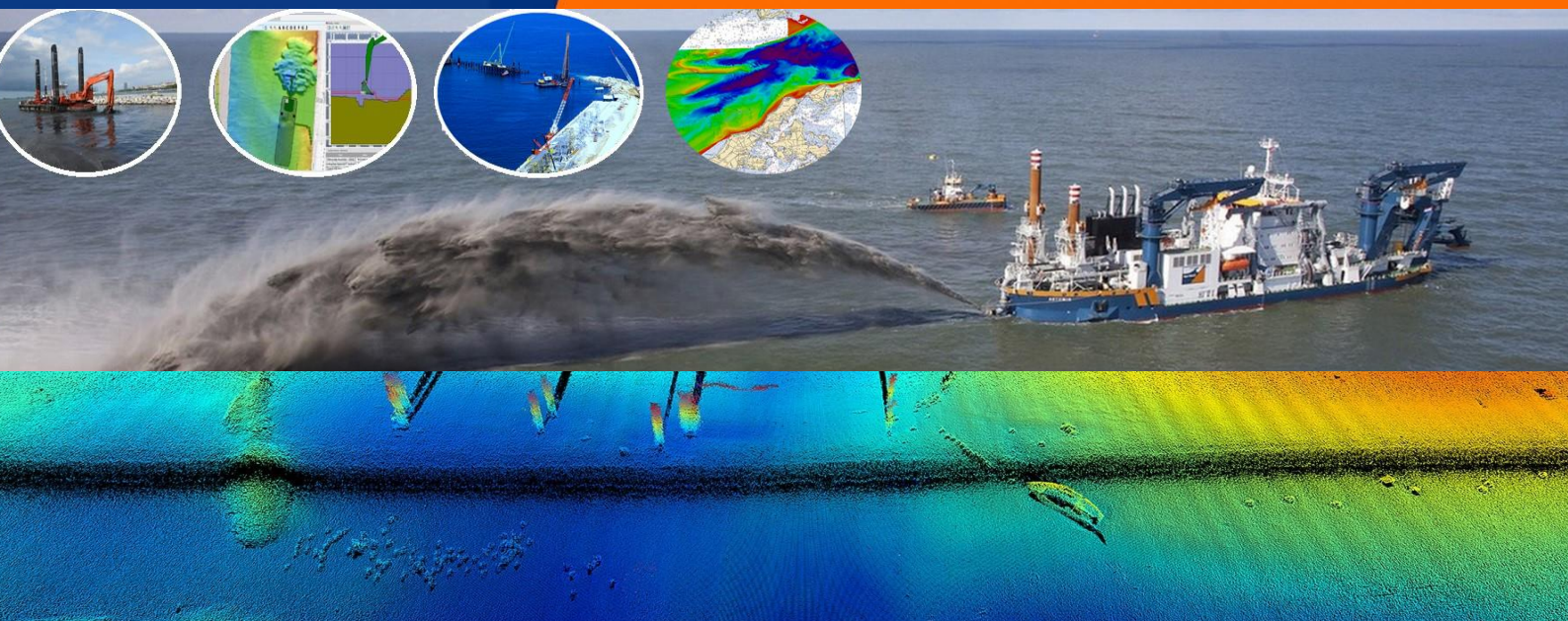
BeamworX

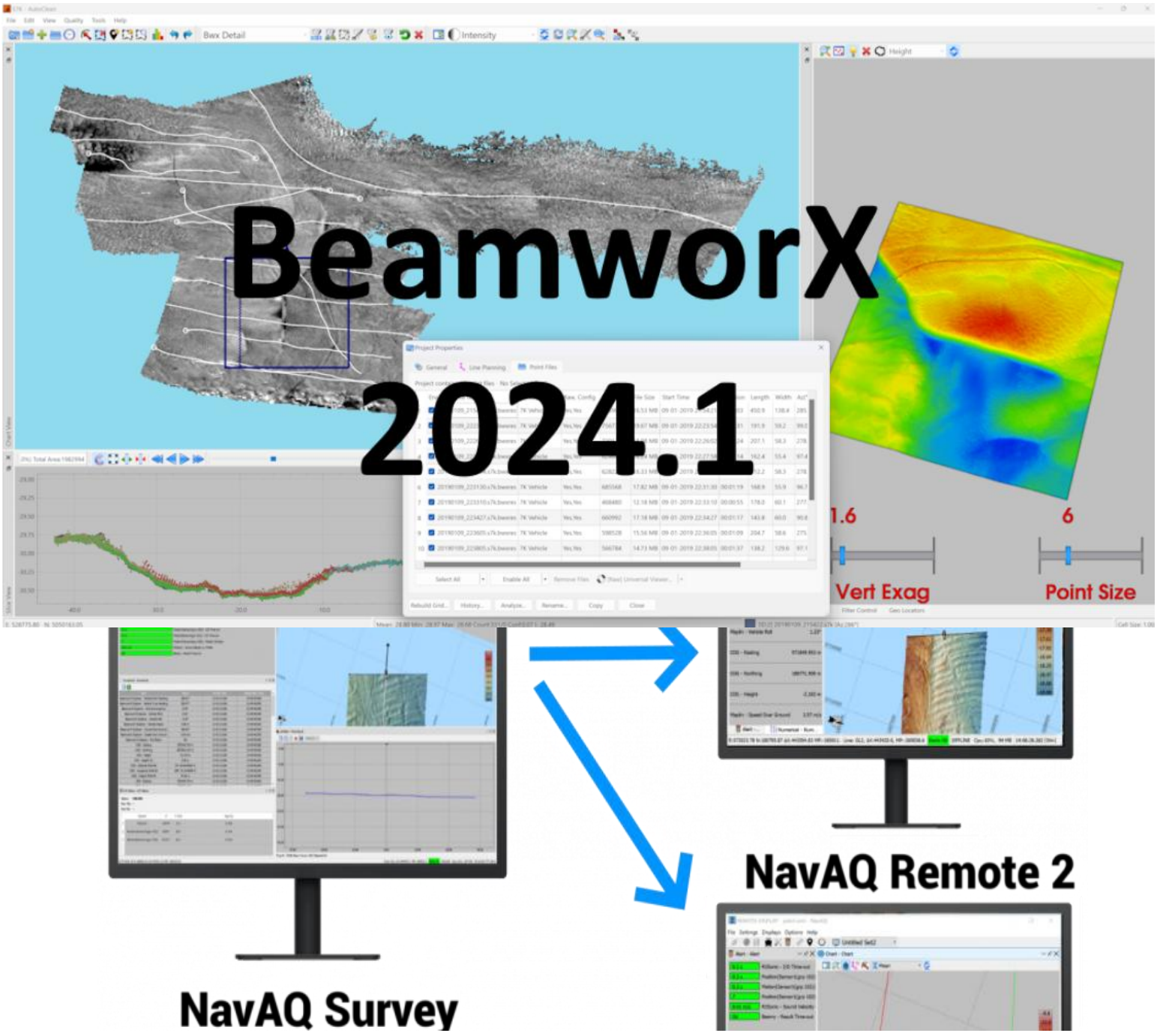
MARINMET
Mühendislik

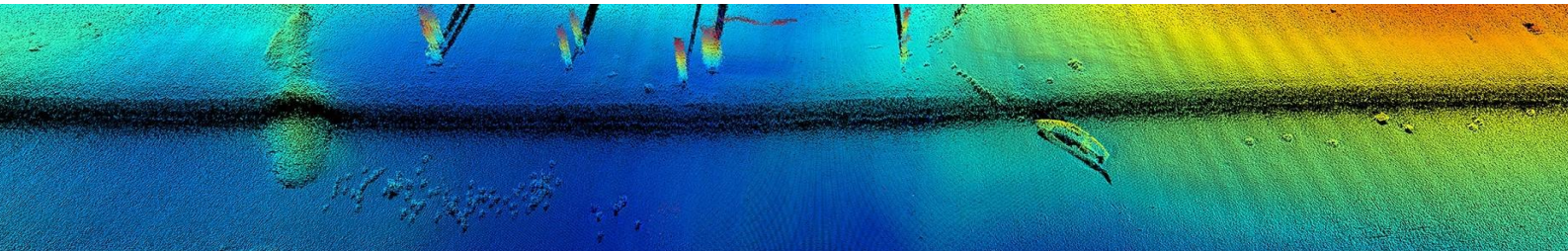


Firmamız **MARİNMET ŞTİ,** Dünyaca ünlü Hollanda firması **BEAMWORX BV '**nin Türkiye temsilcisi olarak hizmet vermektedir. BeamworX yazılım ürünleri, Ulusal ve uluslararası hidrografik / batimetrik etütler, deniz tarama, deniz inşaatları gibi birçok şirketler, kamu kurumları ve de üniversiteler tarafından kullanılmaktadır.

NavAQ Singlebeam / Multibeam Echosounder ve Laser Scanner veri toplama programı;
NavAQ, Singlebeam / Multibeam / deniz tarama ekipmanları ve lazer tarayıcılar için kullanıcı dostu, çok yönlü bir çevrimiçi gezinme ve veri toplama programıdır. Esnek kurulumu sayesinde, aşağıdakiler dahil, çok çeşitli görevler için kullanılabilir. Tek kurulum da **NavAQ- AutoClean- AutoPatch- SbEdit- Raw Processing** programları birlikte yer alır.

- ✓ Singlebeam, Multibeam, Lazer Tarayıcılar ve Hidrografik Araştırma.
- ✓ Kesici- Emici Tarama Gemileri, Ekskavatörler, Yüzer Vinçler ve benzeri vasıtalar.
- ✓ Dronelar ve Gezici araçlar ile lidar tarama.
- ✓ Hem karada hem de denizde genel konumlandırma hesaplama / görselleştirme





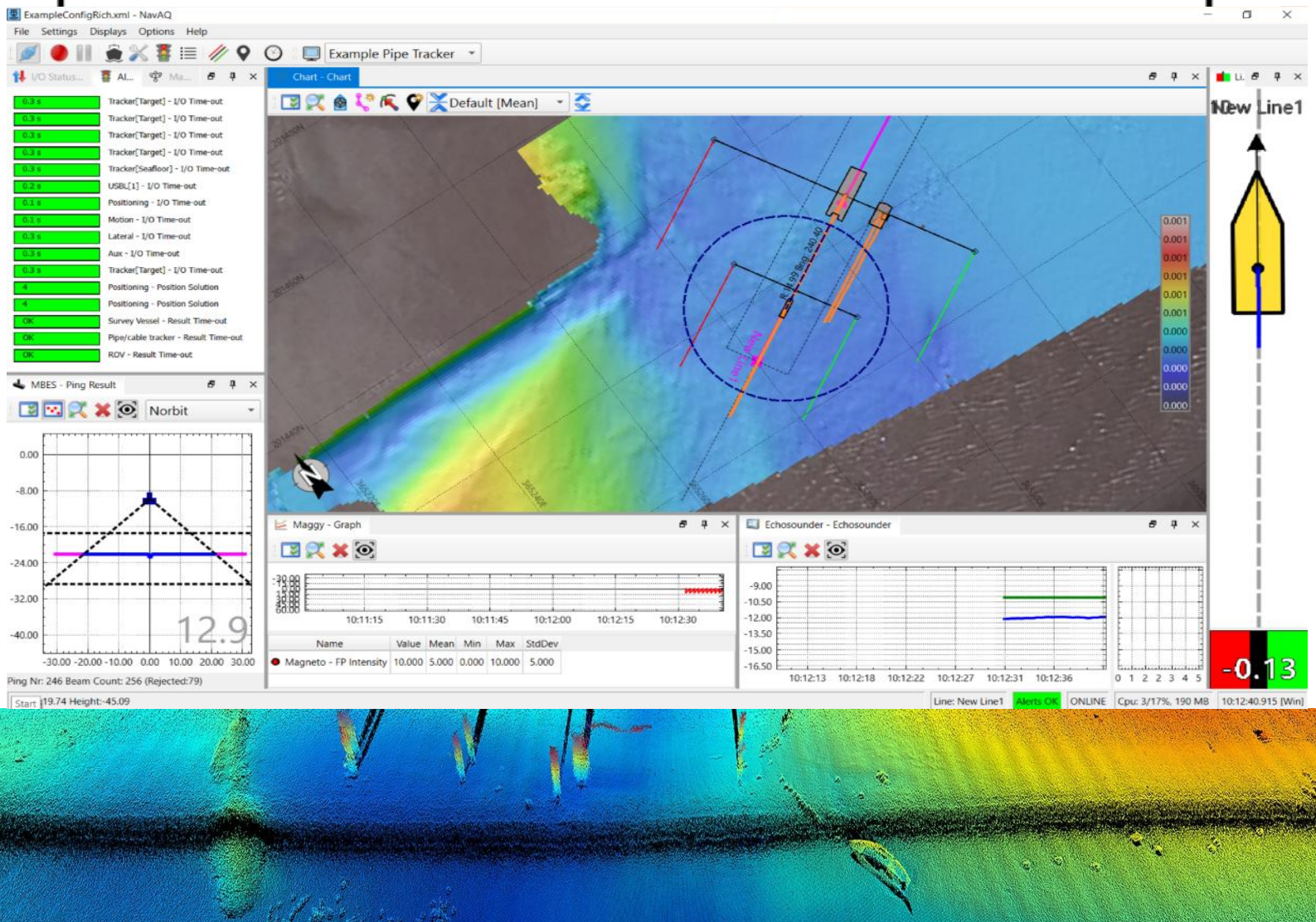
NavAQ

Easy Online!

NavAQ is a user-friendly and versatile online navigation and data acquisition program for single/multibeam echosounders, laser scanners, sidescan sonar, dredging guidance and general positioning calculation and visualisation.

NavAQ includes interfacing drivers to all the wel-known sensor/system brands including Kongberg, Teledyne Reson/Odom, R2Sonic, Norbit, WASSP, Picotech, Z+F, Riegl, Velodyne, SBG, Applanix, iXBlue, Trimble, Septentrio.

- All interfaced sensor messages are logged in its original raw format into the NavAQ raw log file for further processing.
- Positioning and bathymetry results are computed and visualized in real-time and directly stored in the NavAQ result log file.
- Very easy and flexible setup including unlimited sensors and vessels.
- Exports of Raw and Result Data to ASCII/XTF/S7K/Raw Dump/GSF.

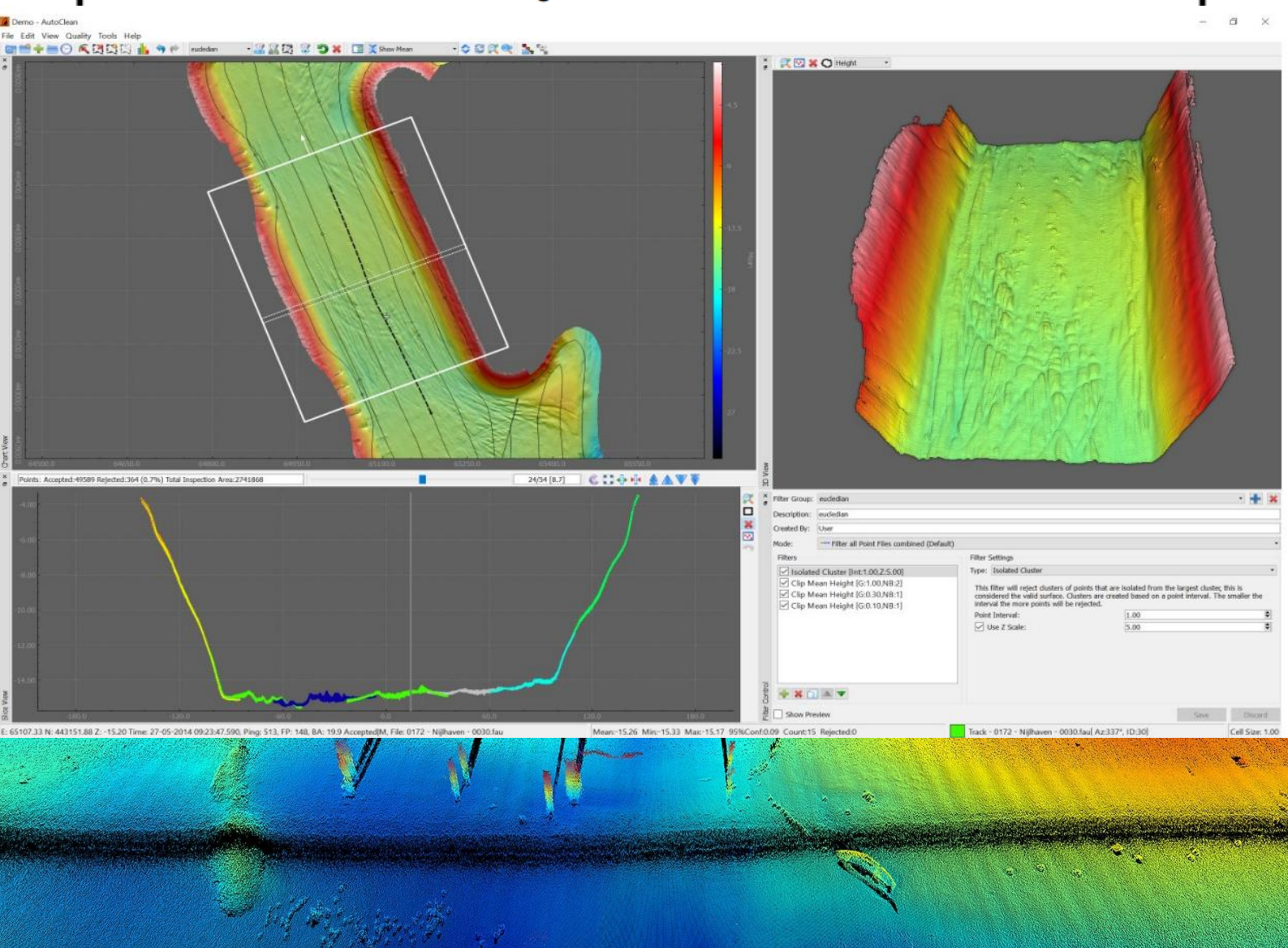


AutoClean

Cleaning tool for bathymetric and Lidar point data

Cleaning program for Bathymetric and Lidar point data. Focused on day to day cleaning on board of survey vessels or near site.

- Automatic cleaning and validation for bathymetric and Lidar point clouds
- Manual flagging of points in 2D Slice and 3D View
- Stand-alone application, easy to learn and use
- Optimum use of modern computer hardware(multi-core, 64-bit, GB's mem)
- Supports many cleaning algorithms: statistical, spline filter, spatial
- Full undo on all modification actions
- Import/export to various file formats, e.g. FAU/GSF/ALL/LAS/LAZ/Hypack HS2(X)/ASCII/Grids/PDS
- Respects the point status as flagged by the acquisition software
- Optionally exports only the changes back to the original source files
- Automatic Least Square Adjustment Height Fitting for Tide errors
- Reference layer for design or previous survey
- Multiple rejection flags and classification
- Automatic import of files through folder monitoring during the survey
- Corrected 95% confidence grid attribute

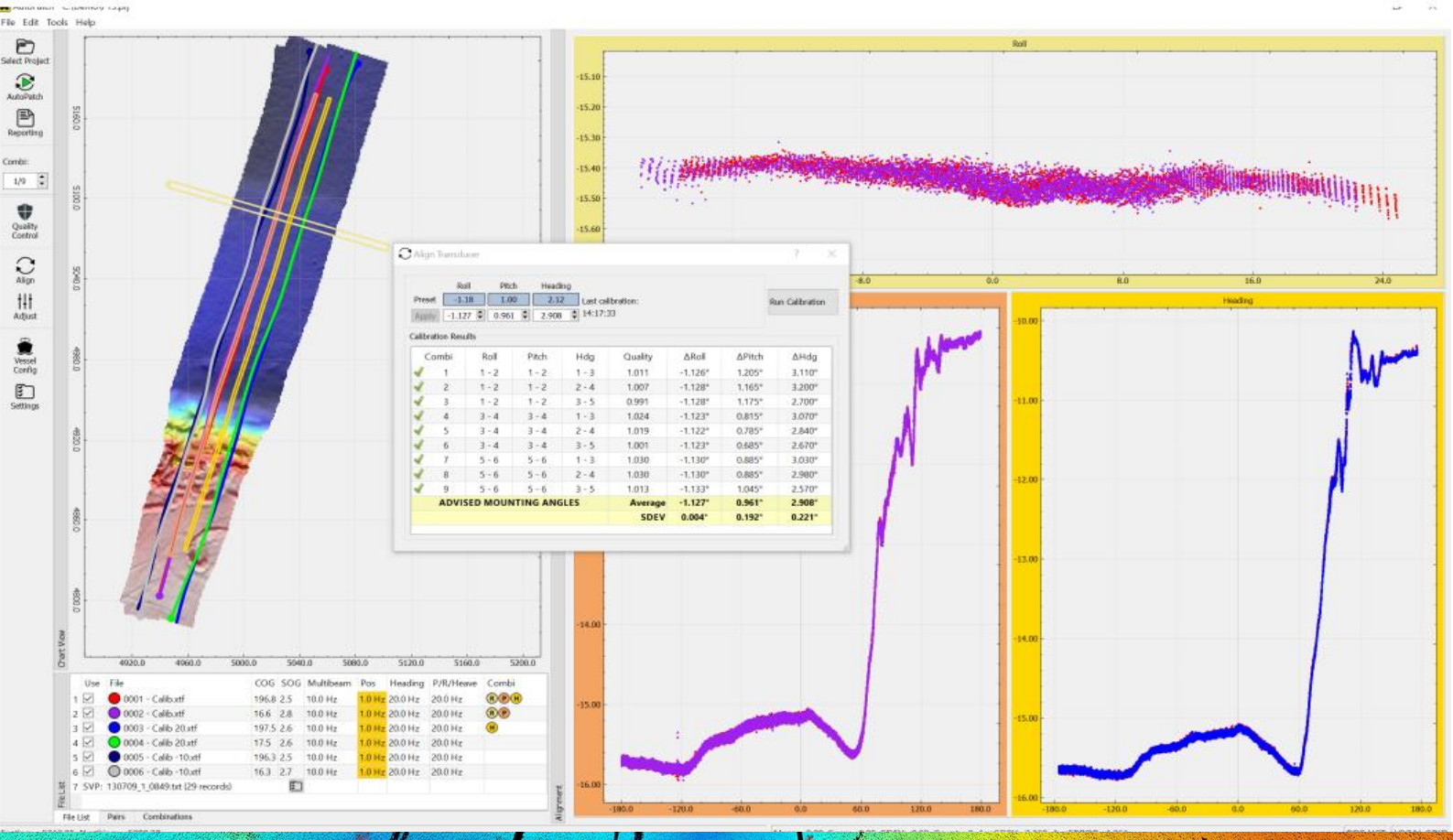


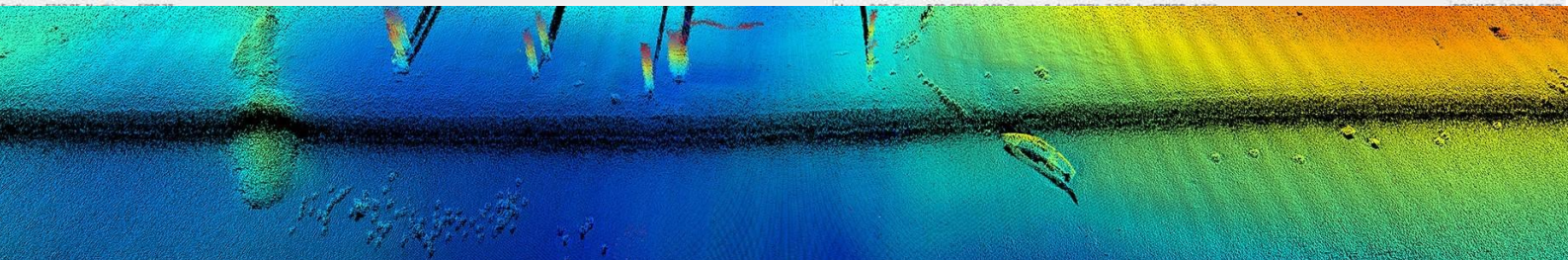
AutoPatch

Fully Automated Multibeam Patch Test Calculation

Fully automated Multibeam Echosounder patch test calculator.
Your calibration report is just a click away!

- Very easy to operate
- One button click to complete the full calculation
- Calculates Roll/Pitch/Heading mounting angles, various latencies, Transducer offset shifts
- Refraction, analyse sound velocity and SVP optimization
- Height fitting for none-RTK data
- Automatic line and area selection
- Extensive calibration report
- Includes despiking/outlier removal for sounder data
- Exact calculation algorithms, using full raytracing
- Consistent and reproducible calibration results
- Supports XTF, Hypack HSX, kongsberg ALL, Teledyne PDS Format
- Calibrates Single/Dual head systems including separate TX and RX
- Calculates the best-fit result from multiple survey lines





SBEdit

User-friendly Single Beam Editor

SBEdit makes it very easy to edit Single Beam Echosounder Data (SBE) in Chart Datum with the raw acoustics as background.

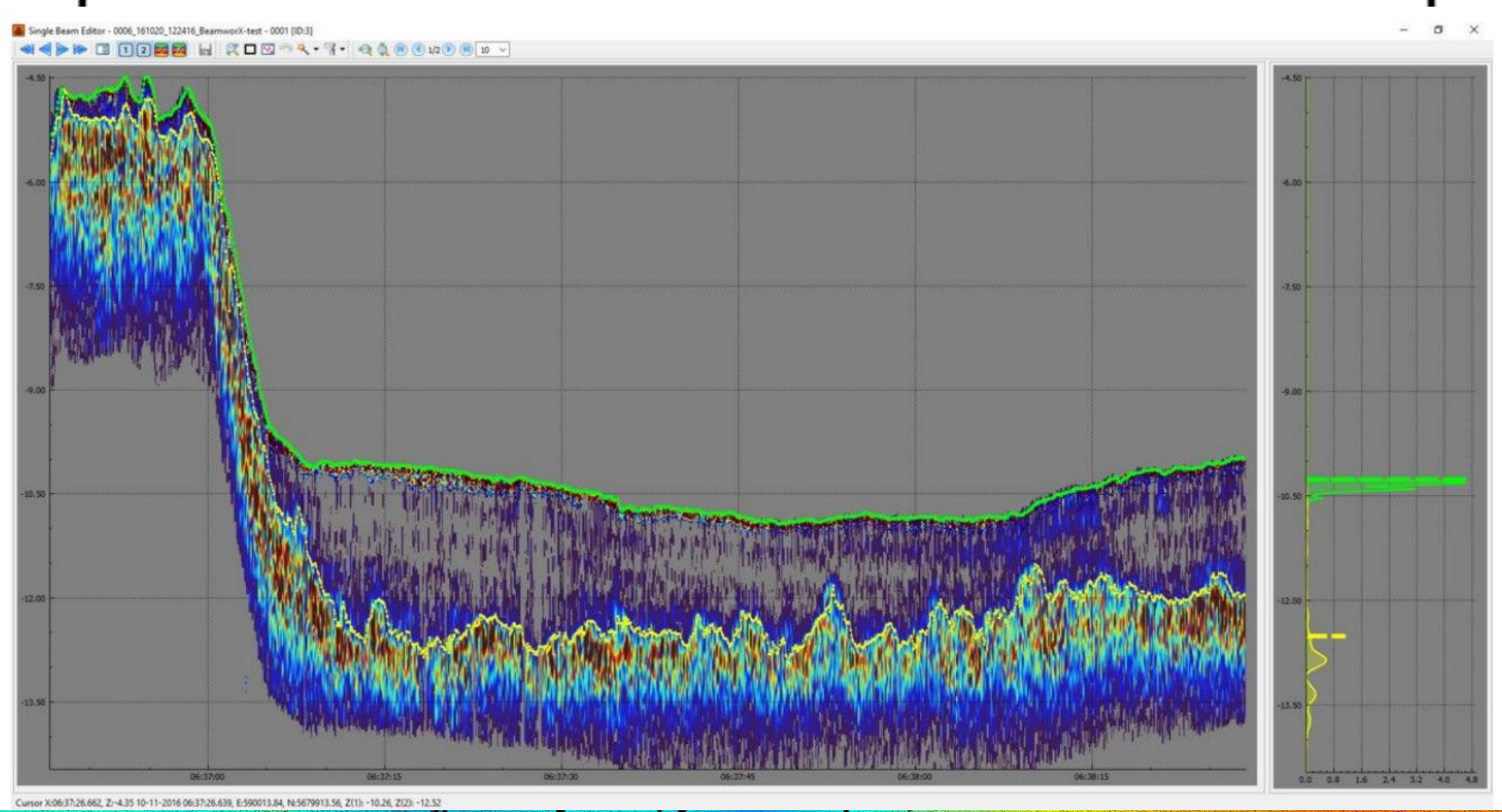
SBEdit is an **AutoClean** Add-on, it is fully integrated into **AutoClean**.

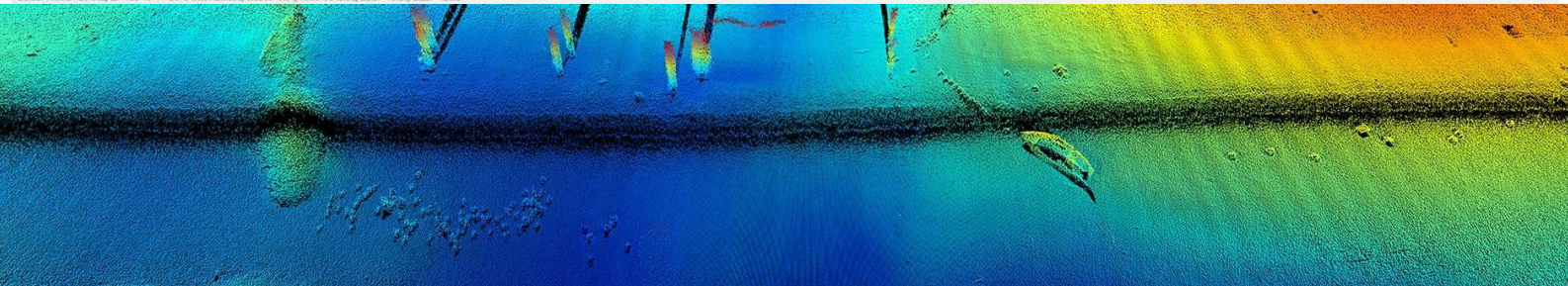
The presentation of the acoustics is configurable with different color palettes and drawing order.

A full range of edit tools are available:

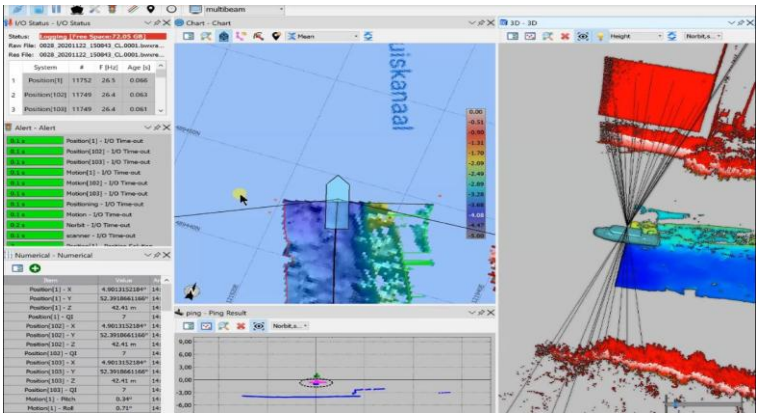
- Manual clipping with the mouse cursor
- Assign new height by “free-drawing” with the mouse cursor
- Automatic “boxcar” Despiking
- Height Averaging

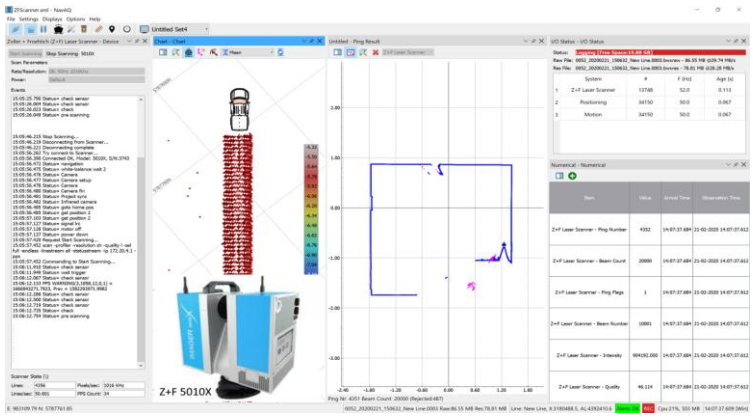
A dedicated BeamworX utility is used to log the “echogram” data directly from the sounder and the results from the Acquisition Software. These files are then commonly presented in AutoClean and SBEdit.



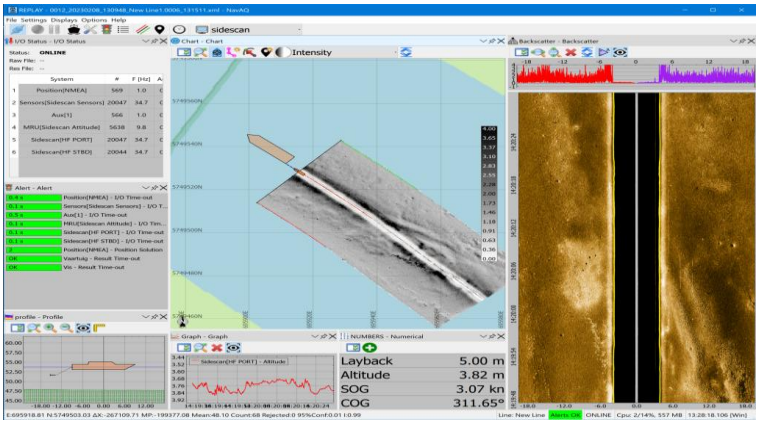


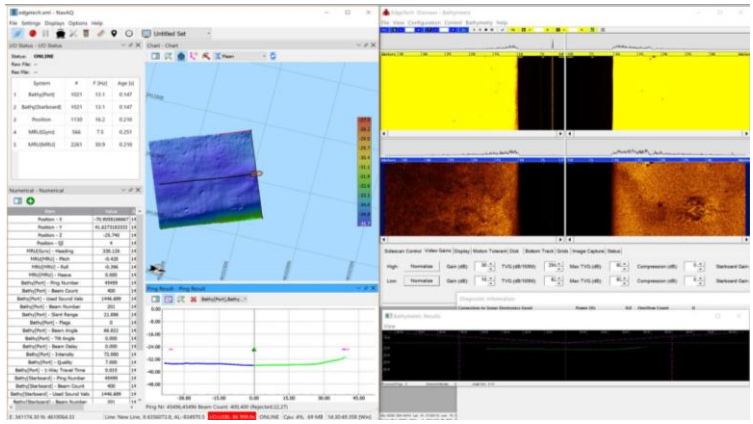
NavAQ Lidar Yazılımı;



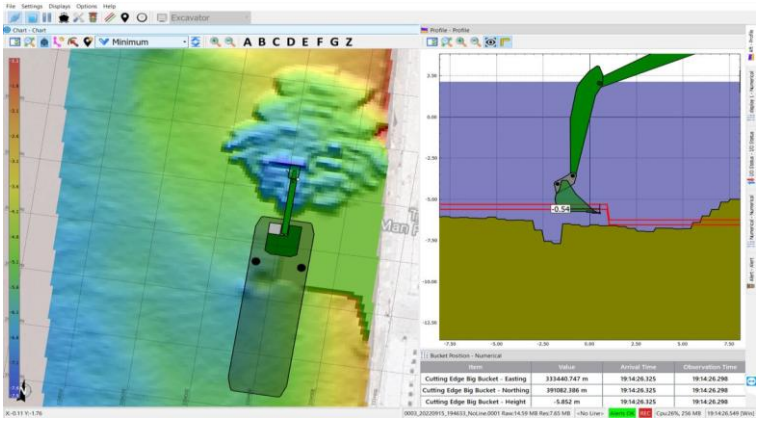


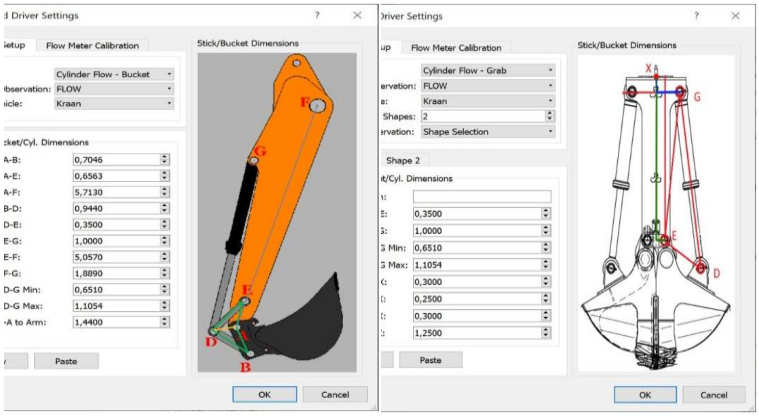
NavAQ Side Scan Sonar Yazılımı;



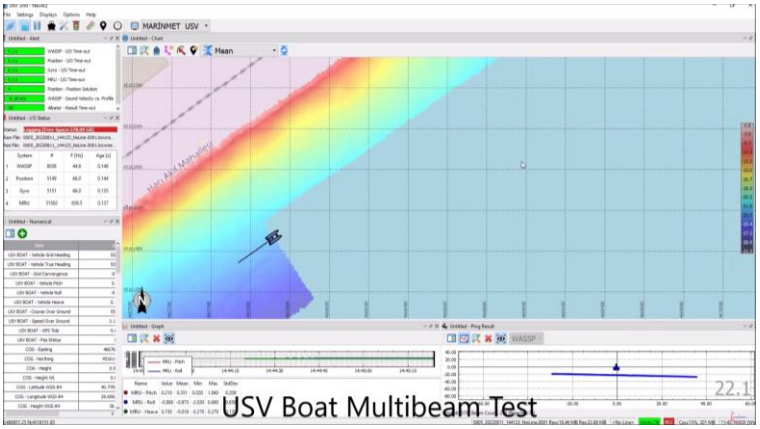


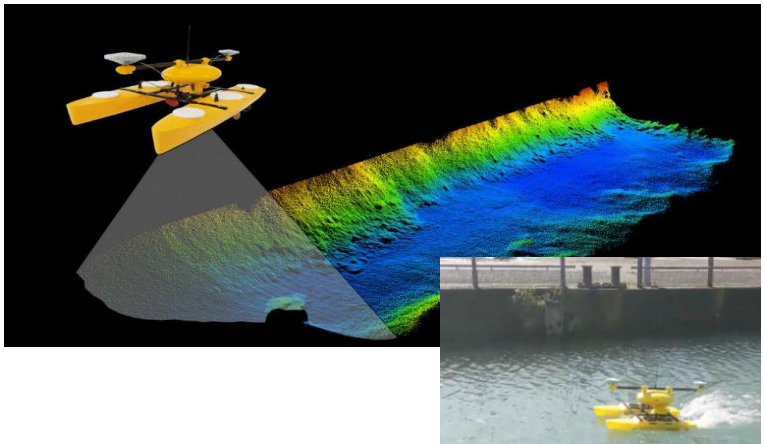
NavAQ İzleme Software (Profesyonel)

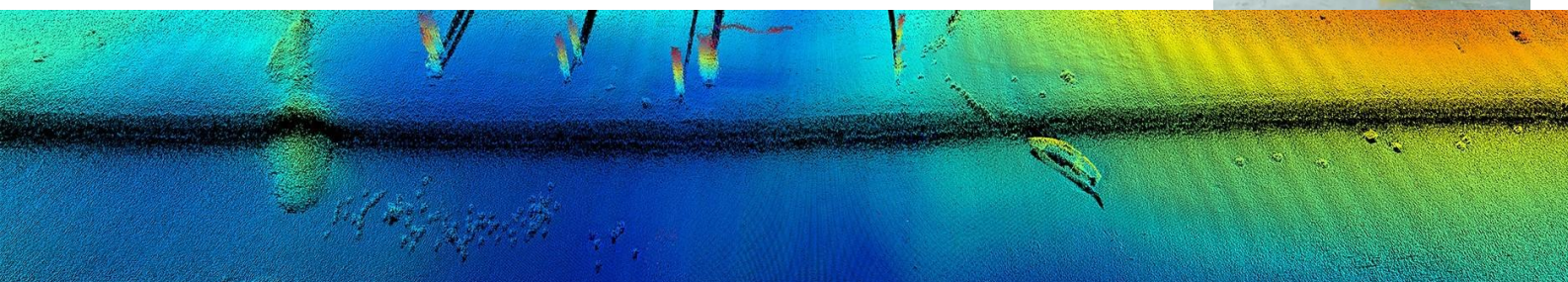




NavAQ USV Software

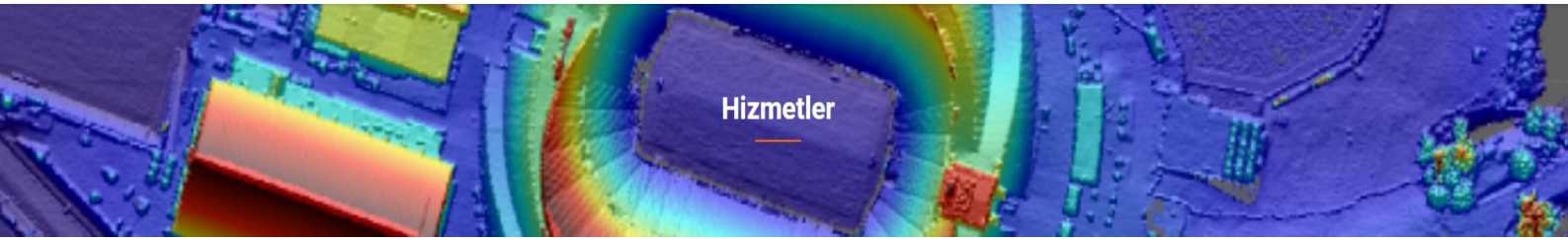






Eğitim

Ürünlerimiz için yerinde eğitim sağlıyoruz, aynı zamanda daha genel olarak çok ışınlı verilerin nasıl elde edileceği, kalibre edileceği ve işleneceği konusunda da eğitim sağlıyoruz.



Yerinde destek

Dünyanın her yerinde, yerinde destek sağlıyoruz. Anket yazılımı kurulumunuzda (MBES Beamworx) donanım / yazılım kurulumunuzda (Çok Işınlı, Tek ışın, GPS, Hareket sensörleri) gibi konularda size yardımcı olabiliriz !

Danışmanlık

Hidrografik Araştırma ve Gemi mobilizasyonlarında 25 yılı aşkın deneyime sahibiz. Sistem kurulumunuzu ayarlamanıza, kalibre etmenize ve sorun gidermenize yardımcı olabiliriz. Ayrıca AutoPatch programı ile multibeam kalibrasyonunun tam olarak nasıl yapılacağına dair eğitim de verebiliyoruz.

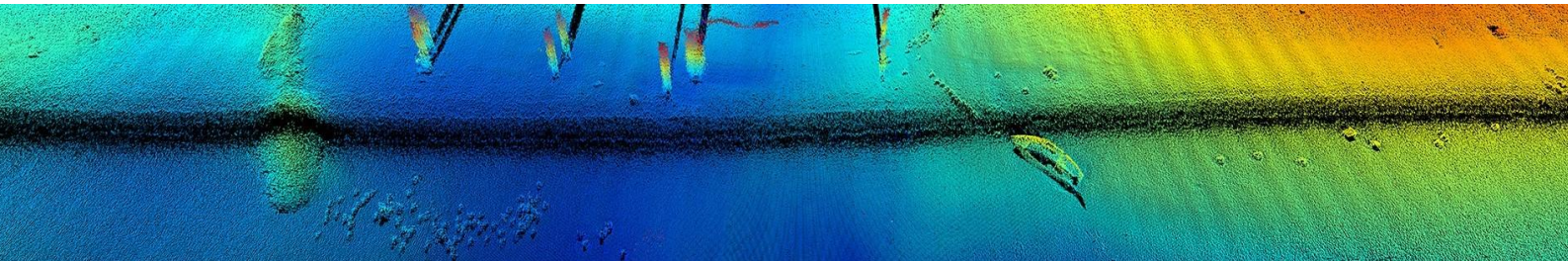
Özel yazılım

Kimsenin sunamayacağı özel programı mı arıyorsunuz? Bu programı yapmanıza yardımcı olabiliriz! Hidrografik veri toplama, işleme ve çok ışınlı sistem arayüzü oluşturma konularında deneyimimiz var. Özel bir yazılım çözümüne mi ihtiyacınız var?

BeamworX
Hydrographic Software & Consultancy

MARİNMET
Mühendislik

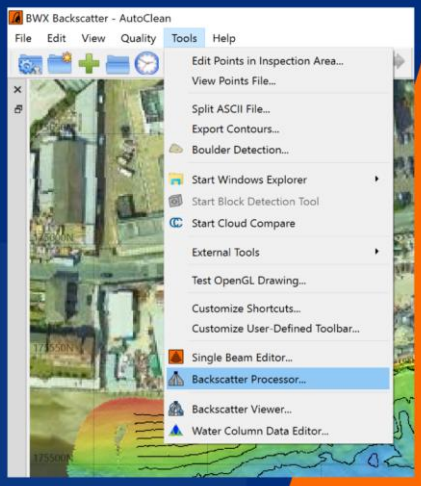
Deniz İnşaat & Genel Sualtı Hizmetleri. San Tic Ltd Şti İstasyon Mh Ceyhun Sk Ahmet Algan Apt. No: 10/ 2 Tuzla İSTANBUL
E-mail: info@marinmet.com.tr Web: www.marinmet.com.tr Tel: 0216 447 38 65 Fax: 0216 447 38 64

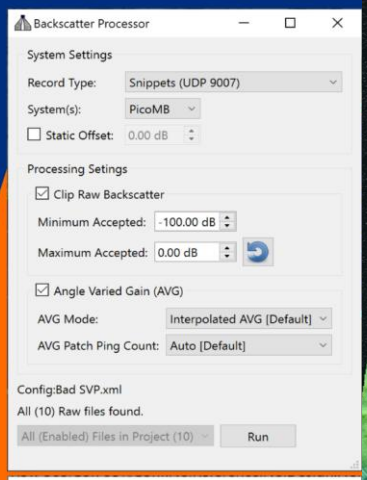


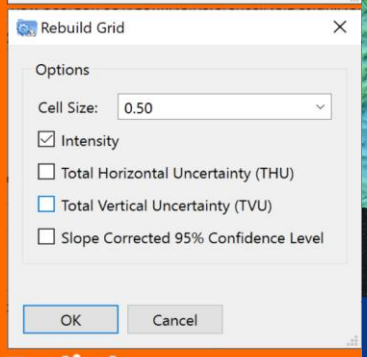
BeamworX

Which formats are supported?

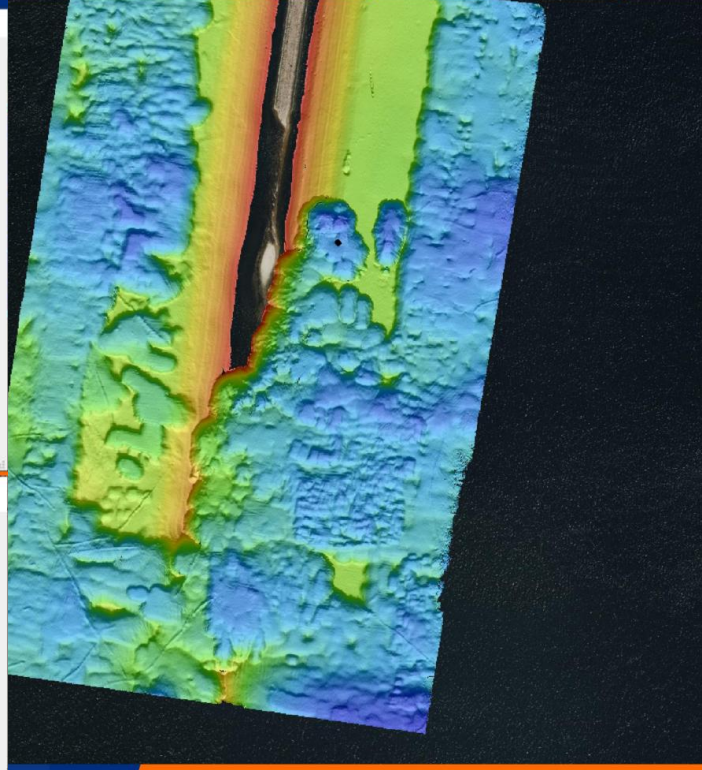
- BeamworX Raw (*.bwxraw)
- Kongsberg ALL (*.all)
- Teledyne PDS Files (*.pds)
- WASSP Data File (*.wmbf)
- GeoSwath Raw File (*.rdf)
- Kongsberg KMALL (*.kmall)
- Norbit/Teledyne (*.s7k)





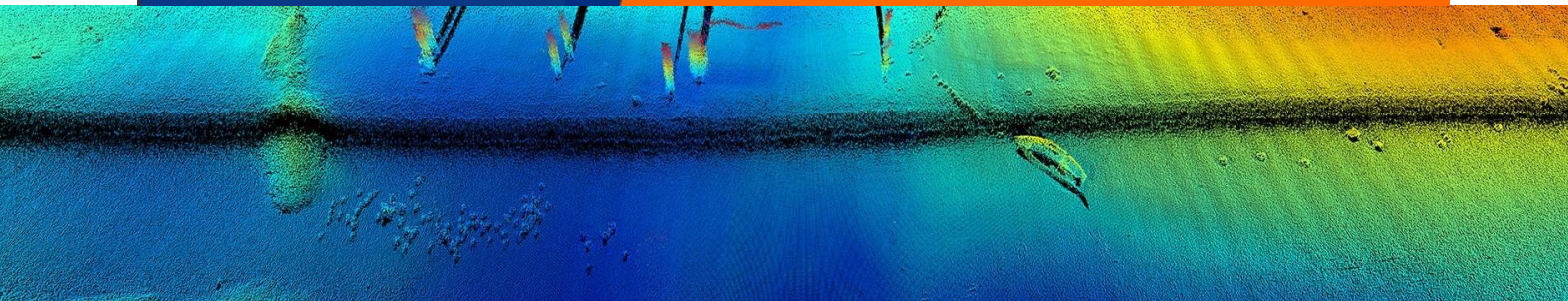


3 click process...



Extremely Fast

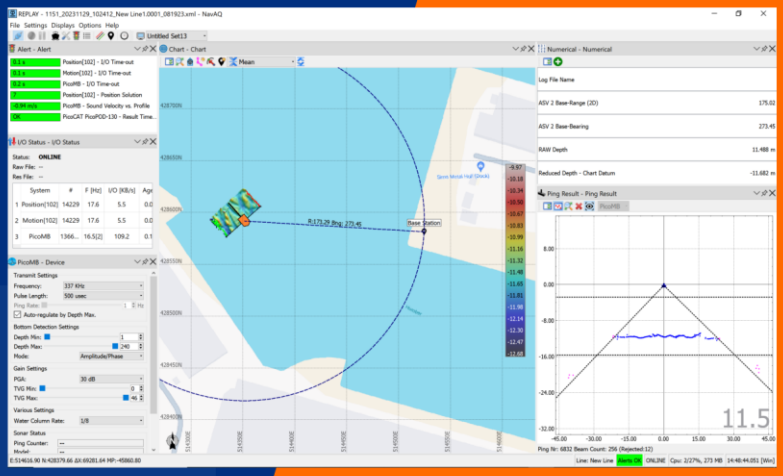
Solid Results

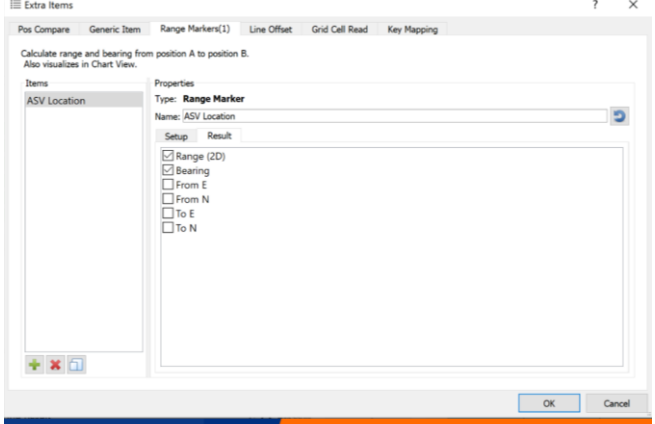


BeamworX

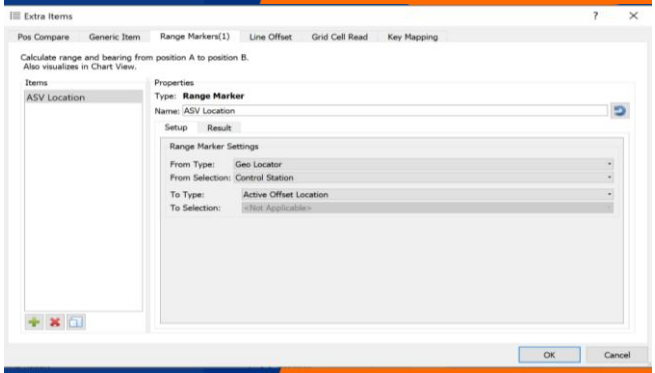
EXTRA ITEMS – Range Markers can be used to calculate various items (2D Range, Bearing, start/end positions) between two locations.

The defined locations are flexible, and range marker results are available in Numerical Display & Extra Items (Generic) and can be also drawn in Chart Display, accessible under Setup Chart Display.

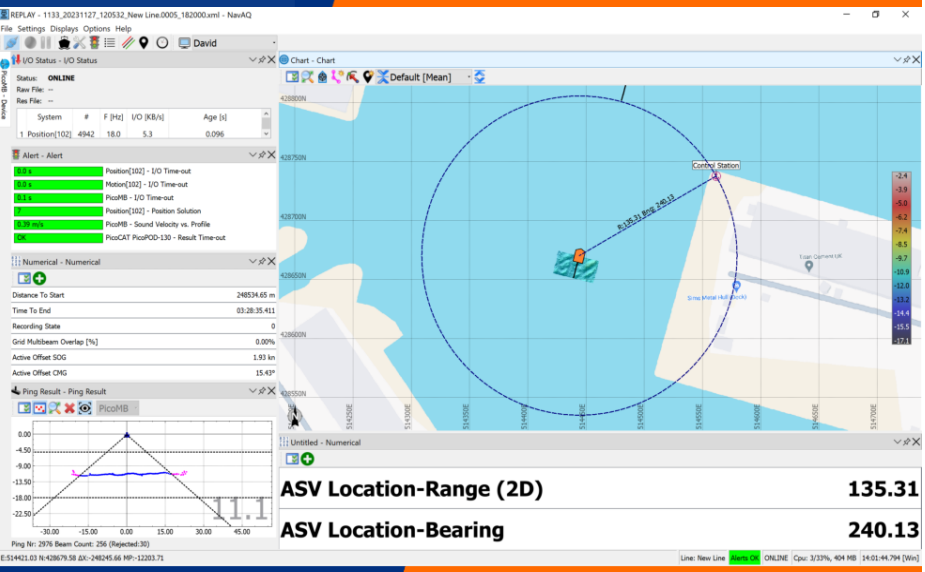


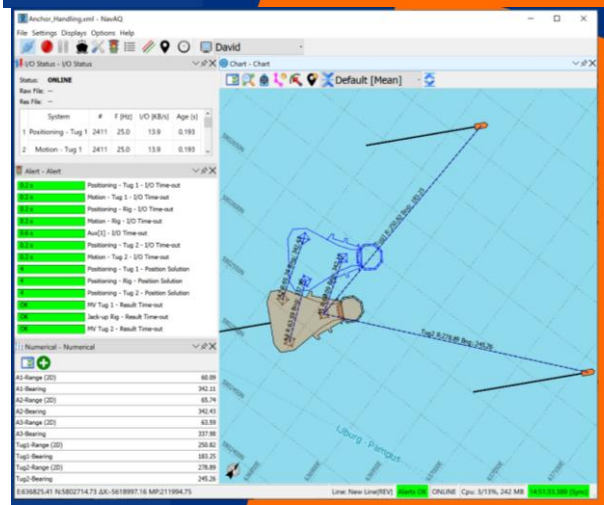


2 - Select Results

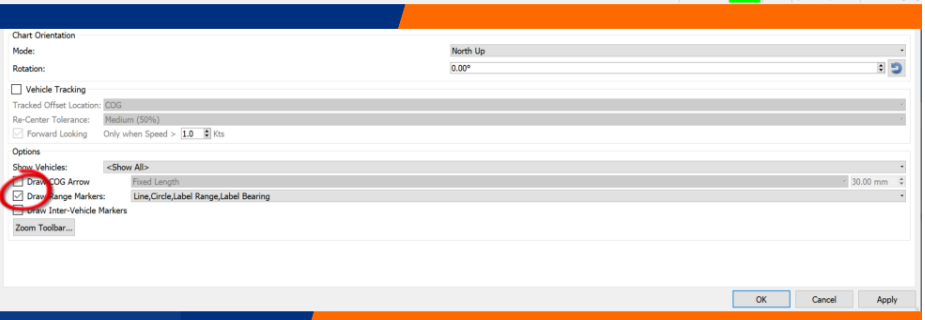


1 - Define Range Marker

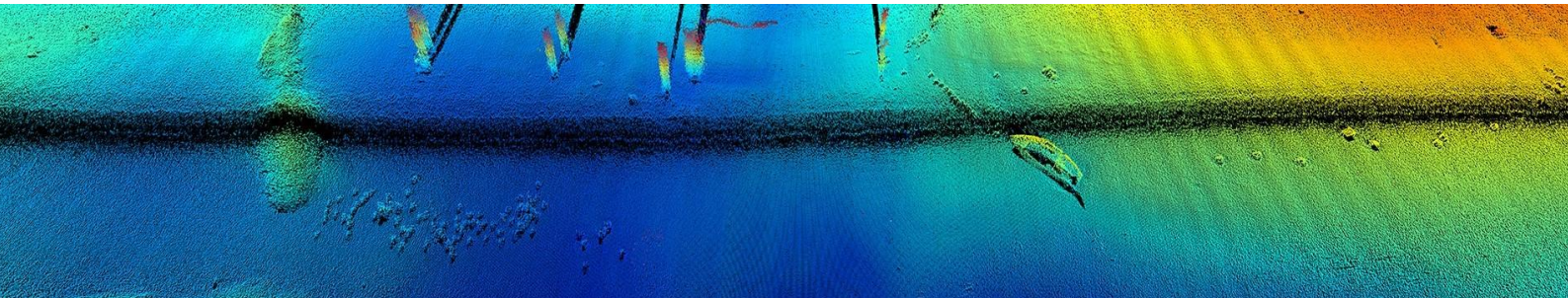




4 - Convey Information



3 - Display Results



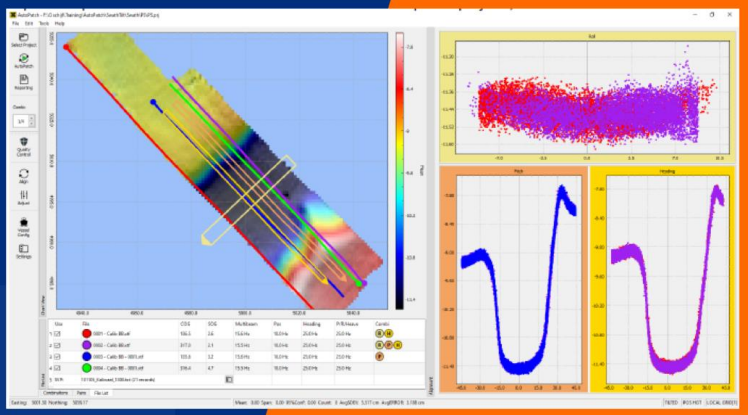
BeamworX

AutoPatch is used for automatic patch testing Multibeam sonar (single & dual head) and LiDAR systems.

But did you know about Adjust and Quality Control features?

In various formats:

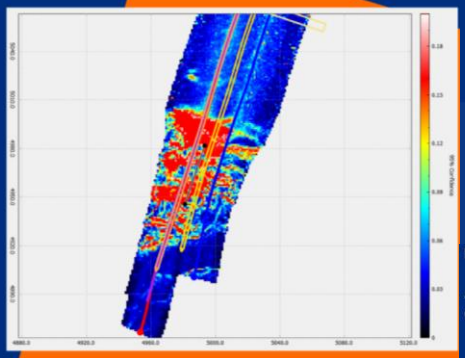
BeamworX Raw (*.bwxraw)
Kongsberg ALL (*.all)
eXtended Triton Format (*.xtf)
Hypack Raw Files (*.hsx)
Teledyne PDS Files (*.pds)
WASSP Data File (*.wmbf)
GeoSwath Raw File (*.rdf)
Kongsberg KMALL (*.kmall)
Teledyne Reson (*.s7k)



1 Automated Patch Testing

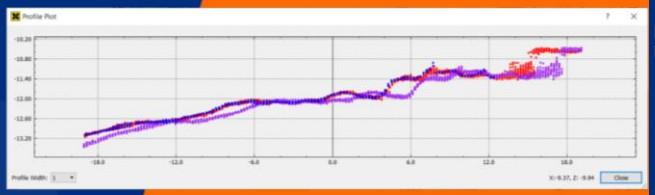
Description:

Applies a time offset to the position timetags.
Note that latency is always subtracted from the times.
Can only be executed when there is a latency pair detected, this is a pair of lines with sufficient speed difference running in the same direction.



Errors fixed:

Position error in bathymetry.



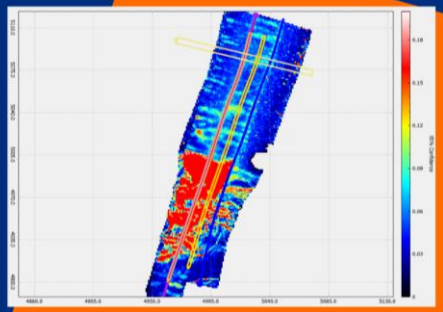
4 Position Latency

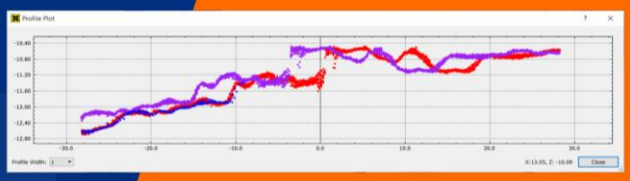
Description:

Applies a latency to the multibeam ping packets.

Errors fixed:

Ripples in the bathymetry.

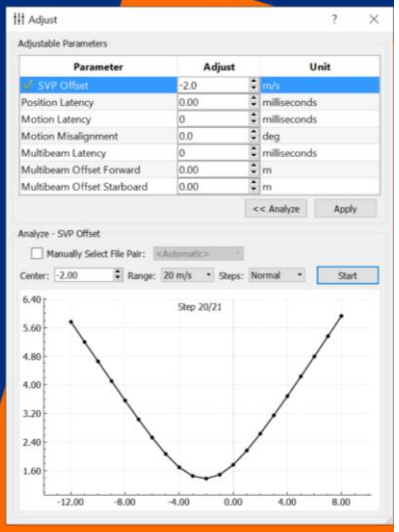




7 Multibeam Latency

The Adjust feature allows users to analyse parameters by generating response curves

SVP offset
Position Latency
Motion Latency
Motion Misalignment
Multibeam Offset Fwd
Multibeam Offset Stbd



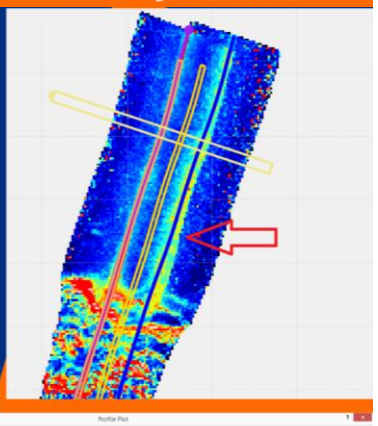
2 Adjust feature

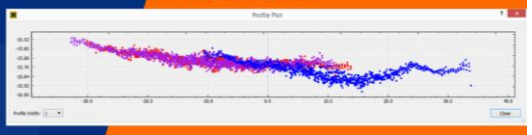
Description:

Applies an offset to the Sound Velocity Profile (SVP).
These errors occur very often.

Errors fixed:

Frowns/Smiles, no good depth fit on overlap with parallel lines.



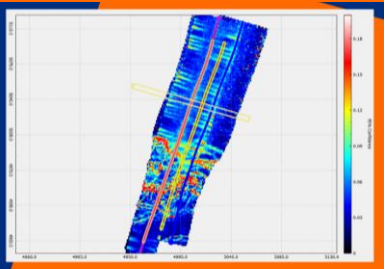


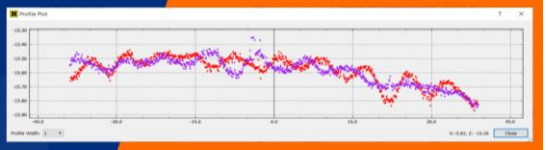
3 SVP Offset

Description:

Applies a latency to the motion data.

Errors fixed:
Ripples in the bathymetry.





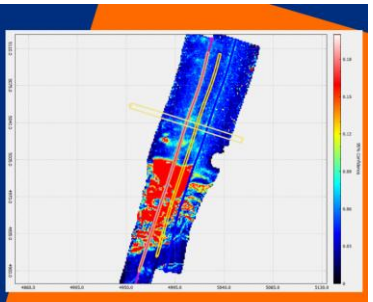
5 Motion Latency

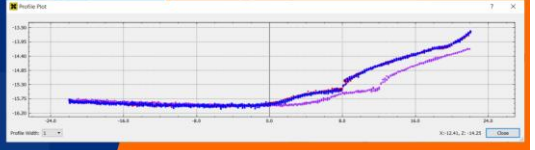
Description:

Shift the current transducer location forward with the entered amount. Positive shift moves transducer to the bow, negative to the stern. For separate TX/RX, BOTH offsets are modified.

Errors fixed:

Height Ripples in the bathymetry, position errors.



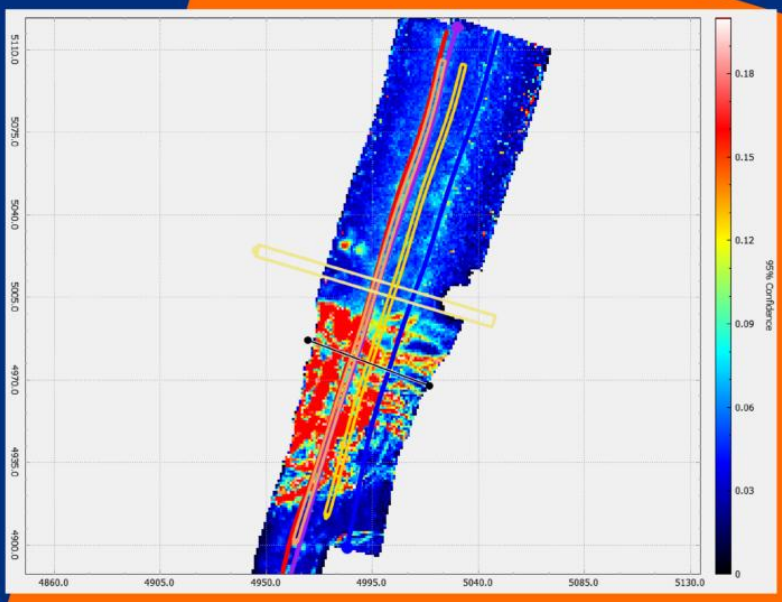


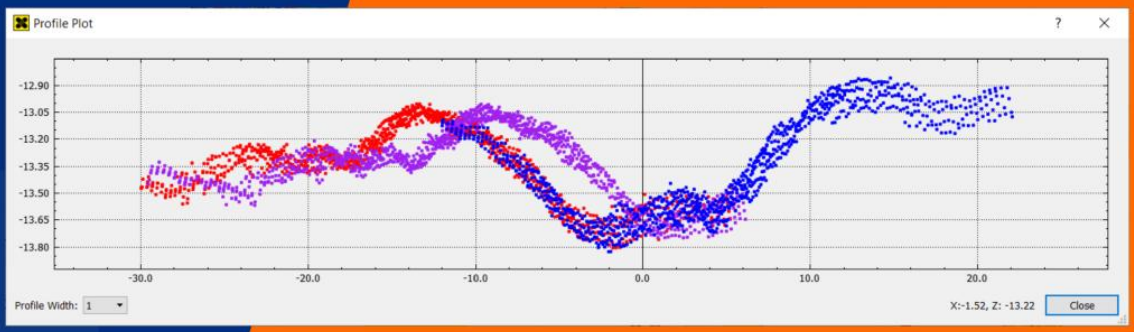
8 Multibeam Offset Forward

Description:

Shift the current transducer location starboard with the entered amount.
Positive is shift to starboard, negative to port.
For separate TX/RX, BOTH offsets are modified.

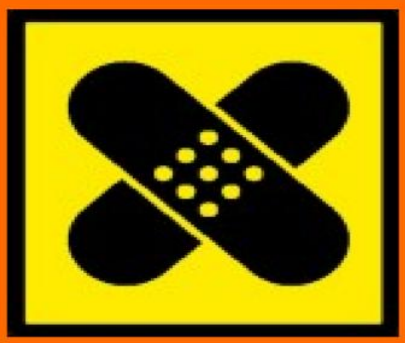
Errors fixed:
Height Ripples in the bathymetry, position errors.

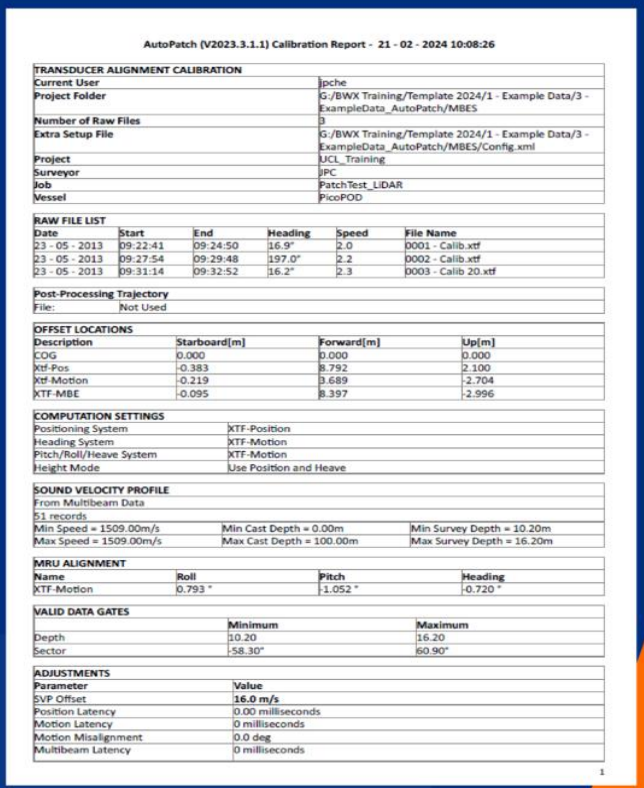




9 Multibeam Offset Starboard

Let AutoPatch find and solve the errors in your data which you may be struggling to identify!





AutoPatch (V2023.3.1.1) Calibration Report - 21 - 02 - 2024 10:08:26

TRANSDUCER ALIGNMENT CALIBRATION	
Current User	jpche
Project Folder	G:/BWX Training/Template 2024/1 - Example Data/3 - ExampleData_AutoPatch/MBES
Number of Raw Files	3
Extra Setup File	G:/BWX Training/Template 2024/1 - Example Data/3 - ExampleData_AutoPatch/MBES/Config.xml
Project	UCL_Training
Surveyor	JPC
Job	PatchTest_LIDAR
Vessel	PicoPOD

RAW FILE LIST					
Date	Start	End	Heading	Speed	File Name
23 - 05 - 2013	09:22:41	09:24:50	16.9°	2.0	0001 - Calib.xtf
23 - 05 - 2013	09:27:54	09:29:48	197.0°	2.2	0002 - Calib.xtf
23 - 05 - 2013	09:31:14	09:32:52	16.2°	2.3	0003 - Calib 20.xtf

Post-Processing Trajectory	
File:	Not Used

OFFSET LOCATIONS			
Description	Starboard[m]	Forward[m]	Up[m]
COG	0.000	0.000	0.000
Xtf-Pos	-0.383	8.792	2.100
Xtf-Motion	-0.219	3.689	-2.704
XTF-MBE	-0.095	8.397	-2.996

COMPUTATION SETTINGS	
Positioning System	XTF-Position
Heading System	XTF-Motion
Pitch/Roll/Heave System	XTF-Motion
Height Mode	Use Position and Heave

SOUND VELOCITY PROFILE		
From Multibeam Data		
51 records		
Min Speed = 1509.00m/s	Min Cast Depth = 0.00m	Min Survey Depth = 10.20m
Max Speed = 1509.00m/s	Max Cast Depth = 100.00m	Max Survey Depth = 16.20m

MRU ALIGNMENT			
Name	Roll	Pitch	Heading
XTF-Motion	0.793 °	-1.052 °	-0.720 °

VALID DATA GATES		
	Minimum	Maximum
Depth	10.20	16.20
Sector	-58.30°	60.90°

ADJUSTMENTS	
Parameter	Value
SVP Offset	16.0 m/s
Position Latency	0.00 milliseconds
Motion Latency	0 milliseconds
Motion Misalignment	0.0 deg
Multibeam Latency	0 milliseconds

1

Multibeam Offset Starboard	0.000 m
Multibeam Offset Forward	0.000 m

DATA PAIRING & ROLL AREA SETTINGS	
Parameter	Value
Min. Roll-Pitch Overlap	80
Max. Heading Overlap	60
Line Heading Margin	30
Line Speed Margin	1
Roll Calibration Area Placement	Automatically, based on seabed features

CALIBRATION OFFSET RESULTS					
Roll-Pitch	Hdg	Roll	Pitch	Heading	
1 - 2	1 - 3	-1.126°	0.89°	3.04°	
	PRESET	0.000°	0.00°	0.00°	
	AVERAGE	-1.126°	0.89°	3.04°	ADVISED MOUNTING ANGLES
	SDEV	0.000°	0.00°	0.00°	

MOUNTING ANGLE SIGN CONVENTION	
Roll	Positive when Transducer center beam points towards port
Pitch	Positive when Transducer center beam points towards bow
Heading	Positive when Transducer is rotated clockwise around vertical axis of vessel
Note: All angles are absolute w.r.t. the vessel reference frame	

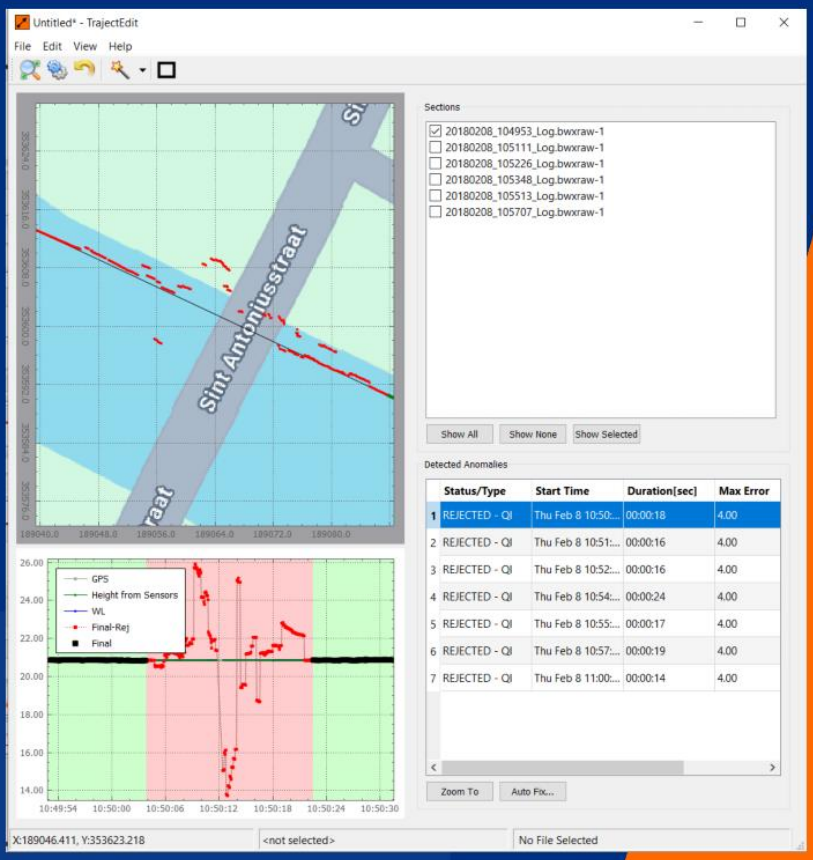
ACCURACY	
Average Error	1.145 cm/m2

WARNINGS
[1] 0001 - Calib.xtf - Position update rate (1.0Hz) is lower than 5Hz
[2] 0002 - Calib.xtf - Position update rate (1.0Hz) is lower than 5Hz
[3] 0003 - Calib 20.xtf - Position update rate (1.0Hz) is lower than 5Hz

10 - Full Error Analysis and Reporting

BeamworX

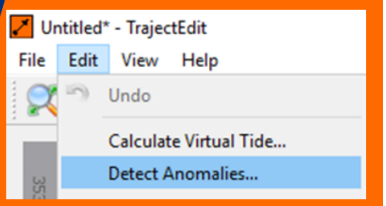
Trajectory Editor is used to fix problematic vessel trajectory data

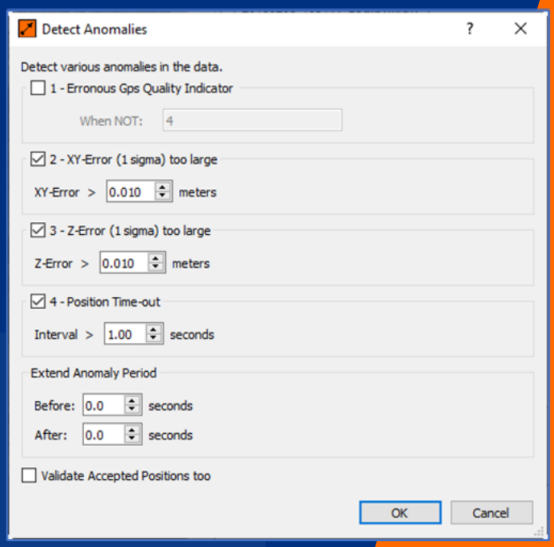


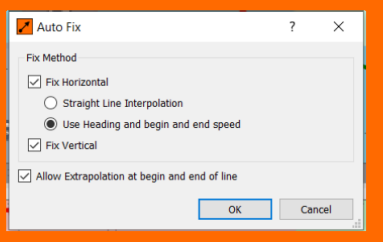
Which formats are supported?

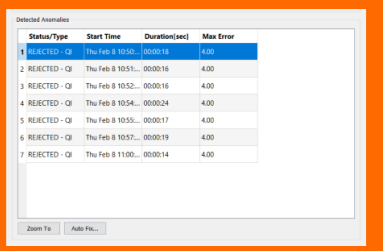
- BeamworX Raw (*.bwxraw)
- Kongsberg ALL (*.all)
- Teledyne PDS Files (*.pds)
- WASSP Data File (*.wmbf)
- GeoSwath Raw File (*.rdf)
- Kongsberg KMALL (*.kmall)
- Norbit/Teledyne (*.s7k)
- Edgetech (*.jsf)
- Applanix (*.000 / *.out)
- CodaOctopus (*.mcom)
- OXTS (*.ncom)
- Terrapos (*.nma)
- Nat Resources Canada (*.pos)
- Advanced Navigation (*.anpp
- User Defined ASCII (*.*)

But did you know that you can automatically detect and correct anomalies based on position Quality Data using AutoFix?



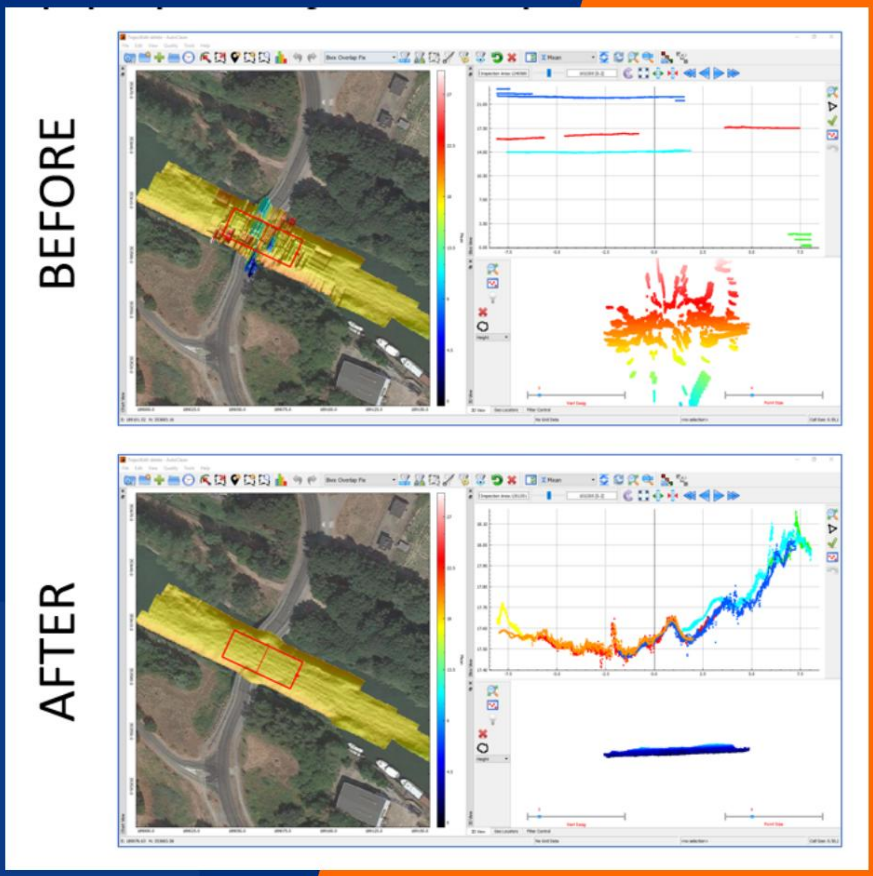


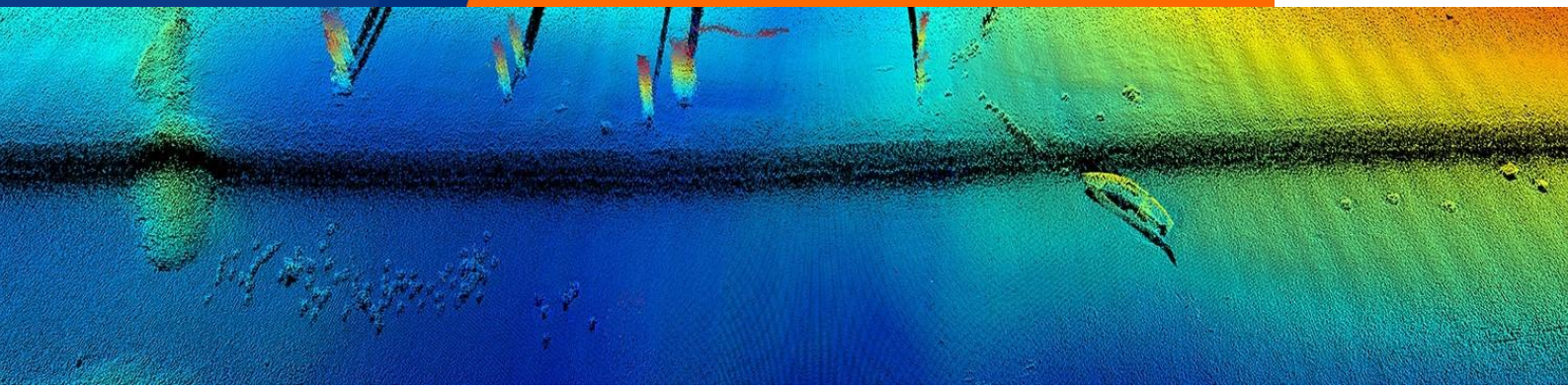




BeamworX

Once corrected, save trajectory (*.bwxtraj) and apply to data on import into AutoClean





MARINMET Mühendislik

Deniz İnşaat & Genel Sualtı Hizmetleri. San Tic Ltd Şti İstasyon Mh Ceyhun Sk Ahmet Algan Apt. No: 10/ 2 Tuzla İSTANBUL
E-mail: info@marinmet.com.tr Web: www.marinmet.com.tr Tel: 0216 447 38 65 Fax: 0216 447 38 64