

Wadugs (*Wave Analyze Data for Underwater Geophysical Survey*) is a sophisticated software package designed for geophysicists, geologists and hydrographers to perform data QC, processing and interpretation from various sensor data that utilize in the field of hydrographic/geophysical within a single interactive platform. It is created to keep running smooth and stable, even for the project contains enormous datasets.

Application

- Geophysical site investigations
- Hydrographic surveys
- Pipeline or cable route surveys
- Search and rescue missions
- Unexploded ordnance (UXO) surveys
- Coastal and marine habitat mapping surveys
- Archaeology or salvaging surveys

Data Sensor Handling

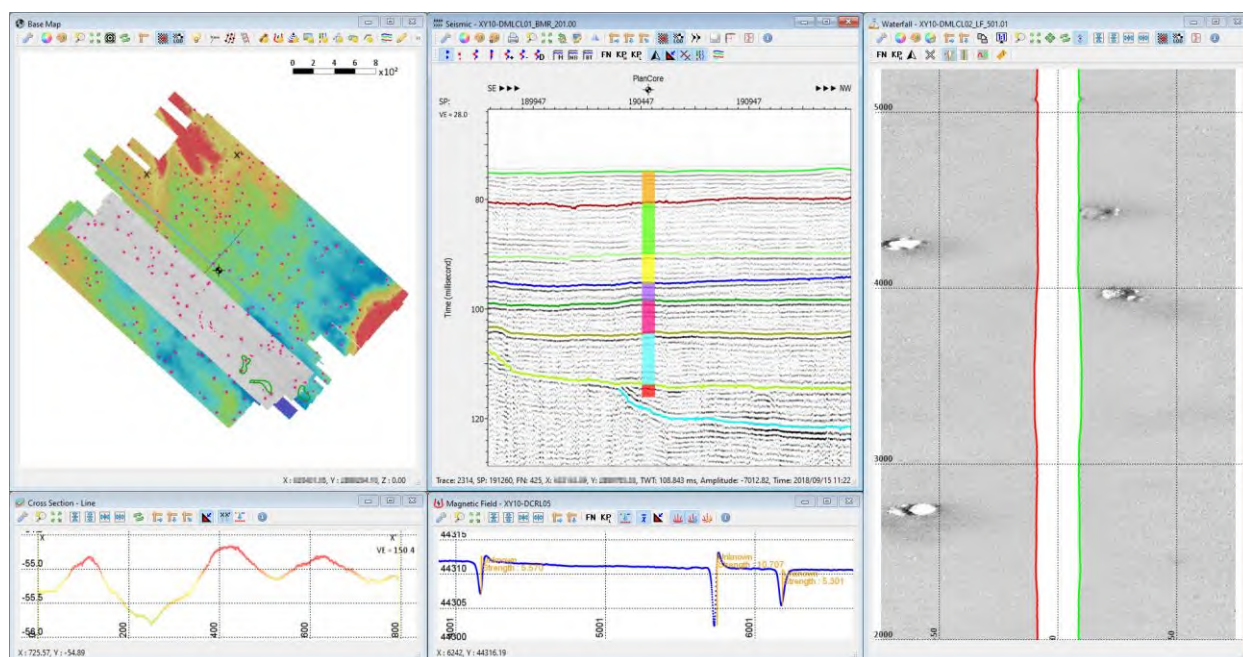
- Gridded raster (ASCII & GeoTIFF)
- Side scan sonar (XTF & JSF)
- Sub-bottom profiler / 2D Multi-channel Hi-Res Seismic Data (SGY & JSF)
- Magnetometer / Gradiometer (ASCII)
- Singlebeam Echo Sounder (ASCII)
- 3D Subsurface (EBOSS JSF)
- Geo Image (GeoTIFF)
- Vector (AutoCad DXF & SHP)

Interpretation Tools

- Mapping seabed features with interactive capabilities to create and edit point, polyline, polygon and textual information.
- Several sub-surface horizon picking mode (auto, semi-auto and manual)
- Creating isopach and seismic amplitude map
- Digitize magnetic anomaly
- Line route study with cross-section analysis for dredging monitoring
- 3D view analysis
- Sediment Classifications

Output

- Raster & sub-surface horizon ASCII
- Raster GeoTIFF
- Various type of seabed features reports (DOC & HTML)
- Seabed features, contour, coverage and magnetic anomaly vector (DXF & SHP)



Wadugs main interface showing various sensor modules. Base Map (top left), Seismic (top center), Cross Section (bottom left), Magnetic Field (bottom center) and Waterfall (right)

Wadugs Raster module provides several tools to do a completed analysis for depth and other (intensity, gradient, etc.) domain of data raster. Users would be able to show the line or area section analysis based on available raster data.

Input / Output

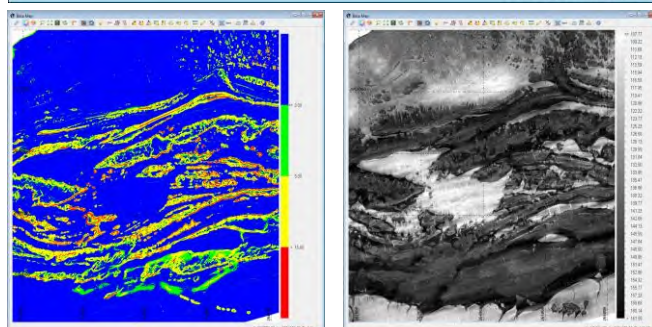
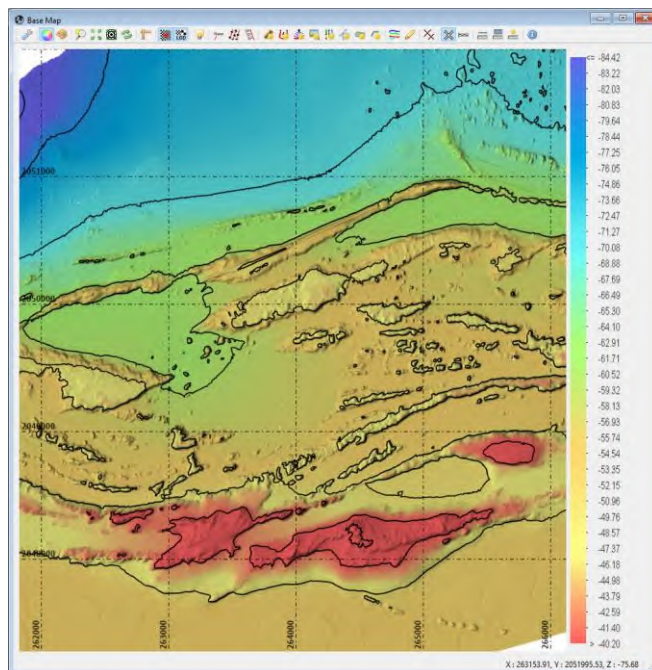
- ASCII
- GeoTIFF

Tools

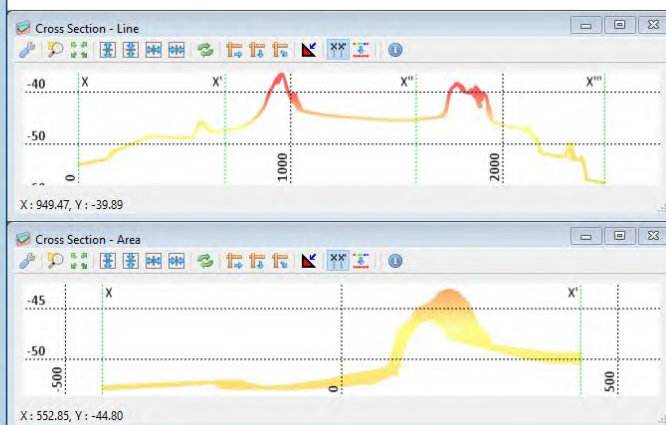
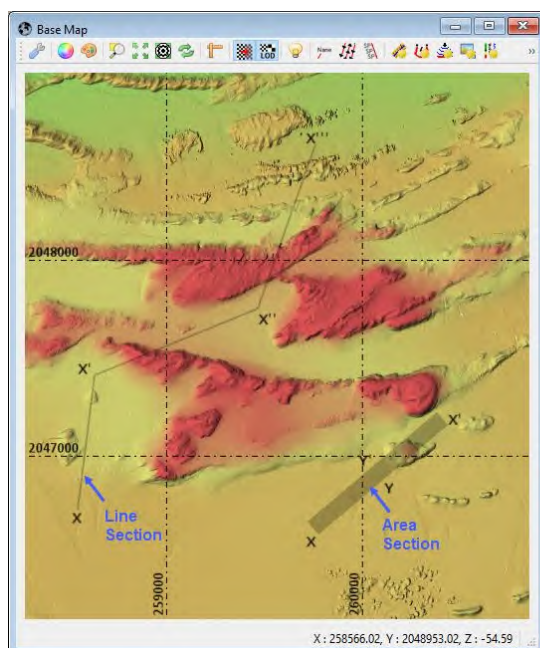
- Combines
- Clipped
- Calculate coverage map
- Show data statistic
- Rescale the resolution
- Sediment Classification

Depth Domain Tools

- Generate contour
- Calculate gradient
- Applying smoothing
- Seabed mound and depression auto mapping
- Applying math operation (add, subtract, multiply and divide)
- Changing light settings in the Base Map



Base Map showing depth with contour lines (top), gradient map (bottom left) and backscatter (bottom right) raster data



Base Map showing depth raster data (left) overlay with the line (top right) and area (bottom right) cross section analysis.

Fast, lite and robust within a single platform



<http://www.wadugs.com>

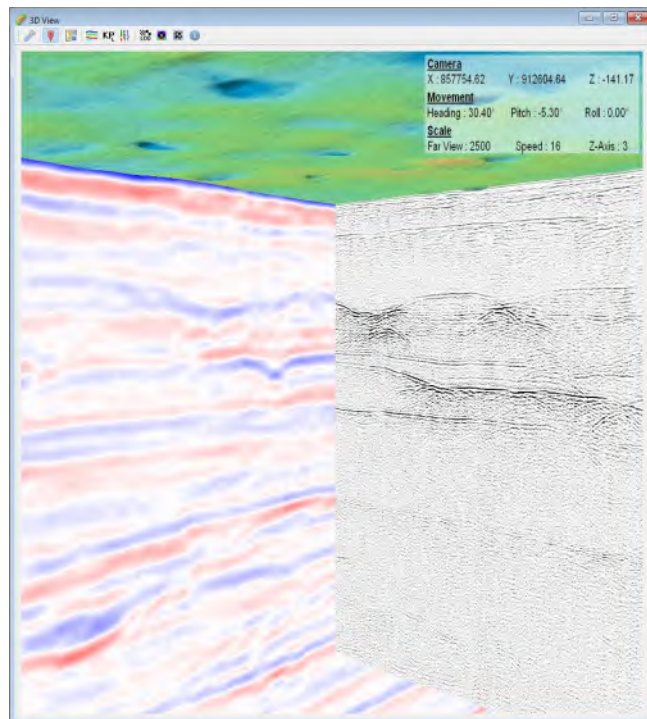


support@wadugs.com

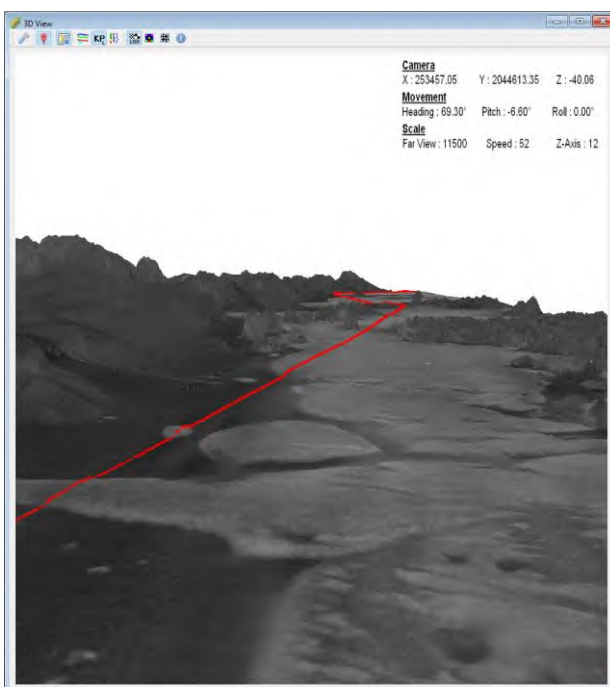
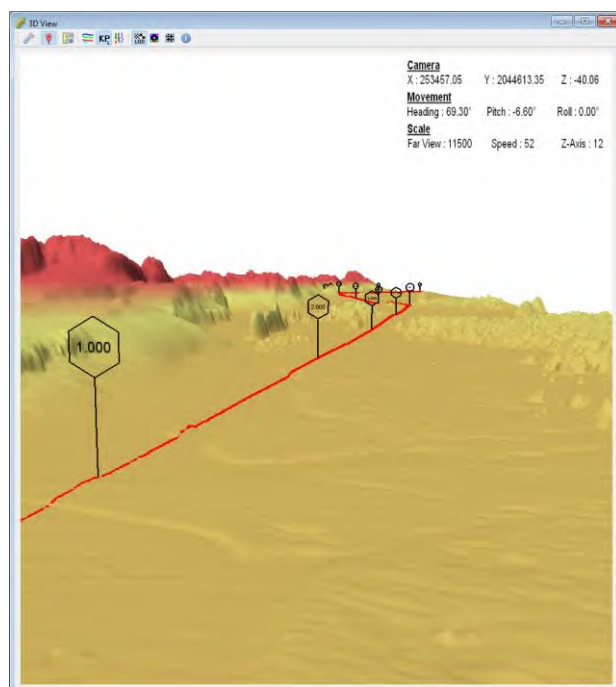
Wadugs 3D View module provides several tools to do a completed analysis for raster and seismic data within 3D environment. By applying the level-of-details (LOD) techniques in rendering process, users will experiencing the smooth transition when interactively moving the camera view.

Features

- Show raster, single beam, magnetometer and seismic profile
- Generating and show raster drape data
- Changing z-axis scale
- Show picked sub-surface horizon in the seismic profile
- Integration with the Line Route Add-Ons



3D View module showing the 2D Seismic and Sub-Bottom Profiler data together with the seabed depth raster data



3D View showing the drape raster data in the depth (left) and intensity (right) domain overlay with the line route.

Wadugs Seismic module provides several tools to do a completed analysis of the sub-surface section from sub-bottom profile or multi channel high resolution seismic data.

Input

- SGY
- JSF

Interpretation

- Various method of seabed tracker
 - from depth raster
 - from header
 - auto bottom track
- Interactive sub-surface horizon picking modes
 - auto
 - semi-auto
 - Manual
- Interactive profile features digitization

Output

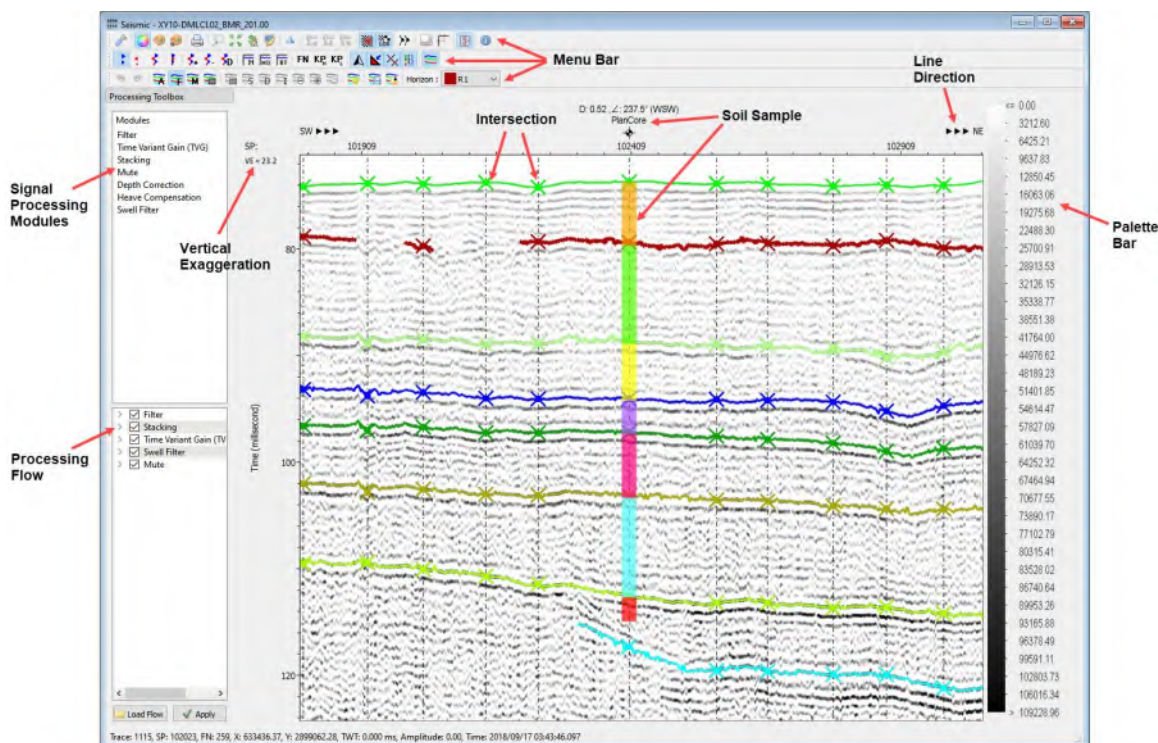
- Calculated isopach maps
- Amplitude extraction (add-on)
- Generating image profiles (PNG)
- Generate sub-surface horizon ASCII

Interface Tools

- Navigation correction
- Soil sample and line route integration
- Reverse seismic profile
- Intersection guide horizon with other lines
- Show sensor track lines direction
- Synchronization of seismic profile position with the cursor in Base Map
- Batch signal processing
- Before / after profile comparison

Signal Processing

- Filtering
- Time-variant gain
- Stacking
- Mute
- Depth Correction
- Heave Compensation
- Swell Filter
- DeMultiple
- DeGhosting
- Predictive Deconvolution
- Seismic Attributes
- Burst Filter
- Phase Conversion



Seismic Panel

Wadugs Side Scan Sonar module provides several tools to do a completed analysis from intensity data of surface seabed both from Base Map and Waterfall perspective.

Input

- XTF
- JSF

Interpretation

- Various method of seabed tracker
 - from header
 - auto and manual bottom track
- Interactive seabed mapping to draw point, polyline, polygon or textual items with shadow calculation feature

Output

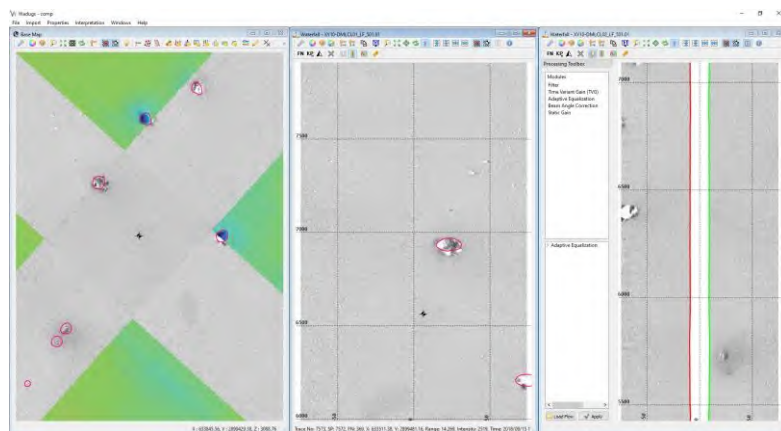
- Creating individual or composite mosaic (GeoTIFF, ASCII)
- Seabed feature / sonar contact report generator (HTML, DOC)
- Seabed features vector (DXF, SHP)

Interface Tools

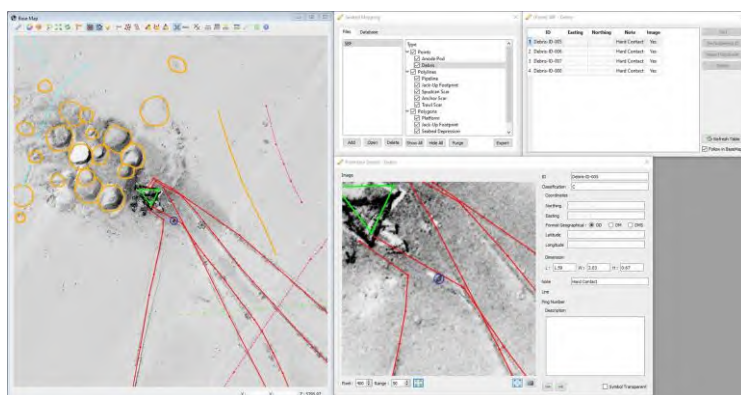
- Navigation correction
- Soil sample, line route and external vector data integration
- Ground range correction
- Beam pattern analysis
- Show sensor track lines direction
- Synchronization of Waterfall mode position with the cursor in Base Map
- Mosaicking with nadir and outer beam filter
- Batch signal processing

Signal Processing

- Filtering
- Time-variant gain
- Adaptive Equalization
- Beam Angle Correction
- Static Gain



Base Map showing side scan sonar mosaic (left). Waterfall view with ground range correction on (center). Waterfall view with processing toolbars and bottom track lines (right).



Base Map showing side scan sonar mosaic with the seabed mapping features (left). Seabed mapping properties show all the categories within the file (top center). Individual seabed feature list (top right). Individual seabed feature analysis (bottom center).

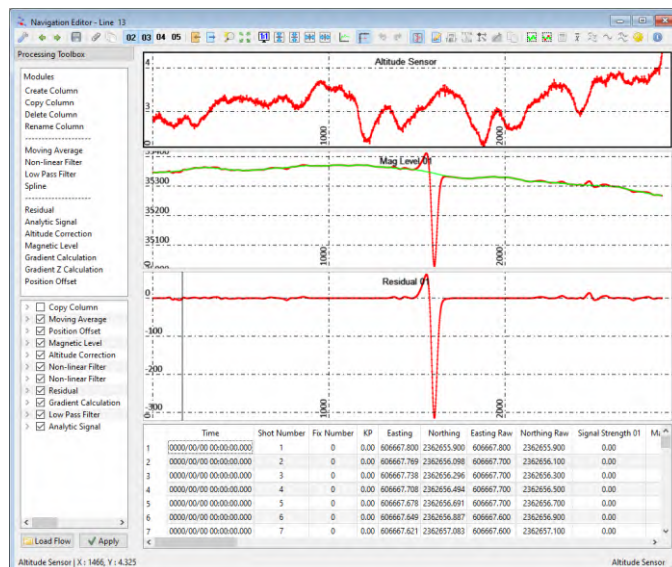
Wadugs Magnetometer module provides several tools to do a completed analysis for single magnetometer data both from Base Map and Magnetic Panel perspective.

Input

- ASCII

Tools

- Navigation and geometry correction
- Applying moving average into the magnetic intensity value to smooth the data and display gradient of magnetic intensity value
- Calculating the magnetic background and residual value.
- Derive the quasi-analytic signals from magnetic field value.



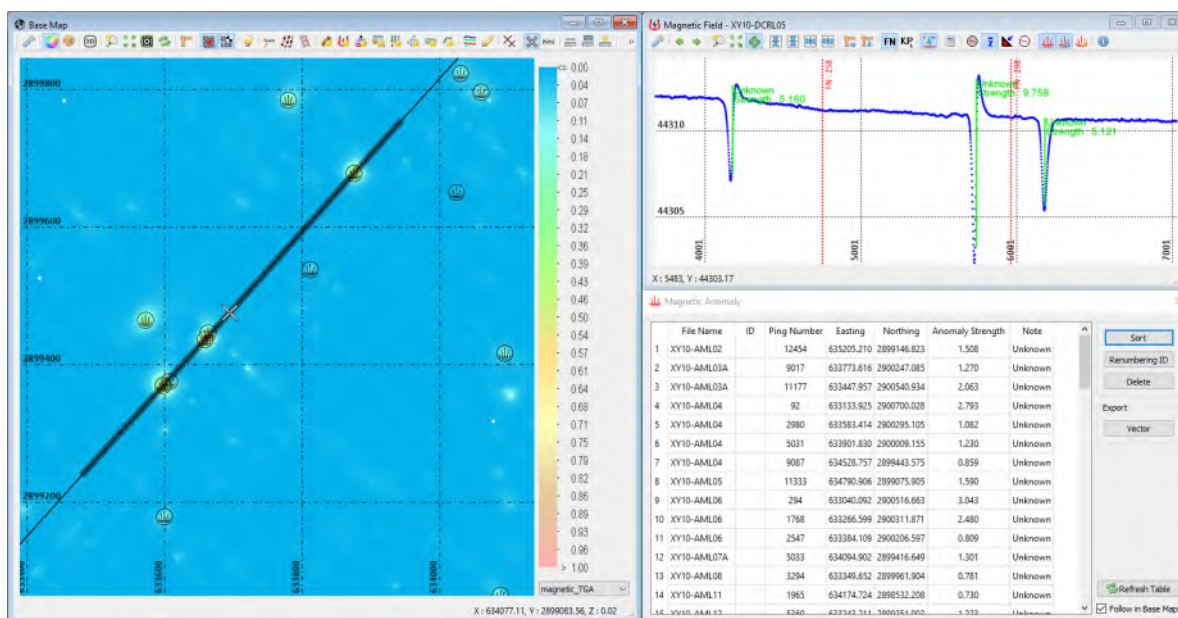
Navigation Editor show the processed Magnetometer Data

Interpretation

- Digitize the magnetic anomaly and visualize it in the Base Map

Output

- Vector points (DXF or SHP)



Base Map showing quasi- analytic signal raster data overlay with digitized magnetic anomalies (left). Digitized magnetic anomalies showed in Magnetic Panel window (top right). List of digitized magnetic anomalies from all the lines (bottom right).

Wadugs 3D Subsurface module provides Volumetric analysis of 3D sub-bottom (eBOSS) data - interactive X-Y and X-Z subsurface sections, seabed picking, subsurface mapping and a dedicated 3D Subsurface View.

Input

- eBOSS JSF

Interpretation

- Seabed tracker using auto or manual bottom track
- Interactive subsurface mapping to draw point, polyline, polygon or textual items with shadow calculation feature

Output

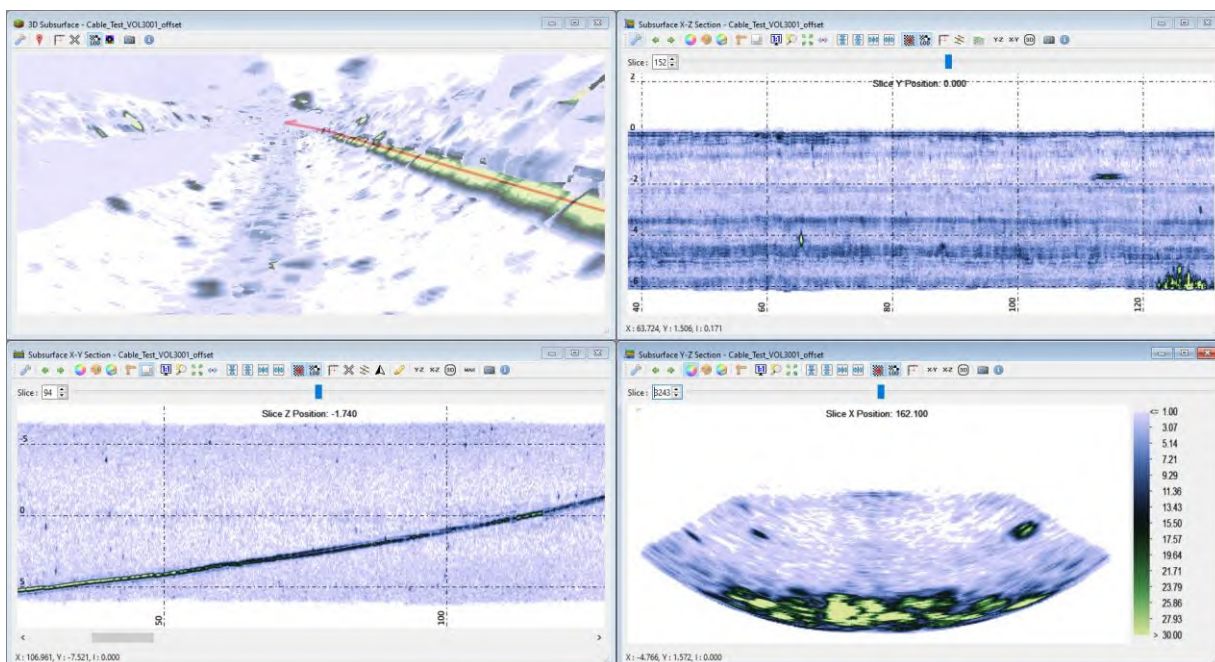
- Creating individual or composite mosaic (GeoTIFF, ASCII)
- Subsurface feature / sonar contact report generator (HTML, DOC)
- Subsurface features vector (DXF, SHP)
- 3D Subsurface Web Viewer

Interface Tools

- Navigation correction
- Three view subsurface sections and 3D view
- Altitude correction
- Cursor sync between sections
- Target detection

Signal Processing

- 2D Amplitude Correction
- 3D Adaptive Equalization
- Beam Focusing



All four synchronized views of a buried cable - 3D Subsurface, X-Z, X-Y and Y-Z sections from a single eBOSS volume.

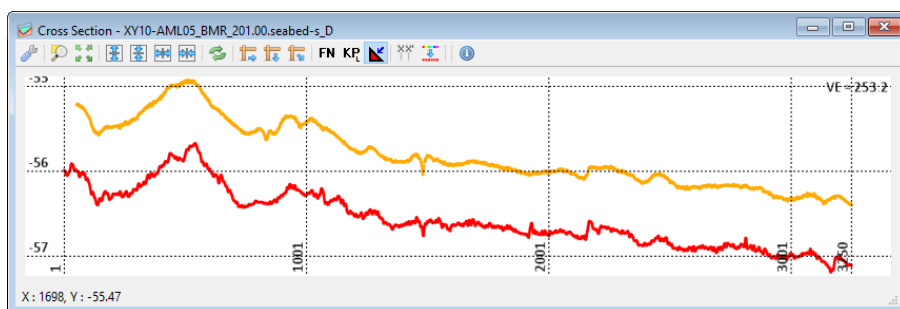
Wadugs Single Beam Echo Sounder module provides a tool to compare between the depth points from raster depth data with the depth points from single-beam data.

Input

- ASCII

Tools

- Navigation and geometry correction
- Creating gridded raster data from multiple single beam lines.



Cross Section showing comparison depth profile between raster and single beam data.

Wadugs Seismic Amplitude Extraction add-on is a tool to extract the amplitude value of the seismic data. The search range for the amplitude that needs to be extracted can be set to be based on the TWTT range or the area between two subsurface horizons. Users can choose the type of amplitude value in the extraction process (minimum, maximum or RMS).

Amplitude

Reference

☒ Time
 ☐ Horizon

☒ Calculate in Between

☒ Minimum
 ☐ Maximum
 ☐ RMS

Time

Start Time:

0 ms

End Time:

1000 ms

Horizon

Top Horizon:

seabed

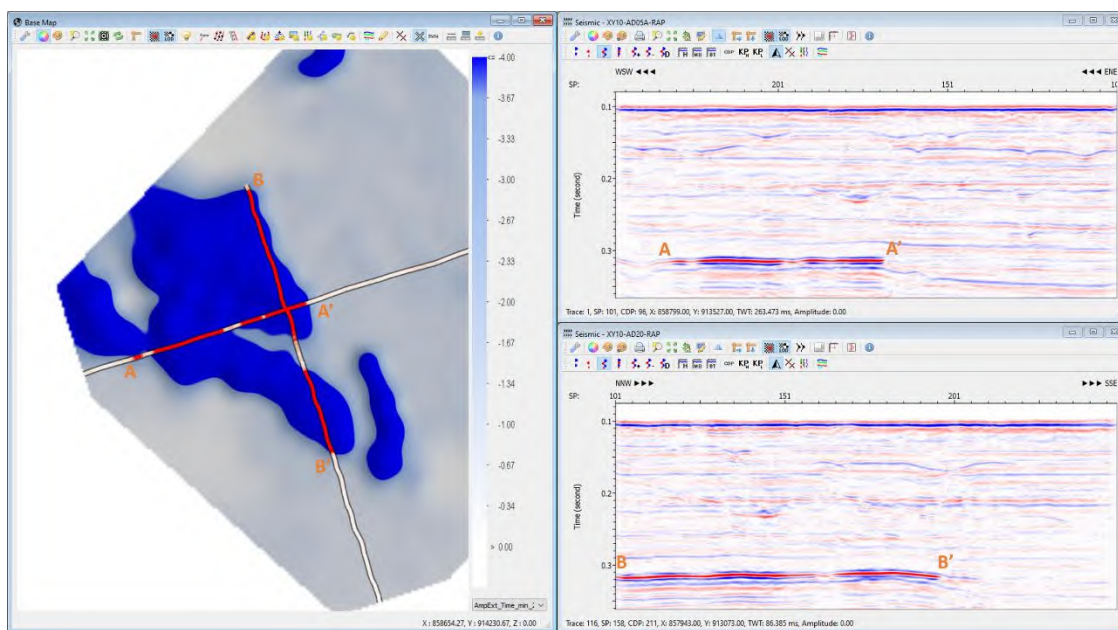
Bottom Horizon:

R1

☒ Exclude Sub-Bottom Profiler Data

Process

Amplitude Extraction settings

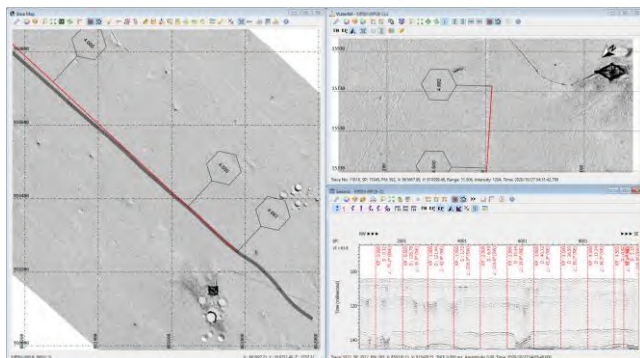


Base Map show the gridded and the line based amplitude extraction results (left). Seismic windows from different direction of seismic profiles showed the location of the anomalies within the search ranges.

Wadugs Line Route add-on is a collection of the tools inside the Wadugs platform with objectivity to improve and simplify data QC, interpretation, and reporting in pipeline/cable route surveys. The design of the line route can be set in a geographical or projection distance route.

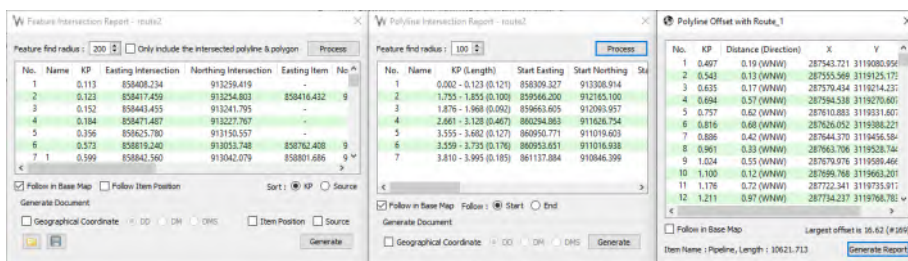
Main Benefits :

- Integration with all Wadugs sensor modules



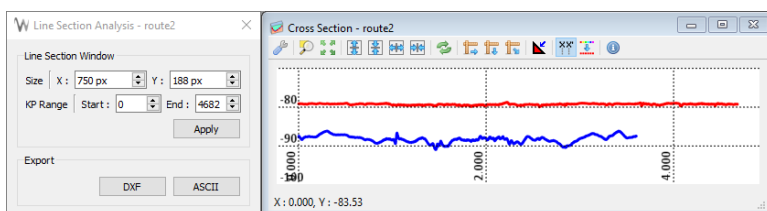
KP flags are generated from the line route shown in the Base Map (left), Waterfall (top right). Meanwhile in Seismic (bottom right), the offset between the nearest sensor position and the KP flags from the line route can be shown.

- Generate three (3) types of reports



Feature Intersection Report (left) is mainly used for the proposed route surveys. Polyline Intersection Report (center) is mainly used for inspection surveys (mapping free span / buried section). Polyline Offset Report (right) is mainly used for post-lay route surveys.

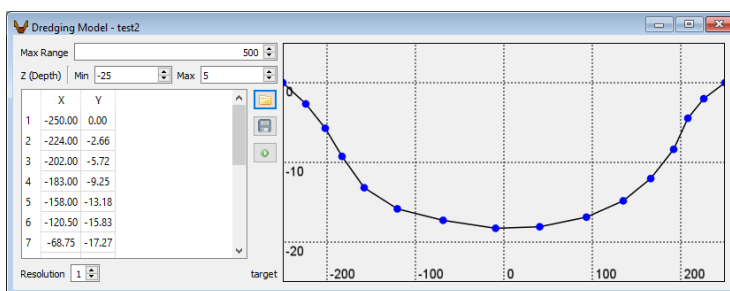
- Generate line profile from Raster Data for the whole line route section



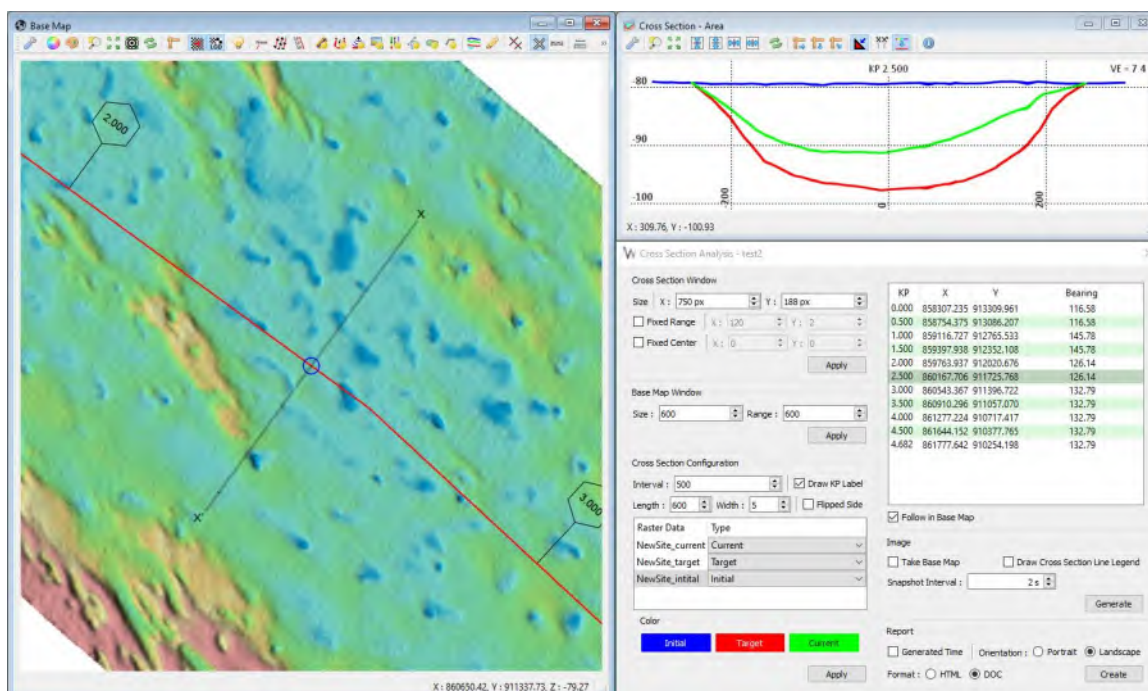
Line Section Analysis (left) dialog used to set the Cross Section (right) windows. Cross Section window showing the seabed and first reflector below the designated line route. Users can export the output to be ASCII or DXF files.

Using this add-on will eliminate the manual processing step during the reporting phase, especially when route development happens in the designated line route, and users will always be able to obtain immediate results from that changes.

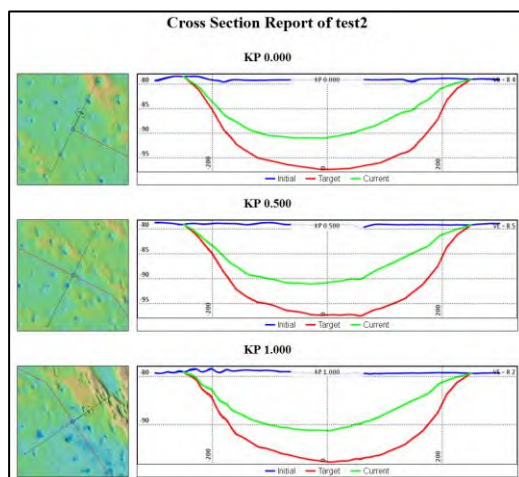
Wadugs Dredge Modelling add-on is a tool on top of the Line Route add-on to interactively create depth raster data and generate automatic cross-section analysis along the route.



Dredge Model window



Base Map shows route line and cross section position on top of the depth raster data (left). Cross Section window (top right) show the depth profile of the selected KP. Cross Section Analysis settings (bottom right) give complete adjustable settings to automate the process for generating cross-section analysis reports.



Cross Section Analysis report example.

Wadugs Seismic Line Route Profile add-on is a tool on top of the Line Route add-on to interactively create the images (PNG) and vector profile (DXF) along the selected line route. The output can be used in the alignment charts that usually use in a route survey project

The vertical scale of the profile can be adjusted following the requirements.

Export Seismic Route Image

Route

Name :

Distance Tolerance :

KP Interval :

☐ Reverse Direction

Velocity

Above Seabed :

Below Seabed :

Seabed

Reference Horizon :

Reference Raster :

Depth Range

Line Interval :

Depth Scale :

☐ Activate Limit

Top :

Bottom :

Create

Export Seismic Route Horizon

Route

Name :

Distance Tolerance :

KP Interval :

☐ Reverse Direction

Velocity

Above Seabed :

Below Seabed :

Depth Scale :

Seabed

Reference Horizon :

Reference Raster :

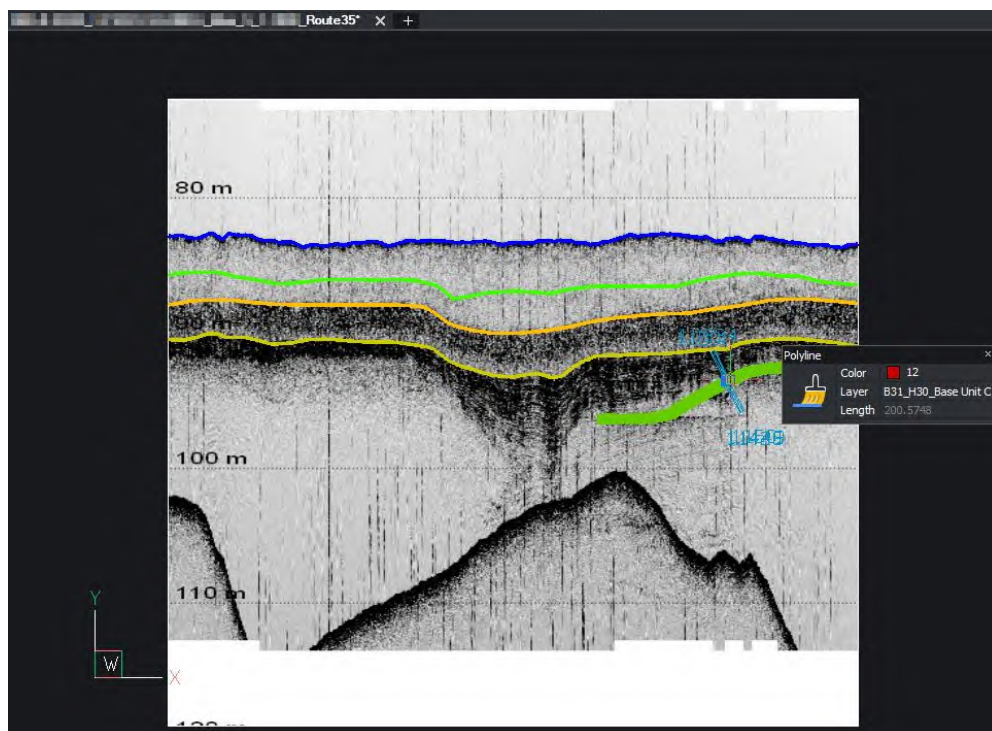
Horizon

- ☒ B31_Acoustic_blanking
- ☐ B31_Acoustic_blanking-Seabed_TWT
- ☐ B31_Acoustic_blanking-Seabed_TWT_D
- ☒ B31_Channel
- ☐ B31_Channel-Seabed_TWT
- ☐ B31_Channel-Seabed_TWT_D
- ☒ B31_Fault
- ☐ B31_Fault-Seabed_TWT
- ☐ B31_Fault-Seabed_TWT_D
- ☒ B31_H10_M_Base_UnitA
- ☐ B31_H10_M_Base_UnitA_shift

☒ Individual output

Create

Export Seismic Route Image (left) and Horizon (right) window



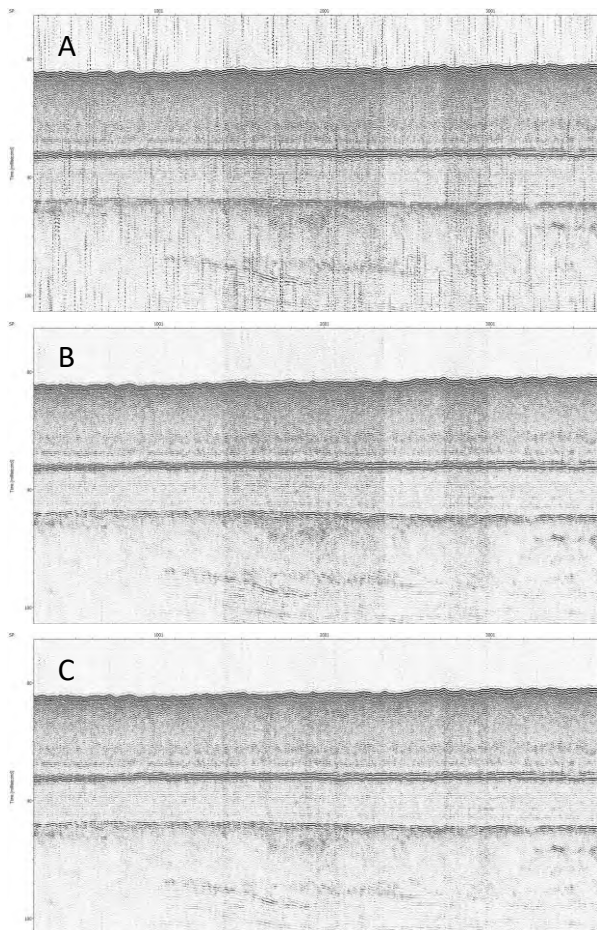
Seismic profile image along the line route overlay with output vector horizon opened in 3rd party CAD software.

Wadugs Seismic Advance Processing

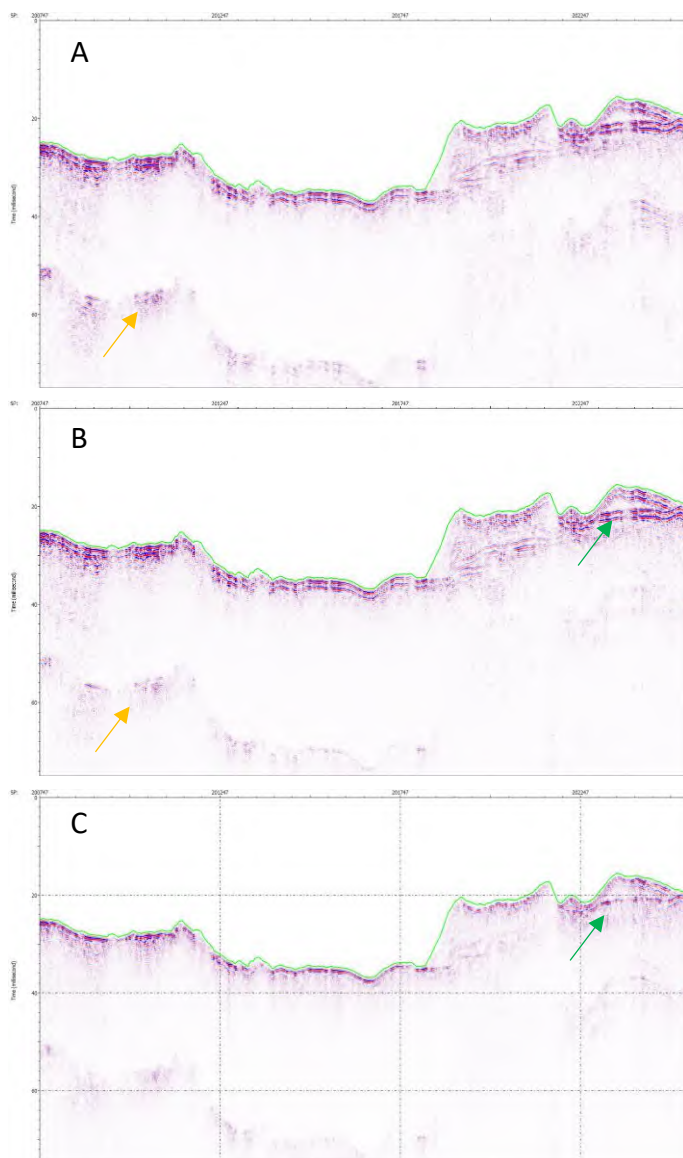
add-on is a comprehensive of tools that used to reduce common noises that recorded in the single channel seismic traces and will enhance the quality of its seismic profile.

Advance Signal Processing

- DeMultiple
- DeGhosting
- DeStripe
- Burst Filter
- Predictive Deconvolution
- Phase Conversion



Seismic profile show the burst noises and unbalance gain in Profile A (raw data). The burst noises is eliminated in Profile B after applying Burst Filter module. The unbalanced gain got corrected in Profile C after applying DeStripe module.



Seismic profile show the multiple and ghost effect contain in Profile A (raw data). The multiple got attenuated in Profile B after applying DeMultiple module. The ghosting effect is reduced in Profile C after applying DeGhosting module.

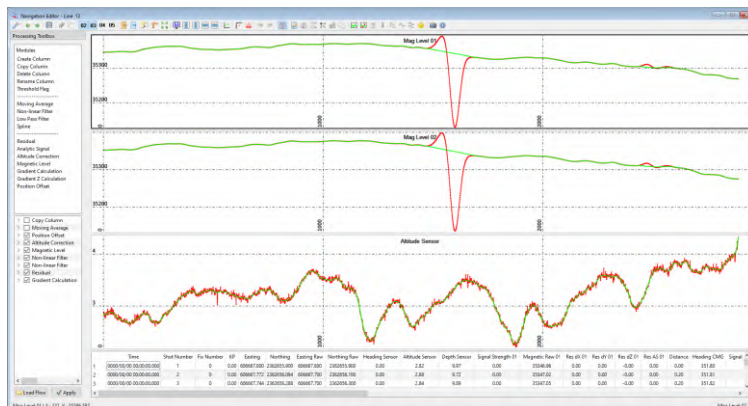
Wadugs Magnetic Advance Processing

add-on are set of tools designed to process data acquired from multiple magnetometer sensors or gradiometry systems. This advanced module applies a structured processing flow, allowing Users to reduce unwanted noise, improve data clarity, and enhance interpretation quality. Each step in the workflow provides the ability to compare the raw input with the processed results, ensuring transparency and flexibility throughout the analysis.

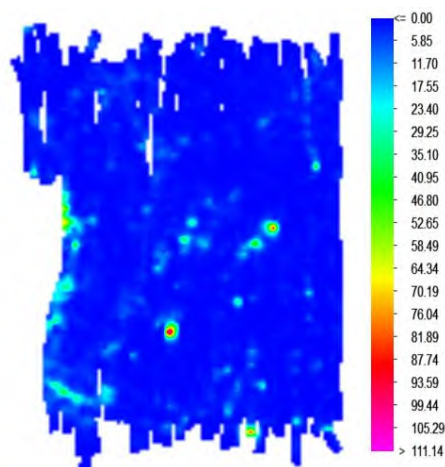
The final output of the processing is a set of analytic signals, delivering refined magnetic anomalies that are better suited for interpretation and further geophysical modeling.

Advance Data Processing

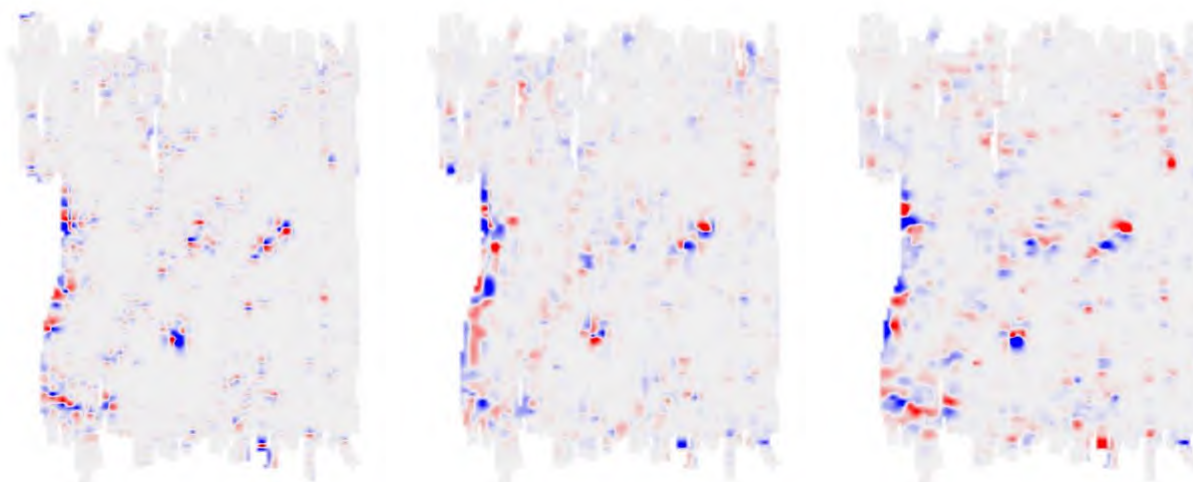
- Analytic Signal
- Altitude Correction
- Magnetic Level
- Gradient Calculation
- Gradient Z Calculation
- Euler Deconvolution
- Dipole Fit



Navigation Editor show the processed Multiple Magnetometer Data



Grid Analytic Signal from derived Gradient data



Grid data of Gradient-X (left), Gradient-Y (center) and Gradient-Z (right)

Wadugs CLI add-on is a command-line interface designed to streamline automated workflows, enable large-scale batch processing, and support remote execution without opening the graphical user interface (GUI). It is ideal for integrating Wadugs functionality into custom scripts, DevOps pipelines, and server environments where efficiency and automation are critical.

The add-on also supports Python integration through subprocess calls and lightweight wrapper scripts, making it simple to embed Wadugs CLI commands inside Python automation workflows.

This approach allows developers to:

- Execute CLI commands directly from Python code
- Capture and parse command outputs for further analysis
- Combine Wadugs workflows with data science, machine learning, or ETL pipelines
- Orchestrate large batch jobs programmatically while maintaining the simplicity of CLI tools

With its flexible design, Wadugs CLI Add-on empowers users to automate repetitive tasks, extend functionality across multiple environments, and seamlessly bridge scripting with higher-level Python-driven workflows.

Modules

- CreateProject_CLI
- JSF2XTF_CLI
- JSF2SGY_CLI
- ImportXTF_CLI
- ImportSGY_CLI
- ImportSBPJSF_CLI
- ImportSSSJSF_CLI
- ImportEBOSSJSF_CLI
- ImportMaggy_CLI
- Seismic-SP_CLI
- Seismic-WD2Hor_CLI
- Seismic-Profile2PNG_CLI
- SSS-BottomTrack_CLI
- SSS-Mosaic_CLI
- SSS-Mosaic2TIFF_CLI
- SSS-SP_CLI
- SSS-Waterfall_CLI
- SSS-Waterfall2Image_CLI
- Subsurface-AltOffset_CLI
- Subsurface-BottomTrack_CLI
- Subsurface-PM_CLI
- NavPM_CLI
- NavExtract_CLI
- NavInject_CLI



```
Command Prompt
C:\Wadugs\Wadugs_2024.9.0>ImportXTF_CLI.exe
"Import XTF v1.0"
"By Wadugs (22-Aug-2024)"
Usage: ImportXTF_CLI -in [Input.xtf] -pd [projectDir] -f [FrequencyMode, 0:LF, 1:HF, 2:VHF] -g_crs [Geographical_EPSG] -
p_crs [Projected_EPSG] -co [configfile (opt)]
C:\Wadugs\Wadugs_2024.9.0>
```

ImportXTF_CLI dialog

CloudChart: Real-Time Project Insights from the Cloud

CloudChart is a cloud-based extension of the Wadugs system that brings your project data to life—anytime, anywhere. Designed for seamless integration with the Wadugs desktop platform, CloudChart enables teams to visualize, track, and analyze geophysical and bathymetric survey data through a user-friendly web interface.

Whether you're in the office or out in the field, CloudChart ensures your latest data is always within reach. With real-time syncing, secure cloud storage, and responsive dashboards, CloudChart helps you make faster, data-driven decisions without the hassle of manual exports or file transfers.

Key Features & Benefits

No Server Setup Required

Users don't need to install or manage any backend infrastructure. CloudChart is ready to use out of the box with cloud-hosted services, reducing technical overhead and speeding up deployment.

Seamless Integration with Wadugs

CloudChart is built on the same platform as Wadugs. It uses the exact same data structures and workflows, so you don't need to export, convert, or rely on third-party tools—everything just works.

Faster Turnaround for Decision Making

Real-time access to survey data empowers project managers and decision-makers to respond quickly to field conditions—no delays, no extra tools, just direct insight.

Save Time and Cost

With no need for server setup, data conversion, or third-party platforms, CloudChart streamlines your workflow. This results in significant savings in both operational time and project costs.

Remote Monitoring from Anywhere

CloudChart enables stakeholders to monitor project progress from any location. Whether in the office, at home, or on-site, teams stay aligned and informed at all times.

Live Vessel Tracking

Vessel locations are tracked live on the map, allowing both operations and management teams to monitor the progress and safety of offshore activities more effectively.

Client-Friendly Dashboard Access

Give clients transparent access to selected data via a secure, read-only dashboard. This keeps them informed and reduces back-and-forth reporting.

Map Annotations & Collaborative Markup

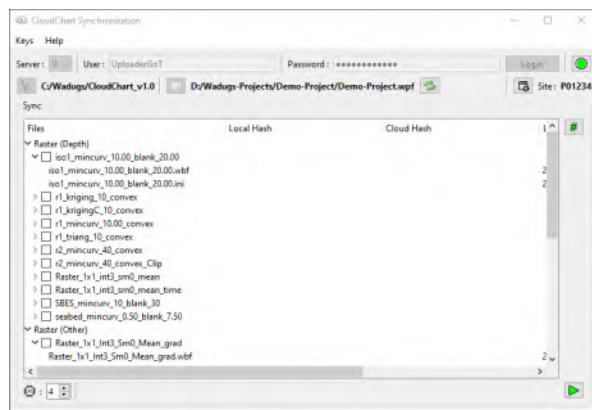
Add comments directly on the map and draw custom shapes such as polylines, and polygons. This allows teams to highlight areas of interest, mark observations, and communicate spatial insights clearly—directly within the CloudChart Map interface. These annotations help improve collaboration between field teams, analysts, and decision-makers without relying on external tools.

Secure and Scalable

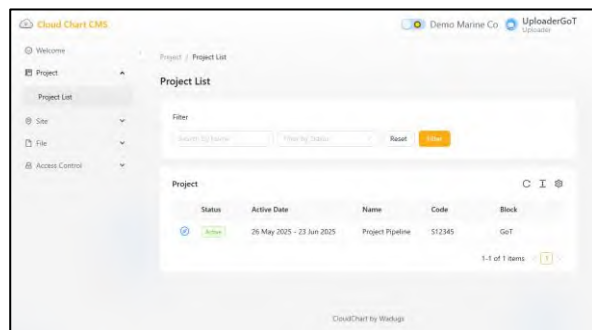
The platform grows with your needs. Whether handling one project or dozens, CloudChart ensures your data is protected and available without performance issues.



CloudChart Maps through Browser



CloudChart Synchronization for Data Uploading from the Desktop



CloudChart CMS Menu

Fast, lite and robust within a single platform



<http://www.wadugs.com>



support@wadugs.com