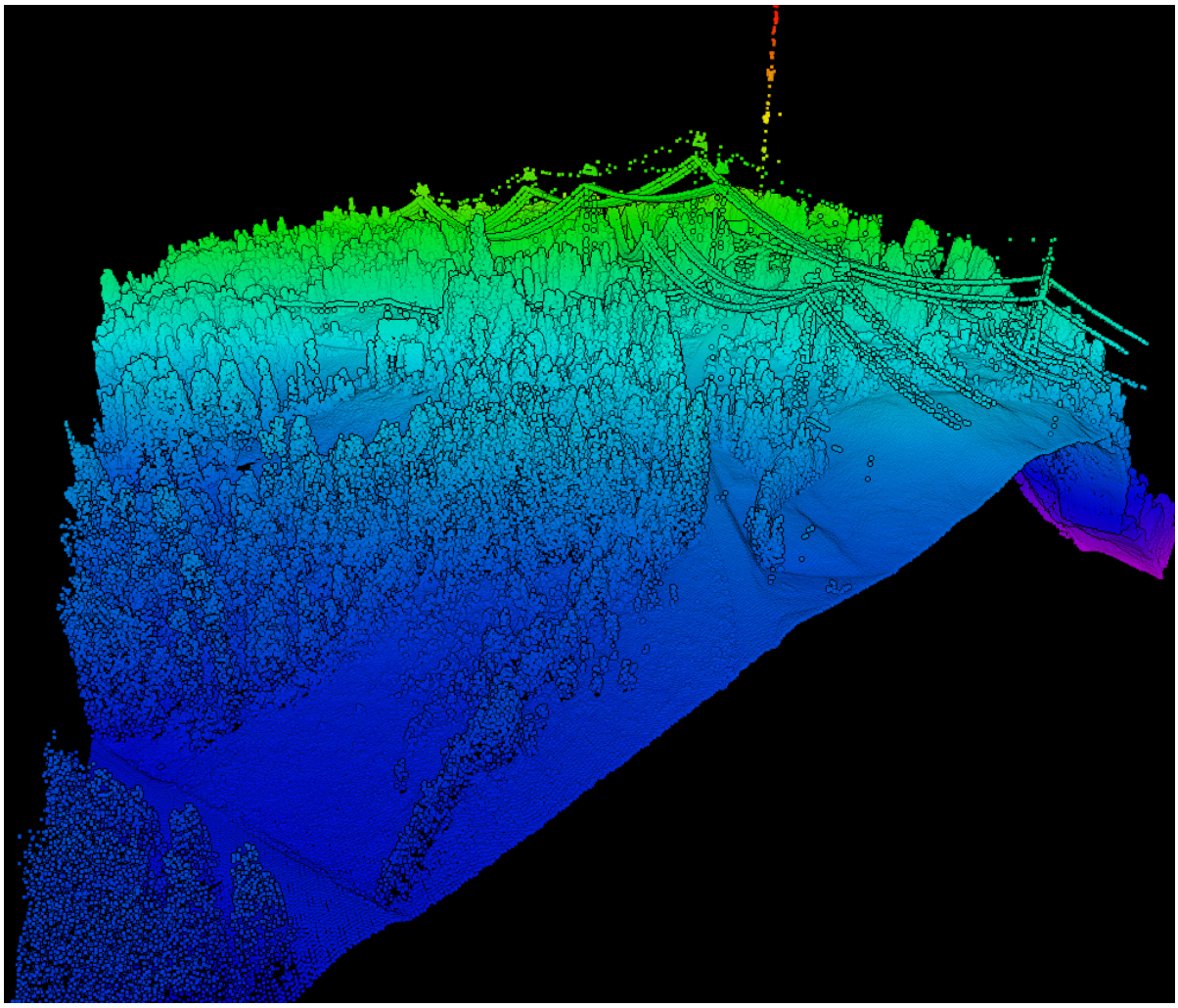
Lidar LAS/LAZ



Introduction

The **LAS** format is a file format created for storing LIDAR point cloud data. It was created by the American Society for Photogrammetry and Remote Sensing (ASPRS). **LAZ** files are the compressed version of the aforementioned object type.

LAS and **LAZ** files (with the file extension .las or .laz) can be loaded directly into Fledermaus as a native object type without the need to import them. In terms of visualization and operation capabilities they are very similar to QPD, PTS, and Point objects.

Storage Format

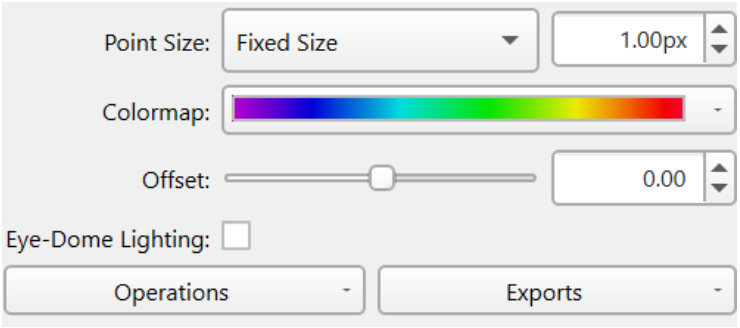
LAS and **LAZ** files have the .las and .laz file extensions respectively. Note that once loaded in Fledermaus a companion .lasatb or lazatb will be created to store addition (optional) Fledermaus specific information as well.

Properties

Name	Description
Point Count	The total number of points in the selected LAS/LAZ file.

Attributes

This object type shares much in common with the Points object and provides a similar set of attribute tailored to the needs of this type.



The *Point Size* is limited to *Fixed Size* for this object type but you can control the size of the point pixels displayed.

The *Colormap* widget provides the control of the color map selection and mapping.

The *Offset* is a simple vertical offset applied to the visualization of the points, the internal data is not modified by this offset.

The Eye-Dome Lighting toggles turns on/off this point illumination algorithm which can improve the visualization of the points and help show their depth. When enabled two extra options are available which control how the algorithm illuminates the points.

Operations

To see the operations available for the point object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Create Surface

This operation provides a convenient method to create a surface for any selected QPD objects. See the gridding documentation for details on making a surface from points.

Create Mesh

This provides a quick way to start the mesh creation process on any selected QPD objects. See the Meshing documentation for details on the processing.

Exports

There are currently no additional exports for the QPD Object type.

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Point Cloud

Introduction

The Point Cloud object is a special type of Points object capable of displaying a much larger number of points by streaming points in dynamically rather than loading all the points at once. Point Cloud objects display data stored in the Entwine Point Tile (EPT) format from disk or from a network location. The structure of EPT formatted points allows Fledermaus to dynamically render specific areas of the point data at varying levels of detail. This keeps Fledermaus running smoothly while displaying high detail in areas of interest, even in large datasets that would normally not be feasible to load due to their massive size.

The number of points displayed at once can be changed to improve performance on low-end computers or increase detail on high-end computers. Look for the **Streaming Point Budget** setting in the General tab of the Preferences dialog.

Point Clouds can be imported into Fledermaus 8 using the **Import > Import EPT Point Cloud...** or **Import > Import EPT Point Cloud From Network...** menu options. The prior loads EPT points from a local file location while the latter loads EPT points from a web location via URL. Note that local file import requires you to select the folder containing the entwine formatted data. If the points you would like to import are in a LAZ file or similar format, see the entwine guide (*Installation* and *Building the data* sections) to learn how to convert your data into entwine format. The folder you select for import should be the folder generated by this conversion process which will contain the ept.json file as well as some other files and folders.

Storage Format

Point Cloud objects are stored in files with the **.pointcloud** extension. Note that Streamed Points objects do not store the data, they only store a reference to its location and other information relevant to their implementation in Fledermaus. If the referenced data source is deleted, or cannot be reached in the case of a network source, the object will not work properly.

If you want to share a Point Cloud file based on local data, rather than sharing the .pointcloud file you should share the folder with the EPT data and have the other person import it themselves. For network based data this is not a problem and you can share the .pointcloud file, provided the recipient has access to the server the data is hosted on.

Properties

Name	Description
Total Point Count	Shows how many points exist in the data set.

Attributes

Point Size

Only fixed size is available for point cloud objects. You can use this to adjust the pixel size of each point.

Colormap

Provides control of the colormapping of the points. The colormap is overridden if the point cloud has RGB data.

Offset

Applies a slight visual-only offset to the points.

Eye-dome Lighting

Toggles the eye-dome lighting shading algorithm which outlines points to give a sense of depth.

EDL Strength

Controls the darkness of the outlines created by the eye-dome lighting shading algorithm. More strength makes the geometric features of the point cloud more pronounced and makes sloped surfaces darker.

EDL Radius

Controls the distance from each point that the outlines can extend to. A larger radius makes the outlines thicker and less sharp.

Operations

To see the operations available for the point object type right click the object's name and look in the Operations sub-menu or look at the Operations drop-down menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Create points from selection

This operation will allow you to create a Points object from a subsection of the full Point Cloud data. To use it, first use one of the Selection Tools to select the area of interest in the Point Cloud, then perform the operation.

A dialog will appear prompting you to select an octree depth limit, and show an estimated point count for your selected area at the given depth limit. A higher depth limit means a higher density of points in the output, with the maximum depth limit using all of the available data, and the minimum depth limit using only the lowest density layer of points.

Be wary of setting your depth limit too high! Point clouds can store many more points than you can usually see at a glance, and a basic points object can be overloaded and significantly slow down Fledermaus. In general, 10 million points is a good upper limit although depending on your computer's hardware specifications you may be able to comfortably handle more or fewer points. The point estimate is derived from the expected point count written in the EPT metadata files for all octets your selection overlaps, so the accuracy may vary but it usually overshoots the actual point count.

After choosing the depth limit, Fledermaus will process the Point Cloud data and extract the points within your selection and save it as a new .points object in the scene.

Create mesh from selection

This operation will allow you to create a Terrain Mesh 3D object from a subsection of the full Point Cloud data. To use it, first use one of the Selection Tools to select the area of interest in the Point Cloud, then perform the operation.

A dialog will appear prompting you to select an octree depth limit, and show an estimated point count for your selected area at the given depth limit. A higher depth limit means a higher density of points in the output, with the maximum depth limit using all of the available data, and the minimum depth limit using only the lowest density layer of points. The point estimate is derived from the expected point count written in the EPT metadata files for all octets your selection overlaps, so the accuracy may vary but it usually overshoots the actual point count.

After choosing the depth limit, Fledermaus will process the Point Cloud data and extract the points within your selection. Once the points are extracted, the Create Mesh Wizard will open for you to choose the meshing settings before creating a new Mesh and saving it as a new .mesh object in the scene.

Create static grid from selection

This operation will allow you to create a Grid object from a subsection of the full Point Cloud data. To use it, first use one of the Selection Tools to select the area of interest in the Point Cloud, then perform the operation.

A dialog will appear prompting you to select an octree depth limit, and show an estimated point count for your selected area at the given depth limit. A higher depth limit means a higher density of points in the output, with the maximum depth limit using all of the available data, and the minimum depth limit using only the lowest density layer of points. The point estimate is derived from the expected point count written in the EPT metadata files for all octets your selection overlaps, so the accuracy may vary but it usually overshoots the actual point count.

After choosing the depth limit, Fledermaus will process the Point Cloud data and extract the points within your selection. Once the points are extracted, the Data Gridding Wizard will open for you to choose the gridding settings before creating a new Grid and saving it as a new .statgrid object in the scene.

Exports

There are currently no export options for Point Cloud objects.

Data Viewing Panel

Point Clouds are currently not supported in the Data Viewing Panel.

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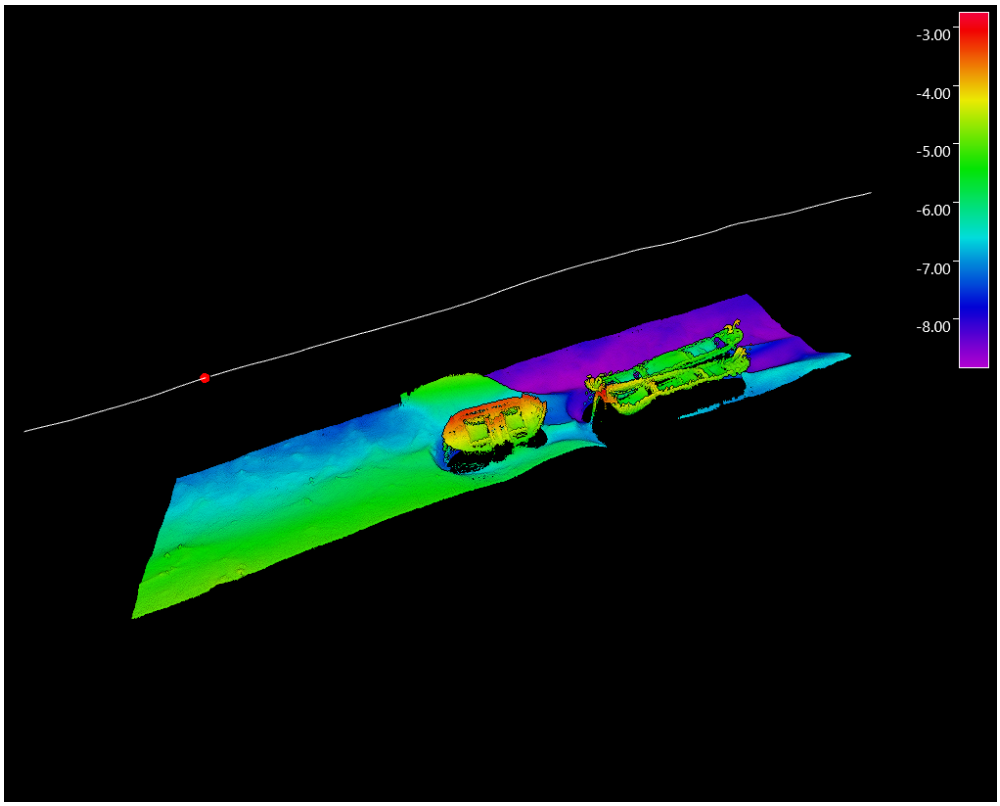
QPDs



Introduction

Qpd files are QPS's processed survey point files and these files can be directly opened as an object type in Fledermaus and used for visualization and/or in various operations. They share a lot of properties with the Point object type.

Storage Format

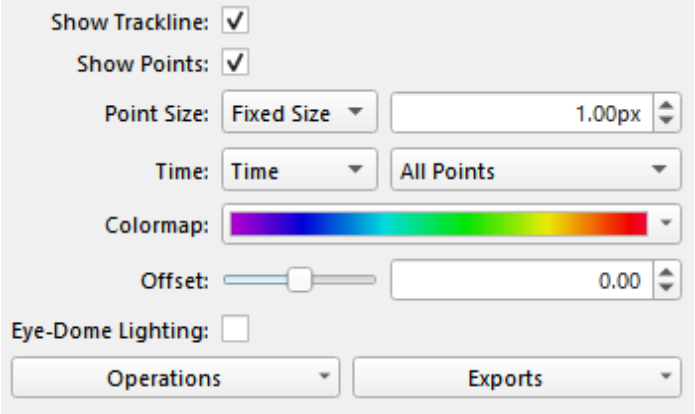
Processed sounding/lidar data from Qinsy and Qimera are written to QPD files with the extension **.qpd** and these files can be directly loaded into Fledermaus for visualization, operations, and further analysis.

Properties

This object does not have an object specific properties.

Attributes

This object type shares much in common with the Points object and provides a similar set of attribute tailored to the needs of this type.



Given this is a survey points format we generally have a track line for the ship or survey vehicle which is shown by default as you can see in the example above. The system will also know the time range over which the data was collected and as you move the Fledermaus Time Bar to different times one can see a red dot plotted on the track line to show the vehicle's position at that point in time. The *Show Trackline* toggles lets one turn this track line off or on in the display.

The *Show Points* toggle lets you specifically toggle the display of the points off and on separate from the track line.

The *Point Size* is limited to *Fixed Size* for this object type but you can control the size of the point pixels displayed.

The *Time* attribute works similarly to the time attribute in regular points. You can choose which column of the data is used as the time and if the Fledermaus should show all the points, only past points, or only points within a time window around the vehicle's position.

The *Colormap* widget provides the control of the color map selection and mapping.

The *Offset* is a simple vertical offset applied to the visualization of the points, the internal data is not modified by this offset.

The Eye-Dome Lighting toggles turns on/off this point illumination algorithm which can improve the visualization of the points and help show their depth. When enabled two extra options are available which control how the algorithm illuminates the points.

Operations

To see the operations available for the point object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just

telling it that this new coordinate system is what the object should have been in in the first place.

Create Surface

This operation provides a convenient method to create a surface for any selected QPD objects. See the gridding documentation for details on making a surface from points.

Create Mesh

This provides a quick way to start the mesh creation process on any selected QPD objects. See the Meshing documentation for details on the processing.

Exports

There are currently no additional exports for the QPD Object type.

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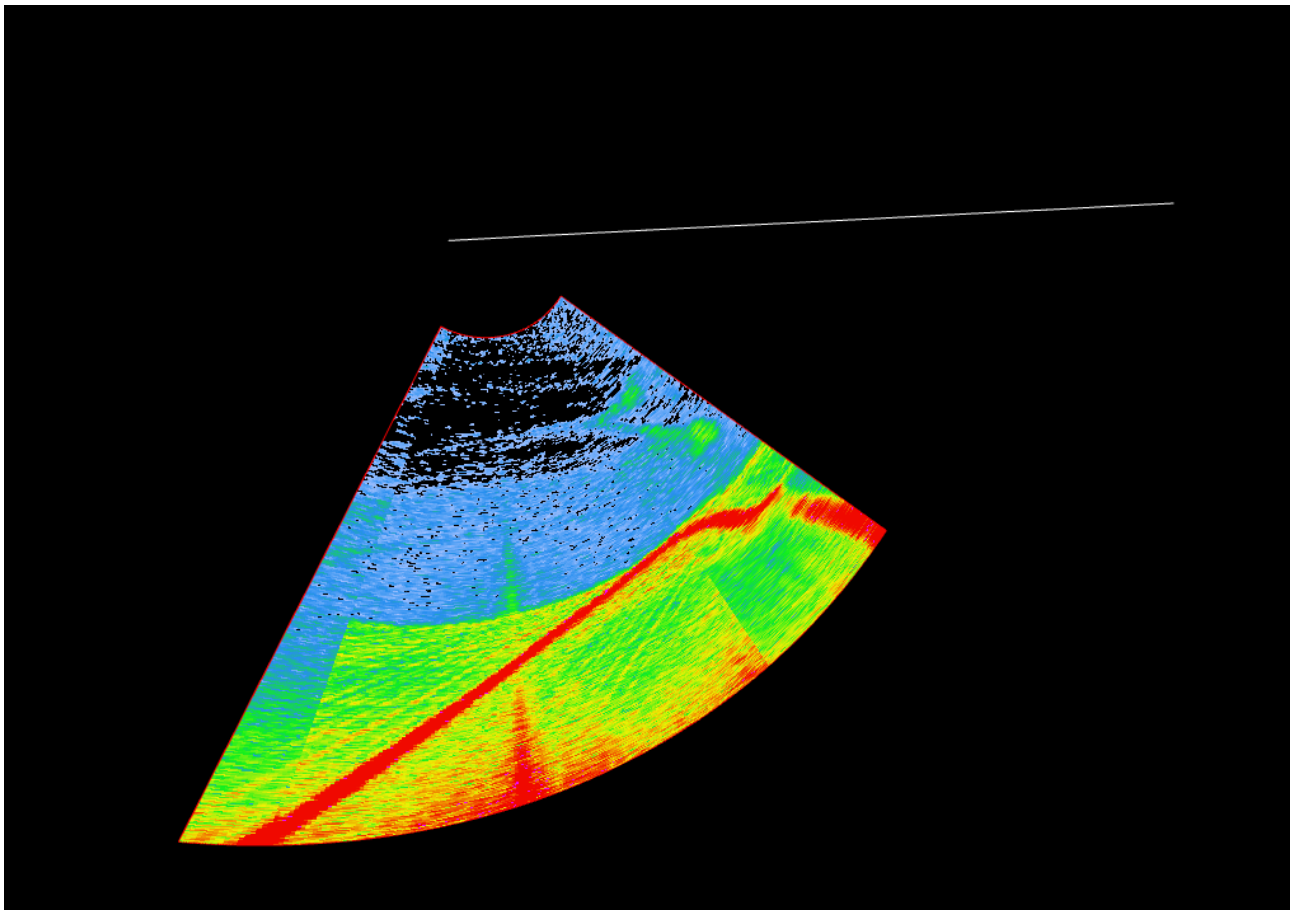
Midwater Ping Fan



Introduction

The midwater beam fan object connects to a GWC file produced from the FMMidwater application and shows the line navigation and the beam fan for the currently selected time.

Storage Format

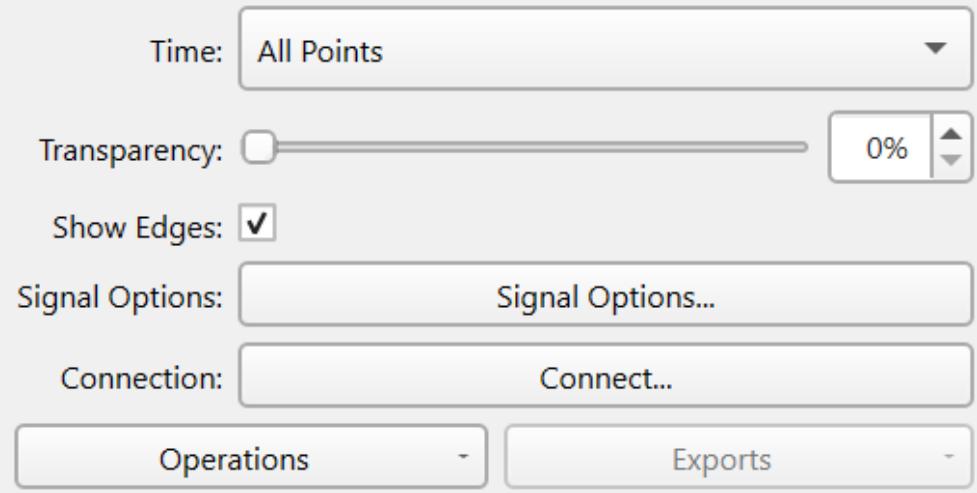
Fledermaus Ping Fan objects are stored in files with the extension of **.mwfan**

Properties

Name	Description
Connected File	The name of the connected GWC file that holds the actual ping data.

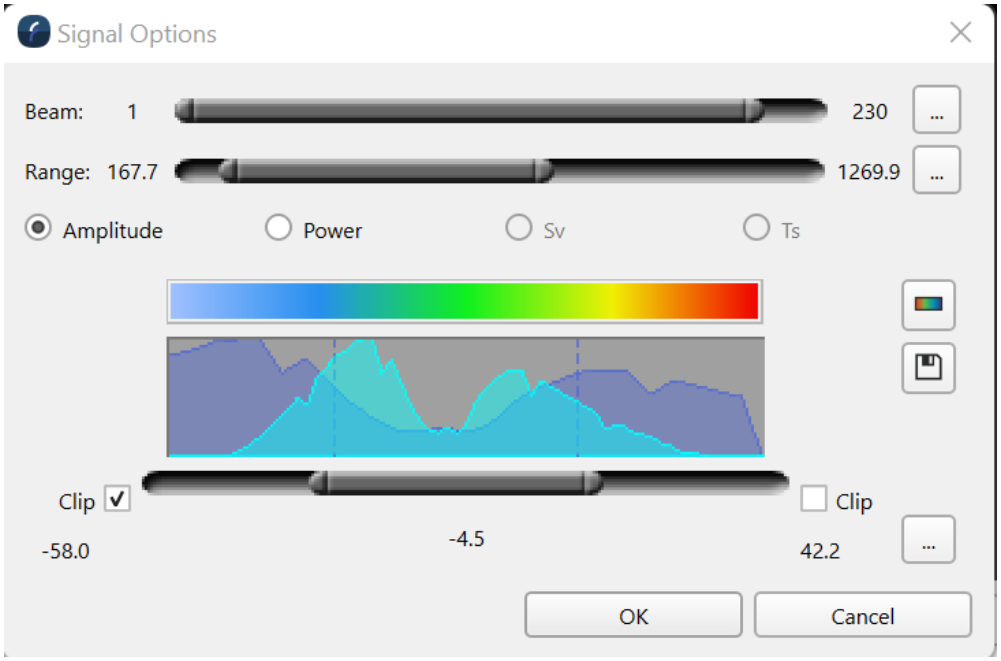
Name	Description
Point Count	The number of ping fans in the GWC file.
Column Count	The number of pixels representing the beam angles.
Row Count	The number of pixels representing the beam range/distance.

Attributes



The *Show Edges* adds a red outline around the ping fan object when toggled on.

The *Signal Options* is used to bring up a dialog which controls how the ping fan is rendered and is the same control used in the FMMidwater application.



The controls available here control the range of beams displayed in the ping fan view along with the time range of the ping fan itself. The remaining controls manage how the signal strength of the ping fan samples are mapped through the color map to determine the resulting view of the ping fan.

The *Connection* option bring up a dialog box to locate the GWC file that is connected to the ping fan object.

Operations

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Connect GWC File

If the Midwater Fan object looses its connection to the GWC file (maybe because it was moved to a different location) then this option allows one to located the GWC file and re-connect it to the object so the ping fans can be displayed again.

Exports

There are no additional export options for this object type.

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Midwater Beam Curtain

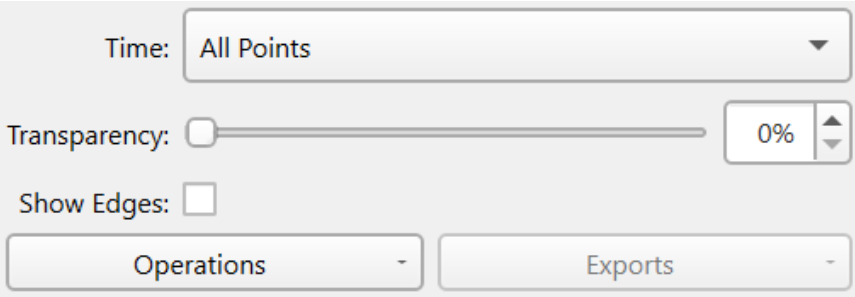
Introduction

The object is very similar to the vertical curtain with the main difference that both to top and bottom of the imagery can be given a location thus the certain can be tilted to any angle. This is normally used in conjunction with FMMidwater application to write out an imagery curtain for particular beams from a multibeam system. One can think of rendering a column of pixels for a given beam for each ping fan in the navigation line. If you join all those columns of pixels together you end up with a beam curtain that is tilted based on the beam angle.

Properties

Name	Description
Column Count	The number of pixels along the beam curtain track
Row Count	The number of pixel along the beam curtain range.

Attributes



The *Time* control dropdown menu controls how much of the overall beam curtain to show. It can be one of *All Points*, *Past Points*, *Points Within a Window*. *All Points* shows the entire beam curtain, *Past Points* shows the curtain from the start time to the currently selected scene time, and *Points Within a Windows* shows the curtain within the selected time window around the current scene time.

The *Transparency* slider allows one to have the curtain rendered with some blending of object behind the curtain based on the amount of object transparency set.

The *Show Edges* shows a an outline around the overall beam curtain object.

Operations

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just telling it that this new coordinate system is what the object should have been in in the first place.

Exports

No additional exports are supported.

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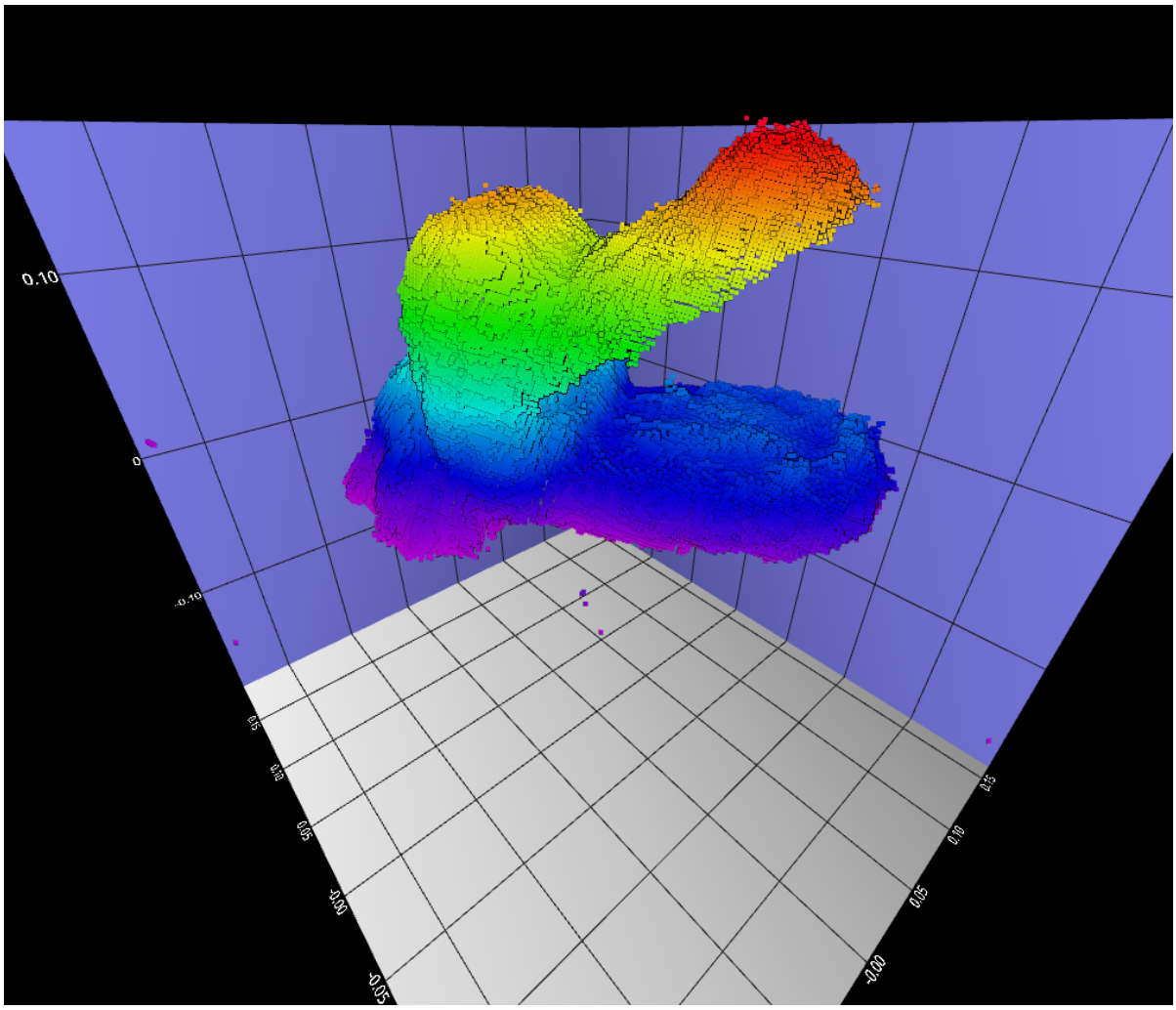
Pts



Introduction

The Pts or points file is a fairly simple file format normally used to store data from laser scanners that can store x, y, z, intensity and RGB values. In terms of visualization and operation capabilities they are very similar to QPD, LAS/LAZ, and Point objects.

Storage Format

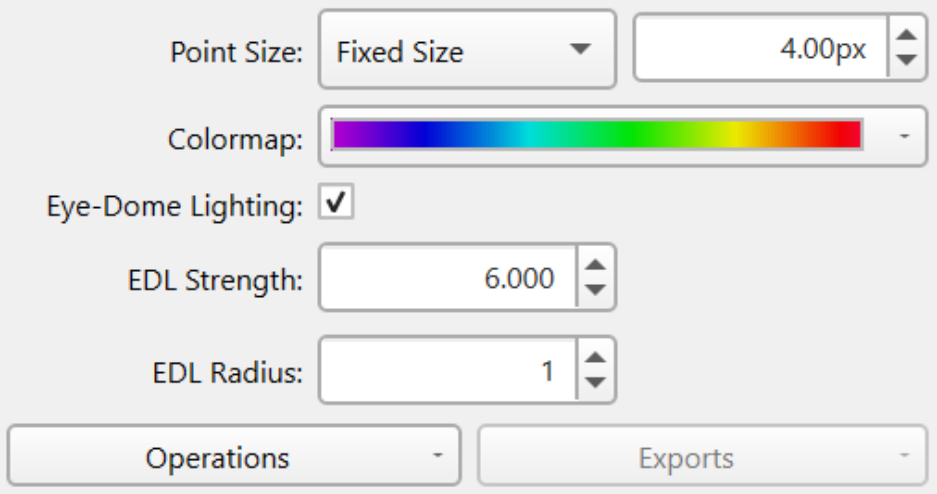
These objects are stored in their native files with the **.pts** extension. A .ptsatb companion file will be constructed to store optional Fledermaus specific data associated with the pts file.

Properties

Name	Description
Point Count	The total number of points in the selected LAS/LAZ file.

Attributes

This object type shares much in common with the Points object and provides a similar set of attribute tailored to the needs of this type.



The *Point Size* is limited to *Fixed Size* for this object type but you can control the size of the point pixels displayed.

The *Colormap* widget provides the control of the color map selection and mapping.

The Eye-Dome Lighting toggles turns on/off this point illumination algorithm which can improve the visualization of the points and help show their depth. When enabled two extra options are available which control how the algorithm illuminates the points.

Operations

To see the operations available for the point object type right click the object's name and look in the Operations sub-menu or look at the Operations dropdown menu at the bottom left of the attribute panel. These operations include:

Change Object Coordinate System

While this should be very rarely needed it can be used if necessary to change the coordinate system currently applied to the object. No projection is done here you are just

telling it that this new coordinate system is what the object should have been in in the first place.

Exports

There are currently no additional exports for the QPD Object type.

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Route

Introduction

The route object type is a series of line segments containing all of the KP/DX information within the current scene. Routes can be created from Line and QGF Line objects, or imported from a route in a Qimera project. There can only be one route per scene, and selecting a different line as the route will replace the one currently active.

Storage Format

Route objects are stored in files with the *.route* extension.

Properties

In addition to the standard object properties and bounds, route objects have additional properties:

Property Name	
Total Point Count	The number of points stored by the route object as a sum of the number of points in each line segment.
Total Route Length	The total length of the route.
KP Range	The range including the minimum and maximum KP on the route.

Attributes

Show KP Markers

Toggles the visibility of KP markers along the route.

KP Markers Size

Adjusts the on-screen size of KP markers along the route.

Show KP Text

Toggles the visibility of KP labels along the route.

KP Text Size

Adjusts the on-screen size of the visible KP labels along the route.

KP Label Interval

Adjusts the distance between visible KP labels, which determines how many labels appear along the route. For example, lowering the distance will show more KP labels across the route at shorter intervals.

Offset

Adjusts the Z position of the route by the set amount. Note that this is only a visual offset, it does not affect the underlying data and will not change the results of operations.

Operations

Create Profiler...

Creates a profiler object and sets it as the active profiler for the scene, based on the route's line segments. This allows for cross profiling along the route.

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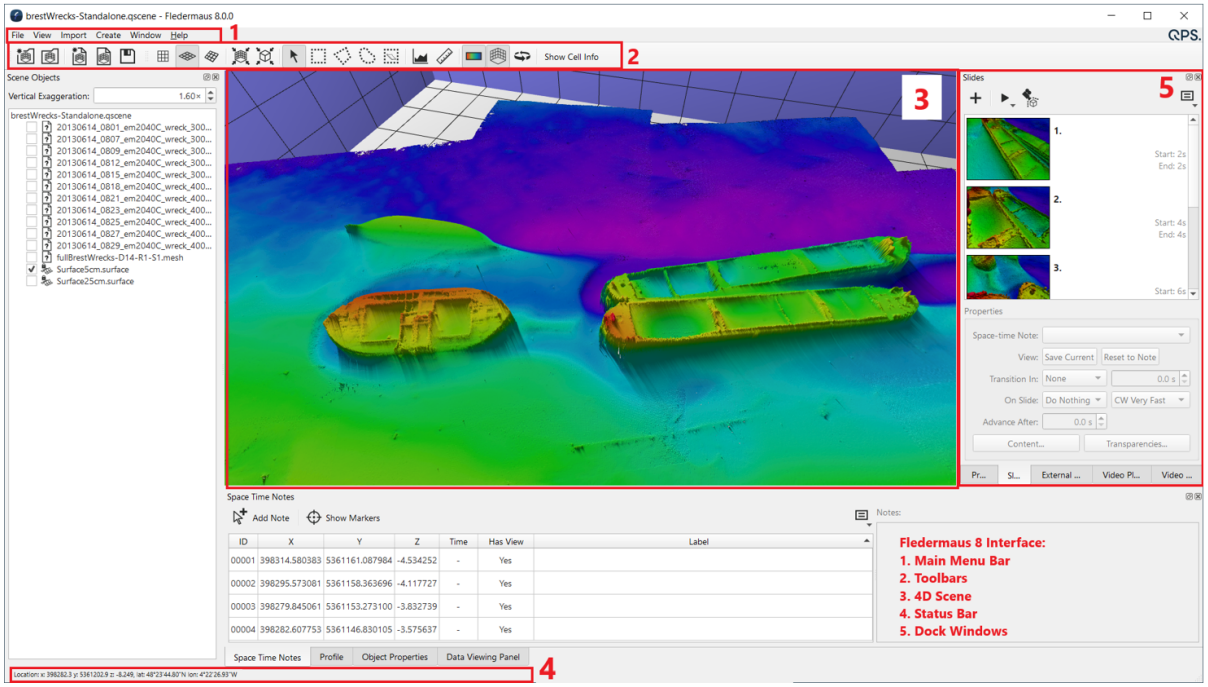
Fledermaus Interface

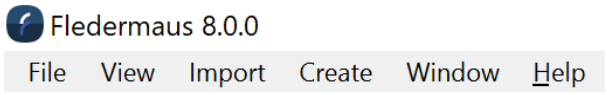


Fledermaus User Interface

The Fledermaus 8 interface is described in detail in each one of the following items:

- Fledermaus Main Menu Bar
- Fledermaus Toolbars
- Fledermaus Dock Windows
- Fledermaus Status Bar
- Fledermaus 4D Scene
- Fledermaus Keyboard Operations

Fledermaus Main Menu Bar



Fledermaus Main Menu Bar

- Fledermaus View Menu
- Fledermaus Help Menu
- Fledermaus Import Menu
- Fledermaus Create Menu
- Fledermaus Window Menu
- Fledermaus File Menu

The Main Menu bar of Fledermaus provides secondary control functionality as well as repeated actions that are represented elsewhere in the experience as buttons.

Return to Fledermaus Interface
Return to Fledermaus Reference Manual

Fledermaus View Menu

- Fledermaus View Menu
  - 2D View
  - 3D Turntable View
  - 3D Flight View
  - Zoom To Scene
  - Zoom To Object
  - Tool Modes
    - No Tool
    - Rectangular Selection Tool
    - Polygonal Selection Tool
    - Free Hand Selection Tool
    - Profile Tool
    - Measurement Tool
  - Show Scene Bounding Box
  - Show Navigation Widgets
  - Show Colormap Legend
  - Show Vessel Location
  - Lock Continuous Rendering
  - Show Cell Info

Fledermaus View Menu

2D View

Visualizes scene in plan view mode. You are viewing the scene from above and can zoom in/out or pan the view. **Left-Click** and drag will pan the scene. Moving the mouse-wheel will zoom in or out of the scene.

3D Turntable View

Visualizes scene in turntable view mode. You are viewing the scene as if it were on a rotatable table in front of you. **Left-Click** and drag in the horizontal direction will rotate the scene around the current center point. **Left-Click** and drag in the vertical direction will tilt

the scene. **Middle-Click** on a point in the scene will change the center of rotation to that point.

3D Flight View

Visualizes scene in 3D flight mode. In this mode one can utilize a 3D input device such as the Patriot system or a Space Navigator to fly though the data. You can also utilize the *aswd* keys to move the camera left, right and forward and back in the scene. The q and e keys respectively move the camera up and down in z. If one **Left-Click's** and drags in the 3D window one can control the look direction of the camera.

Zoom To Scene

This will zoom the scene out to the overall scene bounds.

Zoom To Object

This will zoom the scene such that the selected objects fits the viewable area of the window.

Tool Modes

These selection modes have specific capabilities that are described in detail in Fledermaus Scene Toolbar.

No Tool

It allows you navigate through the data **Left-Click** and drag in the horizontal direction will rotate the scene around the current center point. **Left-Click** and drag in the vertical direction will tilt the scene. **Middle-Click** on a point in the scene will change the center of rotation to that point.

Rectangular Selection Tool

When in this mode, **Left-Click-Drag** to draw a selection box.

Polygonal Selection Tool

When in this mode, **Left-Click** to draw the vertices of a polygon selection. Click on the first point to close the selection.

Free Hand Selection Tool

When in this mode, **Left-Click-Drag** to draw a selection area.

Profile Tool

When in this mode, **Left-Click-Drag** to draw a profile over a surface.

Measurement Tool

When in this mode, **Left-Click-Drag** to over a surface and see the distance displayed in the Fledermaus Status Bar.

Show Scene Bounding Box

This options toggles on and off the rendering of the overall scene bounding box around all loaded data.

Show Navigation Widgets

When in the 3D Turntable view mode this option toggles on and off the display on the turntable widgets that are shown in the 3D scene.

Show Colormap Legend

When toggled on and one selects objects in the scene dock a color map overlay for the selected object will be shown in the 3D window. Note that not all object types have color maps to show but most do.

Show Vessel Location

When a object type that contains a time based vessel position toggling this option on will show a red dot in the 3D scene that represents the vessel position for the given time along the time bar.

Lock Continuous Rendering

This feature is new to FM8 and designed to be used in live mode. In live mode, FM8 receives ongoing vessel positions from Qinsy, and *Lock Continuous Rendering* ensures that the scene in FM8 continuously renders as new data is received.

Show Cell Info

This will launch the Fledermaus Cell Information Dialog dialog.

Fledermaus Help Menu

- Fledermaus Help Menu
  - Offline Manual
  - Online Support Desk
  - QPS Home Page
  - Open Crash Dump Folder for Fledermaus
  - Enable Verbose Logging
  - Enable Console Logging
  - Open Log Folder
  - Show License Manager
  - About Fledermaus

Fledermaus Help Menu

The help menu gives you access to version information as well as a link to the online and offline help.

Offline Manual

This menu option will bring up the offline documentation that can be used without an internet connection.

Online Support Desk

This menu option will bring up the online Support Desk web page that can only be used with an internet connection.

QPS Home Page

This menu option will bring up the QPS home page.

Open Crash Dump Folder for Fledermaus

This menu option will open the location where Fledermaus places any crash dumps.

(Note that on macOS this will open the user Diagnostic Reports folder that contains crash dumps for all macOS applications including QPS Applications.)

(Note that on Linux this menu option is not available.)

Enable Verbose Logging

This menu option enables more verbose logging that will appear in the logging folder listed below.

Enable Console Logging

This menu option enables console logging when you run Fledermaus from the command line with the -debug option. The output from verbose logging, which will continue to log to a file, will also appear in the console.

Open Log Folder

This menu option opens the Fledermaus verbose logging folder: C:\Users\username\AppData\Local\QPS\Logs

Show License Manager

This menu option opens the License Status dialog, which displays the current licensing status and allows installation of new licenses.

(Note that on macOS, this menu entry is shown under the *Fledermaus* menu.)

About Fledermaus

The third option available is *About*. When selected it displays an about box that contains the version number of Fledermaus and QPS company information such as our address, e-mail, and web site URL.

Fledermaus Import Menu

- Fledermaus Import Menu
  - Import Gridded Data
  - Import Points
  - Import Lines
  - Import 3D Model
  - Import 3D Terrain Mesh
  - Import CAD
  - Import Dynamic Cable/Pipeline
    - Import from ASCII XYZ...
    - Import from Listing File...
  - Import Image
  - Import Vertical Image
  - Import Image Collection
  - Import Image from Web Mapping Service
  - Import ArcGIS Shape
  - Import Profiler
  - Import EPT Point Cloud
  - Import EPT Point Cloud from Network
  - Import Vessel Tracklines

Fledermaus Import Menu

Import Gridded Data

This option opens a file browser to select supported gridded data to import. It will then launch the *Import Gridded Data* dialog.

Import Points

This option opens a file browser to select supported point files to import. It will then launch the *Import Points* dialog.

Import Lines

This option opens a file browser to select supported line files to import. It will then launch the *Import Lines* dialog that is used to create a Fledermaus Line SD object.

Import 3D Model

This option opens a file browser to select supported 3D models to import. It will then launch the *Import 3D* model dialog.

Import 3D Terrain Mesh

This option opens a file browser to select supported 3D terrain meshes to import. It will then launch the *Import 3D Terrain Mesh* dialog.

Import CAD

This option opens a file browser to select CAD DXF/DWG files to import. As well as QGF QPS files. It will then launch the *Import CAD* dialog that is used to create a Fledermaus Model SD object. This option now allows selecting multiple files at CAD import. If multiple files are selected, the results are combined in the Loaded CAD file dialog.

Import Dynamic Cable/Pipeline

There are two options for importing a dynamic cable/pipe:

Import from ASCII XYZ…

This option opens a file browser to select a text file containing the points defining the cable/pipe's path. Once the text file is selected, the ASCII importer will open where you can make adjustments to the column designations and data types before the cable/pipe is created. By default the columns are setup as X, Y, Z, and KP. Having a KP column is not required to create the cable/pipe.

Import from Listing File…

Similar to Import from ASCII XYZ, this option opens a text file with the ASCII importer. This option is used for cable/pipe objects with cross point listings. You can import a file with extra columns containing (in addition to X, Y, Z, and KP) the cross point depths and the ASCII importer will have extra column designations for cover, port and starboard adjacent, middle, and outer points. Of course all of these extra column designations are optional so you can have as many or as few as you want. For details see the Import from Listing File Dialog.

Import Image

This option opens a file browser to select an image file to be loaded directly into Fledermaus. It will then launch the *Import Image* dialog that is used to create a Fledermaus Image object.

Import Vertical Image

This option opens a file browser to select a vertical image file to be loaded directly into Fledermaus. It will then launch the *Import vertical Image* dialog is used to create a Fledermaus Image object.

Import Image Collection

This option opens a file browser allowing to select an image collection to load it into the Fledermaus scene. It will launch the Import Image Dialog to create the Image Collection object.

Import Image from Web Mapping Service

This option launches the Import Image from Web Mapping Service Dialog that is used to create a Geoimage object from a valid Web Mapping Service URL and load it into Fledermaus.

Import ArcGIS Shape

This option opens a file browser to select ESRI Shape files to import. It will then launch the *Import ESRI Shape* dialog that is used to create a Fledermaus Shape object of the appropriate type.

Import Profiler

This option opens a file browser to select an ascii file that is used to create a series of control points to construct a profiler object from. Once a file is selected the ASCII File configuration dialog will be shown to select the X, Y, and Z fields for the control points of the profile. Once the points are imported a coordinate system dialog is shown to choose the coordinate system for the profiler which will default o the scene or project CRS if one is present. The result will be a new profiler object added to the scene.

Import EPT Point Cloud

This option opens a file browser to select the main JSON file that represents an on disk Entwine Point Tile object.

Import EPT Point Cloud from Network

This option opens a file browser to select a vertical image file to be loaded directly into Fledermaus. It will then launch the *Import vertical Image* dialog is used to create a Fledermaus Image object.

Import Vessel Tracklines

A Vessel Trackline object represents the path a vessel of some type - a ship, and AUV, a drone, etc. took. It records the x, y, z, time, and optionally roll, pitch, and heave information from an imported file. A 3D model of the vessel can be attached to the path and lets one visualize the location and attitude of the vessel as a function of time. This option opens the Import Vessel Trackline dialog box to import the data and setup the Vessel Trackline object.

Fledermaus Create Menu

- Fledermaus Create Menu
  - Create Static Grid from Point Files
  - Create Scalar Grid from Point Files
  - Create Grid Lines
  - Create Plane
  - Create Mesh
  - Create QGF Annotation File
  - Create Lines from Selection

Fledermaus Create Menu

Create Static Grid from Point Files

This menu option builds a uniform gridded surface from supplied point data. Click here for details.

Create Scalar Grid from Point Files

This option builds a Scalar object by gridding data from point files. Click here for details.

Create Grid Lines

This option adds a grid to the extents of the loaded data. Once created it can be altered as needed by changing the bounds, number of rows and columns, the cell size and color. If needed it can also be draped over the surface.

Create Plane

This menu option creates a simple plane which can be set at a desired height, can change the color and the opacity

Create Mesh

This option opens the create Mesh dialog. This allows the importing of ungridded data to create a Mesh.

Create QGF Annotation File

This option opens the create QGF dialog that allows importing point data and uses it to create an QPS annotation file.

Create Lines from Selection

When a closed selection is present in the scene, a lines object will be created from it, matching the number of vertices.

Fledermaus Window Menu

- Fledermaus Window Menu
  - Workspaces
    - Fledermaus Default
    - Create New Workspace
    - Reset Current Workspace to Default
    - Save Current Workspace to File…
    - Load Workspace from File…
  - Lock Workspace
  - Save Current Workspace to File…
  - Load Workspace from File…
  - Full Screen Mode
  - Full Window Mode
  - Show Main Toolbar
  - Show Scene Toolbar
  - Show Custom Toolbar
  - Data Viewing Panel Dock
  - External Data Dock
  - Object Properties Dock
  - Profile Dock
  - Project Dock
  - Scene Objects Dock
  - Slides Dock
  - Space Times Notes Dock
  - Video Files Dock
  - Video Player Dock

Fledermaus Window Menu

The window menu allows you show or hide individual dockable windows. It also allows you to create and control custom workspace layouts. Custom layouts are an effective way of customizing particular portions of your workflow tasks.

Workspaces

This sub-menu manages the selection, management and creation of workspaces.

Fledermaus Default

This is the default workspace for Fledermaus. All panels appear in their default positions.

Create New Workspace

This action will launch the **Fledermaus Workspace Creation DL** allowing the creation of a workspace based on the configuration of a previously defined workspace.

Reset Current Workspace to Default

This action will reset the Fledermaus workspace to the default layout.

Save Current Workspace to File…

Saves the current workspace to a file that can be shared or loaded into Fledermaus. The default location is the public user documents Workspaces directory and the default name is the workspace name.

Load Workspace from File…

Allows a workspace file to be loaded to Fledermaus. The default location checked is the public user documents Workspaces directory.

Lock Workspace

This will prevent any dockable panels from being floated or moved.

Save Current Workspace to File…

Saves the current workspace to a file that can be shared or loaded into Fledermaus. The default location is the public user documents Workspaces directory and the default name is the workspace name.

Load Workspace from File…

Allows a workspace file to be loaded to Fledermaus. The default location checked is the public user documents Workspaces directory.

Full Screen Mode

This option will expand the visualization window to fill the entire screen. Use the Esc key to return to the normal view

Full Window Mode

This option will expand the visualization window to the size of the FM8 window the user has open on the desktop. Press ESC to return to default view.

Show Main Toolbar

This option allows users to switch off the Main Toolbar and to switch it on again

Show Scene Toolbar

This option allows users to switch off the Scene Toolbar and to switch it on again

Show Custom Toolbar

This option turns on and off the Custom Toolbar and associated options.

Data Viewing Panel Dock

This option turns on and off the Data Viewing Panel Dock.

External Data Dock

This will turn on and off the External Data Dock.

Object Properties Dock

This will turn on and off the Object Properties Dock

Profile Dock

This will turn on and off the Profile Dock

Project Dock

This option will switch off and on the Project Dock

Scene Objects Dock

This option will switch off and on the Scene Objects Dock

Slides Dock

This option switches off and on the Slides Dock

Space Times Notes Dock

This option switches off and on the Space Time Notes Dock

Video Files Dock

This option switches off and on the Video Files Dock

Video Player Dock

This option switches off and on the Video Player Dock

Fledermaus File Menu

- Fledermaus File Menu
  - New Project
  - Open Project
  - Open Recent Project
  - Open Survey Manager Session
  - Open File Folder
  - New Scene
  - Open Scene
  - Open Recent Scene
  - Save Scene
  - Save Scene As
  - Share Scene
  - Export Scene To Image
  - Load Object Files
  - Load Recent Object File
  - Screen Capture
  - Preferences
  - Configure Shortcuts
  - Configure Custom Toolbar
  - Quit Fledermaus

Fledermaus File Menu

New Project

This menu option launches the Create Project dialog. If you currently have a project open, it will save and close the current project before creating a new one. See the Getting Started for additional information on creating projects.

Open Project

This menu option allows you to open an existing QPS project using a file browser dialog. If you currently have a project open, it will save and close the current project before opening a new one.

Open Recent Project

This menu option allows easy access to recently opened projects.

Open Survey Manager Session

This menu option allows one to open a QPS Survey Manager Session file (.svmini). This will open the matching QPS project and load into the Fledermaus scene any of the data that was showing in Survey Manager along with its show/hide state. The idea being that if you are moving from using a project in Survey Manager to Fledermaus you can just pick up from where you left off in Survey Manager to continue working with and visualizing your information in Fledermaus without any additional steps required.

Open File Folder

This menu option opens a file explorer dialog based on the current state of Fledermaus:

- If an object is selected, the folder containing that object will be opened.
- If a project is loaded, the project folder will be opened.
- If a scene file is present, the folder containing the scene will be opened.
- If none of the above conditions are met, the last used directory will be opened.

New Scene

This menu launches a new scene. If you currently have a scene open, it will launch an option to save, discard or cancel this action.

Open Scene

This menu option allows the opening of Fledermaus shared files, scene files and legacy Fledermaus .scene files

Open Recent Scene

This sub-menu serves the same purpose as the recent projects menu but lists scene files that have been recently loaded.

Save Scene

Save the current open scene. If the scene has not already been saved, users will be prompted to save.

Save Scene As

Prompts the user to Save the scene as a new file.

Share Scene

This option opens the Share Scene Dialog which allows one to zip the current open scene to a ".qsz" which can be shared with other users and opened in Fledermaus, it encapsulates all the current scene items.

Export Scene To Image

This option opens the Export Scene to Image Dialog which allows one to generate a top-down orthographic rendering of the scene to be saved a geo-referenced image product of however the scene has been setup and the options selected. It can create a very high resolution integrated image result.

Load Object Files

This menu option allows the opening of any Fledermaus object, all QPS formats, text files along with the legacy SD files

Load Recent Object File

displays all recently opened object files

Screen Capture

This option is used to save an image in the current visualization window to a file for printing or publication. Selecting this option brings up the Screen Capture dialog box.

The image can be saved as either a JPEG, PNG, TIFF image, encapsulated postscript (eps) file or copied to your clipboard. Choose the image format from the *Image Type* pop-up. The entry field at the top displays the name of the image file to be saved. The *Image Size* entry field gives the output size (width x height) of the generated image both in pixels and in Megabytes. The image size is based on the actual dimensions of the visualization window and the magnification factor specified by the *Magnification* slider bar.

The scale factor will be multiplied with the dimensions of the visualization window to give the final image size. With a magnification factor of 1 the image size will match the

visualization window exactly. Note that the amount of memory required for an image increases by the square of the image dimensions. The memory requirements indicate how much RAM will be required to save the image and may not reflect the actual size of the resulting image file due to compression. When scaling the image ensure that enough memory is available in your machine to hold the image before it is written to the file.

Preferences

Select the *File > Preferences* menu to open the *Preferences* dialog box shown in the figure below. Preferences are used to save personal settings for a number of options that affect how Fledermaus runs.

Please see the Fledermaus Preferences section for more information.

Configure Shortcuts

This menu option displays the Fledermaus Configure Shortcuts Dialog.

Configure Custom Toolbar

The Custom Toolbar is a user customizable interface allowing pre-determined actions, in the form of buttons, to be placed for quick access. Actions can be added in any order and can be separated using a separator. The Custom Toolbar can be shown or hidden using the Custom Toolbar option of the Window menu of the Main Menu Toolbar.

Quit Fledermaus

The *Quit* menu command is used to stop running Fledermaus and exit the application.

Fledermaus Toolbars

Fledermaus Toolbars

Fledermaus 8 has only a few primary toolbars, as Fledermaus gets more capabilities, the number of toolbars may increase. However, the Fledermaus Custom toolbar allows managing and customizing the tools used in them thus minimizing user interface complexity. Each toolbar above starts with the double vertical line of faint dots. One can grab the tool bars on this spot and move them to any side of the application and combine them into a single line as done above.

- Fledermaus Main Toolbar
- Fledermaus Custom Toolbar
- Fledermaus Scene Toolbar

Return to Fledermaus Interface

Return to Fledermaus Reference Manual

Fledermaus Main Toolbar

Fledermaus Main Toolbar

- Fledermaus Main Toolbar
  - New Project
  - Open Project
  - New Scene
  - Open Scene
  - Save Scene

Fledermaus Main Toolbar

The main toolbar in Fledermaus deals with Project and Scene creation and Data Management

New Project

This menu option launches the **Create Project** dialog. If you currently have a project open, it will save and close the current project before creating a new one.

Open Project

This menu option allows you to open an existing QPS project using a *file browser dialog*. If you currently have a project open, it will save and close the current project before opening a new one.

New Scene

This menu option launches the create new scene dialog. If you currently have a scene open, it will save and close the current scene before creating a new one.

Open Scene

This menu option allows you to open an existing Fledermaus scene using a file browser dialog. If you currently have a scene open, it will save and close the current scene before opening a new one.

Save Scene

This menu option allows you to open the save new scene dialog or save the current working scene.

Return to Fledermaus Toolbars.

Fledermaus Custom Toolbar

Fledermaus Default Custom Toolbar

Fledermaus Custom Toolbar

The Custom Toolbar is a user customizable interface allowing pre-determined actions, in the form of buttons, to be placed for quick access. Actions can be added in any order and can be separated using a separator. The Custom Toolbar can be shown or hidden using the *Show Custom Toolbar* option of the *Window* menu in the *Main Menu* Toolbar. By default the custom toolbar will only contain the gear tool used to setup the custom toolbar.

Customization

Customization of the Custom Toolbar is accomplished using the Configure Custom Toolbar Dialog.

This dialog can be shown by:

1. *File Menu → Configure Custom Toolbar*
2. Selecting the *Configure Custom* Toolbar icon in the *Custom Toolbar* if it has already been added.

Return to Fledermaus Toolbars.

Fledermaus Scene Toolbar

Fledermaus Scene Toolbar

- Fledermaus Scene Toolbar
  - Data Interaction Modes
    - 2D View
    - 3D Turntable View
    - 3D Flight View
  - Zoom Buttons
    - Zoom to Scene
    - Zoom to KP
  - Cursor Mode Buttons
    - Explore.
    - Rectangular Selection
    - Polygonal Selection
    - Free Hand Selection
    - Clear Selection
    - Profile Tool
      - Picking (Cross cursor)
      - Line Translation (Hand cursor)
      - Point Translation (Four arrow cursor)
      - Cross-profile position
      - Cross-profile radius
    - Measuring Tool
    - Route Planning Tool
    - Add Space-Time Notes
  - Scene Component Buttons
    - Color Map

- Render Bounding Box
- Render Widgets

Fledermaus Scene Toolbar

The scene toolbar in Fledermaus deals with Scene data interaction modes, zoom buttons, selection modes, profiles, measuring and scene component modes

Data Interaction Modes

2D View

While in 2D View, *Plan View*, simply **Left-Click** and drag to pan the scene. Moving the mouse-wheel will zoom in or out of the scene. You can also pan by using the right and lower scroll widget. Use the left scroll widget to zoom.

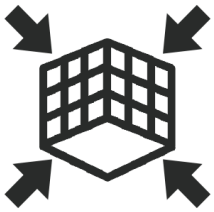
3D Turntable View

While in 3D *Turntable View*, simply **Left-Click** and drag in the horizontal direction to rotate the scene around the current center point. **Left-Click** and drag in the vertical direction to tilt the scene. **Center-Click** on a point in the scene to change the current point of rotation. You can also use right scroll bar to move the scene up or down, the bottom scroll bar to move the scene left or right, and the left scroll bar to zoom in and out of the scene. While in this mode, you can also interact with the *Navigation Widget* to navigation in the scene.

3D Flight View

While in *3D Flight View* you can use the keyboard and/or a supplemental navigation device such as the Patriot Bat, a SpaceNavigator, or a VIVE controller to explore the 3D world. The *AWSD* keys move you left, forward, backward, and right respectively from your current view point. The *Q* and *E* keys move your camera up and down in the z-axis. If you left click and drag the mouse you can control the viewpoint while applying other key combinations. When using a supplemental flight device enter flight mode by holding the trigger button and translate and rotate to control the camera velocities when moving through the scene.

Zoom Buttons

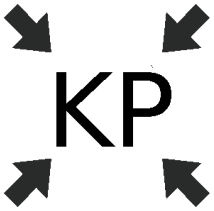


Zoom to Scene

Clicking on the *Zoom to Scene* button returns to the default camera position. The default camera view is normally looking down at the data at about 45 degrees; however, this can be changed in the General Preferences if an alternate view is desired. If the data objects are lost from view in the 3D scene simply click this button to return to the default viewpoint.

Zoom to Object

Zoom to object (Z-key) button will move the camera so that you are viewing the currently active data object.



Zoom to KP

Zoom to the KP found in either the last selected route from a project or from the selected route object. The Route object must have KP values generated. See the Route page for more information

Cursor Mode Buttons

Explore.

This is the primary navigation mode of the 4D scene. If you are in any other cursor mode, simply hold down the **Shift** key to allow standard explore mode navigation behavior. When in explore mode, status information about the objects under the cursor will be displayed in the **Status Bar**. If you are in Plan View, use a L**eft-Click-Drag** to pan around the scene. Use the mouse wheel to zoom in and out of the scene. Alternatively, you can **Center-Click-Drag** to zoom in and out of the scene. If you are in Turntable View, a **Left-Click-Drag** horizontally will spin the scene about a central point as if the scene was on, you

guessed it, a turntable. If you drag vertically, it will tilt the table toward or away from your viewpoint. To change the center of rotation, **Center-Click** a different location in the scene. This also works when in Plan View.

Rectangular Selection

This mode allows for rectangular area selections within the scene on a surface. This area can be used to enter the **3D Editor**. Once the rectangle has been drawn on the surface, it can be rotated or reshaped using the drag handles that appear on all sides and corners of the widget. If you **Left-Click** and drag one of the corner handles, it will resize the rectangle width and height. **Left-Click** and drag on one of the side handles, it will resize the rectangle in the associated axis. **Left-Click** and drag on the center handle rotates the selection rectangle. **Left-Click** and drag inside the rectangle but not over one of the handles allows you to move the rectangle over a surface. An example of this selection mode while Slice Editing is shown below.

To easily move the Rectangular Selection, use the **W** and **S** keys to move forward and backwards along the direction of the arrow. Use the **A** and **D** keys to move left and right, perpendicular to the arrow. Use the **Q** and **E** keys to rotate the selection +/- 15 degrees.

Polygonal Selection

Left-Click a series of points on a series to define a selection polygon. You must select on the initial point to close the polygon.

Hitting the **ESC** key at any point during polygon selection will remove the last polygon point created.

Free Hand Selection

Left-Click and drag a shape to define a selection area. When you release the left mouse button, the selection area will be closed automatically.

Clear Selection

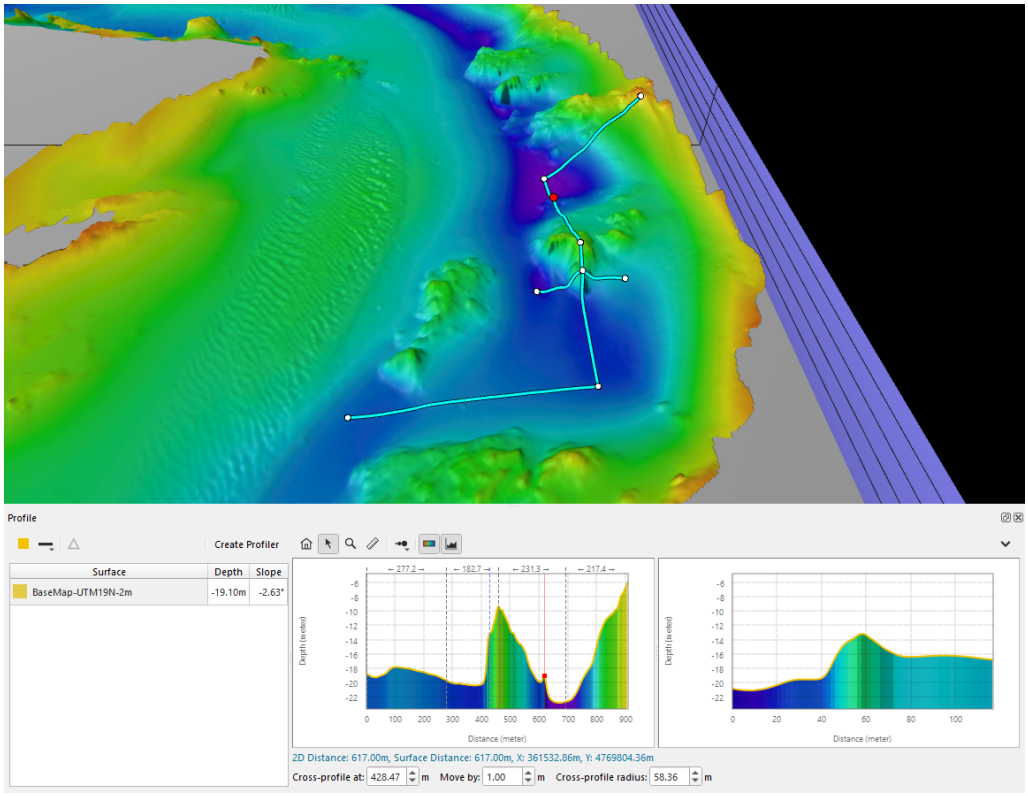
Clicking this Icon will unselect any current selection area.

Profile Tool

Left-Click a series of line segments on a surface to see the depth profile in the Profile Window. **Right-Click** to end the profile.

Alternatively, you can **Ctrl+Left-Click and drag** to make a quick, single segment profile without having to activate the profile tool first.

An example of a multi-segment profile with a cross profile is shown below.



Profile Tool

Once created, the profile can be edited in the scene. The mouse cursor will change to one of the following cursors to indicate which action will take place when left-clicking:

Picking (Cross cursor)

This cursor appears when defining the profile line as described above, or when the mouse is away from the profile line. While this cursor is displayed, the mouse is used to pick the control points of the profile line. **Left-clicking** on a surface picks the clicked location as a control point. If the line is already defined, left-clicking will prompt you to delete the current line and start a new line. **Right-click** is used to finish the line.

Line Translation (Hand cursor)

This cursor appears when the mouse is near or on top of the profile line, but not on top of a control point. While this cursor is displayed, **left-clicking and dragging** will move the entire profile line around the scene.

Point Translation (Four arrow cursor)

This mode is activated when the mouse is on top of a control point. While this cursor is displayed, **left-clicking and dragging** will move the control point under the mouse around the scene.

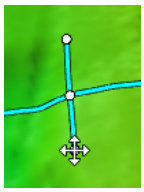
When cross profiling is turned on in the profile panel, some additional controls become available on the profile tool in the scene. Note that while the basic profile tool is available in Fledermaus Viewer, the cross profiling capabilities are not.

Cross-profile position

Left-clicking and dragging the control point at the center of the cross-profile line where it intersects the main profile line allows you to move the cross-profile line along the main profile line. This can also be done by changing the "Cross-profile at" value in the profile panel.

Cross-profile radius

Left-clicking and dragging either of the control points at the ends of the cross-profile line will allow you to adjust the radius, or distance from the main line, of the cross-profile. This can also be done by changing the "Cross-profile radius" value in the profile panel.



If you left click when not on a control point where the normal cross hair cursor is shown you can start a new profile. A dialog will appear asking you to confirm that you meant to start a new profile and one can proceed or not. If you are editing a profile path that comes from a profiler object the ability to create a new profile is disabled.

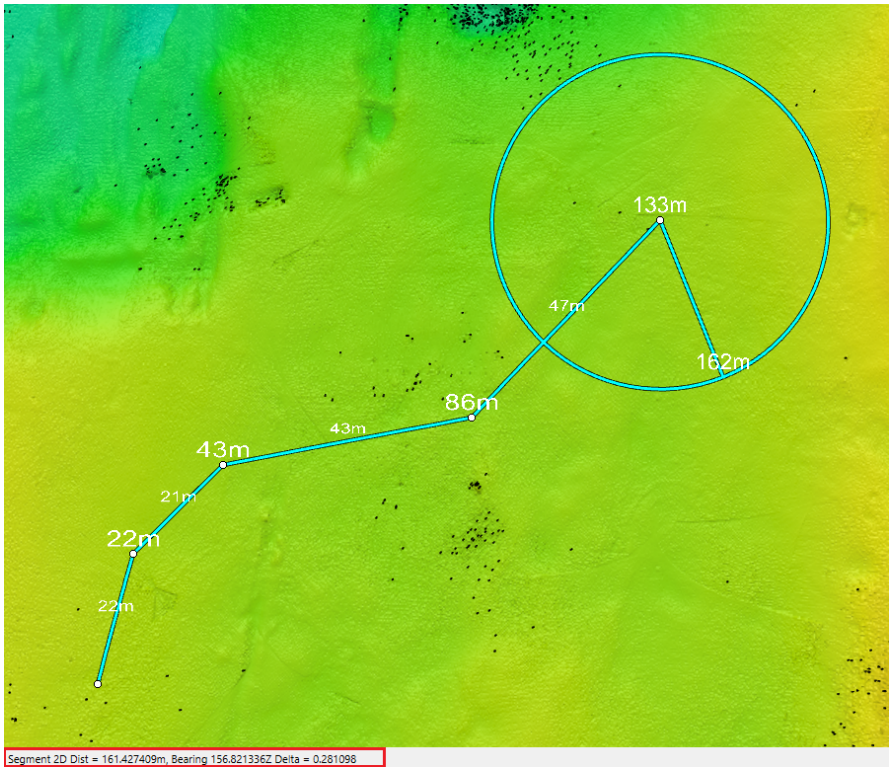
Additional operations can be accessed via context menu by **Right-clicking** after the profile has been completed (after right-clicking to stop adding points to the line). These operations include:

- **Create Line From Profile:** Creates a new Lines object from the profile path.

Measuring Tool

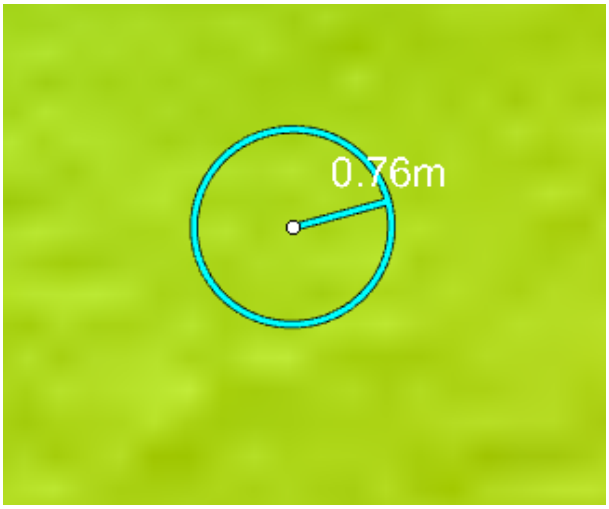
Left-Click a series of line segments on a surface to see total distance, line segment distance and line segment bearing. You will see the last segment 2D distance, Bearing, and Z Delta displayed in the Status Bar. As you move to a new location, a range circle will be drawn so that you can see all parts of the survey within the particular range. An example of a completed multi-segment measurement is shown below.

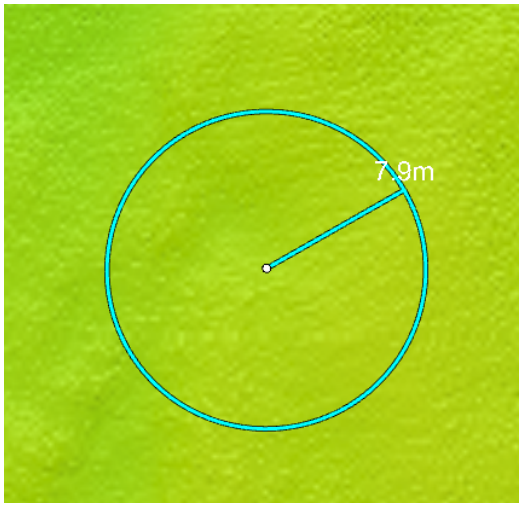
Hitting the **ESC** key at any point during line segment creation will return you to the Explore mode.

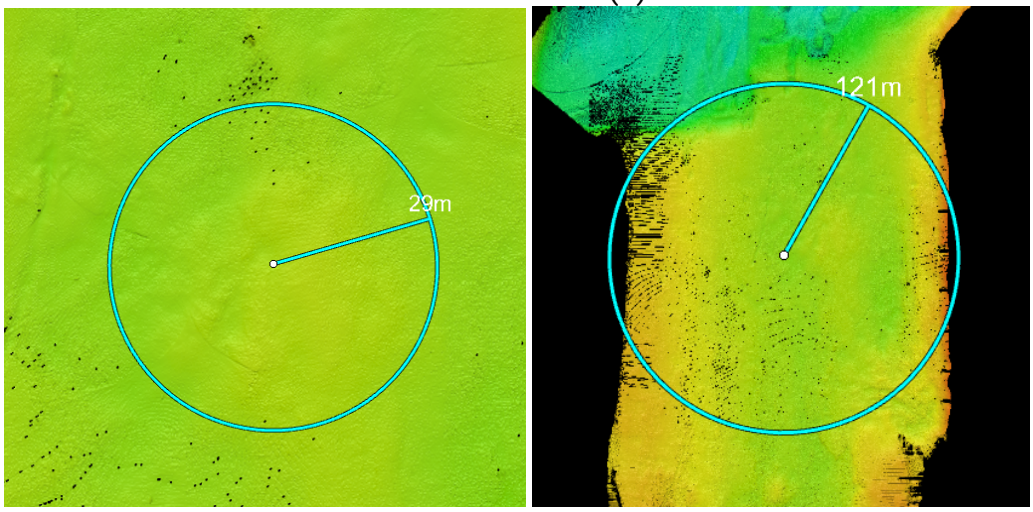


Measuring Mode

Note that the measure tool will attempt to show the distance with at least two significant digits, if possible, from the last point created. See the following examples:

(a) 

(b) 

(c) 

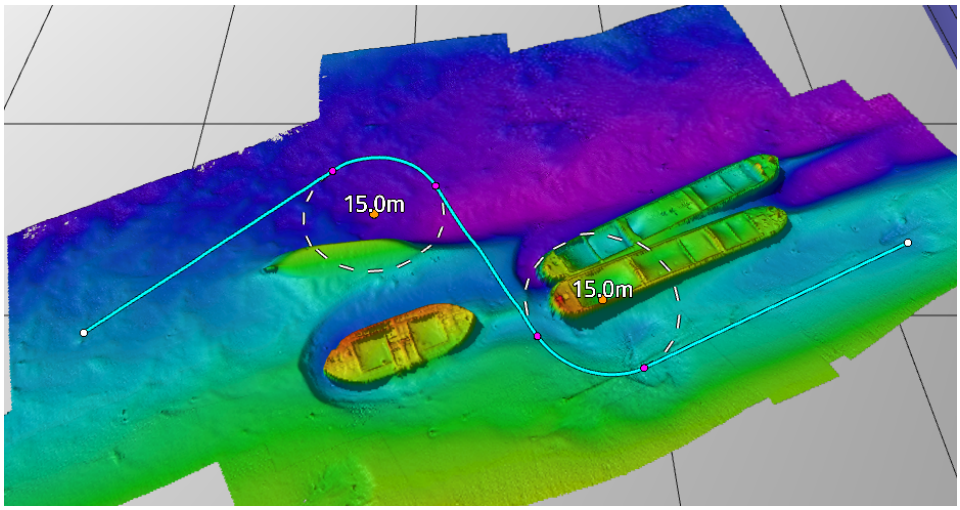
Measuring Mode Precision: Showing minimum of two digits in (a) centimeters (b) tens of centimeters (c) meters

You can increase or decrease the size of the text on the measuring tool using **Shift+=** and **Shift+**- respectively. These keyboard shortcuts can be changed in the Configure Shortcuts menu by rebinding the Increase Tool Text Scale and Decrease Tool Text Scale actions.

Route Planning Tool

Left-Click to create line segments, when a corner is formed the tool will automatically create a curve in its place. **Right-Click** to end the route.

An example of a finished route is shown below.



Route Planning Tool in use

Once created, there are a few ways to modify the route.

- **Start/End points:** The white points at the start and end of the route can be moved by **Left-clicking and dragging** them around. Curves tangential to the dragged point will automatically adjust themselves as these points are moved.
- **Tangent points:** The magenta points which mark the start and end of each curved segment can also be moved by **Left-clicking and dragging** them. Moving either of the two tangent points on a curve will move the entire curve segment without changing its radius. Again, adjacent curves will be adjusted automatically as you move the point.
- **Center points:** The orange point at the center of a curve is used to adjust the radius of the curve. **Left-clicking and dragging** on the point will not move it, instead the radius will increase if the mouse is moved up or to the right, or decrease if the mouse is moved down or to the left.

Note that you may not always be able to drag a point. The tool prevents you from dragging points into a position which would result in an invalid route. If you want to drag a point somewhere and cannot, try adjusting nearby curves or the start and end points first.

Curves created while defining the line will try to set the radius to the default value, which can be changed in the preferences under the General tab. If a curve cannot use the default radius without invalidating the route (for example, because the angle of the turn is too sharp) then it will automatically reduce the radius to the largest value that will fit.

Additional operations can be accessed via context menu by **Right-clicking** after the route has been completed (after right-clicking to stop adding points to the route). These operations include:

- **Create pipe from route:** Creates a new Dynamic Pipe object from the route. Before creating you can choose the sample interval and pipe radius to change the resolution and size of the cable/pipe.
- **Export to ASCII:** Samples points at the sample interval from the start of the route to the end, and saves the XYZ (or just XY if selected) coordinates to a new plain text file.
- **Export to Lines:** Creates a new Lines object from the route. This is equivalent to exporting the route to ASCII and then importing that text file as lines.
- **Export to PLF:** Saves the route parameters to a PLF formatted text file which can be used to rebuild the profile in supporting software.

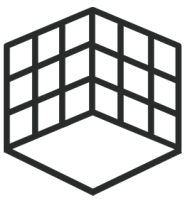
Add Space-Time Notes

Left click to add Space-Time Notes. This mode will stay active until another mode is selected or by clicking on this mode button again to return to explore mode. Press and hold one of the shift keys to explore while in this mode.

Scene Component Buttons

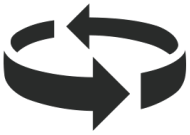
Color Map

Show/Hide the color map overlay for the selected surface.

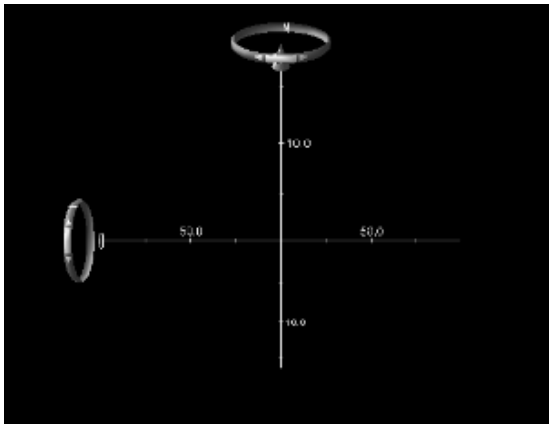


Render Bounding Box

The *Bounding Coords* button will show or hide the Root Node's bounding box and associated coordinate labels. Note that coordinate labels only appear after data has been loaded.



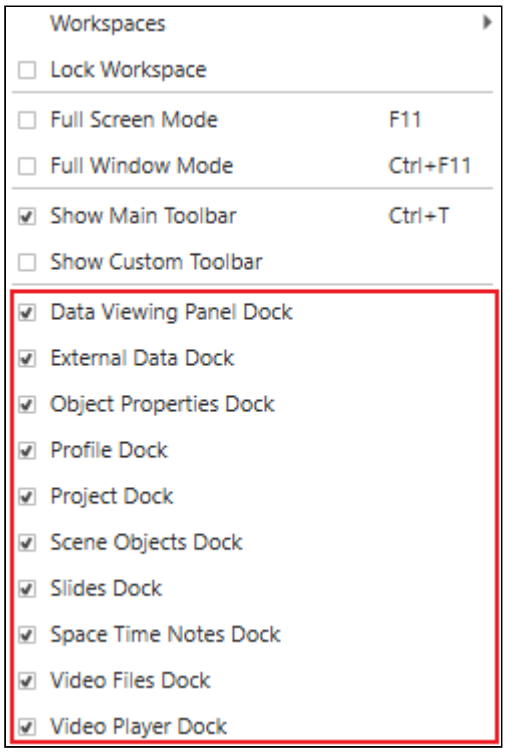
Render Widgets



Navigation Widget

Return to Fledermaus Toolbars.

Fledermaus Dock Windows



Fledermaus Windows Menu

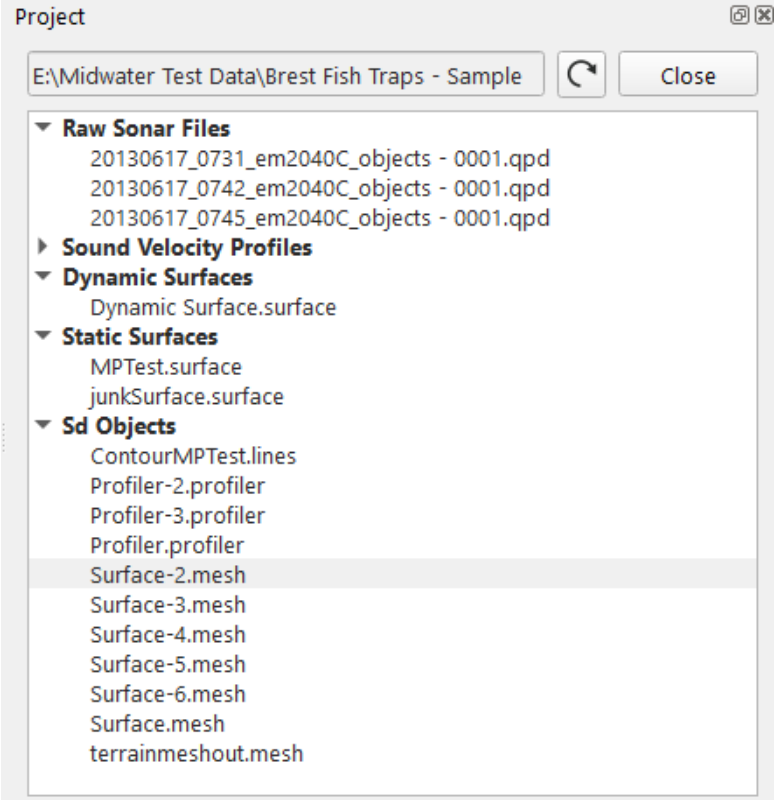
Except for the Fledermaus 4D scene visualization window, all the other windows are made up of **docks**. Docks are smaller pieces of the user interface, dedicated to a particular piece of functionality, which can be hidden or rearranged to suit the users needs.

Fledermaus currently has the following docks:

- Fledermaus Data Viewing Panel Dock
- Fledermaus External Data Dock
- Fledermaus Grid Cell Properties Dock
- Fledermaus Object Properties Dock
- Fledermaus Profile Dock
- Fledermaus Project Dock
- Fledermaus Scene Objects Dock
- Fledermaus Slides Dock
- Fledermaus Space Time Notes Dock
- Fledermaus Video Files Dock
- Fledermaus Video Player Dock

Return to Fledermaus Interface
Return to Fledermaus Reference Manual

Fledermaus Project Dock



Project Dock

- Project Dock
  - General Context Menu (Menu 1)
  - .sd File Context Menu (Menu 2)
  - Processed Point Files Context Menu (Menu 3)
  - Image Files Context Menu (Menu 4)
- Drag and Drop
- Context Menu Operations
  - Add to Scene (1,3)
  - Import to Scene (2)
  - Import Image (4)
  - Create Surface from Points (3)
  - Create Terrain Mesh from Points (3)
  - Add as a Trackline (3)

Project Dock

The Project Dock tab as shown in the figure above allows the user to interact with QPS Projects. The entry field at the top shows the current active project. The (recycle) button will re-read the project from disk and update the dock contents accordingly. The Close button will close the current project so it is not part of the current scene. When a project is loaded the rest of the dock will be filled in with the various project sections from raw data files to processed files in the project. When you right click on files different context menu options will be presented depending on the data type selected to perform actions on the selected files.

This document is organized using numbers to match operations to the context menus they show up in. For example an operation labelled (2,3) shows up in menus 2 and 3.

General Context Menu (Menu 1)

- Add to Scene (1,3)

.sd File Context Menu (Menu 2)

- Import to Scene (2)

Processed Point Files Context Menu (Menu 3)

- Add to Scene (1,3)
- Create Surface from Points (3)
- Create Terrain Mesh from Points (3)
- Add as a Trackline (3)

Image Files Context Menu (Menu 4)

- Import Image (4)

Drag and Drop

It is now possible to drag any object from the Project dock to the scene window or to the Objects panel. The object being dragged may be placed in a specific location in the Objects panel, for example in a group, or just dropped onto the Objects panel in which case it will be added to the end of the list of objects in that panel.

Context Menu Operations

Add to Scene (1,3)

Adds the object to the current scene.

Import to Scene (2)

Opens a dialog allowing you to add an object to the scene that requires an upgrade or some parameters.

Import Image (4)

Lets you import various image file formats into Fledermaus as geoimage files.

Create Surface from Points (3)

Opens the Data Gridding Wizard which allows you to create a new surface from the points in the selected object.

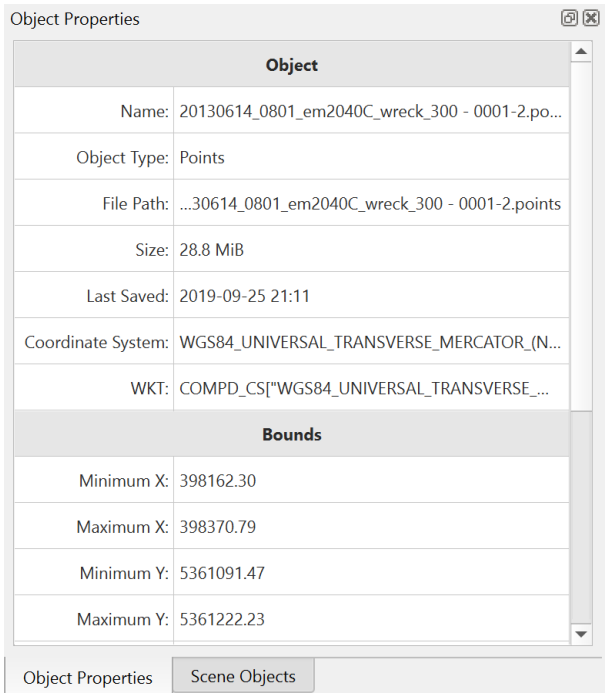
Create Terrain Mesh from Points (3)

Allows you to create a new terrain mesh from the points in the selected object.

Add as a Trackline (3)

Allows you to create a trackline from selected qpd files.

Fledermaus Object Properties Dock



Object Properties Dock

- Object Properties Dock
  - Surface
  - Points
  - Illumination Properties

Object Properties Dock

The Object Properties Dock will display specific properties for the object selected in the Scene object dock. Object metadata, such as name, Object type, File path location, size on disk, Last time saved, Coordinate System and WKT.

Depending on the scene object types the Object properties can be the following:

Surface

Object Metadata, Bounds, Solid Model

Points

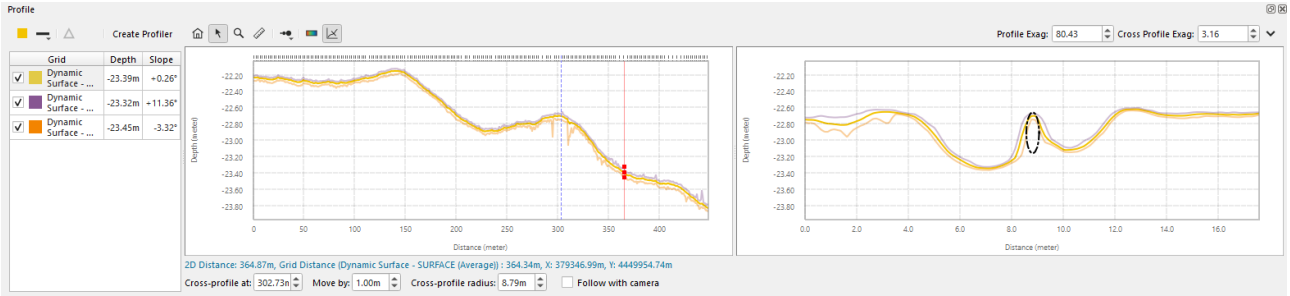
Object Metadata, Bounds, Point number (total), Number of clusters (if any).

Illumination Properties

This section contains the illumination properties for the selected surface. Is Illum Dirty indicates whether shading has been computed for this surface. And, the Shaded Surface indicates the layer for which the shading has been computed, shallow, deep, average, or cube.

Illumination Properties	
Shaded Surface:	Shallow
Sun Azimuth:	315
Sun Inclination:	45
Ambient Factor:	0.4
Specular Factor:	0.10622
Soft Shadow Factor:	0.35
Vertical Light Scale:	5
Is Illum Dirty:	False

Fledermaus Profile Dock



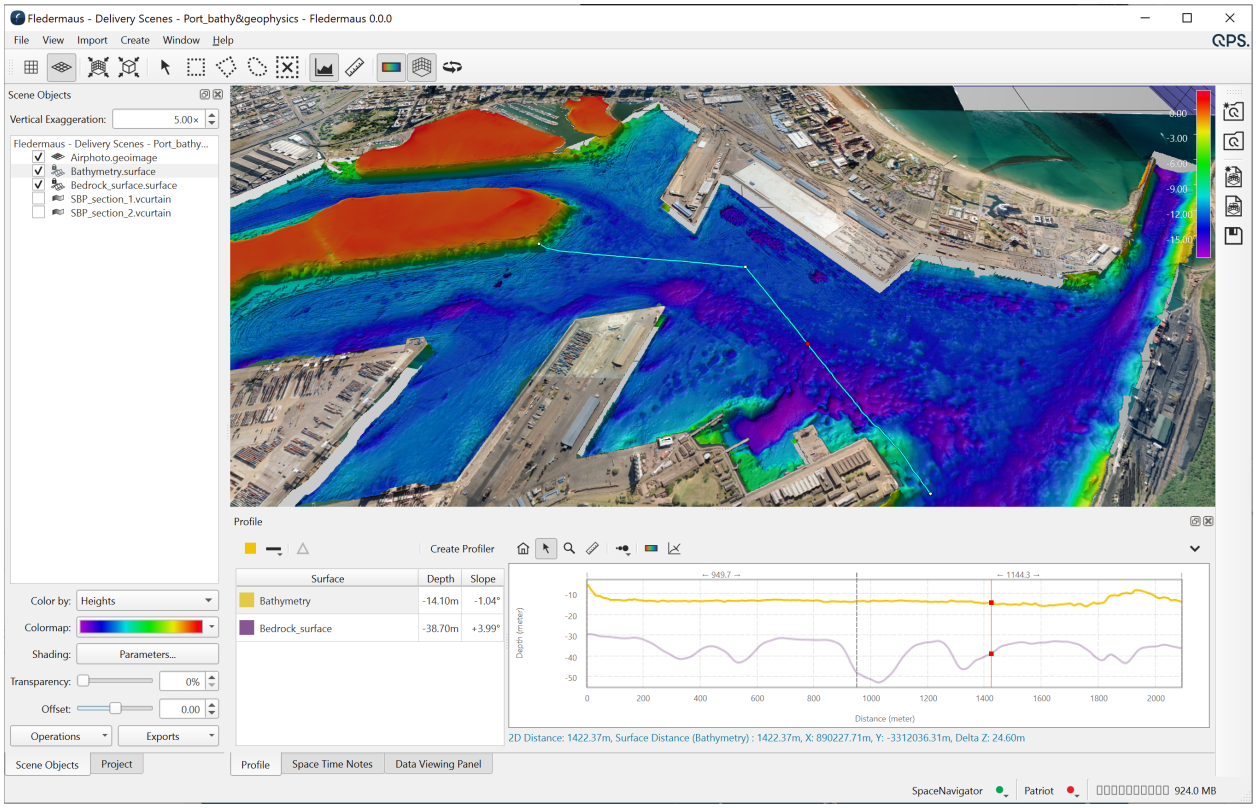
Profile Dock

- Profile Dock
  - The Profile Selection Control
  - Profile Dock Toolbar
  - Line Pattern Button
  - Delta Button
  - Create a New Profiler Button
  - Zoom Out Button
  - Explore Mode
  - Zoom Mode
  - Measure Mode
  - Point Size
  - Show Profile Colors
  - Show Cross Profiler
  - Profile and Cross Profile Vertical Exaggeration
  - Profile Menu
    - Show Statistics
    - Export to ASCII...
    - Save Plot To Image
    - Save Cross Profile Plot To Image
    - Show Gridlines
    - Disable Vertical Exaggeration
    - Lock Scale Depth

- Clear Differences
- Show/Hide All Profile Plots
- Reference Profiles

Profile Dock

The Profile Dock allows you to view a profile line over one or more surfaces in order to get detailed or comparative information along the line. To enter profiling mode, click the button on the application tool bar. Then **left-click** points on a surface to define your line segments. End your profile by defining a final point using **right-click**. For a single profile segment start with a left click on the desired start location then just right click on the end location. Fledermaus will generate a profile for every visible Dynamic or Static surface in the current project. If you don't want to see a profile in the plot, simply hide the surface in the the scene panel by toggling its visibility check box. Here is what the Fledermaus application interface looks like for the profile above.



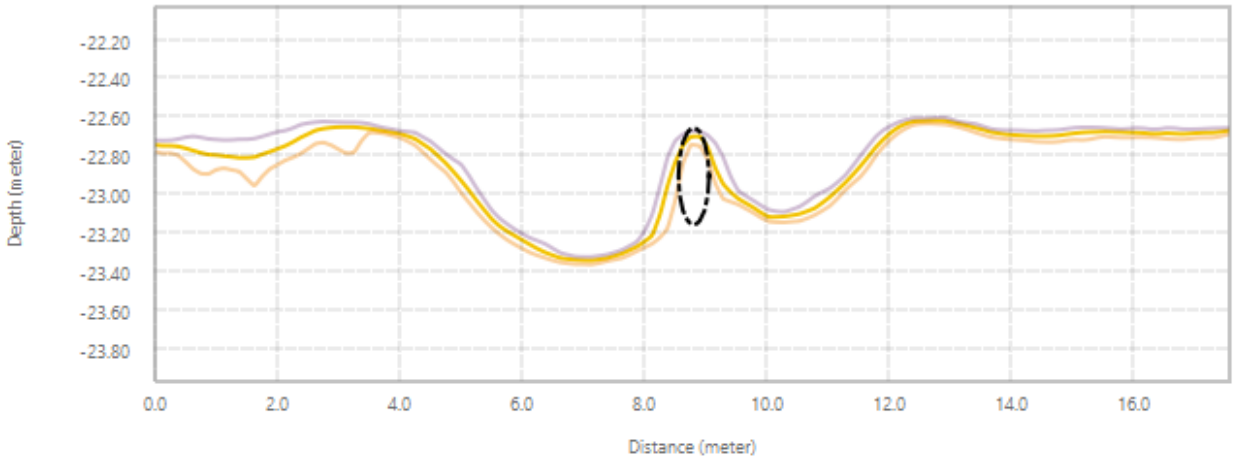
Overview of a profile selection and the profile dock view

In the example above, there are two surfaces, a bathymetry surface and a bed rock layer surface which is below the bathymetry surface. A two segment profile was selected and the results are shown in the profiling dock window.

In the profile dock there is a tool bar across the top, a section along the left side for the list of active profiles, with the main graph of the profiles plotted on the right side. Just below the graph is an information line which shows information from the cursors position in the graph and various details when using some of the tool modes. When the cross profiling mode is activated a secondary profiling graph is shown to the right of the main profile graph. The profile plot surface displays the locations and *span* distance between each control point in the profile segments using a vertical dashed line in the plot. The vertical axis is the profile z (height) range and the X-axis is the 2D distance along the profile. As one moves the cursor along the profile plot, you will also see the 2D and 3D Surface Distance reported below the plot. The profiles in the dock are a live analysis of the objects in the scene. If you turn on or off the visibility of surfaces then appropriate results will be added or removed from the list of dock profiles in response.

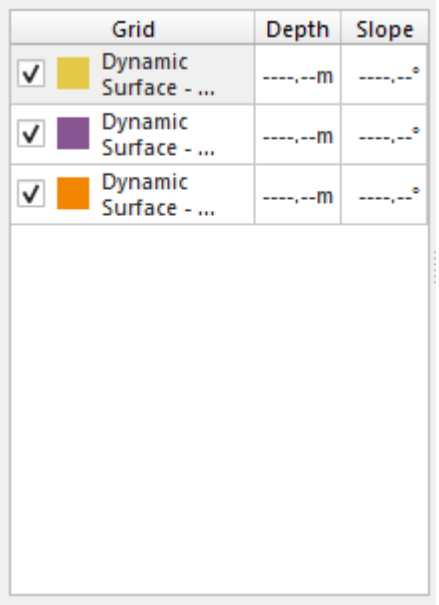
In the **Scene 4D** main visualization window, the profile draws as a draped line on the topmost surface. White markers are also drawn at each segment endpoint. A single red marker (the pipper) appears along the plot correlating to the location of the cursor in the plot area of the Profile Dock.

If you have a profile which goes over a Dynamic Pipe object, a cross sectional view of the pipe/cable will be shown in the profile plot as a black dashed circle. Be aware that the circle stretches vertically with the plot exaggeration. If the profile is close to parallel with the Dynamic Pipe, no indicator will be visible.



A Dynamic Pipe indicator in the profile plot

The Profile Selection Control



The Profile Selection Control Area

At the left side of the profile dock is the selection control area. For any visible surfaces in the main scene a profile will be created for each layer of the surface, added to this list, and shown in the profile display. The checkbox on the left controls the visibility of that layer in the profile plot, and the profile is drawn in the plot with the color shown. When you have multiple profiles the selected profile will render a little more brightly than the others to help highlight it. When the cursor moves over the profile red dots will appear on the profile at the selected location and the profile depth and instantaneous slope at that point is shown in this control. You can select multiple profiles be holding down the Ctrl key when clicking on a profile name.

Profile Dock Toolbar

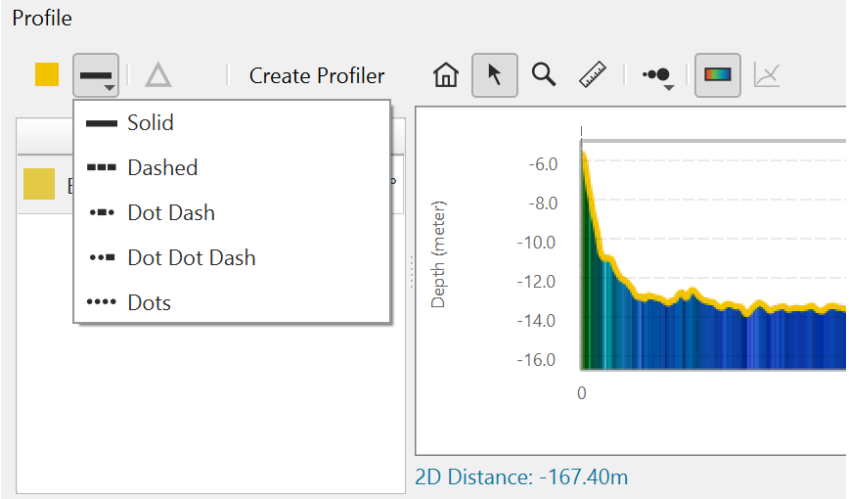
Profile Dock Toolbar

The tool bar along the top of the dock control three areas of controls. On the far left are controls that apply to the profile selections. The middle set controls the profile display mode and some viewing states and operations. Finally at the right hand edge is controls for the vertical exaggeration of the profile and cross profile graphs, as well as a drop down menu of additional operations and options to export profile data and imagery.

This button is used change the color of the currently selected profile line in the graph.

Line Pattern Button

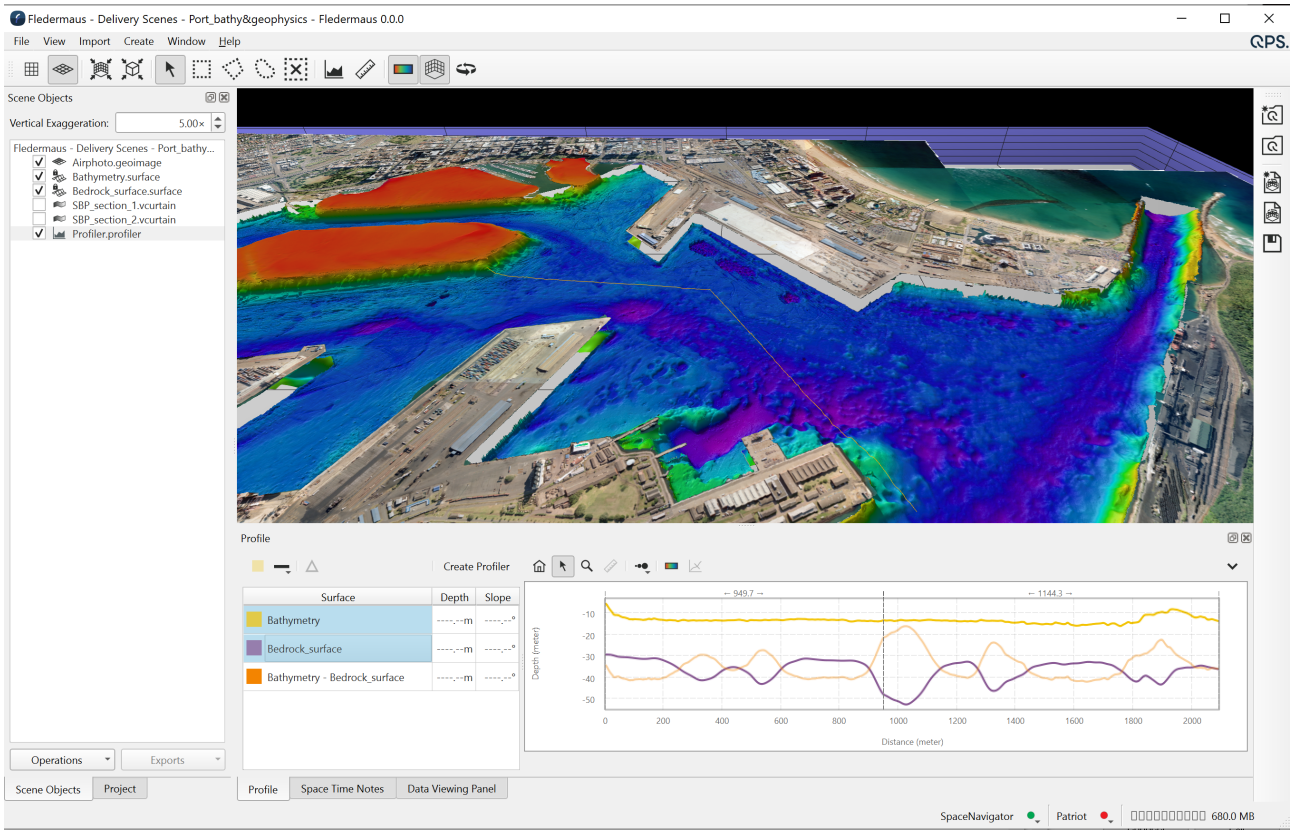
This button will change the line pattern of the currently selected profile. If you click and hold the button, you will see a drop down list of the choices. If you simply click, it will cycle to the next line pattern. The choices are dots, dashed line, dot-dash line, dot-dot-dash line, and solid line as shown below.



Profile Line Styles

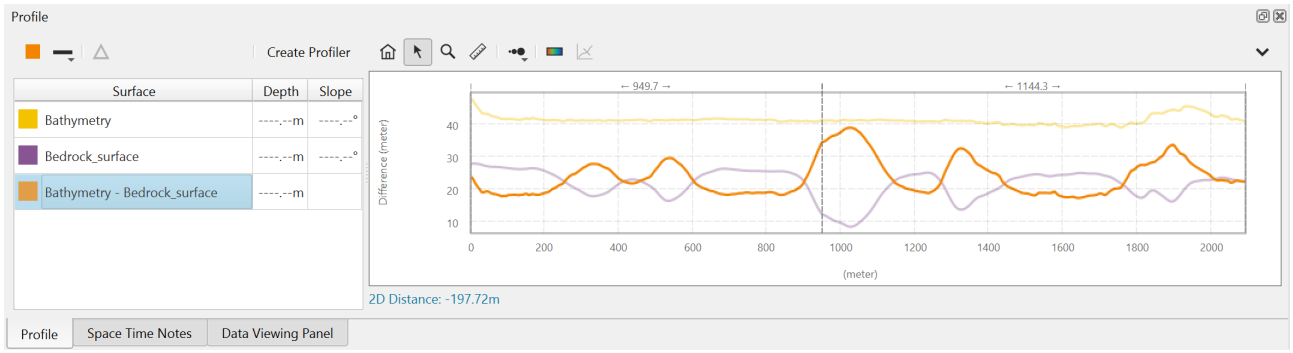
Delta Button

This button will compute the difference between two selected profiles in the table view. To select a second profile hold the Ctrl Key down while clicking a second profile. Once you select the two profiles, click on this button to generate a difference profile to plot. This will create a new profile representing the difference with the (first profile - second profile) as a result. The name given to the profile tells you how the difference was constructed. In the example below the Bathymetry surface profile was selected first and the bedrock surface second so you are seeing the amount of sediment in the difference between the two layers.



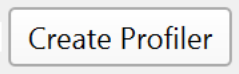
Sample Difference Plot

Normally the depth values of the surface difference are significantly different than the profiles it is generated from. To make it easy to visually compare the results the difference profile is plotted on the graph with it own range superimposed on top. When you select the "Difference" entry from the table view, the Y scale will change for the plot showing you the vertical extents of the difference data as shown below.



Difference Plot in Profile Dock

Any difference analysis done is saved as part of a scene. They only last while the profile is loaded into the dock. If you create a new profile or select a different profiler object then any difference plots created will be cleared.



Create a New Profiler Button

Profile paths that are loaded into the dock for analysis can come from two sources. They can be from a profile path created when using the profiling tool from the main display or they can come from a saved "Profiler" object which is a saved profile path that appears in the scene object list.

When a profile path is created using the profiling tool this button lets you create a profiler object from the current path. When clicked you will be asked for a filename to create the "<userGivenName>.profile" file and it will be added to the current scene's object list. Any number of profiler objects can be created and when selected in the scene list that profile path will be loaded into the profiling dock for analysis. You do not need to be in the "Profiling Mode" for the profilers path to be loaded and shown. In the main 4D display profiles created via the profile tool are shown in a light blue/aqua color whereas profiles from a profiler object are shown as a light orange line. For details on editing of the profile path see the profile tool selection of the manual. Note that if you are viewing a profiler object's profile you can drag the profile and move the control points in the main scene but you can not start a completely new profile path. Unselect the profiler object to create a new one. Profiler objects can also be created from existing 3D line objects by right clicking on the line object and selecting the Create Profiler... operation.

Zoom Out Button

When in zoom mode, simply click and drag an area of the plot to zoom into. Click the Home button here to return to the full extents of the data. For more information on plotting surface navigation, see the appendix section found **here**.

Explore Mode

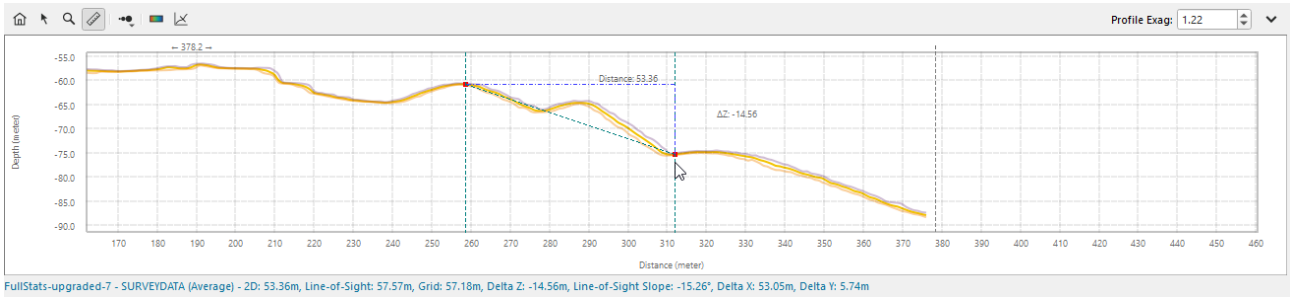
This is the default mode for the profile dock. When in explore mode, simply left click and drag to translate the plot around. To zoom in/out use the middle scroll wheel. To return the graph to the full extents click the Home button above. A For more information on plotting surface navigation, see the appendix section found **here**.

Zoom Mode

When in zoom mode, simply left click and drag an area of the plot to zoom into. Click the Home button to return to the full extents of the data. At any time, you can s**hift-click** to drag the plot to a new location. For more information on plotting surface navigation, see the appendix section found **here**.

Measure Mode

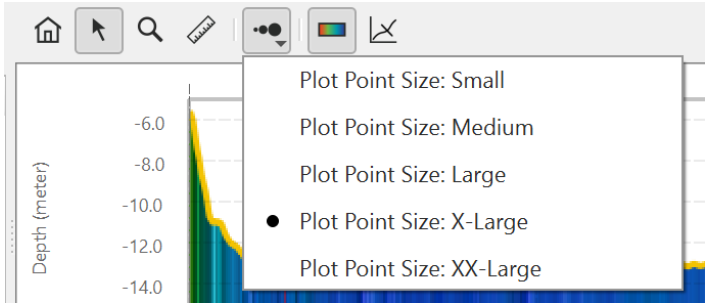
This mode will allow you to measure along a profile. First, you must select a profile from the table view. Then **left-click** and drag in the plot area to measure between 2 points on the profile. As you drag, you will see corresponding red markers indicating the start and end of your measure in the plot and 4D View. The 2D distance and change in depth will be shown in the plot window. Below the plot you can see more specific details about the measurement. These include 2D Distance, Surface Distance, Line-of-Sight Distance, Line-of-Sight slope, and the change in X/Lon, Y/Lat, and Z/Depth.



Measure Mode in Profile Dock

Point Size

This button will allow you to change the size of the plotted points and lines. Sizes range from Small to XX-Large. Clicking on the button will cycle to the next size. Click and hold to get a dropdown menu of sizes to choose as shown below.

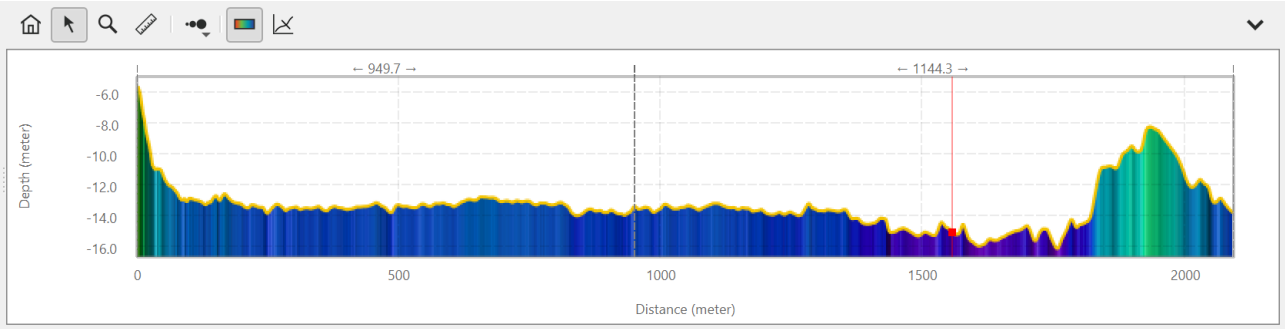


Profile Point Size Selection

Show Profile Colors

When turned on, this mode fills in the space below the selected profile with the color from the surface that the profile is crossing. It can be helpful in corelating the profile points with

their location in the scene. This mode works well with single profiles although with multiple profiles it can make other profile lines hard to see.



A Profile when the show profile colors tool bar is toggled on.

Show Cross Profiler

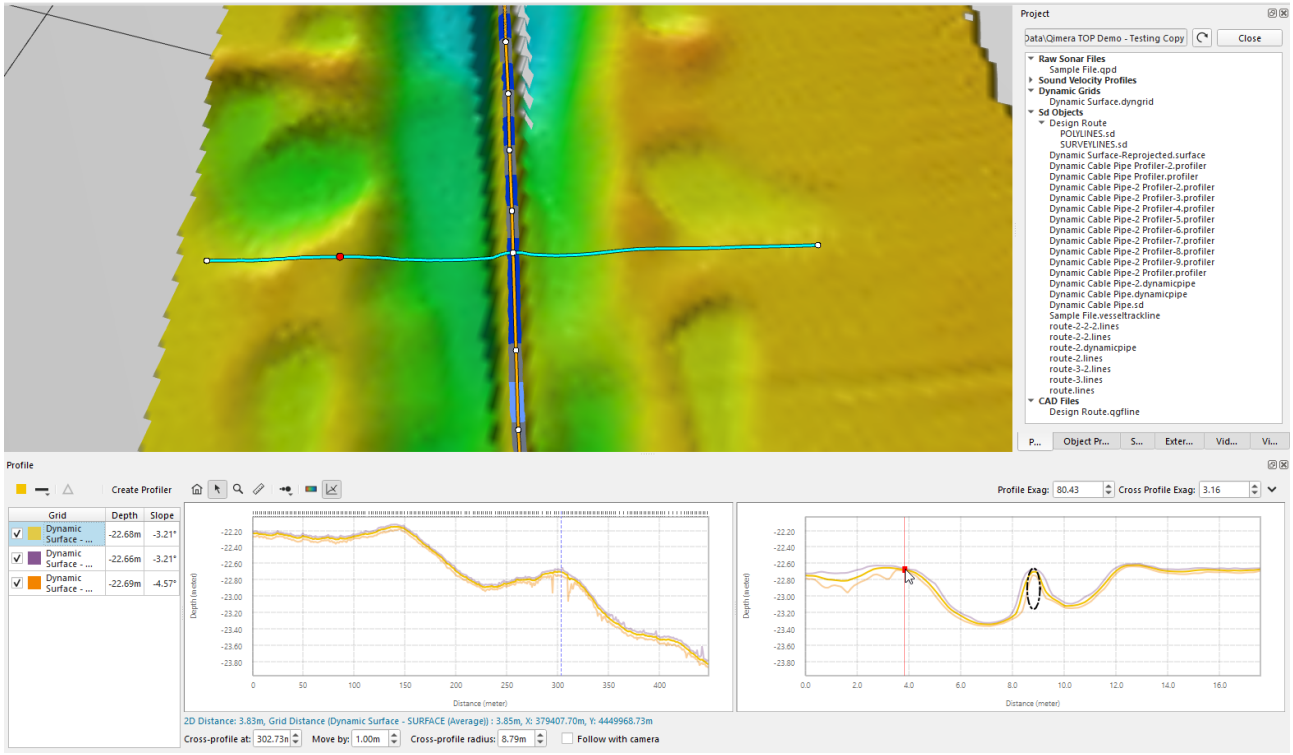
The profiling dock has a built in cross profile analysis tool which is activated by pressing this button. In order to activate cross profiling mode you must be in the profiling tool mode for the 4D display. If you want to analyze an existing profiler object simply select it then enter profiling mode before clicking the cross profile analysis button.

Clicking this button opens the cross profile graph which is designed to show a perpendicular profile from a selected point on the active main profile line. It will show a secondary profile graph to the right of the main profiling graph. This graph shows cross profiles for any profiles in the main display. Initially the cross profile will be positioned at the start of the main profile line. Several additional input controls are shown below the graphs to show and set the current cross profiling KP point (distance from the start of the profile), a move by amount and and the radius length of the cross profile. You can enter values to setup the cross profile as desired.

The cross profile will also be shown in the main 4D window with control points at the ends of the cross profile and one where it intersects the main line. One can click and drag on these control points as well to visually position and size the cross profile.

One can also set the KP of the cross profile by left clicking in the main profile window which will move the cross profile to that location. The cross profile location is shown in the main profile graph with a dashed vertical blue line. If you are using the generate cross profiles functionality of a profiler object, left clicking the main profile window will instead select the nearest generated cross profile to the position clicked. For more information on the generate cross profiles functionality, see the attributes section of the Profiler object page.

Finally as you move the cursor over either graph, the position of the cursor is shown by a red point in both the graph and the main 4D scene.



Cross profiling activated for the selected profile

The "Cross-profile at" field allows you to adjust the position of the cross profile, while the "Move by" field determines how far the profile will move with each click of the up and down arrow buttons. The "Cross-profile radius" field controls the length of the cross profile line. Finally, the "Follow with camera" checkbox will make the camera re-center on the middle of the cross profile whenever its position is modified via the "Cross-profile at" field.

Profile and Cross Profile Vertical Exaggeration

These spin boxes on the right hand side of the toolbar control the vertical exaggeration scale for the profile and cross profile graphs. The scale factors for the profile and cross profile are independent, so each graph can be adjusted individually. Using the Zoom Tool or clicking the Zoom Out Button will automatically adjust the vertical exaggeration scale to fit the selected area or default view accordingly.

Vertical exaggeration scale cannot be adjusted while Lock Depth Scale is turned on.

Profile Menu

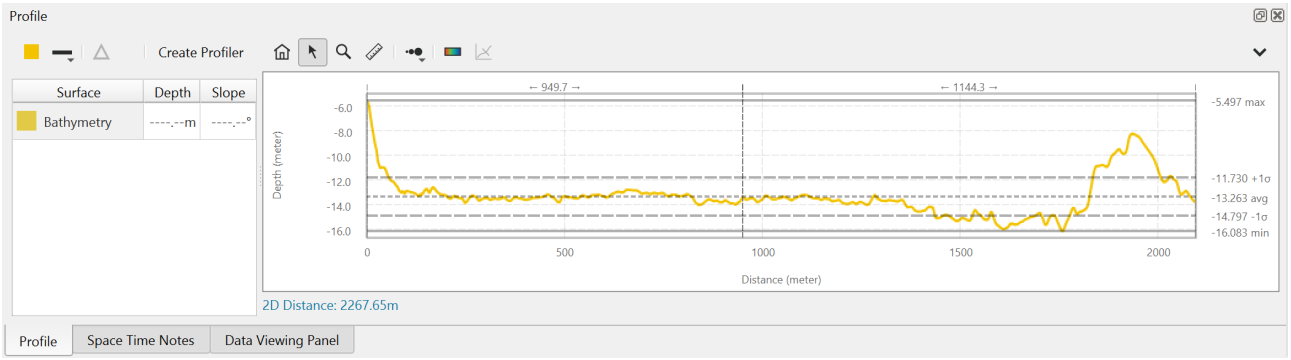
The profile menu at the far top right of the profile dock includes the following options:

- Show Statistics
- Export to ASCII...

- Save Plot To Image
- Save Cross Profile Plot To Image
- Show Gridlines
- Disable Vertical Exaggeration
- Lock Scale Depth
- Clear Differences
- Show/Hide All Profile Plots

Show Statistics

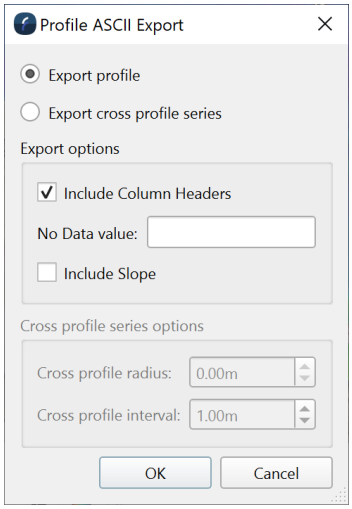
Turning the show statistics option adds a set of profile stats at the right edge of the profile. This include the min and max point, the average, and +- 1 standard deviation as shown below.



In addition to the values horizontal line on displayed on the graph to help visualize the location of the statistics.

Export to ASCII...

Selecting this option will bring up a dialog box to control the export options which looks like:



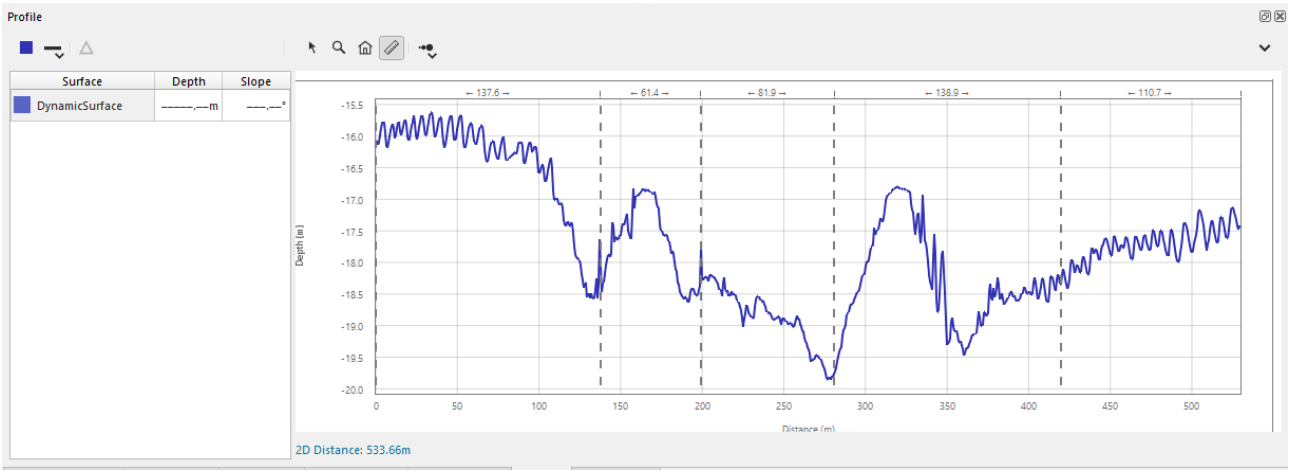
This includes options for exporting both a main profile and a whole series of cross profiles built from the main line as well. If the profile has no data gaps one can specify what value to export in its place and one can optionally include the instantaneous slope at each point along the profile. If the "Export cross profile series" option is selected a series of profile file will be exported based on the cross profile radius and stepping internal one selects. The file name given after one clicks Ok will form the base name and profile will be named with the basename_<distance_along>.txt. The exported ASCII file(s) will contain Sample Point, 2D Distance, Easting, Northing, and Depth and Surface Distance for each surface in the Profile Dock. A sample export is shown below.

```
#
#       File      : ascii_export.txt
#       Parameter 1: Sample Point
#       Parameter 2: 2D Distance
#       Parameter 3: Easting
#       Parameter 4: Northing
#       Parameter 5: Depth (DynamicSurface)
#       Parameter 6: 3D Distance (DynamicSurface)
#
#         1          2          3          4          5          6
          1,       0.00,   71010.71,  441377.51,   -15.889,   0.000
          2,       0.25,   71010.50,  441377.45,   -15.922,   0.250
          3,       0.50,   71010.29,  441377.59,   -16.024,   0.500
          4,       0.75,   71010.09,  441377.75,   -16.098,   0.751
          5,       1.00,   71009.88,  441377.86,   -16.151,   1.000
          6,       1.25,   71009.67,  441378.00,   -16.165,   1.250
          7,       1.50,   71009.46,  441378.14,   -16.144,   1.500
          8,       1.75,   71009.24,  441378.28,   -16.133,   1.750
          9,       2.00,   71009.03,  441378.42,   -16.088,   2.000
         10,       2.25,   71008.81,  441378.55,   -16.041,   2.250
         11,       2.50,   71008.60,  441378.69,   -16.000,   2.500
         12,       2.75,   71008.40,  441378.85,   -15.963,   2.750
         13,       3.00,   71008.21,  441379.07,   -15.919,   3.000
         14,       3.25,   71008.00,  441379.31,   -15.878,   3.250
         15,       3.50,   71007.79,  441379.54,   -15.843,   3.500
         16,       3.75,   71007.58,  441379.78,   -15.808,   3.750
         17,       4.00,   71007.37,  441379.92,   -15.776,   4.000
         18,       4.25,   71007.17,  441379.66,   -15.767,   4.250
         19,       4.50,   71006.96,  441379.79,   -15.765,   4.500
         20,       4.75,   71006.75,  441379.95,   -15.772,   4.750
         21,       5.00,   71006.54,  441380.07,   -15.775,   5.000
         22,       5.25,   71006.33,  441380.21,   -15.790,   5.250
         23,       5.50,   71006.12,  441380.35,   -15.839,   5.500
         24,       5.75,   71005.92,  441380.48,   -15.910,   5.750
         25,       6.00,   71005.71,  441380.62,   -15.930,   6.000
         26,       6.25,   71005.50,  441380.76,   -15.896,   6.250
         27,       6.50,   71005.29,  441380.90,   -15.857,   6.500
         28,       6.75,   71005.08,  441381.04,   -15.875,   6.750
         29,       7.00,   71004.87,  441381.17,   -15.884,   7.000
         30,       7.25,   71004.66,  441381.31,   -15.877,   7.251
         31,       7.50,   71004.45,  441381.45,   -15.845,   7.500
```

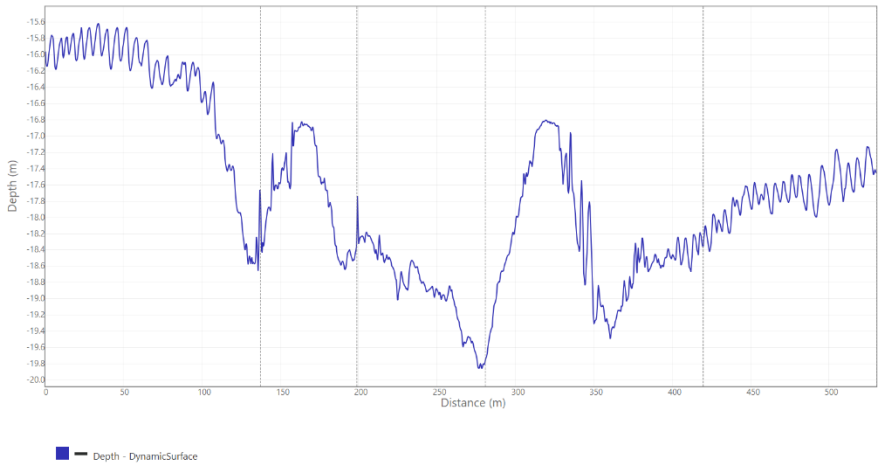
Ascii Export from Profile

Save Plot To Image

This will save the current Profile Plot to an image file. The file type by default is PNG. The first image below is the configuration of the Plot before export. The next image is the exported image. Notice that Fledermaus includes the color and line pattern legend as part of the result.



Profile Plot to Export



Exported Profile Plot

Save Cross Profile Plot To Image

If you have a cross profile open this option will be available and is identical to the above one expect the cross profile image will be saved.

Show Gridlines

This option will show/hide the grid lines in the plot area.

Disable Vertical Exaggeration

This option disables the vertical exaggeration controls and locks the vertical exaggeration to 1.0x.

Lock Scale Depth

This will lock the current Y plot range (Depth) so that when you create a new profile over flatter terrain, it doesn't overly exaggerate small details. This allows you to more easily see areas of high depth range. If the new profile contains depths above or below your currently "locked" range, the range will be extended to encompass these new depths so that you don't have to zoom out to see them. Vertical exaggeration cannot be changed while this is active.

Clear Differences

This will clear the current difference plots from the Surface Table. If you create a new profile, difference plots will be automatically cleared.

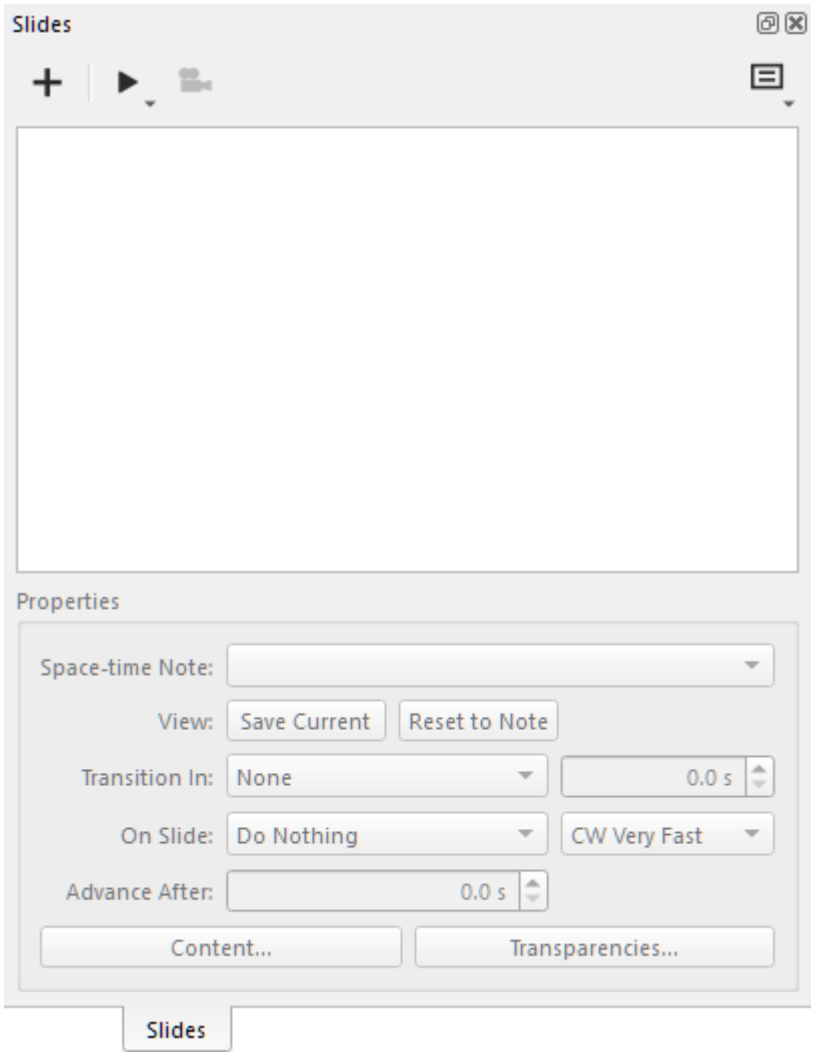
Show/Hide All Profile Plots

Changes the visibility of all plots at once.

Reference Profiles

If you have a 3D line object loaded in the scene, one can right click to access the objects operations and choose to create a reference profile. This is normally done to compare an existing line consisting of many x, y, z points to the surface profiles from surfaces that follow the same path. The reference lines takes its full x, y, z points from the line and adds a reference profile to the graph. Then the line's x,y path is used to sample any surfaces to create profiles based on the given sampling locations from the reference line. One can then use the profile dock to compare results and/or use the difference tool for further analysis. If a new profile is created or a profiler object is selected then any existing reference line set in the profile dock will be cleared.

Fledermaus Slides Dock



Slides Dock

- Fledermaus Slides Dock
  - Add New Slide
    - New Slide Dialog
  - Play Presentation
    - Start Presentation
    - Start Presentation from Current Slide
    - Start Timed Presentation
    - Start Timed Presentation from Current Slide

- Start Times Presentation Loop
- Render to Movie
- More Actions
  - Remove all Slides
  - Present Fullscreen
  - Presentation Properties
- Properties
  - Content
  - Templates
    - Centered Image
    - Full Slide Image
  - Transparencies

Fledermaus Slides Dock

The Fledermaus Slides Dock is allows for the creation of an interactive presentation and rendering of movies

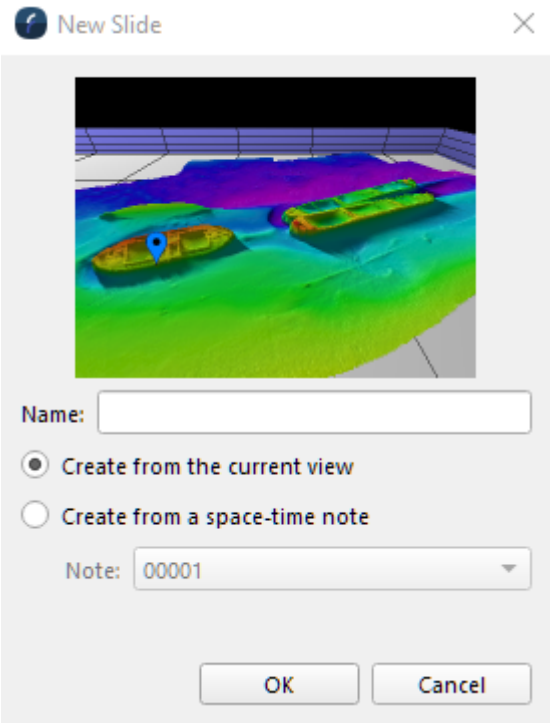
Add New Slide

This icon will launch the New Slide Dialog

New Slide Dialog

This window will launch when the Add Slide button is selected.

It gives you the option to Name the slide and to create an image from the current view (shown in the small visualization window) or to create a view from existing Space Time Notes.



New Slide Dialog

Play Presentation

The Play Presentation icon if clicked will give the following drop down menu:

- Start Presentation
- Start Presentation from Current Slide
- Start Timed Presentation
- Start Timed Presentation from Current Slide
- Start Times Presentation Loop

Start Presentation

This will launch the full screen mode and move to the first slide position. Press Space bar or the right arrow key → to advance through the slides using the flight path, the Left arrow key ← will snap back to the previous slide view and Esc to close the full screen mode and return to the normal view.

Start Presentation from Current Slide

This option will launch the full screen mode and zoom to the view from the selected slide. Use the Space bar to or the right arrow key → to advance through the slides using the

flight path, the Left arrow key ← will snap back to the previous slide view and Esc to close the full screen mode and return to the normal view.

Start Timed Presentation

This option will launch full screen mode and will then use the information from the Properties window to run through the presentation automatically.

Start Timed Presentation from Current Slide

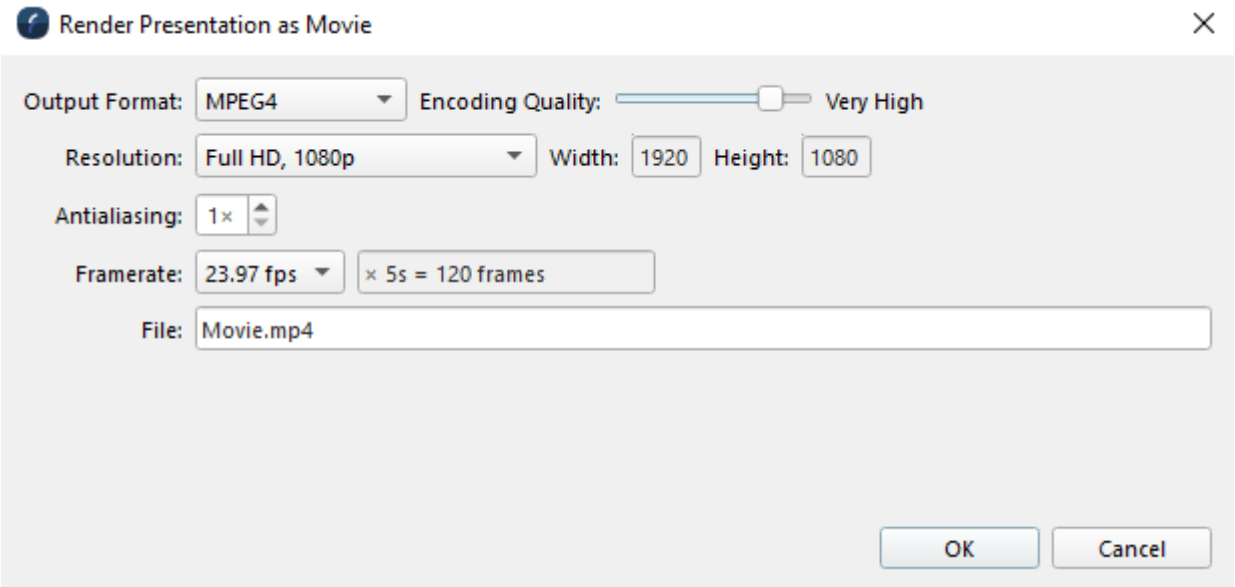
Using the currently selected slide will launch the full screen mode and move through the presentation using the information from the properties window.

Start Times Presentation Loop

This option will launch the full screen mode and will move through the slides using the information from the properties window, it will continue to loop through the slides until cancelled by the Esc key.

Render to Movie

This option allows the user to render a movie into another transferable data format



Render Presentation as Movie Dialog

Output format: The available options are MPEG4, TIFF Sequence, or JPEG Sequence. The latter two options will require another software to stitch them together into a movie format.

Encoding Quality: Controls the balance of video quality vs file size. By adjusting the slider you can choose from the lowest quality video with the smallest file size, to lossless video with the largest file size, and some levels of quality in between. Fledermaus uses Constant Rate Factor (CRF) encoding which provides consistent quality with variable bitrate.

Resolution: Controls the pixel dimensions of the output video. The options available are:

- Standard HD 720p (1280 x 720)
- Full HD 1080p (1920 x 1080)
- Quad HD 1440p (2560 x 1440)
- UHD 4K 2160p (3840 × 2160)
- UHD 8K 4320p (7680 x 4320)
- Custom resolution

With custom resolution the dimensions can be set manually in the Width and Height fields.

Antialiasing: Antialiasing works by rendering each frame at a higher resolution and then scaling them down to the resolution of the output movie. This results in a higher quality image but causes rendering to take quite a bit longer. The antialiasing factor is the size difference between the rendered frame and the output movie---an antialiasing factor of three will mean that the render window will by three times as wide and high as the final movie.

Framerate: Is expressed in frames per second or FPS is the frequency (rate) at which consecutive images appear on a display. The term applies equally to film and video cameras, computer graphics, and motion capture systems. The Framerate options are:

- 25 Frames/sec
- 29.97 Frames/sec
- 30 Frames/sec
- 60 Frames/sec
- 90 Frames/sec
- 120 Frames/sec

File: this option allows you to set the name and location of the video file

More Actions

The More Actions drop down menu can be selected by left clicking on the icon in the top right corner.

- Remove all Slides
- Present Fullscreen

- Presentation Properties

Remove all Slides

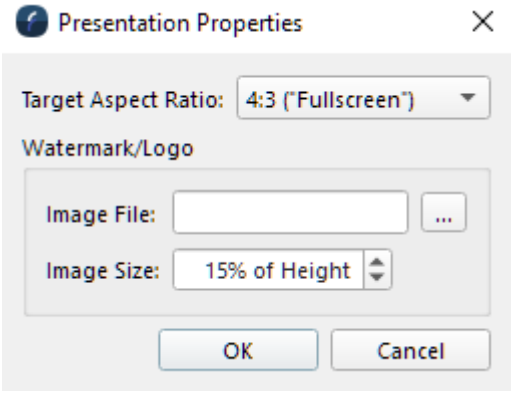
This option will remove all of the existing slides from the project.

Present Fullscreen

This will allow the full screen option to be switched on, if off the full window mode will be used and the Fledermaus toolbar will be able to be seen

Presentation Properties

Launches the presentation properties dialog which allows you to set the aspect ratio and add additional information.



Presentation Properties Dialog

Target Aspect Ratio; the drop down menu gives a list of the available aspect ratios that are available.

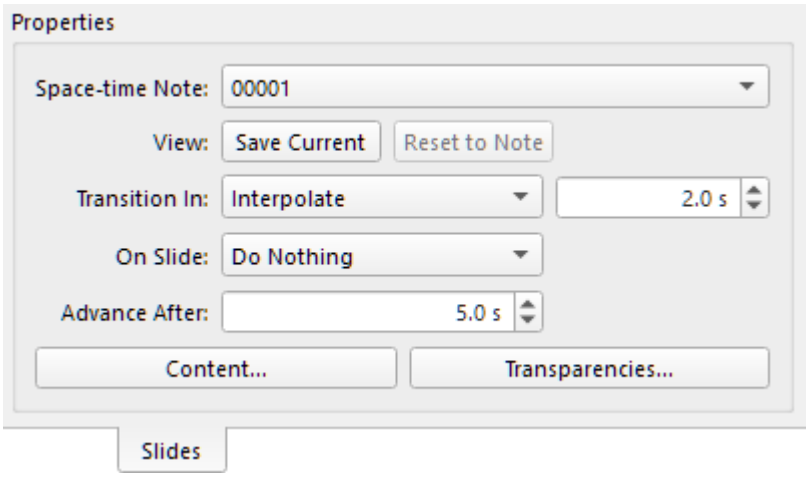
Target Aspect Ratio Drop Down Menu

Image file; this option allows a user to select an image which will be displayed in the presentation mode as a logo or watermark.

Image Size; how big the image is in relation to the screen size.

Properties

The Properties window becomes active when any slide is selected



Properties Dock

Space-time Note: This option indicates if a Space-time note is being used as a Slide view, if there is no space-time note associated this will say None.

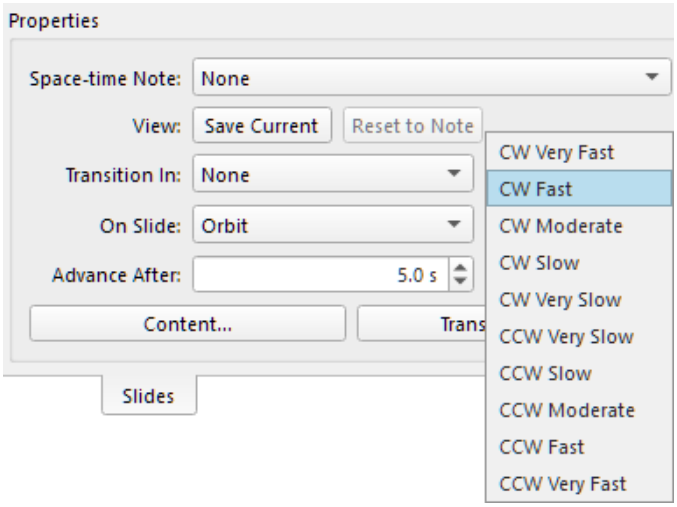
View: This allows you to adjust the view of the slide and to save the new view over the existing - if there is an associated space-time note then it is possible to reset it back to the original view.

Transition in: There are two options available which controls the way the camera arrives at the slide view,

- Interpolate - This will create a smooth path between the slides seamlessly transitioning. If this is set for the first slide Fledermaus will interpolate between the current view
- None - This option will not interpolate between the slides, it will just jump between the views

On Slide: Once the view has been reached there are two additional options

- Do Nothing - The camera will remain as it is without doing anything
- Orbit - the camera will pan around the central location until the slide is advanced. The speed is controlled by the additional options that becomes available when Orbit is selected
  - CW = Clockwise
  - CCW = Counter Clockwise

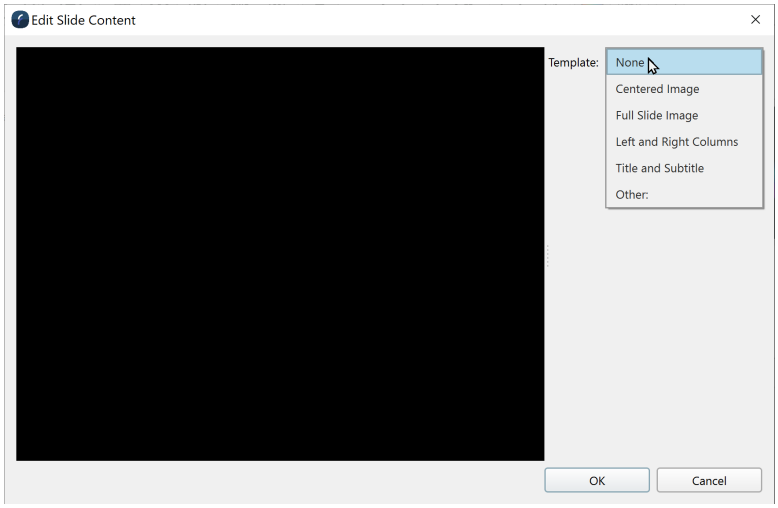


Transition In Drop Down Menu

Advance After: This option is used when working with the Timed Presentations and controls how soon after arriving Fledermaus moves on to the next available slide.

Content

The content window allows the slides to be edited and customized.

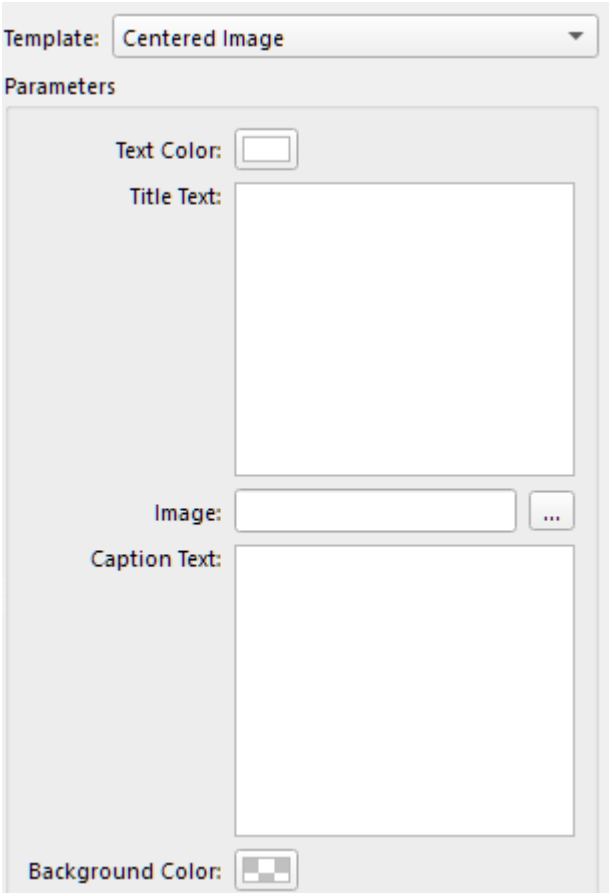


Edit Slide Content Window

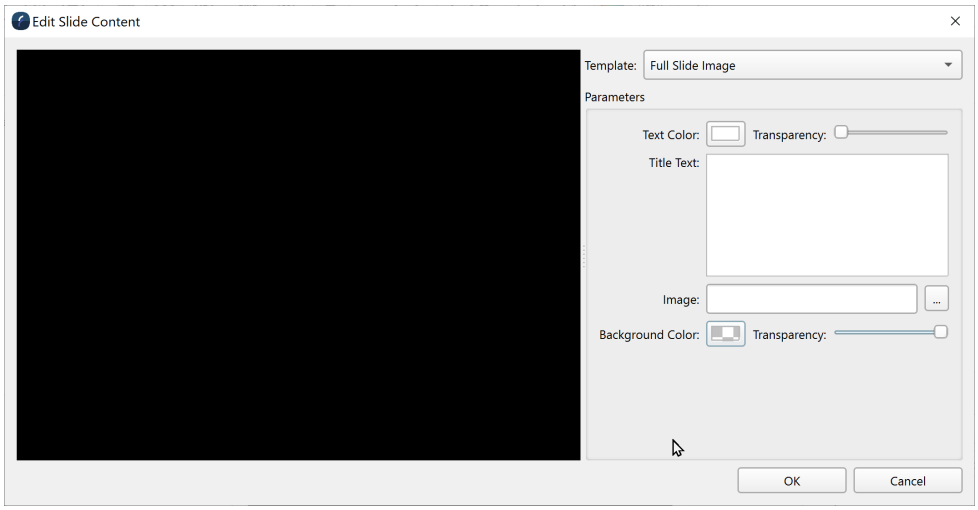
The available templates are shown in the drop down menu, selecting one of them will activate more options

Templates

Centered Image



Full Slide Image

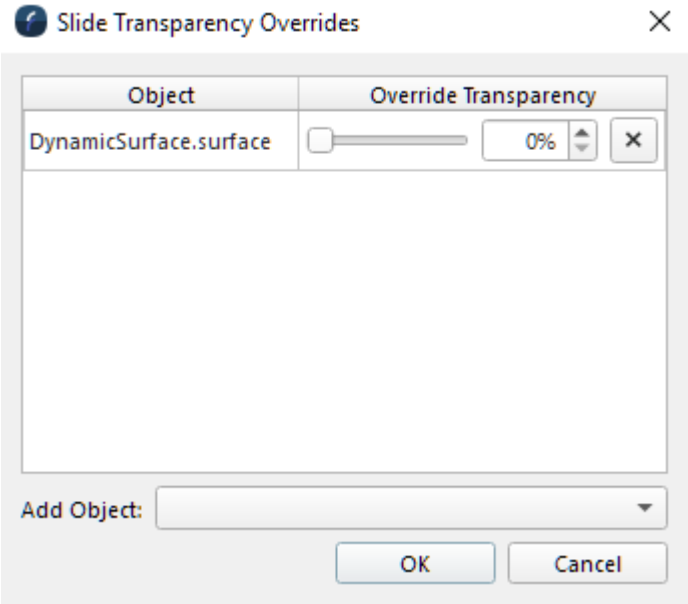


Template Window

The template allows the user to set text, images background colours to the slide, when this has been completed the slide will be visible during the presentation mode.

Transparencies

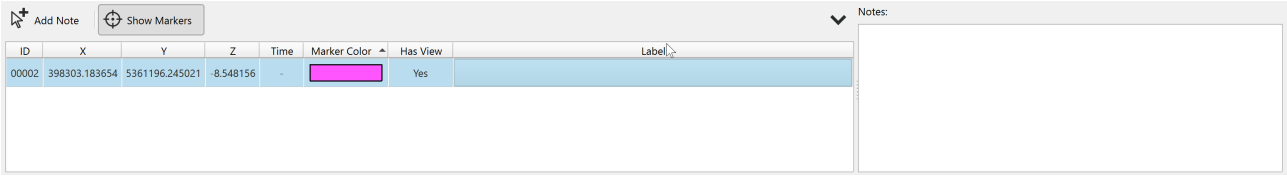
This window will allow you to add a transparency to surfaces in the background of your slide.



Slide Transparency Override Window

Use the Add Object drop down menu to add a surface to the table and select the Override Transparency

Fledermaus Space Time Notes Dock

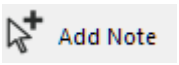


Space Time Notes Dock

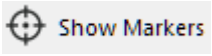
- Space Time Notes
  - Add Note
  - Show Markers
  - Space Time Note Display Table
  - Right Click Menu
    - Center in View
    - Save Current View
    - Add to Presentation
    - Remove...
  - More Actions
    - Import from ASCII
    - Export to ASCII
    - Create Points from Space Time Notes
    - Create Lines from Space Time Notes
  - Notes

Space Time Notes

Space time notes are picked XYZ points on your surfaces, they can be used to select features or to create views for presentation

Add Note 

Adding a new note will create a selection on the the surface with an X,Y and Z co-ordinate

Show Markers 

This option switches on and off the marker display on the surface

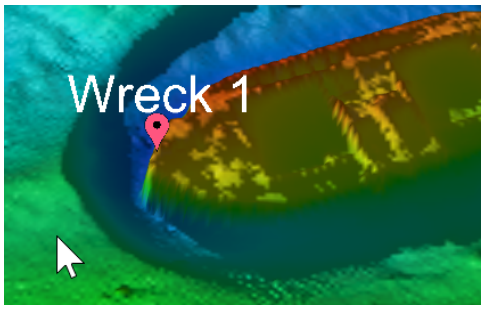
Marker Displayed on Surface

Space Time Note Display Table

The table will display all the notes in the scene, with their ID, position, time (if applicable), marker color, whether there is an associated view and the label. If there is a label included this will also be displayed on the surface.

ID	X	Y	Z	Time	Marker Color	Has View	Label
00005	398269.114676	5361134.180365	-5.717454	-		Yes	
00006	398266.254339	5361196.041125	-8.216230	-		Yes	
00007	398237.210496	5361137.290963	-3.879407	-		Yes	Wreck 1
00002	398303.183654	5361196.245021	-8.548156	-		Yes	

Space Time Note Table



Label Displayed on Surface with Marker

Right Click Menu

Once you have selected a Space Time Note it is possible to bring up more options using Right Click.

- Center in View
- Save Current View
- Add to Presentation
- Remove...
- Create Points from Space Time Notes
- Create Lines from Space Time Notes

Center in View

This option will re-center the screen on the selected Space Time Note.

Save Current View

This option will override the saved view with the currently selected one.

Add to Presentation

This will add the Space Time Note, with its information and view to the Slides Dock.

Remove...

This will remove the selected Space Time Notes.

More Actions

The More Actions drop down menu lets you access import and export operations.

- Import from ASCII
- Export to ASCII

Import from ASCII

This will allow you to select the required file and will launch the ASCII parsing engine to bring the data into your scene.

Export to ASCII

This will export all selected Space Time Notes to an ASCII text format with the header X, Y, Z, Date-time, Label, Notes.

Create Points from Space Time Notes

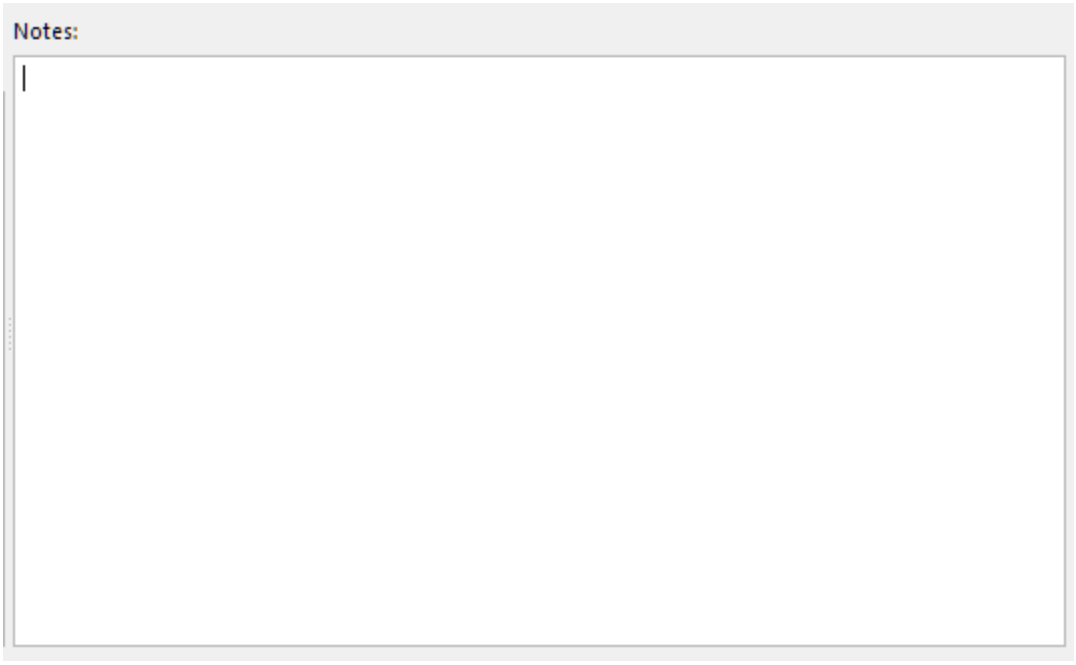
This will create points in the scene from the space time notes. You will be prompted for a file name to save the points. The points will initially have the same colors as the space time notes, this can be changed in the created points object.

Create Lines from Space Time Notes

This will create lines in the scene from the space time notes. You will be prompted for a file name to save the lines. Beware that the line(s) or portions of lines may be below the surface. Use Drape Lines in the created lines object to drape onto the surface. The color of the lines will be the default, usually white.

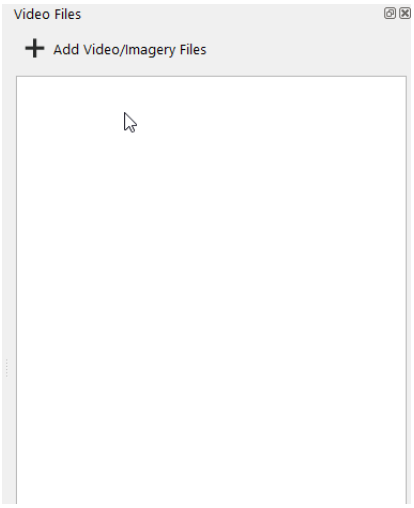
Notes

Text can be added to the Notes section, if the Space time notes are exported to Ascii then the Notes will also be exported, they can also be imported from an ascii file.



Notes Window

Fledermaus Video Files Dock



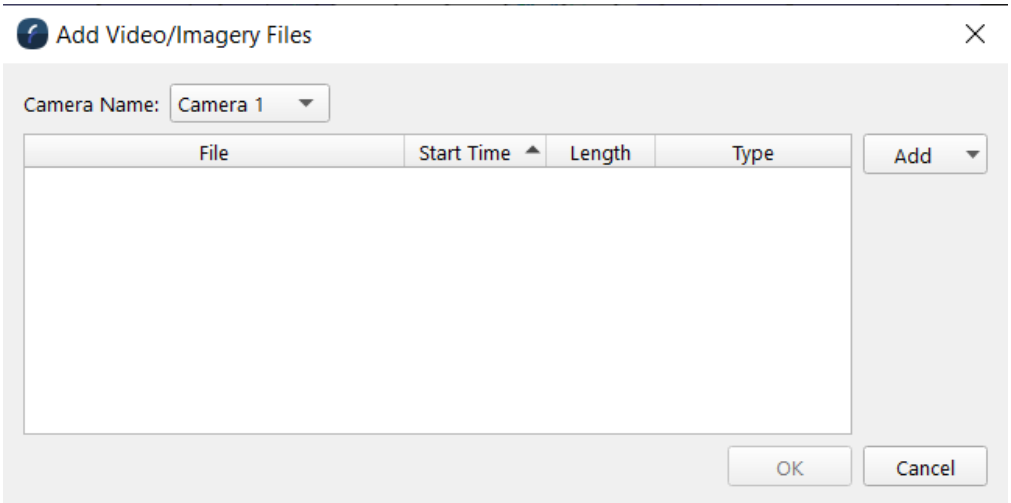
Video Files Dock

- Video Files Dock

Video Files Dock

Enable the video files dock to import video files into a project in Fledermaus. Click on the plus sign, Add Video Files, to open the Add Video/Imagery Files dialog. From there, click on the Add button and select the type of files to import. There are three options:

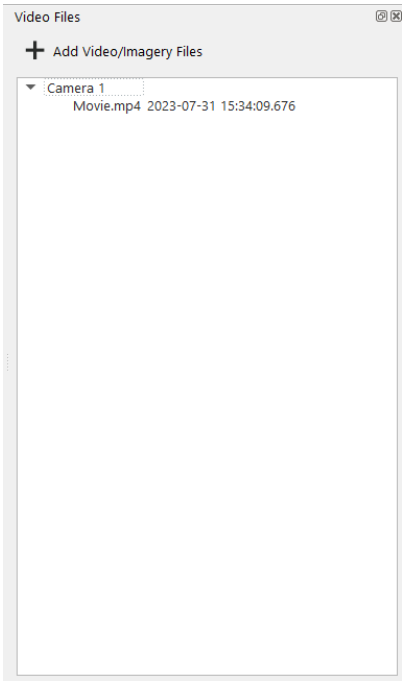
- Add Files without Timestamp
- Add Files with Timestamped Names
- Add Files from Timestamped Log File



Add Video/Imagery Files Dialog

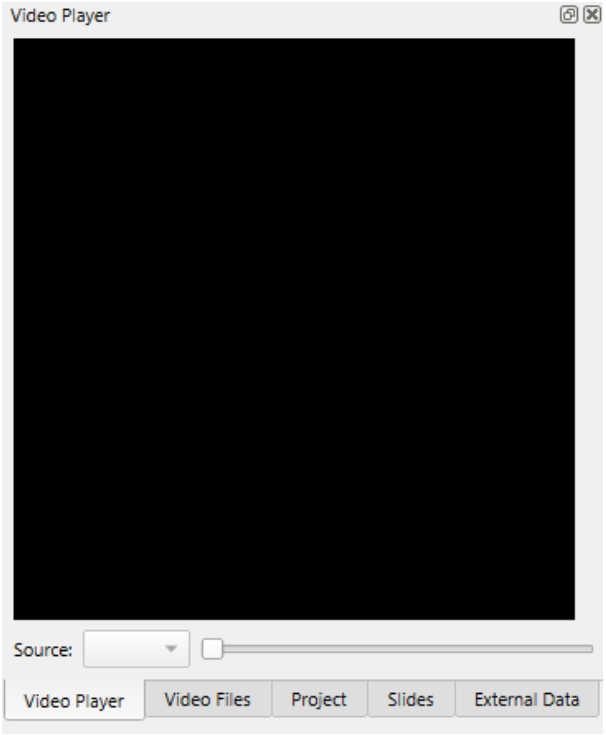
The example shows the Add Video/Imagery Files dialog with a file imported without a timestamp. It is possible to edit the start time and date of the video by double clicking on the Start Time field for the particular video. If there is only one camera in the scene, the default, Camera 1, may be used. It is possible to add more cameras as desired by clicking on Create New in the list of camera names.

Once the video files are imported, it is possible to change the timestamp of any file by double clicking on the timestamp in the Video Files dock. An example is illustrated after importing the example file, Movie.mp4. The date on import was 2023-07-31. Any part of the date or time may be edited. Supported formats are .mp4, .mpg and .avi.



Video Files Dock with Changed Timestamp Illustrated

Fledermaus Video Player Dock



Video Player Dock

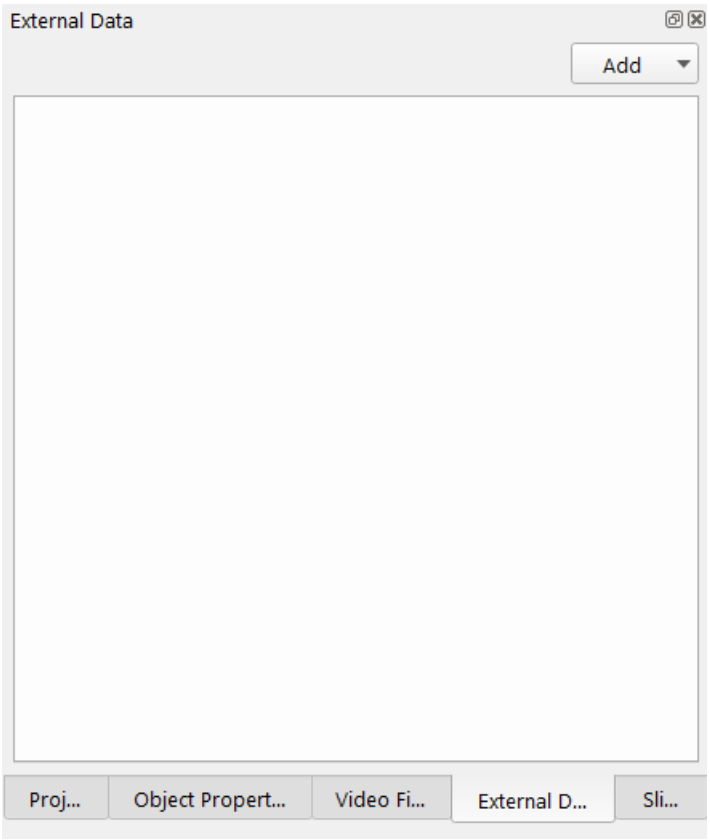
- Video Player Dock

Video Player Dock

The Video Player Dock is where video files can be loaded and viewed.

The Time Bar is integrated with the Video Player Dock, such that video with time will advance with and track together with other objects having time in the scene. In particular, the Vessel Trackline object which can have time and the Image Collection object, which also has time.

Fledermaus External Data Dock



External Data Dock

- External Data Dock
  - Add Arc Geodatabase
  - Add EOMAP SDB Service
  - Add QPS Project
  - Loading Ungridded Data from External Projects

External Data Dock

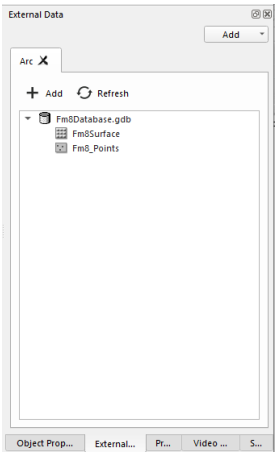
The external data dock provides support to connect to several data services to pull data in or push data to. The Add dropdown at the top of the *External Data* dock shows a list of available services to connect to. Currently there are two options including:

- Add Arc Geodatabase...
- Add EOMAP SDB Service...

Add Arc Geodatabase

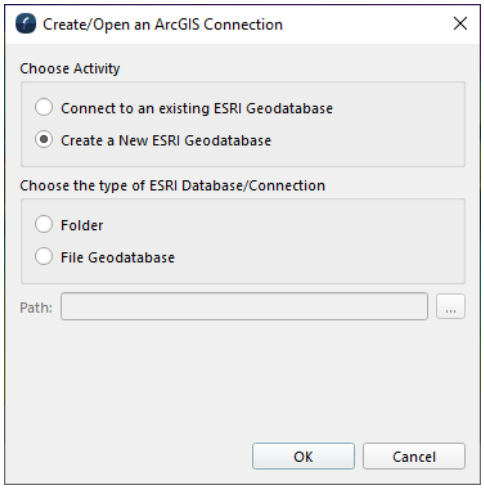
In order to use the Arc Geodatabase tools you will need a Fledermaus 8 FMGIS license as well as an ESRI license. You will also need to install ArcGIS Desktop version 10.1 and above, as well as the same version of ArcGIS Desktop Background Geoprocessing 64bit.

Using the Add Arc Geodatabase option will add an ArcGIS geodatabase connection tab to the External Data window. Once the Arc tab is added, you can connect to an exisiting ArcGIS geodatabase or create a new file or folder geodatabase using the *Add* button. The *Refresh* button will manually refresh the geodatabase connection to display the latest contents of the geodatabase. If you open a scene with a geodatabase, clicking the *Refresh* button will re-connect to the geodatabase.



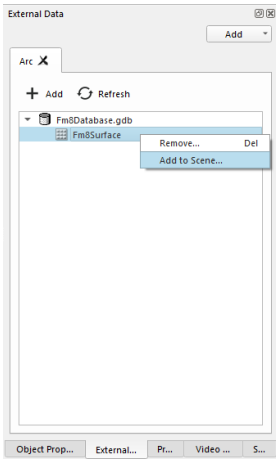
Arc Geodatabase Connection Tab showing a connection to a File Geodatabase.

Clicking on the *Add* button will open the *Create/Open an ArcGIS Connection* window. There are options to *Connect to an existing ESRI Geodatabase* or *Create a New ESRI Geodatabase*. Select an option and then select the type of ESRI database connection, Folder and File Geodatabases are supported at this time. Finally select the Path and filename where the geodatabase is or will be stored. This will add the Geodatabase to the Arc window.



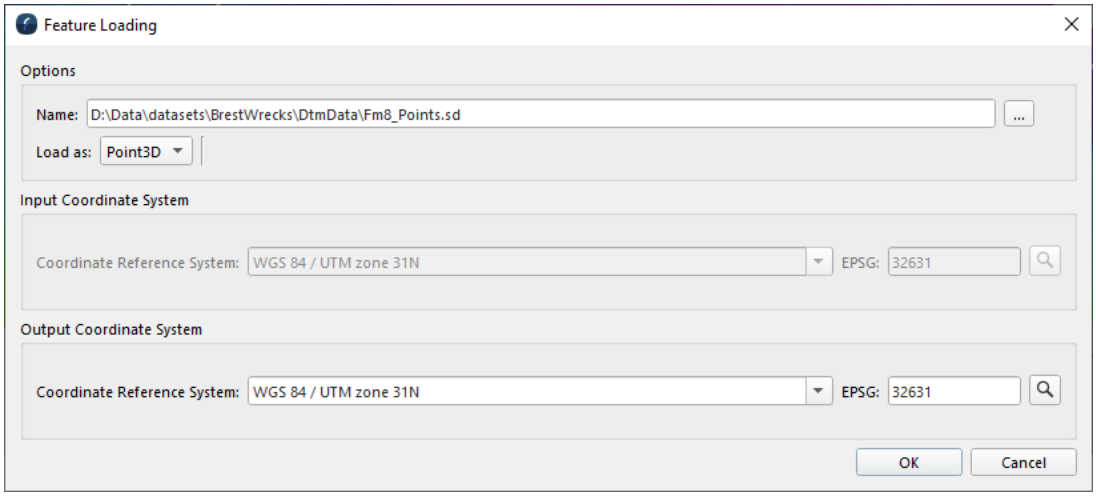
Create/Open an ArcGIS Connection window

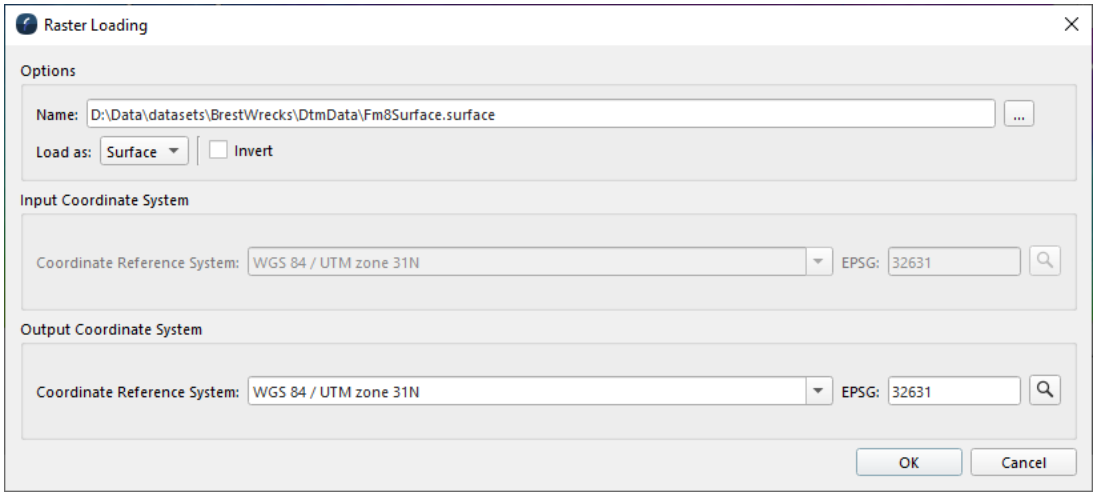
To transfer files from the Arc geodatabase to the scene, right click on the feature or raster and select *Add to Scene* or double click on the feature or raster.



Transfer a file from an Arc Geodatabase by right clicking on the item.

Depending on the type of item you select in the Arc Geodatabase, you will have different options available for importing the object in the *Options* section. For example if importing a raster object, you can change the type in Fledermaus 8 using the *Load as:* drop-down menu. The output Coordinate System can also be changed here to match the Scene or Project.





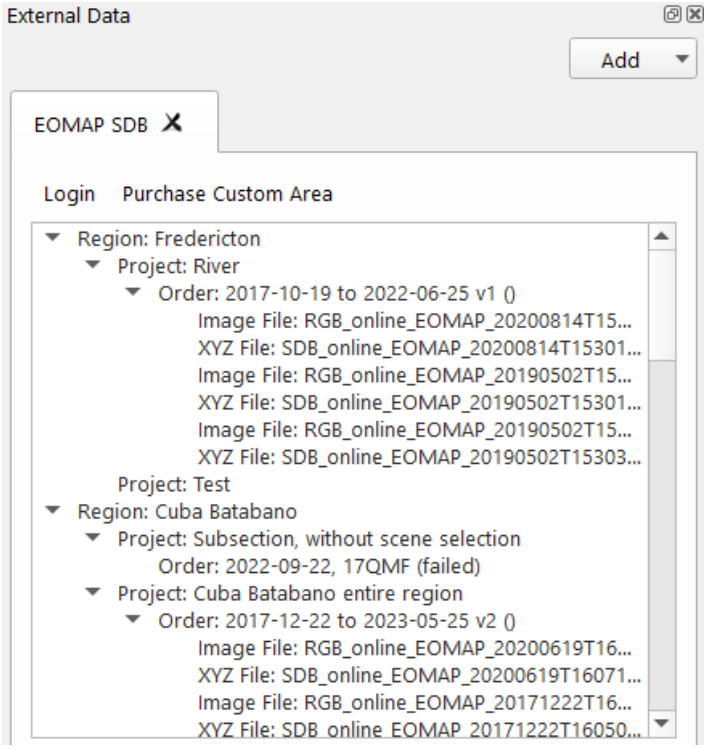
Transferring a Point Object from a File Geodatabase (left). Transferring a Raster Object from a File Geodatabase (right).

You can remove a geodatabase from the window by right clicking on the geodatabase and selecting *Remove...* Removing a database will not delete it. You can also Delete objects from the geodatabase by right-clicking on the object in the geodatabase and select *Remove...* This will permanently delete the object from the geodatabase.

More details on transferring Fledermaus 8 files to an ESRI geodatabase are found in the Fledermaus Export to ArcGIS Dialog.

Add EOMAP SDB Service

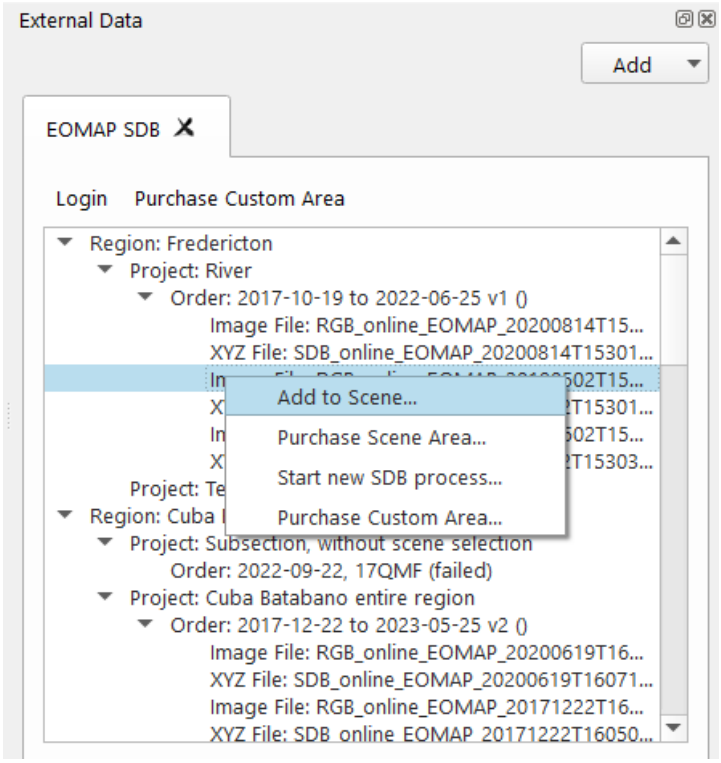
EOMAP is a service that provides satellite derived bathymetry for customers who have an account with them. One can connect to an existing EOMap account and see all the data that has been purchased on that account. Fledermaus provides options to easily import the imagery and to grid XYZ files provided by the service. Once the EOMap service is added the external data dialog will be populated with the service details similar to what is shown below.



If one has already logged into the service Fledermaus will automatically try and log in again and display any data that is available. If this is a first time use then click the *Login* button at the top left to be asked for ones login account name and password. The system will then try and log in and if successful will download the detailed data available for that account. If this is your first time logging in it may take a little time for the system to talk to the service and pull down the data to make it available. The data will be organized in the dock area in the same manner as the EOMap site organizes your data into purchased regions and then into Projects, and Orders. The system provides two types of data, imagey and XYZ files. If you right click on either of them the data will be imported into the current fledermaus scene. Imagery is imported directly, XYZ files bring up the Fledermaus gridding tool in order to produce a surface based on the data provided. It is likely that most users of EOMap will do their purchasing and project setup in the EOMap website and utilize this FM service as a convenient mechanism to import the data results into a Fledermaus scene for further analysis, visualization, and processing.

The *Purchase Custom Area* lets one specify a specific area and send the command to EOMap to purchase that area assuming one has sufficient credits to buy it.

Right clicking in the service area gives a popup menu that looks like

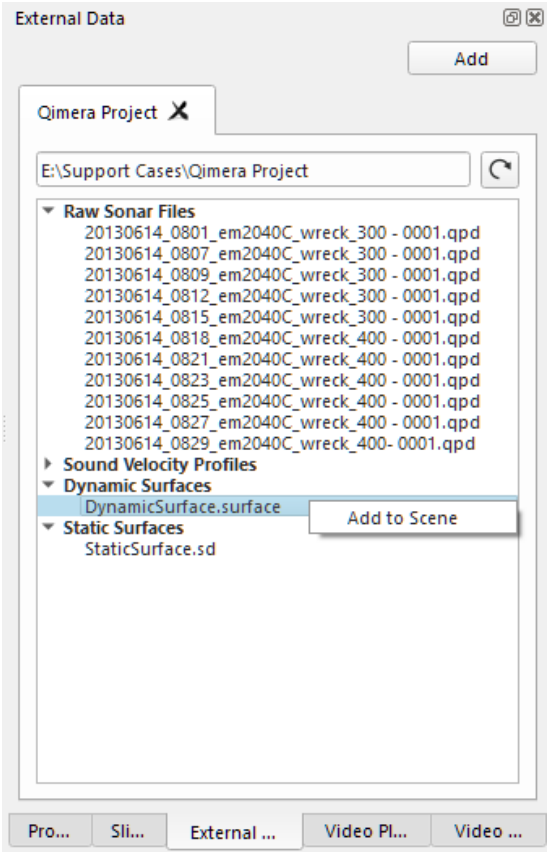


If an image or XYZ file is right clicked it can be added to the current Fledermaus scene with the *Add to Scene…* button. There are additional options for convenience. For example if you already have a scene area setup if Fledermaus and you want to purchase the satellite derived bathymetry to match that area one can use the *Purchase Scene Area…* option.

Add QPS Project

NOTE: THIS FEATURE USED TO EXIST BUT WE HAVE TEMPORARY REMOVED IT SO ADDING THE UNDER CONSTRUCTION LABEL UNTIL IT RETURNS!

Once a connection has been established to the project the available files will be displayed in the window. To load the data to the scene Right Click on the required file and select Add to Scene

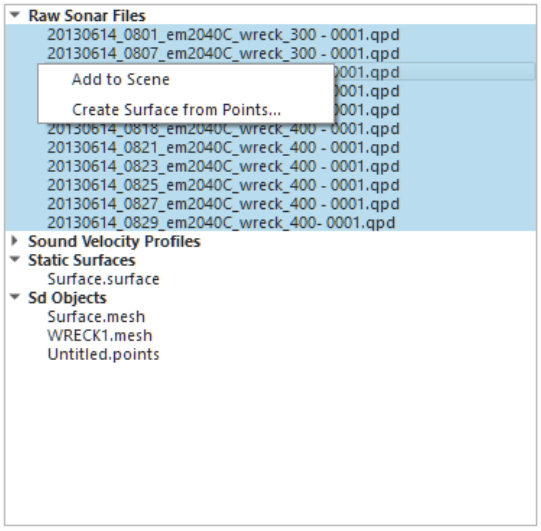


Add to Scene Option

Loading Ungridded Data from External Projects

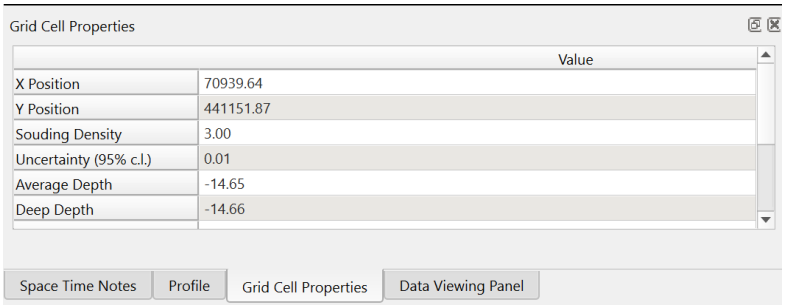
Using the Add to Scene option will add a trackline for each selected line and will load a point cloud for each individual line

Create surface from Points will launch the Data Gridding wizard and will allow the files to be added to a surface file.



Create Surface from Points

Fledermaus Grid Cell Properties Dock



Grid Cell Properties Dock

- What it Does
- General Description

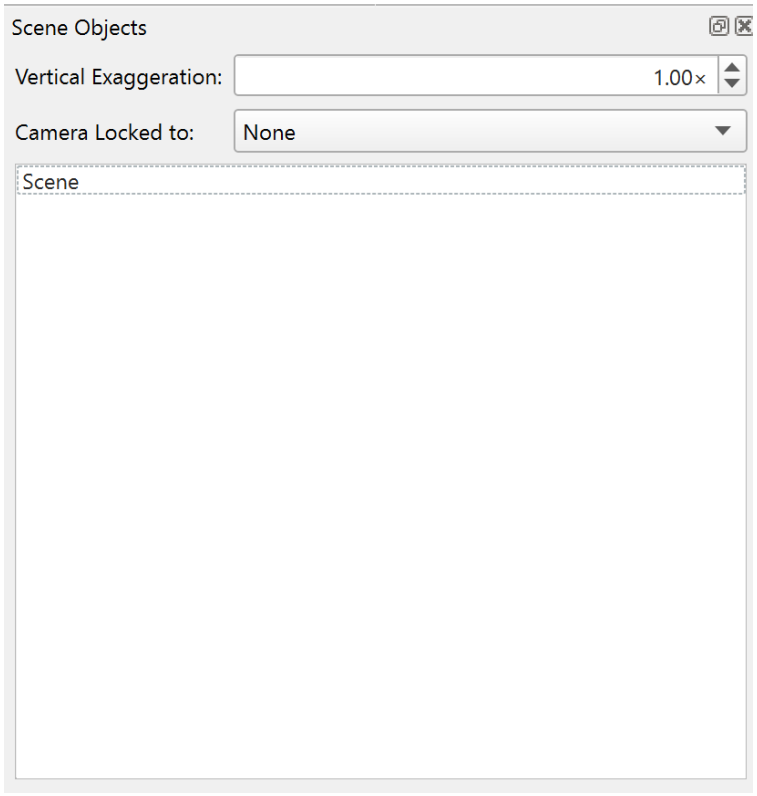
What it Does

The Grid Cell Properties Dock shows the attribute values for a cell of the selected dynamic surface that the cursor is hovering over.

General Description

After selecting a dynamic surface from the *Scene Objects* window, Fledermaus will utilize this dock for viewing Cell information. The Cell Information will not just show cell information for the selected Dynamic Surface from the layers window, but rather from any dynamic surface that the cursor is hovering over. Fledermaus will use the x,y position of the cursor and match that up with a Cell from the dynamic surface that the cursor is hovering over. The Grid Cell Properties Dock will display X, Y position of the cursor, the Sounding Density, the Uncertainty, and the Average, Deep and Shallow Depth values. If CUBE is included with the Dynamic Surface, it will also display the CUBE depth value, the number of hypothesis, the Hypothesis Uncertainty, and the Hypothesis Strength values.

Fledermaus Scene Objects Dock



Scene Objects Dock

- Scene Object Dock
  - Object List
  - Scene Object Context Menu
    - Operations
    - Exports
    - Create Group From Selection...
    - Save Selected...
    - Zoom to Object
    - Rename...
    - Remove...
  - Exaggeration Field
  - Camera Locked To
- Attribute Panel

Scene Object Dock

The Scene Objects Dock provides the ability to manage data objects actively loaded into the application. In addition, it provides access to data set specific control functions for the selected object. The toolbars will change depending on what kind of data object is selected.

Object List

The list-box in the center of these controls displays the names of all currently loaded data objects. If there are more objects than can fit in the list box a scroll bar appears so you can scroll up and down the list. Selecting an object's name makes it the active object that the rest of the controls manipulate. The object names are indented to show the hierarchical relationship between the objects. All objects are considered children of the root node. However, some of the children may themselves have children. These second-generation children are further indented from their parent to show this relationship. Any transformation performed on the parent of a group of children objects will also affect all the children as well. For example, if the Z scale of the root node is increased by a factor of two, every object's Z axis will appear to be scaled by a factor of two. If a data object has no descendants then transformations performed on it will affect only it. The same relationship applies when showing or hiding objects. Hiding the root node automatically hides all of its children, which hides every data object in the system. To show or hide a data object, click on the checkbox to the left of the object name.
To close a data object file, removing it from the 4D scene, select its name in the data list and press the Delete key. Note that this only removes it from the active 4D scene it does not affect the file on disk in any way. Scene objects can also be deleted from the **Scene Objects Context** Menu.

Scene Object Context Menu

Access the Scene Object Context Menu by **Right-clicking** the scene object window or on an object in the list. The Scene Object Context Menu contains the following options:

- Operations
- Exports
- Create Group From Selection...
- Save Selected...
- Zoom to Object
- Rename...
- Remove...

Operations

Operations will list all the available operations that can be made to the object(s) selected. Check the (8.6) Fledermaus Visual Objects, Operations, & Exports section of the manual for more information on the operations available for each object type.

Exports

Export will list the export options available for the specific data object(s). Check the (8.6) Fledermaus Visual Objects, Operations, & Exports section of the manual for more information on the export options available for each object type.

Create Group From Selection...

Create Group from Selection will nest selected objects in a parent object as children.

Save Selected...

Save selected will be present when you have an object from the object list selected.

Zoom to Object

Zooms the camera onto the selected object.

Rename...

Rename allows you to change the name of a selected object.

Remove...

Removes the selected objects from the current scene. A checkbox can be set to also remove the objects from disk. This checkbox does not appear if the following objects are selected as they can not be removed from disk by Fledermaus:

- CAD (QGF)
- QPDs
- Lidar LAS/LAZ
- Pts

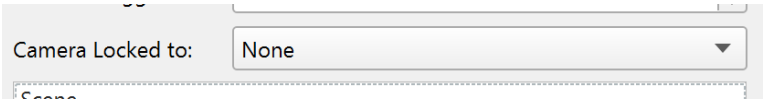
Exaggeration Field

Vertical Exaggeration Field

The Exaggeration text field stores the current vertical exaggeration factor for the root node, which corresponds to the vertical exaggeration factor for the entire scene. To change this value, enter a new number in the text field and press the Enter key. A value of 1.0 results in no vertical exaggeration, while a value of 2.0 results in the heights being stretched twice as high as they should be, and so on. The exaggeration can also be adjusted by clicking and dragging the cone on top of the central widget in the turntable interface mode.

Note: The vertical exaggeration of the scene may be locked to 1.0 when certain object types (such as Vessel Tracklines) are present in the scene. This is to ensure these objects function as intended.

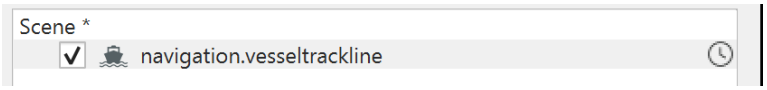
Camera Locked To



Camera Locked To Menu

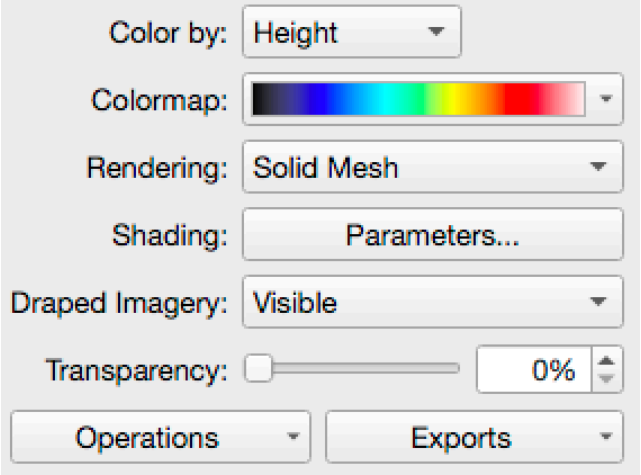
The Camera Locked To drop down menu currently offers two options to lock the focus of the camera, one is None, the other is Lock to Time. As expected, Lock Camera To None will leave the camera free to focus anywhere in the scene. The Lock to Time option will seek out the first object in the scene list that has the time attribute. The camera focus will then be locked to the position of that object in the scene. The object is expected to change position according to time, so as the Time Bar changes, the position of the object will change and the camera will follow the object as the time changes.

Objects with the time attribute will have a clock symbol next to them in the scene object list. Currently, the vessel trackline object is supported. Look for the symbol similar to the one in this example for an object with time attribute:



Object with Time Attribute

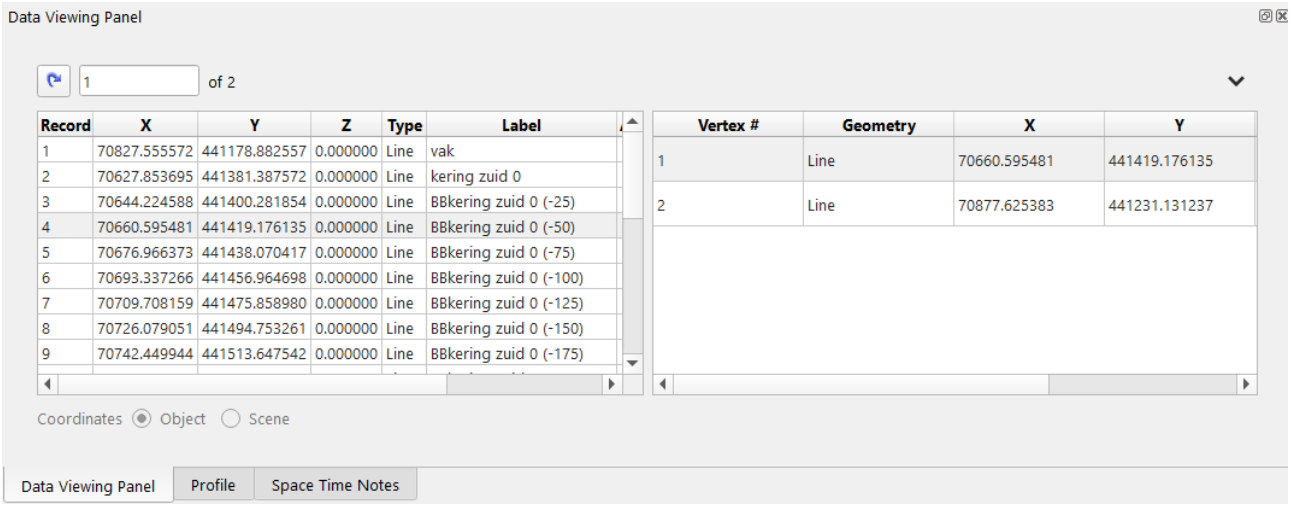
Attribute Panel



Sample Object Attribute Panel

The attributes panel shows any available attributes for the current selection of data objects. For detailed information about the attribute panels for all the specific object types consult the Fledermaus Visual Objects, Operations, and Exports documentation area.

Fledermaus Data Viewing Panel Dock



Data Viewing Panel Dock

- Data Viewing Panel Dock
- Overview
  - Jump Box
  - More Actions
    - Save Table as CSV...
    - Add Selection as Line
    - Add Color Column
- Other Actions

Data Viewing Panel Dock

The Data Viewing Panel dock is designed as a supplementary display to the main 3D display to show detailed information about any object types data that it supports. This currently includes:

- PointCloud Objects → The x, y, z and other attributes of the points are displayed in spreadsheet form.
- Profile Objects → The control points of the profile are shown and can be edited to give specific values.
- Pipeline Objects → The control points of the pipeline are shown.
- CAD Objects → A split view shows the list of CAD entities and types on the left, and the right portion displays the details of the selected entity - for example the vertices that make up a selected line entity.

- Lines3D Objects → A split view shows the lines and properties, and the right side shows the individual 3D points that make up each polyline.
- VesselTrackLine Objects → The trackline points are shown as a spreadsheet like view in the data viewing panel.

Different object types may have additional controls and options in the panels drop down menu at the top righthand corner.

The jump box just above the left of the main panel will jump to the entry specified on the right-most panel. That is, if there is a subtable, the jump box will jump to the specified entry in the subtable. If no subtable is present, then the jump box will jump to the specified entry in the main table.

Overview

Jump Box

Jump Box

The jump box will jump to the numbered entry on the right-most table in the Data Viewing Panel. That is, if a subtable is present, the jump box will reference the subtable. Otherwise, the main table if there is no subtable present. The jump box has been simplified, requiring only that the entry number be entered and the Enter or Return key pressed to jump to the record. The Jump to Record button can also be clicked to jump to a record, useful if using the mouse.

More Actions

The More Actions drop down menu on the far top right provides options to interact with the tables.

Save Table as CSV...

Save the contents of the right-most table to a CSV table. When a subtable is open, the subtable will be saved, otherwise the main table. Present for all types of data.

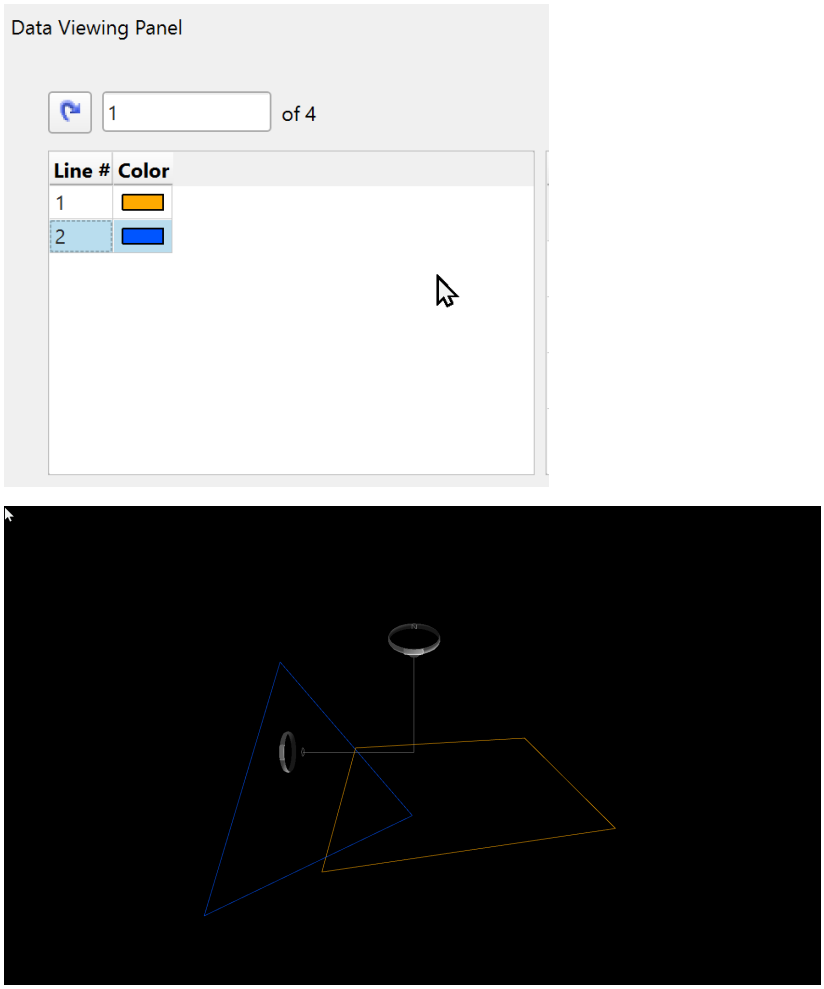
Add Selection as Line

For line objects, if a user has a selection in the main3D scene this will add the selection values as a new line to the current object. Valid for line objects only.

Add Color Column

A column to specify the color for each line in a lines object can be added to the main table by selecting this option. The default color of white will be used for each line initially. Double click on the color swatch to pick a color from the palette. The specified line will be rendered in the chosen color. Valid for line objects only.

Example of lines with orange and blue colors:

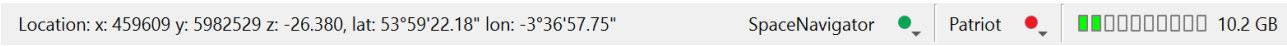


Lines with Color Column

Other Actions

Double clicking on an entry in the data viewing panel will zoom to the location or KP (if present) of the entry.

Fledermaus Status Bar

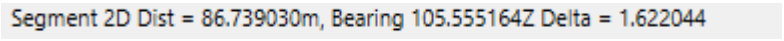


Fledermaus Status Bar

The Status Bar sits directly at the bottom of the Fledermaus application window and consists of several sections.

Coordinate Picking Display

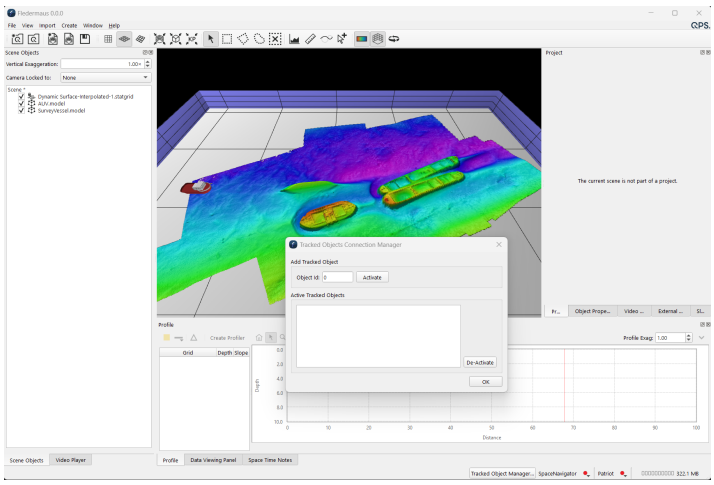
At the left hand edge the geo-referencing information for the cursors position over the scene is shown. If the scene has a projected coordinate system, it will show both projected coordinates and WGS84 geographic coordinates. The Status Bar will display values for most object types, such as surfaces, meshes and geo-images, but not lines or points. Note that for geo-images, the Status Bar will also display the RGB color values under the cursor. The left hand coordinate display area is also used by some of the active tools. For example this area will also show distance and bearing information when the cursor is in *Measure Mode* as shown below.



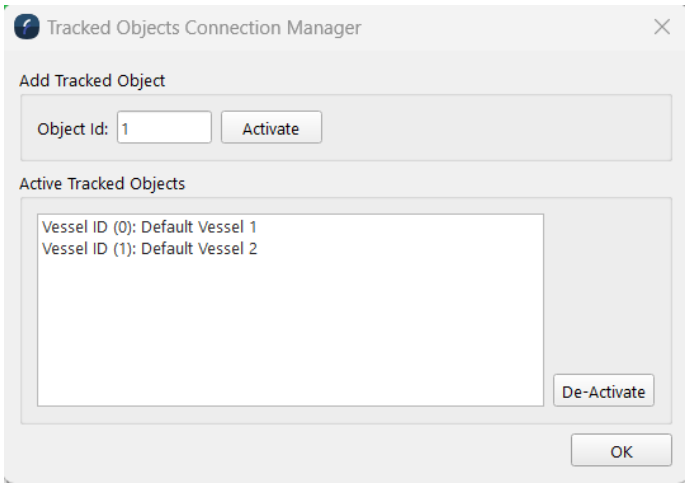
Fledermaus Status Bar Using Measure Mode

Tracked Object Manager

Fledermaus now has the capability to configure and manage connections to live navigation data for tracking vehicles or any objects that move over time in conjunction with the vesselmanager application. The vesselmanager application processes navigation data from files, serial ports, and network connections and can acquire data for up to 10 vehicles (or tracked objects) at any given time. These tracked objects data stream can be connected to by Fledermaus so ships, AUV's, and other 3D models can be positioned in real time based on the navigation data stream. The *Tracked Object Manager* button is used to connect to vesselmanager's tracked object navigation data.



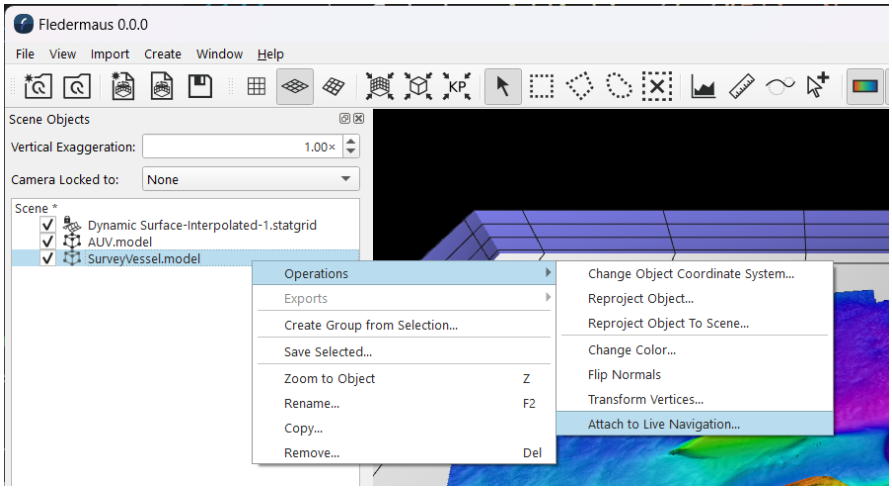
The Tracked Object Manager



Adding tracked vehicles

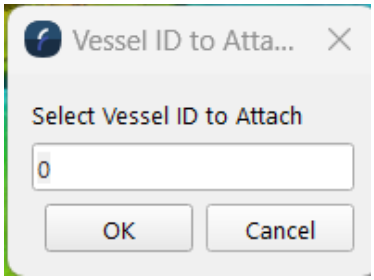
Assuming vesselmanager is configured and running, in the example above there are two objects added to be tracked. To add a connection to a vesselmanager navigation stream one needs to enter its ID from [0, 9] and click the *Activate* button. If an active navigation stream is available for the given Id then it will be added to the tracked objects list and that Id will be available to connect to a 3D object in Fledermaus. If no vesselmanager stream is available an error message will be shown and the object will not be activated. If one selects an active object from the tracked list and clicks the *De-Activate* button then the link to the live navigation stream will be broken and the objects position will no longer update and it will be removed from the list.

In the Fledermaus screen capture above one can see a sample scene with a surface and two 3D models which can be connected to the navigation streams. Once they are added to the connection manager to connect it up to a 3D model right click the model and go to the operations menu and select *Attach to Live Object* and enter the matching Id and the 3D model will move to the current available position anytime the scene is rendered. To see the vehicle move continuously in the *View* menu click on the *View → Lock Continuous Rendering* option.



Connecting a 3D model to a navigation source

The *Attach to Live Navigation* operation for 3D models is the final step to have the model move in the 3D scene based on the position in the navigation stream. This operation will bring up a dialog where you need to enter the matching ID and click *Ok* to connect the 3D model with the navigation information setup in the Tracked Object Manager.

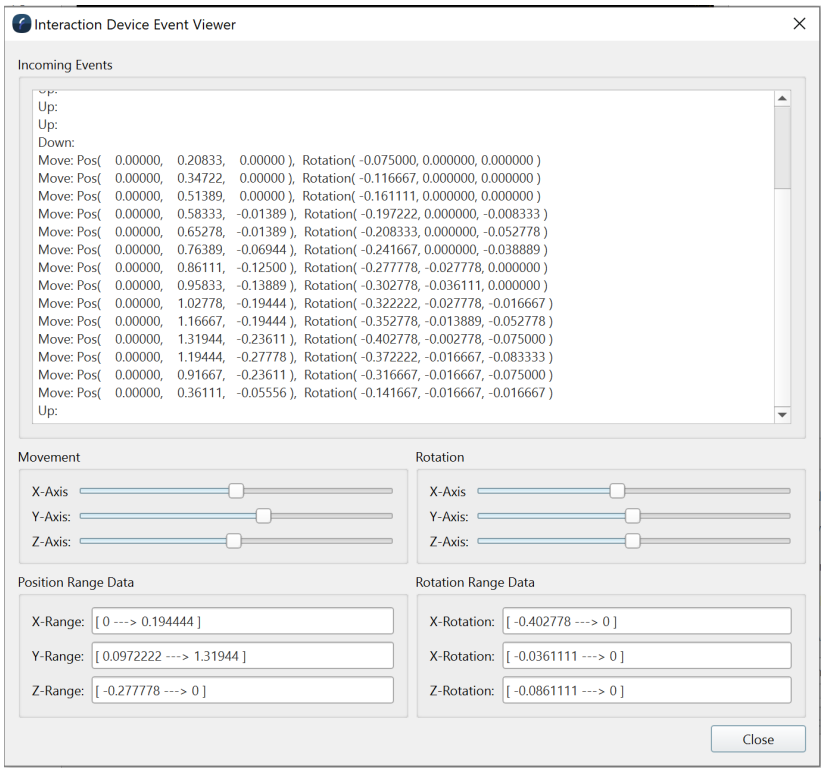


Model objects can also be connected to the "*Camera Locked To*" option so the camera continuously tracks the vehicle as it receives positional updates. When this is combined with the *View → Lock Continuous Rendering* the scene will continually render with the model always as the center of focus.

Device Controls

Device Control Popdown Menu

The right side of the status bar shows any 3D interaction devices configured for use and finally the memory usage gauge. 3D devices are configured from the preferences dialog via the Interaction Devices tab. The device name is shown followed by a status icon. There are 3 states, red = a device is configured but not connected, yellow = a device is connected and ready for use, and green = the device is active and can be used to interact with the 3D scene. The the example image above a 3DConnexion SpaceNavigator controller is actively in use and a Patriot 3D Bat is configured but not currently connected for use. The status icon is also a drop down menu if you click on it. The options let you active, deactive, disconnect, or connect and activate the device. Depending the the current state of the device some options will be greyed out. Only an active device with the green dot will actually send events to the 3D scene. A connected device (yellow) means the device is all setup and ready to go, you just need to activate it to use it. A device that has been configured will show up with the red status. To start it up use the *Connect and Activate Device* option. This will start up communication with the device and if successful make it active and ready to go. Lastly the *Show Device Log* option will display a dialog box that shows events sent by the device along with information that helps calibrate and verify the devices function.



Device Event Viewer

The main window of the device event viewer just shows the raw events that the interaction device produces. The sliders show the relative movement along the position and rotation

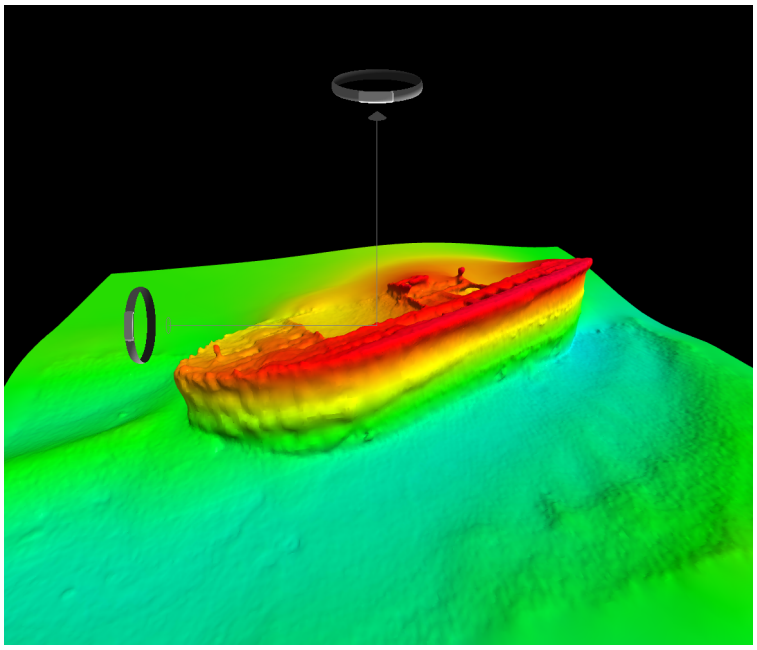
axis and the ranges at the bottom show the range of numbers returned for the position and rotation axis as you move the controller around. This dialog is mainly provided as a support tool to help calibrate and make sure the supported device is working as expected.

Memory Usage Monitor

Lastly on the status bar, the memory gauge gives both a rough idea of how much memory is available for the application to use and also the specific amount it is currently using at any given moment.

Return to Fledermaus Interface
Return to Fledermaus Reference Manual

Fledermaus 4D Scene



Fledermaus 4D Scene

- Fledermaus 4D Scene
  - Data Exploration Modes
  - Plan View
  - Turntable View
  - 3D Flight View
  - Cable/Pipe View
  - Widget Navigation Interface
  - Object Visibility
  - Object Selection
  - Time Bar
  - Drag & Drop
- 4D Scene Route Planner Context Menu
  - Create Pipe From Route
  - Create Route To Lines
  - Export Route To ASCII
  - Export Route To PLF

Fledermaus 4D Scene

The Fledermaus Scene is the view port to integrated visualization of loaded data or project(s). It is primarily a display space. It is primarily a display space but does contain a number of controls and interaction functions. In addition to the three exploration modes. The central visualization window widget of the application and thus cannot be floated or hidden. The cursor modes used within the 4D Scene corresponds to the ones selection method chosen in the Fledermaus Scene and Custom Toolbar. In any other cursor mode, you can navigate by using the Shift key as a modifier while clicking.

Data Exploration Modes

Data exploration modes for navigating in the scene is dependent on the viewing mode. These modes are the Plan View and Turntable View and 3D Flight mode. Plan View and Turntable View are mouse-controlled widgets based on a centered zoom and rotate data manipulation technique. Each of the exploration modes has strengths and weaknesses. The 3D Flight mode provides for smooth navigation across both large and small datasets while the widgets provide a fast and effective center, zoom and spin interface that quickly focuses attention on the area of interest.

Plan View

While in Plan View, simply **Left-Click** and drag to pan the scene. Moving the mouse-wheel will zoom in or out of the scene. You can also pan by using the right and lower scroll widget. Use the left scroll widget to zoom.

Turntable View

While in Turntable View, simply **Left-Click** and drag in the horizontal direction to rotate the scene around the current center point. **Left-Click** and drag in the vertical direction to tilt the scene. **Center-Click** on a point in the scene to change the current point of rotation. You can also use right scroll bar to move the scene up or down, the bottom scroll bar to move the scene left or right, and the left scroll bar to zoom in and out of the scene. While in this mode, you can also interact with the Navigation Widget to navigate within the scene.

3D Flight View

This mode of exploration provides a powerful means to navigate around the 3D data space with the use of a 3D input device, such as the BAT, or Space Navigator. A supported 3D input device must be connected and turned on before starting this mode. If using the BAT, press and hold down the trigger button on the 3D input device to begin flying. While the button is held down, hand movements of the device are mapped in a natural fashion to movements within the 4D scene.

For example, to move forward in the scene simply push your hand forward while holding down the trigger. To move to the right you move your hand to the right. Rotations are accomplished in a similar manner. To turn left you twist your hand to the left, to turn up twist your hand upwards and so on and so forth. The speed of movement in the 3D scene is mapped non-linearly from the hand movements of the input device. Slow hand motions provide detailed and fine adjustments while fast movements accelerate the exploration speed allowing you to quickly move around the entire scene.

The rectangular box, with its corresponding tails, is called the predictor. It aids in navigation and helps prevent getting lost in the virtual world. As you fly around the 3D data set, the predictor shows where you will be a short time in the future. The tails of the predictor provide a cue to velocity and a brief history of movements. Thus it can be easily seen if you are going forward, backwards, or turning, along with how fast you are currently moving (the longer the tail the faster).

Cable/Pipe View

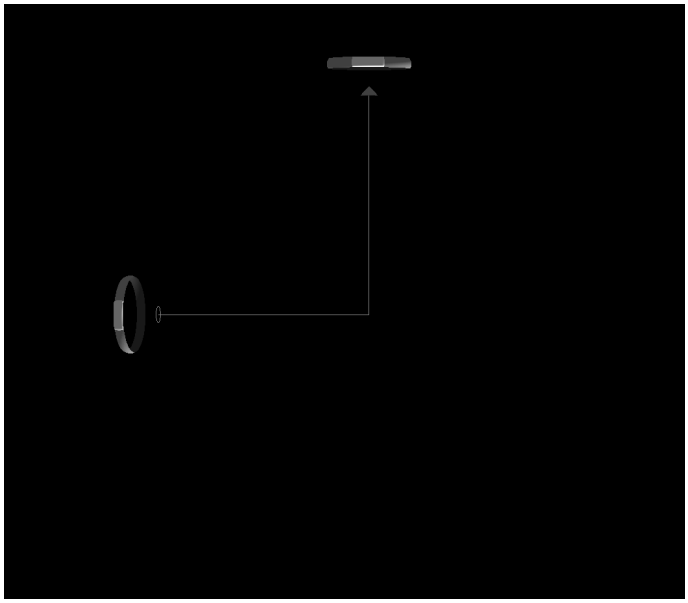
This view mode is similar to the turntable view, but the focal point is locked to the path of a dynamic cable/pipe object. Left-clicking and dragging the arrows that appear on the widget navigation interface allows you to move the focal point along the cable/pipe path. Alternatively you can use the W and S keys to move forwards and backwards respectively.

If your scene has multiple cable/pipe objects and you want to change which one is followed, use the "Tracked Cablepipe" combo box located above the Scene Objects Dock to select the one you want to follow.

Note that this view cannot be used if your scene does not contain a cable/pipe object!

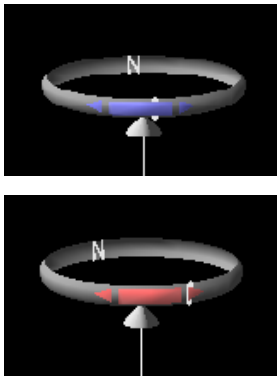
Widget Navigation Interface

The alternate exploration mode is a mouse based widget navigation (pick and zoom) interface that uses on screen widgets and direct interaction with the data space. The main point to remember with this interface is that all rotations and zoom occur about the center of the screen and picking on a new location will move that point in the scene to the center of the display.



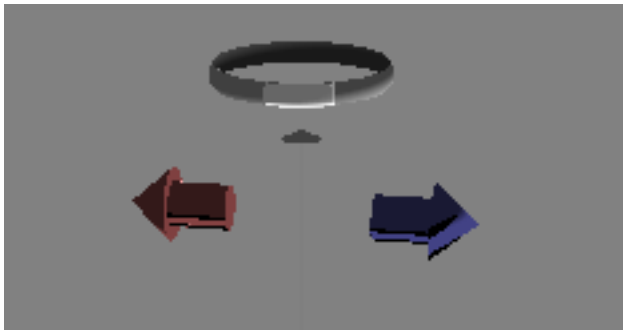
Navigation Widget

The Navigation Widget can be used in Turntable View only and allows for mouse-click based navigation of the scene. **Left-Click** and drag on the top crown to rotate the scene about the vertical axis centered at the current point of rotation. **Left-Click** and drag on the left crown to rotate the scene about the horizontal axis perpendicular to the view direction. **Left-Click** and drag on the top arrow to increase or decrease the vertical exaggeration of the scene. The value of vertical exaggeration will be shown in the Exag field near the top of the scene objects window.



Navigation Widget Rotation Controls

The images above shows how the widget looks when rotating under user control. Note that the "N" on the rotation widgets indicates which direction is north.



Navigation Widget Arrow Controls

When using the cable/pipe view mode, arrows will appear on the navigation widget which allow you to traverse the cable/pipe path by left-clicking and dragging them.

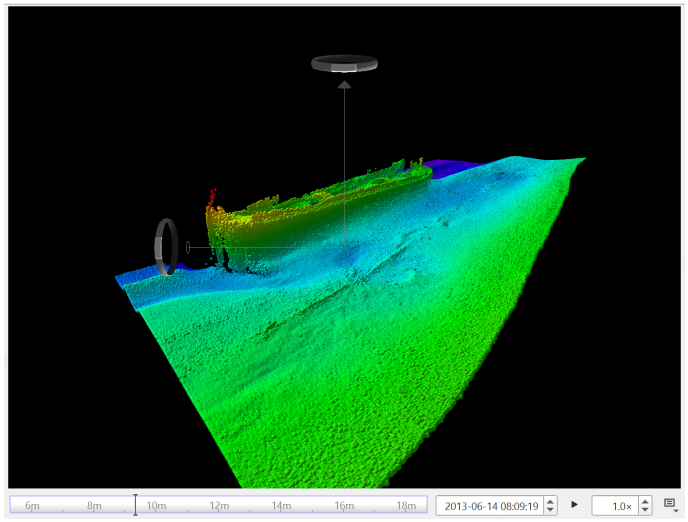
Object Visibility

Visibility of a particular scene object is controlled by the checkbox in either the Project Sources window or Project Layers window. If the object is checked, it will be visible. If not, it will be invisible.

Object Selection

While in Explore Mode, clicking on an object in the scene will select that object if it is selectable.

Time Bar



Time Bar

The Time Bar will display for time supported object types, it allows to interactively manipulate the current time displayed in the 4D Scene.

Drag & Drop

Data can be loaded into Fledermaus by drag and dropping files or a directory directly into the Main Visualization Window. This allows the loading of one or more SD objects or one scene file, as well as QGF QPS files.

4D Scene Route Planner Context Menu

If you right click on the scene while the Route Planning Tool is active, a context menu will appear with the following options on the route.

Create Pipe From Route

This menu option will create a dynamic pipe object from a route created using the route planning tool. The pipe will also be added to the scene.

Create Route To Lines

This menu option will export a route created using the route planning tool to a .lines file.

Export Route To ASCII

This menu option will export a route created using the route planning tool to an ASCII-formatted .txt file.

Export Route To PLF

This menu option will export a route created using the route planning tool to a .plf file.

Return to Fledermaus Interface
Return to Fledermaus Reference Manual

Fledermaus Keyboard Operations

- Ctrl+F

Ctrl+F

Pressing Ctrl+F on the keyboard will bring up a file explorer menu to one of three places. If nothing is selected and a project is loaded the project's file location will be brought up. If an object is selected the object's file location will be brought up. If nothing is selected the scene file location or where the scene file would be saved has its file location brought up.

Fledermaus Wizards and Dialogs

Fledermaus has many wizards and dialogs. They will be launched through interaction with toolbars, menu bars or context menus.

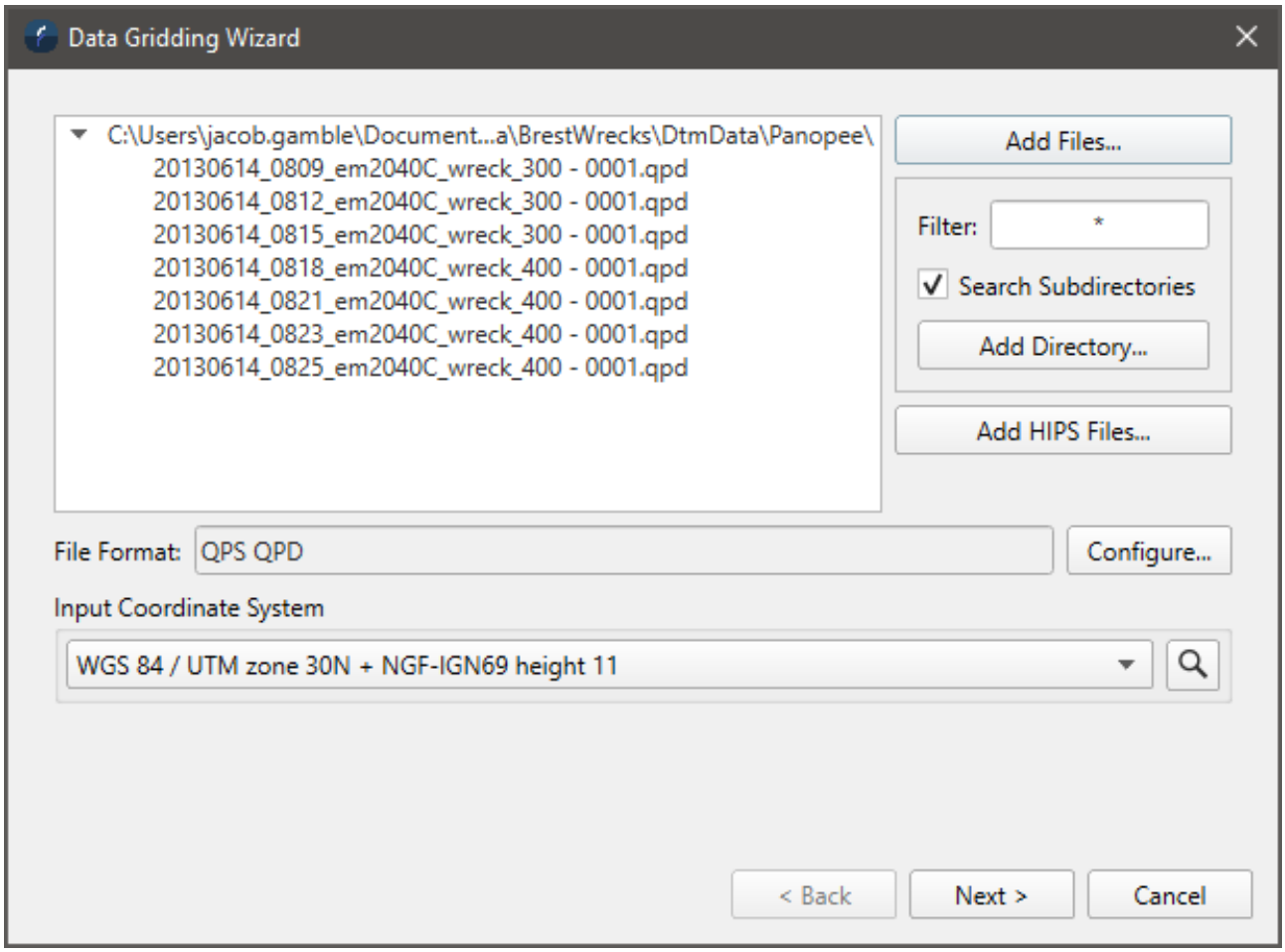
Fledermaus wizard and dialogs are described in detail in the following pages:

- Fledermaus About Dialog
- Fledermaus Adjust Colormap Range Dialog
- Fledermaus Attach Scalar Dialog
- Fledermaus Calculate Contours Dialog
- Fledermaus Calculate IHO Uncertainty Dialog
- Fledermaus Calculate Rugosity Dialog
- Fledermaus Calculate Slope Dialog
- Fledermaus Cell Information Dialog
- Fledermaus Change Bounds Dialog
- Fledermaus Change Object Coordinate System Dialog
- Fledermaus Colormap Editor Dialog
- Fledermaus Compute Mask Dialog
- Fledermaus Configure Custom Dialog
- Fledermaus Configure Custom Toolbar Dialog
- Fledermaus Configure Shortcuts Dialog
- Fledermaus Create a Static Gridded Surface
- Fledermaus Create Dynamic Points Dialog
- Fledermaus Create Grid Lines Dialog
- Fledermaus Create Mesh Dialog
- Fledermaus Create Mesh Wizard
- Fledermaus Create Plane Dialog
- Fledermaus Create Project Dialog
- Fledermaus Create Scalar from Point Files
- Fledermaus Custom Ascii Configuration Dialog
- Fledermaus Data Gridding Wizard
- Fledermaus Detach Scalar Dialog
- Fledermaus Drape Image Dialog
- Fledermaus Export BAG Surface Wizard
- Fledermaus Export Route To ASCII Dialog
- Fledermaus Export Scene to Image Dialog
- Fledermaus Export Surface Dialog
- Fledermaus Export Texture to Image Dialog
- Fledermaus Export to 3D PDF Dialog

- Fledermaus Export to ArcGIS® Dialog
- Fledermaus Export to Google Earth KML Dialog
- Fledermaus Export to Image Dialog
- Fledermaus Export to Rendered Image Dialog
- Fledermaus Export to XYZ+Attributes Dialog
- Fledermaus Extract Area Dialog
- Fledermaus Extract Grid Layers Dialog
- Fledermaus Geodetic Search Dialog
- Fledermaus Grid Statistics Dialog
- Fledermaus Import From Listing File Dialog
- Fledermaus Import Gridded Data Wizard
- Fledermaus Import Image Dialog
- Fledermaus Import Image from Web Mapping Service
- Fledermaus Import Model Dialog
- Fledermaus Import Vessel Track Dialog
- Fledermaus Interpolate Surface Dialog
- Fledermaus Invert Vertical Curtain Z Imagery
- Fledermaus Merge Dialog (Surfaces, Scalars, and Geoimages)
- Fledermaus Mesh Clipping Dialog
- Fledermaus Mesh Slicer Dialog
- Fledermaus Preferences Dialog
- Fledermaus Replace Area Dialog
- Fledermaus Reproject Coordinate System Dialog
- Fledermaus Resample Dialog
- Fledermaus Select Colormap Dialog
- Fledermaus Shading Parameters Dialog
- Fledermaus Share Scene Dialog
- Fledermaus Show Histogram Dialog
- Fledermaus Show Spreadsheet Dialog
- Fledermaus Surface Difference Wizard

Return to Fledermaus Reference Manual

Fledermaus Create Scalar from Point Files



Create Scalar Dialog

- How to Start
- What it Does
- General Description

How to Start

- Main Menu Bar → Create → Create Scalar from Point Files...

What it Does

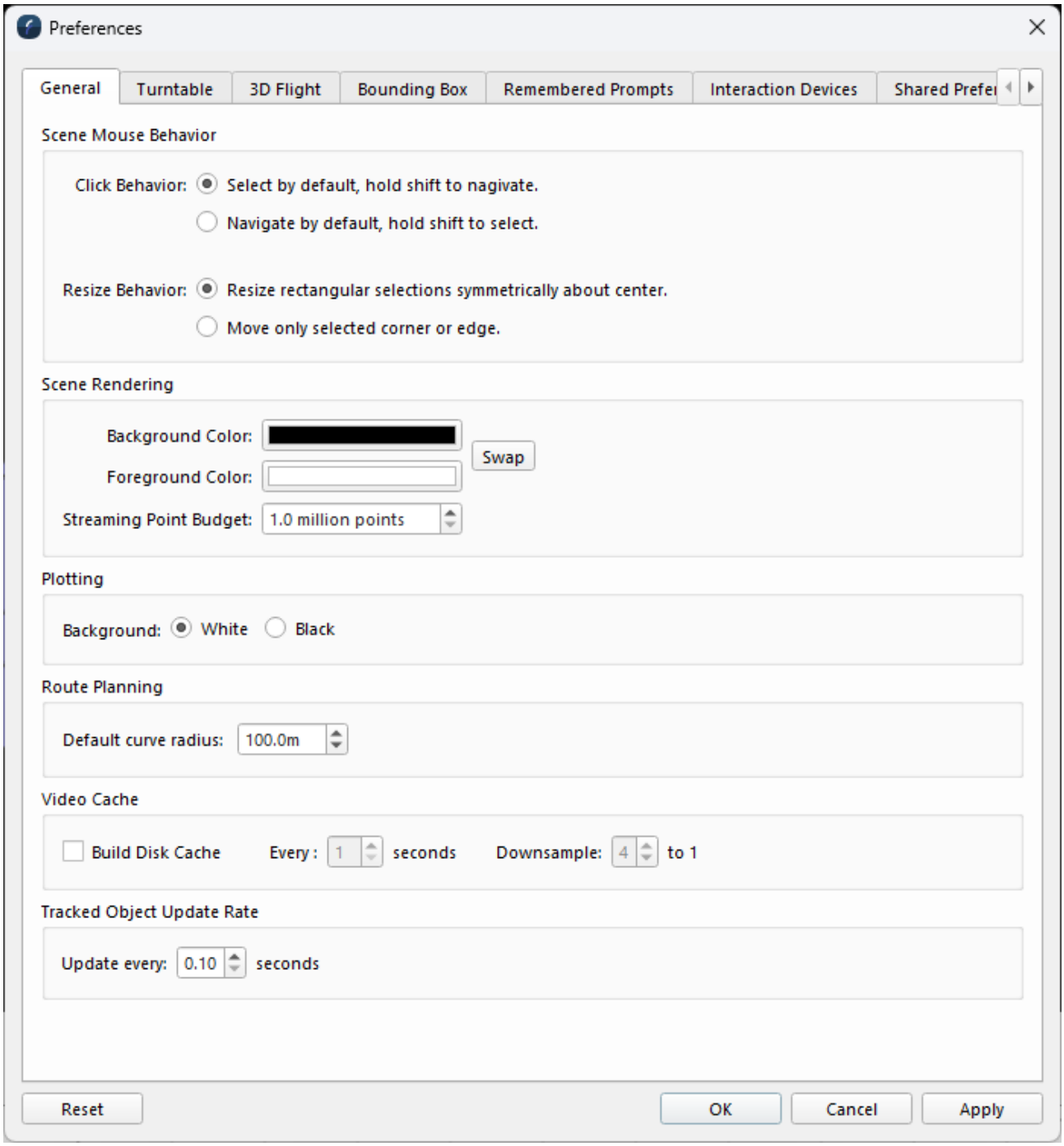
The *Create Scalar from Point Files* option works almost identically to the create static gridded surface option but the resulting gridded data is written to a Scalar object data type. This type is visualized as a flat surface but the colors displayed are mapped through

the gridded data to show the scalar's values. For example one might have a file of magnetics in the form of ascii X, Y, Mag-Value which could be gridded to produce a "surface" of magnetic intensity. The result can be visualized directly as a Scalar object or maybe to then be attached to or drapped onto another bathymetric surface as an example.

General Description

Other than the resulting object type created this wizard is identical to the Create Static Grid option.

Fledermaus Preferences Dialog



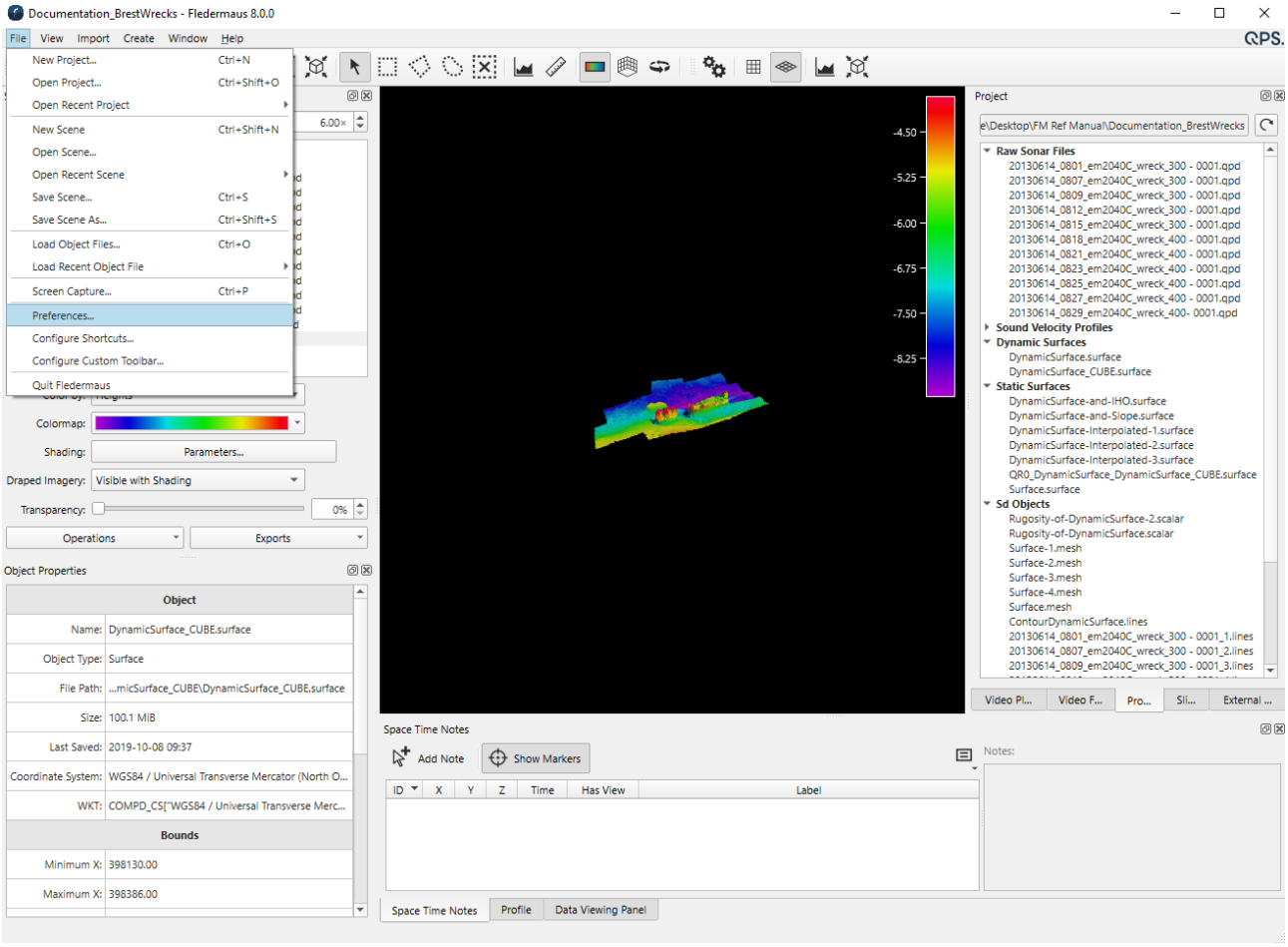
Preferences Dialog

- How to Start

- What it Does
- General Description
  - General Preferences
    - Scene Mouse Behavior
      - Click Behavior
      - Resize Behavior
    - Scene Rendering
    - Plotting
    - Video Cache
  - Turntable Preferences
    - Widget Options
  - 3D Flight Preferences
  - Bounding Box Preferences
    - Bounding Box Style
  - Remembered Prompts Preferences
  - Interaction Device Preferences
  - Shared Preferences
    - Startup
    - Display
      - Projected Options
    - Default Surface Shading
    - HIPS Licensing

How to Start

- Main Menu Bar → File → Preferences



Preferences Dialog from File Menu

What it Does

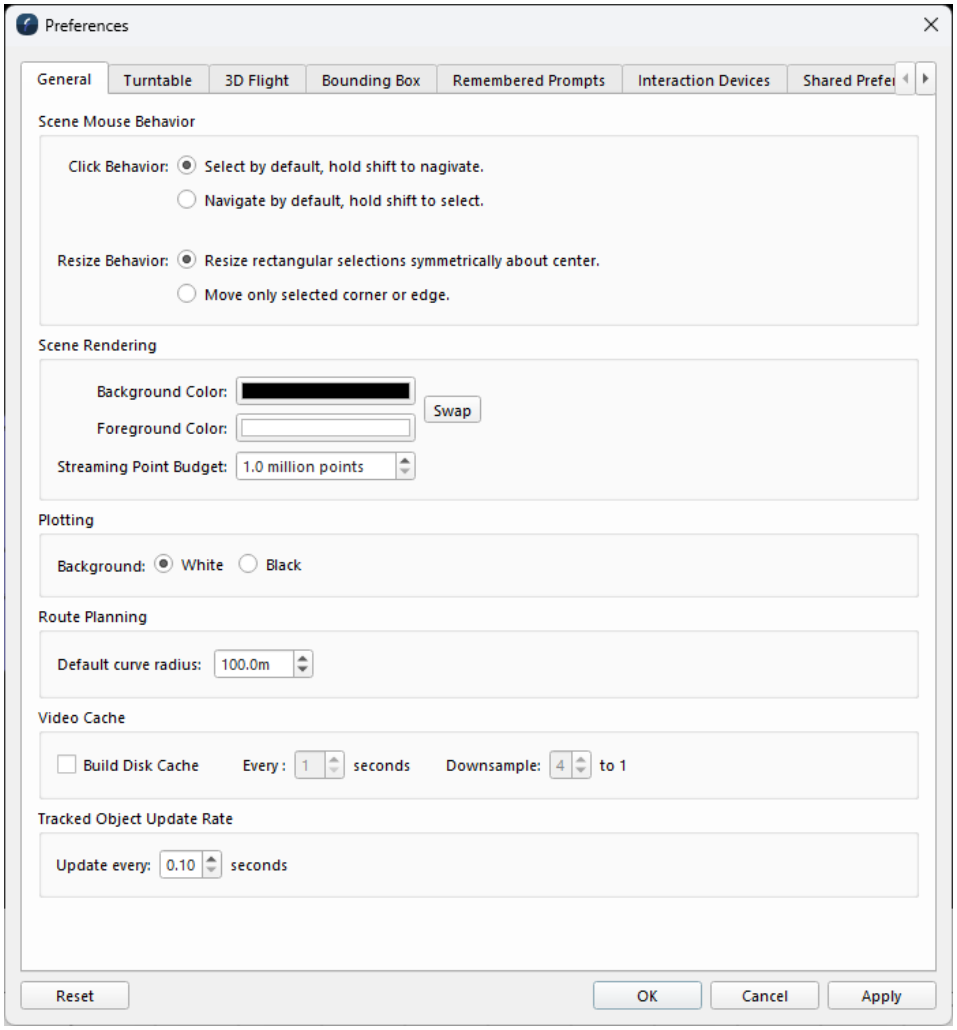
This dialog is used to modify application preferences.

General Description

Preferences are used across all projects created by Fledermaus. They are not project specific. There are 4 preference tabs which are described below. The tab bar across the top of the dialog shows the available preference groups. Selecting a tab will display its controls. There are also a number of buttons along the bottom of the dialog.
The *OK* button applies all of the changed preferences and hides the dialog from view.
The *Cancel* button dismisses the dialog without saving any changes. The Apply button sets all changed preferences without hiding the dialog box. The *Reset* button will reset the preferences to their default (starting) values.

General Preferences

The *General* preference tab is a miscellaneous collection of settings that do not fit in any other group.



General Preferences Tab

Scene Mouse Behavior

Click Behavior

Some user workflows prefer scene navigation by default for any mouse interaction. Some user workflows prefer original mouse behavior. You can change the mouse navigation behavior of Fledermaus by changing this option.

The *Selected by Default* option allows mouse interaction with the scene to perform the operations allowed by the selected mode. For example, in *Rectangular Select* mode, if you left-click-drag over a grid in the scene, you will create a selection area. Doing this in another location will create a new selection area. If you want to navigate within the scene, you have to hold down the SHIFT key.

The *Navigate by Default* option will navigate the scene with any mouse interaction for any selected mode. In order to use the capabilities of the selected mode, you must hold down the SHIFT key. For example, if you are in *Area Select* mode, you must hold down the SHIFT key to select a new area.

Resize Behavior

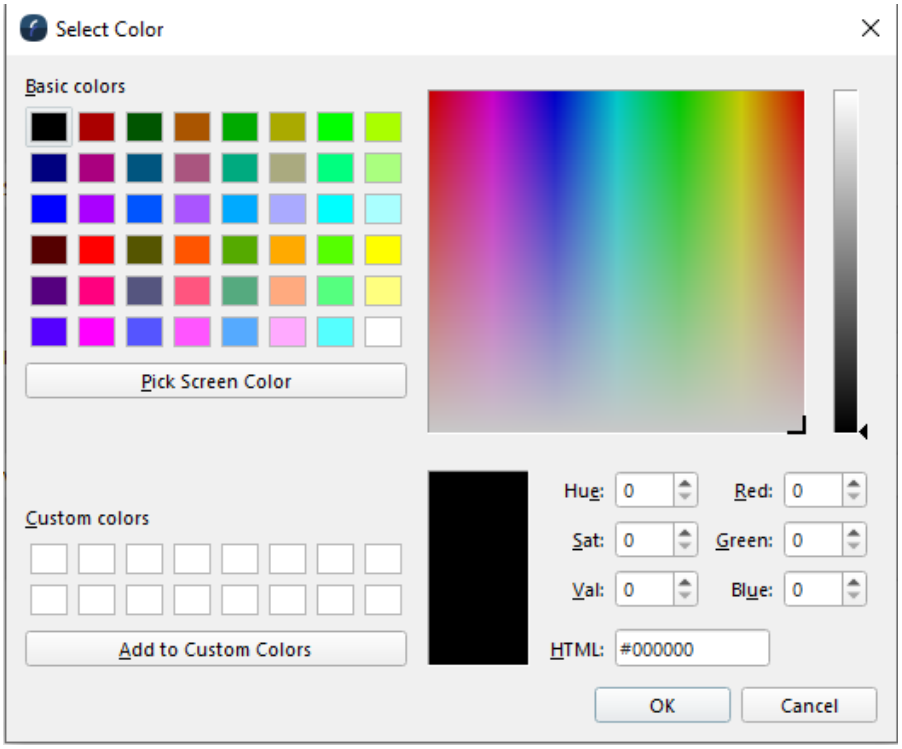
For *Rectangular* and *Free/Fixed Slice Select* modes you can resize the selections by clicking and dragging one of the corner or edge "handles" (dots), changing this option changes how the other sides of the selection change as you drag.

The *Resize rectangular selections symmetrically about center* option changes all sides and corners such that the center of the selection stays fixed.

The *Move only selected corner or edge* option will only modify the corner or edge being dragged, which will adjust the center of the selection but leave the opposite edge or corner fixed.

Scene Rendering

The *Background Color* and *Foreground Color* options allows you to change the colors of the 4D Scene. Simply click on the button go get the color picker dialog show below. Use the *Swap* button to swap the foreground and background color.



Select Color Dialog

The *Streaming Point Budget* option sets the maximum number of points rendered by Point Cloud objects. Increasing this value will allow Streamed Points to display more detail at the cost of performance. This can be set to anything between 1 million and 1 billion points.

Plotting

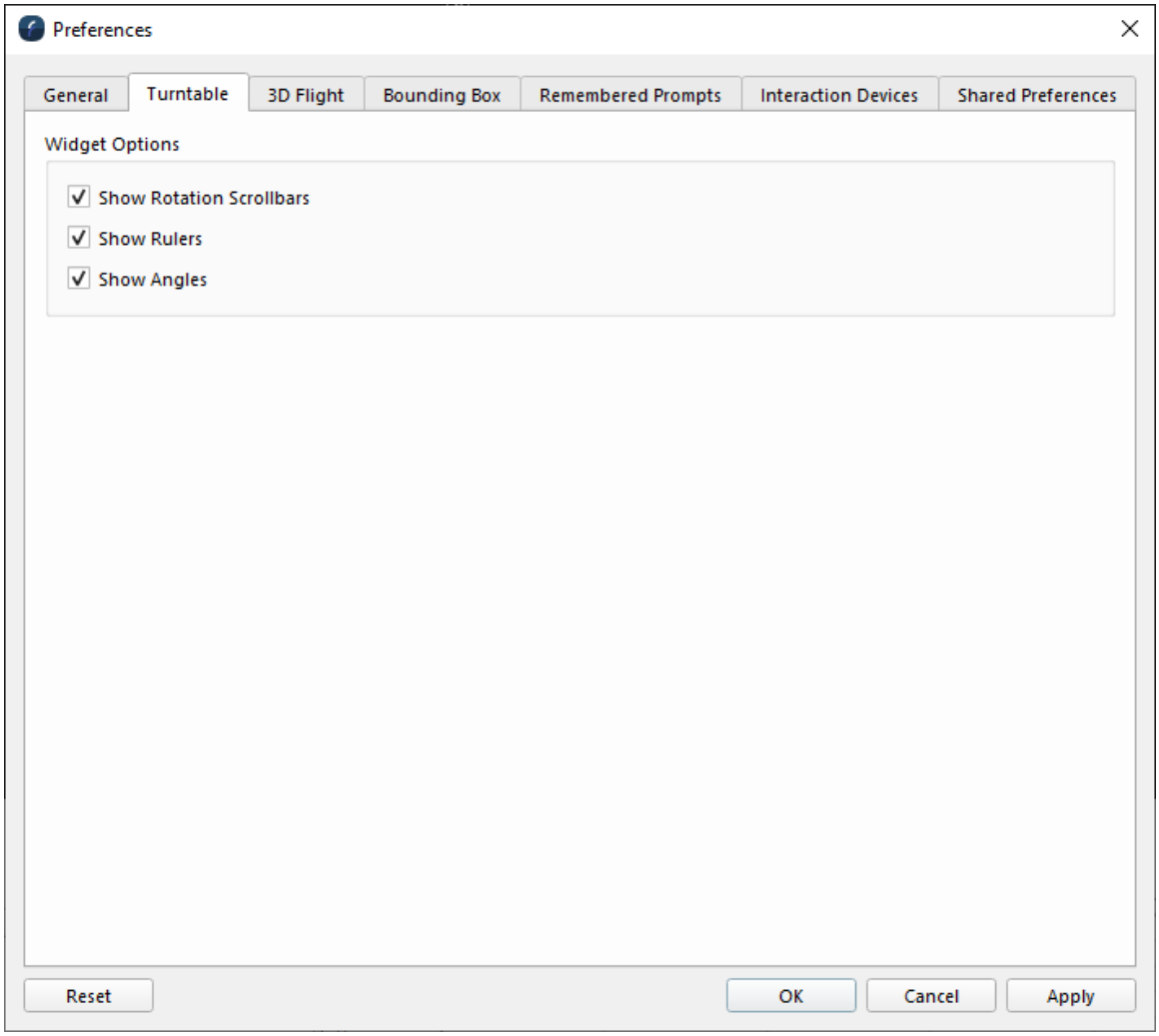
You can change the background color of all plot based widgets to either black or white. When you switch colors, the grid line color will also invert so that the lines are visible.

Video Cache

A video cache can be used when you are working with video files attached to a scene. It is especially useful when working with large 4K video files. When turned on and used with a project when one adds video sources it will make a series of smaller images behind the scenes to make scrolling in time much faster then it otherwise would be. One can select the time interval to create the cached imagery and an amount to down sample them which is useful when dealing with 4K or other large video files.

Turntable Preferences

This tab contains options to customize the 3D Turntable View.



Turntable Preferences Tab

Widget Options

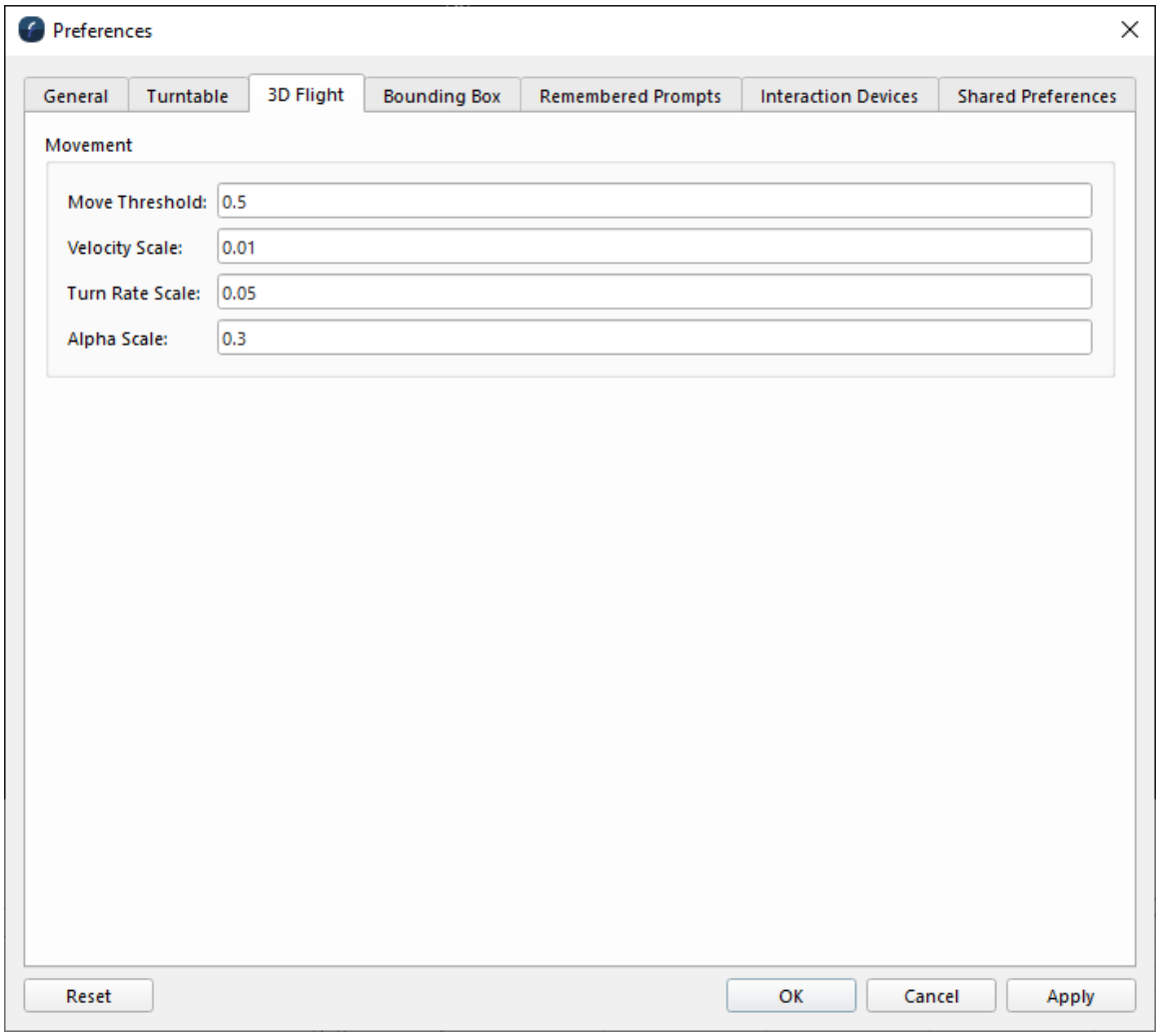
The *Show Rotation Scrollbars* checkbox toggles the visibility of the rings on the ends of the turntable widget's arms which are used to control rotation.

The *Show Rulers* checkbox toggles the visibility of distance marks and labels along the turntable widget's arms.

The *Show Angles* checkbox toggles the visibility of pitch and yaw angle labels near the ends of the turntable widget's arms.

3D Flight Preferences

This tab contains the calibration parameters used to customize the 3D flight interaction mode.



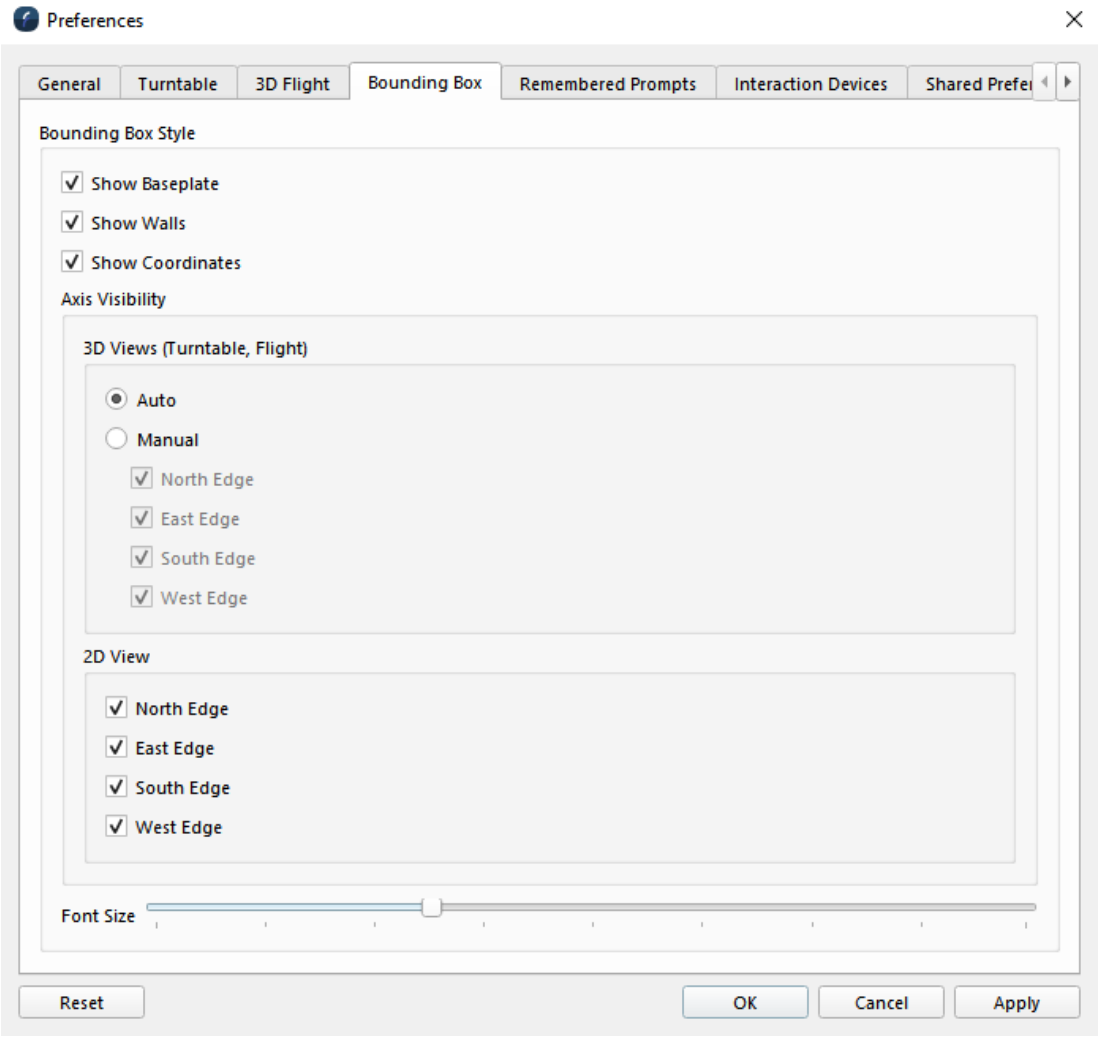
3D Flight Preferences Tab

There are four input fields that allow control of the sensitivity of the 3D flight algorithm. Control values are changed by entering a new value in the appropriate text field.

- The *Move Threshold* is the distance, in centimeters, you must move the 3D device before flying will begin.
- The *Velocity Scale* affects the speed with which you travel through the 3D world. Similarly.
- The *Turn Rate Scale* affects the speed with which you turn in the 3D world.
- The *Alpha Scale* affects the increase in turn rate with increases in speed. Generally you will not need to change this last parameter.

Bounding Box Preferences

This tab contains options to customize the scene bounding box.



Bounding Box Tab

Bounding Box Style

Here you can choose which parts of the bounding box will be displayed in the scene.

If *Show Coordinates* is checked, then the axes of the bounding box will show coordinate labels based on the *Axis Visibility* settings. These settings are separate for the 3D view modes (Turntable and Flight mode) and the 2D view mode. For the 3D view modes you can choose to have the bounding box automatically show only the labels on the axes closest to the camera, or control the axis visibility manually. For the 2D view mode only manual visibility is available.

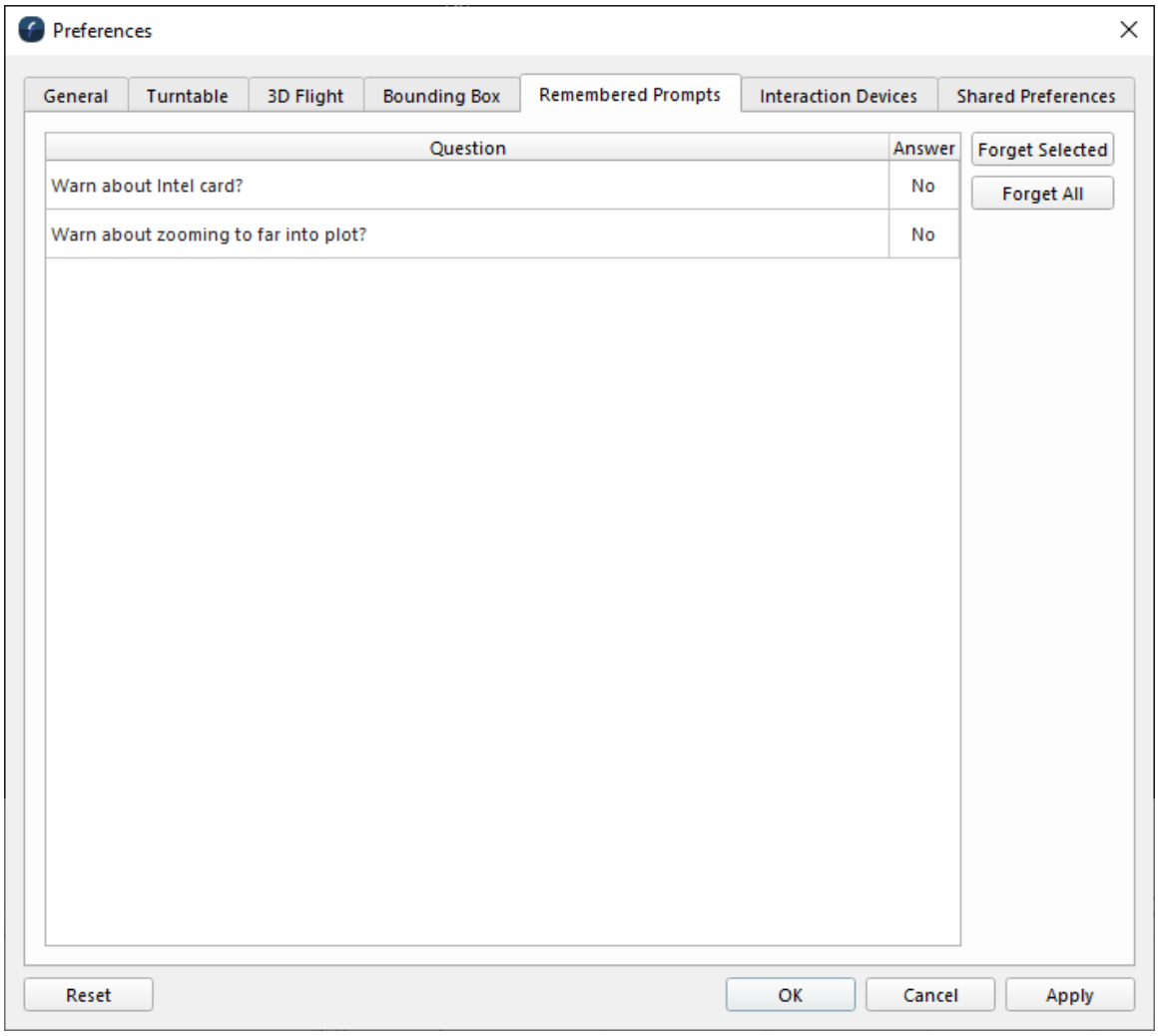
The *Font Size* slider let you customize the size of the coordinate labels along the edges of the bounding box.

Note that if *Show Baseplate* or *Show Walls* are unchecked, the labels on the corresponding part of the bounding box will not appear, regardless of whether *Show Coordinates* is checked or not.

Remembered Prompts Preferences

Part of Fledermaus' Dynamic Workflow is to prompt the user with questions about the next logical step in the process.

In addition to the prompt bar, many message boxes with Fledermaus also have *Don't ask again* or *Don't show this message again* check boxes. These work the exact same way and are also shown in the *Remembered Prompts* table.

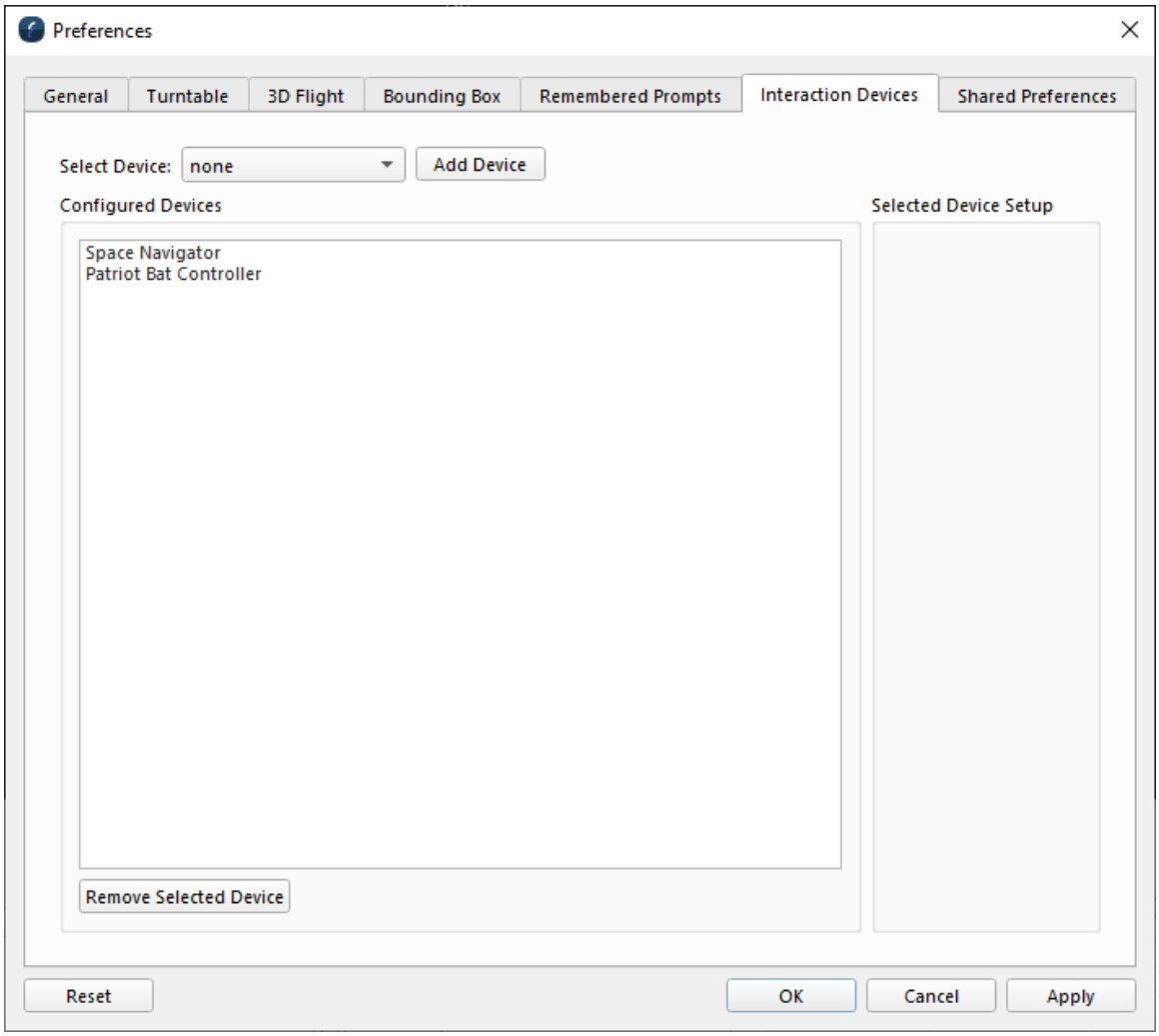


Remembered Prompts Preferences Tab

Interaction Device Preferences

The *Interaction Devices* preference tab is used to configure hardware devices used to interact with the 3D scene such as the Connexion SpaceNavigator, and the Patriot Bat. In

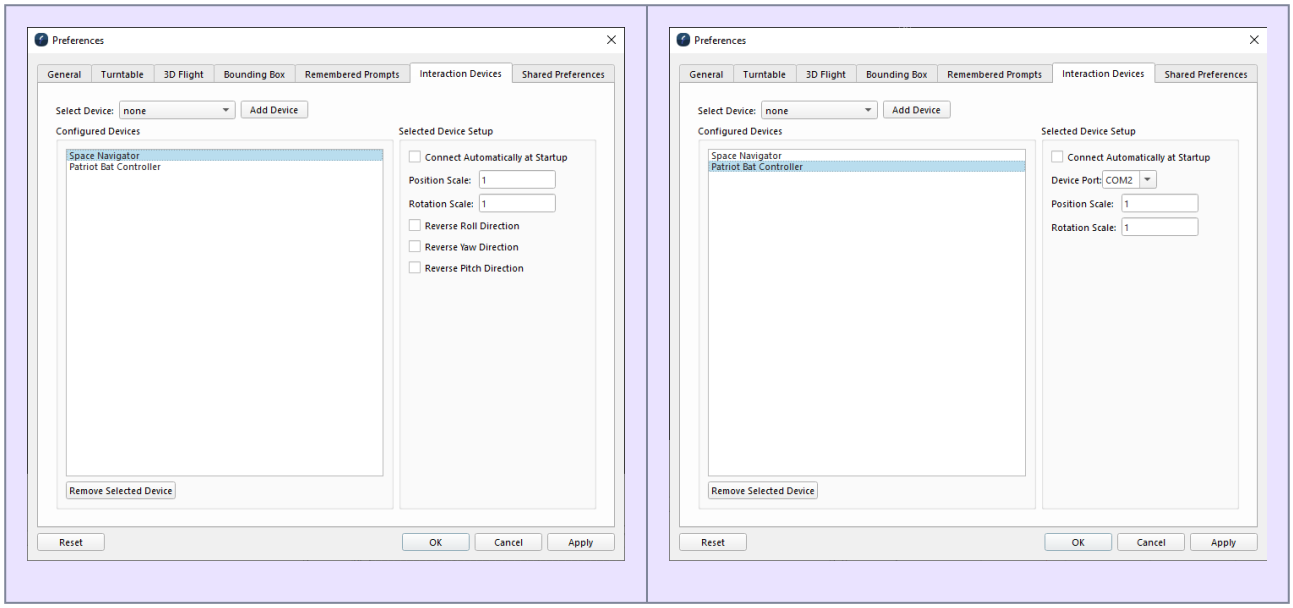
order to configure a device you must first add it be selecting a supported device from the *Select Device* drop down menu. Current the SpaceNavigator and Patriot Bat are supported devices. After selecting the device click *Add Device* to add it to the list of configured devices. Once a device has been added if you click the device name you will see any device specific options to the right in the selected device setup area. You can remove a device by selecting it in the list and clicking the *Remove Selected Device* button. Once you click Apply or Ok for the preferences any configured devices will appear on the right hand side of the Fledermaus status bar.



Interaction Device Preferences Tab

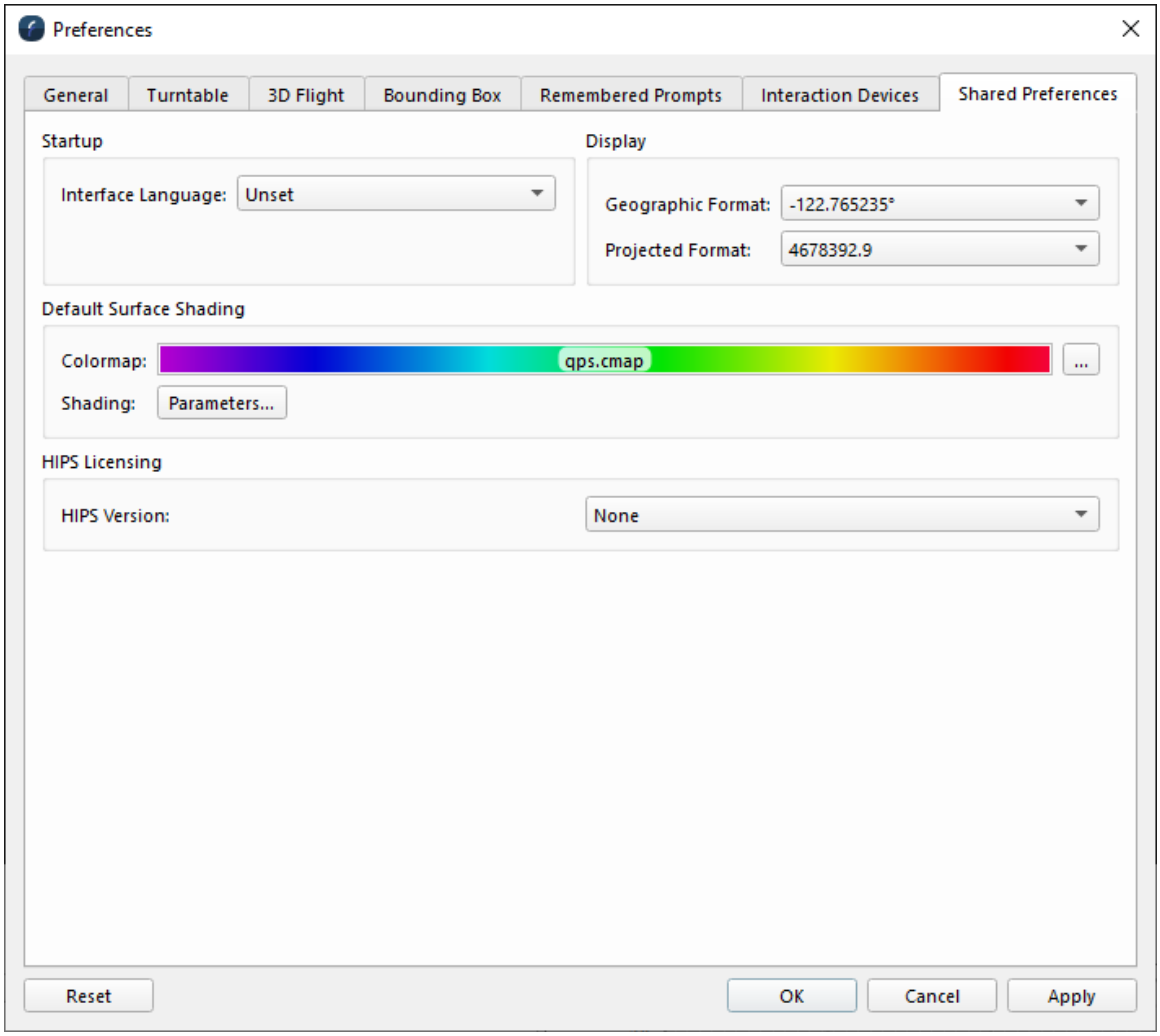
The device setup parameters available will depend on the device being configured as shown below for the SpaceNavigator and the Patriot device. The Connect Automatically at Startup when checks attempt to connect and activate the device whenever fm8 is started. When un-checked the device will appear in the status bar but you will need to connect it whenever you want to use the device. The Patriot device needs to be connected to the computer via a Keyspan USB (or similar) device to connect the Bat's serial port to the computer. The position and rotation scale factors are used to adjust the calibration of the

device to make the system move more or less as you move the device and controls how the device feels when moving or rotating the 3D scene. See the Fledermaus status bar documentation for details about managing the configured devices.



Interaction Device Setup Options

Shared Preferences



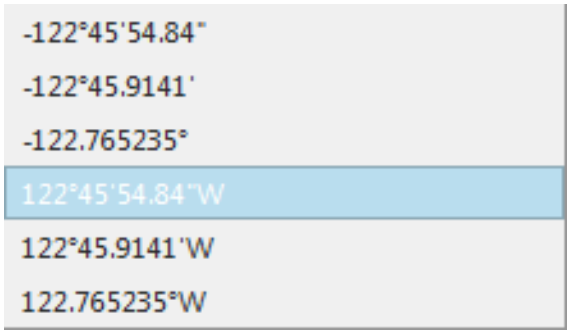
Shared Preferences Tab

Startup

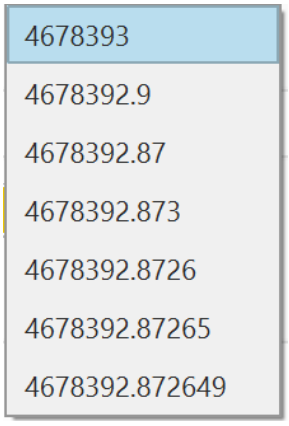
The *Interface Language* combo box allows you to select the language to be used by the user experience when Fledermaus is restarted. This list will increase over time and new language packs will be available from the download section of Fledermaus.

Display

These options change how geographic or projected coordinates are viewed in dialogs and the Status Bar.



Geographic Options



Projected Options

Default Surface Shading

Please see sections Shading Parameters Dialog and Select Colormap Dialog for more information on this section. These options are used whenever creating Dynamic or Static surfaces in Fledermaus.

HIPS Licensing

The *HIPS Version* dropdown box allows you to specify whether you are using a HIPS 9 or 11 license. This is used when importing HDCS data.

When the HIPS Version is set to 9, the *HIPS License Path* field allows you to specify the HIPS license file, which is typically located in the System folder of the CARIS installation path.

When the HIPS Version is set to 11, the *HIPS License Host* field allows you to specify the HIPS 11 license string - either the license server's hostname for a server license, or "no-net" for a HIPS 11 local license.

The *Test HIPS Licensing* button performs a license check based on the parameters specified in the HIPS Version and HIPS License Path/Host fields.

Return to the File menu.

Fledermaus Export BAG Surface Wizard

On this page:

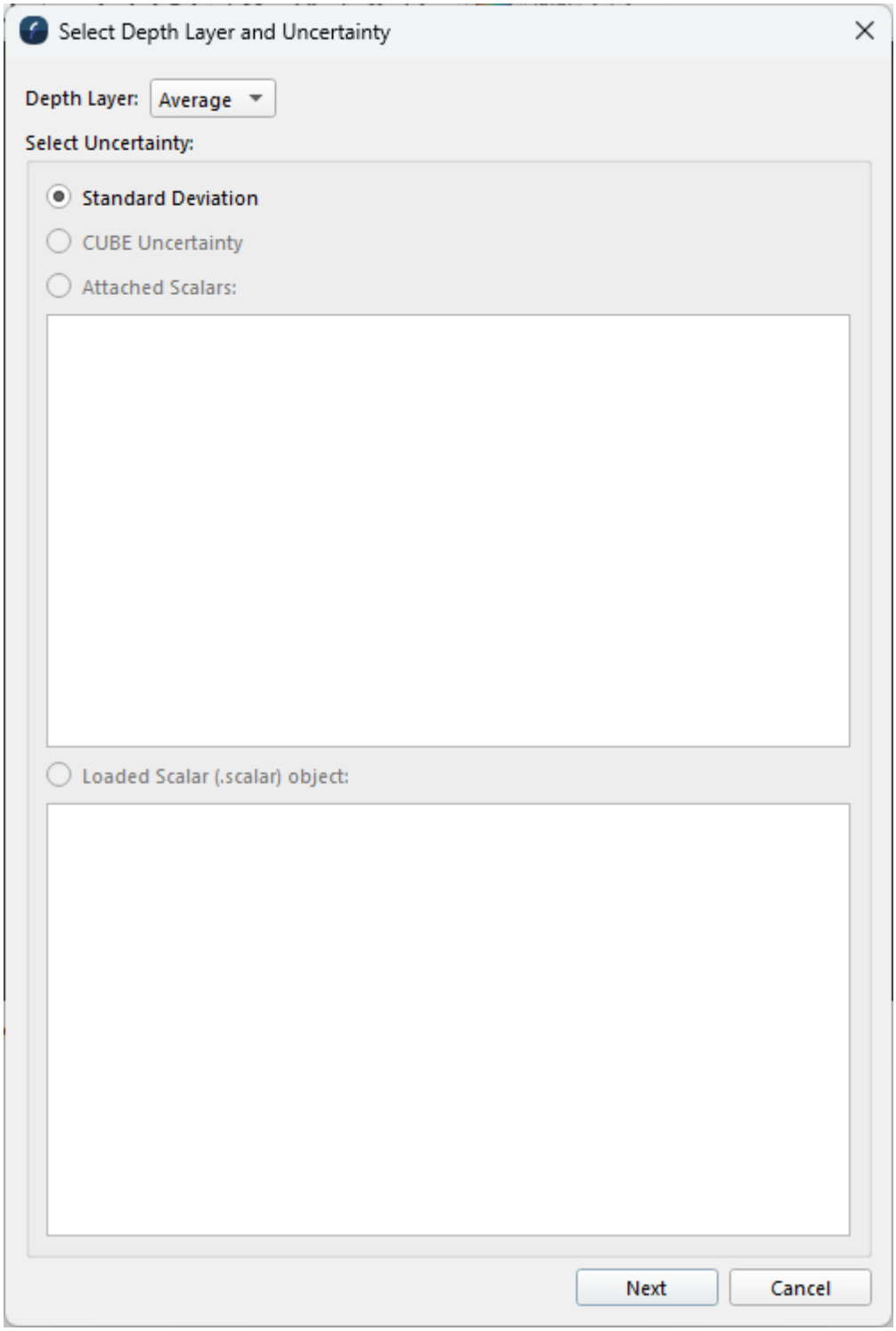
- Overview:
- Page 1
- Page 2
- Page 3

Overview:

This dialog is launched via the Fledermaus Visual Objects, Operations, & Exports. This option allows the current selected Dynamic Surface to be exported to a bag surface.

Page 1

The first screen in the series of pages in this wizard prompts for the depth layer and uncertainty layer to use to create the BAG file. The options for Attached Scalars and Loaded Scalar (.scalar) Object will be available if there are scalars attached to the surface or in the scene, respectively.



The "Depth Layer" dropdown specifies the depth layer to export during the BAG export process. This dropdown menu is automatically populated with the depth layer currently displayed based on what is selected in the Fledermaus Scene Objects Dock.

The "Select Uncertainty" radio button is initially configured based on what is selected in the Fledermaus Scene Objects Dock.

For example, if a single Dynamic Surface is selected but doesn't include CUBE, then "Standard Deviation" will be set initially. However, if a single Dynamic Surface is selected that includes CUBE then "CUBE Uncertainty" will be initially set.

Project Layers Selection	Initial Radio Button Option
Single Dynamic Surface	Standard Deviation
Single Dynamic Surface with CUBE	CUBE Uncertainty
Single Dynamic Surface with attached Scalar	Attached Scalar
Multiselect Dynamic Surface and Scalar Object (e.g. TVU)	Loaded Scalar (.scalar) Object

It is possible to override this option. For example, if CUBE Uncertainty is initially set, then it can be changed to Standard Deviation instead.

Some options may be unavailable. For example, if the current selected Dynamic Surface doesn't include CUBE, then the option for "CUBE Uncertainty" will be greyed out.

When multiselecting, the loaded scalar will be automatically selected from the list of available scalars. Alternatively, select a single dynamic surface, then pick a scalar from the list of loaded scalars after the fact.

When multiselecting more than one Dynamic Surface a batch export will be performed (Note: In this mode, the first page of the wizard is skipped).

If CUBE Uncertainty is selected, then the uncertainty layer will come from the CUBE surface.

Radio Button Option	Resulting BAG Uncertainty
Standard Deviation	Surface Standard Deviation
CUBE Uncertainty	CUBE Surface Uncertainty

Radio Button Option	Resulting BAG Uncertainty
Attached Scalar	Surface Attached Scalar is used as Uncertainty
Loaded Scalar (.scalar) object	The Loaded Scalar is used as Uncertainty.

Note that CUBE Uncertainty layer is different than the usual Dynamic Surface Uncertainty layer.

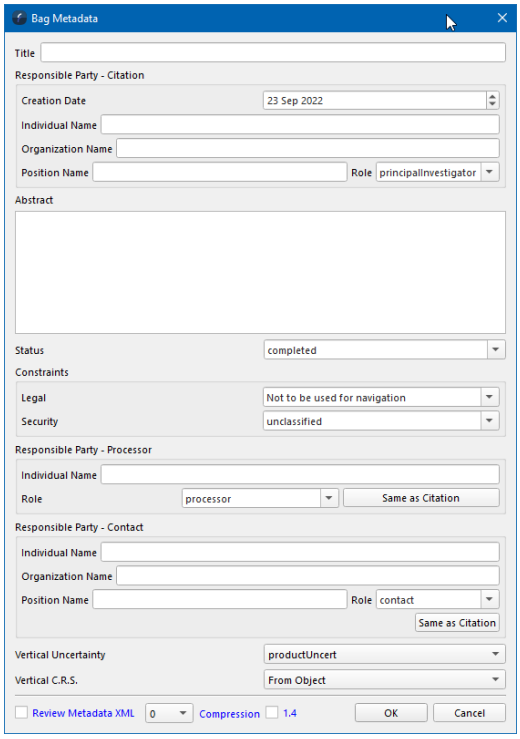
- The regular Uncertainty layer for a Dynamic Surface reflects the standard deviation, scaled to 95% c.l., of all accepted soundings, regardless of whether or not they are used for a CUBE surface. It does not include rejected soundings in the calculation.
- The CUBE Uncertainty layer reflects the standard deviation, scaled to 95% c.l., of the accepted soundings that contributed to the selected hypothesis.

In both cases, the standard deviation is scaled to 95% c.l. via the scaling factor of 1.96.

Page 2

This will launch a file browser to select the name for the exported BAG.

Page 3



This dialog simply gathers all the metadata information that can be stored with a bag surface.

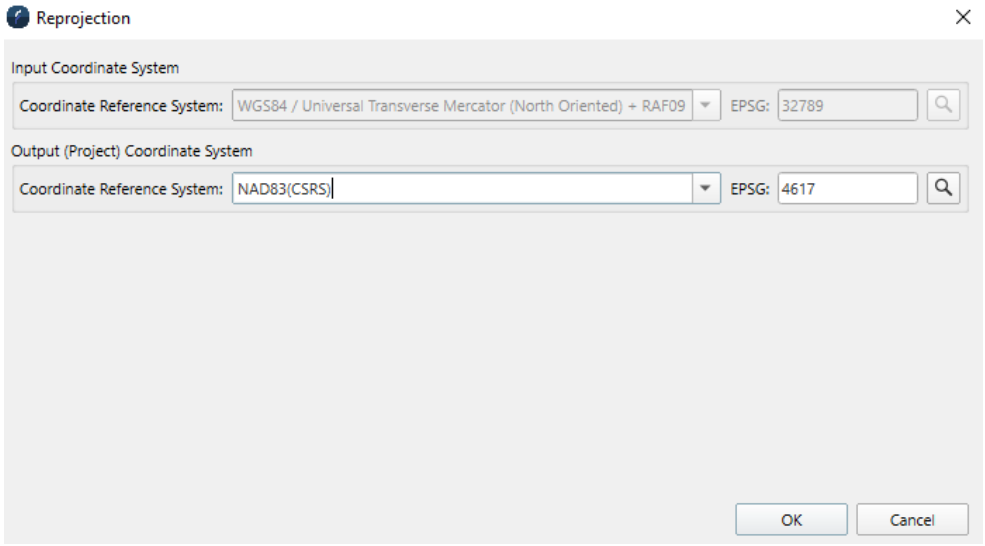
The Vertical Uncertainty tag will be initially set based on the option you chose on page 1:

For example, if "CUBE Uncertainty" was selected on page 1, then Vertical Uncertainty will be initially set to "cubeUncert" on page 2.

Page 1 Option	**Initial Vertical Uncertainty**
Standard Deviation	rawStdDev
CUBE Uncertainty	cubeUncert
Attached Scalar	productUncert
Loaded Scalar (.scalar) object	productUncert

It can still be changed from the dropdown.

Fledermaus Reproject Coordinate System Dialog



Reproject Coordinate System Dialog

- How to Start
- What it Does
- General Description
  - Coordinate Reference System
  - EPSG

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Reproject Coordinate System
- Scene Objects Dock → Operations → Reproject Coordinate System

What it Does

The *Reprojection* dialog can be used to change an image from one projection to another, such as from Lat/Lon to UTM. The first step in the process is to select what operation to perform using the drop down list at the top of the dialog. Depending on which operation you select, you may then have to enter some additional information about the image.

General Description

The selected object can be reprojected in to a different coordinate system than the original import.

Note that layers in a multilayer surface cannot be individually reprojected. Only the parent item can be reprojected, thus every layer will be reprojected to the selected CRS in that case.

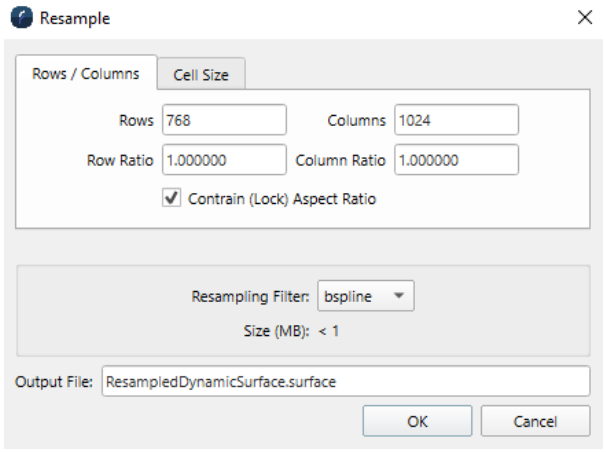
Coordinate Reference System

This field contains the coordinate system the object will be changed to.

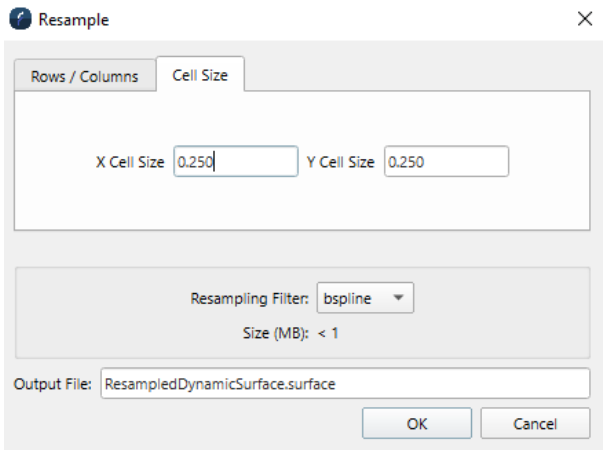
EPSG

Stands for the *European Petroleum Survey Group.* These codes are a set of geodetic parameters used to represent projected, unprojected and local coordinate system definitions. More information can be found here http://www.epsg.org/

Fledermaus Resample Dialog



Resample Dialog - Rows/Columns Tab



Resample Dialog - Cell Size Tab

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Resample
- Scene Objects Dock → Operations → Resample

What it Does

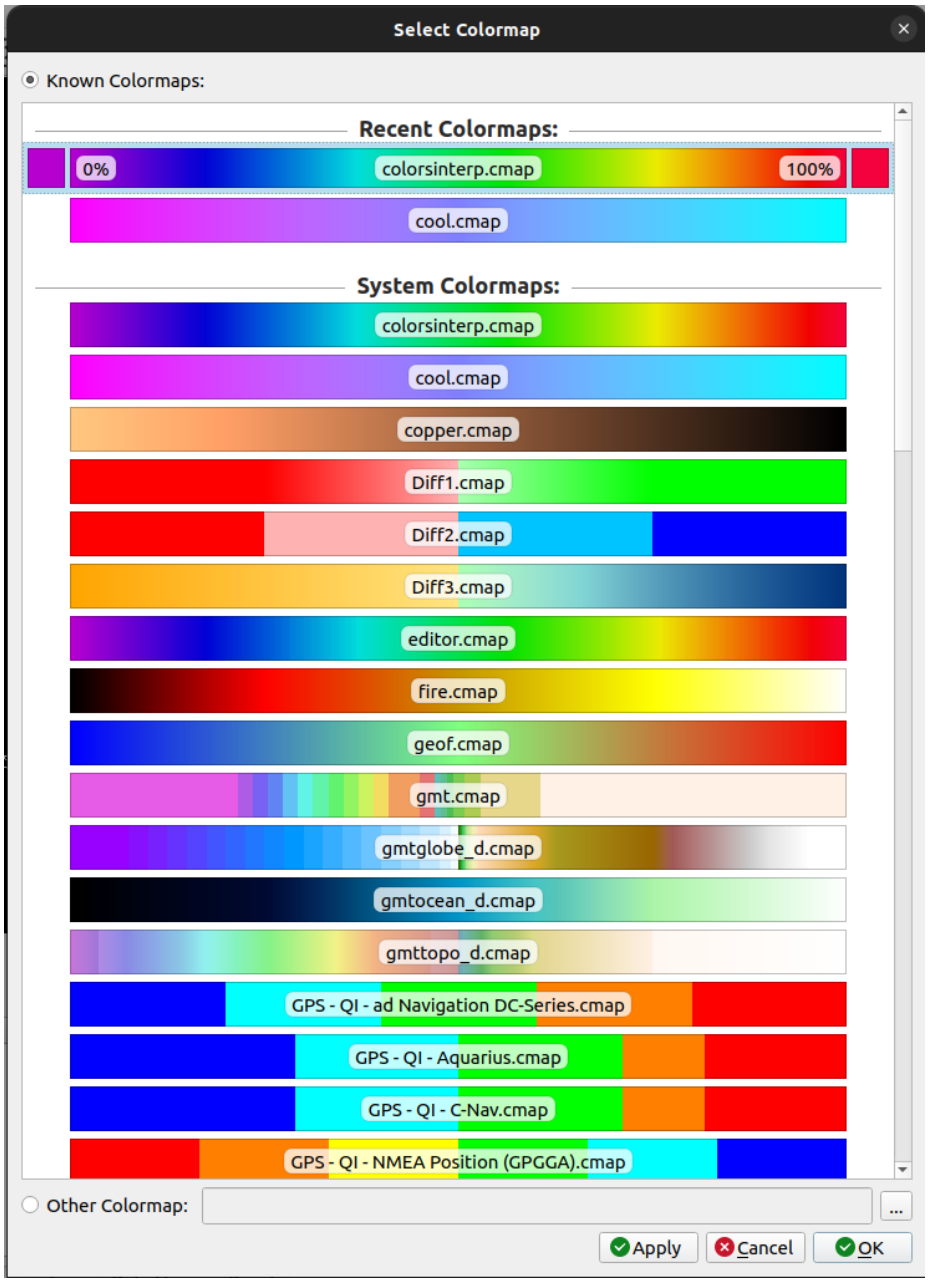
The resample operation can change the number of rows or columns in a surface. This is useful to change the resolution of an SD, for example to make it smaller in size.

General Description

This operation does not affect the geo referencing bounds. By default, the ratio of rows to columns is not allowed to change, that is the aspect ratio is preserved. By un-checking the *Constrain Ratio* check box, the aspect ratio can be changed.

Instead of resampling based on the number of rows or columns, the surface can also be changed by specifying the X and Y cell sizes.

Fledermaus Select Colormap Dialog

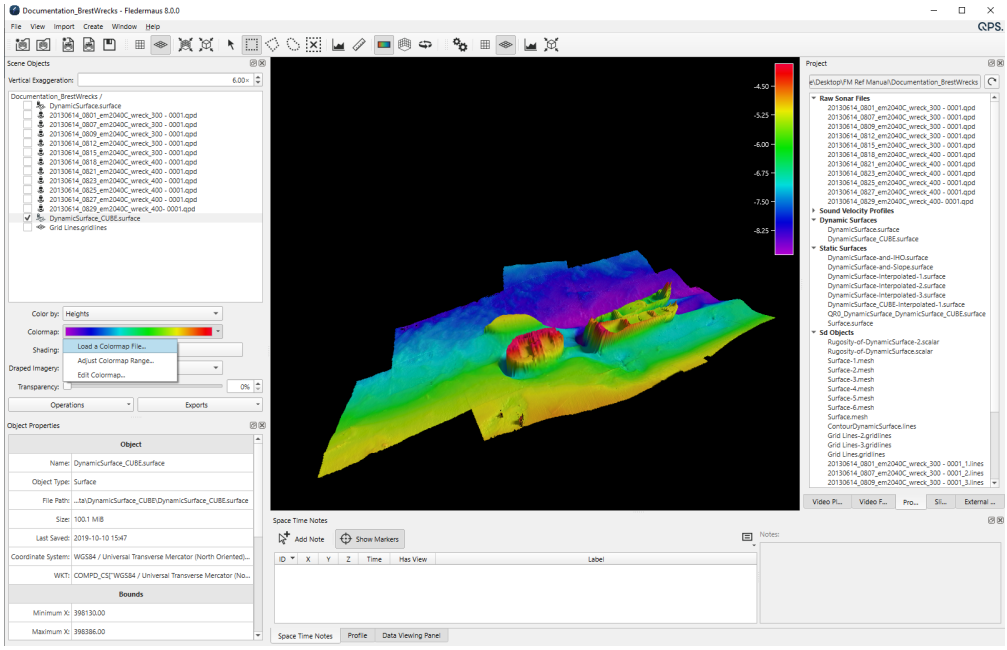


Select Colormap Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Colormap → Load a Colormap File
- File Menu → Preferences → Shared Preferences → Colormap → ...



Select Colormap Dialog from Scene Objects Dock

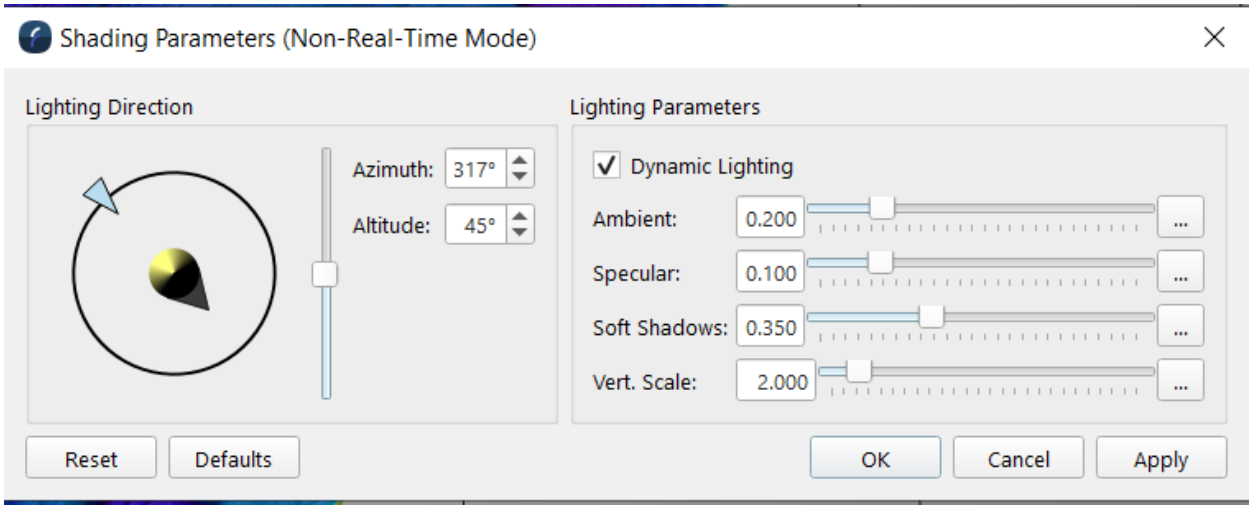
What it Does

This dialog provides a non-visual (and frankly 1980's) list of available colormaps to choose.

General Description

For *System Colormaps*, simply select the entry from the list and click *OK*. Select *User Colormaps* to load a previously saved colormap not part of the default colormap list.

Fledermaus Shading Parameters Dialog

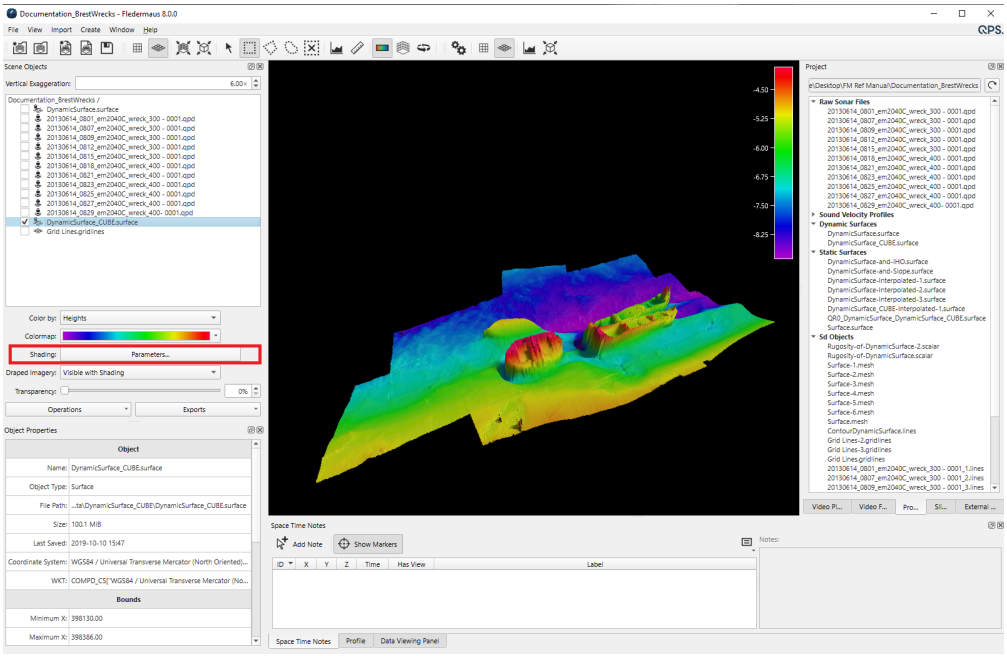


Shading Parameters Dialog

- How to Start
- What it Does
- General Description
  - Dynamic Lighting Toggle
  - Lighting Direction
  - Ambient
  - Specular
  - Soft Shadows
  - Vertical Scale

How to Start

- Scene Objects Dock → Shading → Parameters
- File Menu → Preferences → Shared Preferences → Shading → Parameters



Shading Parameters Dialog from Scene Objects Dock

What it Does

This dialog controls shading parameters for surface generation.

General Description

Dynamic Lighting Toggle

When this option is toggled on the amount of illumination a surface receives is adjusted in a manner that enhances the illumination for relatively flat surfaces and reduces it for mountainous surfaces. This tends to make most surfaces look good with the default settings but at the expense of accurate reported vertical exaggeration and sun altitude angles. This is what Fledermaus version 7 did for illuminating surfaces. If accurate sun elevation and vertical exaggeration values matter to you more the the look of the surface then don't use this option. You can achieve the same or a similar look without the dynamic lighting on but you will generally have the adjust the sun elevation to make it higher in the sky than the default (~63 degrees) and then increase the vertical scale until the desired look is achieved. The amount of elevation and vertical scale will depend on the shape and z-range of the surface.

Lighting Direction

The arrow in this box represents the sun direction, which can be rotated to any azimuth from 0 to 360 degrees by clicking and dragging the left mouse button inside the box. The

sphere in the middle of the diagram displays the current direction and length of the cast shadows. Dragging the slider located on the right side of the Shadow Direction box adjusts the sun altitude from 0 to 90 degrees, where 0 degrees indicates the sun would be at the horizon and 90 degrees would indicate the sun would be directly overhead. In the example shown in the figure the light is coming from the North West (upper left) and the sun is at 45 degrees in the sky (halfway). On the right of the area, both the azimuth and altitude can be edited directly.

The rest of the parameters are controlled via the following slider controls.

Ambient

This slider controls the amount of ambient or background light in the lighting model. It primarily affects the amount of light that appears in cast shadows. High ambient light makes the entire image brighter and the shadows less distinct.

Specular

This slider controls the amount of glossy highlight that appears. High specular makes the surface appear to be very glossy. Low specular will provide a matte finish.

Soft Shadows

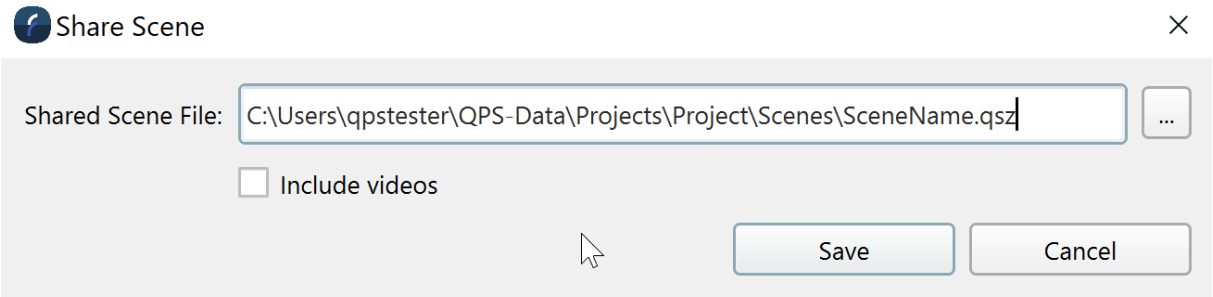
This slider controls how sharp or soft the shadow edges are.

Vertical Scale

The height of the surface can be artificially increased or decreased to change the shadow length. Occasionally this is useful to enhance a low relief surface or reduce a very high relief surface. It is usually better to use the Shadow Direction/Length box to configure and adjust the shadow length.

All of the sliders work in a standard way. To change the position of the slider select and drag it using the left mouse button. To go directly to a specific part of the slider bar click the middle mouse button.

Fledermaus Share Scene Dialog



Share Scene Dialog

- How to Start
- What it Does
- General Description
  - Share Scene File
  - Share Videos

How to Start

- Main Menu Bar → File → Share Scene

What it Does

This dialog zips the currently open Fledermaus scene to a ".qsz" file to facilitate sharing. It encapsulates all of the scene files so that the scene can be reopened from other locations.

General Description

This dialog has the following options:

Share Scene File

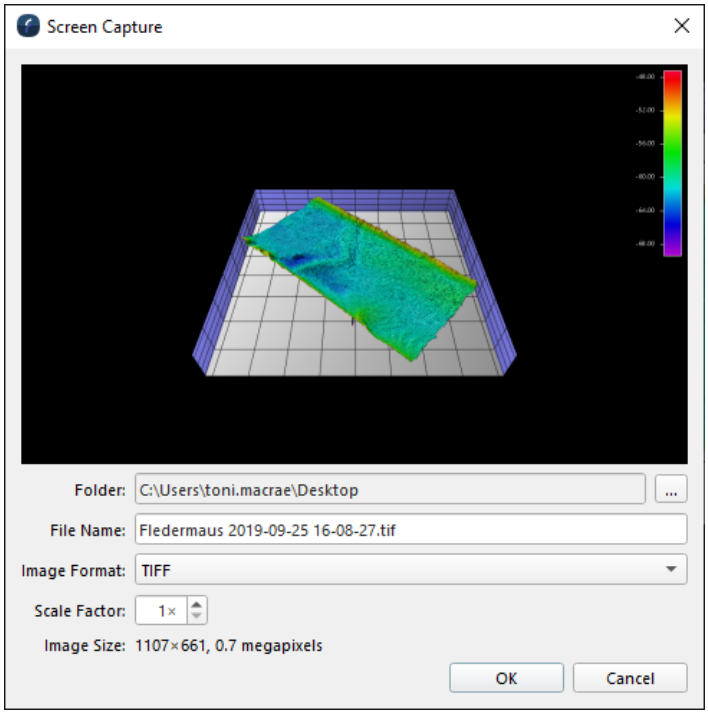
This is the file path where your shared scene file will be created. To change it, simply click on the *Browse* button and browse to a new folder.

Share Videos

If selected videos will be included in the shared scene.

Return to the File menu.

Fledermaus Screen Capture Dialog

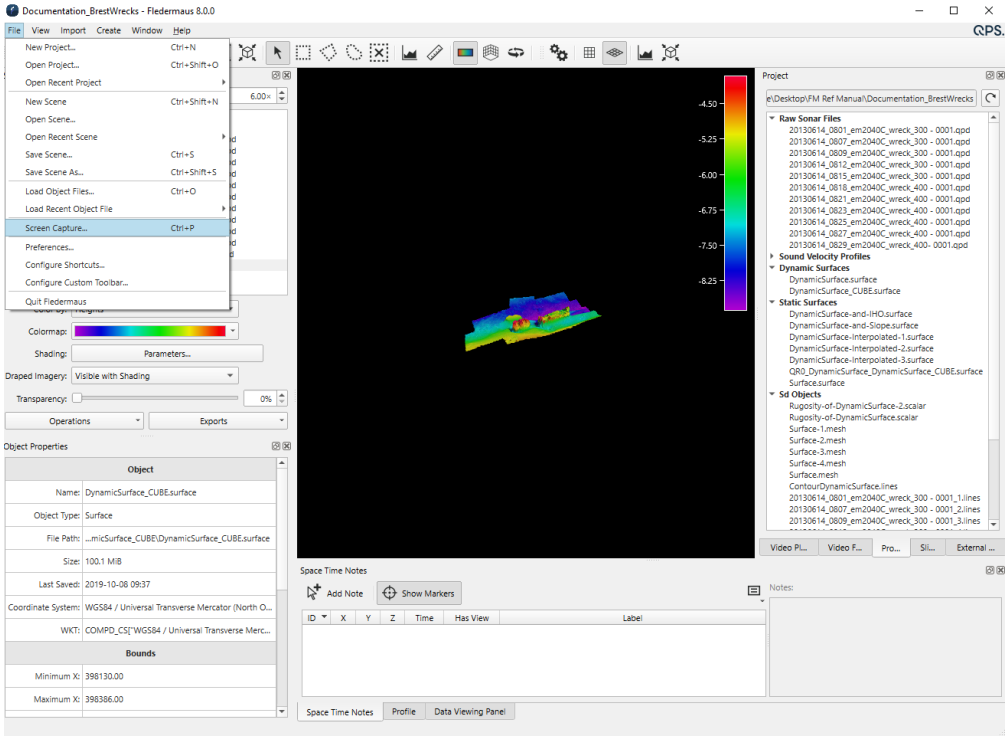


Screen Capture Dialog

- How to Start
- What it Does
- General Description
  - Folder
  - File Name
  - Image Format
  - Scale Factor

How to Start

- Main Menu Bar → File → Screen Capture
- Keyboard Shortcut: Ctrl+P



Screen Capture Dialog from File Menu

What it Does

This dialog is used to capture the current scene display as an image and export it to a supported image format.

General Description

A screen shot of the current scene can be saved using this dialog. The export image location, name, format type and scale factor must be specified in this dialog.

Folder

The folder where the exported image will be saved. The default folder will point to */ Graphics/Screen Captures* in the current Fledermaus 8 project directory.

File Name

The filename of the exported image including its format extension. If the extension is removed it will be automatically applied based on the format selected in the '*Image Format*' Combo Box.

Image Format

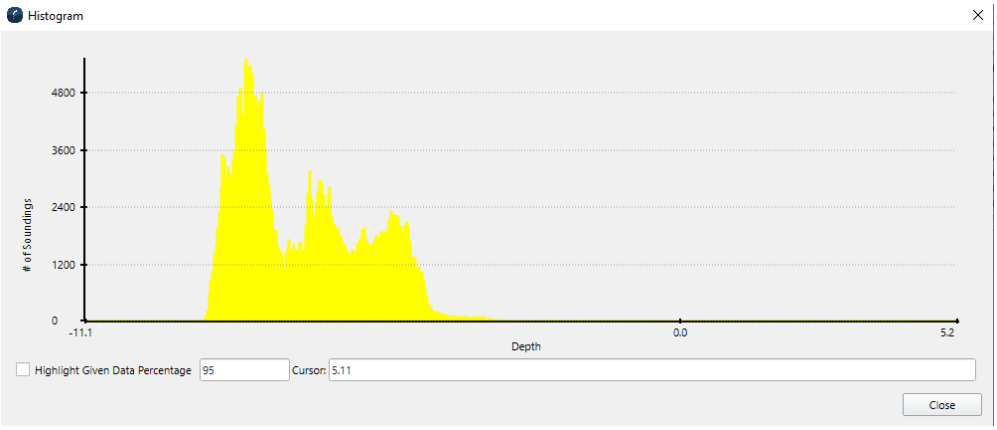
This Combo Box allows selection of the exported image format. Current supported export formats are *JPG, PNG, TIFF, EPS (Encapsulated PostScript)*. The *'Copy to Clipboard'* option will copy the image to the operating system clipboard and allow for pasting into an external application.

Scale Factor

Increasing the scale factor will increase the resolution of the resulting image. The resulting image size and megapixel values will be displayed next to the *'Image Size'* label.

Return to the File menu.

Fledermaus Show Histogram Dialog



Show Histogram Dialog

- How to Start
- What it Does

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Show Histogram
- Scene Objects Dock → Operations → Show Histogram

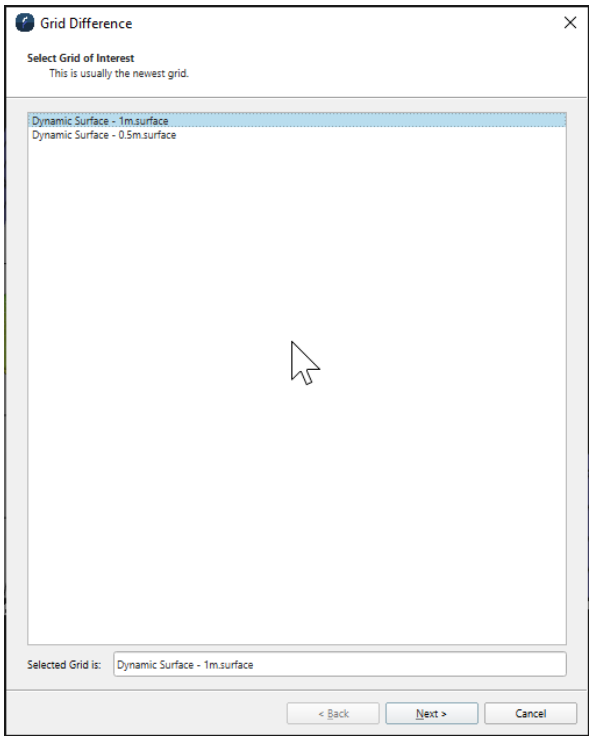
What it Does

This command will display a histogram for the currently selected un-gridded data file, or the current active group of files. The currently active attribute that is displayed can be adjusted using the *Variable* combo-box located at the bottom of the dialog.

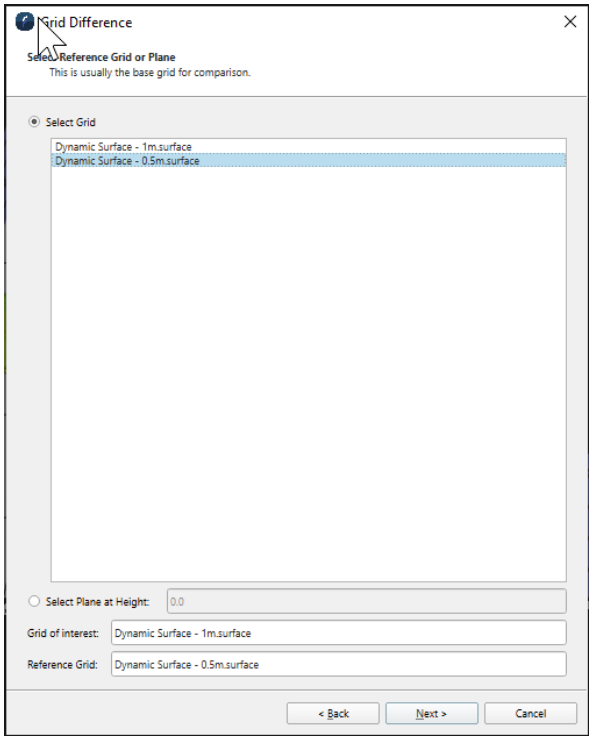
Fledermaus Surface Difference Wizard

On this page:

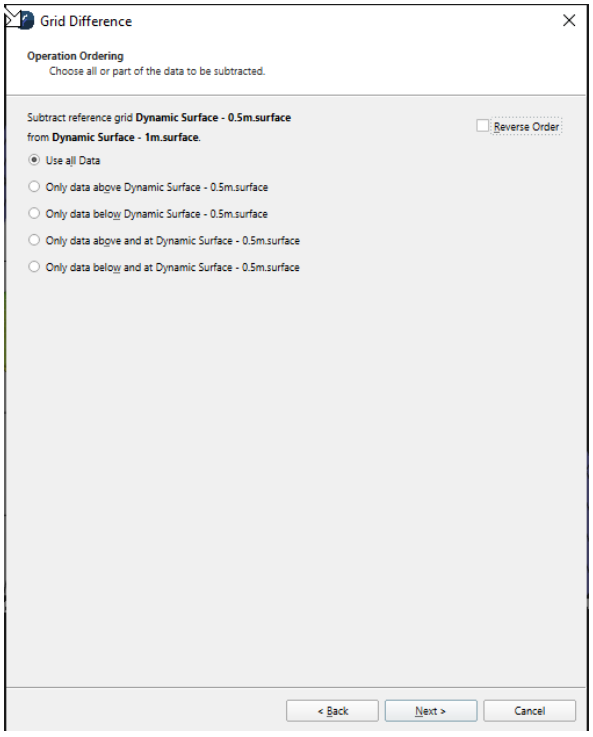
- How to Start
- What it Does
- General Description
  - Page 1
  - Page 2
  - Page 3
  - Page 4
  - Page 5



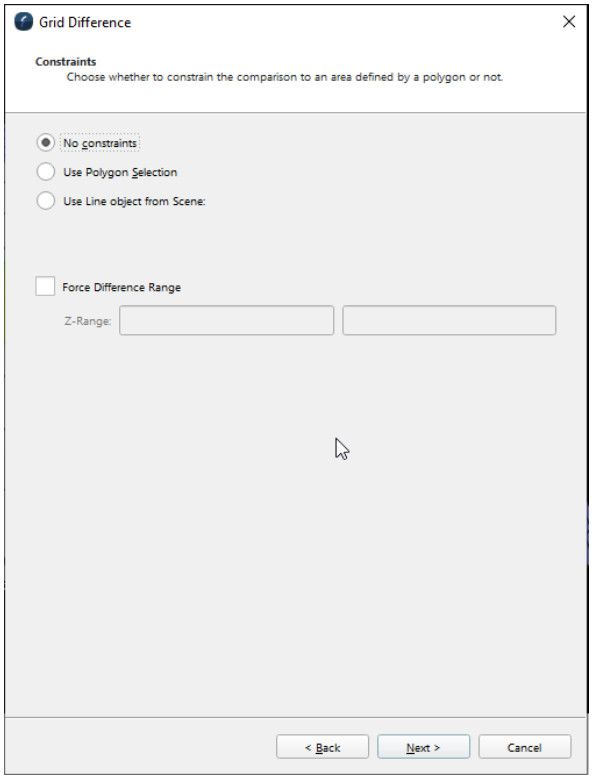
Surface Difference Wizard - Page 1



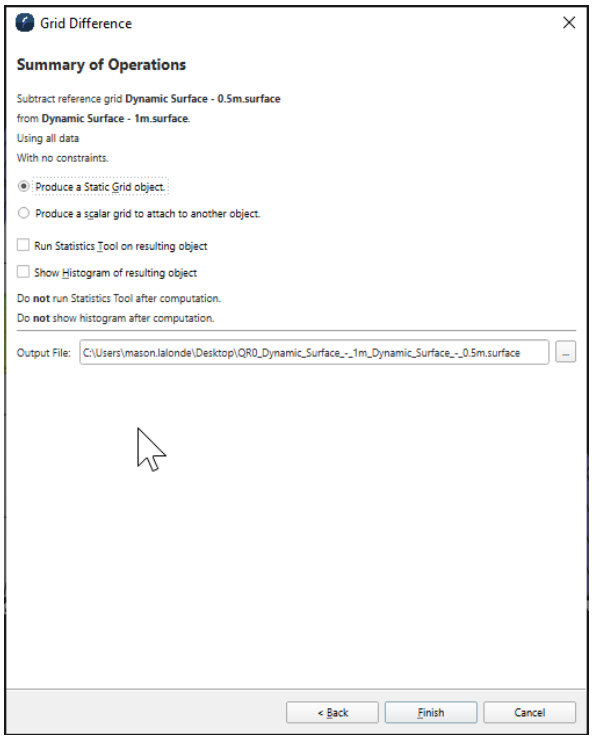
Surface Difference Wizard - Page 2



Surface Difference Wizard - Page 3



Surface Difference Wizard - Page 4



Surface Difference Wizard - Page 5

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Surface Difference
- Scene Objects Dock → Operations → Surface Difference

What it Does

The *Surface Difference* wizard is used to initiate several kinds of surface-surface and surface-plane queries.

General Description

Object types that can be queried are selectable through page 1 and page 2 of the wizard, and the type of query to be applied is selected via the query type radio buttons on page 3. The selected query is applied to the specified data objects, and the scope of the query is specified on page 4 of the wizard. By default, the query is applied to the common or intersection area of both input surfaces. However, a polygon can be used to constrain the query scope to within a certain area. A polygon can be loaded from the current polygon selection in the Main Visualization Window by selecting the *Use Polygon Selection* radial button. Alternately, a polygon can be loaded from an XY text file by selecting the *Load Polygon from File* radial button.

Page 1

Select the first surface or surface layer

from the list of available surfaces for the difference operation. Click **Next** to proceed to the next page of the wizard or **Cancel** to cancel the operation.

Page 2

Select the second surface or surface layer

for the difference operation. Alternatively you can choose to use a plane at a specified height for the second surface. Click **Next** to proceed to the next page, **Back** to return to the previous page of the wizard or **Cancel** to cancel the operation.

Page 3

Select which data to use for the difference operation. Click **Next** to proceed to the next page, **Back** to return to the previous page of the wizard or **Cancel** to cancel the operation.

Page 4

Select the constraints of the difference operation. You can optionally specify a Z-Range that you want to force the difference surface to have. The main purpose of this is you want to do multiple surface differences one can optionally guarantee each resulting surface has the same difference range which is particularly useful if one wants to show the difference histogram in the next page to make comparative histogram plots. If one chooses to force the difference range any resulting difference cells outside the specified range will be clipped out. Click **Next** to proceed to the next page, **Back** to return to the previous page of the wizard or **Cancel** to cancel the operation.

Page 5

Review the selected options for the difference operation. Click **Finish** to proceed or **Cancel** cancel the operation. When complete, a Fledermaus static surface will be added to the project representing the results of the surface difference operation. Assuming they are selected one will also see the statistics for the surface difference and/or a resulting histogram of the difference.

Fledermaus Show Spreadsheet Dialog

Show Spreadsheet Dialog

- How to Start
- What it Does
- General Description

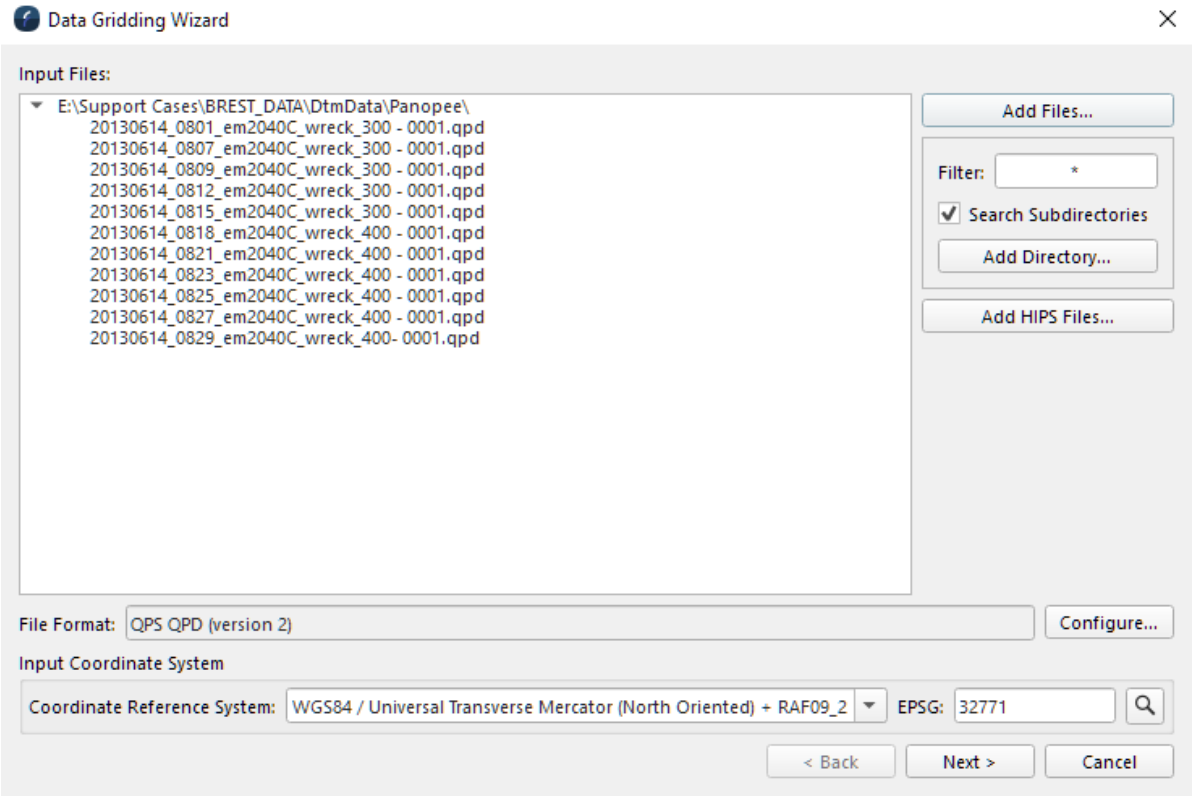
How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Show Spreadsheet
- Scene Objects Dock → Operations → Show Spreadsheet

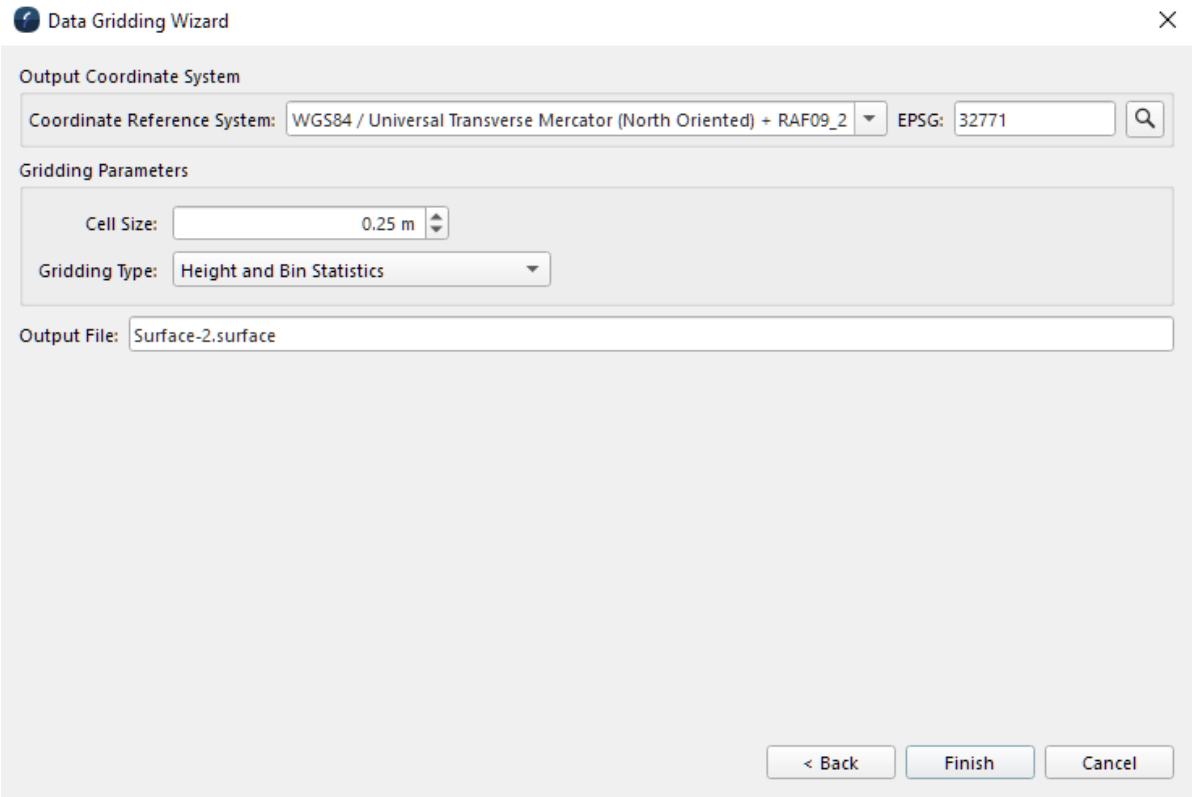
What it Does

General Description

Fledermaus Data Gridding Wizard



Data Gridding Wizard - Page 1

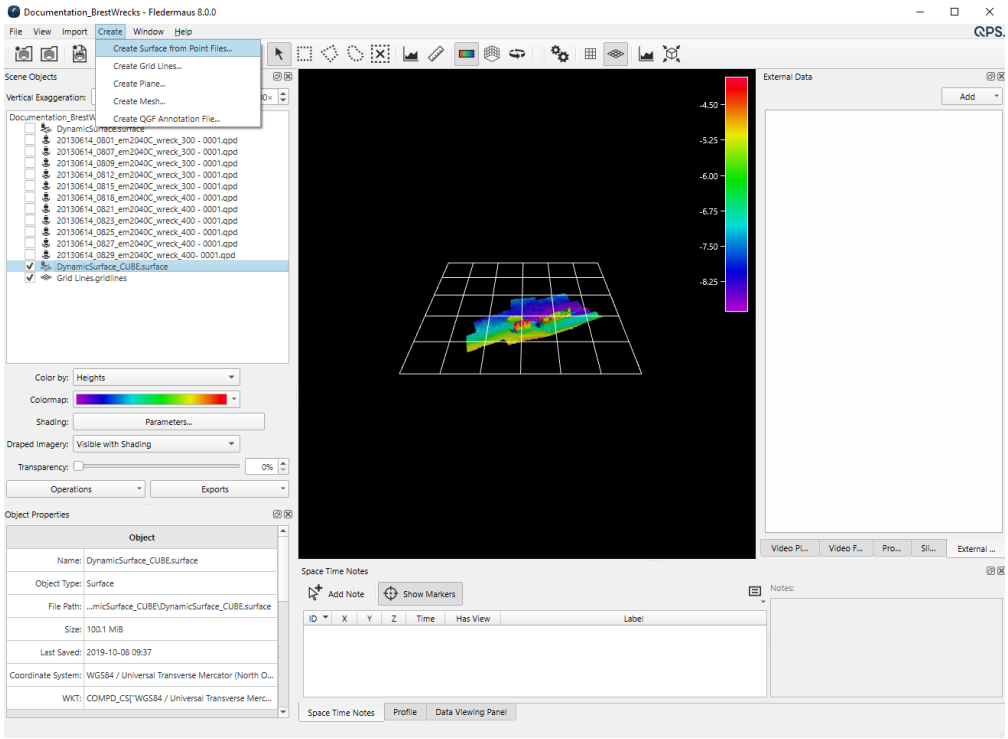


Data Gridding Wizard - Page 2

- How to Start
- What it Does
- General Description
- Add HIPS Files

How to Start

- Main Menu Bar → Create → Create Surface from Point Files
- Scene Objects Dock → Right-Click on Object → Operations → Create Surface
- Scene Objects Dock → Operations → Create Surface



Data Gridding Wizard from Create Menu

What it Does

This option is used to create a gridded .surface file from one or more un-gridded files

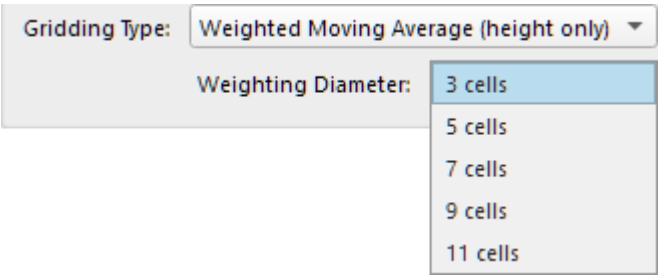
General Description

Data Gridding Wizard - Page 1 will show the selected source files, the file format and the geodetics of the imported files.

Data Gridding Wizard - Page 2 is the settings for the grid, the output co-ordinate systems, the gridding parameters including the cell size, gridding type and the file name.

The Gridding Types available are:

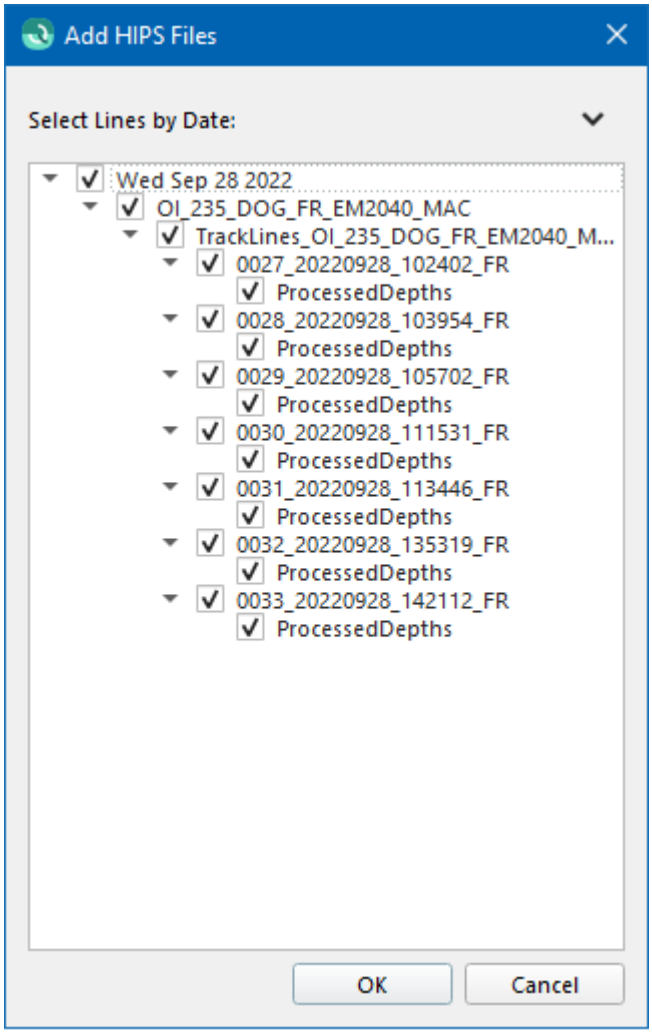
- Height and Bin Statistics
- Height Only
- Weighted Moving average



Gridding Type Drop Down Menu

The weighted moving average has additional options with the weighting diameter. The larger the weighted diameter the smoother the surface will be.

Add HIPS Files



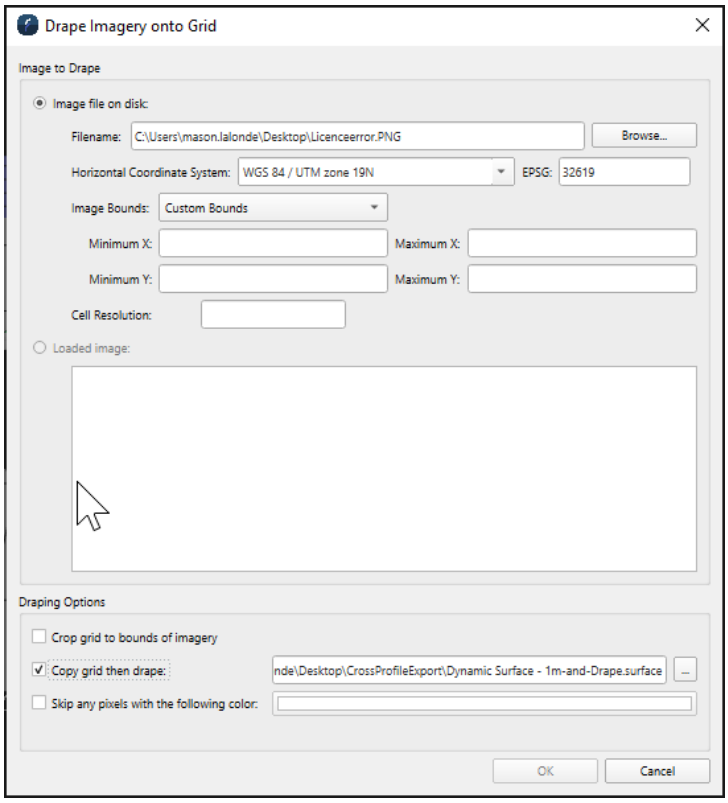
Clicking on the 'Add HIPS Files...' button will bring up a directory selection dialog followed by the Add HIPS Files dialog. Select the desired Lines of HIPS data and hit OK. The

selected lines will be added to the Data Gridding Wizard. To add HIPS data, Fledermaus requires a valid CARIS license. To point Fledermaus to the valid CARIS license, refer to the Shared Preference option in the Preference dialog.

Fledermaus Detach Scalar Dialog

Starting v8.7.0 the Detach Scalar operation as been replaced with Extract Grid Layers.

Fledermaus Drape Image Dialog



Drape Image Dialog

- How to Start
- What it Does
- General Description
- Options
  - Image to Drape
  - Draping Options
    - Crop surface to Bounds of Imagery
    - Copy Surface then Drape
    - Skip Pixels with Specified Color

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Drape Image

- Scene Objects Dock → Operations → Drape Image

What it Does

Use the *Drape Image on Surface* menu option to import an image and drape it over a SonarDTM surface.

General Description

Click the *Browse* button to specify the path and name of the image file using the standard file selection dialog, or select from the list of available objects.

When importing an image, the software first cuts out regions from both the image and the DTM that overlap. In order to match areas of the DTM and image, georeferencing must be given for the image in the *Georeferencing for image* fields.

Note that if an image is opened that contains georeferencing (e.g. a geo-tiff), the values will automatically be filled into the fields.

Options

Image to Drape

Select the image to drape on the surface. Either a file from disk, the upper option, or an object in the scene from the list under Loaded Objects. The image must be fully georeferenced, which is the case for Loaded Objects. Fro files from disk, full georeferencing must be specified. Any georeferencing in the file from disk will be filled in automatically. Some images do not have full georeferenicng, and this must be added before the image may be draped.

Draping Options

There are currently three options available:

- Crop image to bounds of imagery
- Copy surface then drape
- Skip pixels with specified color

Crop surface to Bounds of Imagery

This option will crop the surface to the bounds of the imagery, as it says. This option requires a new surface to complete the crop, so the copy surface then drape options must be specified.

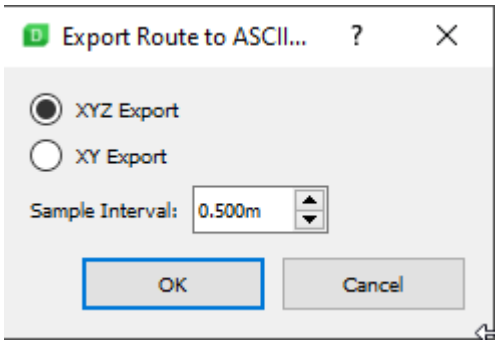
Copy Surface then Drape

This option will make a copy of the original surface before draping on the copy. In the case that crop surface to bound of imagery was selected, the surface will be cropped first.

Skip Pixels with Specified Color

This option, if selected, will skip pure white pixels (#ffffff) in the image during the drape process. This can be useful to speed up processing by skipping pixels with no information. It will also reduce the size of the resulting drape, since the pixels that match the exact color specified will not be written. Other colors may be specified by clicking on the color button. Only the exact color specified will match, however.

Fledermaus Export Route To ASCII Dialog



- How to Start
- What It Does
- General Description

How to Start

- Right Click on an Existing Route → Left Click Export Route to ASCII Button

What It Does

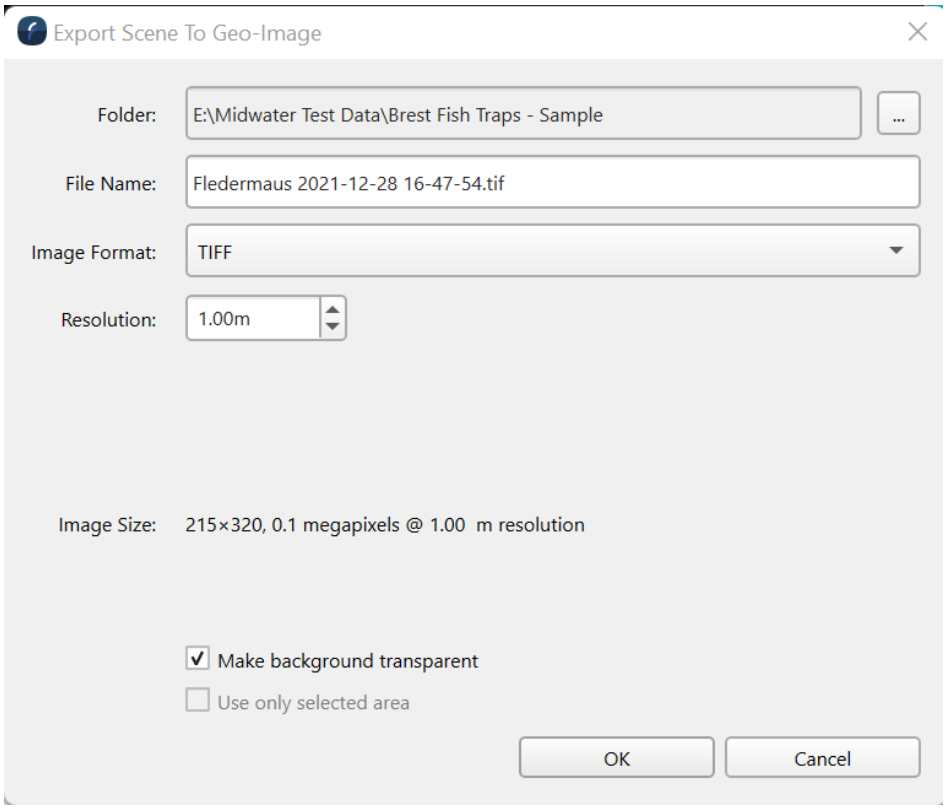
Converts route data into an ASCII-formatted .txt file.

General Description

XYZ / XY Export: Allows the user to decide if they want to save the route's Z values to their exported .txt file.

Sample Interval: Allows the user to set the interval distance between each point they take from the route. A lower interval will mean more points.

Fledermaus Export Scene to Image Dialog

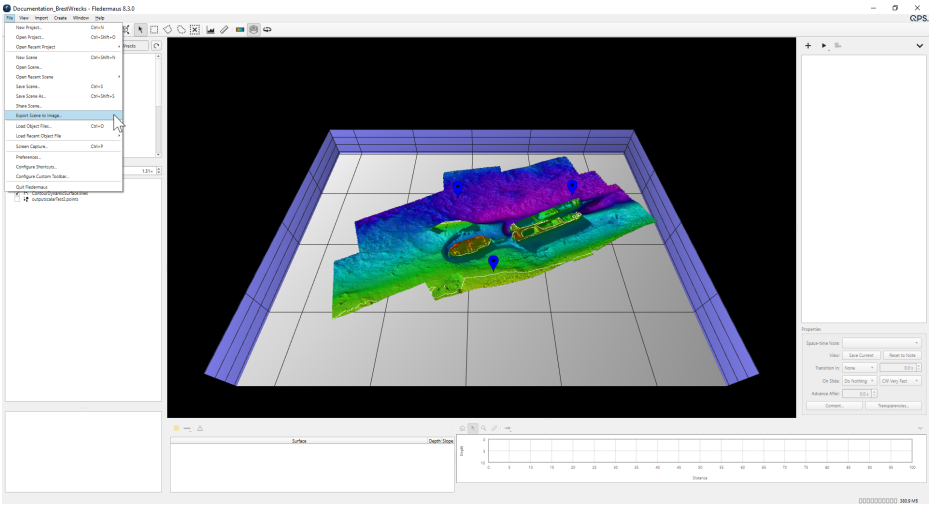


Export Scene to Geo-Image Dialog

- How to Start
- What it Does
- General Description
  - Folder
  - File Name
  - Image Format
  - Resolution
  - Make background transparent
  - Use only selected area

How to Start

- Main Menu Bar → File → Export Scene to Image



What it Does

This dialog is used to render and save the current scene display as a top-down orthographic georeferenced image and export it to a selected image format.

General Description

The export image location, name, format type, and scale factor must be specified in this dialog.

Folder

The folder where the exported image will be saved. If a project is open, the default folder will point to */Graphics/Mapsheet Captures* in the current Fledermaus 8 project directory.

File Name

The filename of the exported image including its format extension. If the extension is removed it will be automatically applied based on the format selected in the '*Image Format*' Combo Box.

Image Format

This Combo Box allows selection of the exported image format. Current supported export formats are *JPG, PNG, TIFF, EPS (Encapsulated PostScript)*. The *'Copy to Clipboard'* option will copy the image to the operating system clipboard and allow for pasting into an external application.

Resolution

One can directly control the resolution of the pixels in the resulting image by entering it here. By default the application will use the best resolution from any active object in the scene. Specifying a higher resolution (smaller number) will result in a larger image but doesn't really increase the information density as you are going beyond the resolution of the best available object. There are times however where this can be useful. The resulting image size and megapixel values will be displayed next to the *'Image Size'* label. It is a good idea to keep an eye on the resulting image size. For example if you have a low resolution surface covering a very large area and a very high resolution in just a small part of the overall scene area then you can get some very big image sizes here.

Make background transparent

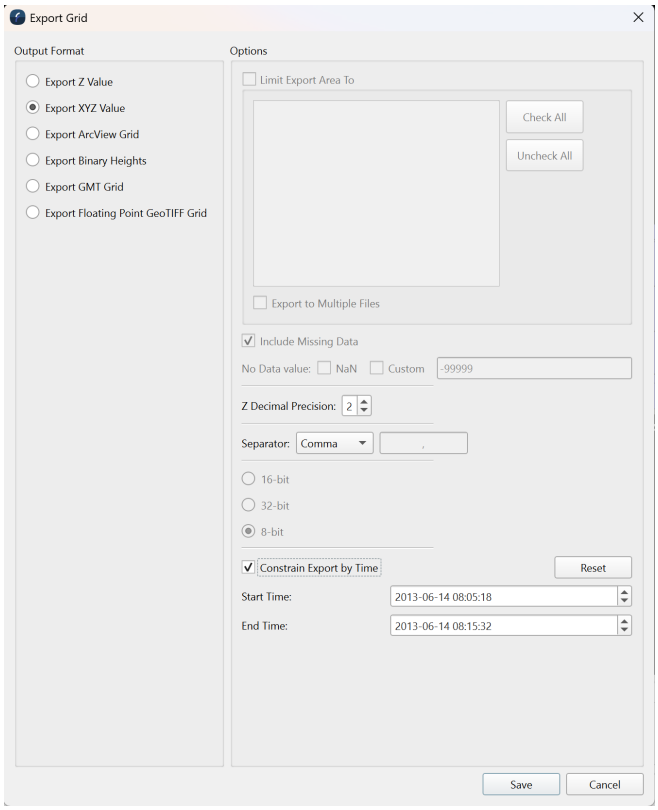
When toggled on, any area of the scene that has no data in it will have transparent pixels in the resulting image. If toggled off these areas will have the background color instead.

Use only selected area

One can control the area of the scene to be rendered by using one of the selection tools like the rectangular selection tool to set an area of interest. If so set this option will be available and can be used to more precisely choose the area to be exported. (Note its geo-spatial bounds will be an even multiple of the specified resolution.)

Return to the File menu.

Fledermaus Export Surface Dialog



- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Exports → Export to Surface
- Scene Objects Dock → Exports → Export to Surface

What it Does

This dialog is used to export surface information from a selected surface layer.

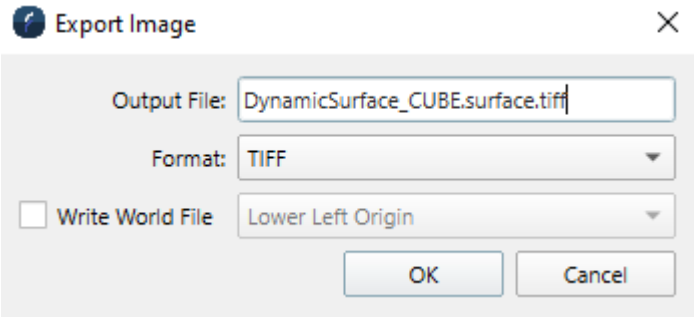
General Description

This option allows the current selected Surface to be exported to another supported surface. When saving the data, areas of the surface containing no data may be included with the output file if the Include Missing Data option is on. If missing data is included, a special value is written for these data points, indicated by the No Data Value text field.

When writing a binary file, you may specify either writing an 8-bit or 16-bit number, or a 32-bit greyscale value containing red, green, blue, and alpha components. When exporting to ASCII X and XYZ Grids, there is an option to specify a decimal precision of the Z value being written. You may also include constraints by time for your exported grid. this will limit the grid to only the data collected between the 2 times

Exports can be limited to the area made by an Sd line object or a selection made in the workarea. The multiple files option allows for each export area to be exported to a unique file.

Fledermaus Export Texture to Image Dialog

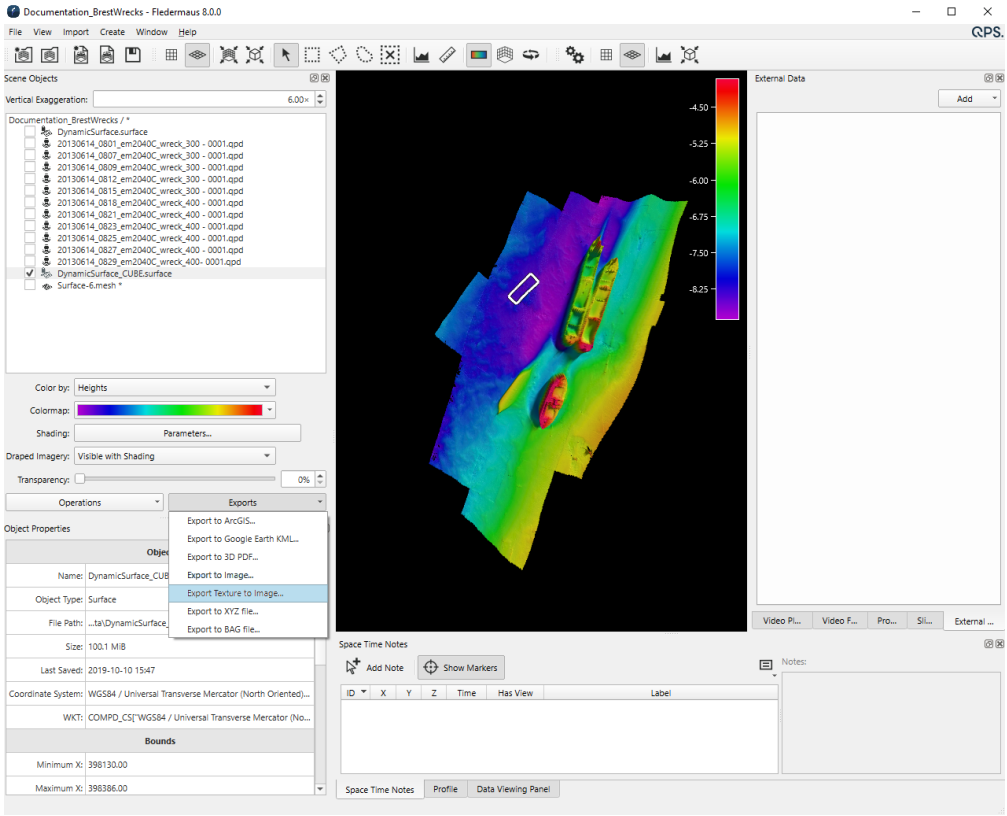


Export to Image Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Exports → Export Texture to Image
- Scene Objects Dock → Exports → Export Texture to Image



Export Texture to Image Dialog from Export Menu

What it Does

This dialog saves a georeferenced image file (TIFF, JPEG, PNG, BMP, TFW), of the texture associated with a surface, as seen in the Fledermaus display.

To save an image of the colors only, without shading or textures, use the Export to Image... dialog.

Note that this dialog captures the texture in association with the Draped Imagery selection. There may be up to three options available for Export Texture to Image (Hidden, Visible and Visible with Shading). If there is no Visible texture (e.g. no textured images or no colors from as in an imported Fledermaus 7 SD object), there will be no difference between Hidden and Visible with Shading. The Visible mode will not have shading unless already present, e.g. from a Fledermaus 7 SD object.

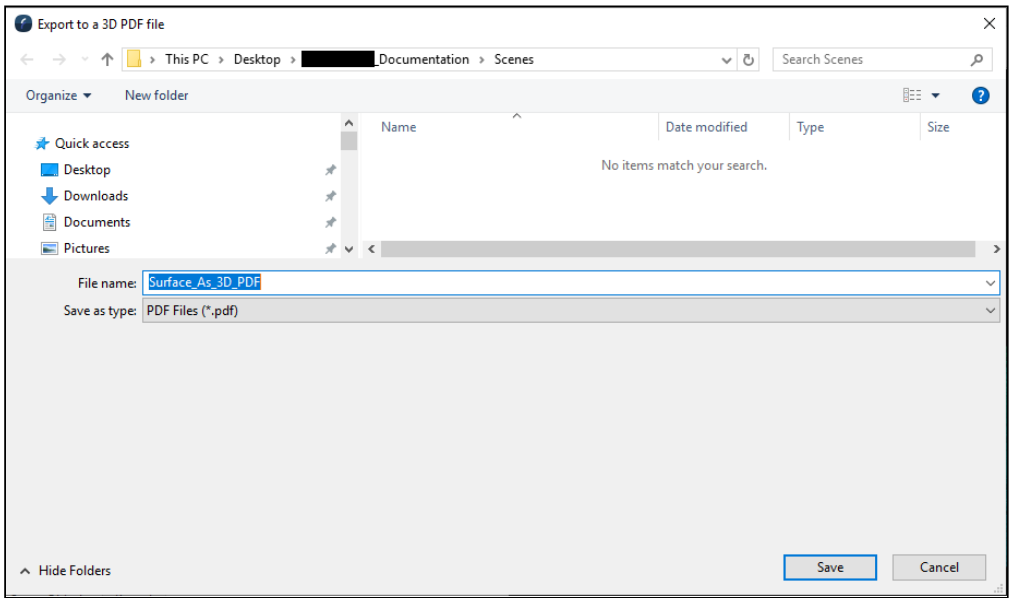
General Description

First, ensure that the desired Draped Imagery selection has been made. Then choose the image type by selecting the file format from the *Format* drop down.

To write a TIFF World File, the check box must be selected to allow the user to choose the origin. The origin options include: Lower Left Origin, or ESRI Upper Left Origin.

Note that TFW file's with the ESRI Upper Left Origin, are compatible with most major GIS packages. TIFF files will be written as GeoTIFFs with full georeferencing information.

Fledermaus Export to 3D PDF Dialog

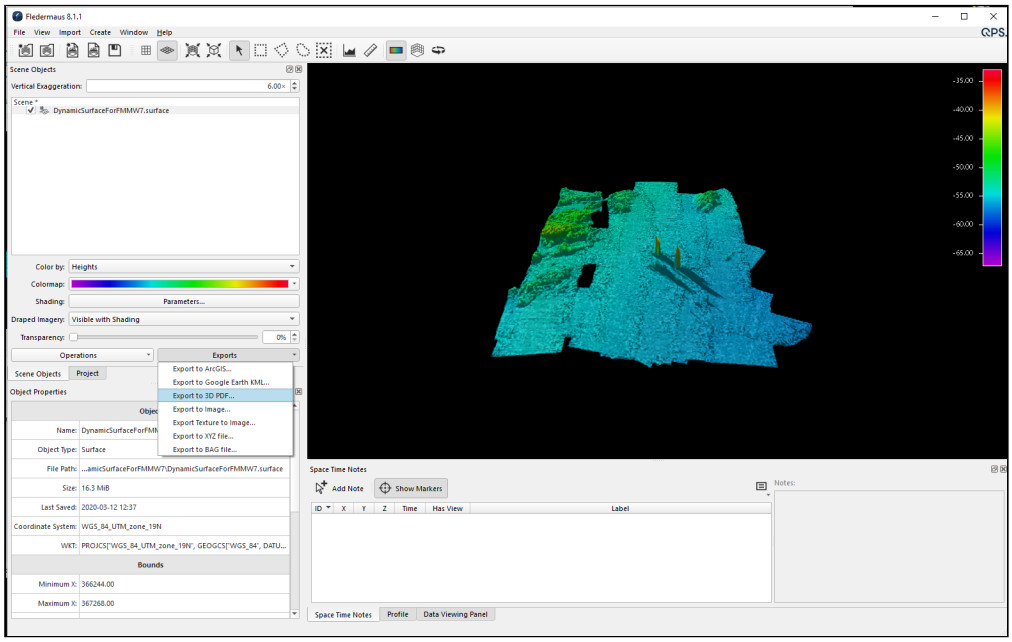


Export to 3D PDF Window

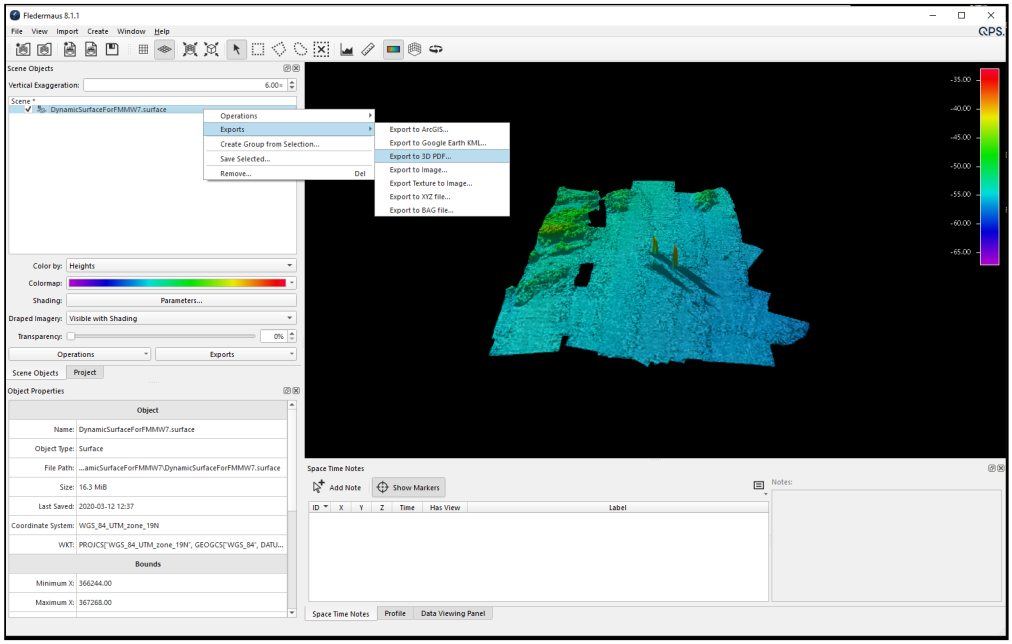
- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Exports → Export to 3D PDF
- Scene Objects Dock → Right-Click on Object → Exports → Export to 3D PDF



Export to 3D PDF in Exports drop down



Export to 3D PDF right-click scene object

What it Does

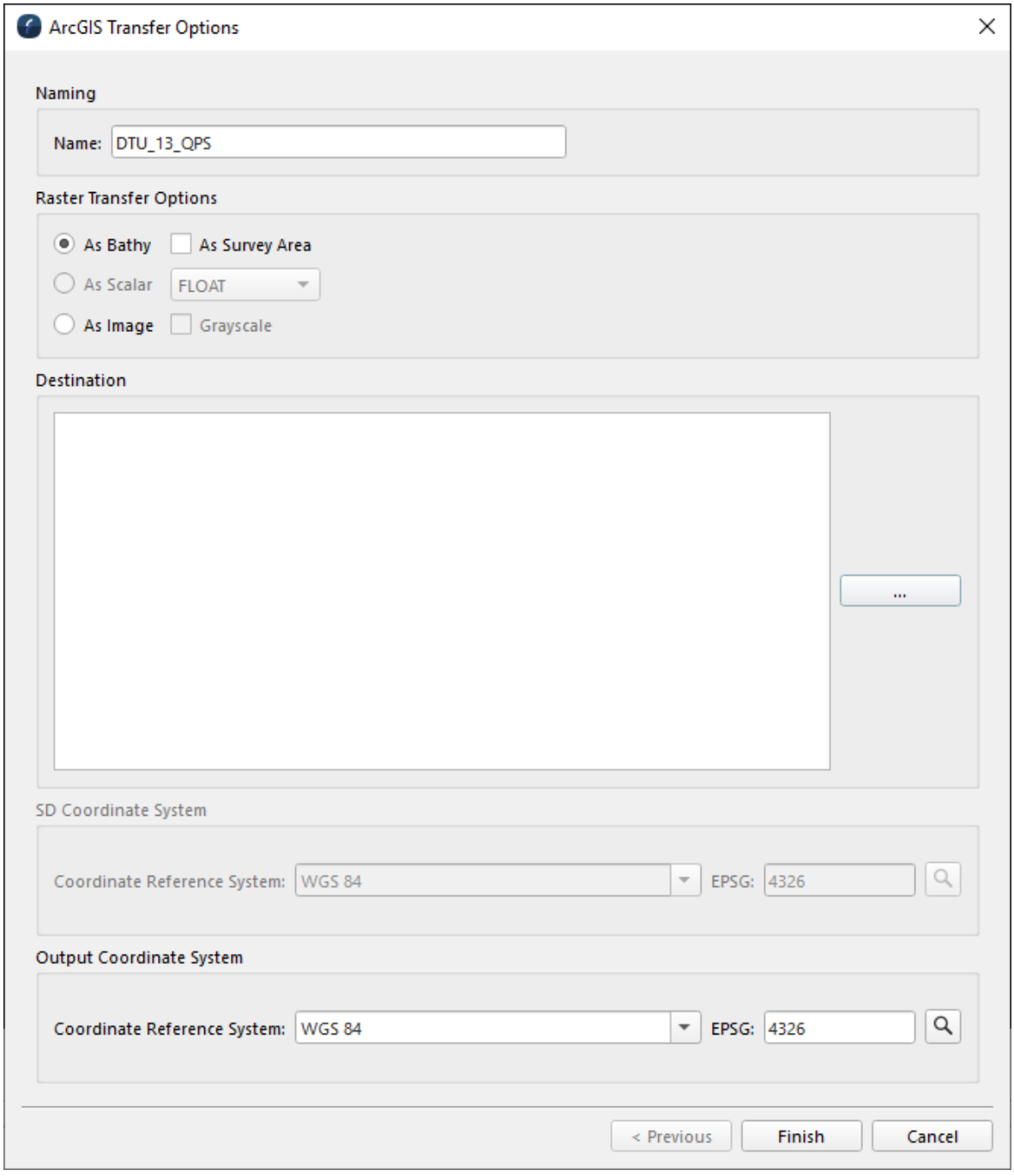
This feature is used to export the scene objects as a 3D PDF which can then be loaded in Adobe Acrobat Reader or other compatible 3D PDF readers. The scene's vertical exaggeration is used in the export.

General Description

This feature is ideal for use in restrictive IT environments. The surface will be rendered in 3D PDF compatible readers as a 3D object for interactive viewing. Beware that such readers have difficulty loading or rendering surfaces of more than four million cells (2,000 x 2,000 cells). Crop or reduce the size of the surface before exporting to work around this issue. Due to how the internal 3D PDF formal is arranged, the 3D PDF file will be approximately 4 to 5 times bigger than the surface SD file.

Fledermaus Export to ArcGIS® Dialog

In order to use the Arc Geodatabase tools you will need a Fledermaus 8 FMGIS license as well as an ESRI license.
You will also need to install ArcGIS Desktop version 10.1 and above, as well as the same version of ArcGIS Desktop Background Geoprocessing 64bit.

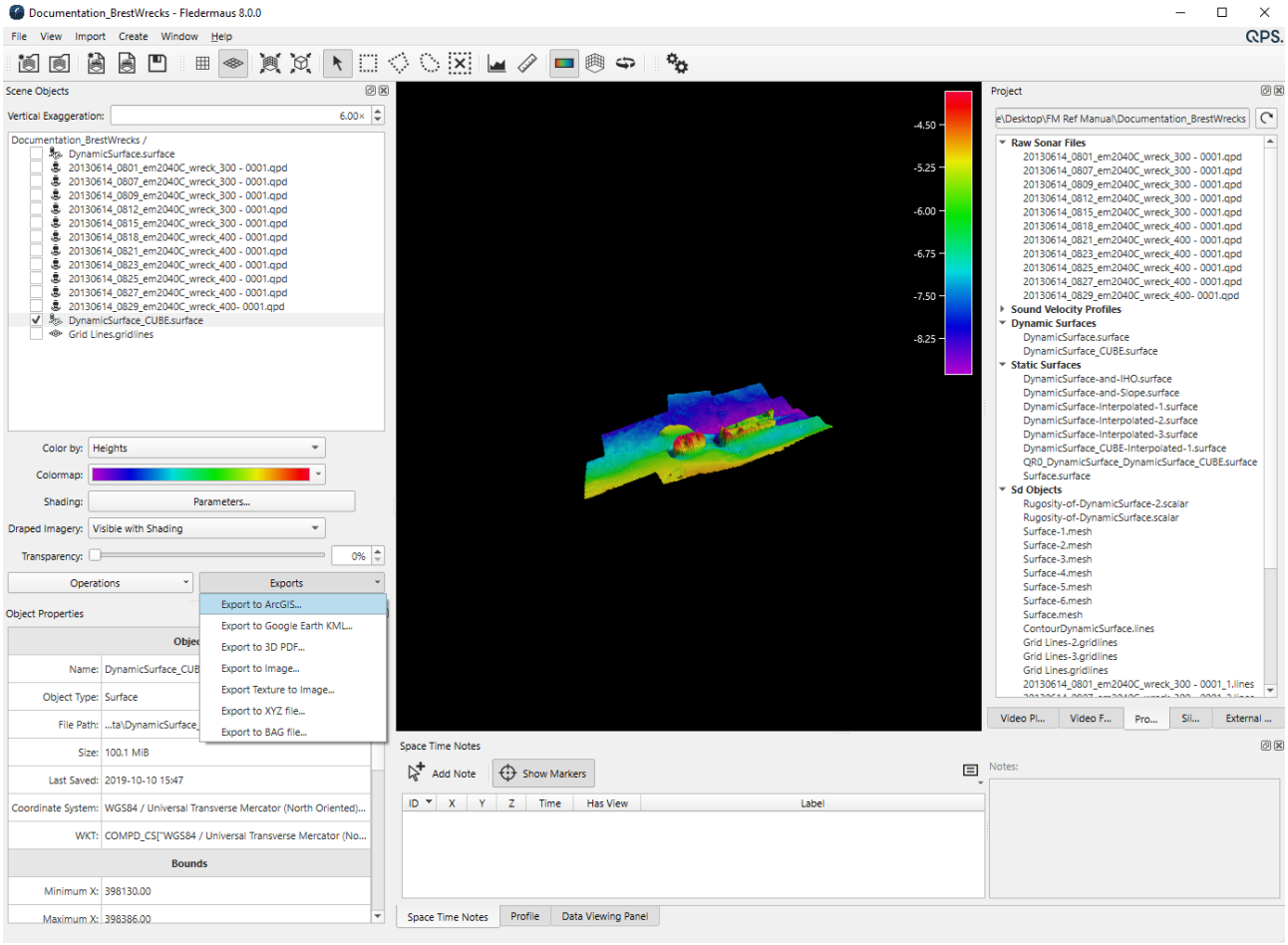


Export to ArcGIS Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object(s) → Exports → Export to ArcGIS
- Scene Objects Dock → Exports → Export to ArcGIS



Export to ArcGIS Dialog from Export Menu

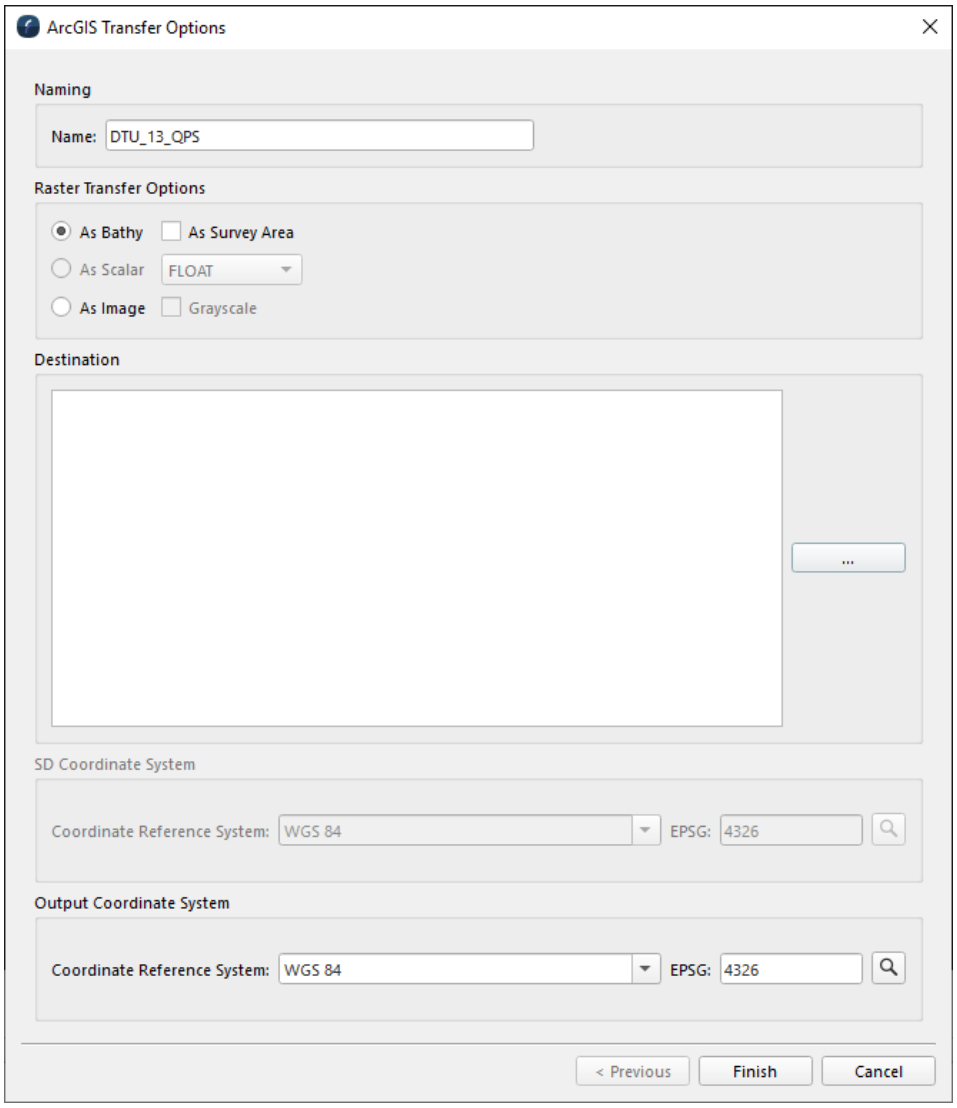
What it Does

This feature allows the user to export the scene object(s) to an ArcGIS geodatabase (.gdb).

General Description

The selected scene object(s) can be exported directly to an ArcGIS geodatabase (.gdb) in order to integrate visualization with ESRI products.

Select the ... to designate your path. In order to successfully export your scene object(s) to ArcGIS, a geodatabase folder is required. You will be given the option to either create a new geodatabase (.gbd) or select an existing one.



In the *Create/Open ArcGIS Connection* dialogue:

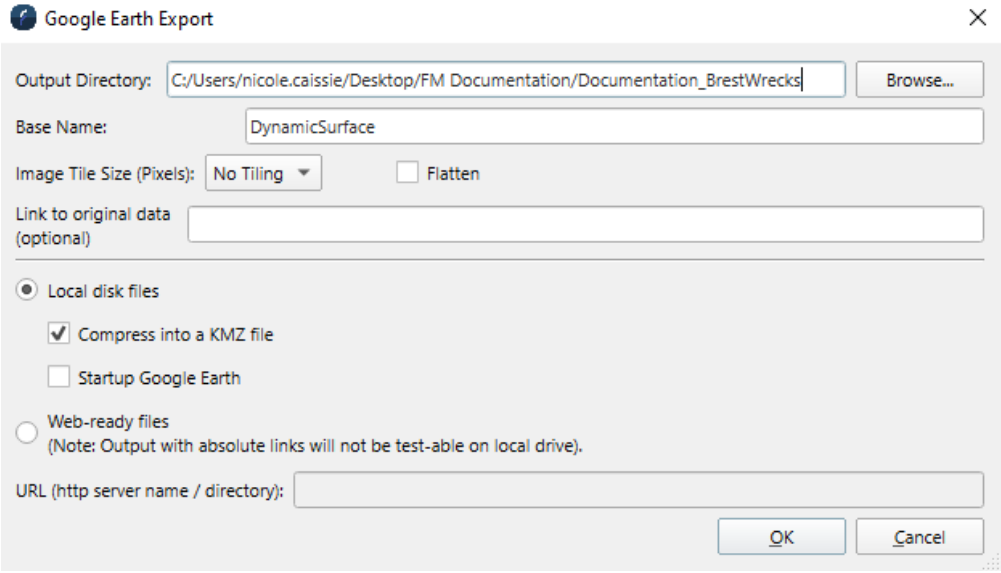
Create a new geodatabase (.gdb): Select *Create a New ESRI Geodatabase,* and *File Geodatabase* as type. You will be able to name your .gdb when you designate your file path.

Use an existing ESRI Database: Select *Connect to an existing ESRI Database* and *Folder* as type. You will be able to name your .gdb when you designate your file path.

Once this is completed, the geodatabase (.gdb) will appear in the Arc Tab next to your scene window and will contain the object(s) exported.

More details on connecting to and transferring files from an ESRI geodatabase are found in Fledermaus External Data Dock.

Fledermaus Export to Google Earth KML Dialog

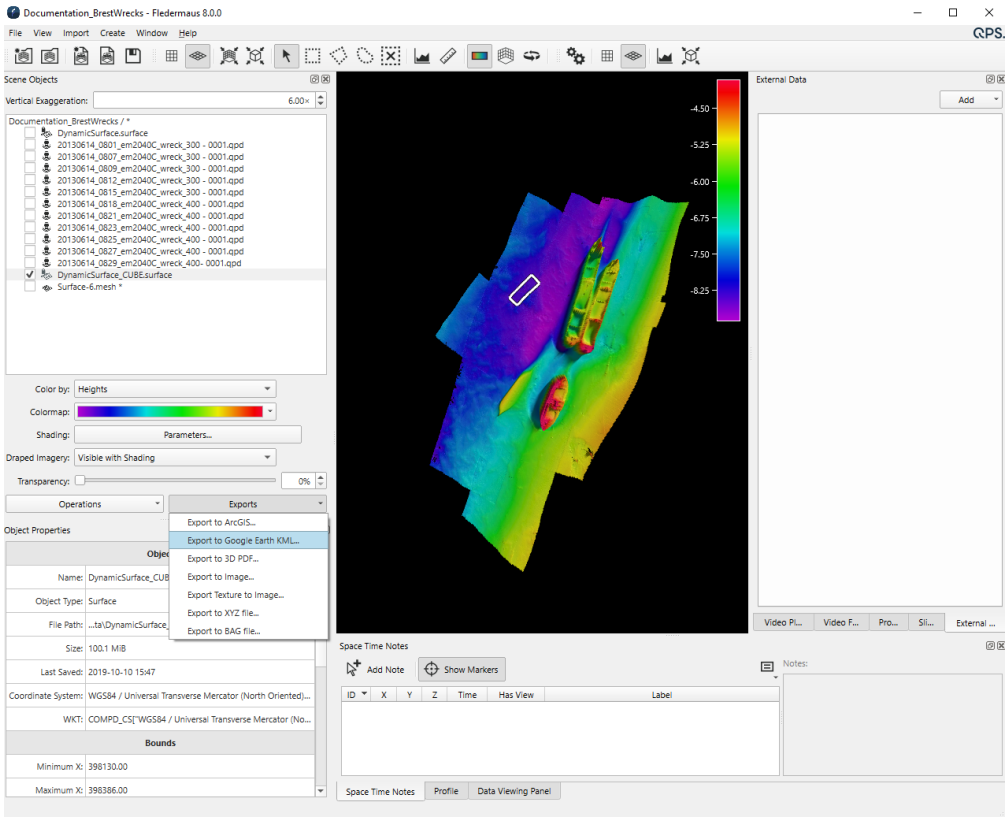


Export to Google Earth KML Dialog

- How to Start
- What it Does
- General Description
  - Output Directory
  - Base Name
  - Image Tile Size (Pixels)
    - Flatten
  - Link To Original Data (Optional)
  - Local Disk Files
    - 1. Compress into a KMZ file
    - 2. Startup Google Earth
  - Web-ready files
  - URL

How to Start

- Scene Objects Dock → Right-Click on Object → Exports → Export to Google Earth KML
- Scene Objects Dock → Exports → Export to Google Earth KML



Export to Google KML Dialog from Export Menu

What it Does

This dialog will export the selected surface to a Google Earth comparable KML or KMZ file.

General Description

Exporting to KML can be configured with the following options.

Output Directory

The *Output Directory* indicates the path to the directory where the file will be saved. This path can be modified using the *Browse* button.

Base Name

The *Base Name* text field contains the filename that will be used when saving the file.

Image Tile Size (Pixels)

Selecting an *Image Tile Size* from the *Combo Box* will limit KML files to the selected tile/ pixel size. Additional files will be created to ensure the entire surface is exported.

If *No Tiling* is selected a single KML will be exported.

Flatten

When '*Flatten'* is unchecked all KML exports are created with Altitude Mode 'clampToSeaFloor'. This mode ignores any altitude values and drapes the feature on the bottom of any major body of water. If the feature is located away from a body of water the feature will be clamped to the ground level instead.

Checking the '*Flatten'* button export the KML with no Altitude Mode resulting in a flat image.

Link To Original Data (Optional)

Including a link in this text field will add the KML link tag in the exported file.

Local Disk Files

Creates the file on the local disk with the 2 following options:

1. Compress into a KMZ file

Compresses the KML files into a single KMZ file. This will not delete the original KML files.

2. Startup Google Earth

Selecting this option will attempt to launch the Google Earth Application if it is installed on the local PC with the exported file.

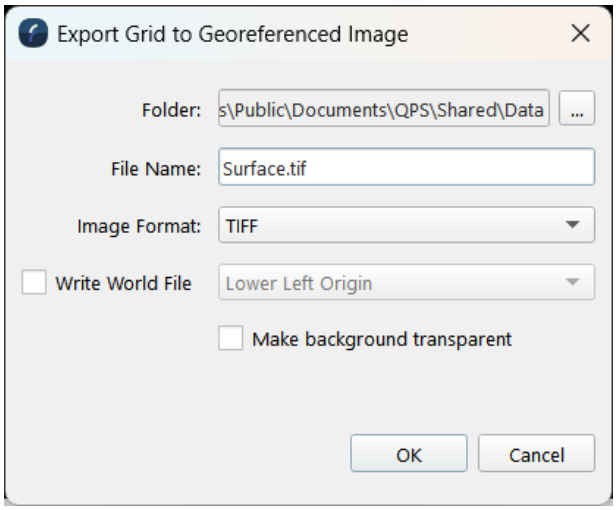
Web-ready files

Files can be uploaded to a server after creation.

URL

The URL of the server the files will be uploaded to.

Fledermaus Export to Image Dialog

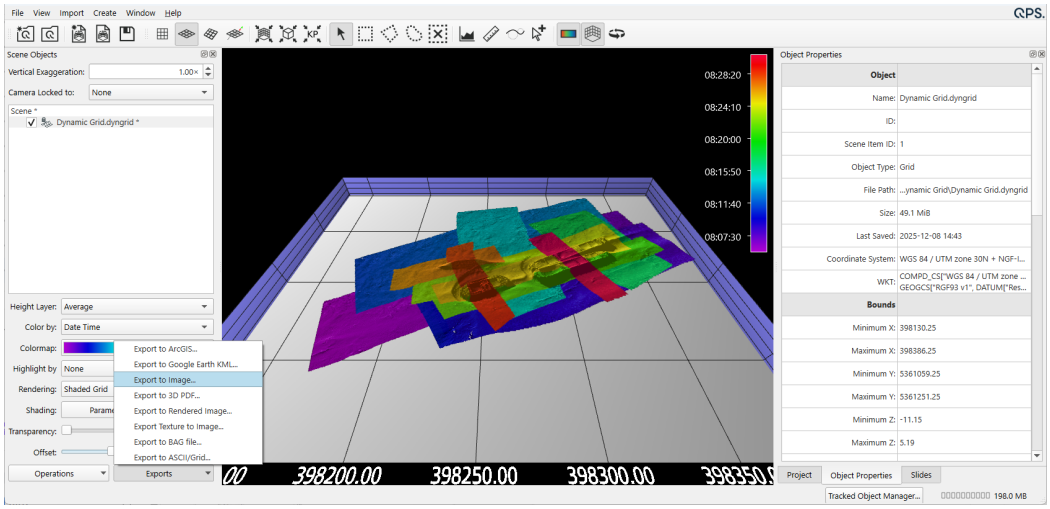


Export to Image Dialog

- How to Start
- What it Does
- General Description
- Output Example

How to Start

- Scene Objects Dock → Right-Click on Object → Exports → Export to Image
- Scene Objects Dock → Exports → Export to Image



Export to Image Dialog from Export Menu

What it Does

This dialog is used to save a georeferenced image file (TIFF, JPEG, PNG, BMP, TFW), of the surface.

This dialog saves an image of the specified surface as seen in the Fledermaus display.

This exact pixel export only contains the colors as displayed in the workarea. These colors may be directly referenced to the colormap. This is useful to reference heights accurately by color since there would be no color shifts caused by the presence of shadows.

General Description

Choose the image type by selecting the file format from the *Format* drop down.

To write a TIFF World File*, the check box must be selected to allow the user to choose the origin. The origin options include: Lower Left Origin, or ESRI Upper Left Origin.

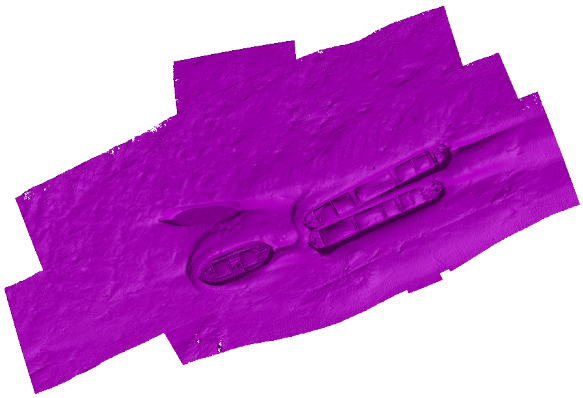
When exporting the image of the surface as seen in the Fledermaus, the size of the image will be at the same resolution as the surface.

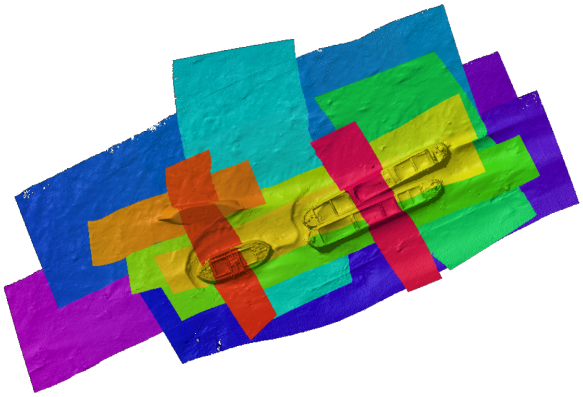
*Note that TFW file's with the ESRI Upper Left Origin, are compatible with most major GIS packages. TIFF files will be written as GeoTIFFs with full georeferencing information.

Output Example

Exact Pixel Export:

As Seen in Fledermaus Display:





Fledermaus Export to XYZ+Attributes Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Exports → Export to XYZ+Attributes
- Scene Objects Dock → Right-Click on Object → Exports → Export to XYZ+Attributes

What it Does

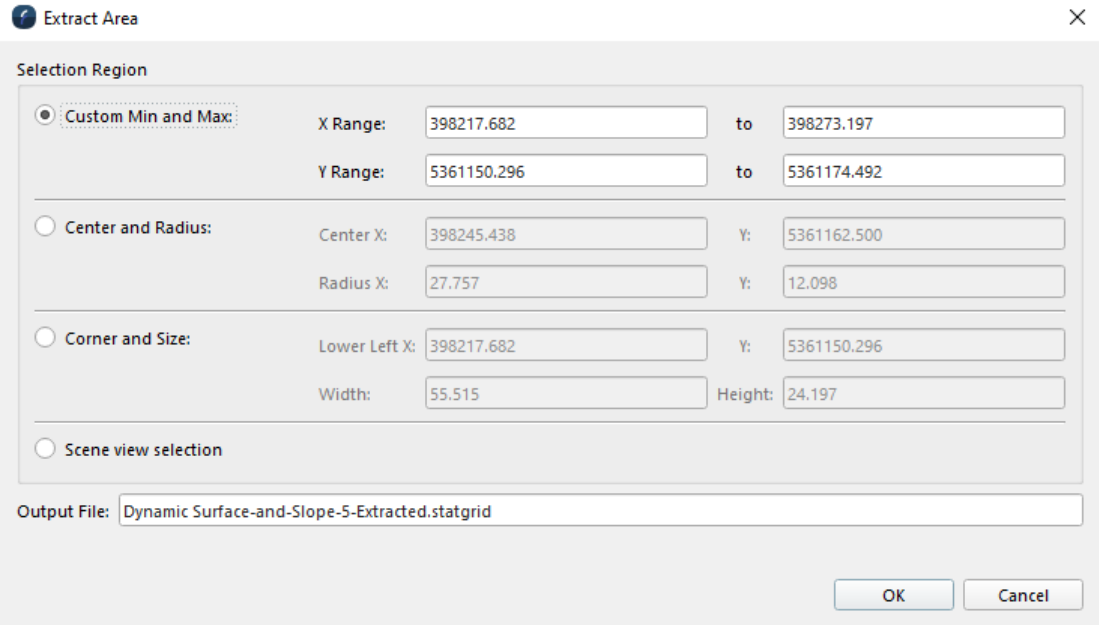
This feature is used to export values stored in a line object including any attributes loaded as an ASCII text file which can then be used to load into other software or examined in a text viewer or editor.

General Description

This feature can be used to examine values that were imported into the line object, including any attribute values specified during loading. This is useful for roundtrip testing of values, examining values after the fact or editing and re-importing values.

Currently, this is supported by line objects only.

Fledermaus Extract Area Dialog



Extract Area Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Extract Area…
- Scene Objects Dock → Operations → Extract Area…

What it Does

This dialog is used to export an area of your choice from the currently selected Grid to be saved as a new Grid with “Extracted” appended to the file name.

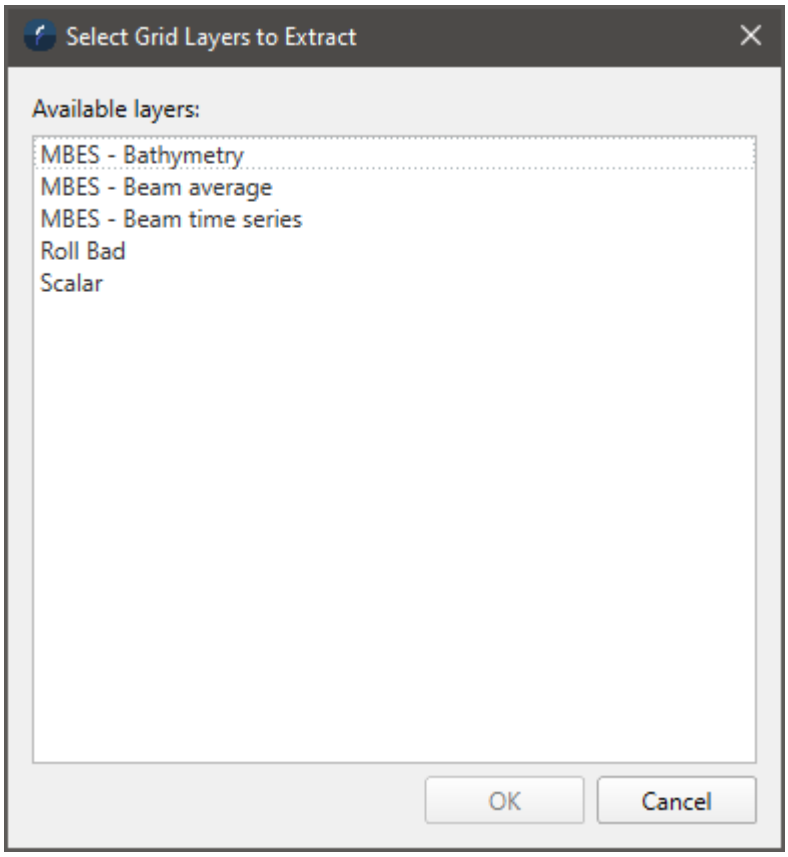
General Description

This dialog gives you a few different ways to select the region to extract:

- *Custom Min and Max*: Specify a rectangular sub-section of the data by giving the lower left and upper right coordinates of the box.

- *Center and Radius*: Specify a rectangular sub-section of the data by giving the center point, X radius, and Y radius of the box.
- *Corner and Size*: Specify a rectangular sub-section of the data by giving the lower left corner plus the width and height.
- *Scene view selection:* Uses the area selected with one of the selection tools to determine the extracted region. Using this method you can extract any shape from the surface, not just rectangles. Only available if you made a selection with a selection tool before clicking on the operation.

Fledermaus Extract Grid Layers Dialog



Extract Grid Layers dialog

- How to Start
- What it Does
- General Description

How to Start

Scene Objects Dock → Right-Click on Object → Operations → Extract Grid Layers…

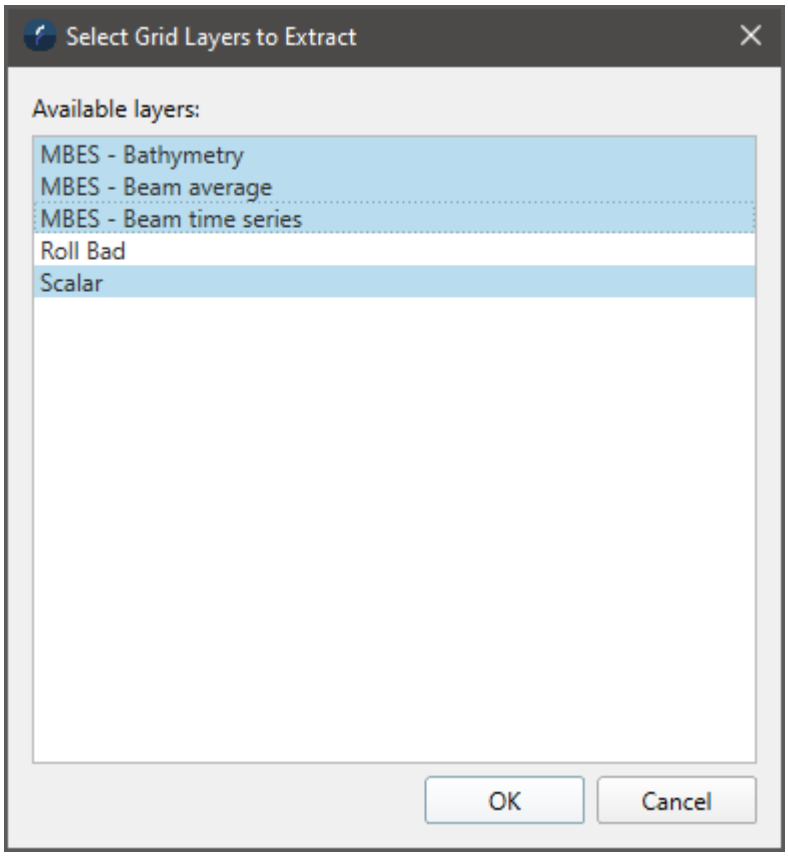
Scene Objects Dock → Operations → Extract Grid Layers…

What it Does

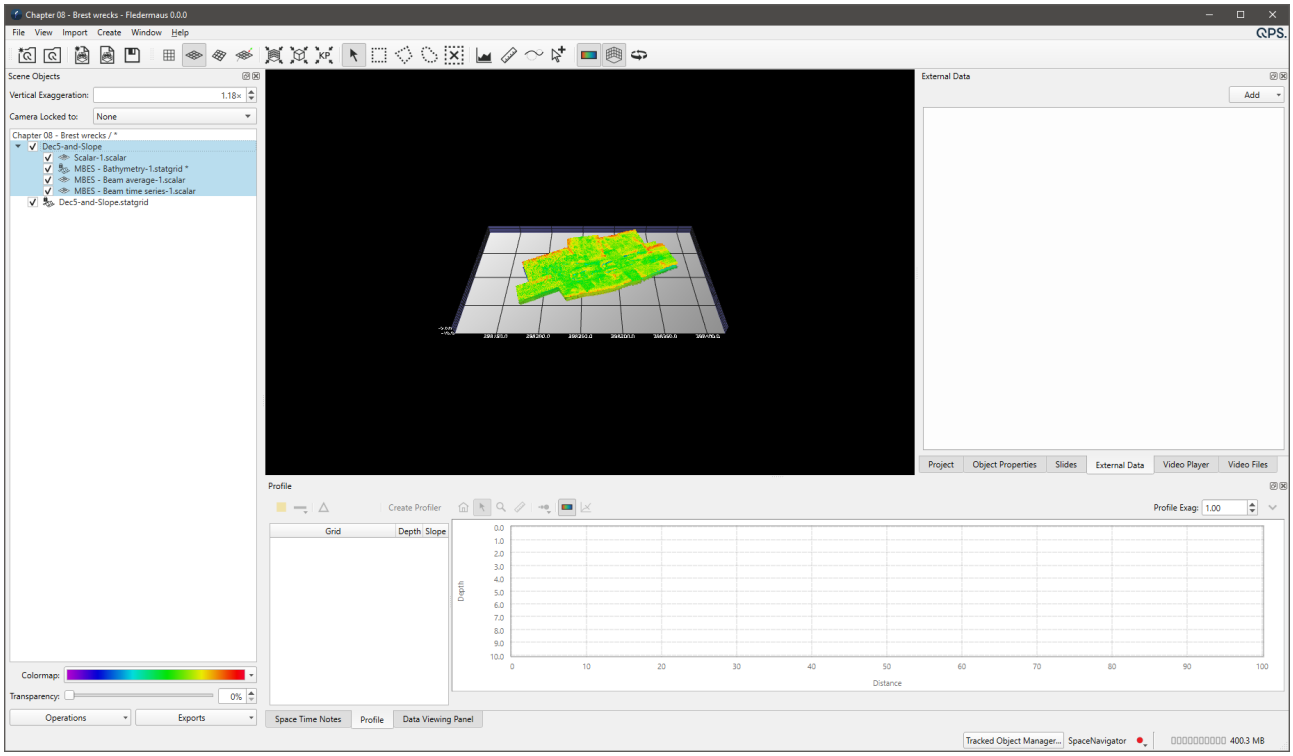
This dialog extracts the selected layers into a new group as standalone grids or scalars.

General Description

Once the desired layers are selected, the extracted layers will be created as standalone objects under a new group in the Scene Objects Dock. The group name will reflect the name of the grid the layers were extracted from.



Selecting specific layers to extract



The resulting objects in the Scene Objects Dock

Fledermaus Geodetic Search Dialog

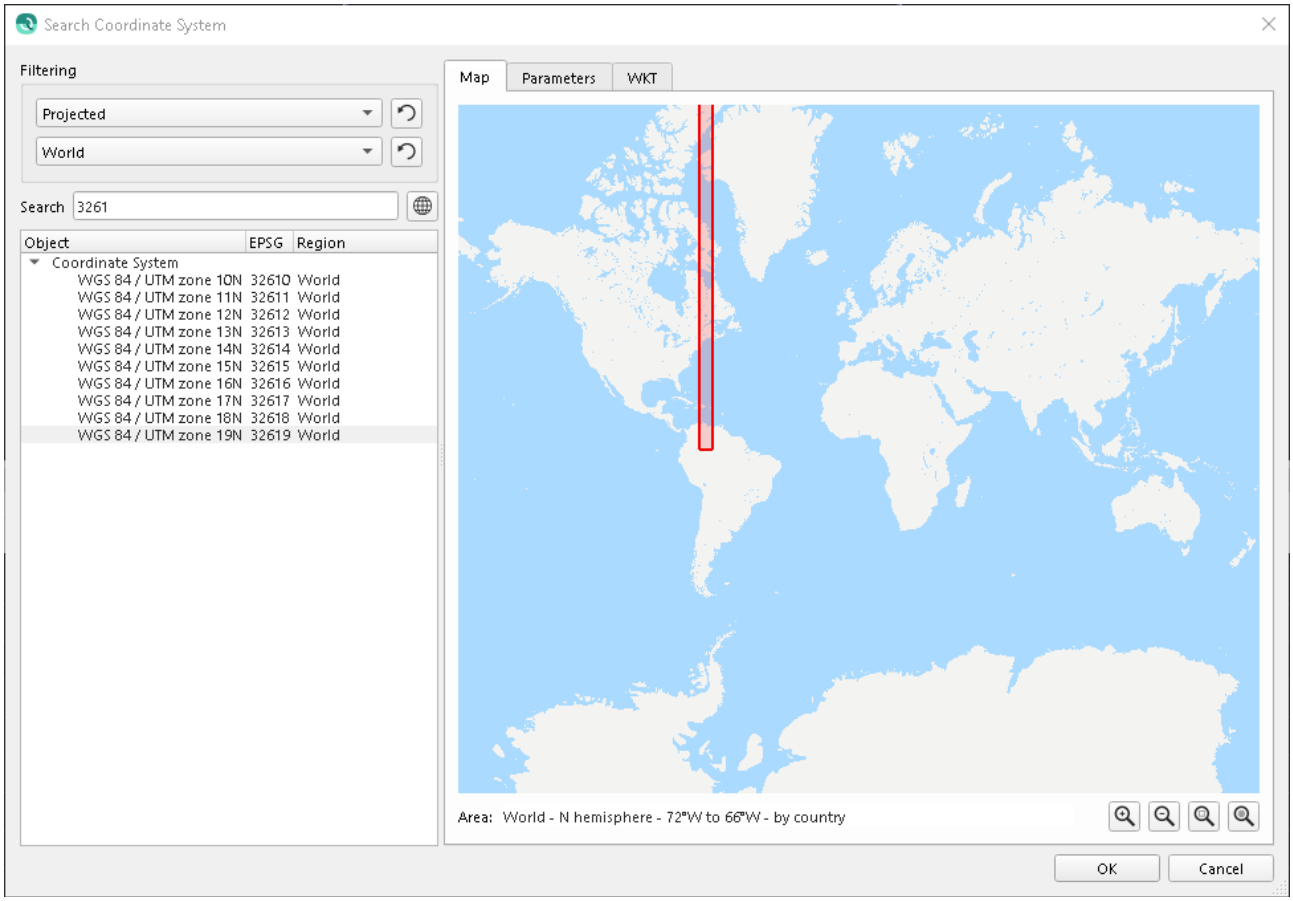
- How to Start
- What it Does
- General Description
- Filtering
- Search
- Results List
- Map Navigation
  - Map Toolbar
- Parameters Tab

How to Start

- From any widget that requests a coordinate system by clicking the button found to the right of the EPSG code.

The Geodetic Search Dialog

What it Does



General Description

The Search Dialog is used for any type of geodetic component searching. When you search, you will always get the same user experience. The only difference is the geodetic component you are searching on. For example, the Search Dialog is used to search for geographic or projected coordinate systems, map projections, geodetic datums, and transformations. For the purpose of this reference manual section, we will use a projected coordinate system to search for as our example.

Filtering

Filtering allows you to reduce the number of geodetic items that are searched whenever the search edit text is changed. The first filter is the geodetic item type. For example, if you are searching for a project coordinate system, your choices are *All, Projected,* and *Compound*. The first filter will change according to what geodetic item type you are searching (i.e. coordinate systems, datum, transformation...) . The second filter is the geodetic Area that will be searched. The first two choices are *All Areas* and *Map*.

These first choices will be followed by every available country area from *Aaland Islands* through *Zimbabwe*. All Areas will not restrict you search by area. The Map option will restrict your search to the geodetic items that define an area of use that intersects the current map view. When this option is chosen, as you pan/zoom around the map, the tree view will change to display the geodetic items available in that area. To reset any filter simply click on the button.

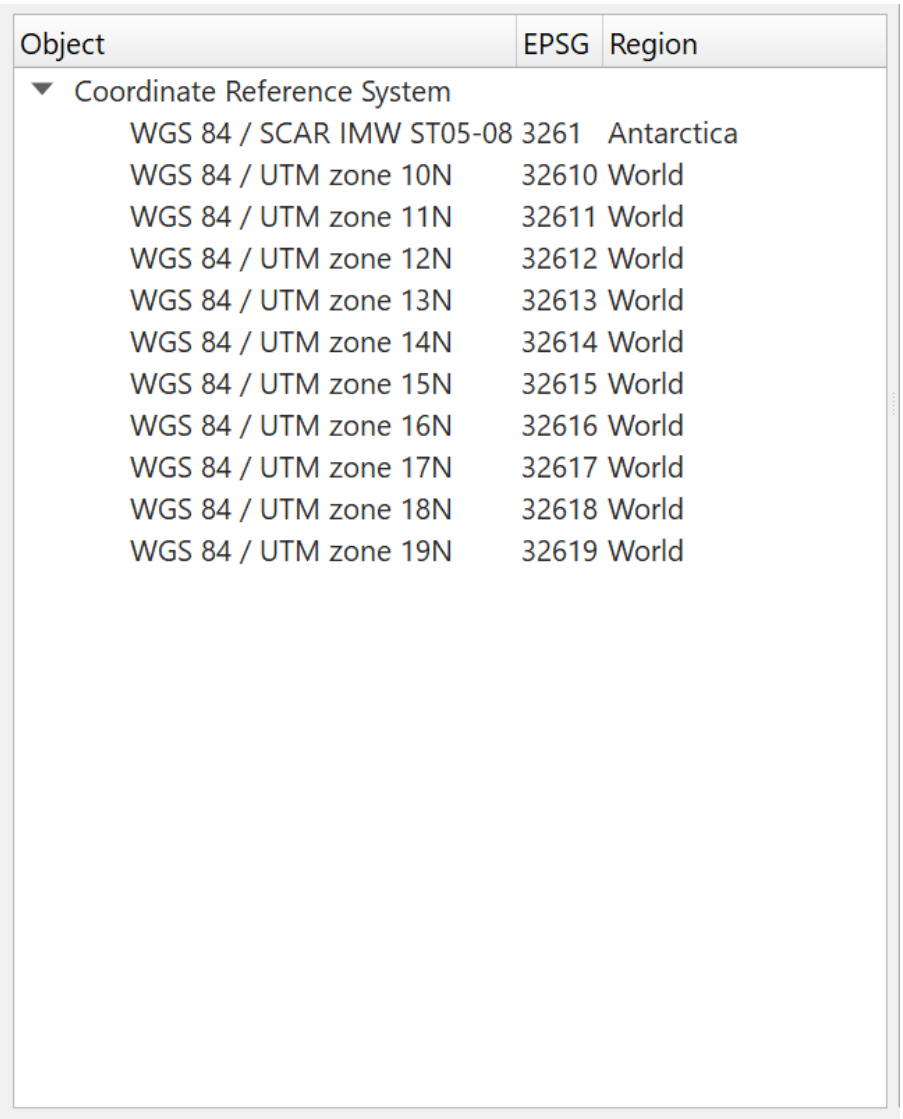
Search

The search text area is used to search for text tokens or EPSG codes of the geodetic items. If the search text is blank, the object list will contain every geodetic item that fits the constraints of your filters. As you type, the geodetic list is automatically updated with results that contain your search text. Remember you can search for numeric EPSG codes or text tokens. The text tokens will search both the geodetic item name and the region name. Examples of search text are: "32619", "Amersfoort", "GDA2020 MGA". The first yields the specific coordinate system with that EPSG code. The second example yields 2 projected and 1 compound coordinate system. The last yields 14 coordinate systems. If you have only 1 search token and it is numeric, the interface will consider that as an EPSG code and search accordingly. If you have more than one search token, it will use those to search against the geodetic item name and the area of use. If all tokens are found, the item will be added to the list. This can be considered an "AND" search of your tokens so the more tokens you have, the more refined the search will be. The only variant of the multiple search token logic is when you are searching for transformations. If you have 2 search tokens and they are both numeric, these will be used as the source or target entries for a transformation. For example, in the search text box, you could enter "4230 4326" which would give you a number of results for transformations between ED50 and WGS 84.

When you select one of the results from your query in the geodetic list, the corresponding area of use will be highlighted on the map and displayed in text under the map next to the "Area:" label (if an area is defined for this geodetic item). It will additionally fill out the Parameters tab and the WKT tab with the relevant information for the geodetic item.

The button is a quick way to search based on the current map view. This button will clear the search tokens and just search on the area. The geodetic list will be filled with the items whose area of use intersects the current map view. If you want to add tokens to an map area search, change the second filter to *Map* and then add the specific search tokens.

Results List



Object	EPSG	Region
Coordinate Reference System		
WGS 84 / SCAR IMW ST05-08	3261	Antarctica
WGS 84 / UTM zone 10N	32610	World
WGS 84 / UTM zone 11N	32611	World
WGS 84 / UTM zone 12N	32612	World
WGS 84 / UTM zone 13N	32613	World
WGS 84 / UTM zone 14N	32614	World
WGS 84 / UTM zone 15N	32615	World
WGS 84 / UTM zone 16N	32616	World
WGS 84 / UTM zone 17N	32617	World
WGS 84 / UTM zone 18N	32618	World
WGS 84 / UTM zone 19N	32619	World

The results list contains the result of the search combined with the selected filters. The results list will show the geodetic item Name, EPSG code and Region. The Region is the primary component of the detailed area of use. When you select an entry from this list, the selected item will be used to highlight an area of use on the map, fill in the Parameter tab and fill in the WKT string tab. Additionally, when you select an entry from this list and click the OK button, that item will be loaded to the widget that called it.

Map Navigation

Use the left-mouse-button to click and drag the map to a new location. Use the mouse wheel to zoom in and out of the map.

Map Toolbar

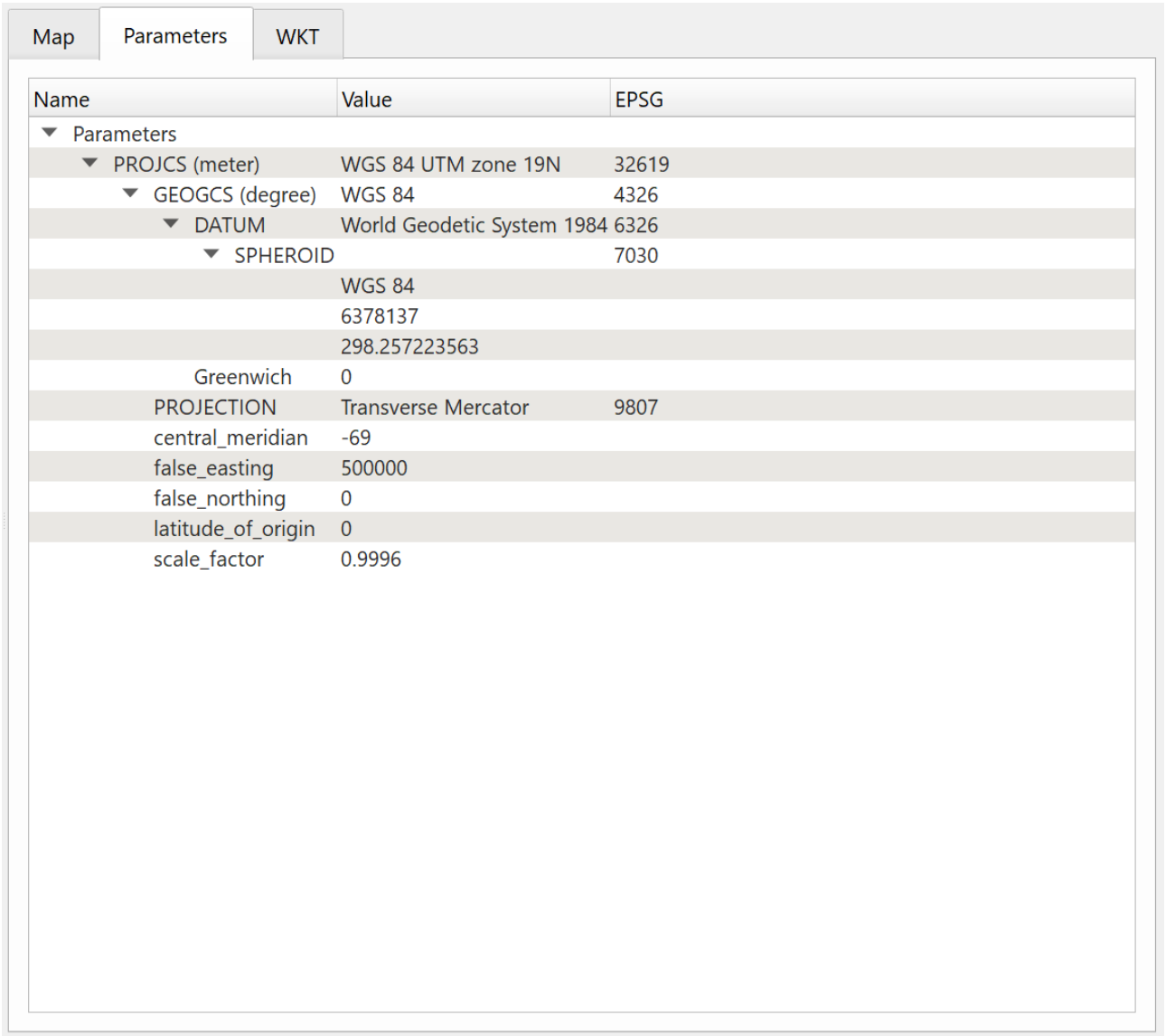
Use this button to zoom in on the map.

Use this button to zoom out on the map.

Use this button to zoom to the center of the selected area of use.

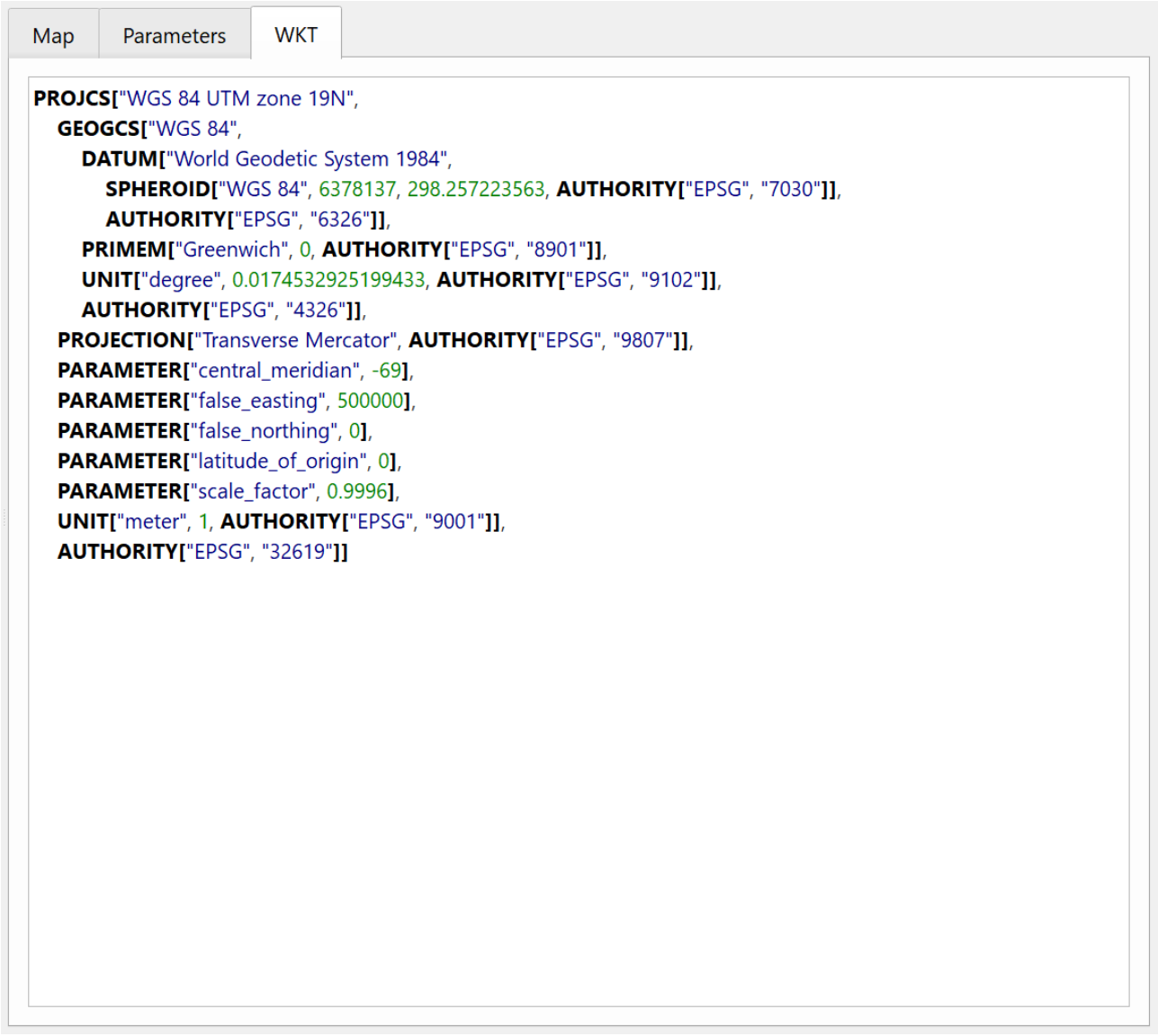
Use this button to zoom out to the extents of the map.

Parameters Tab



This tab shows the attributes and associated values of the selected geodetic item.

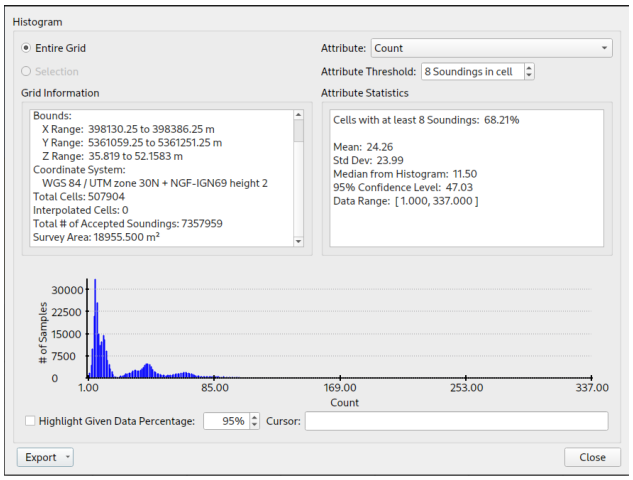
WKT Tab



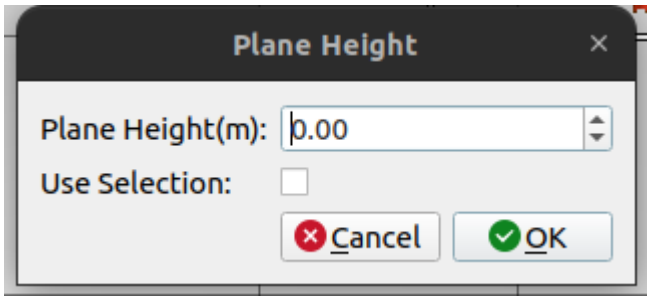
The tab shows the well know text (WKT) string that is created by the geodetic engine based on the attributes of the selected geodetic item.

The Fledermaus Geodetic Search Dialog

Fledermaus Grid Statistics Dialog



Grid Statistics Dialog



Plane Height Input Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Statistics
- Scene Objects Dock → Operations → Statistics

What it Does

This dialog displays various statistics about the surface in questions along with the histogram of the height distribution across the surface.

General Description

The Grid Statistics dialog functions similarly to a wizard, guiding you through the necessary steps. Initially, an input dialog with a spin box will appear, allowing you to select the desired depth above or below the reference plane. The spin box enables you to specify a plane other than the default value of 0.0. This plane height is crucial for the Survey Area and volume calculations, as it determines the area and volume above or below the selected plane.

Once you've entered the plane height, the main Grid Statistics dialog box will be displayed, as shown in the figure above. The left text box provides detailed Grid Information, while the right text box presents Attribute Statistics. Below these two sections, a histogram of the data is displayed for further analysis.

By default the statistics will be computed for the entire grid. If you selected a rectangular area from the main window before bringing up this dialog then the "Use Selection" checkbox will be enabled but will NOT be toggled ON by default. You must choose "Use Selection" to use the constrained area as an additional step.

The Attribute dropdown box is used to select which Attribute Statistics are shown in the right text box and the histogram. Additionally, some layers have an Attribute Threshold option, allowing a threshold to be specified for that layer. This threshold is calculated and displayed in the Attribute Statistics.

Underneath the histogram, you can specify what percentage of the given data you want highlighted. The Cursor field shows the bin average when you hover over the histogram. The bin highlight is shown as a red line.

The Export dropdown offers the three options for Grid Statistics exports:

- Save Text: Saves the information displayed in the Grid Information and Attribute Statistics boxes.
- Export Window as Image: Saves the entire Grid Statistics window as either a PNG or JPEG image.
- Export Histogram to ASCII: Saves the information displayed in the Grid Information and Attribute Statistics boxes and appends the data in the histogram in CSV format.

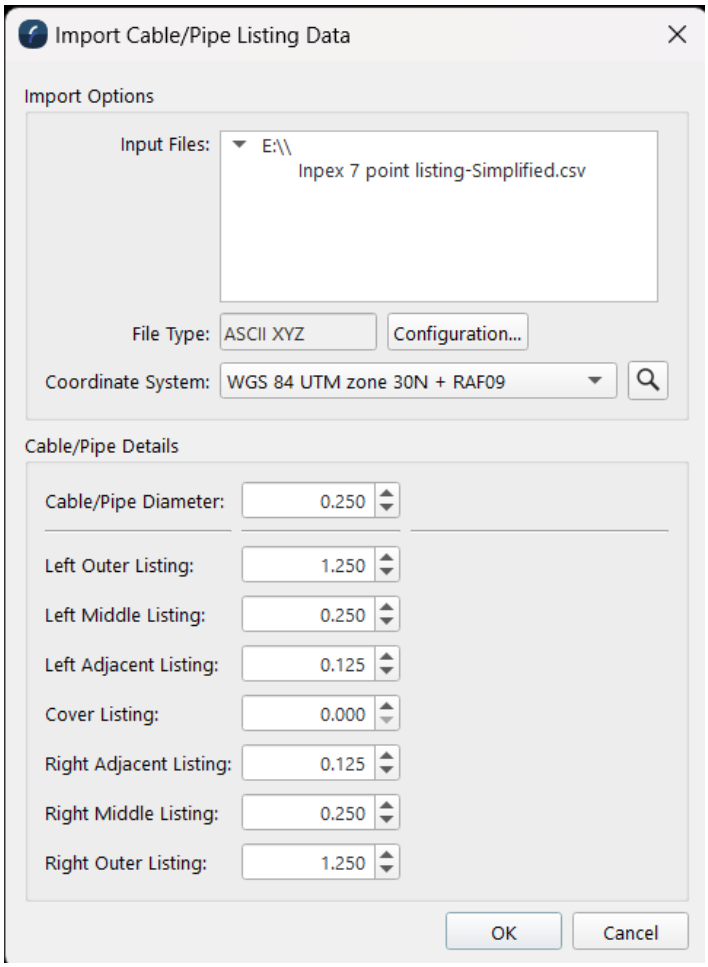
The histogram image can be saved by right-clicking the context menu over the histogram.

The Percentage of grid cells filled / Filled Cells / Empty Cells only show when a selection is made.

The Cell Size shows variable precision depending if the data is geographic or projected. Note that as typical for calculations in geographic coordinate systems, the average latitude is used for calculating the cell sizes. It is assumed that the data is reasonably well distributed. In this case, any loss north of center is made up by excess south. For data sets with more data north or south of the midpoint, the accuracy of the result will vary with latitude and size of the data set. More northerly data sets will have more error depending

on how uneven the distribution of the data is. In testing, a comparison of the same geographic data reprojected to UTM was a small fraction of one percent difference in area.

Fledermaus Import From Listing File Dialog



Import From Listing File Dialog

- How to Start
- What It Does
- General Description

How to Start

- Import Menu → Import Dynamic Cable/Pipeline → Import from Listing File

What It Does

This option can be used to import a cable pipeline object along with cross point listing values. When selected it will first the custom ascii parser dialog for one to specify the route points and option cross point listing field values. You can optionally specify up to a seven point listing file identifying which fields represent:

- X

- Y
- Z
- KP
- Left Outer
- Left Middle
- Left Adjacent
- Cover
- Right Adjacent
- Right Middle
- Right Outer

X, Y, and Z represent the pipe center control point, KP the value at that control point, and the remaining up to a seven point cross listing. These are the z values of the various cross listing points.

General Description

Once the ascii parser is setup to import the file at hand the dialog above is shown. Only the listing options you assign in the parser will show up in the dialog above. It is here where one must identify the distance the cross listing point is away from the pipeline. Their x and y values are computed automatically from the route. In addition the Cable/Pipe diameter must be specified in order to import the object properly. Once everything is entered appropriately clicking Ok will ask for a filename to save the Cable/Pipeline object and it will be created and opened as specified.

Fledermaus Import Gridded Data Wizard

Overview

The Import Gridded Data wizard gives a step-by-step method for importing a grid into Fledermaus that is stored in an external format.

The steps through the wizard are as follows:

1. Load a gridded file to import.
2. Select the file type from the list. Usually, the system detects the type of file being loaded and selects an appropriate file type. If the system does not select the correct file type, it is possible to change the type to one of the supported types.
3. There may be one or more steps specific to the type of data being imported in order to specify parameters for the import, such as the special Z value used for data nulls.
4. The coordinate system of the data may be entered on the Input Coordinate System page. If the data already contains a coordinate system recognized by Fledermaus, it will already be filled in. It is possible to change this setting if it is not suitable.
5. The Grid Information page will be shown with the data dimensions, bounds of the data and the cell size.
6. On the next page, the Z coordinate options and output coordinate system used by Fledermaus may be set.
7. Finally, the output type, scalar or surface, may be selected, the output filename and colormap may be selected and the shade parameters set to the default or by a shade parameter file.

Any of the steps after selecting the file may be reviewed at any time by using the Previous and Next buttons. Complete the import by clicking Finish. The operation can be cancelled at any time by clicking Cancel.

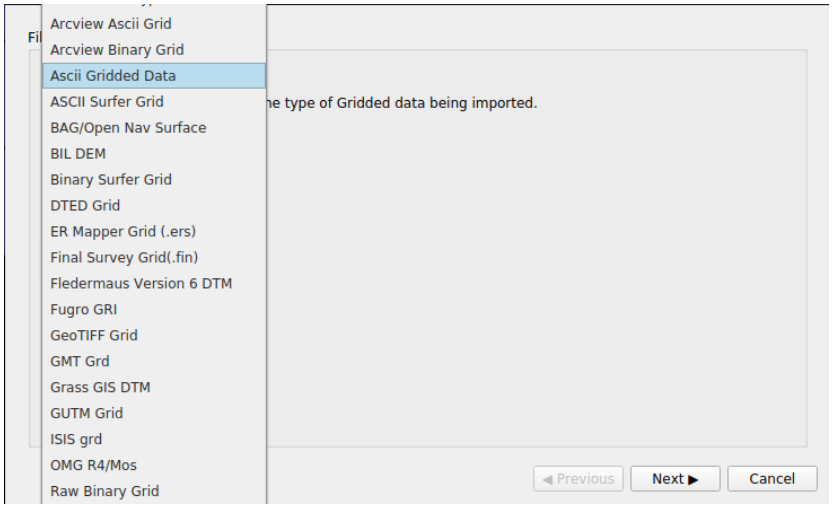
The following formats are recognized:

- Arcview Ascii Grid
- Arcview Binary Grid
- Ascii Gridded Data
- ASCII Surfer Grid
- BAG/Open Nav Surface
- BIL DEM
- Binary Surfer Grid
- DTED Grid
- ER Mapper Grid (.ers)
- Final Survey Grid (.fin)

- Fledermaus Version 6 DTM
- Fugro GRI
- GeoTIFF Grid
- GMT Grid
- Grass GIS DTM
- GUTM Grid
- ISIS Grid
- OMG R4/Mos
- Raw Binary Grid
- USGS DEM

ASCII Import Grid

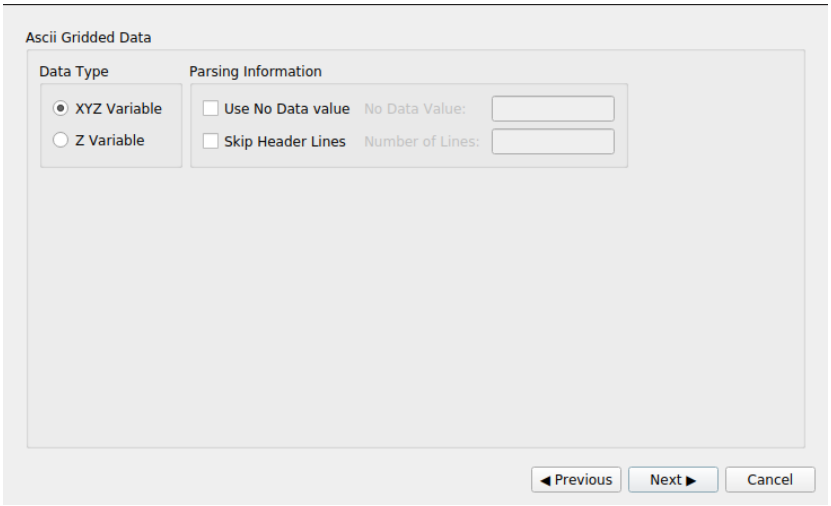
File Type



The Import Grid Wizard for ASCII data detects the file type automatically and selects it. If your data is not automatically detected, it can be selected manually. Similarly, if your data is detected incorrectly, the correct file type may be selected. Click Next to continue to the next screen.

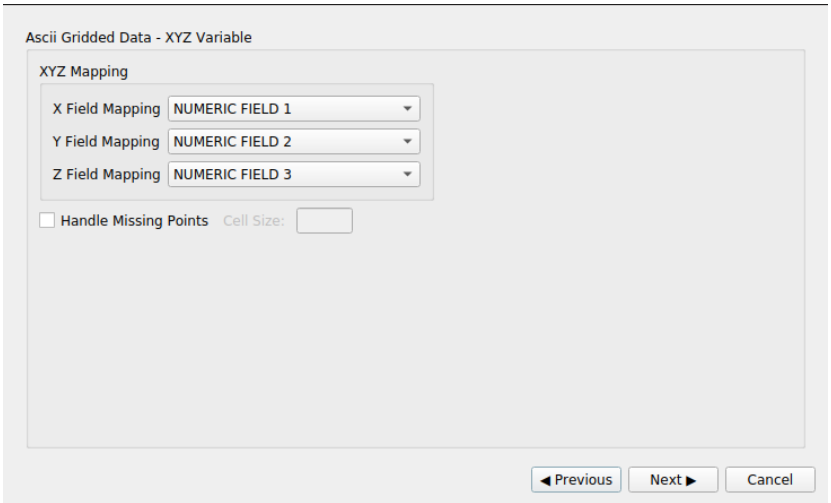
Parsing Information

For ASCII data, the next screen prompts for the data type, XYZ or Z Variable and some parsing information. The No Data value may be entered and the number of header lines to skip, if any, may be entered.



There are two different screens possible for ASCII gridded data after this screen. One is the field mapping for XYZ data, the other is for Z only data.

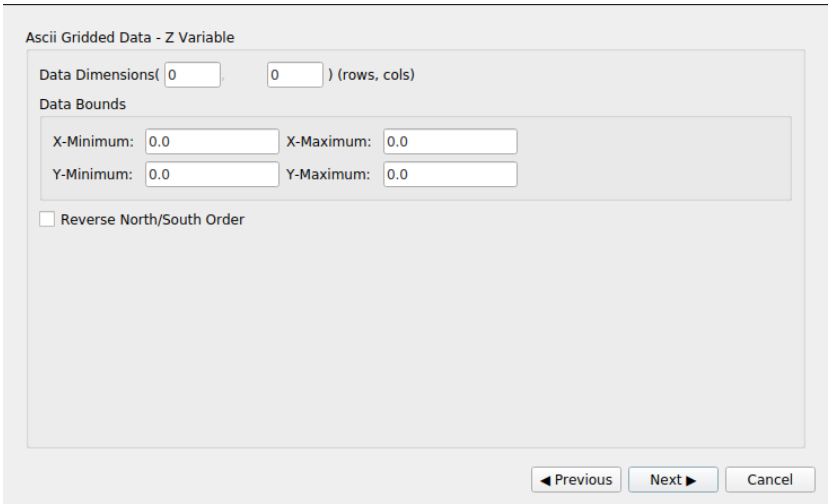
ASCII XYZ Parsing Page



Use this page to enter the field in the ASCII file that corresponds to the X, Y and Z fields. The default mapping sets the first field in to X, the second field to Y and the third field to Z. Set the order to match your file.

If there are data nulls in the file, where there is no entry in the input for a particular grid cell, select Handle Missing Points and specify the cell size. Fledermaus will make a best effort if this field is not specified.

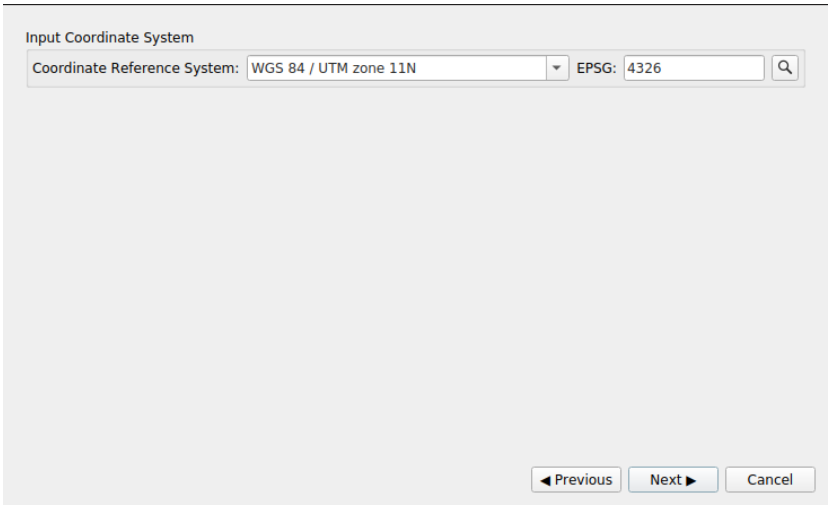
ASCII Z Parsing Page



Use this page to specify the dimensions of the grid (rows and columns) and the data bounds.

Input Coordinate Reference System

Enter the CRS for the input data. In this case, UTM zone 11N was selected manually. For some formats, the correct CRS will be selected automatically.



Grid Information

The grid information will be displayed on this page. It is possible to review the data dimensions in rows and columns, the bounds and the cell size to determine if the information makes sense for the input data. If not, the input parameters can be reviewed

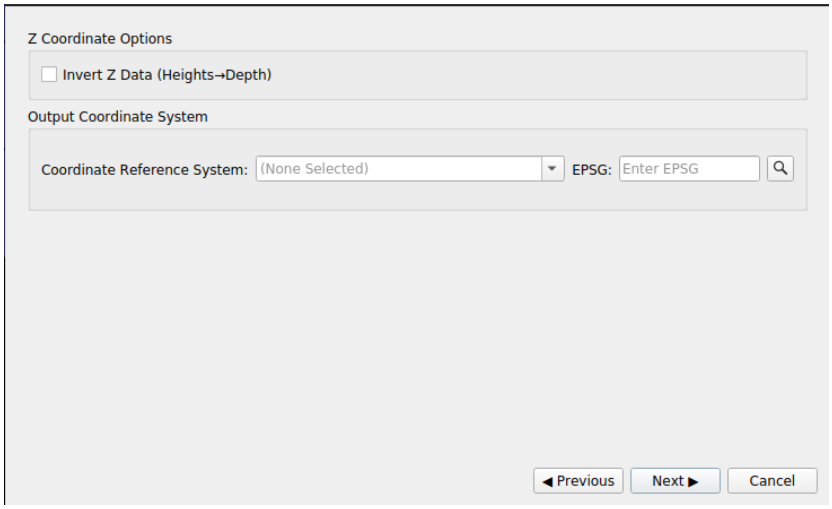
by clicking Previous until the page with incorrect information can be identified and corrected.

For example, if range of the X and Y data indicates that a geographic CRS such as WGS 84 should be selected instead of a UTM projection, it is possible to go back and change the CRS.

Output Coordinate System

The output coordinate system can be selected here. Often, the same coordinate system used for input is used here, but it is possible to reproject data from the input coordinate system to a different one. This may be because the scene coordinate system used in Fledermaus is different from the input data. If the imported data does not have the same CRS as the scene, it will not display in Fledermaus. It is possible to reproject data to the scene CRS in Fledermaus later, if that is desired.

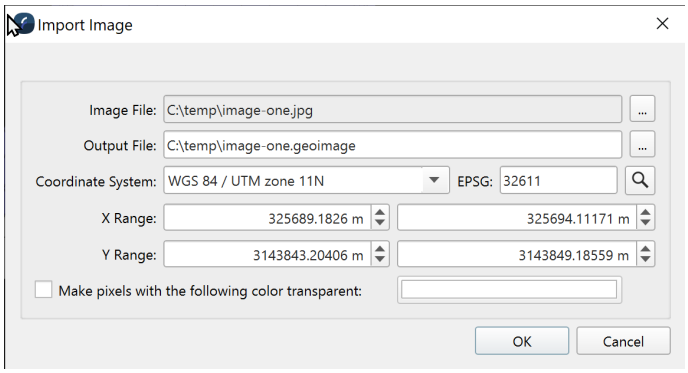
The Z data may also be inverted, so that positive values of Z represent depths, for example.



Final Settings

The final page lists options to select the output type, filename, colormap and shade parameters. The default filename has the same base name as the input filename, with the extension changed to *.surface* for a surface or *.scalar* for a scalar grid. The colormap may be changed to any of the system colormaps or a colormap created with the colormap editor. Shade parameters may be loaded from a file with shade parameters.

Fledermaus Import Image Dialog



Import Image Dialog

- How to Start
- What It Does
- Overview

How to Start

- Import Menu → Import Image...

What It Does

The Import Image option from the Imports menu will load an image file in one of the supported image formats. The import process starts with a prompt for the file to import followed by the Import Image dialog. The options in the dialog are a path to save the imported image, the coordinate system, bounds to position the model within the current 3D scene and an option to make pixels with a specific color transparent. The latter may be omitted if desired, it is omitted by default.

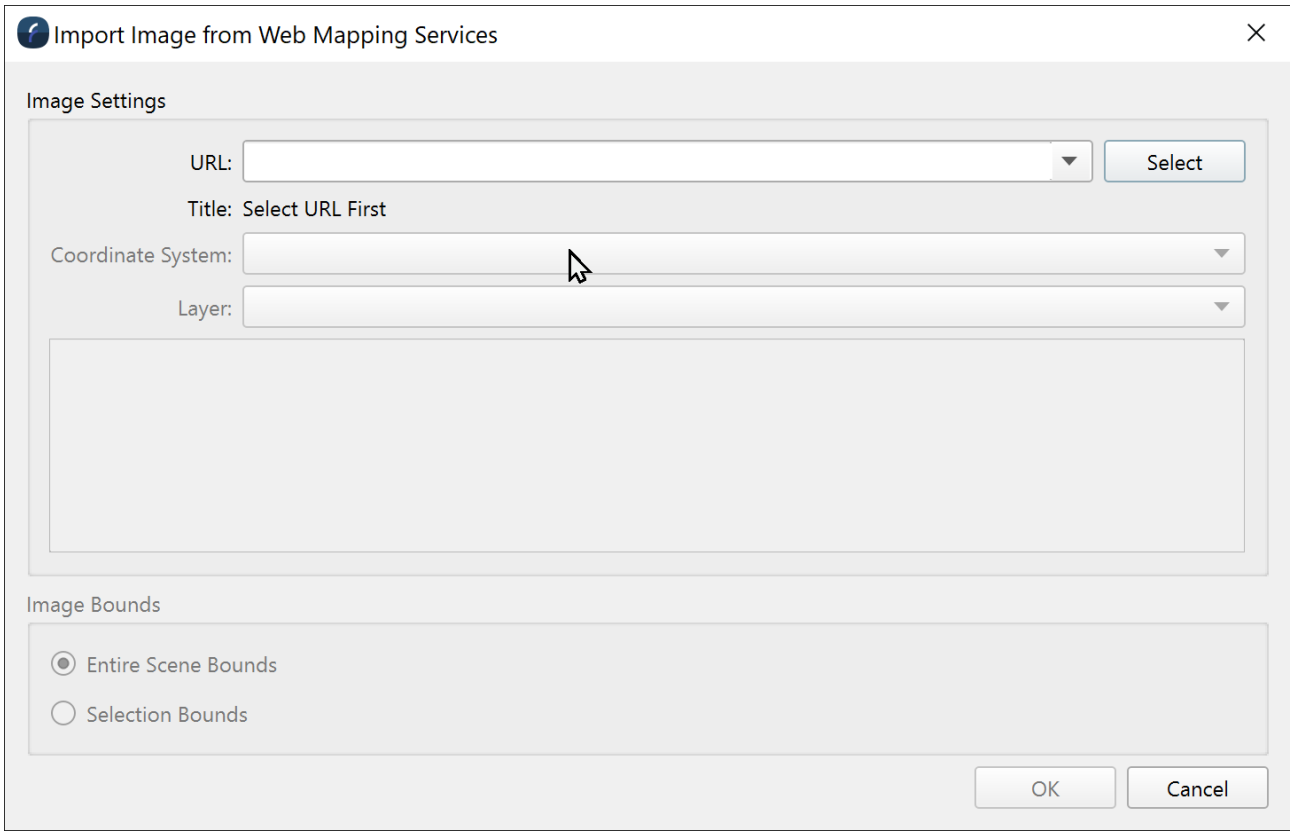
Overview

The dialog imports a specified file, writing the imported file to the specified output file. The CRS must be specified. It will be filled in from the image, if the image has a CRS, or from the scene CRS if the image does not have a CRS (e.g. JPEGs). Bounds must be specified. The bounds will be filled if if possible from the image metadata (e.g. GeoTIFF, TIFF World File, etc.). The bounds may be the bounds of the entire scene if the image does not have bounds.

Optionally, it is possible to make pixels of a specified color transparent. This can be useful to reduce storage space and to speed up import in the case where the specified color is not of interest, e.g. backscatter mosaics where large swaths of, say, pure white borders the data of interest.

Enable the option (checked), then click the color swatch to change the selected color. The color selected must match exactly. Pixels that do not match exactly will not be made transparent.

Fledermaus Import Image from Web Mapping Service



Web Mapping Services Dialog

How to Start

Import → Import Image from Web Mapping Services

What It Does

The Import Image from Web Mapping Service action will activate a dialog that will prompt for the URL of a Web Mapping Services portal. The details for that server will be displayed. Most servers will present a list of supported coordinate systems (CRS) for images that the server can deliver. Some servers will present a list of layers that can be selected. The dialog supports loading one CRS and one layer.

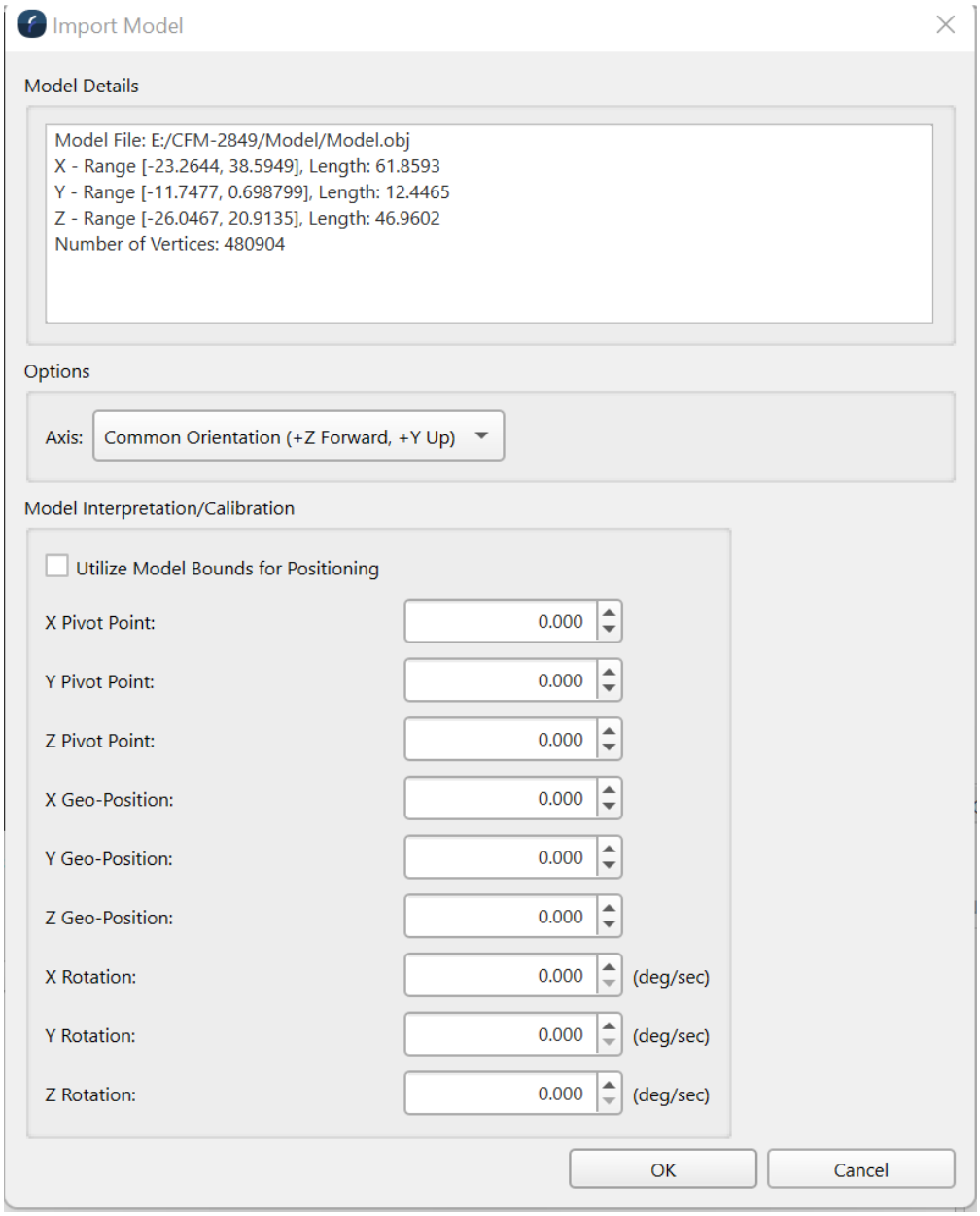
If a selection is present in the scene, it can be used to restrict the area of the image downloaded. Otherwise, the current bounds of the scene is used.

Overview

At this time, the dialog will import one static image to the specified file. If the CRS selected in the dialog is different from CRS in the scene, the image will first be reprojected. If the scene does not have a CRS set, the selected CRS will be used for the scene.

Note that if the scene has objects in it already, the image will be constrained to the nearest size that fits into the scene. Conversely, if the scene is yet to be populated, the bounds of the Earth for the given CRS will be used.

Fledermaus Import Model Dialog



Import Model Dialog

- How to Start
- What It Does
- General Description

How to Start

- Import Menu → Import Model

What It Does

Selecting the the Import Model option from the Imports menu will ask for a 3D model file to be loaded in one of the supported 3D formats. Once selected the model's data will be processed and the Import Model dialog will be displayed to finish the import process. Most of the options in the dialog are interpret the model correctly and help position the model within the current 3D scene.

General Description

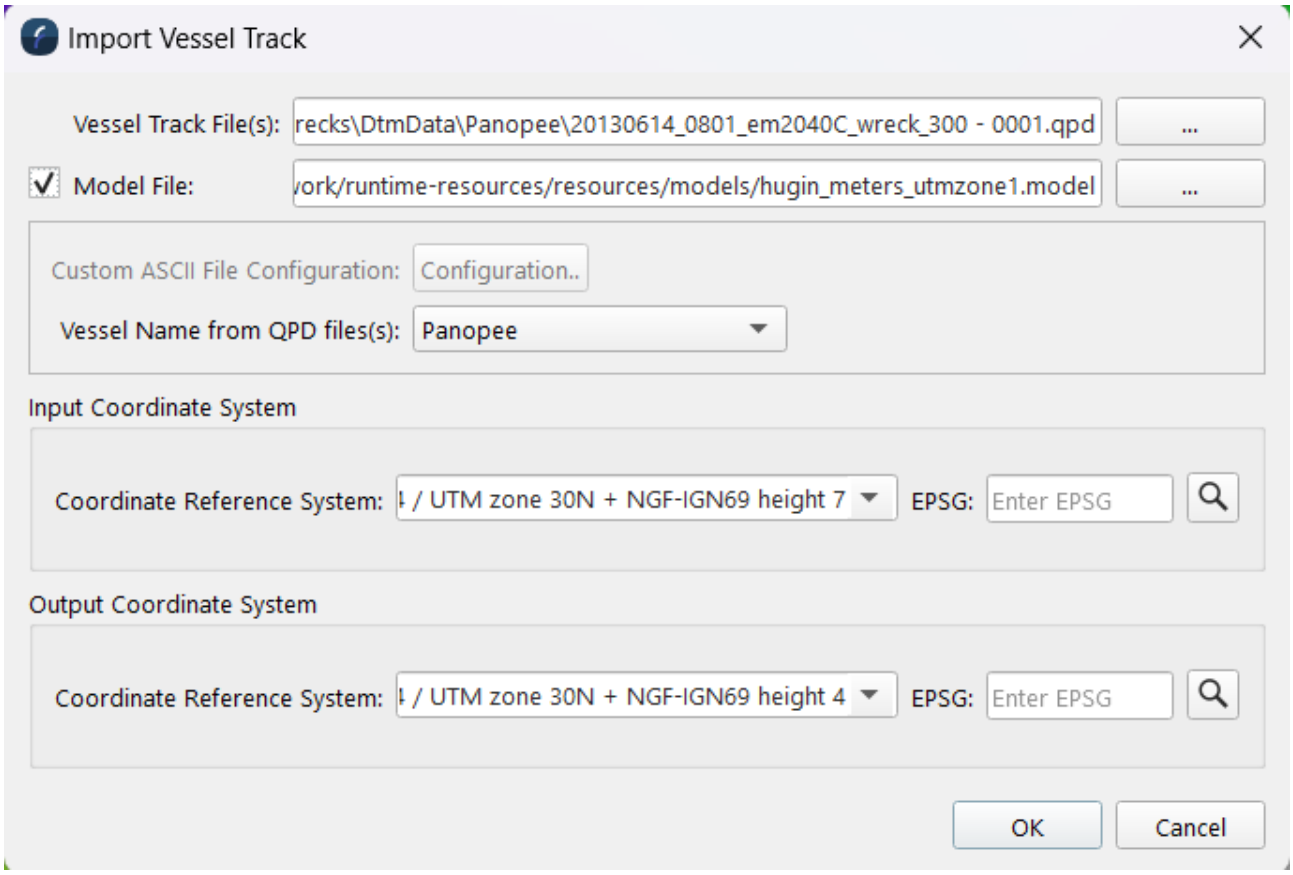
At the top of the dialog some basic information about the model file being read is shown. Most models are designed near the cartesian origin of (0.0, 0.0, 0.0) and the length of the model along each axis is shown. You can also see how many triangle vertices make up the model. The Axis option controls how the model is brought into the scene. Many models have a positive Z forward and positive Y up but some such as those that come for the common open source Blender applications have a positive Y forward and positive Z up axis configuration. The current axis options include:

- Fledermaus/Blender (+Y Forward, +Z up)
- Common Orientation (+Z Forward, +Y up)

Depending on the format the default axis will be selected but you can change it if you like. If the model comes in the wrong way in the scene it can be transformed later if needed. The remaining options in the dialog are used to control how the model is placed into the 3D scene.

It is uncommon but if you happen to have a model that is already geo-positioned and it coordinates are in the same coordinate space as the scene then one can just click the Utilize Model Bounds for Positioning and the model will be placed based on its bounds. However this is rarely the case. Normally models are designed so that to place in a 3D scene you move it's (0, 0, 0) coordinate to the desired geospatial location thus geo-positioning the model. The X Geo-Position, Y Geo-Position, and Z Geo-Position are the fields used to place the model. This sets the offset to translate the model into the 3D scene. You can place the model based on a different non zero model coordinate by entering values in the X, Y, and Z pivot points. Then this point will be the point moved to the specified geo-position. The X, Y, and Z rotation rates are special options for models that one want's to have continually rotate in the scene. For example the blades of a windmill.

Fledermaus Import Vessel Track Dialog



Import Vessel Track Dialog

- How to Start
- What It Does
- General Description

How to Start

- Import Menu → Import Vessel Trackline…

What It Does

This option lets one combine a path represented by a file which has position, time, and optionally attitude data (roll, pitch, heading) representing the path some kind of vessel has travelled. A model file can be optionally specified when creating the object as well. When imported the vessel trackline will be display in the 3D scene and if a model was specified it will be positioned and orientated based on the scene's current time. As time is changed the model will move along the trackline accordingly.

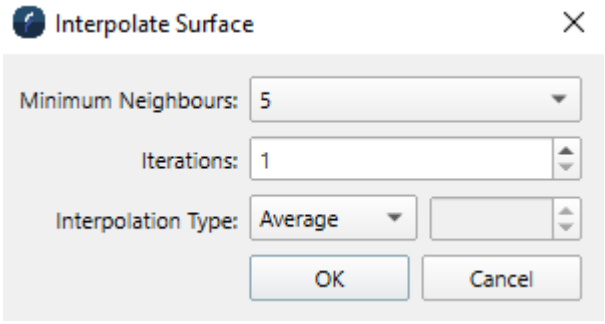
General Description

The first option at the top is to select a file that stores the vessels path. This could be a simple ascii x, y, z file or often a QPD file which contains the survey data from which its trackline can be extracted. It the file has attitute data such as roll, pitch, and heading that can also be read in to orientate a vessel along the path. If no atttitude data is present the vessel's heading will automatically be orientated to point in the direction of travel with roll and pitch set to 0.0. If a QPD file is selected you can choose which vessel to follow if it contains more than one. For ascii files you can customize the reader to assign the x, y, z, and optionally attitude fields of the importer.

The second option lets one toggle on the display of a 3D model representing a vessel and specify the location of a saved 3D model file that has been previously set up and oriented so that its faces the +ve X (right side) direction. The vessel model needs to be oriented this way in order for its heading to be set properly when it follows the trackline. To create a .model file separately import a 3D model, make sure it is orientated to face the right (use the operations to adjust the model if necessary) and save it to a .model file which can be used here. See Fledermaus Import Model Dialog for details on imported a 3D model for use in Fledermaus.

The input and output coordinate system also needs to be specified. If a scene is already setup the output coordinate system will default to the scene and one needs to make sure the input coordinate system matches that of the trackline data file specified.

Fledermaus Interpolate Surface Dialog



Interpolate Surface Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Interpolate
- Scene Objects Dock → Operations → Interpolate

What it Does

The surface interpolation tool allows for small holes in a surface or scalar to be filled in using values from one or more of the surrounding cells.

General Description

Four options are available for determining the interpolated values:

1. Average: Calculates the average value of all surrounding cells
2. Minimum Value: Uses the maximum of all surrounding cells
3. Maximum Value: Uses the minimum of all surrounding cells
4. Fixed Value: Uses the value supplied by the user

Once the interpolation method has been chosen, the next step is to determine what cells will be filled in by the interpolator. This is done by setting the minimum number of neighbours required for a cell to be filled in, ranging from 1 to 8. You can also set the number of times the algorithm runs over the entire grid by setting the *Number of Iterations* pull down menu.

Fledermaus Invert Vertical Curtain Z Imagery

- How To Start
- What It Does
- General Description

How To Start

- Scene Objects Dock → Right-Click on Object → Operations → Invert Z Imagery...
- Scene Objects Dock → Operations → Invert Z Imagery...

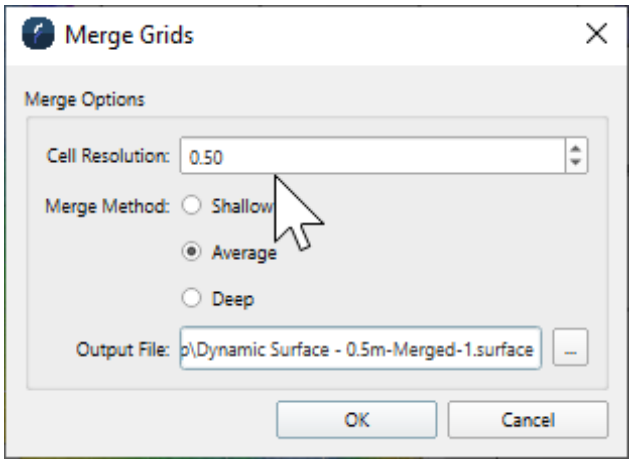
What It Does

For any given vertical curtain it flips the displayed imagery.

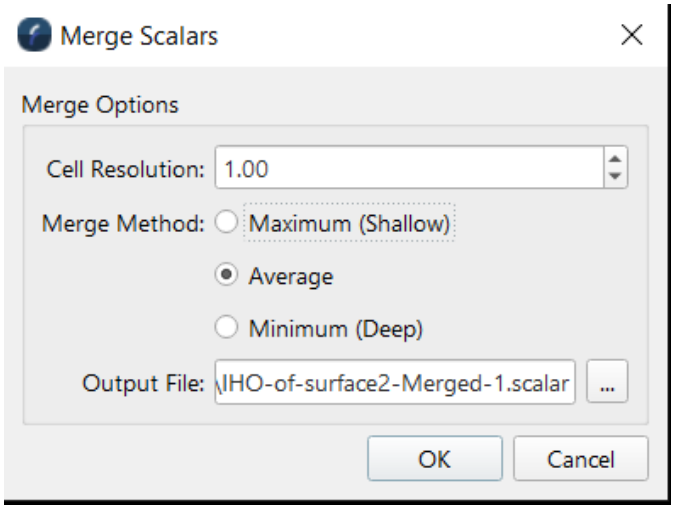
General Description

The functionality allows the user to flip the vertical curtain imagery. This functionality is useful in case that the original source file is stored in a way that would render upside down in Fledermaus.

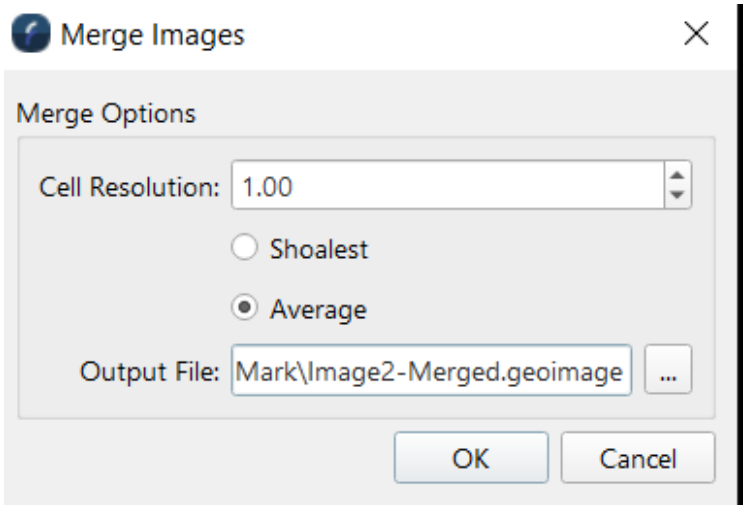
Fledermaus Merge Dialog (Surfaces, Scalars, and Geoimages)



Merge Dialog - Surface object version



Merge Dialog - Scalar object version



Merge Dialog - GeoImage object version

- How to Start
- What it Does
- General Description
  - Surface Merge Methods
  - Scalar Merge Methods
  - GeoImage Merge Methods

How to Start

- Scene Objects Dock → Right-Click on two Objects of the same type (Surface, Scalar, or GeoImage) → Operations → Merge
- Scene Objects Dock → Operations → Merge

What it Does

The merge operation takes two or more files of the same type and creates one file using the date from the input files.

General Description

All of the data from the input objects will be preserved, expect if there is overlapping data. In this case there are a few options for merging methods, how we decide what data to write out if there is overlapping data.

Surface Merge Methods

Shallow - Takes the shoalest depth and writes that to the output file.

Average - Averages depths and writes the average to the output file.

Deep - Takes the deepest value and writes that to the output file.

Scalar Merge Methods

Maximum (Shallow) - takes the largest value and writes that to the output file.

Average - Averages values and writes the average to the output file.

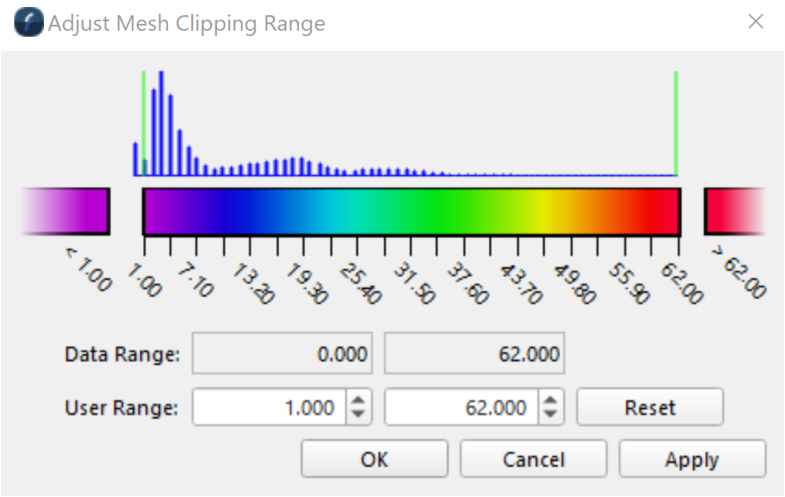
Minimum (Deep) - Takes the smallest value and writes that to the output file.

GeoImage Merge Methods

Shoalest - Takes the color value from the shoalest image and writes that to the output file.

Average - Blends the colors to create a new color and writes that to the output file.

Fledermaus Mesh Clipping Dialog

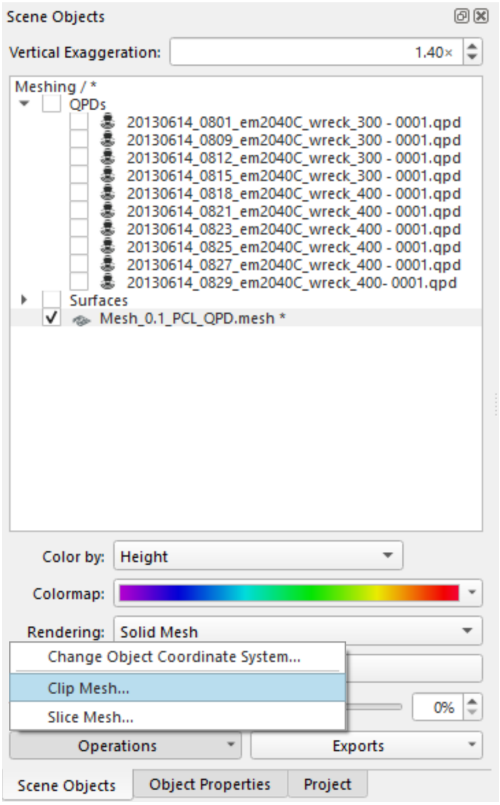


Adjust Mesh Clipping Range Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Mesh → Operations → Clip Mesh
- Scene Objects Dock → Operations → Clip Mesh



Clip Mesh Dialog from Operations Menu

What it Does

This dialog clips the selected mesh according to the sounding density along it.

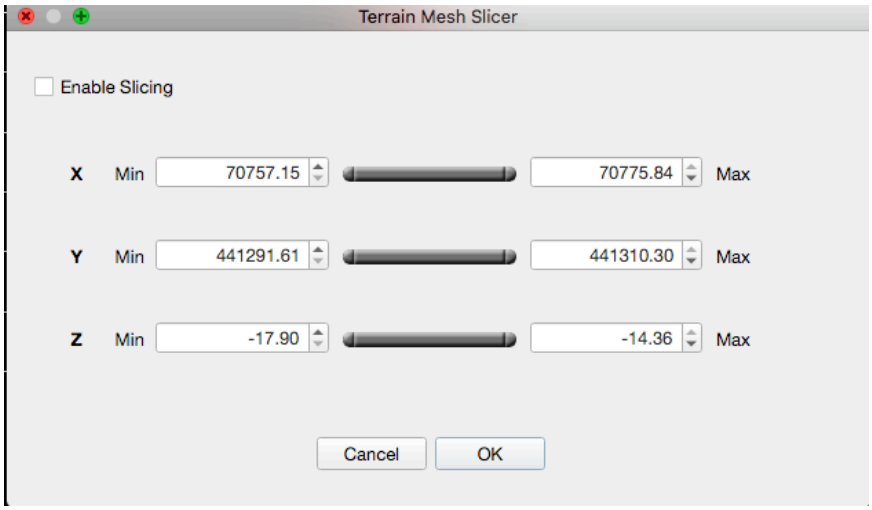
General Description

The dialog shows two ranges:

- The *Data Range* is the actual range of density values found in the selected files. This is not user editable.
- The *User Range* is a separate range that can override the data range when clipping the surface. By default the minimum is set to 1, so as to hide areas that have 1 or fewer soundings in them.

The range can be reset, as the data is not removed, but just hidden.

Fledermaus Mesh Slicer Dialog

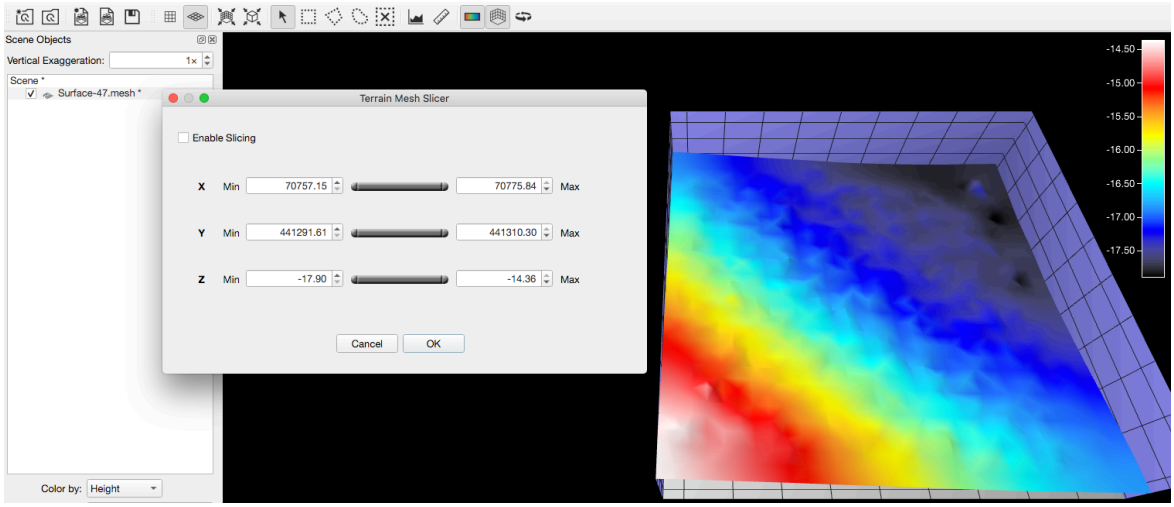


Mesh Slicer Dialog

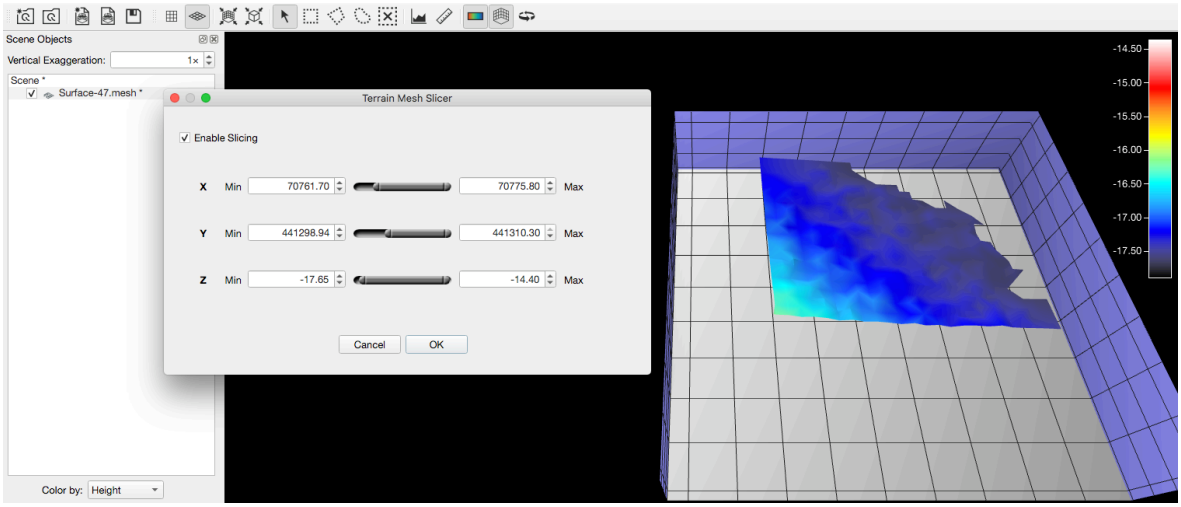
- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Slice Mesh



Terrain Mesh before being sliced using the Terrain Mesh Slicer Dialog.



Terrain Mesh after being sliced using the Terrain Mesh Slicer Dialog.

What it Does

The Mesh Slicer dialog allows the user to slice the selected terrain mesh on X,Y and/or Z axis.

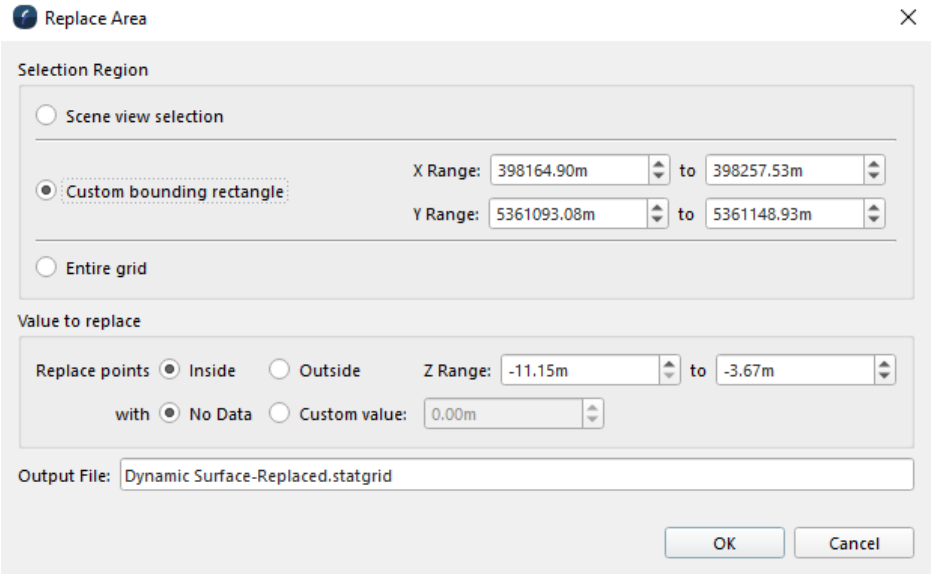
General Description

Click on the *Enable Slicing* checkbox to enable or disable the Terrain Mesh slicing feature.

Use the X,Y,Z range sliders to select the ranges to be rendered on the three axis.

After clicking the **OK** button the dialog windows will be closed. Should any modification to the slicing options is needed, this dialog needs to be opened again following the steps described on the **How to Start** section of this page.

Fledermaus Replace Area Dialog



Replace Area Dialog

- How to Start
- What It Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Replace Value…
- Scene Objects Dock → Operations → Replace Value…

What It Does

Replaces all depth values in a selected area of the grid with a custom value or a no-data value. Useful for removing data above/below a threshold.

General Description

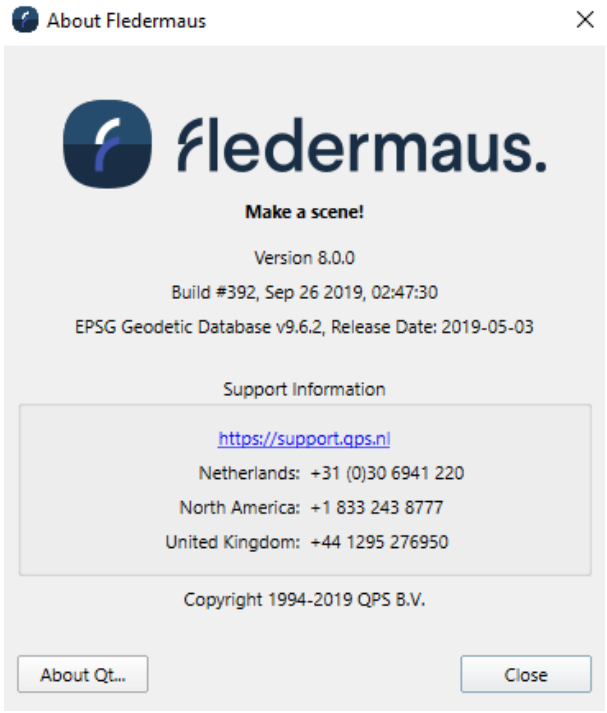
Selection Region: The area on the surface which will be affected by the operation. Scene view selection allows the use of the selection tools to define an area, otherwise the area can be entered manually. The X and Y range fields will be automatically filled with the bounds of the scene view selection, or the whole grid if no scene view selection was made.

Value to replace: Here you can choose the range of values to be replaced. You can specify a Z range up to the minimum and maximum Z values of the grid.

- The inside and outside radio buttons control if values inside or outside the Z range should be replaced (negative values are depths, positive heights). Inside includes the min and max values, while outside excludes them. For example if your range is -15.0m to -10.0m, then a value of 10.0m will be replaced if inside is checked, and not replaced if outside is checked.
- The “No data” radio button will replace the values with a special value indicated there is no data present, effectively deleting those values from the grid. Alternatively you can specify a custom value to insert in place of the replaced values.

Output File: The name of the new grid file that will be produced.

Fledermaus About Dialog

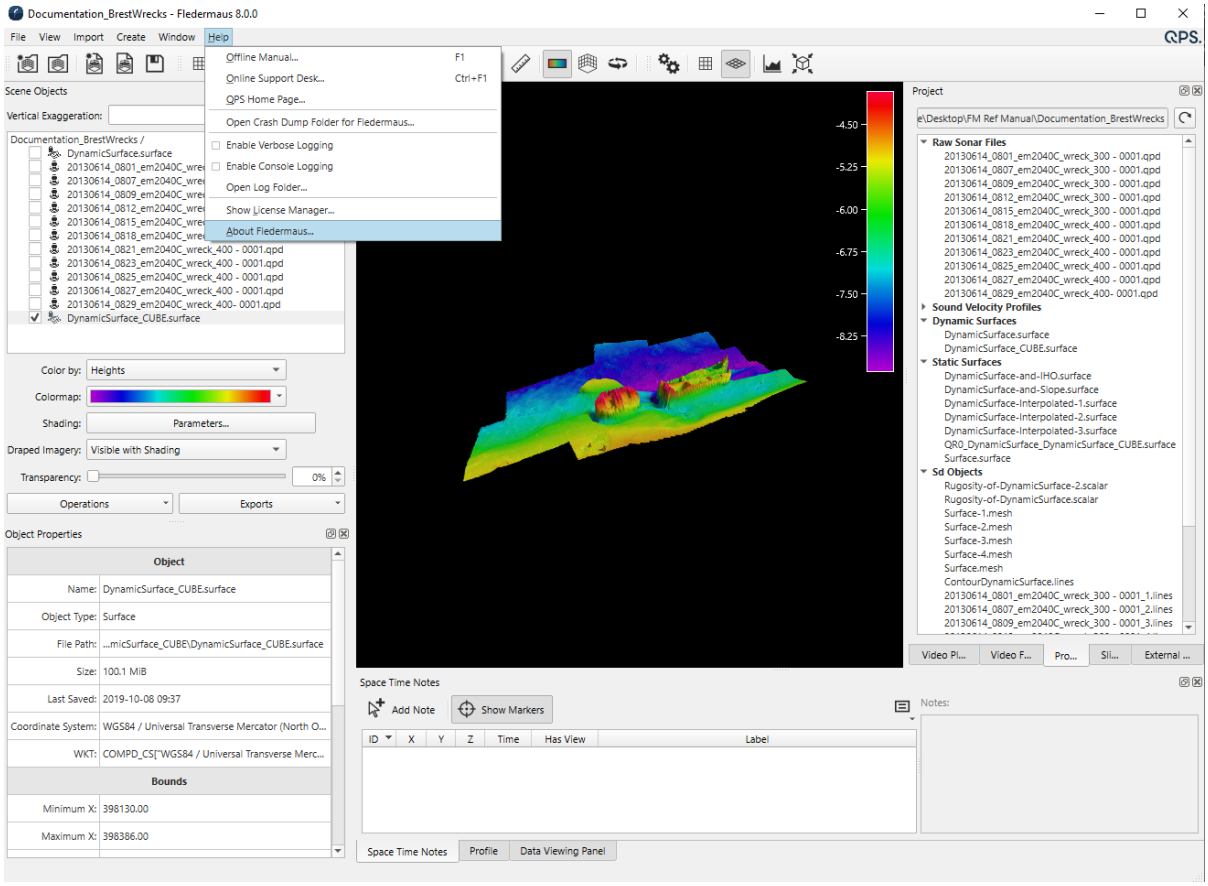


About Fledermaus Dialog

- How to Start
- What it Does

How to Start

- Main Menu Bar → Help → About Fledermaus

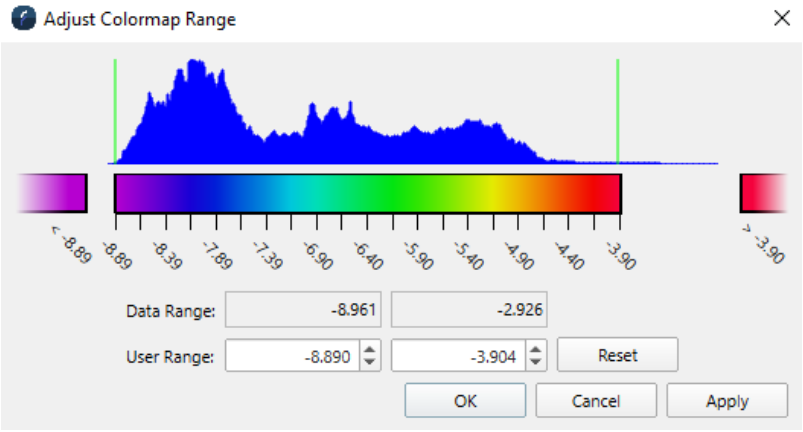


About Fledermaus Dialog from Help Menu

What it Does

This dialog displays version, build information and release date.
This information is important when reporting any problems to QPS Support.
It also has the contact email, phone number and web address.

Fledermaus Adjust Colormap Range Dialog

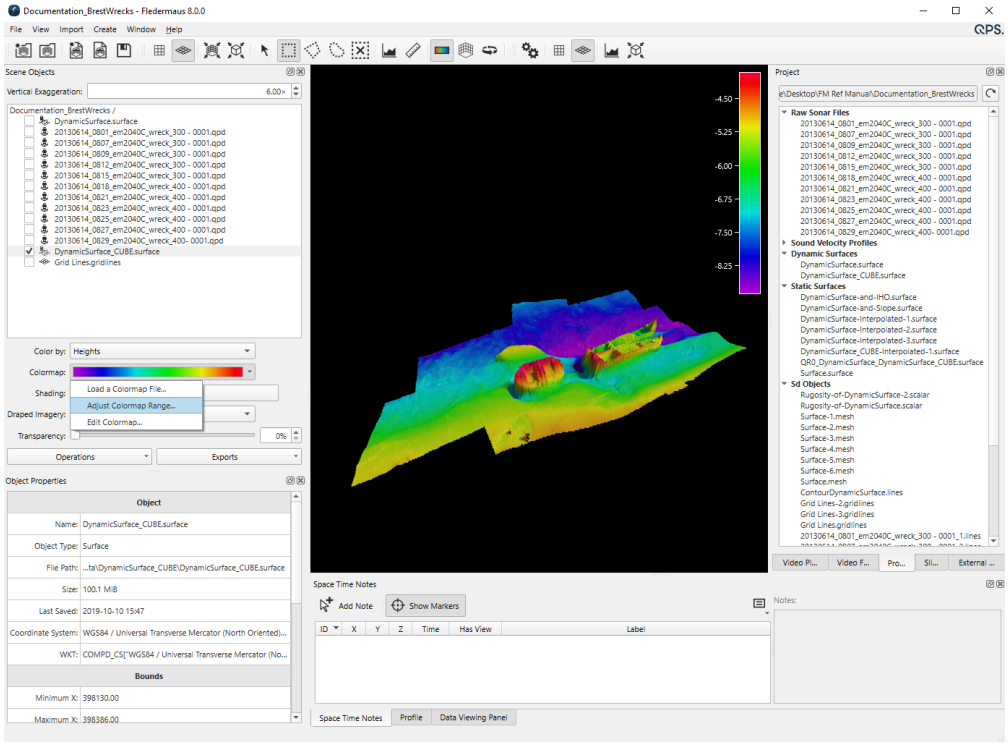


Adjust Colormap Range Dialog

- How to Start
- What it Does
- General Description
  - With a Single Surface Selected
  - With Multiple Surfaces Selected

How to Start

- Scene Objects Dock → Colormap → Adjust a Colormap Range



Adjust Colormap Range Dialog from Scene Objects Dock

What it Does

This dialog adjusts how colormap is applied to the range of values in the selected layers.

General Description

The dialog shows two ranges:

- The *Data Range* is the actual range of values found in the selected files. This is not user editable.
- The *User Range* is a separate range that can override the data range when coloring the surface.

The actual effect of the user range depends on the scaling type of the colormap.

- For *Percentage Based* colormaps, it adjusts the minimum and maximum that the relative scaling occurs between.
- For *Fixed Range* colormaps, it just adjusts the minimum and maximum outside of which values should be considered out of range.

With a Single Surface Selected

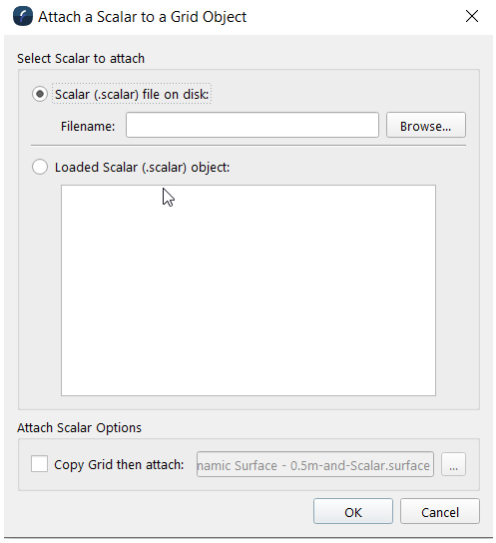
If only one surface is selected, a histogram is shown, as in the image above. This shows where in the range the majority of the data lies, making it easier to choose a user range. Left clicking on the histogram sets the user minimum. Right clicking sets the maximum.

The *Reset* button, resets the user range to match the data range.

With Multiple Surfaces Selected

If multiple surfaces are selected, the histogram display will show a combined histogram from the selected files and any adjustments one makes are applied to all selected surfaces.

Fledermaus Attach Scalar Dialog



Attach Scalar Dialog

- How To Start
- What It Does
- General Description

How To Start

- Scene Objects Dock → Right-Click on Object → Operations → Attach Scalar
- Scene Objects Dock → Operations → Attach Scalar

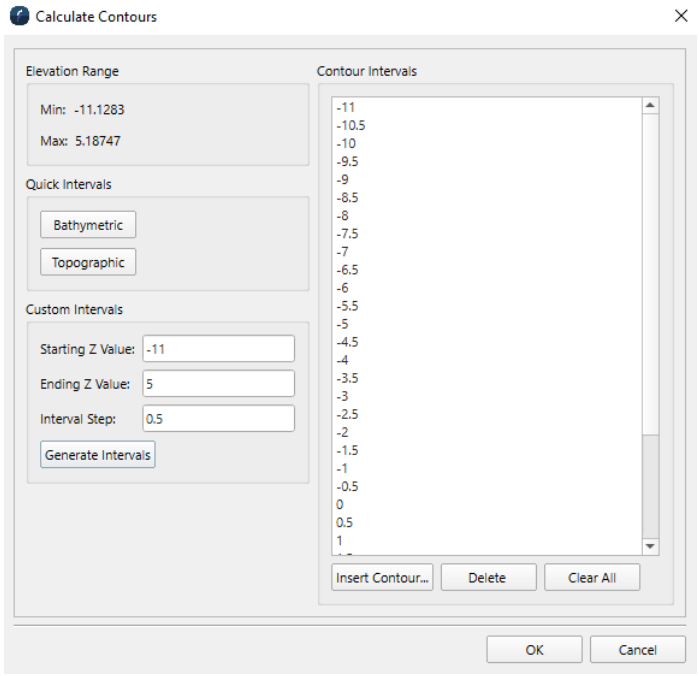
What It Does

Any standalone Scalar file can be attached to a Surface file using the *Attach Scalar* Operation. Once attached, the Scalar file can be used to shade the Surface and the Scalar data will be displayed during any geo-picking operation on the Surface.

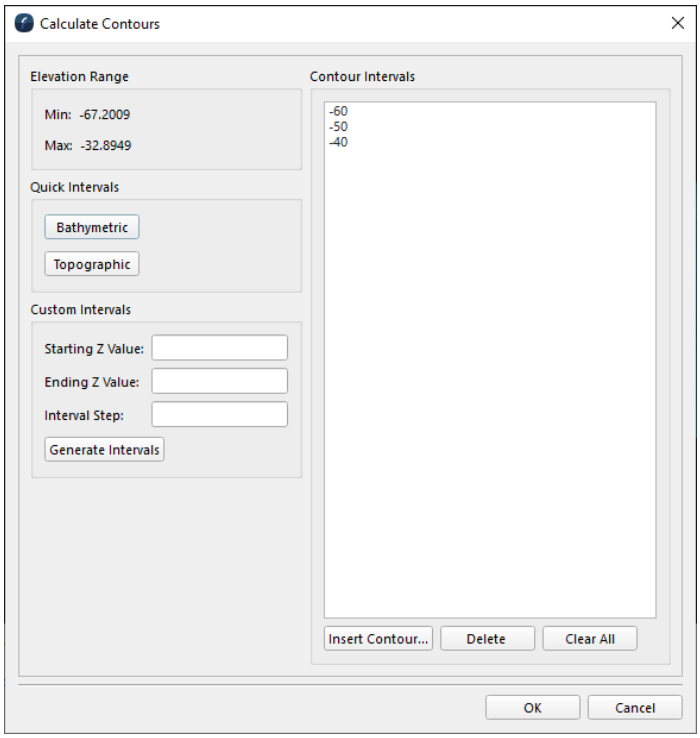
General Description

You can choose to attach a Scalar file that you have on disk or one that has already been loaded to your scene. Once attached you use the color by option in the Scene Objects Dock to color by the attached scalar.

Fledermaus Calculate Contours Dialog



Calculate Contours Dialog - Custom Intervals



Calculate Contours Dialog - Quick Intervals

- How to Start
- What it Does
- General Description
  - Elevation Range
  - Quick Intervals
  - Custom Intervals
  - Labels
  - Contour Intervals

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Contours
- Scene Objects Dock → Operations → Contours

What it Does

The *Calculate Contours Dialog* allows the user to create contours on the selected surface.

General Description

Elevation Range

The Minimum and Maximum Elevation values for the selected surface are displayed here, to be used during Custom Interval creation.

Quick Intervals

The easiest and fastest way to generate intervals is to click on either the Bathymetric or Topographic Quick Intervals button. Clicking either of these buttons will add a number of intervals in the Contour Intervals list box. This feature is used to generate contours of a dataset. It will generate predefined intervals based on the range of the input dataset. If a predefined value falls within the bounds of the dataset, it will populate in the Contour Interval list.

Custom Intervals

To generate contours at regular intervals, the user must specify the minimum and maximum starting elevation and the elevation step amount in the Starting Z Value, Ending Z Value and Interval Step fields. Once these values are specified, clicking on the Generate Intervals will automatically add the appropriate contours to the list.

Note: only intervals that fall within the selected Elevation Range will be added.

Labels

Important Note: The functionality to add labels will be added in a future Fledermaus release.

Labels can be generated for the contours by enabling the Label Contours toggle. If the Label Contours toggle is turned on, enter the size of the labels to be generated in the Label Size field. The size entered is approximately the height of the letters in units of the data. Once the desired contour intervals have been specified, clicking the OK button will prompt to save a generated the contour file and make it appear in the scene.

Contour Intervals

Specific intervals can also be added directly by clicking the Insert Contours... button. The new interval will then be added to the list.

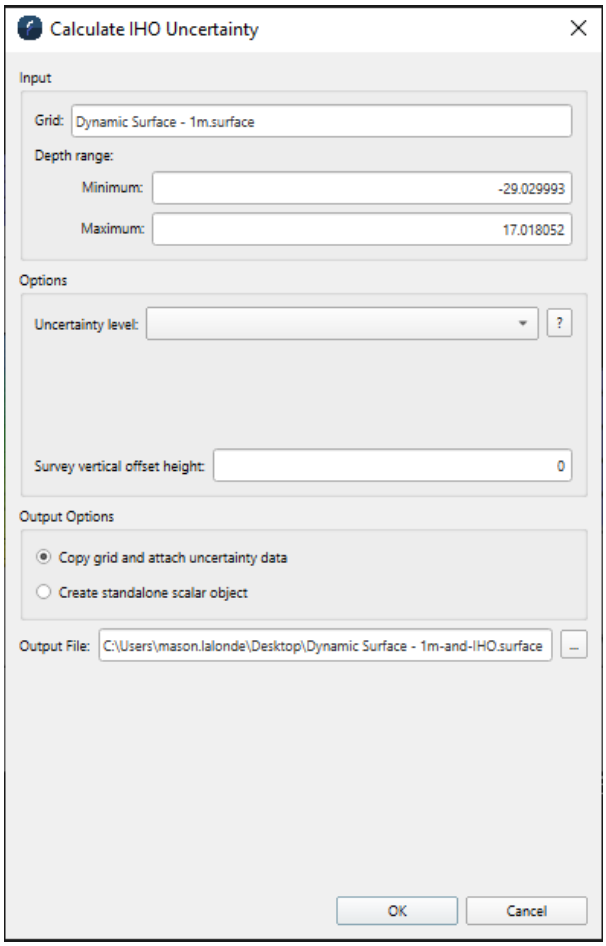
Intervals can be removed by highlighting them and clicking the Delete button.

The Clear All Values will clear all the entries in the list.

The Cancel button simply closes the dialog without performing the contouring operation.

Note that since 7.6.0, each contour line has an attribute called Elevation with the interval height encoded. This is useful when exporting the contours to Arc, since the contour height can be exported with the data.

Fledermaus Calculate IHO Uncertainty Dialog



Calculate IHO Uncertainty Dialog

- How to Start
- What it Does
- General Description
  - Input
    - Surface
    - Depth Range
  - Options
    - Uncertainty Level
    - Survey Vertical Height Offset
  - Output Options

- Copy Surface and Attach Uncertainty Data
- Create Standalone Scalar Object

- Output File

How to Start

- Scene Objects Dock → Right-Click on Object → Operations →IHO Uncertainty
- Scene Objects Dock → Operations → IHO Uncertainty

What it Does

The *Calculate IHO Uncertainty* dialog calculates the uncertainty associated with the dataset. This uncertainty value will determine whether the data has met IHO order standards.

General Description

Input

Surface

The surface for which the IHO Uncertainty is required.

Depth Range

The depth range of the selected dataset.

Options

Uncertainty Level

You will need to set the uncertainty level to the correct level for your data. There are 4 levels of depth accuracy specified by the IHO per Special Publication Number 44: Special Order, Order 1, Order 2 and Order 3. The criteria for each in brief:

IHO Standards for Hydrographic Surveys			
Special Order	Order 1	Order 2	Order 3
Harbours, berthing areas, and associated critical channels with minimum underkeel clearances.	Harbours, harbour approach channels, recommended tracks and some coastal areas with depths up to 100 m.	Areas not described in Special Order and Order 1, or areas up to 200 m water depth.	Offshore areas not described in Special Order, and Orders 1 and 2.

Survey Vertical Height Offset

This feature is intended for is designed for lakes that are above sea level. If your data is bathymetric and below 0, then you will not need to use this.

Output Options

Copy Surface and Attach Uncertainty Data

This option is applicable when the user wishes to transfer their object to ArcGIS. It will copy the surface and attach the uncertainty to it.

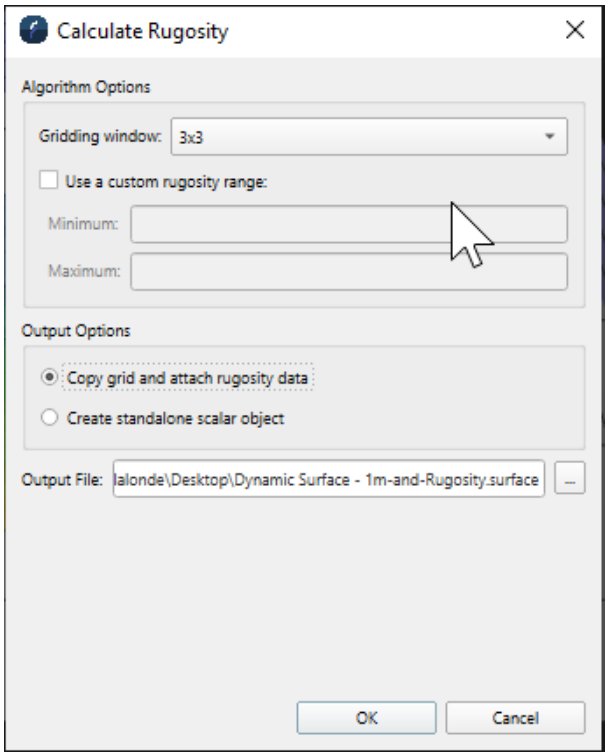
Create Standalone Scalar Object

This option will create a scalar, which is an x,y attribute surface with the uncertainty as an attached scalar value.

Output File

The filename of the surface with the according uncertainty value including its format extension, .surface.

Fledermaus Calculate Rugosity Dialog



Calculate Rugosity Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Rugosity
- Scene Objects Dock → Operations → Rugosity

What it Does

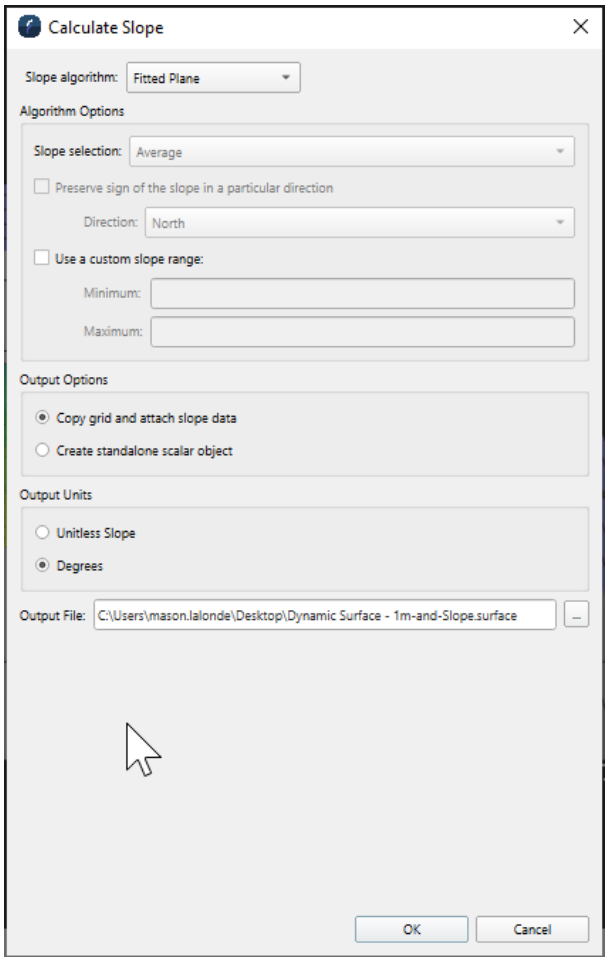
Rugosity is a measure of surface roughness and it can be calculated using the *Calculate Rugosity* dialog.

General Description

The Gridding Window specifies the grid size surrounding a cell that will be used to calculate the rugosity value. By default the output surface will contain the full range of rugosity values, however a custom range can be specified to restrict the output to the user supplied values. There are three output options for the generated surface, with the default being to attach it to the original source SD file. There is also an option to create a copy of the source SD before attaching the rugosity, as well as an option to create a standalone SCALAR file.

If the resulting surface will be an attached Scalar to the current SD or a copy of the current SD, the SD can be re-shaded using the new attached scalar if *Re-Shade with attached scalar* is toggled one.

Fledermaus Calculate Slope Dialog



Calculate Slope Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Slope
- Scene Objects Dock → Operations → Slope

What it Does

The *Calculate Slope dialog* allows the user to compute a surface that represents the maximum slope at each grid center of the currently selected SD.

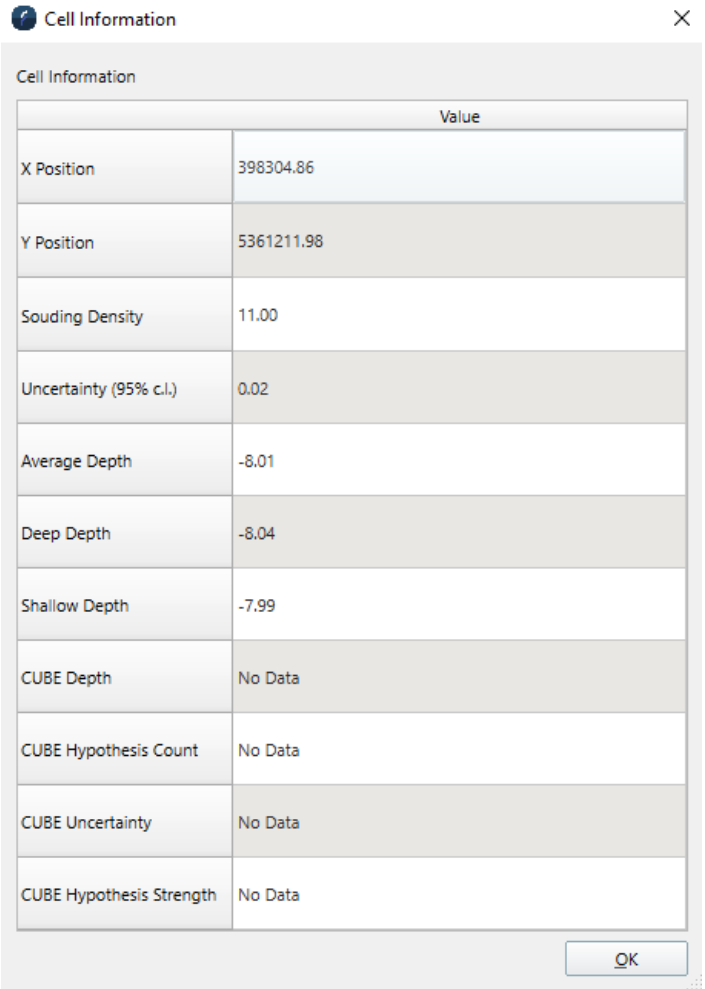
General Description

The generated surface will have the same dimensions as the original surface file and represents the maximum slope from each cell to any of its neighboring cells.
For the generated surface, each cell represents the maximum slope to any of its neighbors written in decimal degrees. You can optionally specify the slope range bounds for the generated surface. This is useful if you want the range to correspond to a particular range of colors in a given color map.

The created scalar file can then be used in the shading process to drape the scalar color over the DTM. The values of the scalar can also be attached to the original surface. This means that when the surface of the object is picked in Fledermaus it will return X, Y, Z, and slope. Alternatively the user may create another surface where the Z value of the DTM is the slope.

If the resulting surface will be an attached Scalar to the current SD or a copy of the current SD, the SD can be re-shaded using the new attached scalar if *Re-Shade with attached scalar* is toggled on.

Fledermaus Cell Information Dialog

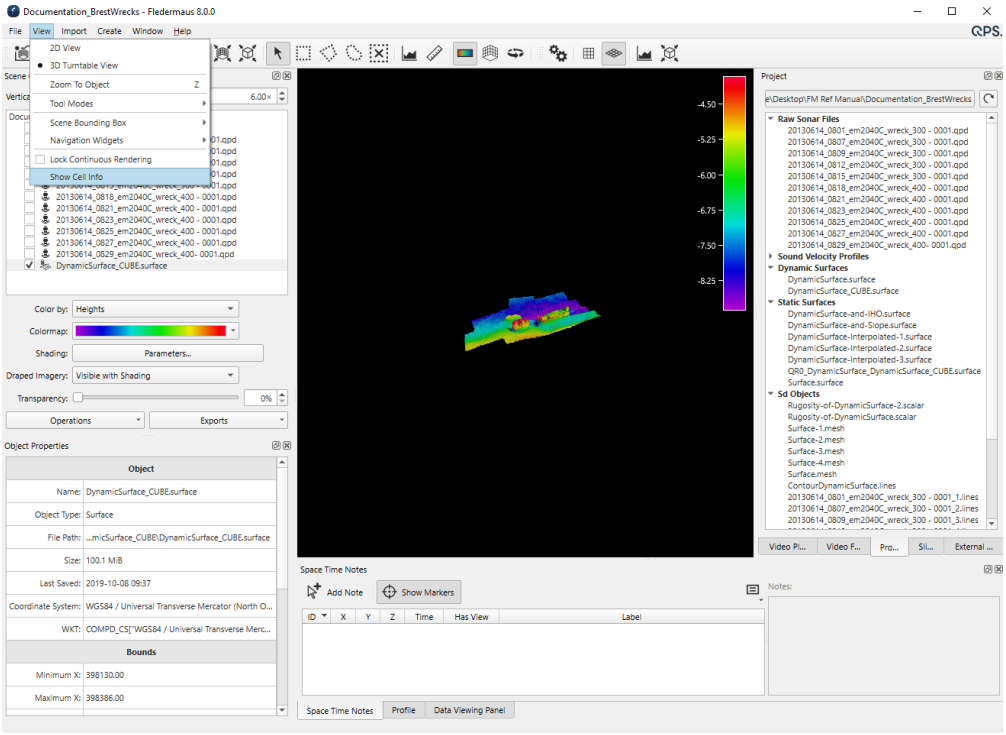


Cell Information Dialog

- How to Start
- What it Does
- General Description

How to Start

- Main Menu Bar → View → Show Cell Info



Show Cell Information Dialog from View Menu

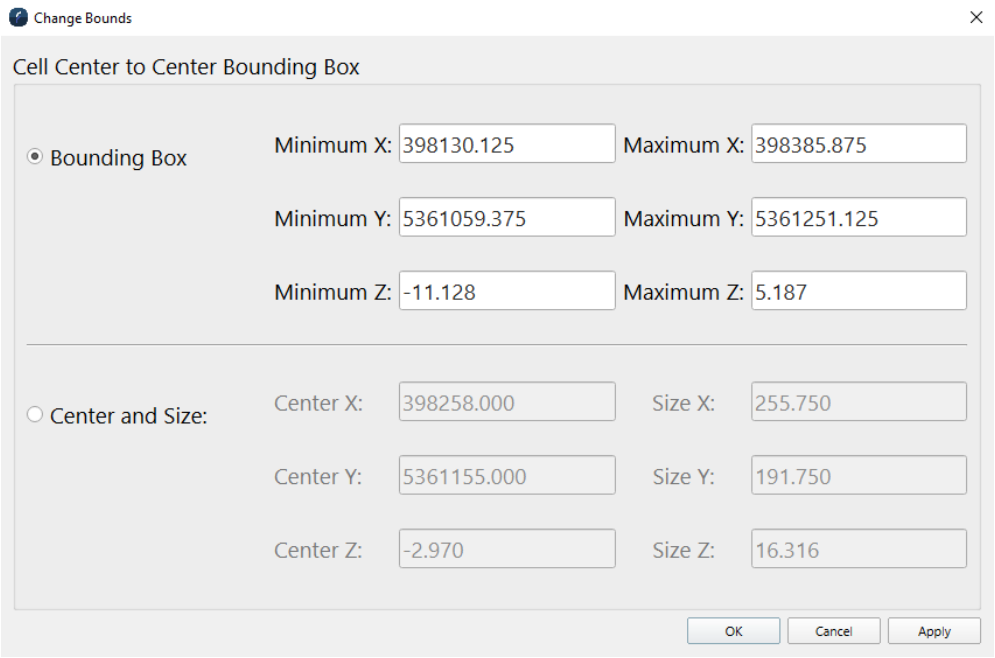
What it Does

This dialog shows the attribute values for a cell of the selected dynamic surface that the cursor is hovering over.

General Description

After selecting a dynamic surface from the *Scene Objects* window, Fledermaus will utilize this dialog for viewing Cell information. The Cell Information will not just show cell information for the selected Dynamic Surface from the the layers window, but rather from any dynamic surface that the cursor is hovering over. Fledermaus will use the x,y position of the cursor and match that up with a Cell from the dynamic surface that the cursor is hovering over. The Cell Information dialog will display X, Y position of the cursor, the Sounding Density, the Uncertainty, and the Average, Deep and Shallow Depth values. If CUBE is included with the Dynamic Surface, it will also display the CUBE depth value, the number of hypothesis, the Hypothesis Uncertainty, and the Hypothesis Strength values.

Fledermaus Change Bounds Dialog



Change Bounds Dialog

- How to Start
- What it Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Change Bounds
- Scene Objects Dock → Operations → Change Bounds

What it Does

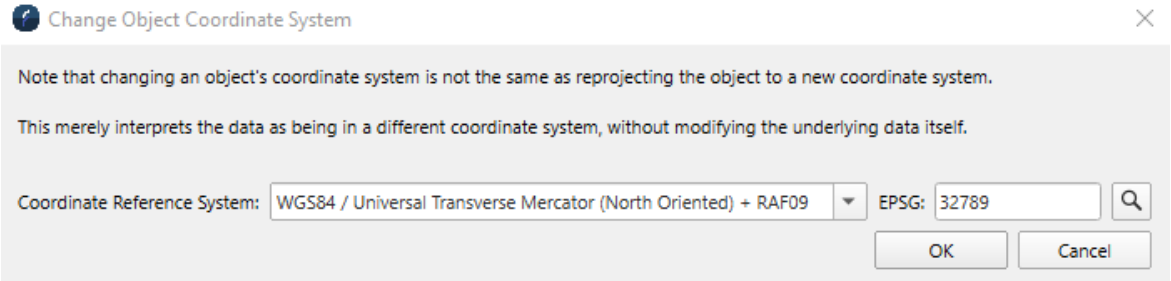
The *Bounds* dialog shows the horizontal and vertical limits of the loaded SD object file.

General Description

The user can if necessary adjust and apply new bounds to the data for instance if a vertical offset has to be applied to a sounding surface.

The limits of the data can be displayed by clicking apply, which will display the new bounds in the Fledermaus 4D Scene.

Fledermaus Change Object Coordinate System Dialog



Change Object Coordinate System Dialog

- How to Start
- What it Does
- General Description
  - Coordinate Reference System
  - EPSG
  - Look up a Coordinate System

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Change Object Coordinate System
- Scene Objects Dock → Operations → Change Object Coordinate System

What it Does

This dialog is used to change the object coordinate reference system, without changing the data itself.

General Description

The selected object can be viewed in a different coordinate system than the original import. This is commonly used when the incorrect CRS was selected during the import process, or as a workaround for data that was recorded in survey feet for FMGT users. This operation does not change the dataset itself.

Note that individual layers of a multilayer surface cannot have the CRS changed. Only the parent item of the surface may be changed, thus all the layers in the surface will have the CRS changed in that case.

Coordinate Reference System

This field contains the coordinate system the object will be changed to.

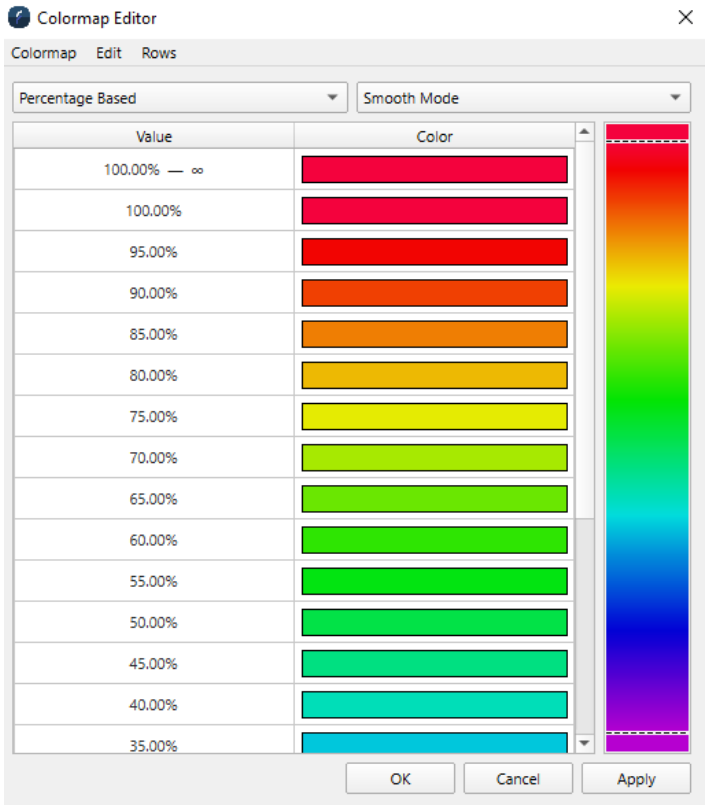
EPSG

Stands for the *European Petroleum Survey Group.* These codes are a set of geodetic parameters used to represent projected, unprojected and local coordinate system definitions. If you know the EPSG code of the coordinate system you want you can quicky select it by entering the code.

Look up a Coordinate System

Clicking on the magnifying glass bring up the coordinate system search tool.

Fledermaus Colormap Editor Dialog

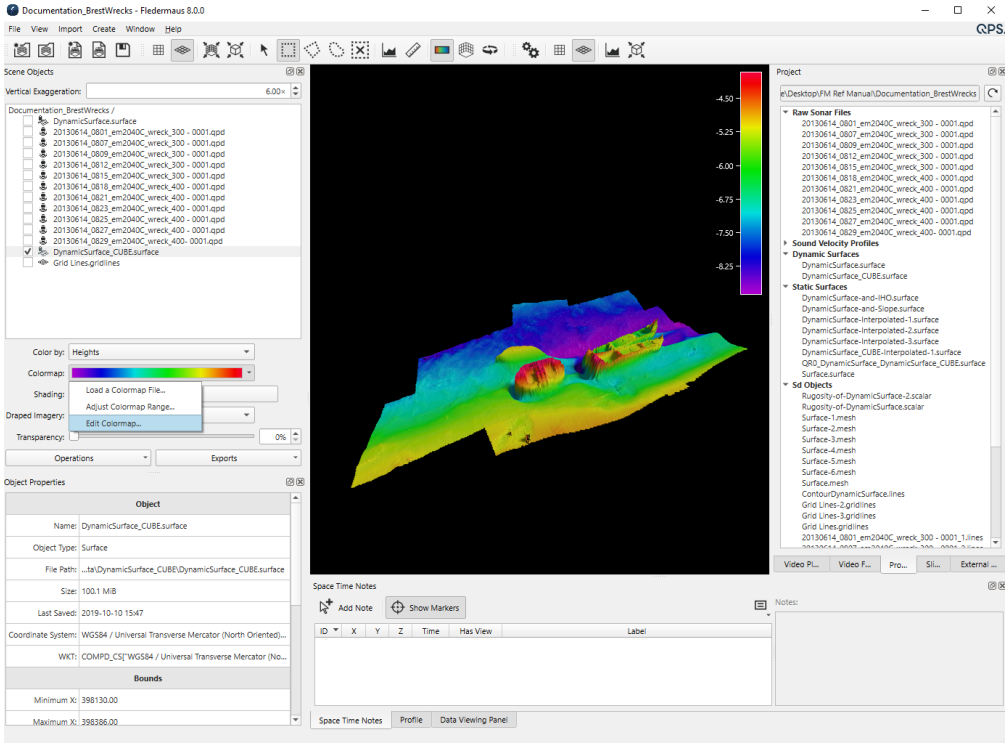


Colormap Editor Dialog

- How to Start
- What it Does
- General Description
- Menubar Actions

How to Start

- Scene Objects Dock → Colormap → Edit Colormap



Colormap Editor Dialog from Scene Objects Menu

What it Does

The colormap editor allows many colormap operations including:

- Creating a new colormap from scratch
- Loading a colormap from multiple formats
- Editing the current colormap
- Saving the current colormap to multiple formats

General Description

The colormap editor is made up of several components:

- The menu bar contains many actions related to colormap files or editing. See below for more detailed descriptions.
- The scaling mode drop down changes the way the colormap is scaled to data.
  - *Percentage Based* colormaps scale themselves relative to whatever data they are applied to.
  - *Fixed Range* colormaps specify a range of absolute values.
- The blending mode drop down changes the way colors blend between values.
  - In *Smooth Mode*, colors blend smoothly and continuously from value to value.

    - In *Banded Mode*, the colormap is divided into discrete ranges or bands of solid color.
    - In *Mixed Mode*, the color immediately above and below each value can be specified allowing both smooth and discrete transitions.
- The table is where the colormap data can be viewed and edited. Cells can be edited via double click or the F2 key. The context menu provides some editing conveniences. The actual columns displayed in the table depend on the current blending mode.
    - In *Smooth Mode*, *Value* and *Color* columns are shown.
    - In *Banded Mode*, *Range* and *Color* columns are shown.
    - In *Mixed Mode*, *Value*, *Color Below* and *Color Above* columns are shown.
- The preview shows the current state of the colormap being edited. The dashed lines represent the top and bottom of the colormap's range. The sections outside these dashed lines show the above and below range colors.
- At the bottom of the window are the standard dialog buttons. While the colormap editor is a dialog, it also behaves much like a stand alone colormap editing application. This makes the meaning of the dialog buttons somewhat less obvious.
    - The *Apply* button applies the colormap as shown in the dialog to the selected layers. This operation is completely independent of any loading or saving of colormap files that was done.
    - The *OK* button is identical to the Apply button, except that it closes the dialog.
    - The *Cancel* button closes the dialog without applying the current colormap to the selected layers. It does not cancel any previous presses of the Apply button or any file based operations performed while the dialog was open.

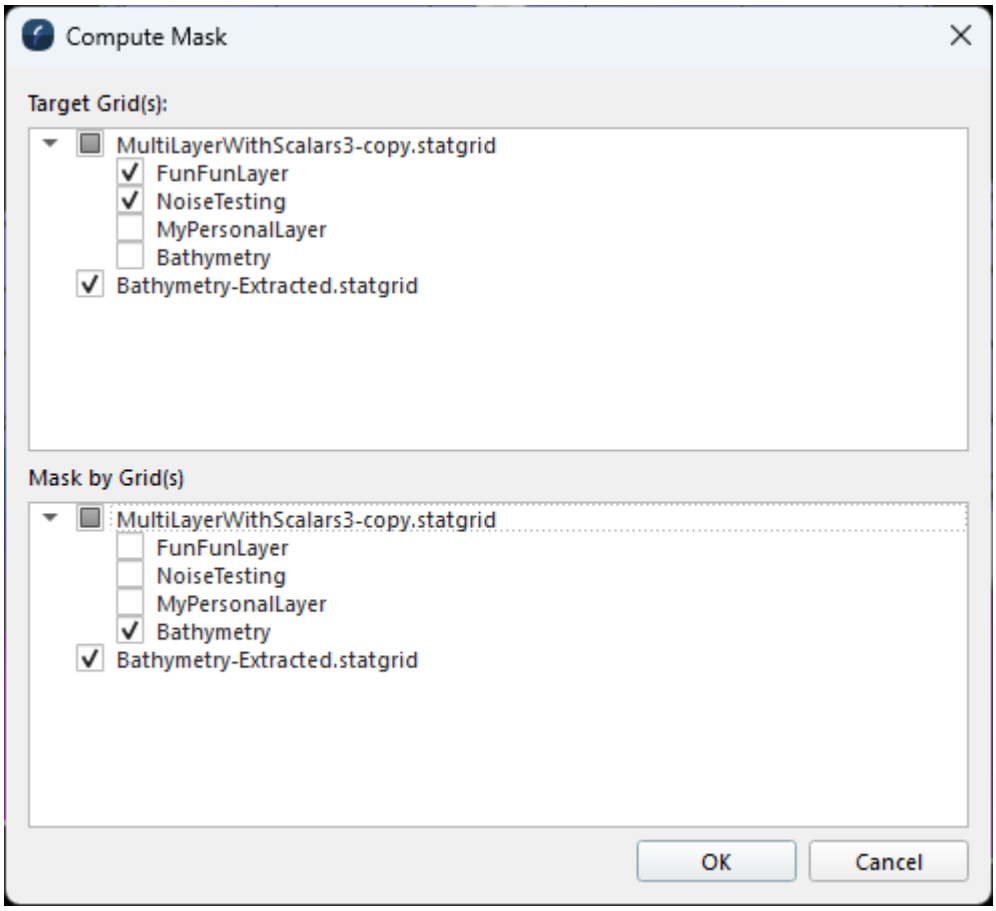
Menubar Actions

- *Colormap* Menu
    - *New...* - Shows the *New Colormap* dialog for creating a new colormap from scratch, which shows:
        - Scaling type
        - Blending mode
        - Minimum and maximum values
        - Minimum and maximum colors
        - The number of stops
        - A preview of the stop values based on the values chosen

- *Load from File...* - Opens a colormap file from disk, replacing the currently loaded colormap. Note that this colormap is not immediately applied to the selected layers, OK or Apply must still be pressed. The supported formats are:
  - Fledermaus CMAP Files (*.cmap)
  - QINSy CLR Files (*.clr)
  - QINSy XML Files (*.xml)
  - ASCII Files (*)
  - Caris Files (*.cma)
  - Gimp/POV-Ray Files (*)
  - GMT Files (*.cpt)
  - GRASS Files (*)
- *Save to File...* - Saves the current colormap to disk as a colormap file. The supported formats are:
  - Fledermaus CMAP Files (*.cmap)
  - QINSy XML Files (*.xml)
  - ASCII Files (*)

- *Edit* Menu
  - *Copy* - Copies the current value or color to the clipboard.
  - *Paste* - Pastes a value or color from the clipboard.
  - *Interpolate Values Between Selected Rows* - Evenly spaces the values between the first and last selected rows.
  - *Interpolate Colors Between Selected Rows* - Evenly blends the colors between the first and last selected rows.
  - *Reverse Colormap*: Reverses the position of every color in the colormap. The minimum color becomes the maximum color, and so on. No change is made to the values.
- *Rows* Menu
  - *Insert Row* - Inserts a new row above the selected row. The value and color are interpolated to be halfway between the surrounding rows.
  - *Delete Row* - Removes the selected row.
  - *Change Number of Rows...* - Rescales the colormap to have the specified number of evenly spaced rows.
  - *Rescale Full Range...* - Rescales a fixed range colormap to a new minimum and maximum.

Fledermaus Compute Mask Dialog



- How to Start
- What It Does
- General Description

How to Start

- Scene Objects Dock → Right-Click on Object → Operations → Compute Mask
- Scene Objects Dock → Operations → Compute Mask

What It Does

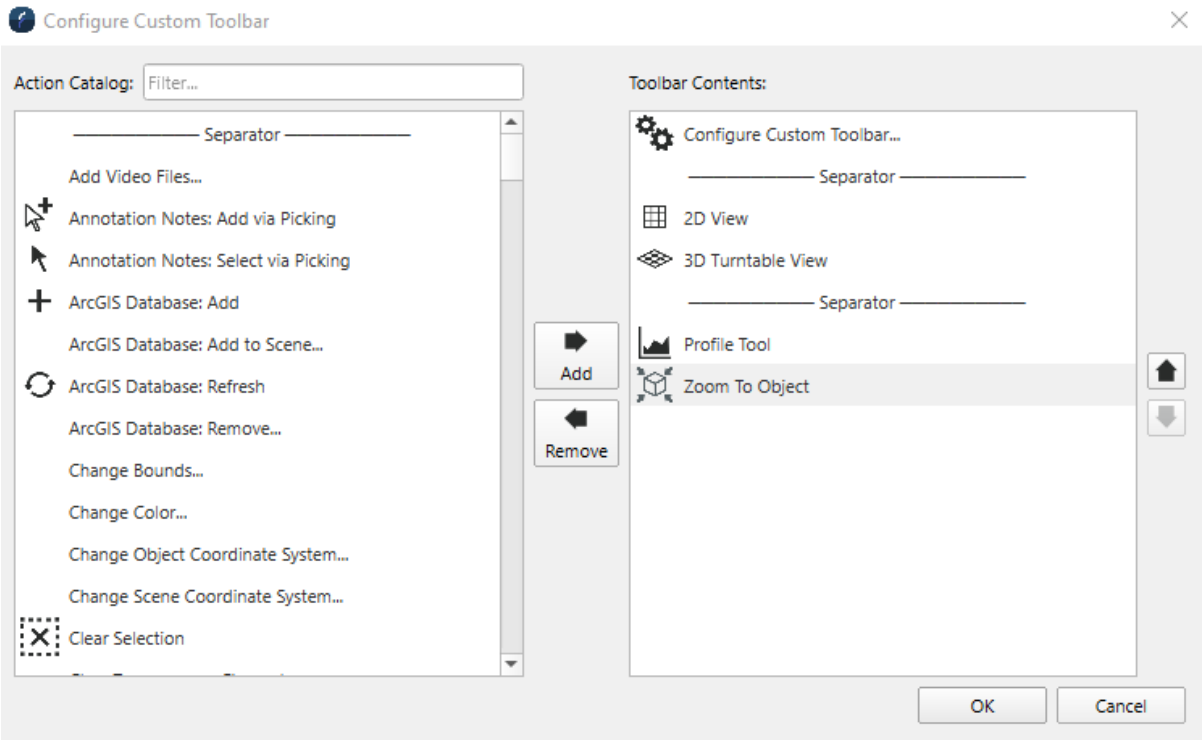
Used to mask a surface by a surface.

General Description

Target Surface(s): This list allows you to select the surfaces you use to target for masking. You are able to target multiple surfaces with this operation, including surface layers in a multilayer grid.

Mask by Surface(s): This list allows you to select the surface or surfaces you wish to mask by. This includes surface layers within a multilayer grid. All the selected surfaces from this list will be used to mask each target surface.

Fledermaus Configure Custom Toolbar Dialog



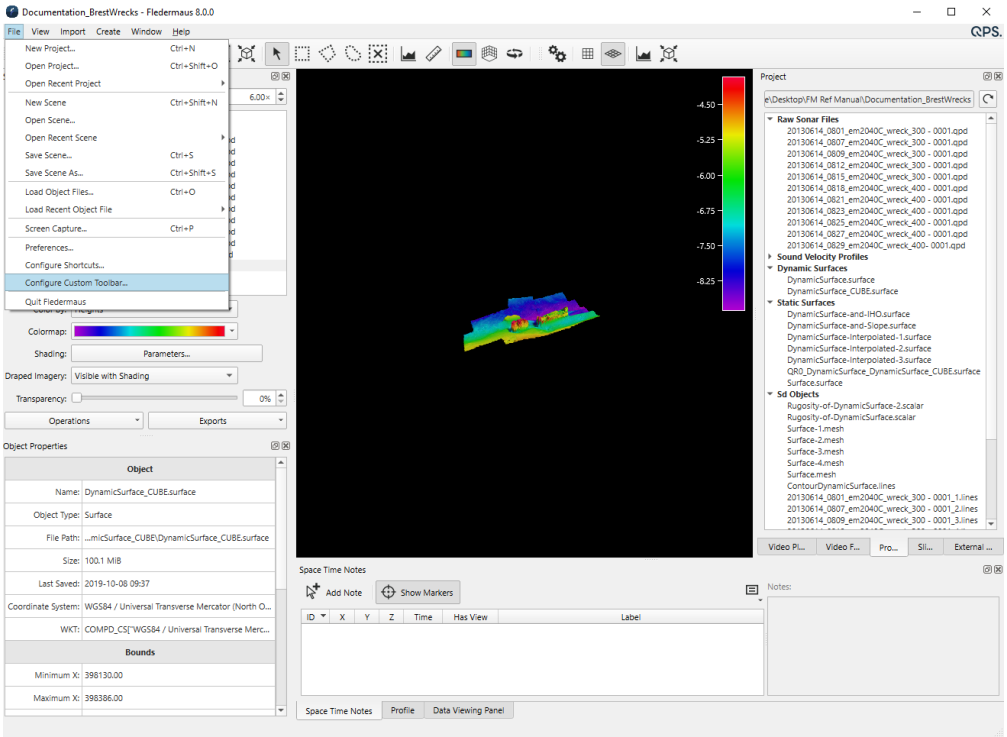
Configure Custom Toolbar Dialog

Custom Toolbar

- How to Start
- What it Does
- General Description
  - Filter
  - Action Catalog
  - Tool Bar Contents
  - Add
  - Remove
  - Up/Down
  - Ok
  - Cancel

How to Start

- Main Menu Bar → File → Configure Custom Toolbar
- If the Custom Toolbar is already enabled, the icon will launch the Configure Custom Toolbar



Configure Custom Toolbar Dialog from File Menu

What it Does

This dialog is used to configure items in the Custom Toolbar.

General Description

This dialog enables the customization of the Custom Toolbar by providing access to pre-determined actions. Actions can be filtered, added and removed, sorted and separated to facilitate the customization needs. All changes will be reflected in the Custom Toolbar upon completion.

Filter

The *Action Catalog Filter* can be used to search and narrow the list of actions.

Action Catalog

The *Action Catalog* list contains all available actions that can be added to the Custom Toolbar. Included as the first element in the list is a line separator that can be used for visual separation between actions.

Tool Bar Contents

The *Tool Bar Contents* list contains all the actions, separators and ordering that are currently applied to the Custom Toolbar.

Add

The *Add* button will add the selected Action in the *Action Catalog* list to the *Tool Bar Contents* list.

Remove

The *Remove* button will remove the selected Action from the *Tool Bar Contents* list.

Up/Down

The *Up* or *Down* button will move the currently selected Action in the *Tool Bar Contents* list in the appropriate direction. An order change in the *Tool Bar Contents* list will be reflected in the Custom Toolbar from Left to Right or Top to Bottom depending on the layout orientation of the Custom Toolbar.

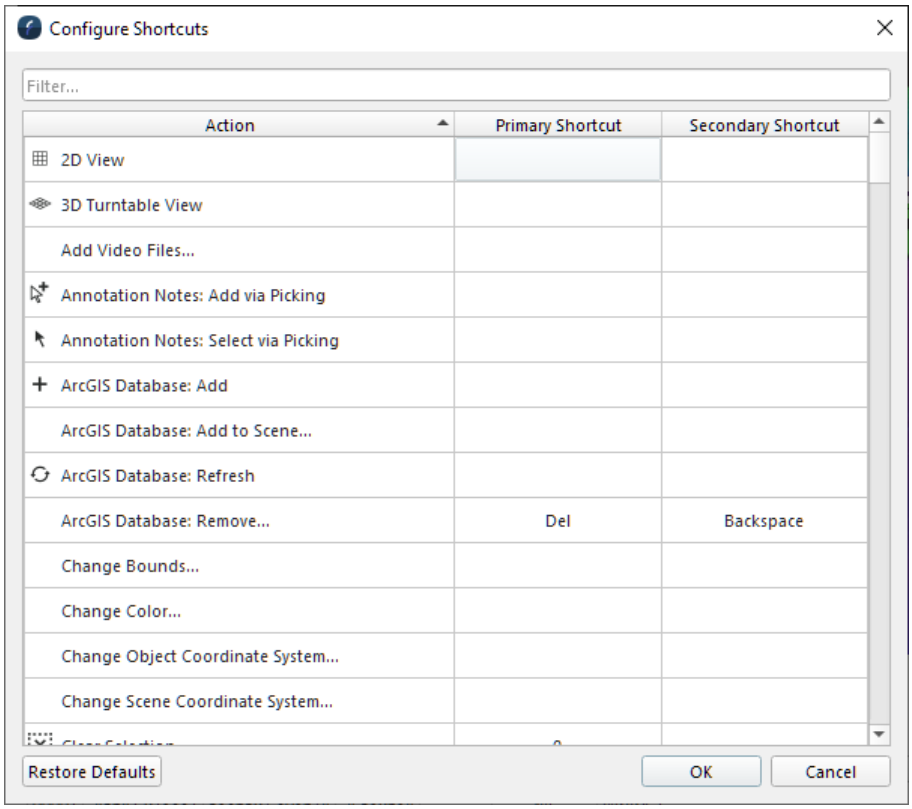
Ok

Clicking Ok will apply the new layout as defined in the *Tool Bar Contents* list to the Custom Toolbar and close the dialog.

Cancel

Clicking Cancel will revert all changes.

Fledermaus Configure Shortcuts Dialog

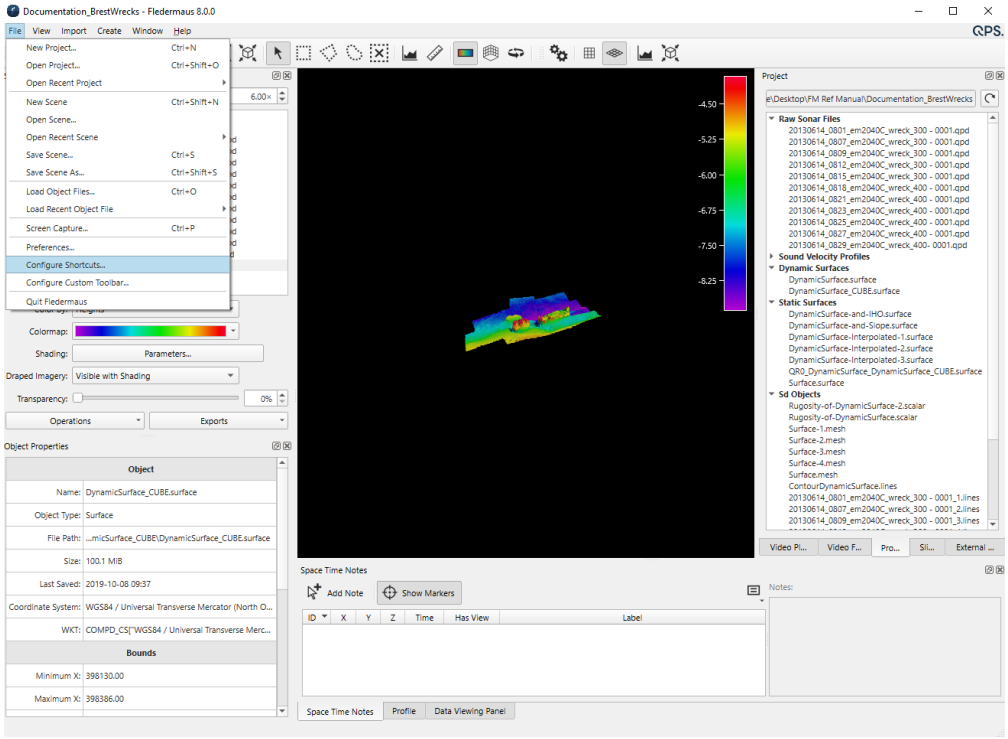


Configure Shortcuts Dialog

- How to Start
- What it Does
- General Description
  - Filter
  - Action Shortcuts
  - Primary and Secondary Shortcuts
  - Restore Defaults
  - OK and Cancel

How to Start

- Main Menu Bar → File → Configure Shortcuts
- Keyboard Shortcut: Ctrl+0 (Windows/Linux) & CMD+0 (Mac)



Configure Shortcuts Dialog from File Menu

What it Does

This dialog allows the user to configure their own shortcuts for predefined actions within the application. Each action can contain two shortcuts that must not conflict with any other action shortcut. In the event a conflict occurs, notification will be given and the option to unset the conflicting action will provided. All user defined shortcuts will be saved for all future instances of the application.

General Description

Filter

The *Filter* text field is used to search for a shortcut. Shortcuts can be found using their *Action Name* or *Primary* and *Secondary* Shortcut keys.

Action Shortcuts

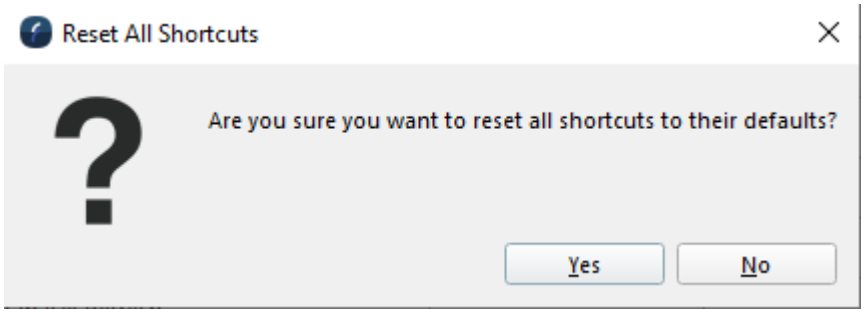
The *Action* column defines the application action the shortcut will affect. This column cannot be modified and all actions are governed by the application. In particular cases the action within the *Action* column will contain a Group ID followed by the Action to help clarify where the shortcut is used.

Primary and Secondary Shortcuts

The *Primary* and *Secondary* Shortcut columns display the application shortcuts for the corresponding Action. Action shortcuts can be set by clicking the cell and entering a key sequence on the keyboard. If the shortcut is not in conflict it will be displayed in the cell.

When a cell is selected it may contain two additional icons. The button will reset the Action Shortcut to the application default. The button will clear the Action Shortcut.

In the event a Action Shortcut is entered and is in conflict with another shortcut, the user will be notified with the option to unset the conflicting shortcut. No two Actions can have the same shortcut.



Reset All Shortcuts Dialog

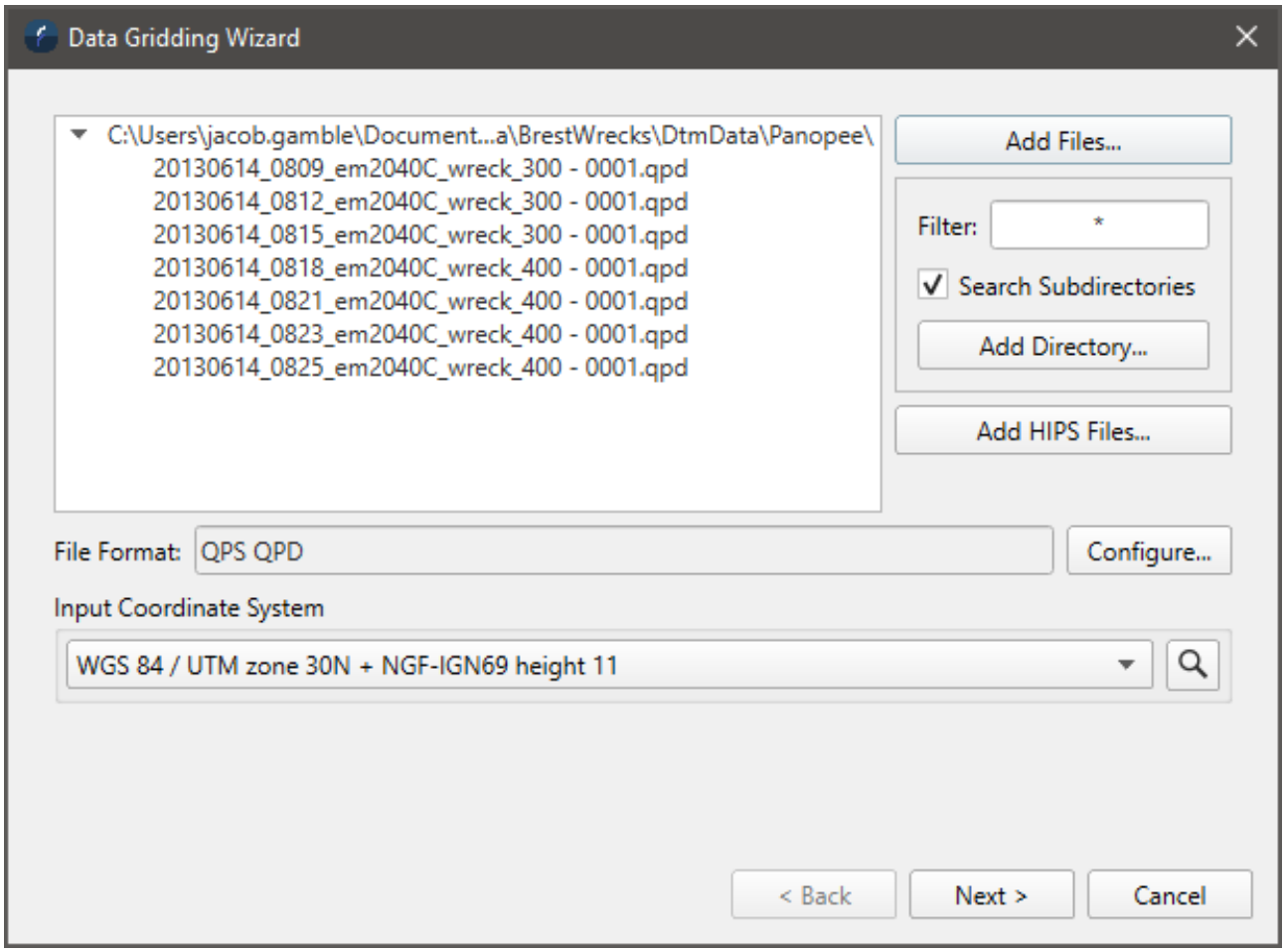
Restore Defaults

Clicking *Restore Defaults* will restore all the Shortcuts for all Actions to their default values.

OK and Cancel

Clicking *Ok* will apply all the changes the user has made. Clicking *Cancel* will revert all changes to their state before the Configure Shortcuts dialog was launched.

Fledermaus Create a Static Gridded Surface



Create Static Grid Dialog

- How to Start
- What it Does
- General Description

How to Start

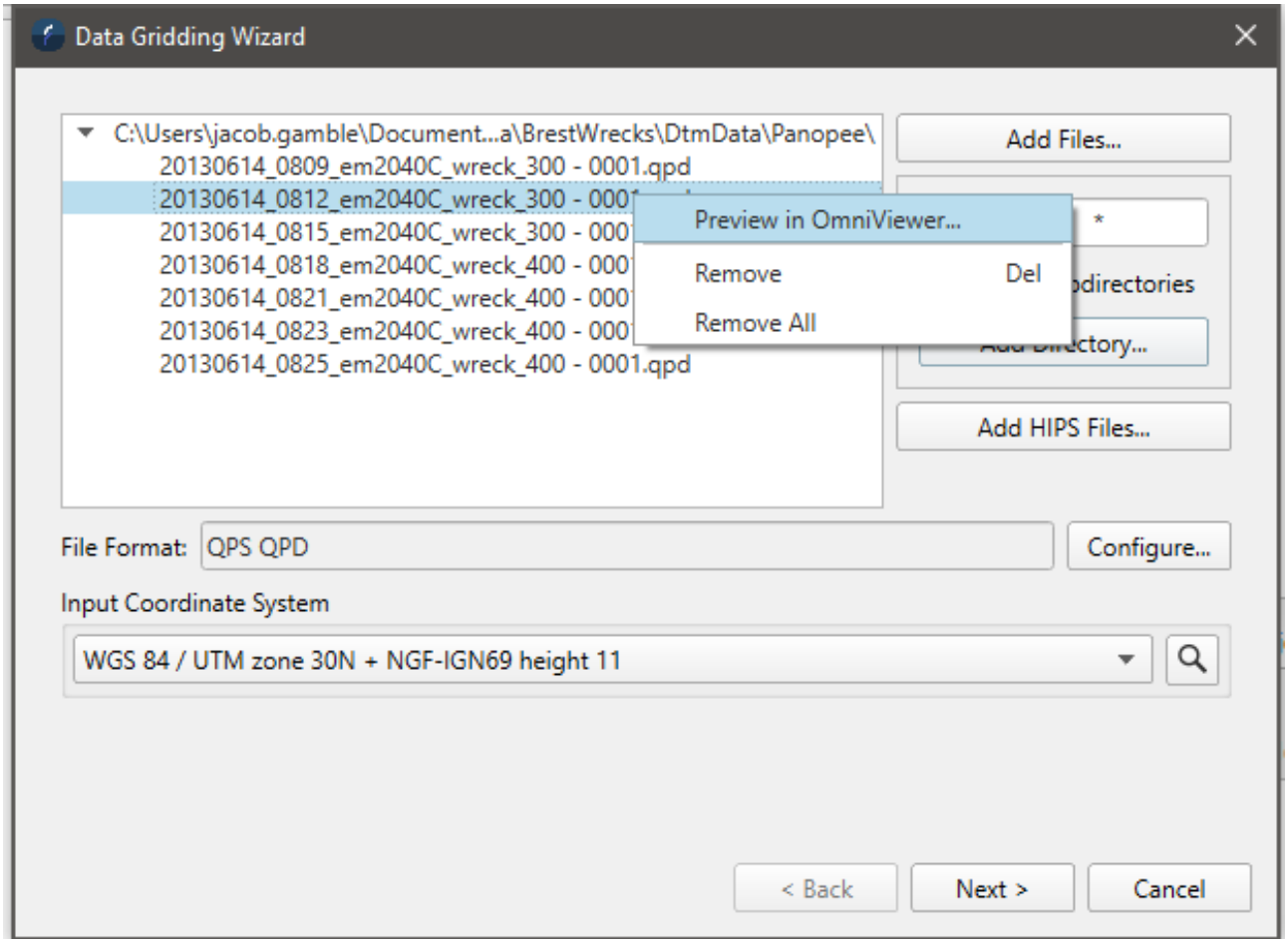
- Scene Objects Dock → Right-Click on Object → Operations → Create Static Grid
- Scene Objects Dock → Operations→ Create Static Grid from Point Files

What it Does

The *Create Static Surface* option allows the user to create a uniformly gridded surface with a specified grid resolution from selected point files with specified settings. Many different point files from ascii, to multibeam formats such as Qpd, and .all, to Lidar (.las, .laz) are supported here. The result will be a .staticgrid file and object type.

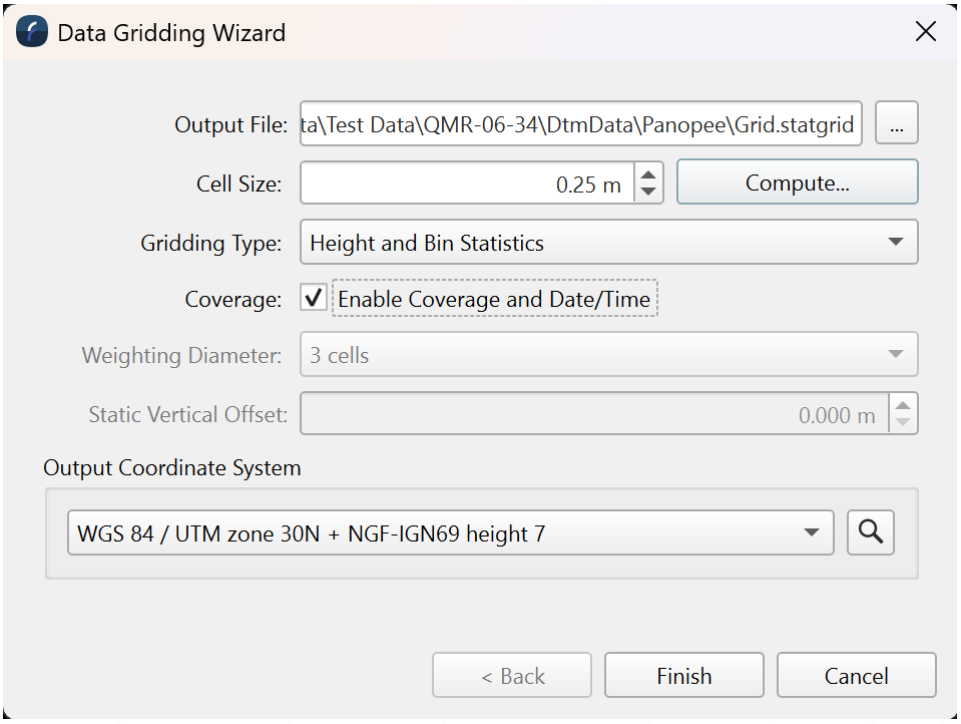
General Description

This wizard has two pages. The first page is used to select the source files that contain point data that one wants to produce a gridded surface for, and the second page contains the options used in the production of the gridded surface product. In the 1st page shown above the main area is used to show the selected files. Along the right hand side are the options to select these files to grid. The *Add Files* button opens a standard file selection dialog to locate and select one or more files. One can do this multiple times to add as many files as is desired. The 2nd way to add files is by scanning a directory and optionally sub-directories and adding all the files that match a certain pattern. For example if you set the filter to *.all and click the *Add Directory* button, one will be asked to select the directory and any files found that match the pattern will be added. The 3rd method to add files is used when you are gridding files from a CARIS HIPS project.



You can remove files from the list by right clicking to see to popup menu or you can just remove files by selecting them and hitting the *delete* key. One can also preview the contents of a particular file using the *Preview in OmniViewer* option which runs OmniViewer and loads the selected file.

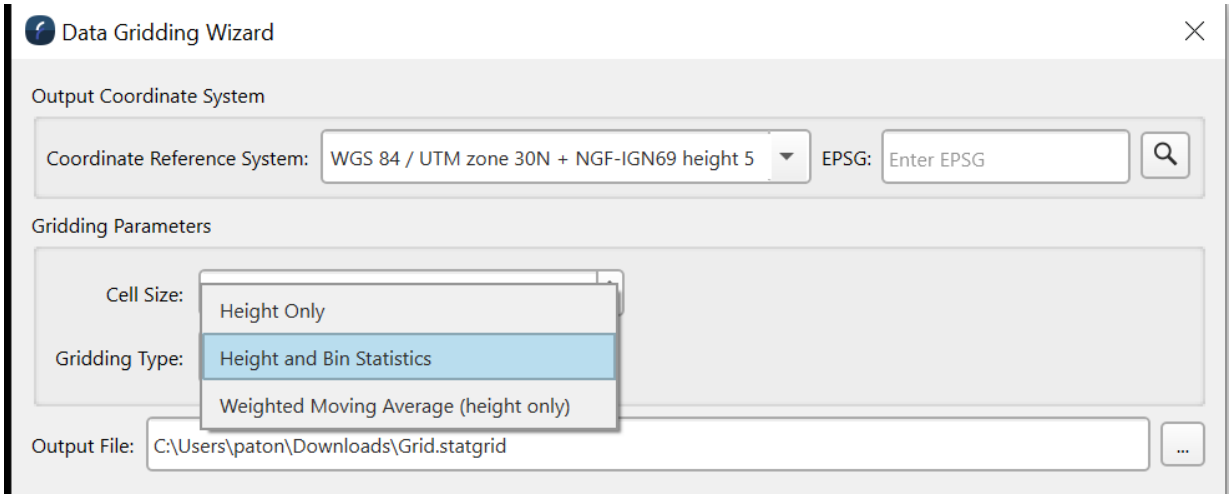
Below the file list it will show the format type detected and for some formats like ascii you can use the configure button to select which columns to grid or apply invert operations on the data as it is read. Finally it is important to specify the coordinate system of the input files. For formats that store a coordinate system like QPD this will be set automatically but if one has an ascii file for example one will need to identify the coordinate system manually. Once the input files are selected and the coordinate system of them set click the *Next* button to move to the gridding options page.



The first option on this page is the output directory. One then needs to select the cell size of the grid one wants to produce along with the grid type to be made. The compute option will produce a suggested cell size based on the size of the source files added on the previous page. The default gridding algorithm is a weight moving average. This builds a static grid with just height data but the input points are smoothed across multiple cells based on the weighting diameter specified.

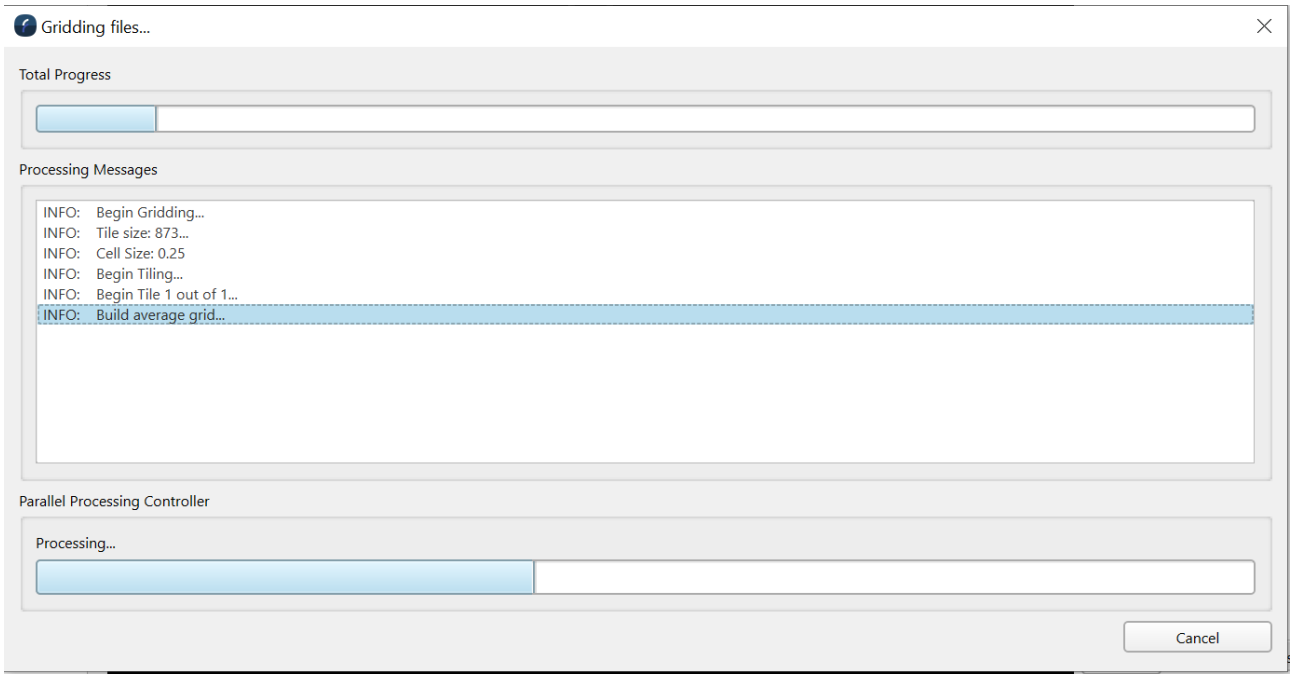
If the selected gridding type is set to either Height only or Height and Bin Statistics then the Coverage option will become available, this will allow you to color your grid by the number of survey lines that the cells have data from and also allow coloring by date/time data that the grid possesses.

The default Weighting Diameter will be three cells means if the cell size is .25 or 25cm then each point will have a 75cm area of influence that falls off as you move away from the points actual location. A weight diameter of 3 is a very good option to produce high quality surfaces with not too much smoothing. The weight diameter must always be an odd number and higher number mean more smoothing is applied to the data. A weight diameter of 1 means only the cell the point falls in will be affected. This grid type also allows one to specify a *Static Vertical Offset* for special occasions when one might want to add a vertical offset to every point being gridded. If will effectively shift the produced surface up or down by the specified amount. Only the WMA grid type supports a static vertical offset. There are two other grid types as shown in the popup below. The final option on this page is to specify the output coordinate system of the grid to be made. By default it will be set to match the coordinate system of the input files but it is possibly to reproject the point data by selecting a different output coordinate system.



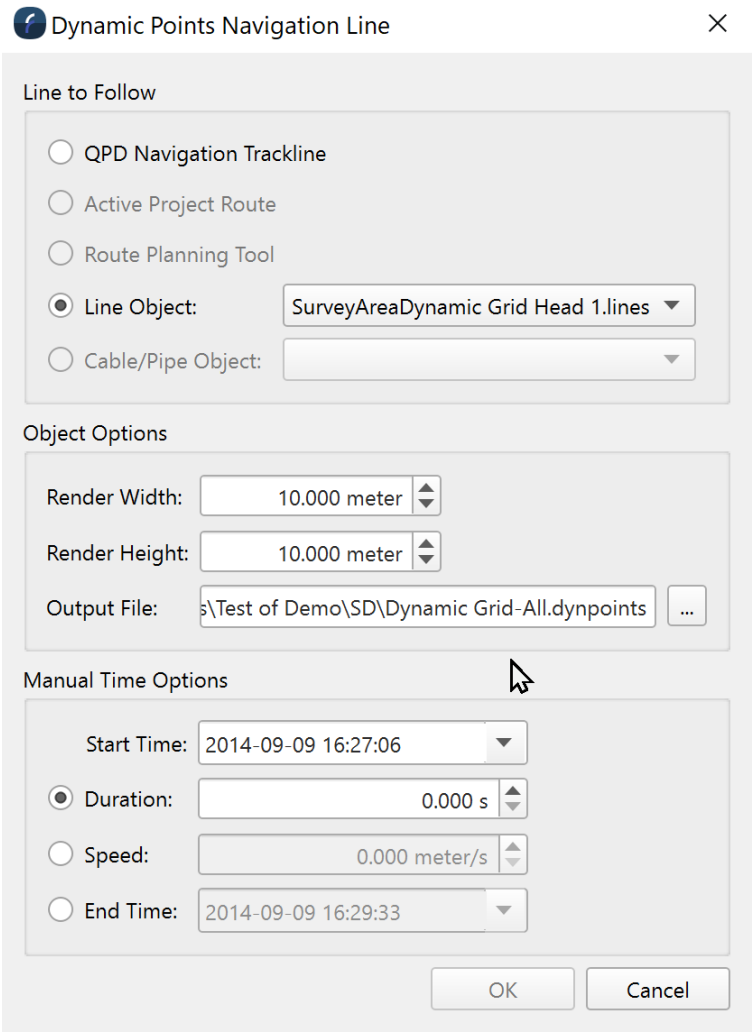
The *Height Only* type produces a static grid where the height is computed by averaging only the points that fall in a given cell. No weighting is applied and the resulting surface like the WMA type above only contains height data. The Height and Bin Statistics option also only averages the points that fall within each cell but the resulting static grid contains extra information that can be visualized including the point count per bin and the standard deviation of the surface cells.

Once the options are set and an output file is provide click the *Finish* button to start the process of producing the gridded data product.



One will see the above dialog as the surface is being produced and all the specified input files are used to construct it. Once complete the surface will be loaded into the 3D scene.

Fledermaus Create Dynamic Points Dialog



Create Dynamic Points for Object Without Time

How to Start

Select a Dynamic Surface (created in Qimera from QPD data) in Fledermaus. Right click then select:
Operations → Create Dynamic Points…

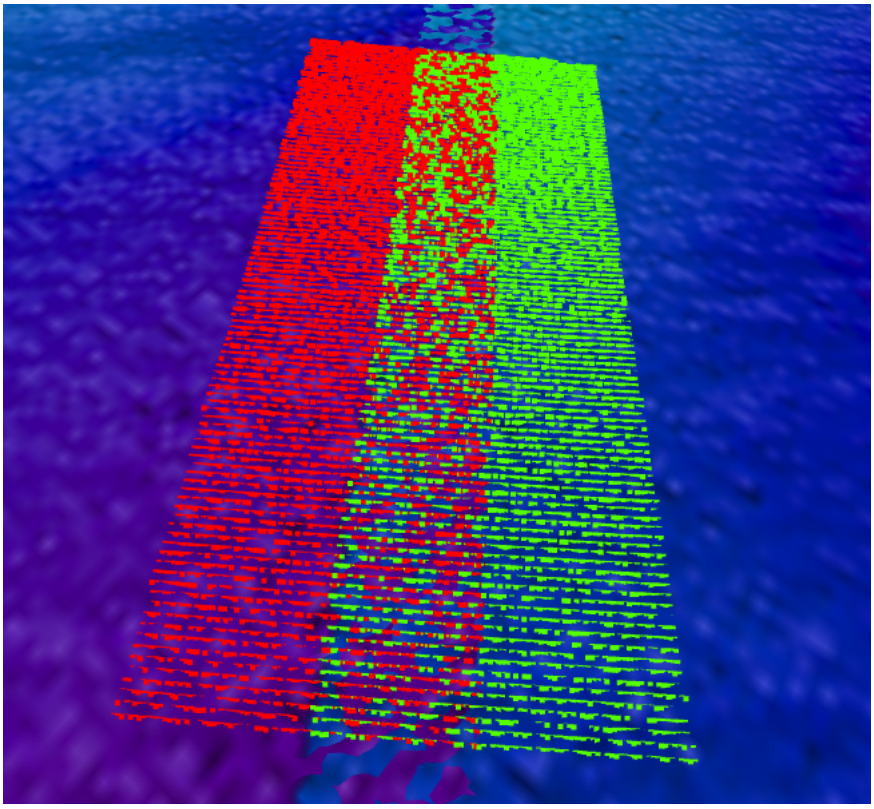
What It Does

The dialog will present a list of options to create a Dynamic Points object. This object will display a rectangular or square area of underlying points from the Dynamic Surface located at a point in time along a specified line. The line may be the trackline of the QPDs themselves or along one of four other options. The other options are: the active route; the

route planning tool; a line object; or a cable/pipe object. If the option selected does not have a time property, the time along track option may be specified from a user specified start time to an end time in one of three ways: length of time; speed along the track; or user specified end time. The default for the start time is the current scene time from the timebar, if active.

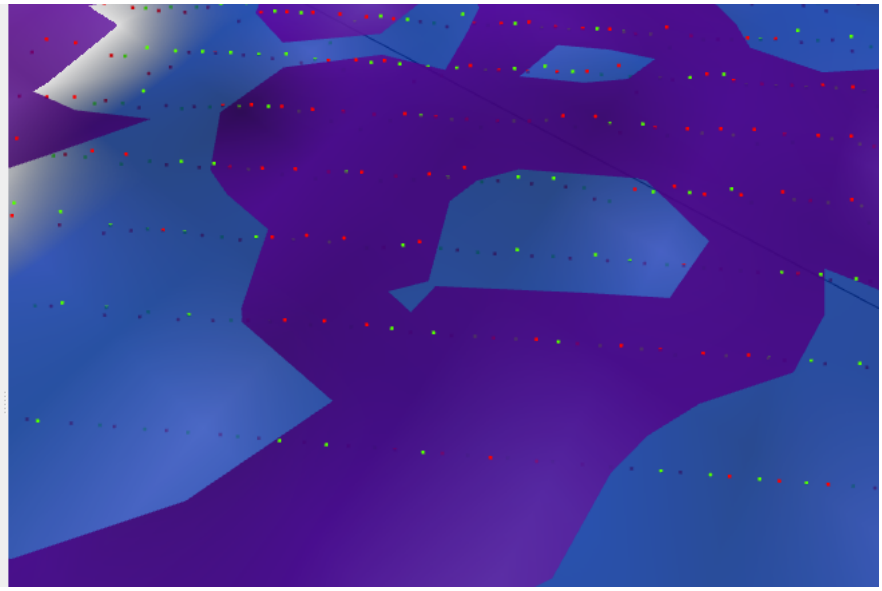
Overview

Sample showing two dynamic points objects from a dual head system. On the left, the red rectangle of points is taken from one head, while in the right, the green rectangle is from the other head.



Two Dynamic Points Objects

A close-up view shows the actual points used to construct the surface:

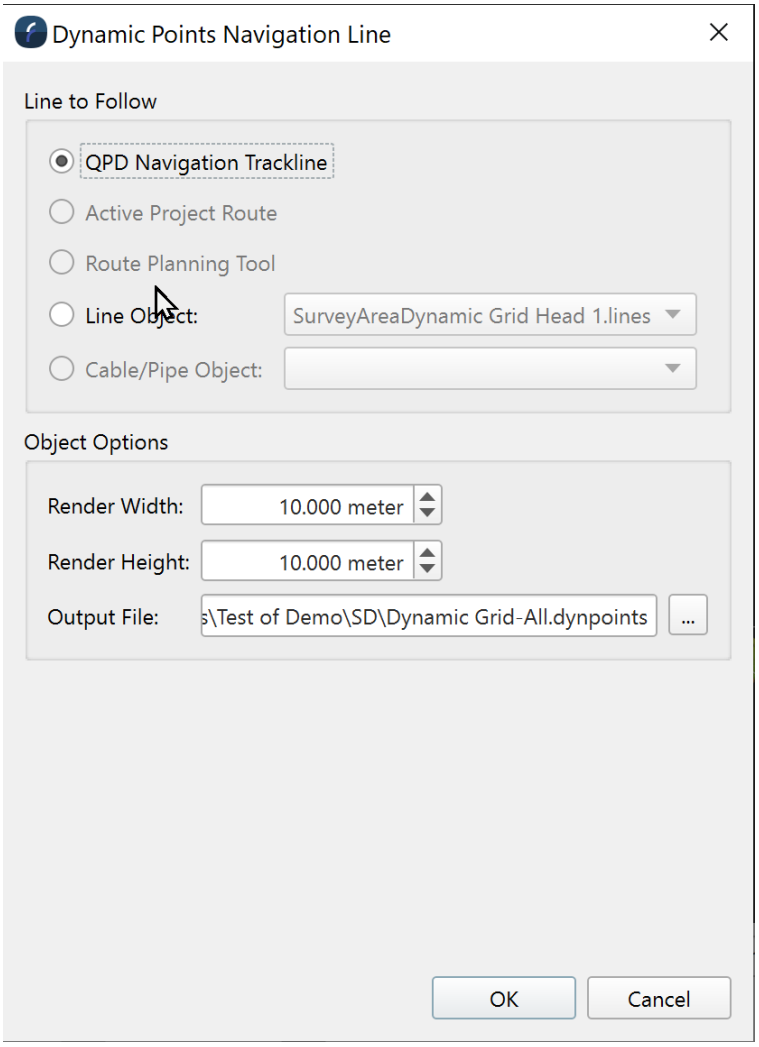


Close-up View of Dynamic Points

To create the dynamic points object, first right click on the desired dynamic surface, click on Operations → Create Dynamic Points…. Then choose the line to follow, one of the five options that are enabled. It is possible to select from a choice of lines or cable/pipe objects from the scene.

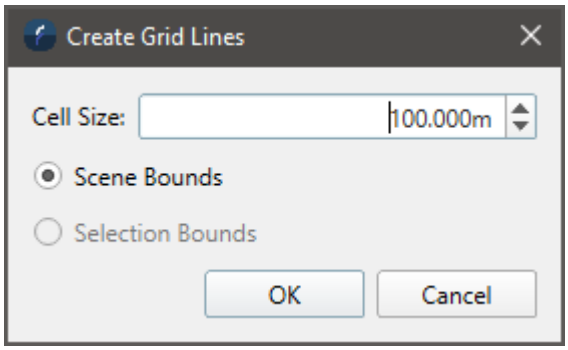
If the selected object does not have a time property, then it will be possible to set the time property in the Manual Time Options pane. If the object already has a time property, this pane will not be visible. First, set the Start Time, which by default is the current time in the scene, if available, or the start time for the set of QPDs otherwise. Then select from one of three options: Duration, Speed or End Time. Then fill in the appropriate value for the desired field. Only the selected field will be used to assign the time property, there is no need to fill out the other two fields. Use the most appropriate field for the data set, usually the most precisely known quantity.

Note that if an object has time, then the options to set the time are not shown. Example of Dynamic Points dialog in the case where an object already has time bounds, e.g. the navigation trackline in a QPD:



Dynamic Points Dialog for Object With Time

Fledermaus Create Grid Lines Dialog

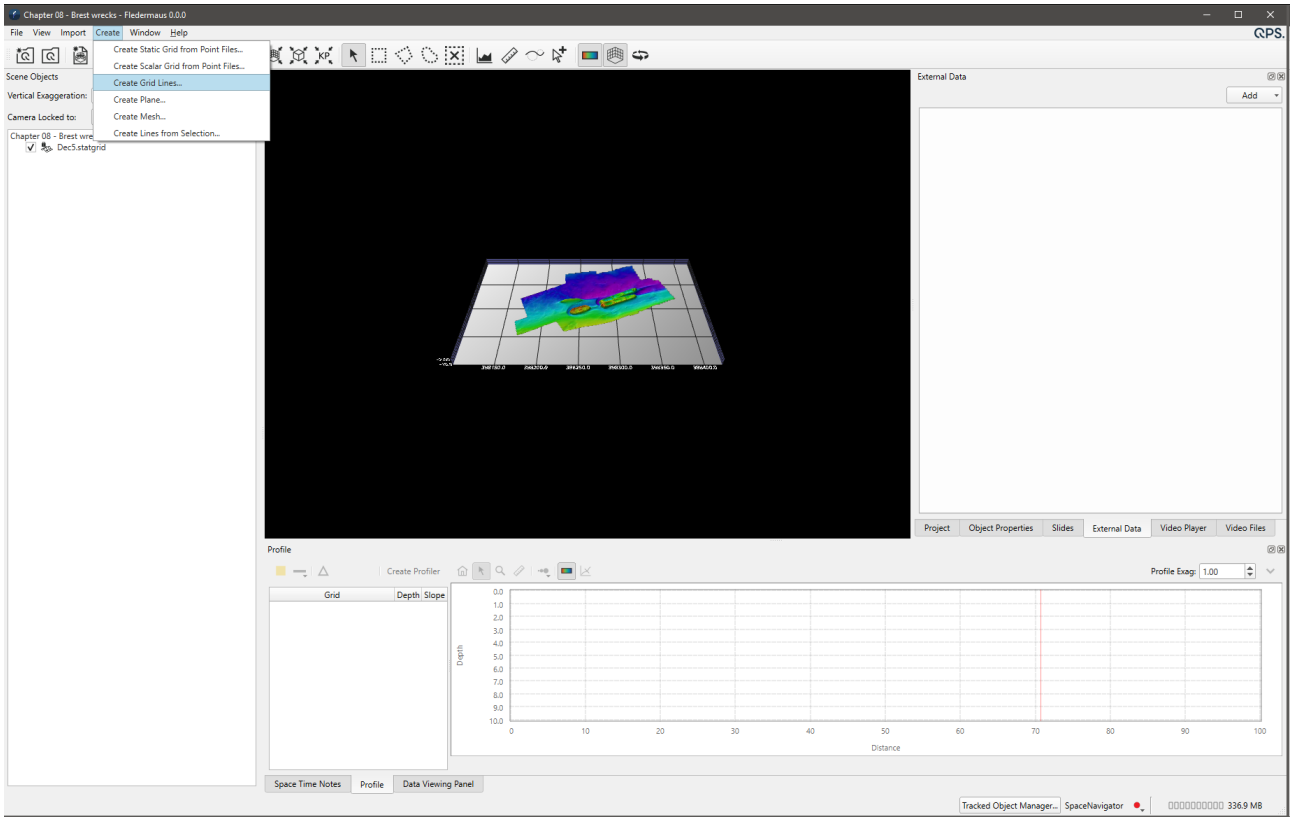


Create Grid Lines dialog

- How to Start
- What it Does
- General Description

How to Start

- Main Menu Bar → Create → Create Grid Lines



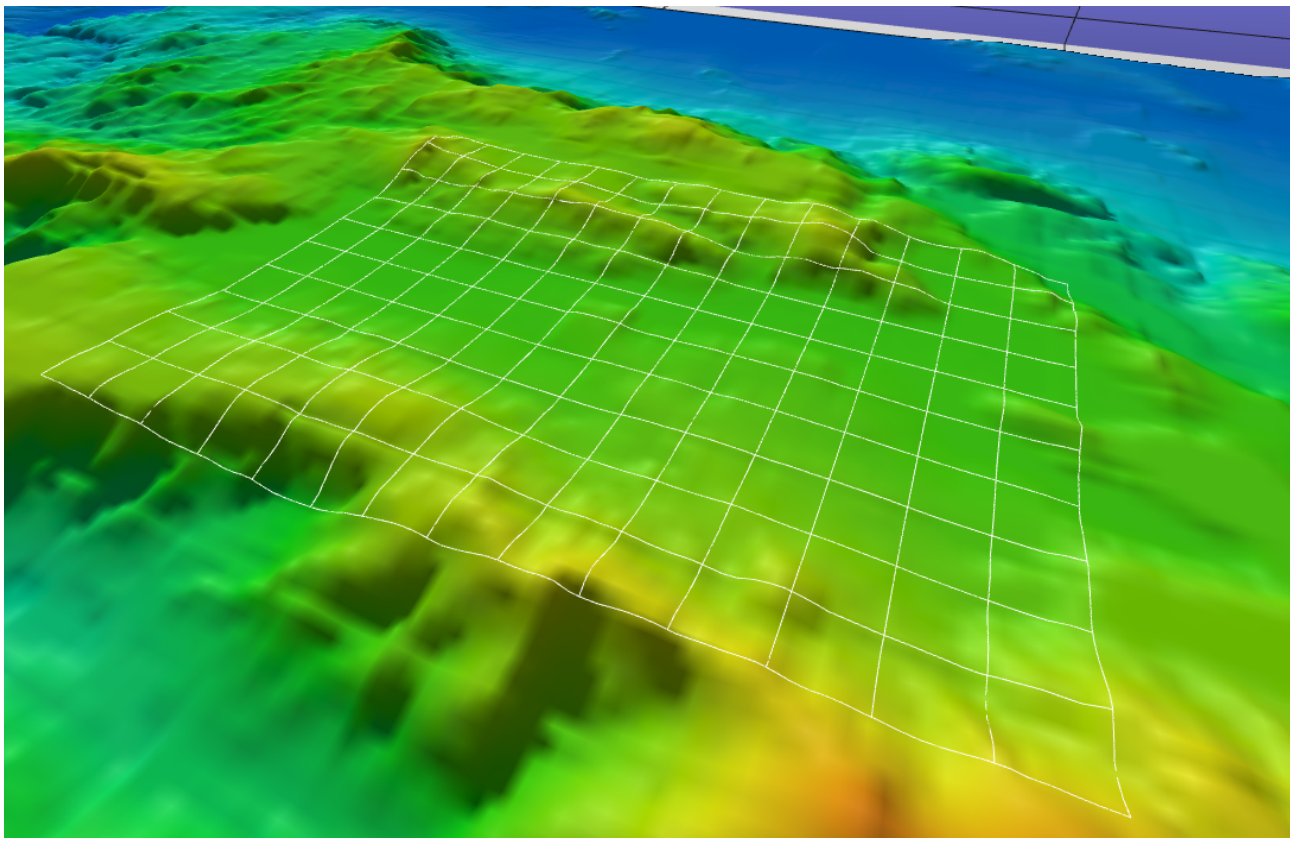
Create Grid Lines dialog from Create menu

What it Does

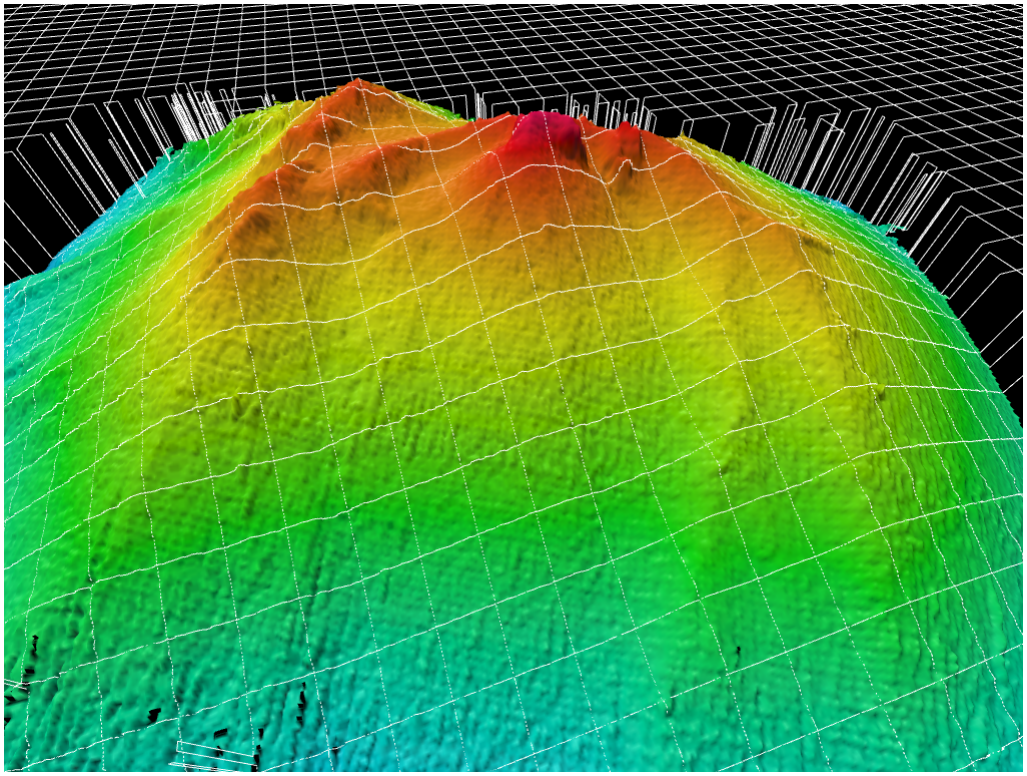
This dialog adds a simple grid of lines within a specified area and grid cell size.

General Description

Grid lines are simple to produce sets of lines which can be draped on surfaces or other objects primarily to use as a visual measurement grid. The grid cell size can be adjusted during creation. Grid lines are restricted by the bounds of the scene or a specific area of selection.



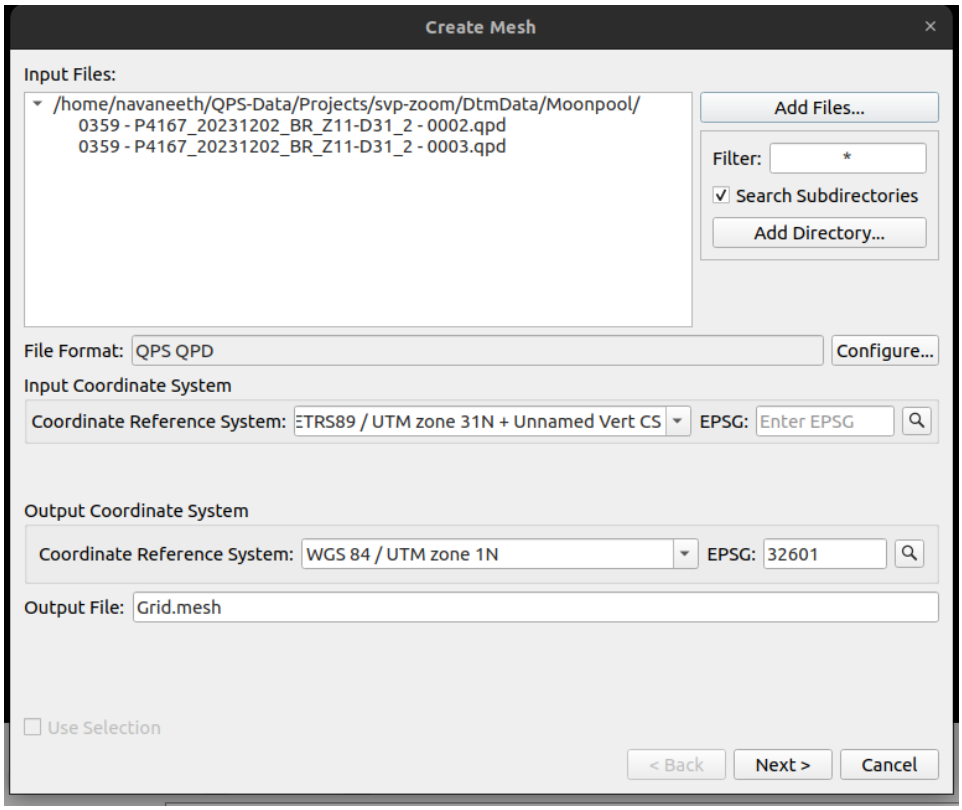
Grid lines created within a specific selection



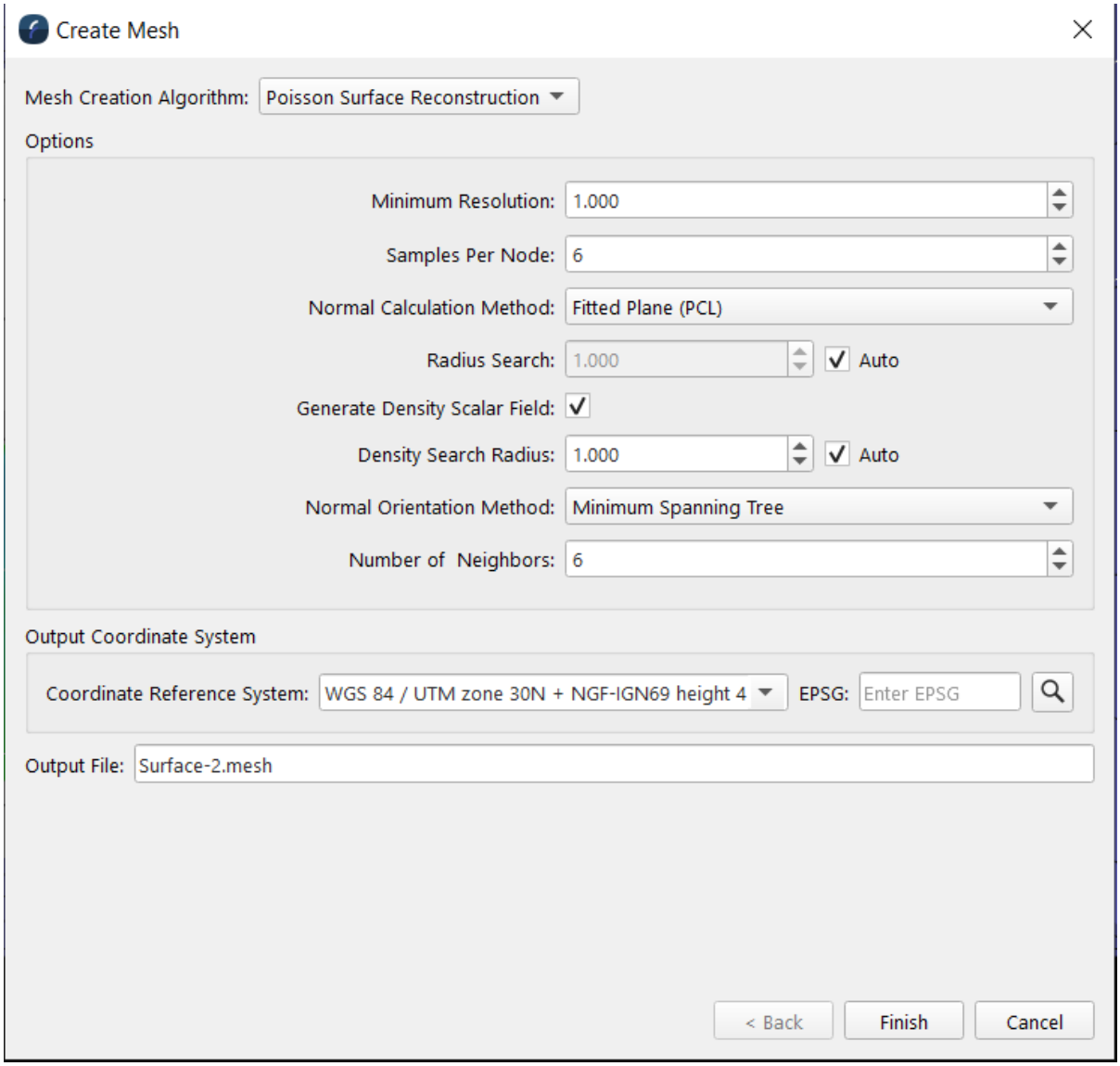
Grid lines created using the scene bounds

Fledermaus Create Mesh Dialog

Fledermaus Create Mesh Wizard



Create Mesh Wizard - Page 1



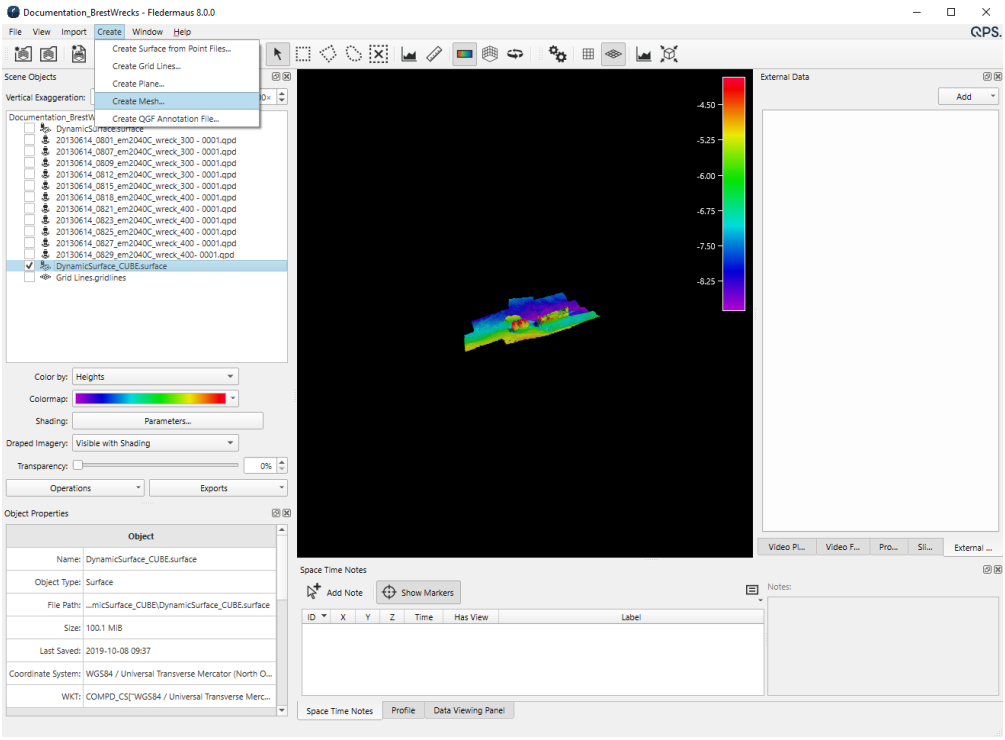
Create Mesh Wizard - Page 2

- How to Start
- What it Does
- Normals Utilized for Creating a Mesh
- General Description
  - Mesh Creation Algorithm
    - Poisson Surface Reconstruction
    - Delauney Triangulation
  - Options
    - Minimum Resolution

    - Samples Per Node
    - Normal Calculation Method
        - Fitted Plane (PCL)
        - Quick Neighborhood Algorithm
    - Radius Search
    - Generate Density Scalar Field
    - Density Search Radius
    - Normal Calculation Method
        - None
        - Fixed Direction
        - Minimum Spanning Tree
        - QPD Time Based Normals
  - Output Coordinate System
    - Coordinate Reference System
  - Output File
- Add HIPS Files

How to Start

- Main Menu Bar → Create → Create Mesh
- Scene Objects Dock → Right-Click on point cloud object (*.points*) → Operations → Create Mesh
- Scene Objects Dock → Operations → Create Mesh



Create Mesh Wizard from Create Menu

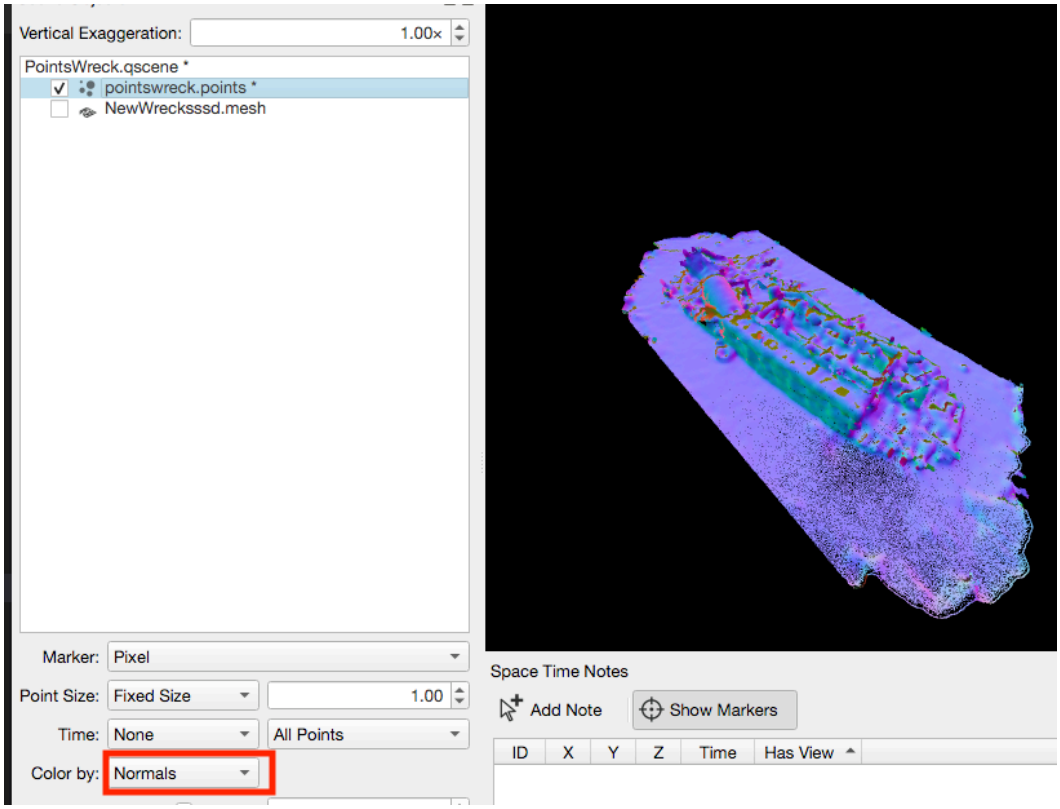
What it Does

The Create Mesh Wizard allows the user to create a mesh surface on a selected area with specified settings.

By default, a mesh will be built to enclose all the data chosen to be added. If you selected a rectangular area from the main window before bringing up this dialog then those bounds will be shown but the "Use Selection" will NOT be checked by default. You must choose “Use Selection" to use the constrained area as an additional step.

Normals Utilized for Creating a Mesh

If the mesh was created out of a point cloud by right clicking on a points object >> operations >> Create mesh, the field *Normals* is going to be added to the aforementioned object so that the user could color by the normals that were used as input to the mesh creation algorithm as the following figure illustrates.



General Description

Mesh Creation Algorithm

Poisson Surface Reconstruction

Reconstructs a triangle mesh from a set of oriented 3D points by solving a Poisson system.

Delauney Triangulation

This is a very fast algorithm that creates a 2.5D triangulated surface.

When choosing the Delauney Triangulation Algorithm, the only customization setting that is changeable is the Output File name. The rest of the settings are set for the creation of the mesh.

Options

Depending on your choice of Algorithm you may be presented with a number of the following mesh creations options:

Minimum Resolution

This is the target width of the finest level of tree cells that will be used for surface reconstruction. A lower value will result in a higher resolution mesh.

Samples Per Node

This value specifies the minimum number of sample points that should fall within an octree node as the octree construction is adapted to sampling density. For noise-free samples, small values in the range [1.0 - 5.0] can be used. For more noisy samples, larger values in the range [15.0 - 20.0] may be needed to provide a smoother, noise-reduced, reconstruction.

Normal Calculation Method

A "normal" is a line or vector that is perpendicular to a given object. In 3D graphics it is most often used for calculating reflections on a surface. For our application, we are calculating the normal for each point, in an effort to identify what should be the inside or outside of the final surface. The normal directions have a large effect on the final mesh that is created, as the Poisson algorithm will try to create a surface that consistently wraps around the points, forming a complete surface. When you have adjacent points with very different normals, the final surface will either be fragmented, or have large "bubbles" as the surface wraps around itself. There are two options available.

Fitted Plane (PCL)

This algorithm which comes from the Point Cloud Library (PCL) attempt to fit a localized plane around the point of interest based on its neighbors. This is the default choice.

Quick Neighborhood Algorithm

This algorithm looks at the neighbors and attempts to produce normals that would point in a consistent direction.

Radius Search

This value specifies the size of a sphere around each point for which other points are included when the PCL normal algorithm is being used. Normally this value is automatically calculated but one can override it if desired.

Generate Density Scalar Field

This option calculates the number of input points that contribute to the final surface triangles, using the "Radius Search" value as a maximum distance. The density value is

very useful for cropping out parts of the mesh that were created from a low number of points.

Density Search Radius

This value specifies the size of the sphere around each points for which other points are included in the density calculation. Normally this value is automatically calculated but one can override it if desired.

Normal Calculation Method

This is a very important option which helps the system align the normals in a consistent way to avoid bubbling problems in the resulting mesh produced. If you have arbitrary point sets the best option here is the default Minimum Spanning Tree. When you have information about how the points are collected the other options may be useful. These options include

None

This is not generally a desirable option as is mostly present to compare doing nothing vs the other option.

Fixed Direction

If you happen to have some knowledge about how the data was collected this can be useful. It lets you choose a primary cartesian axis that all normals should be pointing in. For example say one has data from an arial drone survey. In this case you know all the normals will point pointing in the +ve Z direction so one can select that option and any computed normals that point in -z will be flipped around. This works fine when you have a simple known case like this.

Minimum Spanning Tree

This is the default option and generally works quite well for most data sets. It looks at the nearby point normals and says surfaces won't flip their inside and outside over short distances so it makes sure that normals nearby are all pointing in a consistent direction to avoid this kind of flipping. An option is provided to control how many neighbors to consider in the local field.

QPD Time Based Normals

If one is making a mesh from QPD data, these files know where the source sensor is with respect to the collected points. Thus we can make sure that any points have their normal orientated toward the sensor source. When available this option gives great results and is recommended when using this type of data.

Output Coordinate System

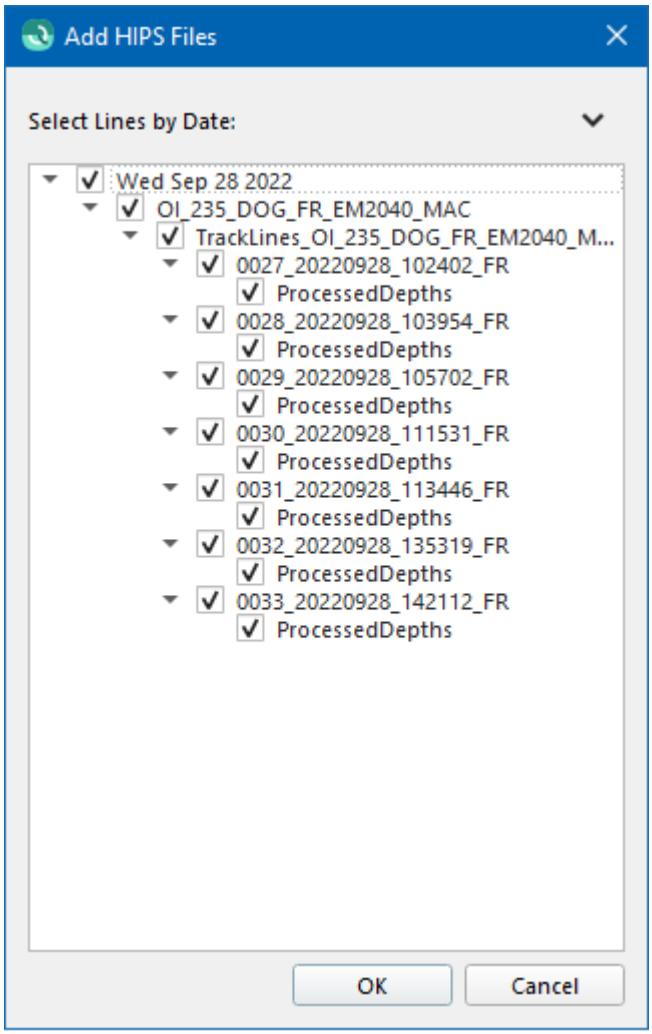
Coordinate Reference System

This field contains the coordinate system the object will be projected in.

Output File

The output filename of the mesh.

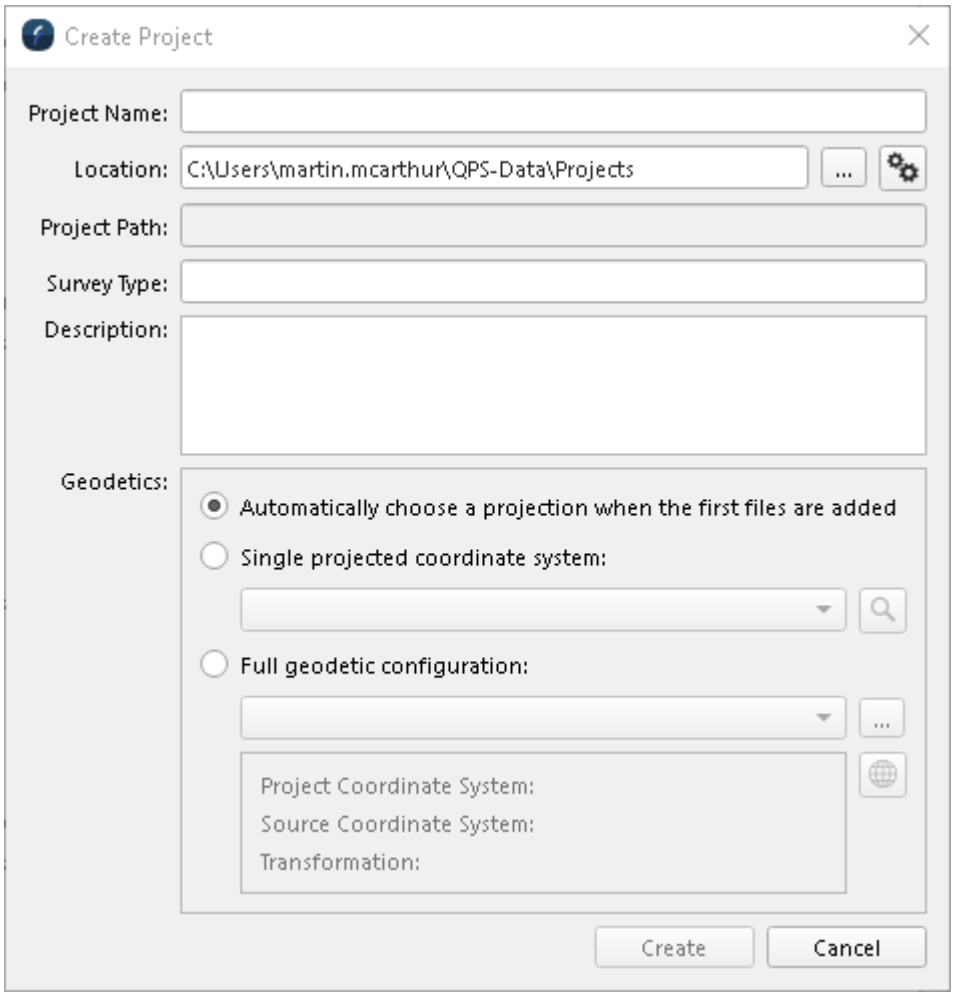
Add HIPS Files



Clicking on the 'Add HIPS Files...' button will bring up a directory selection dialog followed by the Add HIPS Files dialog. Select the desired Lines of HIPS data and hit OK. The selected lines will be added to the Create Mesh Wizard. To add HIPS data, Fledermaus

requires a valid CARIS license. To point Fledermaus to the valid CARIS license, refer to the Shared Preference option in the Preference dialog.

Fledermaus Create Project Dialog

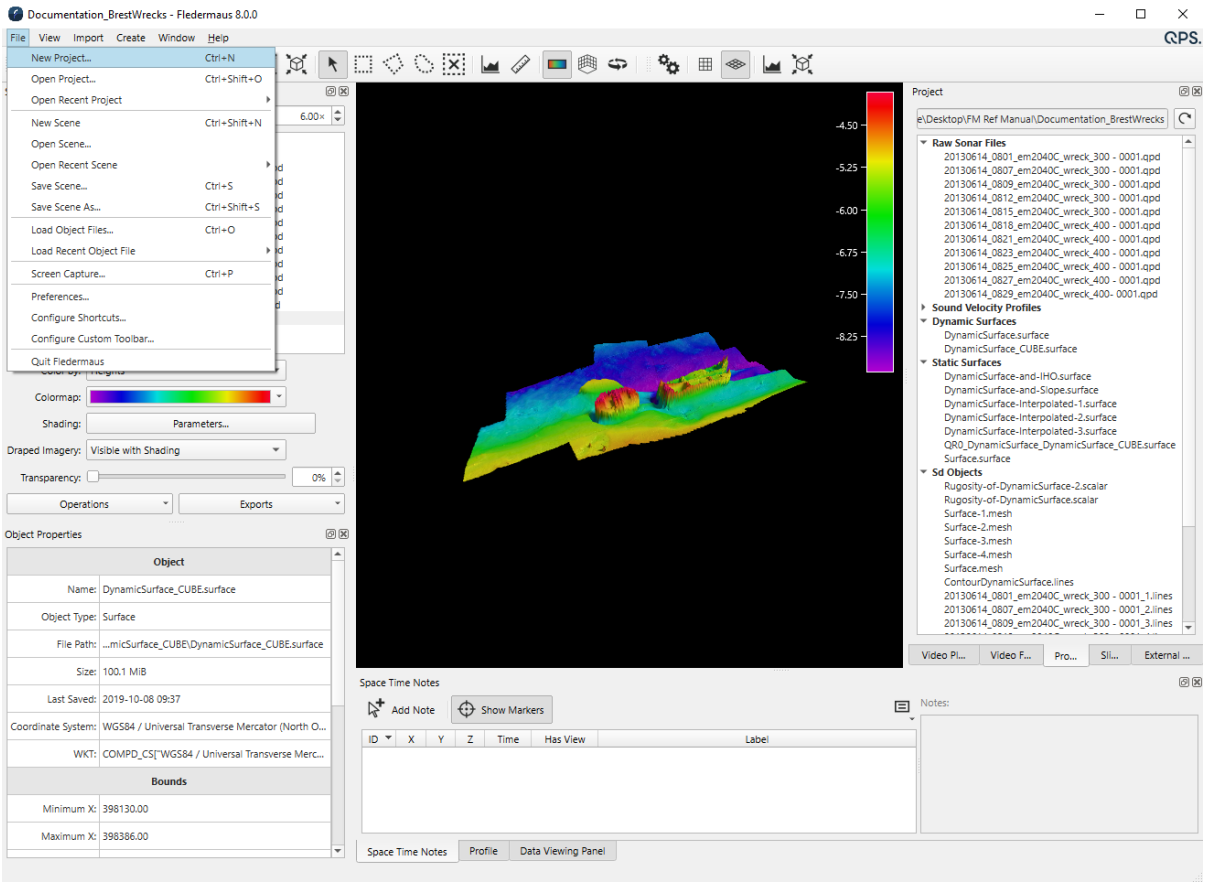


Create Project Dialog

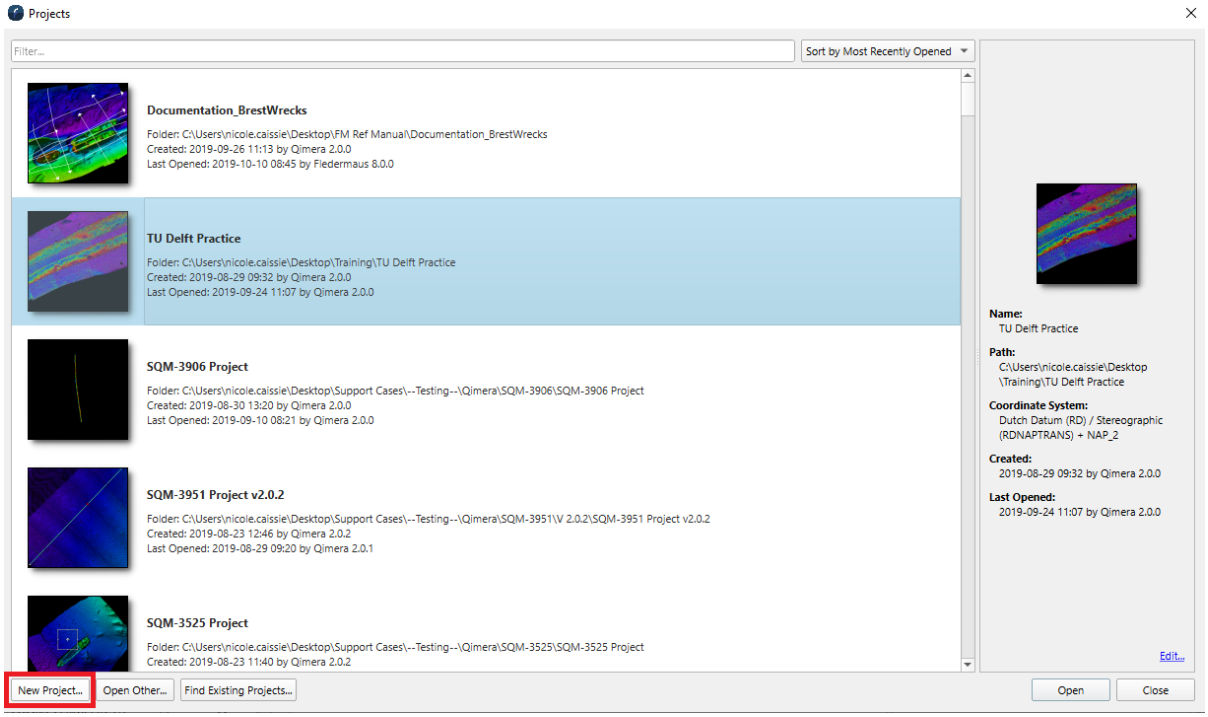
- How to Start
- What it Does
- General Description
  - Project Name
  - Location
  - Project Path
  - Survey Type
  - Description
  - Geodetics

How to Start

- button on the Main Toolbar
- Main Menu Bar → File → New Project
- Main Menu Bar → Open Project → New Project
- When Opening Fledermaus, Welcome Dialog → New Project



Create New Project Dialog from File Menu



Create Project Dialog from Open Projects Window

What it Does

This dialog closes the previous project if one is open and creates a new empty project.

General Description

This dialog has the following options. The layout on disk of the project is described here.

Project Name

Enter the name you want for your project. The application will create a folder with this name in the *Location* directory.

Location

This is the directory path where your project folder will be created. To change it, simply click on the ... button and browse to a new folder.

Project Path

This shows the full path at which the project folder will be created.

Survey Type

A free form, optional field describing the type of survey being conducted.

Description

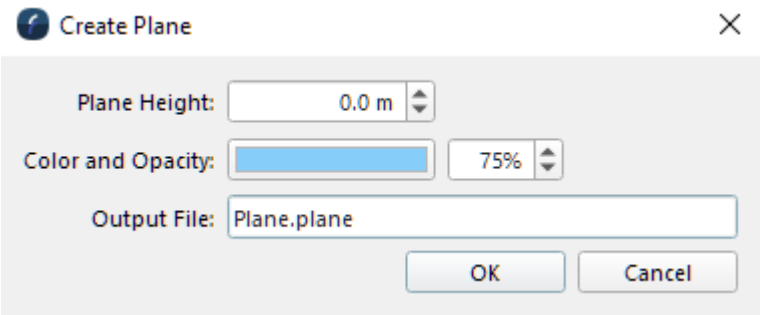
Use this section to describe your project. This information will be saved in the *qpsproject.xml* file and can be edited using the Project Properties dialog option of the Main Menu bar.

Geodetics

This section specifies the geodetic configuration of the project. Every project has a projected coordinate reference system (CRS) describing all the data *inside* the project. While data may be imported from or exported to other coordinate systems, the project coordinate system will be used as the CRS for data storage and processing.

- Choose *Automatically choose a projection when the first files are added* to have the application attempt to select an appropriate projected CRS when the first files are added to the project.
  - If the first files added use a projected CRS, that CRS will become the project CRS.
  - If the first files added use a geographic CRS, the application will select the appropriate WGS 84 UTM Zone based on the location of the data.
  - If the first files added lack a CRS, the user may be prompted to explicitly choose one.
- Choose *Single projected coordinate system* to specify a predefined CRS.
  - Click the dropdown to quickly search coordinate systems by name or EPSG number.
  - Or click the magnifying glass button to open a dialog with advanced search capabilities.
- Choose *Full geodetic configuration* for complete control over the project's geodetic settings.
  - Click the dropdown to quickly search known configurations.
  - Click the ... button to load an existing configuration from a .wkt or .db file.
  - Click the globe button to open the Geodetic Configuration Overview dialog to specify the advanced details including:
    - Custom coordinate systems
    - Custom and predefined source coordinate systems
    - Custom and predefined transformations

Fledermaus Create Plane Dialog

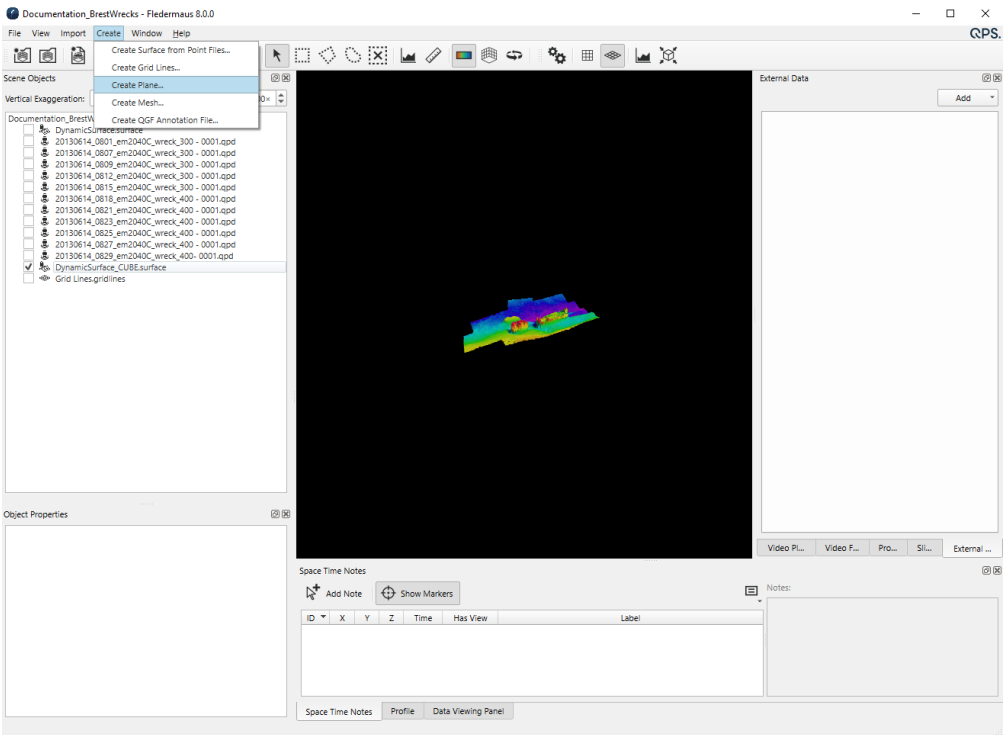


Create Plane Dialog

- How to Start
- What it Does
- General Description

How to Start

- Main Menu Bar → Create → Create Plane



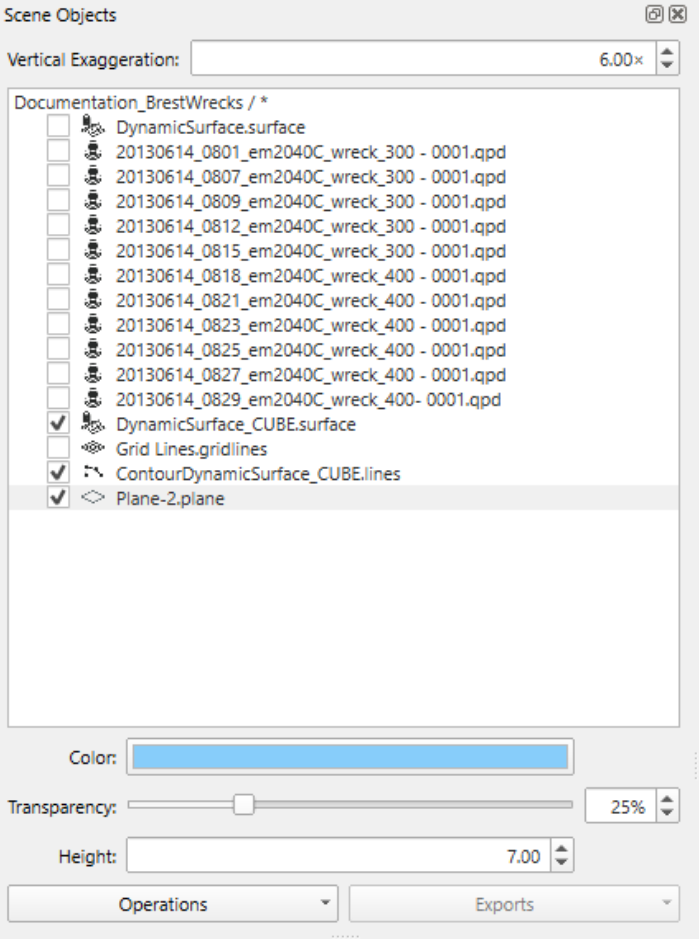
Create Plane Dialog from Create Menu

What it Does

This dialog adds a simple 2D plane with a specified Z height.

General Description

The color, transparency, and height of the Plane can be adjusted after creation in the Scene Objects Dock.



Color, Transparency, Height Adjustments in Scene Objects Dock

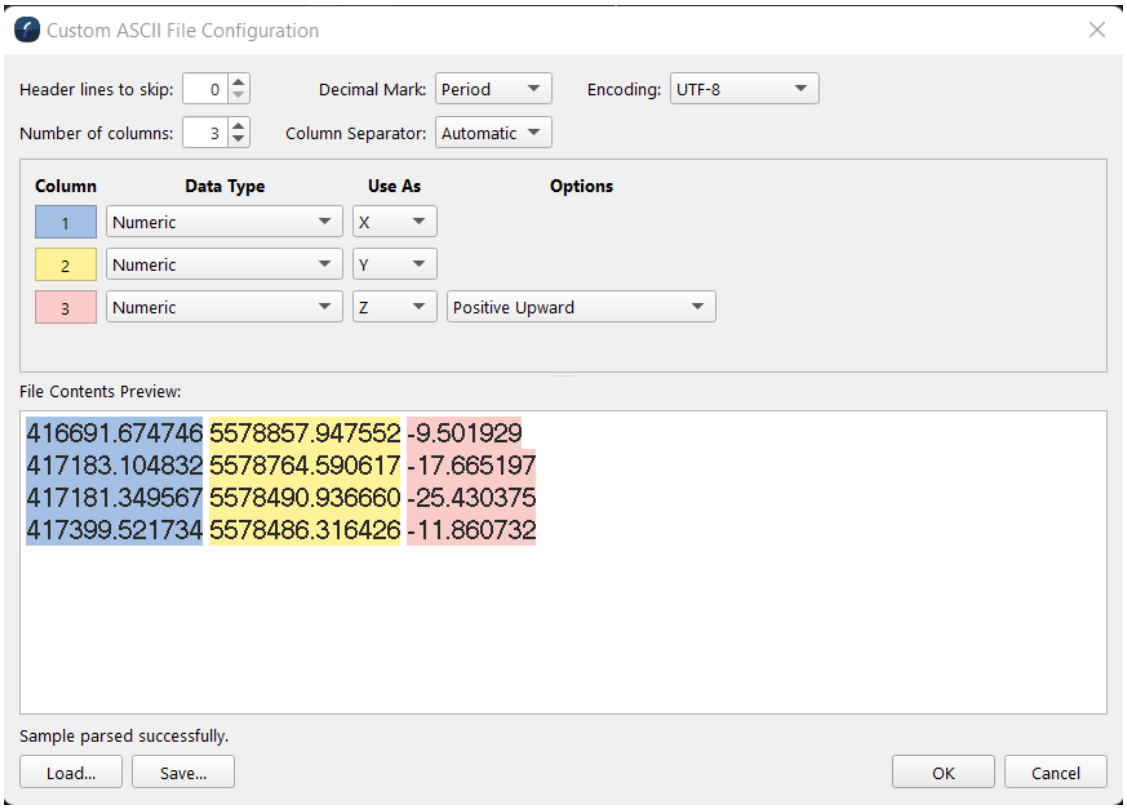
Fledermaus Configure Custom Dialog

Fledermaus Custom Ascii Configuration Dialog

- How To Start
- What It Does
- General Description

How To Start

- Import Points used when importing ascii files.
- Import Lines
- Import Profile
- Import Pipeline
- Import Cable/Pipe Listing File



Custom ASCII File Configuration

What It Does

This dialog is used in a fair number of places when ascii data is being imported for various purposes. It lets the user specify how the columns in an ascii file should be interpreted and can support many columns in a variety of formats from numeric fields to date and time fields, to ascii labels, etc. In addition specific column separators, encoding, and numeric specification are supported. By default the system will normally default to interpreting the first three available fields as X, Y, and Z (positive upwards) as shown above. Commas and tabs are the default column separators which are looked for. The Use As field options will depend on the purpose of the ascii importer.

General Description

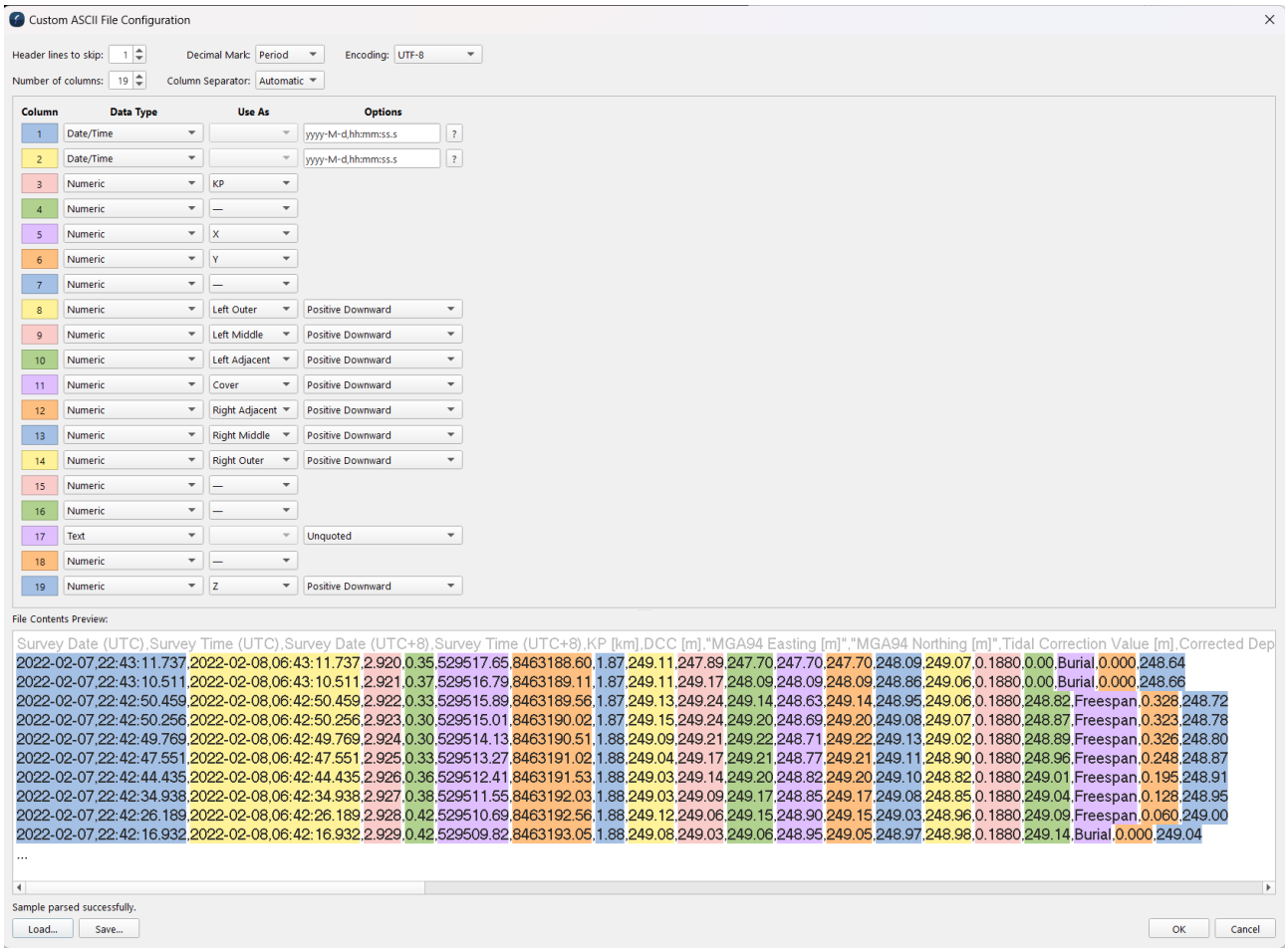
The options at the top let one tell the parser to skip some lines at the start of the file. Often ascii files have a single line identifying the column names of a file but you don't want to actually try and read these in so giving a skip value of one will ignore this line and read the data that follows. The *Decimal Mark* dropdown specifies which character represents the decimal point. It will default to a period but other options are a comma for example which is often used in Europe. *Encoding* defaults to UTM-8 which is the most common but UTF-16 encoded ascii files are also supported. The *Number of columns* field identifies how many fields per line will attempt to be parsed and it can be adjusted as appropriate for the input file. The space below adds a set of controls for each field to identify the data type, how it is used and some potential options or data modifiers. Finally the *Column Separator* indicates what character separate each field in a line. Normally the Automatic options works file to detect whitespace as a separator but for example if you have colon separated columns it can be specified here.

For each column of data one needs to specify what it is, how it might be used, and any particular options needed. Each column is given a color which is shown in the background of the column #. In the file contents preview that portion of the file being parsed for that value is shown in the same background color. Any errors in parsing the row are also shown in the preview so they can be fixed before trying to read the data. The data type options include:

- Numeric
- Integer
- Text
- Date/Time
- Degrees-Minutes-Seconds

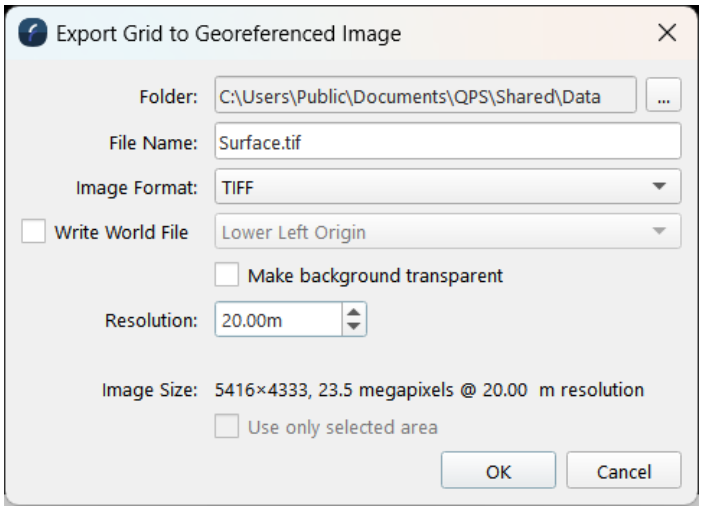
Numeric is a floating point number or values with decimals, Integer is well integers (no decimals), text is strings - things like labels, Date/Time is a field that represents a specific date and/or time component, and the degrees-minutes-second is used to identify a geo-spatial latitude or longitude value. Fields have an additional optional control. The numeric and integer field can be specified as positive up (the default) or positive down (depths for example). The date and time field lets you build up a description of how the date and time

is present using a set of characters to indicate year, month, day, hours, minutes and seconds. There is help built into the option. See the example below as well. Finally there is the *Use As* field which indicates the purpose if any for the field. X, Y, and generally Z are always present to identify which field is those values. When parsing an ascii file the system will default to an assumed X, Y, Z style file and one can customize it as necessary from there. The actual options available for the *Use As* field depend on the purpose the parser is being used for. Importing general points has different options then importing a Cable/Pipe listing file. For example a Cable/Pipe listing file might look something like this example:



Note the question mark icon after the date/time or deg-min-sec options. This will show you more details and examples of how to specify the fields structure. As you enter the specification the system will automatically show how the field is being parsed in the file contents preview.

Fledermaus Export to Rendered Image Dialog

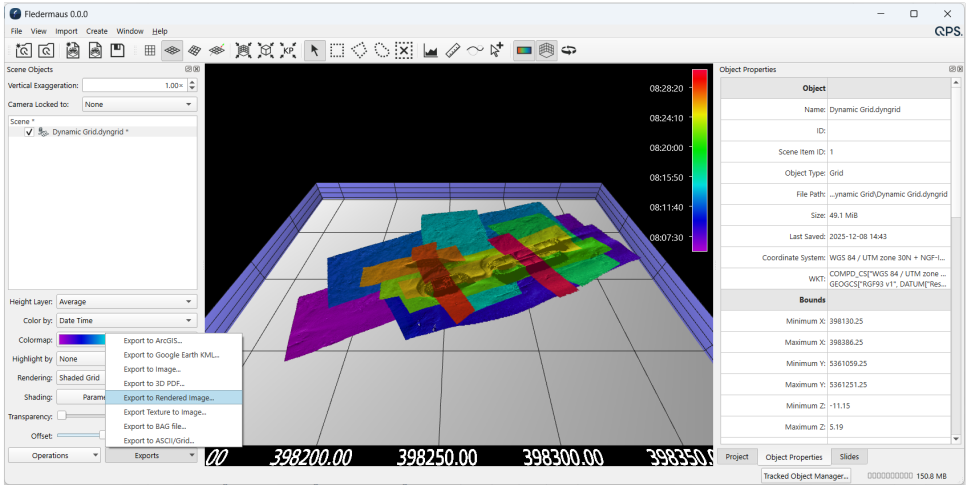


Export to Rendered Image Dialog

- How to Start
- What it Does
- General Description
- Output Example

How to Start

- Scene Objects Dock → Right-Click on Object → Exports → Export to Rendered Image
- Scene Objects Dock → Exports → Export to Rendered Image



Export to Image Dialog from Export Menu

What it Does

This dialog is used to save a georeferenced image file (TIFF, JPEG, PNG, BMP, TFW), of the surface.

This dialog saves a rendered image of the specified surface at the selected resolution.

See the Export to Image option for the exact pixel image, without any shading, of the surface.

General Description

Choose the image type by selecting the file format from the *Format* drop down.

To write a TIFF World File*, the check box must be selected to allow the user to choose the origin. The origin options include: Lower Left Origin, or ESRI Upper Left Origin.

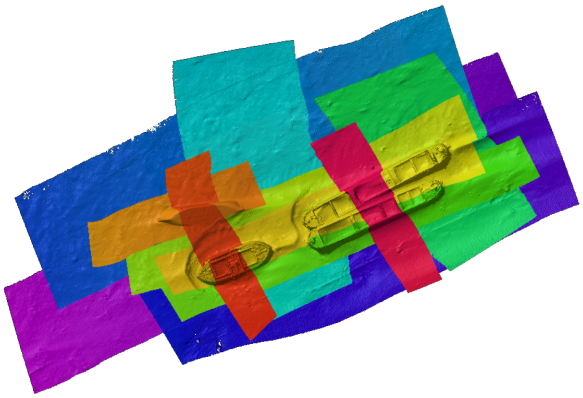
When exporting an image of the surface as seen in the Fledermaus display the image size that is produced can be adjusted using the scale factor.

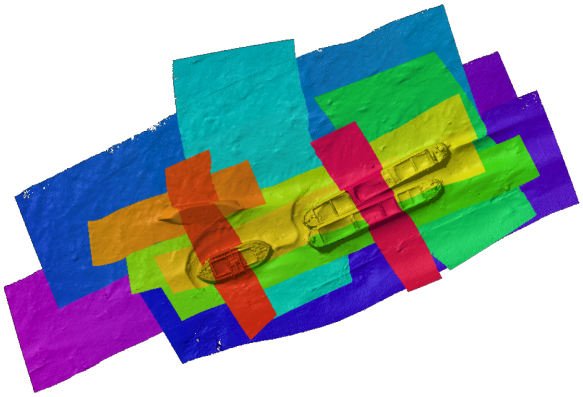
*Note that TFW file's with the ESRI Upper Left Origin, are compatible with most major GIS packages. TIFF files will be written as GeoTIFFs with full georeferencing information.

Output Example

Exact Pixel Export:

As Seen in Fledermaus Display:





Command Line Operations

The following is a list of all the available command-line programs with a quick description. More detailed information for each command-line program can be obtained by running cmdop [program name] -h from a command line.

- Colormap Tools
- Imagery Related
- TDR Utilities
- Surface Operations
- Miscellaneous

Colormap Tools

Command	Description
cmapinfo	List the colors in a standard Fledermaus colormap file.
mkcmap	Builds a standard Flederamus colormap.
rgbconv	Converts ascii RGB data to ascii HSV color data.

Imagery Related

Command	Description
geotoutmimage	Re-projects a geographic image file to UTM.
merctogeoimage	Convert a mercator projected tif image to a geographic referenced tif image.
setbounds	Add georeferencing to make a TIFF into a GeoTIFF image.

Command	Description
tmtogeoimage	Converts an image in TM or UTM coordinates to an image in Geo coordinates.
tmtoutmimage	Converts an image in TM coordinates to an image in UTM coordinates.

TDR Utilities

Command	Description
tdrappend	Appends the data blocks from the listed TDR files to a new output TDR file.
tdrcontents	Summary of the data blocks in a given TDR file.
tdrextract	Extracts a data block from a TDR file.
tdrinfo	Displays information about the data blocks in a TDR file.
tdrmerge	Concatenate the data from multiple TDR files into one TDR file.

Surface Operations

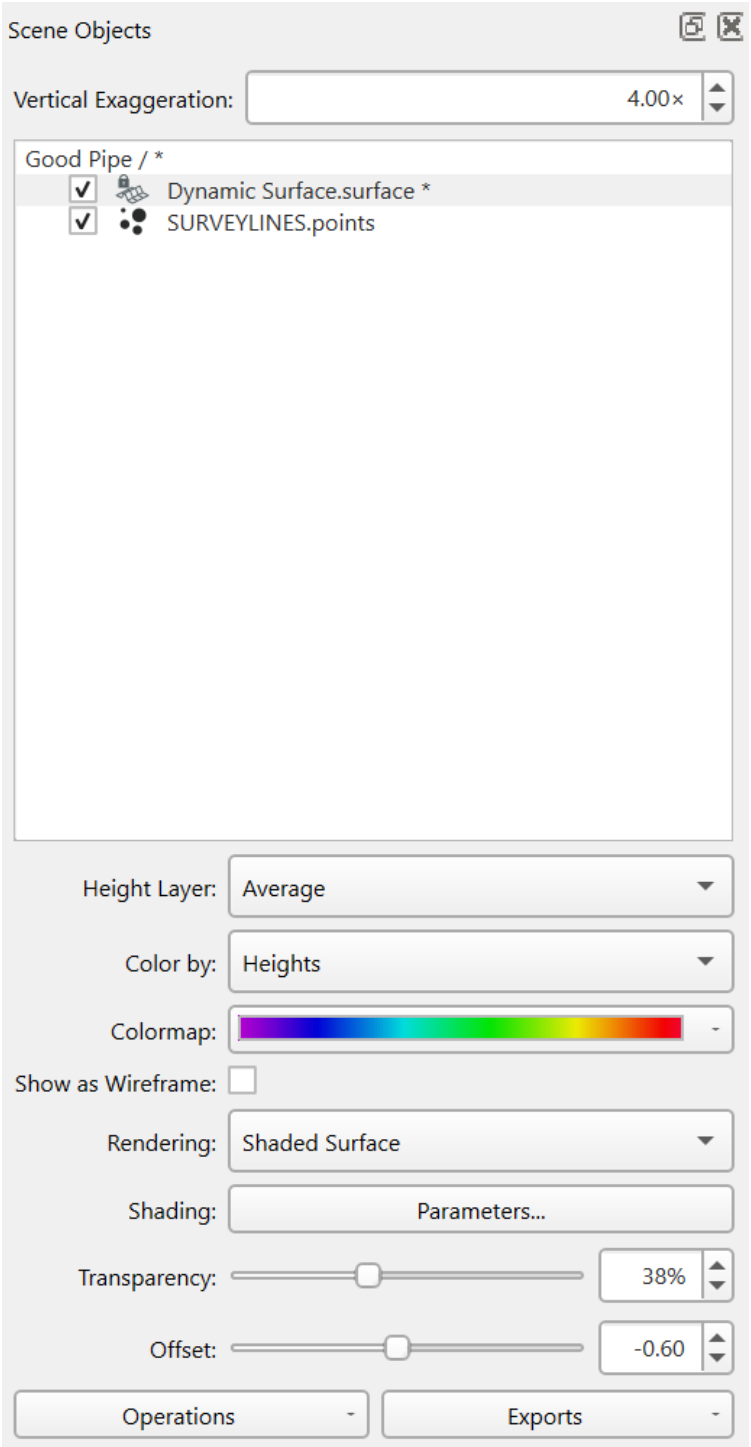
Command	Description
surfacecontour	Create a 3D line file containing the contouring of a surface.
surfacediff	Compares two surfaces.
surfaceextract	Extracts an area from a surface and writes that area to a new file.

Miscellaneous

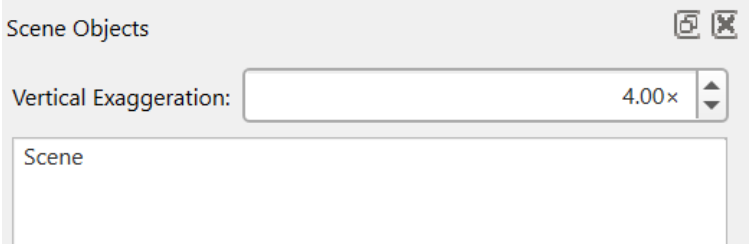
Command	Description
listcoordsys	Search for coordinate systems.
projectpts	Projects points.
resampler	Resamples DTM and image data with a variety of filters.

Fledermaus Scene

Introduction



The Fledermaus scene represents all the objects which are loaded into the application for visualization in the 3D scene. These objects are listed in the Scene Control Dock which is described in detail via the link. It basically has three areas. A control for the overall scene vertical exaggeration at the top, the main area that shows the scene root and any loaded data objects accordingly to their hierarchy, and an area at the bottom which is used to display attributes for the selected objects. In this example for the selected surface. When multiple objects are selected any attributes all selected objects share will be shown in the attribute area. Thus you can change the attributes of many objects at once if desired. When any objects visual state is modified from how it is saved on disk you will see an asterisk (*) at the end of the file name to indicate that if you want the change to be preserved you need to save the object. If any object or scene attribute is changed then the Root object for the scene called "Good Pipe" in this example will have the asterisk beside it noting the scene needs to be saved if you want to preserve the overall state of the scene. When you have a new empty scene the control looks like below to the parent of the overall scene titled "Scene" until one decides to save the scene.



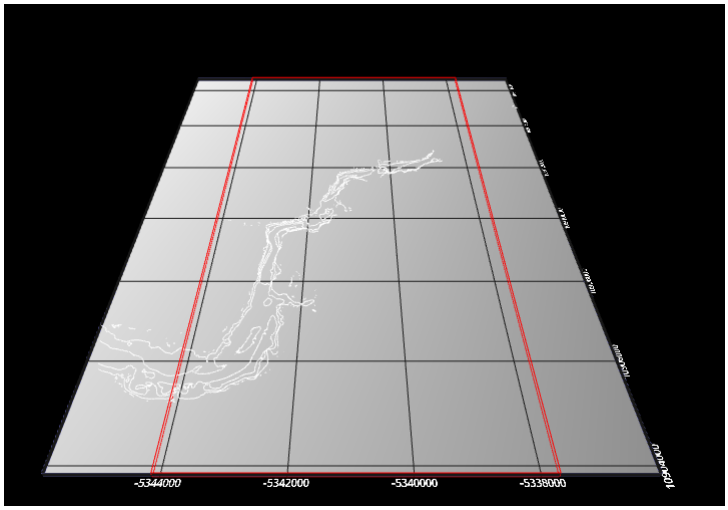
Scenes in Fledermaus 8 are lightweight XML files that point to all the objects that are saved on disk as part of the overall scene.

Compressed Scenes for Distribution

To make it much easier to send a Fledermaus scene to other people or computers, scenes can be shared via the File > Share Scene... option. This will produce a single compressed interchange file with the extension **.qsz** that encapsulates all data objects together. When a qsz file is opened as a scene it will be uncompressed and all the data extracted to reconstruct the scene.

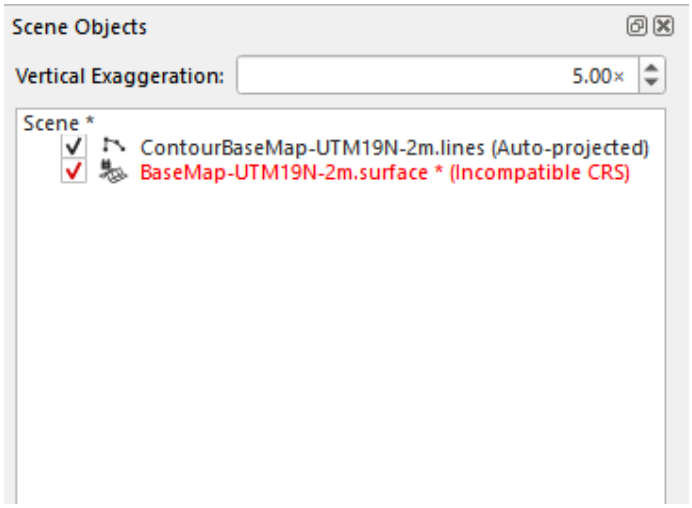
Non-displayable objects

A non-displayable object is an object whose coordinate system is incompatible with the scene's coordinate system. These objects cannot be displayed normally, so instead a non-displayable object will show a red outline where the object would be if it were to be re-projected into the scene's coordinate system.



A non-displayable object shown in the scene

The object's name will also be highlighted in red in the scene tree, with the text "(Incompatible CRS)" appended.



A non-displayable object and auto-projected object shown in the scene tree

Certain object types such as lines and points can auto-project to match the scene's coordinate system. These types of objects will not display the red outline, since they will automatically re-project themselves into the scene's coordinate system. When this happens, the text "(Auto-projected)" is appended to the item in the scene tree. Auto-projected items still have full functionality, this is just to indicate that the object was created in a different coordinate system.

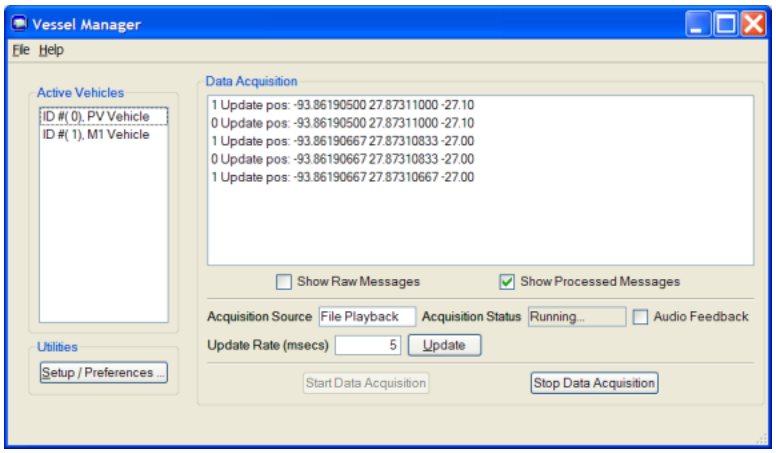
To make a non-displayable object displayable, you can either re-project the item into the scene's coordinate system using the re-project to scene operation or change the scene's coordinate system to match the object's coordinate system.

Background and Foreground Colors

When the scene is selected in the scene tree, the attribute panel will show scene background and foreground color settings. These change the color of the scene background, and the bounds label text color and colormap legend text color respectively. These colors are saved so other people opening the same scene will see the same colors. The default colors are based on your background and foreground color preferences. Applying the color preferences will override the scene colors until the scene is reloaded or the program is restarted.

VesselManager

The vessel management tool is designed to support remote operated vehicle operations, vessel tracking and other similar real-time tracking tasks. It serves to gather the realtime data from appropriate sources and present it to Fledermaus so that vessels, ROVs, and other moving objects can be tracked, measured, and analyzed. At its core, Vessel Manager understands standard NMEA strings, a special customized NMEA like data string, and the PLO (a US Navy) format. Data in any of these formats can be read in via a file, a serial port connection, or via network UDP packets. Previous versions of Vessel Manager could only support one vehicle when using standard NMEA data however as of version 6.5.1 multiple vehicles are supported based on the first two characters of the NMEA message strings.
The *VesselManager Application Window* below is the display when the application is started. The main display area is used to verify that the input navigation is being successfully read and processed. The area to the left shows the list of active vehicles configured to receive data.



VesselManager Application Window

More information about VesselManager

- VesselManager Application Window
- VesselManager Data Flow

VesselManager Application Window

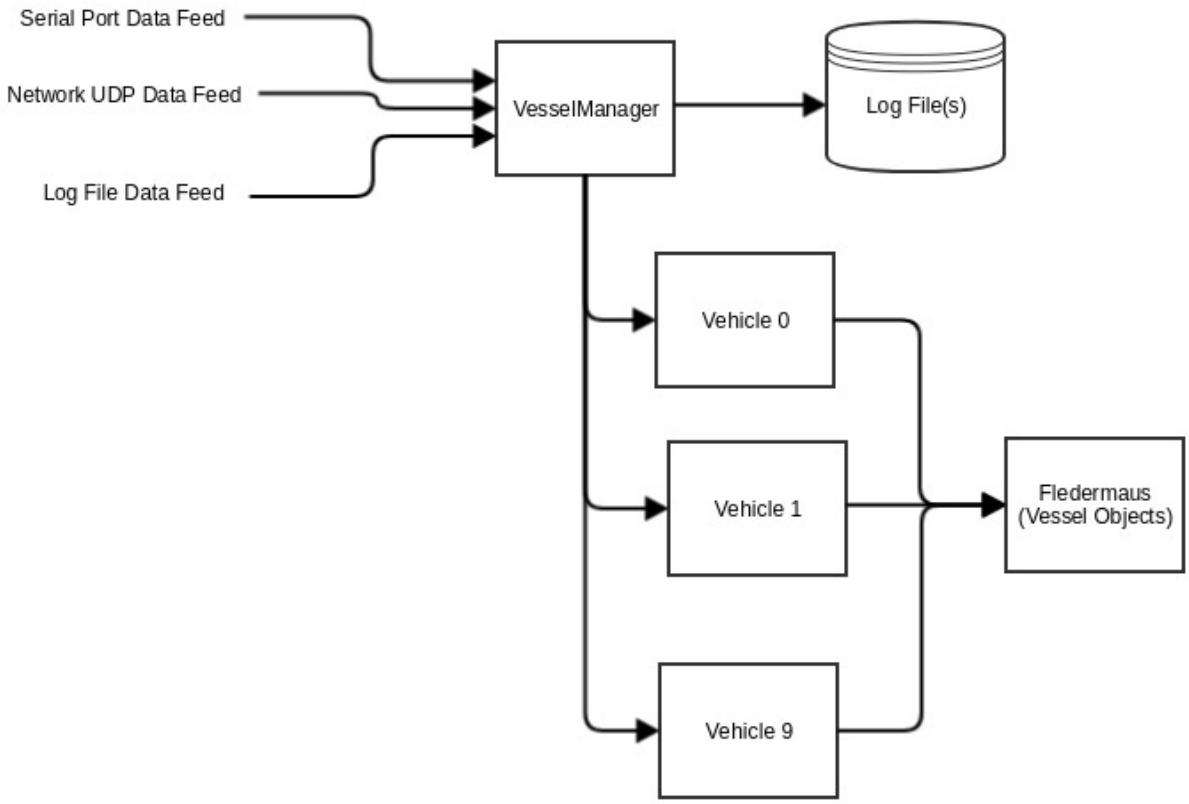
- VesselManager - Application Window
  - General Information
  - Help Menu
    - Offline Manual
    - Online Support Desk
    - QPS Home Page
    - View License Status
    - About Vessel Manager

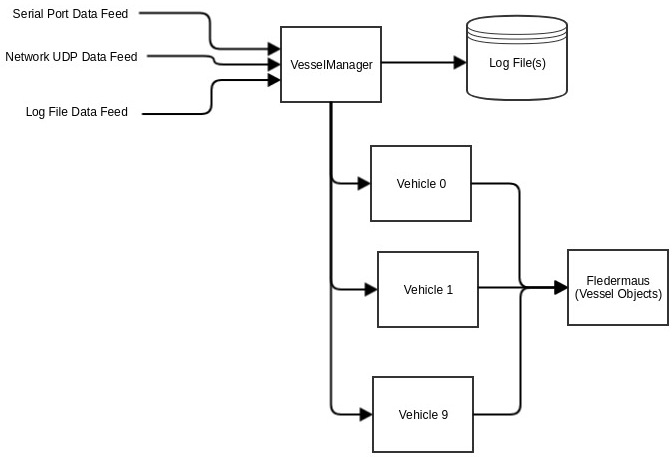
VesselManager - Application Window

General Information

The controls on the front panel are mostly limited to showing the setup/preferences dialog and buttons to start and stop the data acquisition. The data input source and current status are also shown on the front panel. When toggled on the "Audio Feedback" check box causes a beep to be emitted each time a valid input navigation message is processed.

Setting up the workflow for vessel manager is a three step process. Configure the method of data input, specify its format, and setup the vehicle list. The basic data flow for working with real time navigation data is shown in *VesselManager Data Flow* figure below.





VesselManager Data Flow

Help Menu

The help menu gives you access to version information as well as a links to the online help.

Offline Manual

Selecting *Offline Manual* will load the offline documentation for Vesselmanager.

Online Support Desk

When selected this option opens a web browser and loads the URL for the QPS Support Desk.

QPS Home Page

Selecting QPS Home Page will open a web browser and load the URL for QPS.

View License Status

This menu option opens the License Status dialog, which displays the current licensing status and allows installation of new licenses.

(Note that on Mac OS X, this menu entry is shown under the *VesselManager* menu.)

About Vessel Manager

This menu option will launch the *About* dialog containing information about the product version, and QPS company information.

VesselManager Data Flow

VesselManager acts as a middleman between navigation data from a variety of sources and vehicle structures that are constantly updated with the latest vessel position that can be displayed in an application such as Fledermaus. Vessel objects in Fledermaus connect to the vehicle structures generated by VesselManager through the vehicle ID (a number between 0 and 9). All interaction with the vessels is done in Fledermaus, where the vessel data can be visualized and analyzed. Once VesselManager is configured, using it is simply a matter making sure the correct vehicle, listed in the *Active Vehicles* list, is selected and clicking the *Start Acquisition* button. If the auto-start option is checked and *Save As Defaults* is clicked, then acquisition begins automatically when VesselManager is started. First, configure your communications and message setup and save those, though. Here is view of the main VesselManager window. Details on the configuration of the application follows.

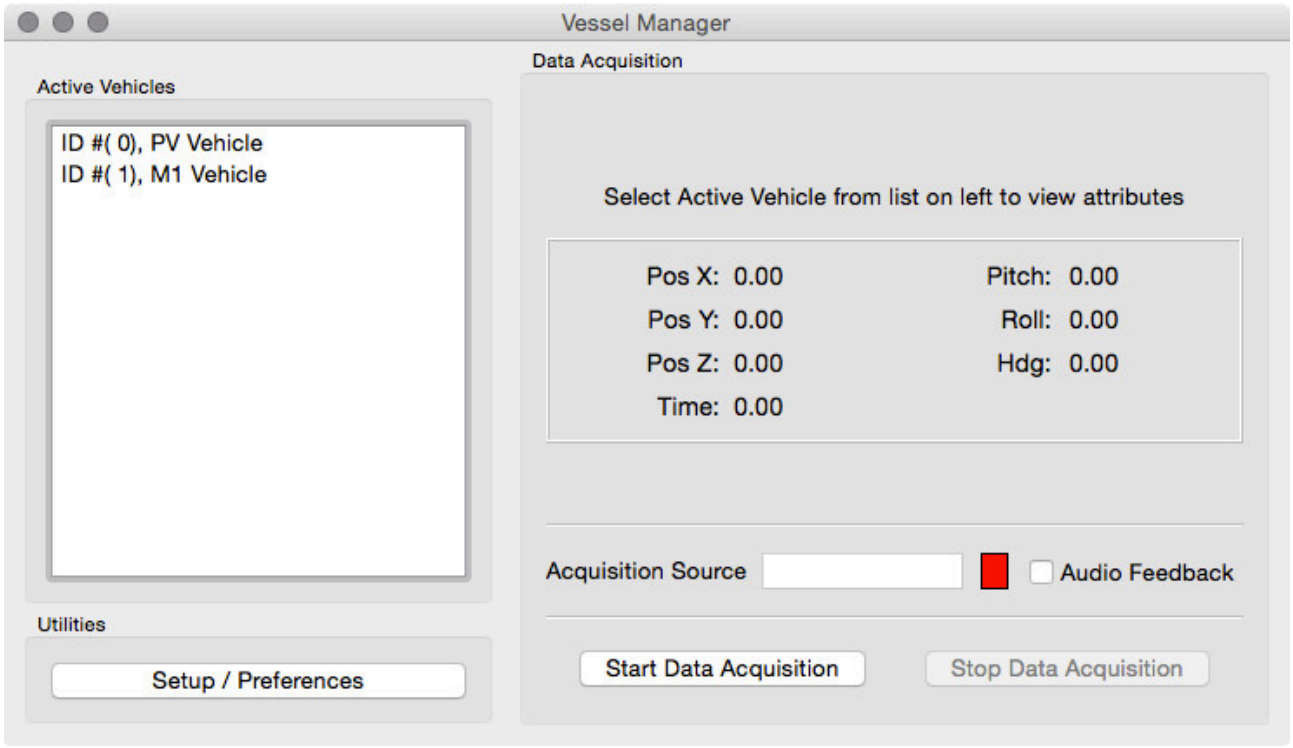


Figure 1. Vessel Manager Main Window

Before VesselManager can be used, it must be first setup to receive and process the received data. This is done by clicking the *Setup/Preference* button in the lower left corner of the main display. Once the application is configured, the settings can be saved as defaults. This makes using the application again in the future easier by saving your preferred settings. The setup dialog box is shown in the *Setting up VesselManager* below. It contains a tabbed display that covers most of the dialog and steps one through the

setup process. As the tabs suggest, one needs to configure the message format (Message Configuration), the data source (Communication Setup), and the vehicle setup (Vehicle Setup). You may optionally configure logging and simulation in the respective tabs. To automatically start acquiring data upon startup, check the box at the bottom left of the dialog. Once the setup is complete, it can be made the application default by clicking the *Save As Defaults* button, or choose *Ok* to finish. Clicking *Cancel* exits the dialog without changing the current configuration. Each tab will be described in detail.

Setting up VesselManager

Check the box below the tabbed display to tell the system to start acquiring data immediately upon startup. This is convenient if the setup has been saved with *Save As Defaults* and the data source will be ready whenever VesselManager is started. This can also be used for demonstration if the simulation mode is enabled. See below.

The first tab, called *Message Configuration* as shown in Figure 2 is used to identify the format of the data. The system currently supports four different data formats, all which now support multiple vehicles. These include standard NMEA messages, POS MV messages, PLO binary messages and a custom defined message. NMEA is most commonly used when reading raw navigation data from a serial port or a network connection. The custom string is generally used in conjunction with a navigation package such as WinFrog. WinFrog, as a full featured navigation system, can receive a wide variety of navigation strings from multiple sources and create the appropriate custom string that VesselManager uses. The format of this string is discussed below.

Note that the Z-values for any of these formats can be negated (changed from a positive to a negative, or vice versa) when the *Negate Z-values in NMEA string* is selected (checked). When this option is unchecked, the Z-values will not be changed. Selecting this option may be necessary if depths increase with positive numbers. Checking this option will make the depths negative in this case, so that deeper is more negative.

Message Formats

The first option listed is the PLO MV format, which is a US Navy format. Note that a message box will popup when the PLO MV option is selected, be sure to check if it is under the setup dialog if you do not see it. Otherwise, the application will become unresponsive.

Message Configuration Setup

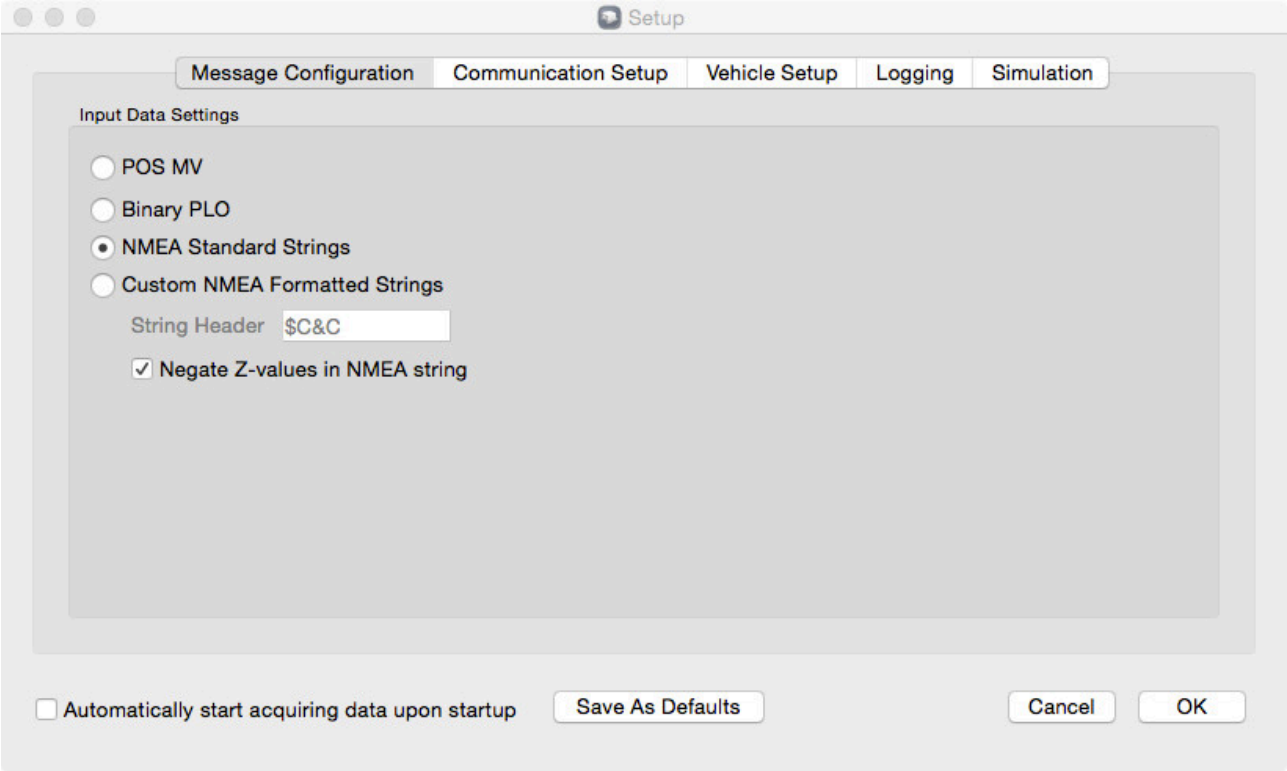


Figure 2. Setting up VesselManager

The second data format option is PLO, which is a binary input format used by the US Navy. It contains a series of records where each record contains a vehicle ID, and appropriate positioning information.

The third option, NMEA standard strings, have no extra configuration options. The system reads a limited number of the standard strings as described below. All NMEA strings start with a dollar sign followed by a five digit code. For example: "$GPGGA" is a standard satellite navigation string. The actual message type is defined by the last three character of the string header. In the previous example that is the "GGA" portion of the message. Vessel manager uses the first two letters as the vehicle name. In this example "GP" would be the name of the vehicle. The NMEA message strings currently understood by VesselManager include (xx means any two characters):

Message Header	Overview
$xxGGA	Provides geographic x, y positioning

$xxGLL	Provides geographic x, y positioning
$xxHDT	Provides heading information
$xxDPT	Provides depth which is negated to turn into a height. (z coordinate)
$xxRMC	Provides heading information
$xxHDG	Provides heading information

Table 3. Message inpout formats

The last input format shown in Figure 2 is *Custom* which is designed to look like NMEA data strings but it supports a custom message string which can be output by navigation programs such as WinFrog. Currently, this input format is the only method to have full access to vehicle yaw, pitch, and roll information. The controls for this format include the ability to identify the NMEA string header (defaults to $C&C). A small sample of input in this format looks like:

```
$C&C,SIM,00:00:00.0,541175.375000,167894.781000,296.088928,0.0,0.0,-2.568574,0.0
$C&C,SIM,00:00:00.0,541173.578779,167895.660529,296.088928,0.0,0.0,-2.564224,0.0
$C&C,SIM,00:00:00.0,541169.088227,167897.859352,296.088928,0.0,0.0,-2.553348,0.0
```

The string follows NMEA conventions, it is a set of comma separate set of fields. Following the $C&C header the fields include:

Vehicle Name -> A string. In the example the name is SIM.
Time -> hh:mm:ss.s for hours, minutes, seconds and fractional secs.
X-Coordinate -> Can be a projected easting or decimal geographic longitude
Y-Coordinate -> Can be a projected northing or decimal geographic latitude
heading -> in degrees [0, 360]
pitch -> in degrees (+ve is pitch up)
roll -> in degrees (+ve is roll to starboard)
height -> in units of the data (+ve is up)
altitude -> in units of the data (currently not used)

The input message contains a string which represents the vehicle name as the first argument. In the example above the vehicle name is "SIM". If this string matches the name given to one of the active vehicles than the relevant navigation data will be sent to that vehicle.

Communications Setup

Starting with the *Communication Setup* tab as shown in the figure above the first choice is to specify how the application will receive its navigation data. There are three choices that include receiving data from a TCP/IP network, via the serial port, or as played back from a logged data file. Clicking on the appropriate choice activates any additional setup parameters required for the chosen method.

To use network based UDP packets you must specify the IP network address and network port number. The lower port numbers are often reserved for other system related activities so generally ports in the 30000-60000 range are recommended. You must specify the resolved IP address (the 4 numeric triplets – for example 192.168.0.45) and not a machine name (for example: mymachine.com).

To receive data via the serial port it is necessary to identify which serial port and the expected baud rate. Generally the baud rate will be 9600 although 4800 is also fairly common. The serial port name on Windows machine will be "COMn" where "n" is a number, usually "1" or "2". For UNIX machines this will be a serial device name. For example on Linux for serial port #1 the serial port name is something similar to "/dev/ttyS0".

Lastly there is a file playback option. This is used to replay an existing log file saved to disk and is a handy option for re-analyzing how a job went or showing others. To use the file playback option you need to select the file and specify the file playback rate. A playback rate of 1 is real time and larger numbers playback the file at "n" times the speed for quick reviews. In previous versions of vessel manager file playback was a separate dialog now it is integrated in here.

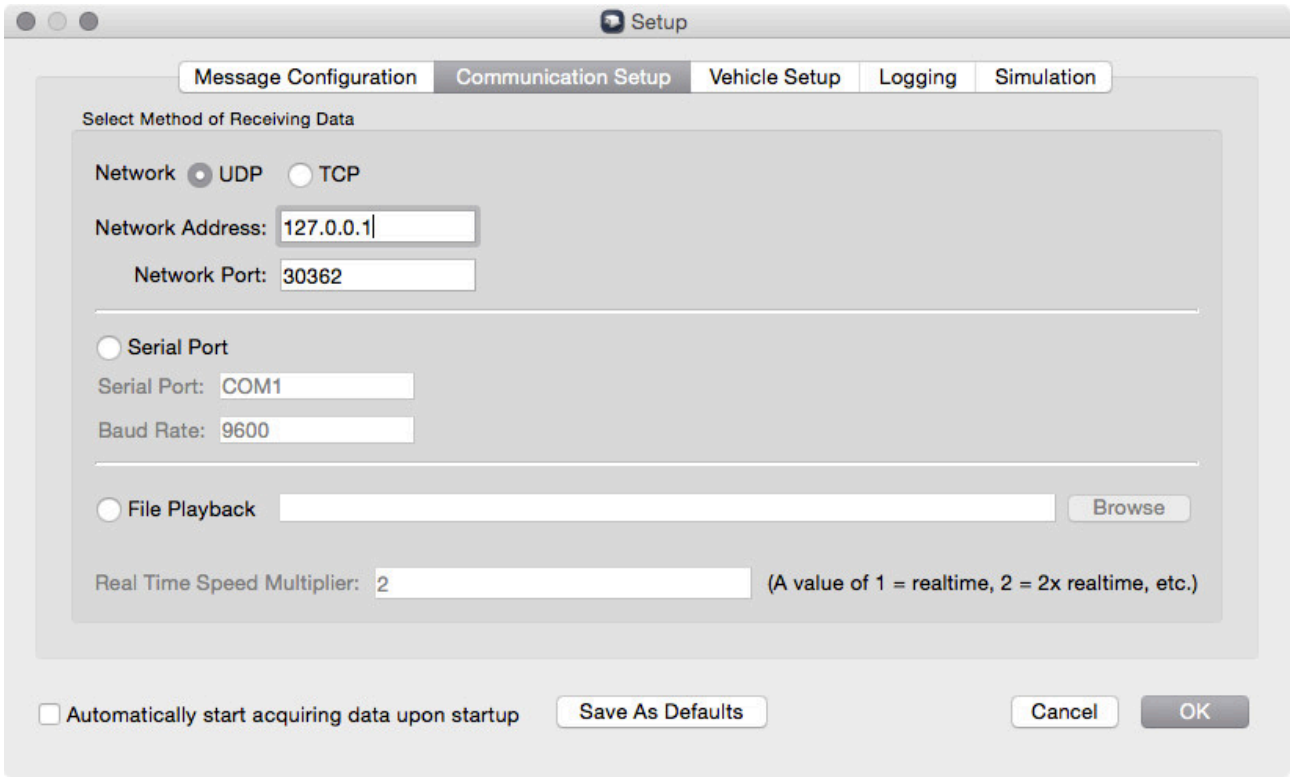


Figure 4. Comminications Setup

Vehicle Setup

The third tab is used to perform the vehicle setup. This identifies the names and/or ID's of particular vehicles of interest present in the incoming data stream and is used to route data to the appropriate vehicle slot.

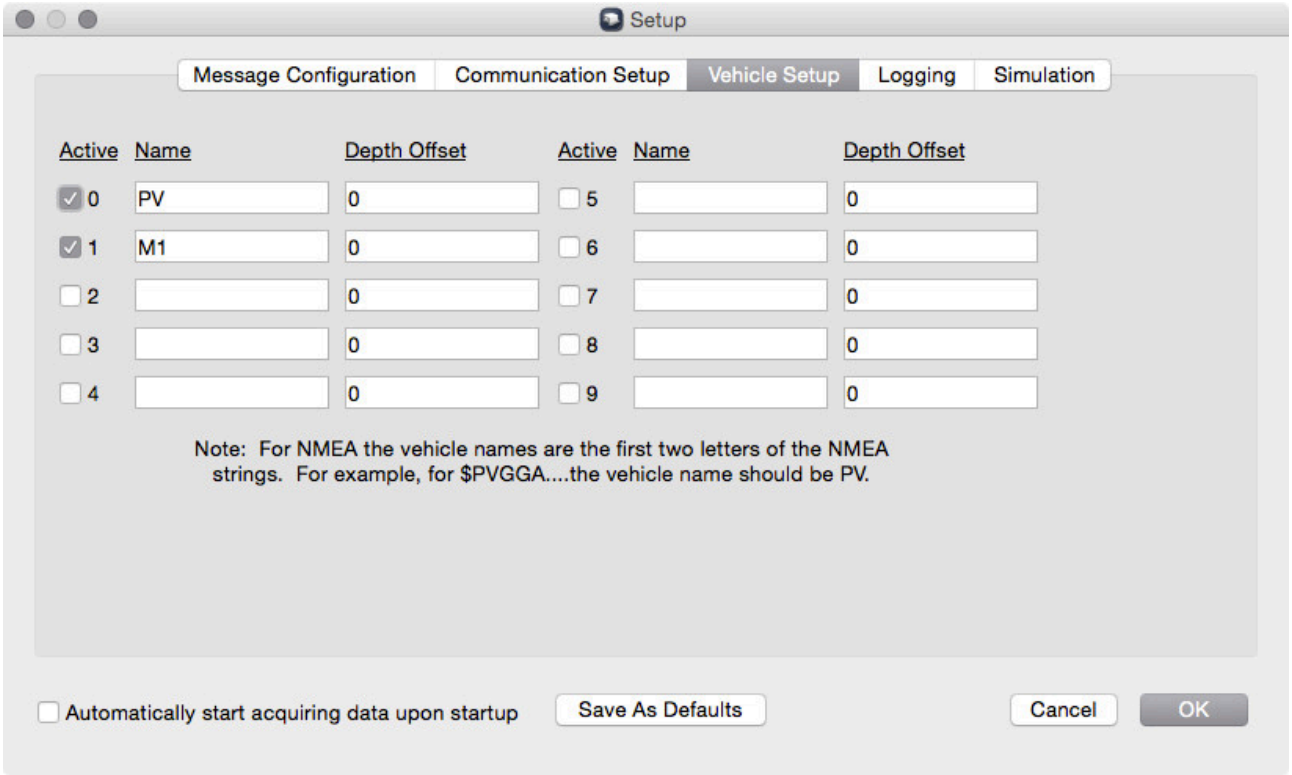


Figure 5. Vehicle Setup

The Vehicle Setup tab contains a set of up controls for up to ten vehicles. Each vehicle has an integer ID shown at the left hand edge of the controls labeled from zero to nine. When using Fledermaus, when you add a vessel, this is the ID # that you need to enter to activate the vessel inside Fledermaus. The vehicle name identifies the vehicle. How it is used depends on which data format was selected in the previous tab.

For standard NMEA messages a vehicle name is always two characters long. These characters must match the 1st two characters of the NMEA message header after the dollar sign. Thus if the NMEA message starts with "$V1HDT…" then one must name a vehicle "V1" (without the quotes) to match it. Any NMEA strings received that start with "$V1" send their data to the V1 vehicle.

For custom formatted data strings the 1st comma separated field after the header is the vehicle name. For example, for messages of the form "$C&C,HMCSHalifax,…" the vehicle name is HMCSHalifax.
Finally for PLO formatted data, the vehicle name is an integer number that matches the appropriate vehicle ID send inside the PLO data.

Data Logging Setup

The Logging tab is used to setup logging. If this option is activated then all received data is sent to a log file. This is useful to replay a job in the future. The resulting log files can be played back by using the file in the file playback option available in the communication setup tab previously described. To create a log file it is necessary to select the directory in

which it will be created and a base name. Log files will be created in that directory with the name <baseName>-<JulianDay>.log. The Julian day is automatically appended onto the filename and is based on the current date when the logging starts. For example for the base name shown in the dialog below if the current date is January 1st then the resulting filename would be "mplog-1.log".

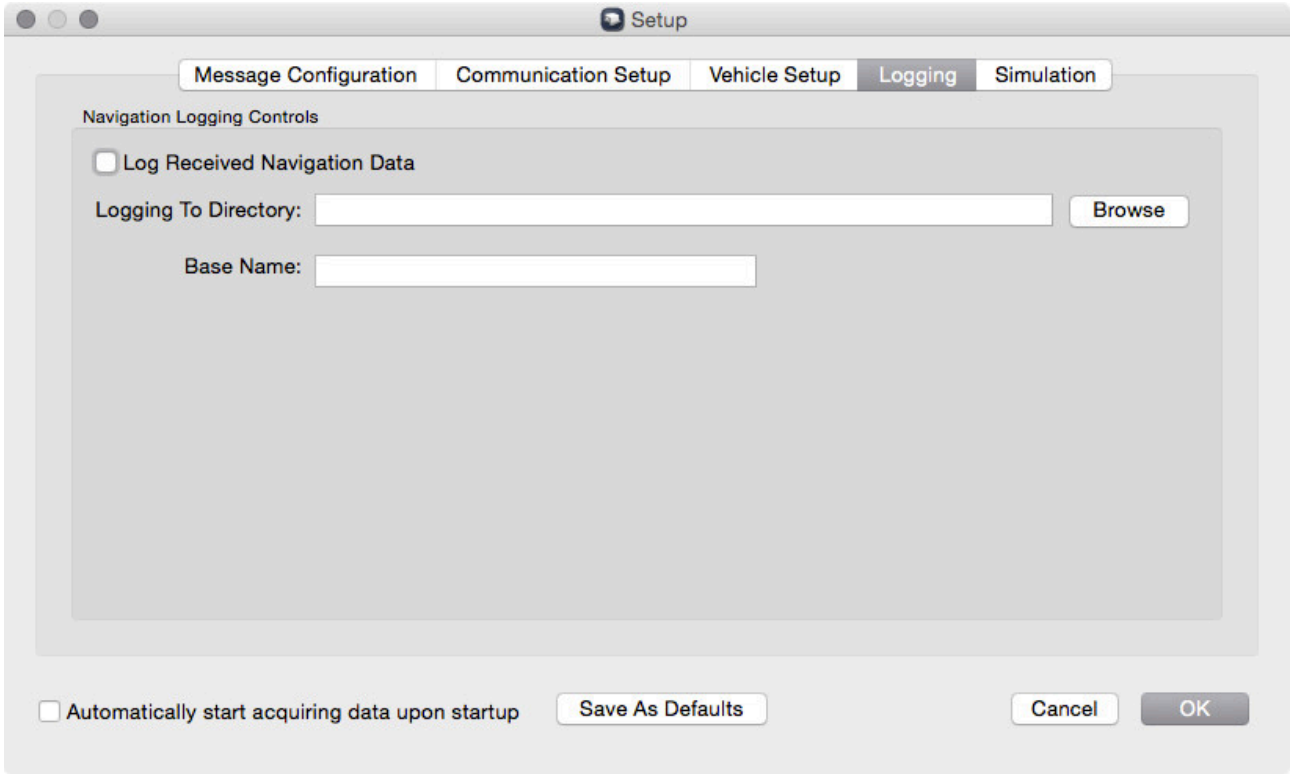


Figure 6. Data Logging Setup

Navigation logging lets one specify a directory in which the log files are written. If "*Log Raw Nav Strings*" is on then a file is written with all the acquired navigation data, along with the time stamp.

Simulation

The final tab, Simulation, allows setting up a demonstration mode, whereby VesselManager will generate data according the parameters set in this tab. This way, a moving vessel can be illustrated in Fledermaus under the full control, without requiring realtime data. Set the parameters for the initial conditions on the left, the variable conditions on the right and the update rate. Click the *On* checkbox to start the simulation.

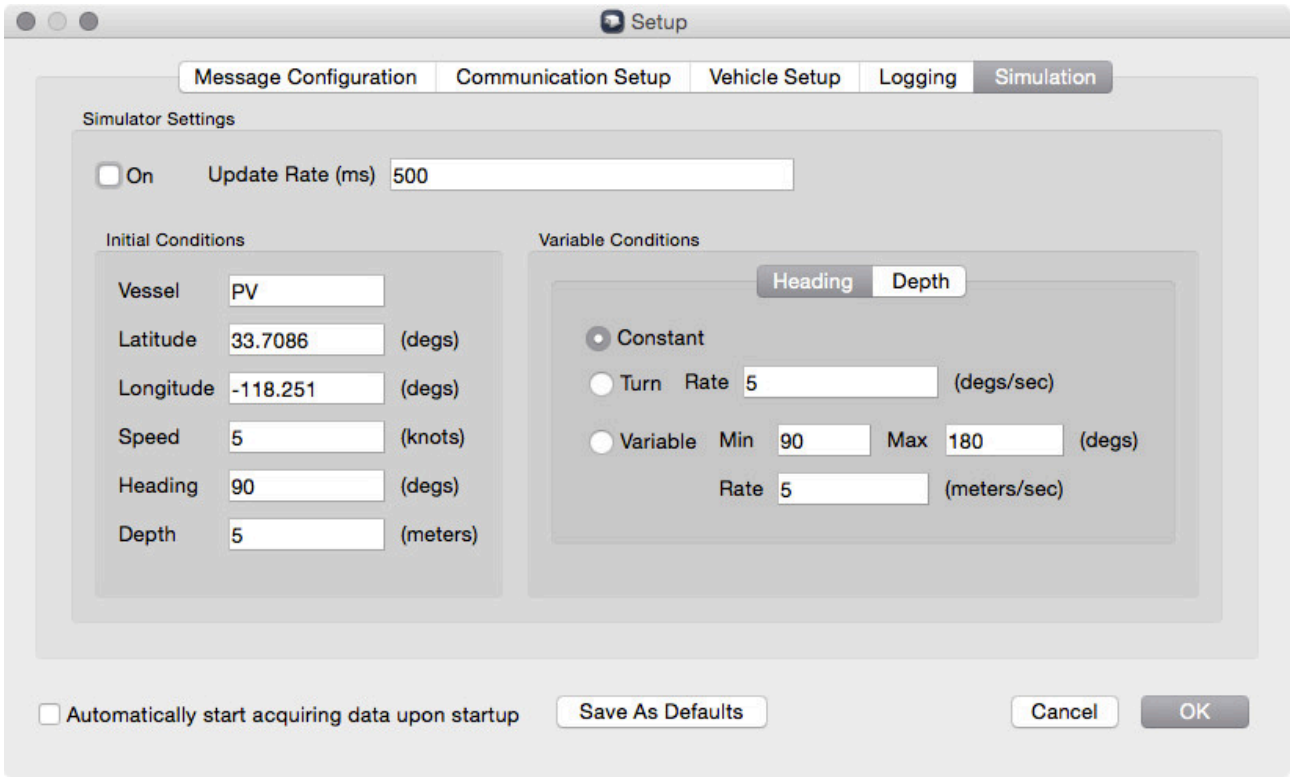


Figure 7. Simulation setup

.

Saving Configurations

Once the setup is complete, clicking *Ok* will make the settings active for the current session and return one to the main display.

From the main display there are several menu options available as shown in the *File Menu for VesselManger* figure below The current settings can be saved to a configuration file using the **File > Save As...** command. File names will automatically be given the extension ".vmf" which stands for vessel manager file. This file saves all the settings used to configure vesselmanager for a particular project. Once a configuration file is saved, it can be loaded back in simply using the **File > Open** option and selecting the saved ".vmf" file. Often this file can be immediately loaded just by looking at the **File > Open Recent** menu. If the ".vmf" file has been used recently it will be shown and can be loaded simply by clicking its name.

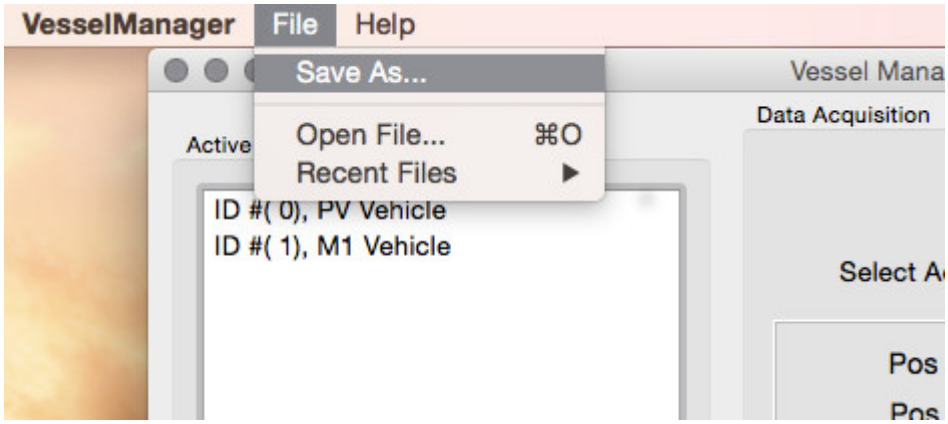


Figure 8. File Menu for VesselManager

Questions & Answers

Should I transition to Fledermaus 8?

Currently, Fledermaus 8 is still growing in functionality. To fully understand if you should transition or not to Fledermaus 8, you could explore Fledermaus 8 - Transitions from Fledermaus v7 to help guide you. Ultimately, you can reach out to our customer support service and have a conversation with one of the QPS Team members.

Where can I download the Fledermaus 8 Mac and Linux installers?

Fledermaus 8.x has been released Multiplatform. Keep up to date releases to have the best results. If you have a specific need for different installers not listed within our supported platforms, please contact support.

What are the hardware and systems recommendations to run Fledermaus 8?

You can find the hardware and system recommendations to run Fledermaus 8 in the Technical Information online document. It details the hardware required and recommended specifications to work with the application.

What version of ArcGIS - ESRI does Fledermaus support?

Currently, Fledermaus 8 Supports all the versions of ArcGIS desktop from 10.4.x. Users should be aware that they need to install ArcGIS Desktop and background geoprocessing executables before attempting to to use the GIS add-on available for Fledermaus. For Fledermaus 7, 32 bit installation is it supported up to ArcGIS 10.4.1 and there are version dependencies. ArcGIS Pro is not a version that is actively supported at the moment. We encourage you to contact the Support and Product Management teams to request support for such version.

What are the distances reported for measurements?

For 2D distances from the measurement tool, the planimetric distance is returned. The distance displayed can be checked manually by using the following formula, where (N1, E1, Z1) are the Northing, Easting and Z height of the first coordinate in the line segment and (N2, E2, Z2) are the Northing, Easting and Z height of the second coordinate:

```
dist = sqrt[(N1-N2)^2 + (E1-E2)^2 + (Z1-Z2)^2]
```

Distances along a line are the geodetic distance. For UTM and other linear projections, the simple Pythagorean calculation is used. In linear projections, this makes the most sense. For geographic (WGS84), an approximation of a one degree span at the equator is used to convert the grid internally to meters. The distance is then calculated as for linear projections. Note that this can result in significant error in the X direction depending on the latitude.

There are three distances reported from a profile. The 2D distance, which is the flat distance between the points, the line of sight distance determined by Pythagoras and the along the surface distance, which is the profile distance. The latter would be equivalent to travelling over the surface.

Technical Information

- Fledermaus System requirements
- Fledermaus Operating Systems
- Fledermaus 8 - Transitions from Fledermaus v7
- Fledermaus Product Licensing and Features
- Fledermaus file size recommendation
- Fledermaus Technical Documentation
- Installation Guide

Fledermaus System requirements

The following table lists the minimum and recommended hardware specifications for PC machines running Intel Based hardware. For information on which operating systems and platforms are supported, see our Platforms Overview page.

Minimum System Requirements

CPU	Intel i3 2.4+Ghz / AMD equivalent.
Memory	3GB+
Graphics Card	• Nvidia GeForce 8000 series of better, including any of the more recent cards that have 3-digit model numbers (G100, GTS250, GTX560, etc.) • AMD HD2xxxx or better (RV610+) • Intel HD2000 or better • Support for OpenGL 3.0+
Monitor	A resolution of 1280x1024 or better.
Mouse	2 Button with Scroll Wheel, 3 button mouse or trackpad with equivalent functionality.

Recommended System Requirements

CPU	Intel i5 or i7 2.6Ghz+ / AMD equivalent
Memory	8GB+
Graphics Card	• Nvidia GeForce 400 series • AMD 7xxxx • Intel HD6xxxx • Support for OpenGL 4.1+

Monitor	A resolution of 1600x1200 or better.
Mouse	2 Button with Scroll Wheel or 3 button mouse.

Extra notes

- Only 64-bit operating systems are supported
- Ensure that any external monitors are plugged into the graphics card ports rather than the onboard ports.
- Dual head support is highly desirable especially in demanding data processing tasks.
- Active Stereo is only supported by the Nvidia Quadro series.
- Reference for Nvidia and AMD graphics cards and Intel integrated Graphics including information on the supported OpenGL versions:
  - Nvidia
  - AMD
  - Intel
- For dongle licenses, the format available is standard USB. To allow compatibility with the growing presence of USB-c ports, a USB to USB c adapter will be required.
- Windows Remote Desktop does not support 3D OpenGL Applications very well so running Fledermaus through Remote Desktop connection can cause unforeseen issues. If you are utilizing an NVidia card they have made available a small application that enables support for this. It can be downloaded from NVidia's site at https://developer.nvidia.com/designworks. Once downloaded you will be required to run it once and reboot your machine and the feature should be enabled.

RELATED TOPICS

Fledermaus Operating System Overview

Fledermaus Operating Systems

Fledermaus software runs on a variety of operating systems; Windows, Mac and Linux. Fledermaus is guaranteed to run on the officially supported systems outlined below. Fledermaus may run successfully on other systems, however QPS supports no warranty in that case. For information on the minimum system requirements for PC systems, please see our Fledermaus System Requirements page.

Windows Platforms

- Windows 10* 64 bit (Excluding 'N' and 'KN' versions of Windows 10 , ex: Windows 10 Enterprise N or Windows 10 Pro N. If you want to try using an 'N' or 'KN' version of Windows 10, this link may help: Media Feature Pack for N and KN versions of Windows 10.)
- Windows 11 64 bit

Macintosh Platforms

- Mac OS X version 10.15.x

Linux Platforms

Check the Installation Guide for further requirements, guidelines or libraries, in particular if the app does not start.

- RedHat Enterprise Linux 7 (64 bit)
- RedHat Enterprise Linux 8 - Requires X.org, currently does not work with `Wayland` (app will fail to start with an error about `wayland`).
- Ubuntu 18.04 LTS
- Ubuntu 20.04 LTS
- Ubuntu 22.04 as of 22.04.1 - Requires `X.org`, currently does not work with `Wayland` (app will fail to start with an error about `wayland`).

Ubuntu's Unity user interface is no longer compatible with Fledermaus, as of Fledermaus 8.0. Other desktop environments, such as Gnome, are suggested instead.

Related Topics

- Fledermaus System requirements
- I receive a WMVCore.DLL error when trying to load Fledermaus
- Installation Guide

Fledermaus 8 - Transitions from Fledermaus v7

- Data Objects, File Formats, and Scenes
- FMGT and FMMidwater
- Removed and Significantly Changed Functionality
- Delayed Functionality (coming to FM after v8.0.0)
- Deprecated Applications
- Bundle Transitions

Fledermaus v8 is a major release that involves a number of changes in the applications and functionality previously bundled with Fledermaus v7. These changes are both to support the new role in the full QPS product suite, and to establish a solid platform for future growth.

Data Objects, File Formats, and Scenes

Scenes

One of the biggest changes in formats for Fledermaus 8 is in how Scenes function. Historically a Fledermaus scene was all inclusive, with all data stored within a single file. Although a single Scene file has some advantages, it has limitations in regards to scalability when working with many large objects. With the introduction of streaming from disk objects and direct Qinsy/Qimera project support in Fledermaus 8, it was no longer feasible to use a single all encompassing scene. As a result Fledermaus 8 introduces a new lightweight QScene format (.qscene) that stores scene settings, space-time notes, and other parameters, but only links to the actual data objects. As a result a Fledermaus 8 scene on disk will always be one .qscene file and a collection of data files, one for each object in the scene.

Some advantages of the new lightweight scenes are:

- More scalable for large data sets
- Multiple scenes can be created with the same set of data objects
- Easier to build on top of a QPS project

SD Objects

Historically all Fledermaus data objects had the same extension of .SD, no matter what the actual data type was. With the adoption of native support for .QPD, .QGF, and .surface files, Fledermaus 8 SD objects now all have individual extensions. The following table explains the transition of each object type:

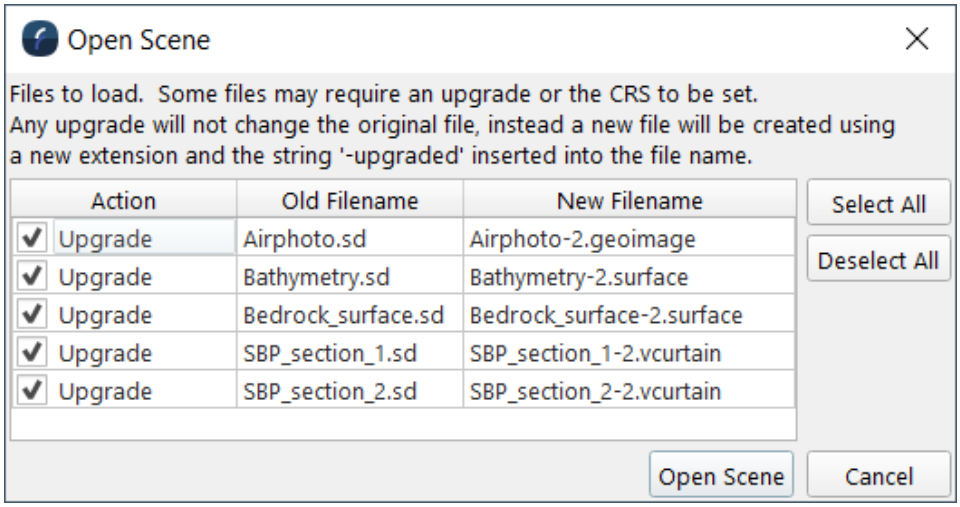
This list is outdated as of 06 Sep 2023. For updates for this list, see Fledermaus 8 - Transitions from Fledermaus v7

Fledermaus 7 Object	Fledermaus 8 Object	New Extension
SonarDTM Surface	GRID5 Surface	.surface
Scalar	GRID5 Scalar	.scalar
Geoimage	GRID5 Geoimage	.image
Lines	Lines	.lines
Points	Points	.points
Midwater Beam	MWBeam	.mwbeam
Midwater Fan	MWFan	.mwfan
Plane	Plane	.plane
Solid Model	Solid Model	.model
Vertical Curtain	Vertical Curtain	.vcurtain
Grid Lines	Grid Lines	.gridlines
Labels	Text	.text
Volume	Volume	.volume
Pipeline	Pipeline	.pipeline*

*Pipeline object support will be added after the first 8.0.0 release

SD and Scene Conversion

When a Fledermaus 7 scene or SD file is opened in Fledermaus 8, the upgrade dialog will be displayed. Each object will then be upgraded to the new format, leaving the original FM7 files alone. For scene files, a new .qscene file is created and each object will be upgraded and saved as a new standalone object.



FMGT and FMMidwater

The FMGT and FMMidwater applications are now released and versioned independently of Fledermaus. Your license will still work the same way, however you need to download and install the applications separately from Fledermaus. In the future functionality from each application will be moving more directly into Fledermaus and Qimera.

Removed and Significantly Changed Functionality

Item	Notes
Spherical Rendering Mode	The spherical display is a special render mode that has been used a lot less than the standard render modes. In addition it did not have full feature parity with the standard rendering modes. For now there is no immediate plan to support this in FM8, however this will be evaluated for future releases.
Graphical object transform ation tools	The graphical transformation tools allowed an object to be manipulated in 3D space. However they were difficult to use for a lot of object types and with larger scenes. This functionality is being evaluated and will return in better form in an upcoming release.

Item	Notes
Keyframe System	Although powerful, the keyframe system in FM7 was difficult to use and hard to expand with new features. Fledermaus 8 has completely new approach to animation and movie creation with automated flightpaths and the new presentation tools
Area Based Editing / PFM	All functionality for editing and processing points has moved over to the Qimera application. Note that all existing users who purchased an FMHydro and FMPro license have access to the Qimera Clean application as the new location for point editing
External Video Player	Video playback has been moved directly into the main application to allow for a better integrated experience
View Manager	The View Manager functionality has been completely replaced and enhanced by the new Space Time Notes system which goes beyond just recording view
Geopicking	The GeoPicking functionality has also moved into the Space Time Notes system, as well as the new annotation tools

Delayed Functionality (coming to FM after v8.0.0)

Functionality	Notes	Timeframe
Profile Features • Export Options • Cross profile controls • Persistent profile objects	Fledermaus 8 focused on modernizing the profile tool and adding new multi-surface capability. Some functionality has not been converted to the new tool, but will be added in upcoming releases.	8.4.0, 8.5.0, 8.6.0
Hardware Flight control	Using hardware devices, such as the BAT or SpaceNavigator has been disabled in the first release as we focus on calibrating the flight mode for a better default experience.	Was addressed in 8.3.0
Split-Screen Stereo Rendering Mode	We are evaluating our support for Stereo Rendering and how to best support support this going forward.	TBD

Functionality	Notes	Timeframe
Graphical Positioning and Transformation tools		Starting implementation on 8.4.0
Pipeline Tools	The pipeline tools were added in recent FM7 releases, and are being combined with the functionality from Routeplanner to form the base of a revised "Offshore" add-on.	Started implementation since 8.4.0
Interpretation Object		TBD

Functionality	Notes	Timeframe
Routeplanner Integration in Fledermaus	The Routeplanner application from FM7 is being replaced by new functionality directly within Fledermaus	Implemented on 8.6.0
VesselManager Integration in Fledermaus	The VesselManager application and supporting functionality will be optimized with new functionality directly within Fledermaus	Implemented on 8.6.0

Deprecated Applications

Application	Replacement	Timeframe
DMagic	Functionality moved directly into Fledermaus • PFM Related functionality moved to Qimera	8.0.0
3DEditor	Point editing is now handled by Qimera	8.0.0
Crosscheck	Functionality directly supported in Qimera	8.0.0

Application	Replacement	Timeframe
Routeplanner	Functionality will move directly into Fledermaus	8.6.0
FMCommand/ cmdop	Scripting options being evaluated for cmdop replacement	8.3.0
iView4D	Fledermaus will be able to run in an "unlicensed" free mode with limited functionality	8.1.0

Bundle Transitions

For Fledermaus 7 users there are a few changes from the original bundles. The table below shows what and where the functionality exists with the release of Fledermaus 8.

If you have any questions, please contact QPS.

FM7 Bundle	FM 8 Equivalent Products
FM Hydro	Fledermaus Qimera Clean
FM Offshore	Fledermaus Offshore
FM Habitat	Fledermaus + FMGIS Addon FMGT
FM Viz4D	Fledermaus
FM Pro	Fledermaus Offshore FMGT Qimera Clean

Fledermaus Product Licensing and Features

Fledermaus Feature list	Fledermaus	Fledermaus Offshore	Fledermaus Viewer	Fledermaus Geocoder Toolkit (FMGT)
Cross-Platform: Windows, Mac & Linux	√	√ * (intention - however, not yet available for other platforms)	√	√
2D Scene Views	√	√	√	√
3D Scene Views	√	√	√	×
4D Scene Views	√	√	×	×
Scene Composition	√	√	×	×
Surface measurement tools	√	√	√	×
Create a 3D surface model and multi-variate surfaces from a variety of ungridded and gridded data types	√	√	×	×
3D model object imports	√	√	×	×

Interpolate, mask, crop or resample grids to get the best possible interpretation of the seafloor	√	√	×	×
Import of ancillary data including images, Esri shapefiles, AutoCAD DXF and DWG, points, lines, 3DS models and ENCs (ENC's FM 7)	√	√	×	×
Drape sidescan mosaics, backscatter, charts, and other imagery onto surfaces	√	√	×	×
Show object and surface change over time using time-stamped data (surface time series)	√	√	×	×
Perform slope, rate of change and surface difference calculations	√	√	×	×
Interactively digitize and label	√	√	×	×

True 3D Mesh technology	√	√	×	×
Eye dome lighting (EDL) for point clouds	√	√	×	×
*Real-time tracking of objects (vessels, animals, etc.) via serial cable, UDP packet or logged string**	×	√	×	×
Generate and export points, lines polygons, contours, grids in industry-standard formats	√	√	×	×
Create time/ space notes for moviemaking and 3D/4D presentations	√	√	×	×
Auto-generated flight paths using the presentation system; output to MPEG movies	√	√	×	×
Produce high-resolution graphics for reports, posters, and publications	√	√	×	×

Create slides directly in scene with easy text/ image insertion, and export to the presentation	√	√	×	×
Export Google Earth KML and KMZ files Node-less surface interpretation tools	√	√	×	×
*Fledermaus Viewer installer for viewing of Fledermaus *.scene and *.SD files*	√	√	√	×
Backscatter processing of specific frequency	×	×	×	√
Multi-spectral backscatter processing	×	×	×	√
Grid-based & cluster voxel-based Volumen calculations	√	√	×	×
Scene interpretation tools	√	√	×	×

Support of bathymetric data to improve backscatter footprint results on rough surfaces	×	×	×	√
Directory monitoring	×	×	×	√
Beam pattern correction	×	×	×	√
Cascading backscatter normalization tool	×	×	×	√
Intra-vessel backscatter adjustment	×	×	×	√
Tiling to support raw large data sets and or high-resolution backscatter mosaics	×	×	×	√
Export of (floating point) GeoTiff and SD surfaces	√	√	×	√
Creation of RGB coloured backscatter imagery	×	×	×	√

Export of detailed backscatter statistics information	×	×	×	√
Angular Range Analysis results (characterizatio n)	×	×	×	√
Synchronized video playback (Full Motion Video)	√	√	×	×
Support for navigation peripherals	√	√	×	×
*Pipe and cable route planning**	×	√	×	×
Calculate and export fixed pipeline length data files	×	√	×	×
Generate and export dynamic long and cross profiles for use in engineering analyses	×	√	×	×
Entwine Point Cloud object reading (big data)	√	√	×	×

Dynamic Multilayer profiling	×	√	×	
*Fledermaus workflow automation using command line tools and popular scripting languages *Limited in FM 8*	√	√	×	×
Seamless workflow with integration to Esri ArcGIS software (Esri ArcGIS installed license required)	**Add-on**	√	×	×
Intuitive and rapid extraction of features from huge multibeam and single-beam water column data files and SBP	**Add-on**	×	×	×
Seep Hunter automated algorithm for hydrocarbon and methane seep detection in water column data (or other features if filter settings are known)	**Add-on**	×	×	×

WC and SBP data extraction, Interpretation and replay	**Add-on**	×	×	×
Dredge Design creations (FM 7)	√	√	×	×
Vertical images displays and creation settings	√	√	×	×
Beam fan time Series creation	√	√	×	×
Image collection (display sync video, scene and merge with vessel)	√	√	×	×
HIPS I/O – Enables reading of Caris HIPS point cloud data	**Add-on**	×	×	**Add-on**

Fledermaus file size recommendation

This page contains an overview of the recommended maximum sizes for the different file types used within QINSy.

- Database files
- QPD files
- Grid files
- QGF files
  - VOM
  - Line
  - Background
  - Design
- Image files
  - Geotiff
  - ECW

File type	Recommended max. size	To be used	Comments
Database	500 MB	Possible: 2Gb	If larger: • Risk of reducing performance (replay/ Qimera/FMGT)
QPD	250 MB	Possible: 1Gb	If larger: • Risk of reducing performance (Validator/ Qimera/FGMT)
Grid	Sounding grid • 50 Gb Dynamic (with qpd's) • 50 Gb		If larger: • Cooperative Cleaning

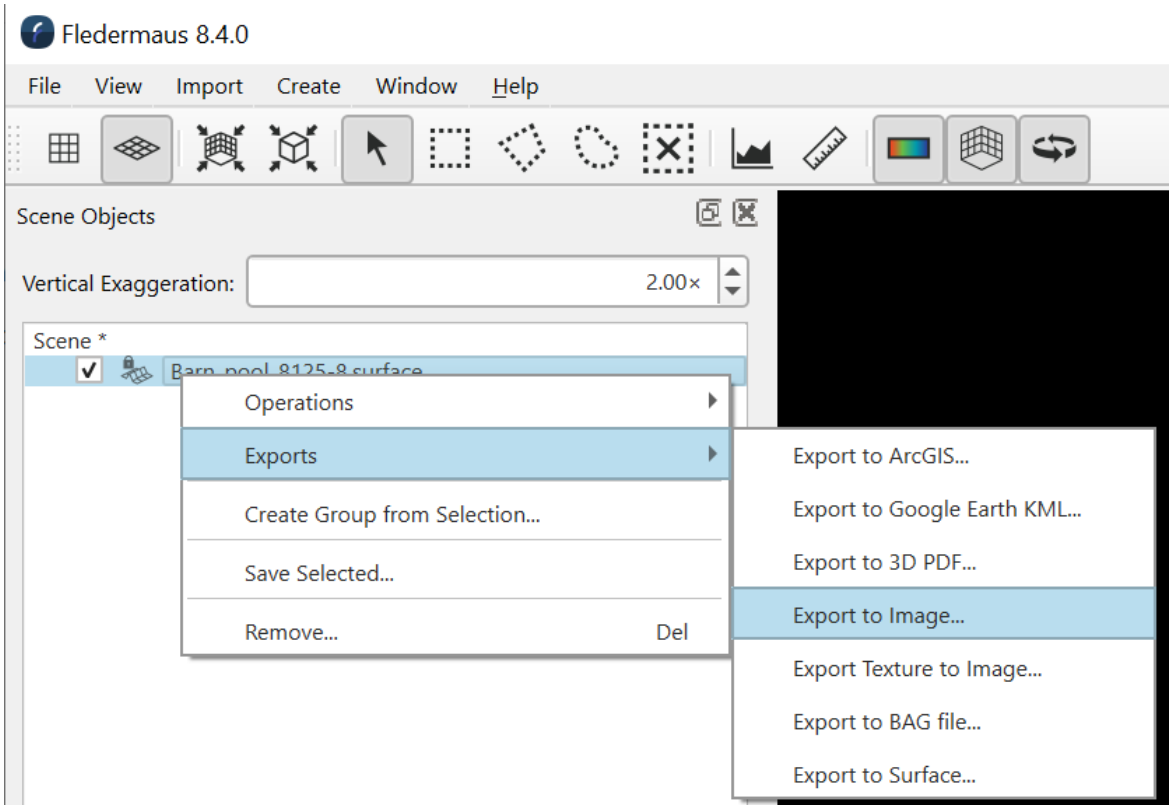
File type	Recommended max. size	To be used	Comments
QGF(CAD)	• 50 Mb (current limit)		FQI-442 • Decimated (removing and simplifying items in the drawing) • Try CAD functions to simplify the drawing • No Blocks, Large Radius, ARC • 50km max. suggested distance from working area • Delete layers that are not used or empty
Image files	Geotiff Distance: • $1000m^2$ Size: • no limit ECW Distance: • $1000km_2$ Size: • 100 Gb		Dependent on Geodetic location If Geotiff misformed/misplaced: • Decrease size (divide into several Geotiffs) • Create ECW instead of Geotiff

Fledermaus Technical Documentation

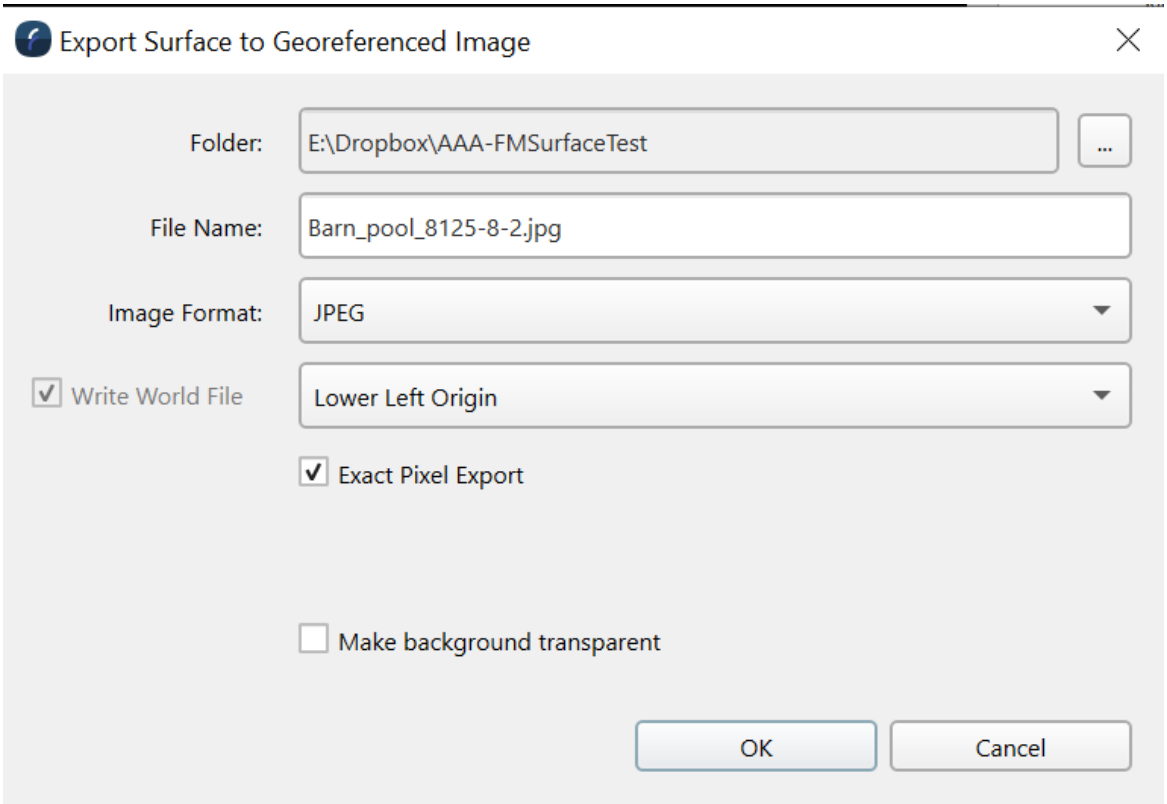
- Exporting Surfaces to Imagery
- Surface Statistics Algorithm
- Understanding Surfaces in Fledermaus 8

Exporting Surfaces to Imagery

This technical note convers some important details related to exporting and rendering surface data into an image and saving the results. If you have a surface object and you want to turn it into a properly geo-referenced image file, the best way to do this is through right clicking the surface object and selecting the Exports > Export to Image... option as shown below.

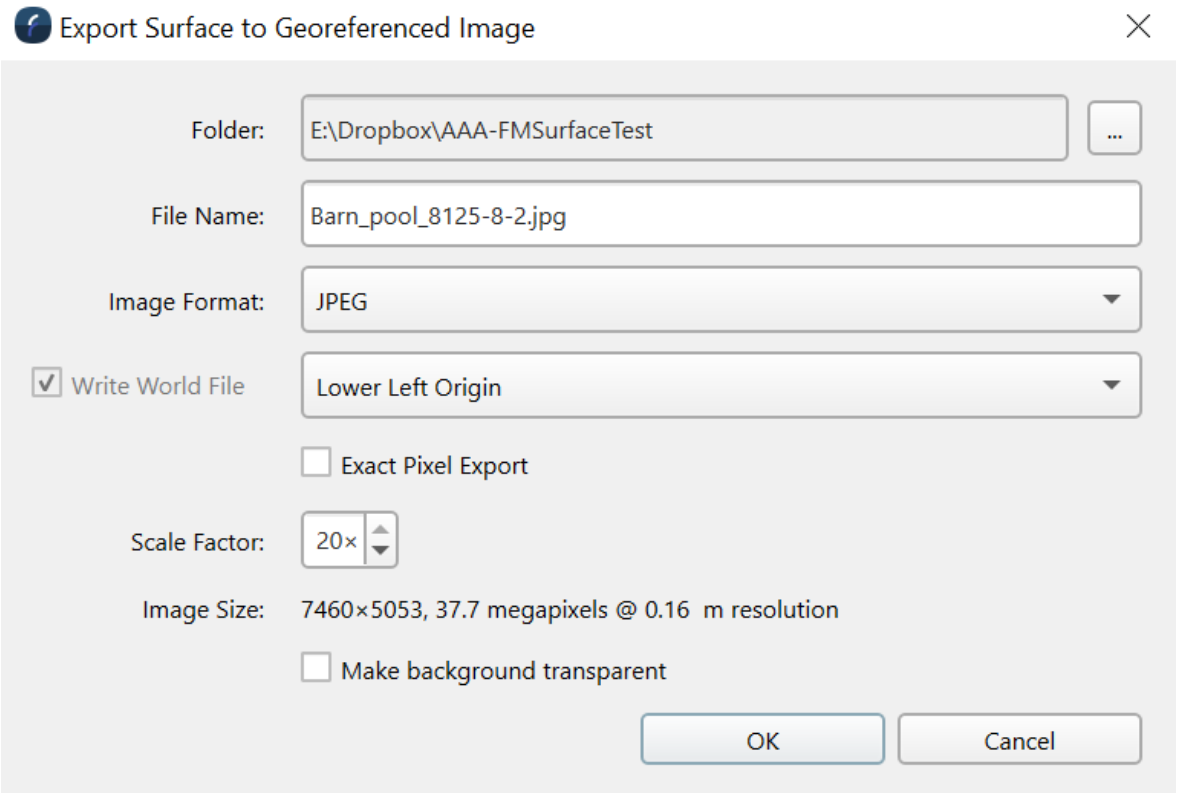


This will bring up a dialog with a number of options to control the export. There are two different methods that are used to turn a surface into a saved imagery. One is conversion and the other is rendering and both have an important place and it is important to understanding the differences. The export dialog looks like:



The "Exact Pixel Export" controls which method, conversion or rendering is used. When exact pixel export is on you are getting the conversion method. In this case each cell of the existing surface is turned into an image pixel. The color of the pixel will be the color of the surface you would see when any texture rendering (if present) is turned off. If the surface is 1000 x 500 cells the resulting image will have exactly 1000 x 500 pixels and the geo-referencing will match the edge-to-edge coordinates from the surface. The resulting image may or may not look like how the surface appears on the screen (especially if you have draped imagery on the surface being displayed). The saved imagery is coming from a direct conversion of the data it is not the rendered product as seen on the screen.

On the other hand if you turn off the "Exact Pixel Export" you will create the image from the surface by rendering the surface into an image. Thus you will get the same imagery as you see on the screen, but at the resolution you specify. The extra options look like:



In particular you have a scale factor and the dialog will show you the resulting image size and effective resolution of each pixel in the image. Unlike the above method behind the scenes this method creates a canvas that exactly matches the aspect ration (width/height) of the surface with a resolution based on the scale factor. The rendering system then renders that surface with a top down orthographic projection into the resulting canvas and saves the results as a properly geo-referenced image. Given that the rendering system is used to generate the image it will appear identical (in colors and structure) to what you see in the 3D rendering of the surface. Generally the scale factor is adjust so the canvas is close to or slightly higher resolution then the surface being exported although if you have a high resolution texture on the surface you will want to select a resolution close to the draped textures resolution. The rendered project is considerably more flexible but it is import to understand the differences. There are two key issues.

Rendered pixel resolution vs surface cell size

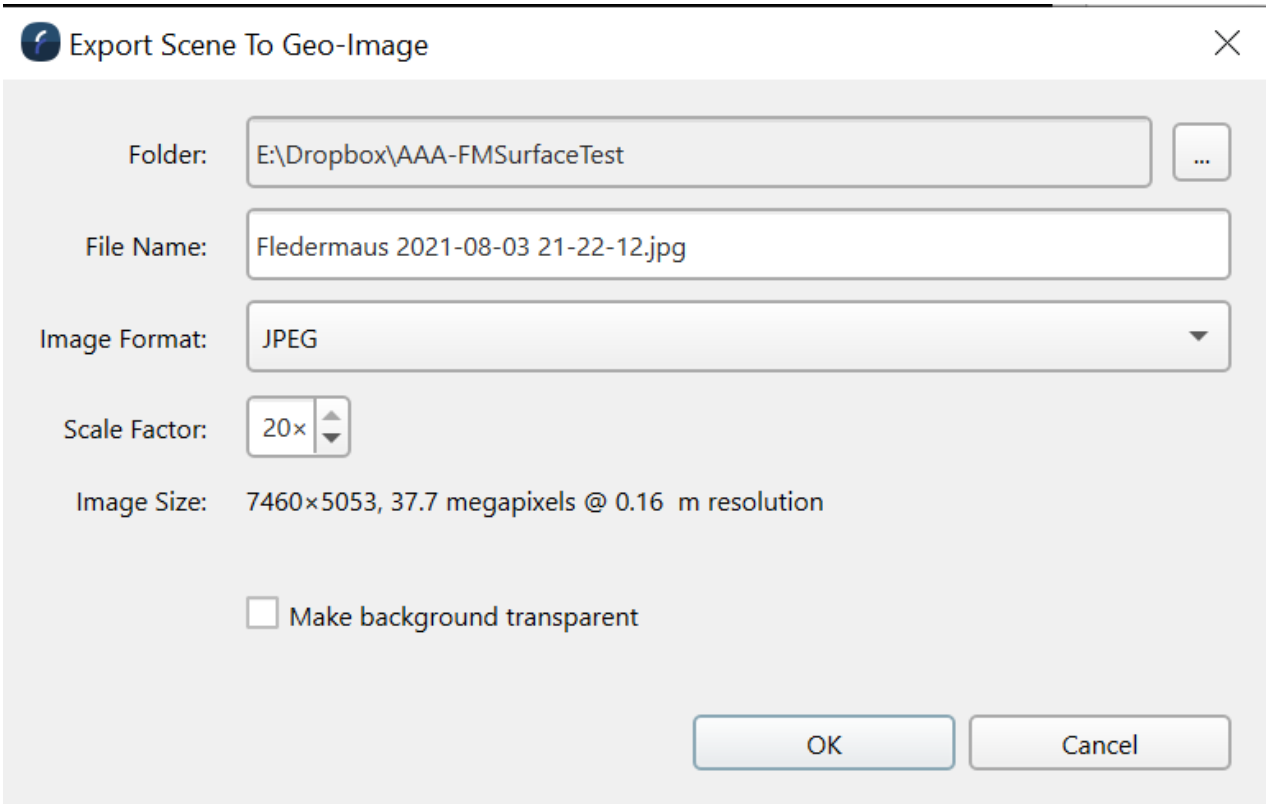
Given the resulting rendered resolution generally differs from the exact cell size of the surface don't expect perfect pixel alignment with the exact pixel export. It will be within the size of the pixel resolution but unless you have a perfect match or integer multiple it won't be exact. However the resulting imagery will be where it is supposed to be

Differences based on rendering method

It is important to consider how we render surfaces for display in a 3D scene because the display engine makes some compromises for efficient high speed rendering. Also 3D rendering has some additional conditions that do not to be considered in more typical 2D GIS systems. In particular we make a compromise in how we handle data holes (data

holidays/missing cells). It is this handling of missing data which often causes some confusion related to positioning when looking at visualized data. For a complete grid (no holes and a valid value for every cell) you will not see any apparent data shifts. The system renders shaded surfaces by joining cell centers together to create a rendered patch and the system will guarantee that if the lower left corner cell center has a value then the patch starting from that corner will be drawn. However, if the lower left cell centre is a data holiday then the corresponding patch will not be drawn. Thus the rendering of “holes” presents a challenge here because while a hole corresponds to the area of the empty bin the rendered hole is actually drawn from that cell centre to the next one to the upper right. This means that the hole will be visually shifted by half a cell although it will have the correct size (one cell area). While the small shift isn’t ideal it was considered the best compromise of various options considered. The advantage is that it allows the system to maintain maximize rendering efficiency, keeps the hole proper size, and makes sure that any point of the surface that has data will always be shown even if a single cell is surrounded by data holidays which is absolutely critical. This minor shift of the rendered hole position can be confusing if you are very carefully inspecting geo position at the hole's location.

The ability to render into a top down image is quite a useful feature and in particular it is used when rendering a scene to an image. If you have a complex scene with multiple surfaces, points, lines, or any other data you can always create a final properly geo-referenced image of all data together via the File > Export Scene To Image... option. The dialog box presented is similar to the surface to image export although the result is always a rendered product.



Currently the main limitation with the render to image process is it is limited to a maximum output resolution of 8192 x 8192 pixels although hopefully that limit will go away in a future release.

Surface Statistics Algorithm

Surface Statistics Algorithm Update – 8.3.3

The surface statistics algorithm has been updated to reduce edge affects when calculating the surface coverage. In previous versions of FM8 and in FM7, the algorithm was using surrounding grid cells to calculate the sloping area between cells. This method has its draw backs one being that cells on the edge were not being included in the calculation because their neighbors don't have any data. To eliminate these edge affects and include all of the valid cells the algorithm has been updated to explicitly count cells. For the surface area calculation if a cell has valid data its cell area is added to the total surface area. For volume calculations this cell area is multiplied by the depth attributed to that cell and added to the total volume.

Surface Statistics and Re-projection

When comparing statistics calculated from the same surface in two different coordinate systems, the values will likely not be the same. The re-projection process takes the bounds of the input surface projects them to the output coordinate system, then "back projects" the location of each cell centre in the resulting surface to the input surface and then uses this location to query the z-value from the original surface and write it to the new location in the re-projected surface. In doing this it is very likely that the surface coverage will change and therefore the surface statistics will also change.

Surface Statistics and Surface Difference

As of version 8.4.0 there have been updates to the surface difference operation to increase the number of options a user has for selecting what data they would like to include in the surface difference result.

Previously (before 8.4.0), the data selection options were:

- only data above (delta z < 0)
- only data below (delta z > 0)
- all data

Additional options available in 8.4.0 and newer:

- data above and at (delta z <= 0)
- data below and at (delta z >= 0)

When comparing statistics computed on a surface difference result, we can expect that the surface area and volume values calculated with the "only data above" option selected and the values calculated with the "data below and at" option selected would add up to equal the values calculated when the "all data" option is selected.

IE: only data above (delta z < 0) **area** + data below and at (delta z >= 0) **area** = all data **area**

IE: only data above (delta z < 0) **volume** + data below and at (delta z >= 0) **volume**= all data **volume**

IE: only data below (delta z > 0) **area** + data above and at (delta z <= 0) area = all data **area**

IE: only data below (delta z > 0) **volume** + data above and at (delta z <= 0) **volume**= all data **volume**

Understanding Surfaces in Fledermaus 8

In FM7 a surface consisted of 2 components, a grid of height values and a grid of color values which were encoded and stored as 16-bit precision numbers. Generally, surfaces had one color value for each height value but we also support the possibility of more (or less) colors per height value – for example when draping a high-resolution image on a surface for example. Colors are stored as 32-bit RGBA values. Thus, for a one height to one color pixel surface the total storage requirement for the surface is 6 bytes per cell times the width times the height.

Benefits:

- Fairly compact storage of surface data.
- Fast and simple to load and save.
- Color pixels can be stored at a different resolution than the height data (for texture mapped draped imagery as an example).

Limitations:

- Limited precision of the height data.
- Once a surface was created its size was fixed. (ie. Growing or shrinking its bounds meant creating a new surface)
- Not ideal for streaming directly from disk especially as the grid sizes increase.
- Maximum size of the surface limited to 65535 x 65535 cells.

Fledermaus 8 has a considerably more complex structure for representing a grid that has many advantages but also some different limitations. FM8 utilizes QPS's grid5 technology for the basic grid storage. A key difference from FM7 is that the grid format is highly extensible meaning it can grow and shrink in size and is designed to support direct streaming from disk for extremely large surfaces. As such it has built in level of detail storage to support these operations. Furthermore, the actual storage structure of each cell is configurable and we support a number of predefined storage profiles (collections of data we store). Compared to Fledermaus 7 we often store quite a bit more information per cell which means a similar surface in FM8 is likely considerably larger depending on the storage profile used. Grid5 based surfaces also support arbitrary layers where each layer can have its own storage profile although all layers must share the same core cell size. In addition, FM8 surfaces support a special texture layer which is composed of RGBA cells and can have a different resolution then the main grid's resolution.

Benefits:

The surface is extensible in numerous ways

- It can grow and/or shrink in area
- New surface layers can be added or existing ones removed
- Each layer can have a different configuration.
- A texture map image layer can be associated with the surface with a separate resolution
- The surface is constructed in a manner depending on the cell profile that it can work as a survey surface with new point files being added to update the surface over time.
- The surface is optimized for streaming and has multiple levels of detail.
- The surface can support extremely large coverage – at least 200k x 200k cells.
- The surface stores heights as high precision doubles (or in a manner high precision doubles can be computed).

Limitations:

- Compared to an FM7 surface even the most basic configuration stores more data per cell. At a minimum it stores a height (8 byte double), a set of flags (2 bytes), and a lighting component (4 bytes) so 14 bytes per cell compared to 6 bytes for a FM7 surface. More sophisticated profiles go up to 64 bytes per cell.
- The extensible nature of the surface adds additional I/O complexity makes the surface slower to read and write then the FM7 surfaces.
- The full suite of level of detail surfaces effectively doubles the size of the surface compared to not storing any LOD variants.

Basically, this means that compared to version 7, most FM 8 surfaces are considerably larger on disk to give the flexibility and streaming benefits.

Fledermaus 8 Surface Grid Profiles

Configuration Name	Contents/Cell	On Disk Size	Suitable For
Minimum	Flags, sigmax, lighting	2 + 8 + 4 = 14 bytes	Static Grid
Simple	Flags, sigmax, lighting, count	14 + 4 = 18 bytes	Static Grid + Density
Standard	Flags, sigmax, sigmax2, lighting, count	18 + 8 = 26 bytes	Static Grid, Acquisition

Extended	Flags, sigmax, sigmax2, lighting, count, min, max, gridxmin/ max, gridymin/max	26 + 4 + 4 + 4*1 = 38 bytes	Static Grid, Acquisition
Complete	Flags, sigmax, sigmax2, lighting, count, min, max, gridxmin/ max, gridymin/max, time, quality	38 + 8 + 1 = 47 bytes	Static Grid, Acquisition, Dynamic Surface 1.0, ENC Production
Dynamic_core	Flags, reject, sigmax, sigmax2, lighting, count, min, max, gridmin-max	38 + 4 = 42 bytes	Static Grid, Acquisition, Dynamic Surface 2.0
Dynamic_cube	Dynamic_core + numhypo, selected Hypo, hypoCount, hypoStrength, cubeDepth, hypoUncertainty	42 + 4 + 2 + 4 + 4 + 4 + 4 = 64 bytes	Static Grid, Acquisition, Dynamic Surface 2.0 with Cube
Imagery_rgba	Flags, RGBA color pixel	2 + 4 = 6 bytes	Color Imagery (RGBA)

The most basic “Minimum” configuration contains three elements.

1. A set of up to 16 flags – These flags are associated with a surface cell to provide items like cell validity, is it interpolated, and various other characterization flags.

1. A z value stored directly as double precision floating point number.

1. A lighting value (Either a normal or soft shadow algorithm parameters)

Most of the other profiles are built on the basic one and add additional capability at the cost of increasing file size. Instead of storing the surface z values directly the Simple configuration store a sum of all the samples added to the cell and a count. The actual z value can be computed when needed. The standard configuration adds a sum squared value allows the computation of standard deviation. The dynamic core and dynamic cube configurations are what are used for the dynamic surface storage from Qinsy and Qimera and store additional information to help process survey grids. The Imagery_rgba configuration is used to store color imagery data.

How are version 7 surfaces handled

Other than internal structure differences, the largest difference between version 7 and 8 is that in version 8 we do not directly store the resulting color of the surface to be displayed rather we store shading information that allows us to determine the final color as the surface is streamed to the display. When a version 7 .sd file is loaded it is upgraded to a version 8 .surface file. Internally it is re-shaded based on information in the version 7 file. However, this mean't that the resulting colors may not exactly match the original version 7 file colors. Thus, to make sure older surfaces do not visually change when simply loaded into FM8, the original colors are added as an additional texture (imagery) layer to the surface and the default options are set to show the textured colors. While this preserves the exact look and feel of a surface going from version 7 to 8 it does add extra storage and it is important to remember you are looking at the texture. If you are looking at a surfaces texture and you do operations like changing of a color map or color map range and expect to see the look of the surface change you will not until you turn off the texture. When you select a surface, the *Drapped Imagery* drop down menu controls the display of any color imagery attached to the surface. It always defaults to *Visible*, meaning that the texture should be shown by default if a texture is present in the file. If you change it to Hidden then you will see the surface shaded based on the selected color map and shading options. The *Visible with Shading* option shows the texture but additionally applies the shading to the surface to illumination the texture based on the shading options set.

If you change shading options, color maps, color map ranges, etc. And don't seem to see a visible change then very likely you have the *Draped Imagery* option set to *Visible* and the surface has attached imagery. The downside of the having an attached image is that makes the file that much larger adding 6 bytes per pixel for the storage. When upgrading fm7 surfaces we always create a texture layer to make it look identical by default. However, if this is not required you can remove the texture by right clicking and selecting the <currently non-existant option to be there for v8.4.0>. This will make the resulting surface smaller and faster to render because there is less work to do.

Creating Surfaces in FM8

Compared to FM7 there are more options when making a new surface in FM8.
The *Gridding Type* dropdown menu controls the type of surface and algorithm used to make it.

If you want to create a surface that matches FM7 use the *Weighted Moving Average (height only)* option. This produces a surface with the minimum profile using the FM7 WMA algorithm.

The *Height Only* option also produces a minimum profile surface but averages only the points that fall within each cell. The *Height and Bin Statistics* produces a large surface with

the Dynamic_Core profile so you get shallow, average, and deep surfaces along with counts, and std. Deviation.

Installation Guide

Introduction

This page contains brief notes for installation requirements or instructions for the supported platforms, Windows, Mac and Linux.

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Windows

This page applies equally to Fledermaus 8 and Qimera 2. The install location is "\Program Files\QPS\Fledermaus8\<version>" by default for Fm8 and "\Program Files\QPS\Qimera\" for Qimera.

Macintosh

This page applies equally to Fledermaus 8 and Qimera 2. The install location is "/Applications/QPS/FM8.app/" for Fm8 and "/Applications/QPS/Qimera.app" for Qimera.

Linux

Note that neither Fledermaus 8 nor Qimera support Wayland, X.org is required. Specific distros may have additional requirements, outlined in the following for each distro. Other distros than those listed may work if equivalent packages that contain the necessary libraries are available.

It is assumed that a normal or standard desktop installation is used. Installation from minimal installation is not covered or supported.

Start Fledermaus from the command line to see errors. There is usually a lot of output, most of which is not error messages. In the event of an error, a short message will result. Check the section, Examples of Error Messages, for the relevant distro that you are using for an illustration of the error and the package to install.

Be sure that your system is up to date and that it has the latest packages available. If an error occurs when installing packages stating "Package cannot be found" or similar, update your system.

Select your system from the list:

- RedHat Enterprise Linux 7
- RedHat Enterprise Linux 8
- Ubuntu 18.04 LTS
- Ubuntu 20.04 LTS

- Ubuntu 22.04 LTS

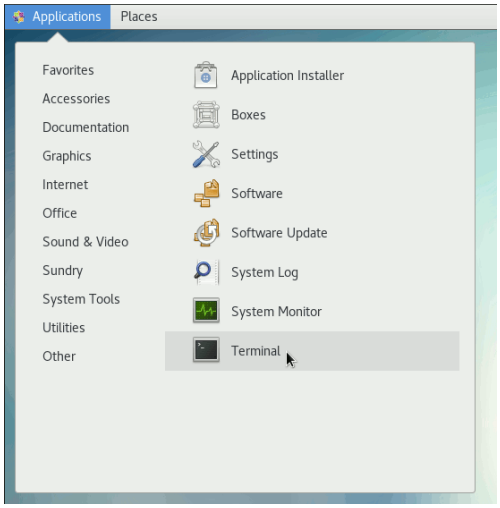
RedHat Enterprise Linux 7

Summary

Also, CentOS 7. On a clean system, two libraries must be installed to enable QPS applications to run

- May require the mesa-libGLU package.
- May require the libglvnd-opengl package.

If Fledermaus does not start, open a Terminal and run Fledermaus from the command line. To open a terminal (click Applications, then mouse over System Tools and finally click on Terminal). See the following illustration:

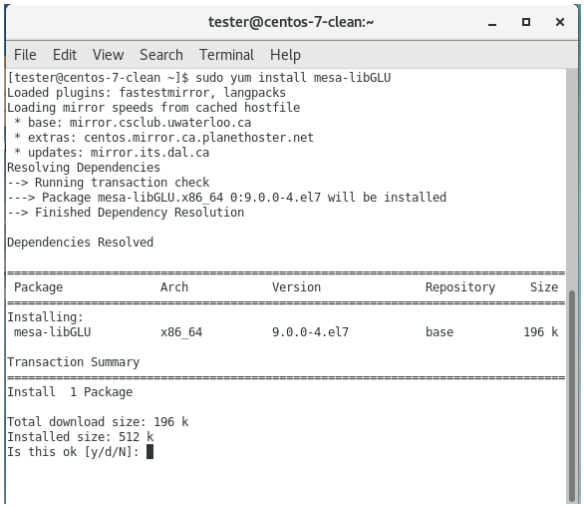


Installing Required Libraries

Install the mesa-libGLU library as follows, using the yum command. The command is:

```
sudo yum install mesa-libGLU
```

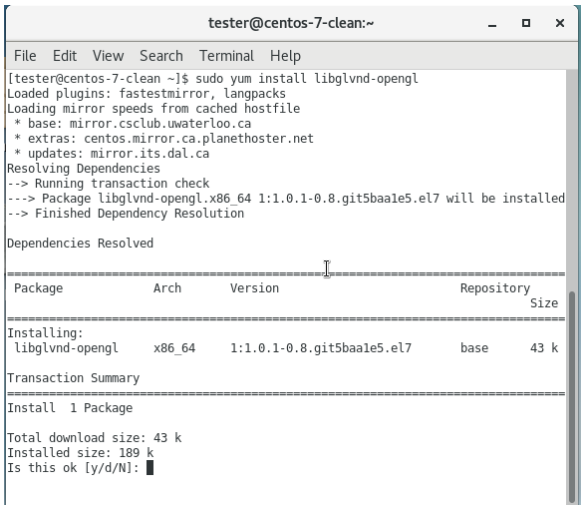
Respond with "y" to install the package and press Enter.



Also install the libglvnd-opengl package if required. The command is:

sudo yum install libglvnd-opengl

Respond with "y" to install the package and press Enter.



Examples of Error Messages

Start Fledermaus from the command line to see errors. There is usually a lot of output, most of which is not error messages. In the event of an error, a short message will result.

An example showing the error for a missing OpenGL library:

```
[tester@centos-7-clean bin]$ ./fm8
./fm8: error while loading shared libraries: libOpenGL.so.0: cannot open shared obje
ct file: No such file or directory
[tester@centos-7-clean bin]$
```

An example showing the error for missing mesa-libGLU:

```
[tester@centos-7-clean bin]$ ./fm8
./fm8: error while loading shared libraries: libGLU.so.1: cannot open shared object
file: No such file or directory
[tester@centos-7-clean bin]$
```

Update System

To ensure that your system is up-to-date, in particular if an error occurs when installing packages stating that the package is not available, update your system. In RHEL7 or CentOS7, open a terminal, thenrun the following command, then type "y" and press Enter:

```
sudo yum update
```

Back to RHEL7

Back to Introduction

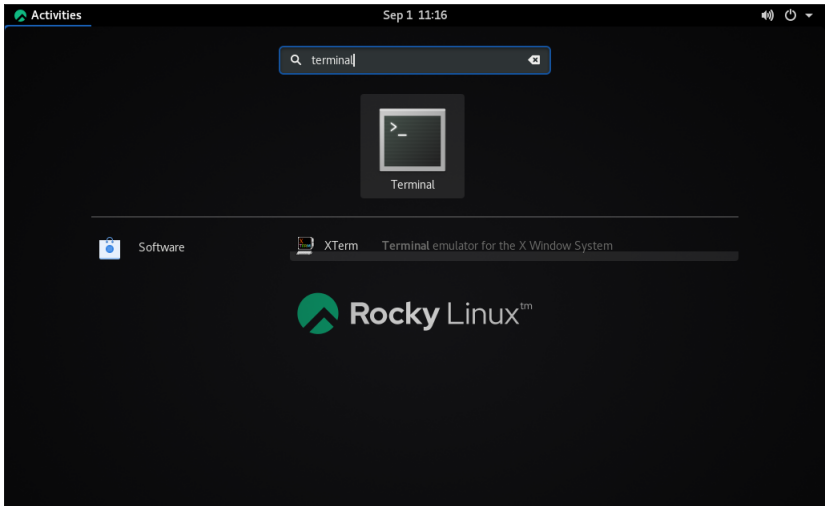
RedHat Enterprise Linux 8

Summary

Also, Rocky Linux 8. Note that RHEL8 support requires X.org to run QPS applications. The following libraries may have to be installed to run the applications:

- May require the `mesa-libGLU` package.
- May require the following three packages (app will fail to start with an error about `xcb):`
  - `xcb-util-image xcb-util-keysyms xcb-util-renderutil`
- May also require the following package, if required: `xcb-util-wm`

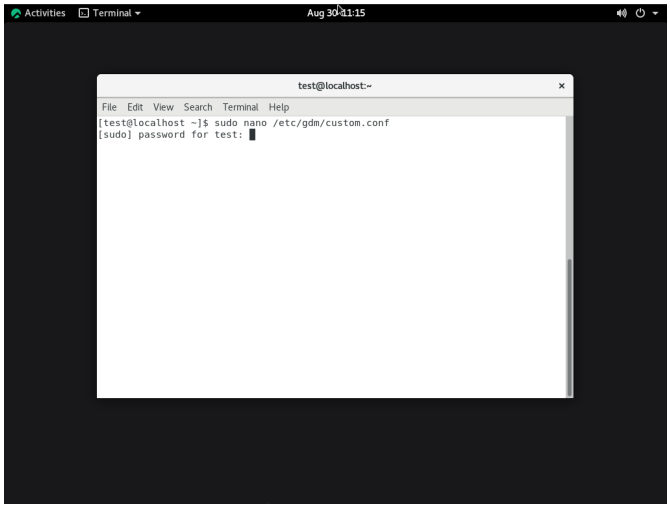
If Fledermaus does not start, open a Terminal and run Fledermaus from the command line. To open a terminal (click Activities, then type `terminal`, finally click the terminal icon or press Enter). See the following illustration:



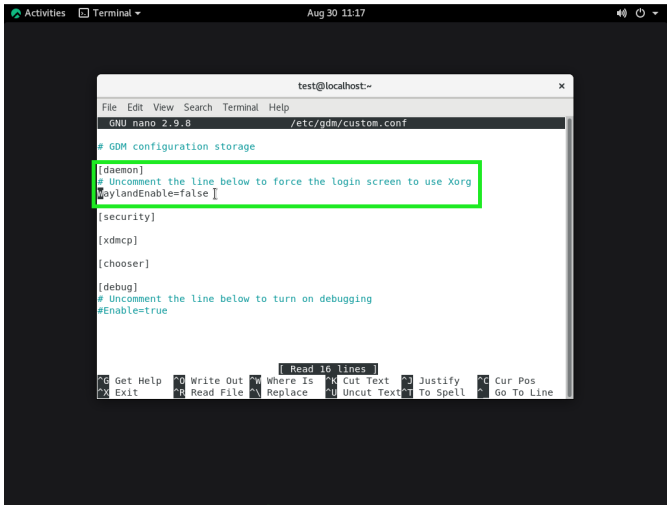
Enabling X.org

Requires `X.org`, currently does not work with `Wayland` (app will fail to start with an error about `wayland`).

To enable X.org, edit the file, /etc/gdm/custom.conf:



Then uncomment or add the line, WaylandEnable=false, as seen here:



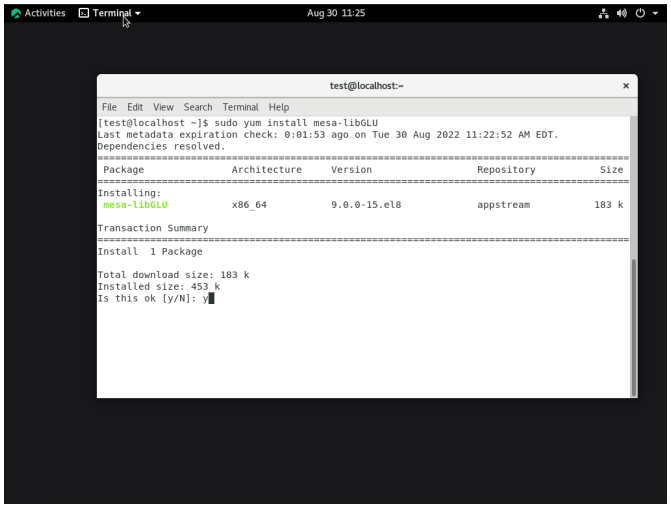
Save the file, then reboot the machine. The machine should now use X.org.

Installing Required Libraries

Install the mesa-libGLU library as follows, using the yum command. The command is:

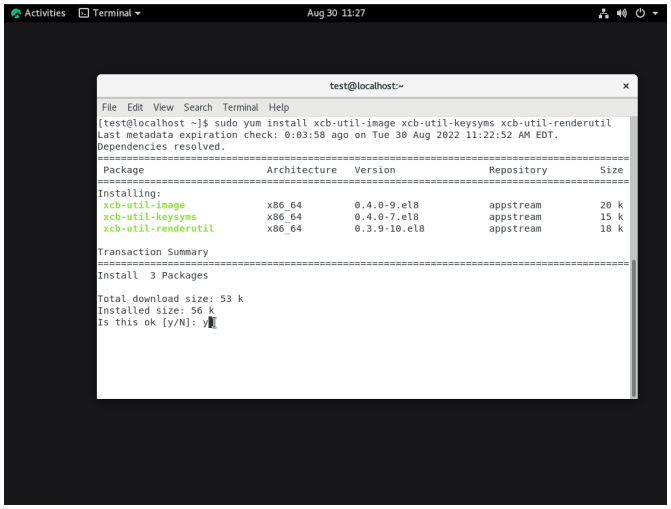
```
yum install mesa-libGLU
```

Respond with "y" to install the package and press Enter.

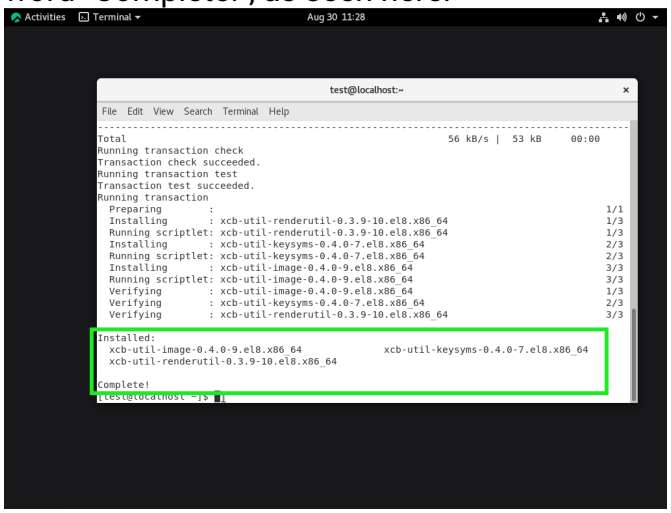


Similarly, install the xcb packages as follows, pressing "y" then Enter to install the packages. The command is:

```
yum install xcb-util-image xcb-util-keysyms xcb-util-renderutil
```



Successful installation of packages finishes with a list of the installed packages and the word "Complete!", as seen here:



If Fledermaus still does not start (in particular on RedHat CentOS8), try installing `xcb-util-wm:`

```
yum install xcb-util-wm
```

Examples of Error Messages

Start Fledermaus from the command line to see errors. There is usually a lot of output, most of which is not error messages. In the event of an error, a short message will result. An example showing the error for missing mesa-libGLU:

```
[test@localhost bin]$ ./fm8
./fm8: error while loading shared libraries: libGLU.so.1: cannot open shared object file: N
o such file or directory
[test@localhost bin]$
```

An example showing an error message with xcb:

```
[test@localhost bin]$ ./fm8
qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it was found.
This application failed to start because no Qt platform plugin could be initialized. Reinst
alling the application may fix this problem.

Available platform plugins are: xcb.

Aborted (core dumped)
[test@localhost bin]$
```

Update System

To ensure that your system is up-to-date, in particular if an error occurs when installing packages stating that the package is not available, update your system. In RHEL8 or Rocky Linux 8, run the following command, then type "y" and press Enter:

```
sudo yum update
```

```
[test@localhost ~]$ sudo yum update
Rocky Linux 8 - AppStream                       9.0 kB/s | 4.8 kB     00:00
Rocky Linux 8 - BaseOS                          7.7 kB/s | 4.3 kB     00:00
Rocky Linux 8 - Extras                          5.5 kB/s | 3.5 kB     00:00
Dependencies resolved.
================================================================================
 Package                Architecture Version               Repository    Size
================================================================================
Upgrading:
 systemd                x86_64       239-58.el8_6.4        baseos       3.6 M
 systemd-container      x86_64       239-58.el8_6.4        baseos       757 k
 systemd-libs           x86_64       239-58.el8_6.4        baseos       1.1 M
 systemd-pam            x86_64       239-58.el8_6.4        baseos       483 k
 systemd-udev           x86_64       239-58.el8_6.4        baseos       1.6 M

Transaction Summary
================================================================================
Upgrade  5 Packages

Total download size: 7.5 M
Is this ok [y/N]: y
```

Back to RHEL8

Back to Introduction

Ubuntu 18.04 LTS

Summary

The following libraries may have to be installed to run the applications:

- May require the package `libopengl0.`
- May require Ubuntu packages `libxcb-xinerama0` and `libxcb-xinput0` (app will fail to start with an error about `xcb`) `.`

If Fledermaus does not start, open a Terminal and run Fledermaus from the command line. To open a terminal (click Activities, then type `terminal`, finally click the terminal icon or press Enter). See the following illustration:

Installing Required Libraries

It is assumed that a standard desktop installation of Ubuntu 18.04 is being used. There may still be a few libraries to install to enable Fledermaus 8 to run. The libraries required are listed above, the following is a step-by-step guide illustrating to those not familiar with installing packages from the command line on Ubuntu on how to install the requisite packages. See the Summary for the list of possible addtional packages required.

First, open a terminal (click Activities, then type `terminal`, then click the terminal icon or press Enter). Install the libopengl0 package as follows. The command is:

```
sudo apt install libopengl0
```

```
tester@ubuntu-1804-clean:bin$ sudo apt install libopengl0
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  libopengl0
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 31.3 kB of archives.
After this operation, 237 kB of additional disk space will be used.
Get:1 http://ca.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libopengl0 a
md64 1.0.0-2ubuntu2.3 [31.3 kB]
Fetched 31.3 kB in 0s (233 kB/s)
Selecting previously unselected package libopengl0:amd64.
(Reading database ... 164852 files and directories currently installed.)
Preparing to unpack .../libopengl0_1.0.0-2ubuntu2.3_amd64.deb ...
Unpacking libopengl0:amd64 (1.0.0-2ubuntu2.3) ...
Setting up libopengl0:amd64 (1.0.0-2ubuntu2.3) ...
Processing triggers for libc-bin (2.27-3ubuntu1.6) ...
tester@ubuntu-1804-clean:bin$
```

If an error concerning xcb occurs, install the xcb packages as follows, using the following command:

```
sudo apt install libxcb-xinerama0 libxcb-xinput0
```

```
tester@ubuntu-1804-clean:bin$ sudo apt install libxcb-xinerama0 libxcb-xinput0
[sudo] password for tester:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  libxcb-xinerama0 libxcb-xinput0
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 34.6 kB of archives.
After this operation, 188 kB of additional disk space will be used.
Get:1 http://ca.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libxcb-xiner
ama0 amd64 1.13-2~ubuntu18.04 [5,264 B]
Get:2 http://ca.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libxcb-xinpu
t0 amd64 1.13-2~ubuntu18.04 [29.3 kB]
Fetched 34.6 kB in 0s (230 kB/s)
Selecting previously unselected package libxcb-xinerama0:amd64.
(Reading database ... 164859 files and directories currently installed.)
Preparing to unpack .../libxcb-xinerama0_1.13-2~ubuntu18.04_amd64.deb ...
Unpacking libxcb-xinerama0:amd64 (1.13-2~ubuntu18.04) ...
Selecting previously unselected package libxcb-xinput0:amd64.
Preparing to unpack .../libxcb-xinput0_1.13-2~ubuntu18.04_amd64.deb ...
Unpacking libxcb-xinput0:amd64 (1.13-2~ubuntu18.04) ...
Setting up libxcb-xinerama0:amd64 (1.13-2~ubuntu18.04) ...
Setting up libxcb-xinput0:amd64 (1.13-2~ubuntu18.04) ...
Processing triggers for libc-bin (2.27-3ubuntu1.6) ...
tester@ubuntu-1804-clean:bin$
```

Examples of Error Messages

In the event that the libopengl0 package is required, the following error occurs:

```
tester@ubuntu-1804-clean:bin$ ./fm8
./fm8: error while loading shared libraries: libOpenGL.so.0: cannot open shared
object file: No such file or directory
tester@ubuntu-1804-clean:bin$
```

This error occurs when the xcb libraries need to be installed. Note the mention of the platform plugin xcb.

```
tester@ubuntu-1804-clean:bin$ ./fm8
qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it
was found.
This application failed to start because no Qt platform plugin could be initiali
zed. Reinstalling the application may fix this problem.

Available platform plugins are: xcb.

Aborted (core dumped)
tester@ubuntu-1804-clean:bin$
```

System Update

To ensure that your system is up-to-date, in particular if an error occurs when installing packages stating that the package is not available, update your system. In Ubuntu, open a terminal, then run the following sequence of commands, responding with "y" to the prompts:

```
sudo apt update
sudo apt upgrade -d
sudo apt upgrade
```

Back to Ubuntu 18.04

Back to Introduction

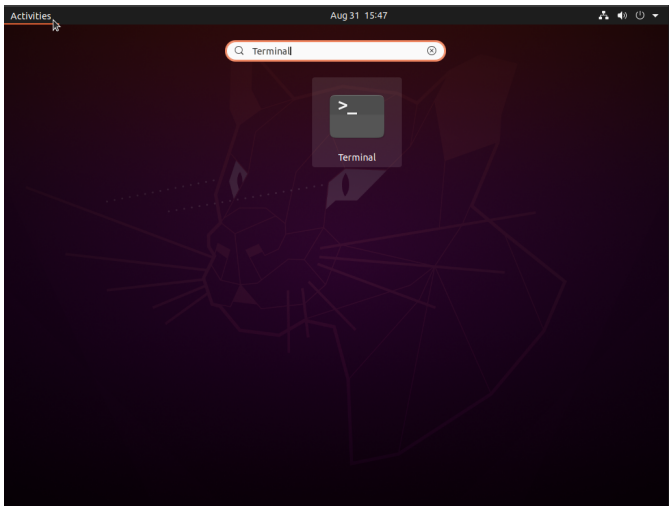
Ubuntu 20.04 LTS

Summary

A normal or standard install of Ubuntu 20.04 may require the following libraries to be installed:

- May require Ubuntu packages `libxcb-xinerama0` and `libxcb-xinput0` (app will fail to start with an error about `xcb`).
- May require the Ubuntu package `libjpeg62`

If Fledermaus does not start, open a Terminal and run Fledermaus from the command line. To open a terminal (click Activities, then type `terminal`, then click the terminal icon or press Enter). See the following illustration:



Installing Required Libraries

It is assumed that a standard desktop installation of Ubuntu 20.04 is being used. There may still be a few libraries to install to enable Fledermaus 8 to run. The libraries required are listed above, the following is a step-by-step guide illustrating to those not familiar with

installing packages from the command line on Ubuntu on how to install the requisite packages. See the Summary for the list of possible addtional packages required.

If an error concerning xcb occurs, install the xcb packages as follows, using the following command:

```
sudo apt install libxcb-xinerama0 libxcb-xinput0
```

```
tester@ubuntu-20:bin$ sudo apt install libxcb-xinerama0 libxcb-xinput0
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  libxcb-xinerama0 libxcb-xinput0
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 34.6 kB of archives.
After this operation, 201 kB of additional disk space will be used.
Get:1 http://ca.archive.ubuntu.com/ubuntu focal/main amd64 libxcb-xinerama0 amd6
4 1.14-2 [5,260 B]
Get:2 http://ca.archive.ubuntu.com/ubuntu focal/main amd64 libxcb-xinput0 amd64
1.14-2 [29.3 kB]
Fetched 34.6 kB in 0s (140 kB/s)
Selecting previously unselected package libxcb-xinerama0:amd64.
(Reading database ... 180267 files and directories currently installed.)
Preparing to unpack .../libxcb-xinerama0_1.14-2_amd64.deb ...
Unpacking libxcb-xinerama0:amd64 (1.14-2) ...
Selecting previously unselected package libxcb-xinput0:amd64.
Preparing to unpack .../libxcb-xinput0_1.14-2_amd64.deb ...
Unpacking libxcb-xinput0:amd64 (1.14-2) ...
Setting up libxcb-xinput0:amd64 (1.14-2) ...
Setting up libxcb-xinerama0:amd64 (1.14-2) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
tester@ubuntu-20:bin$
```

The command for `libjpeg62`, required for processing meshes:

```
sudo apt install libjpeg62
```

Examples of Error Messages

This error occurs when the xcb libraries need to be installed. Note the mention of the platform plugin xcb.

```
tester@ubuntu-20:bin$ ./fm8
qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it
was found.
This application failed to start because no Qt platform plugin could be initiali
zed. Reinstalling the application may fix this problem.

Available platform plugins are: xcb.

Aborted (core dumped)
tester@ubuntu-20:bin$
```

System Update

To ensure that your system is up-to-date, in particular if an error occurs when installing packages stating that the package is not available, update your system. In Ubuntu, open a terminal, then run the following sequence of commands, responding with "y" to the prompts:

```
sudo apt update
sudo apt upgrade -d
sudo apt upgrade
```

Back to Ubuntu 20.04

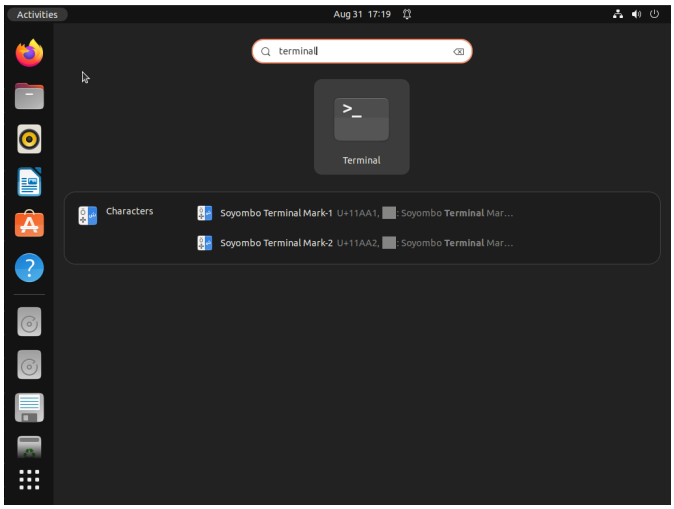
Back to Introduction

Ubuntu 22.04 LTS

As of Ubuntu 22.04.1 with the following as required:

- May require Ubuntu packages `libxcb-xinerama0` and `libxcb-xinput0` (app will fail to start with an error about `xcb`).
- May require the Ubuntu package `libjpeg62`
- Requires `X.org`, currently does not work with `Wayland` (app will fail to start with an error about wayland).

If Fledermaus does not start, open a Terminal and run Fledermaus from the command line. To open a terminal (click Activities, then type `terminal`, then click the terminal icon or press Enter). See the following illustration:



Enabling X.org

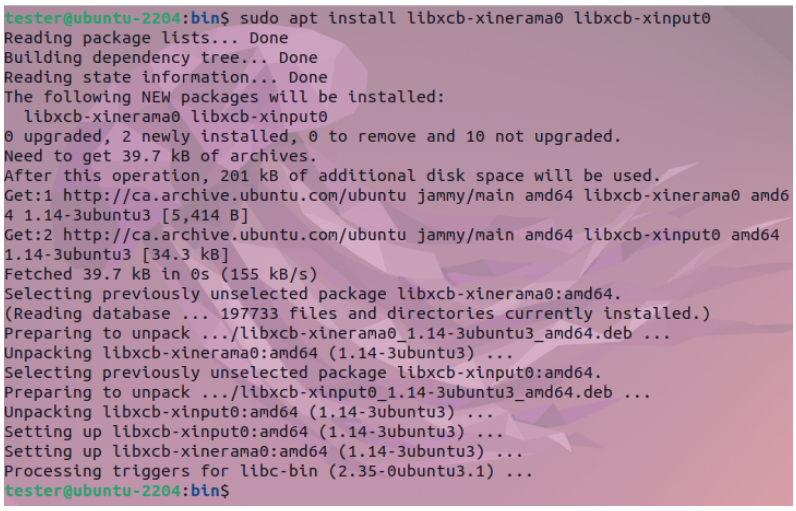
See the section for RHEL8: Enabling X.org

Installing Required Libraries

It is assumed that a standard desktop installation of Ubuntu 22.04 is being used. There may still be a few libraries to install to enable Fledermaus 8 to run. The libraries required are listed above, the following is a step-by-step guide illustrating to those not familiar with installing packages from the command line on Ubuntu on how to install the requisite packages. See the Summary for the list of possible addtional packages required.

If an error concerning xcb occurs, install the xcb packages as follows, using the following command:

```
sudo apt install libxcb-xinerama0 libxcb-xinput0
```

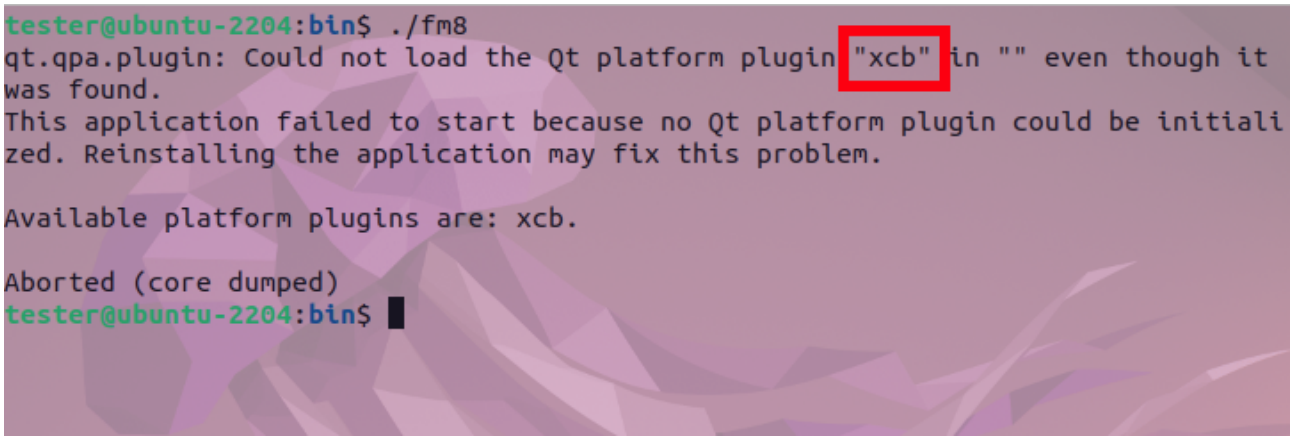


The command for `libjpeg62`, required for processing meshes:

```
sudo apt install libjpeg62
```

Examples of Error Messages

This error occurs when the xcb libraries need to be installed. Note the mention of the platform plugin xcb.



System Update

To ensure that your system is up-to-date, in particular if an error occurs when installing packages stating that the package is not available, update your system. In Ubuntu, open a terminal, then run the following sequence of commands, responding with "y" to the prompts:

```
sudo apt update
sudo apt upgrade -d
sudo apt upgrade
```

Back to Ubuntu 22.04

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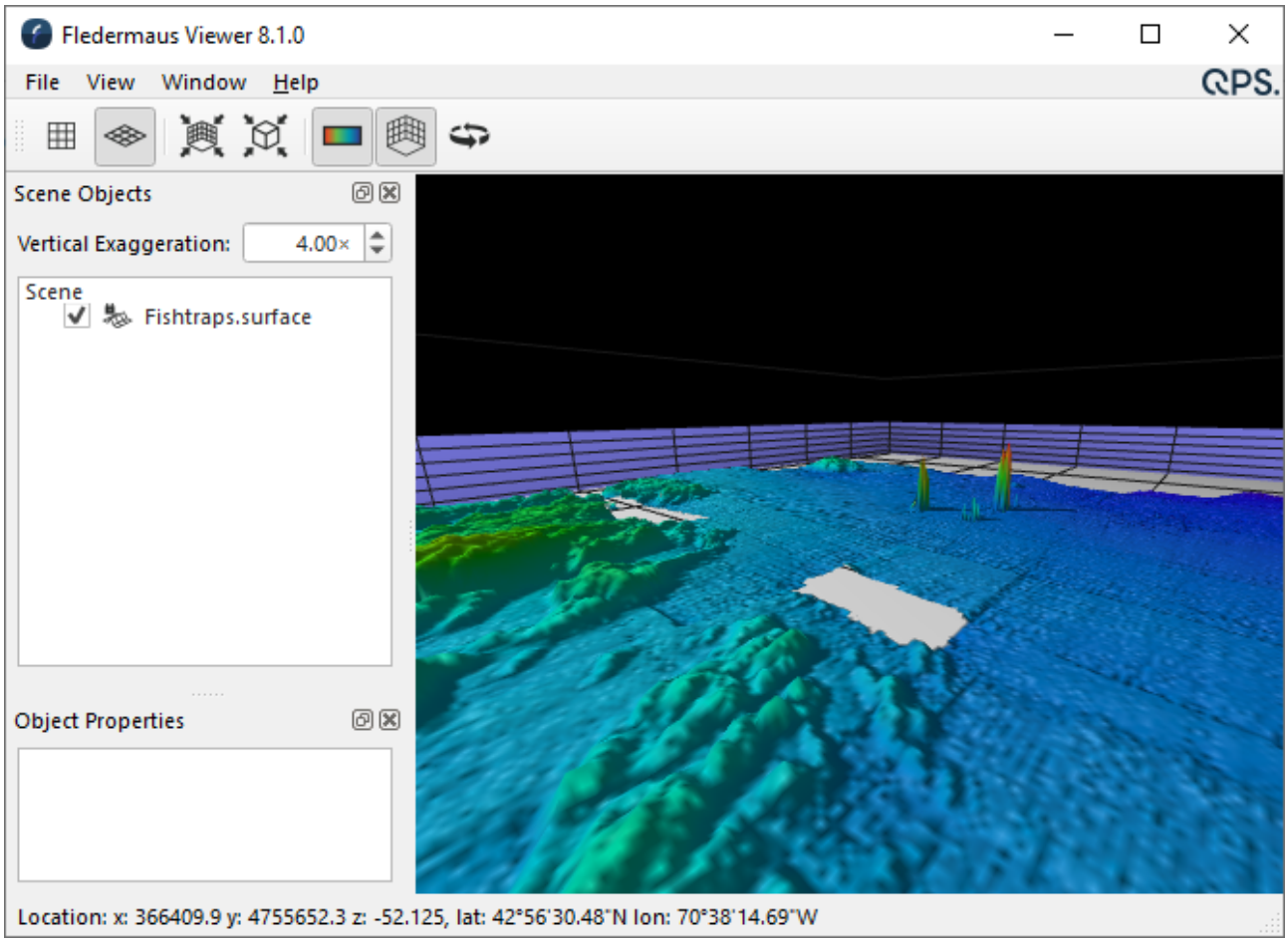
Fledermaus Viewer User Guide



What is Fledermaus Viewer?

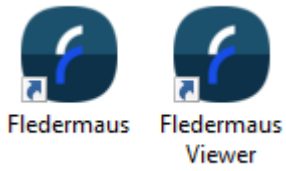
Fledermaus Viewer is a free utility for viewing Fledermaus object files and scenes. It provides a subset of the functionality of the full Fledermaus application, allowing the user to open scenes, load object files, explore in 4D, as well as play presentations.

Fledermaus Viewer is a powerful tool for sharing rich, interactive deliverables to your customers. Create a beautiful, informative scene showcasing your data in Fledermaus, then just share the project and the Fledermaus installer with you customers, allowing them to really explore and understand the data.

Fledermaus Viewer directly replaces the iView4D utility from the Fledermaus 7 software suite.

How does one get Fledermaus Viewer?

Fledermaus Viewer is included as part of every Fledermaus 8 installation and is launched via its own desktop shortcut.



No software activation or hardware dongle is required to run Fledermaus Viewer. It is completely free to use.

How does one use Fledermaus Viewer?

Fledermaus Viewer provides the exact same user interface as Fledermaus, just far less of it. Fledermaus Viewer excludes all the data import, export, processing, and analysis tools (with the exception of basic profiling and measuring tools) normally found in the full application. Everything else works the same.

For more details, consult the Fledermaus Reference Manual.

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