



QINSy

QPS QINSy is navigation / positioning and reporting software used on board offshore construction vessels, pipe-lay barges, drilling rigs, seismic research vessels and all manner of hydrographic survey vessels (Surface and sub-surface). QPS is a market leader in the offshore renewable energy industry, the dredging industry and port communities.

Qimera

QPS Qimera is probably the simplest yet most powerful post processing application available. Built on the strengths of QINSy and Fledermaus and optimized for the latest computing technology, Qimera is feature rich and extremely easy to use. Able to work with QINSy data files, plus many other raw sonar file formats, the Qimera Dynamic Workflow revolutionizes the efficiency with which post processing can be completed.

UNDERWATER MAPPING

Qastor Connect Server

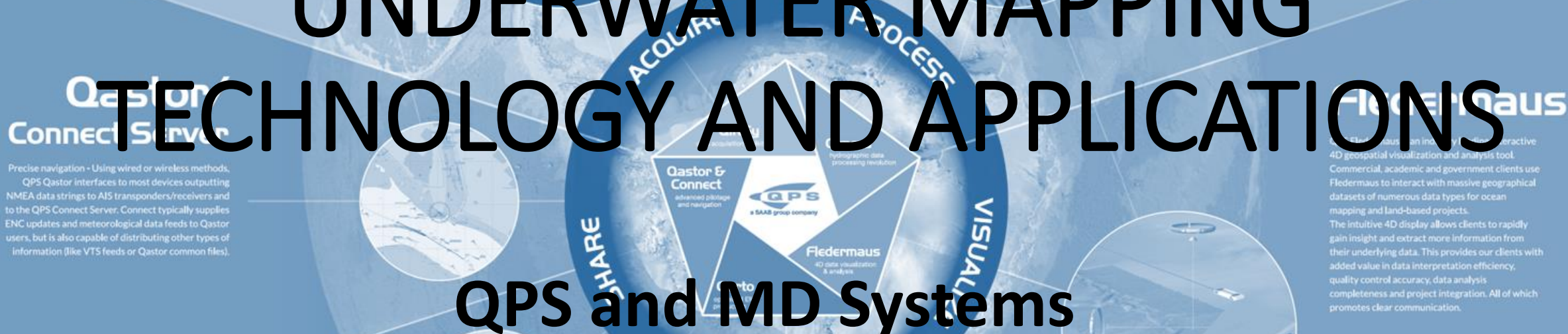
Precise navigation - Using wired or wireless methods, QPS Qastor interfaces to most devices outputting NMEA data strings to AIS transponders/receivers and to the QPS Connect Server. Connect typically supplies ENC updates and meteorological data feeds to Qastor users, but is also capable of distributing other types of information (like VTS feeds or Qastor common files).

Fledermaus

Fledermaus is an industry leading interactive 4D geospatial visualization and analysis tool. Commercial, academic and government clients use Fledermaus to interact with massive geographical datasets of numerous data types for ocean mapping and land-based projects. The intuitive 4D display allows clients to rapidly gain insight and extract more information from their underlying data. This provides our clients with added value in data interpretation efficiency, quality control accuracy, data analysis completeness and project integration. All of which promotes clear communication.

Qarto

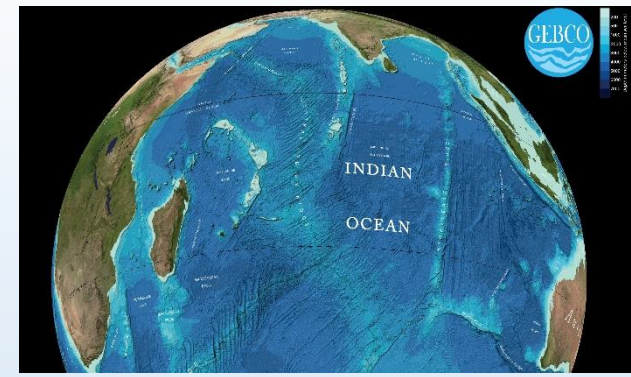
The strength of Qarto is the very fast and automated ENC production. Qarto makes possible the short turn-around times from survey to chart that are necessary for the safe operation of the busy waterways. Qarto vn3 distinguishes itself by its efficient way of data storage and by its principle based on semi-static base cells that are updated with highly dynamic hydrographic data. Completely updated ENC base cells are ready for distribution very shortly after the survey being completed.



QPS and MD Systems

Elisabeth J.Y. Kim

Ocean Mapping Is Exciting..



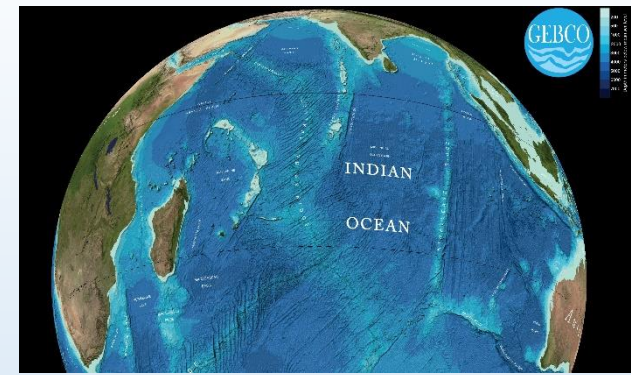
.. and the more we learn about our seafloor, the more we understand scientific processes and their impact on commerce, shipping, safety of navigation, climate change and the coastal environments.

Using Acoustics. Acoustic systems (single-beam echosounder, multibeam echosounder, and side scan sonar) are efficient tools capable of monitoring the environmental (physical and biological) evolution.

Ocean Mapping Is Exciting..

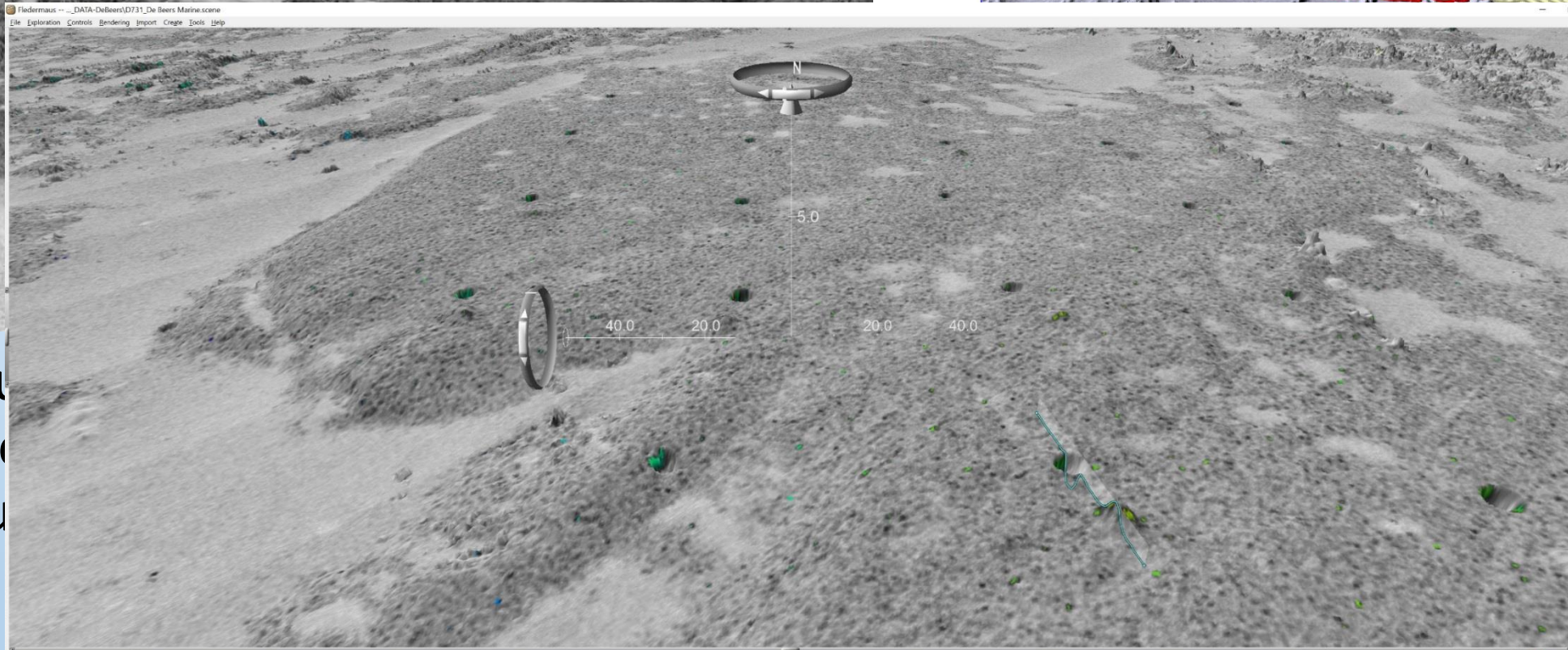
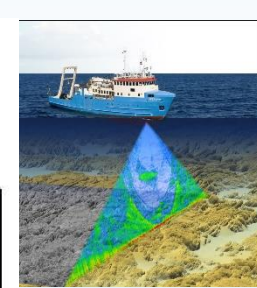
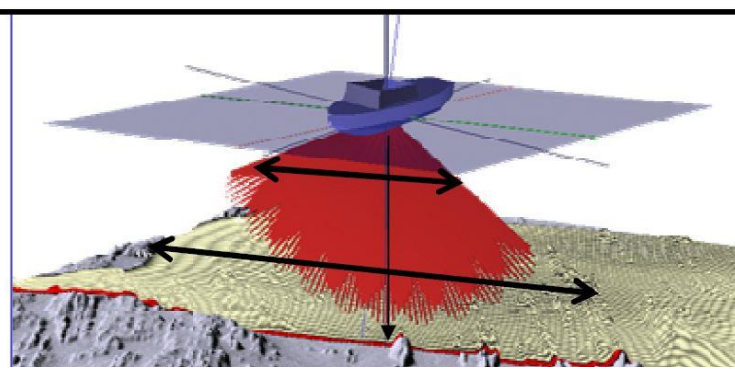
About This Talk:

- Principles of echosounding, and especially MBES
- MBES type and choosing
- MBES data types
- Emerging technologies with MBES data
- Sharing results – linkage with GIS
- Summary & Take Home Message





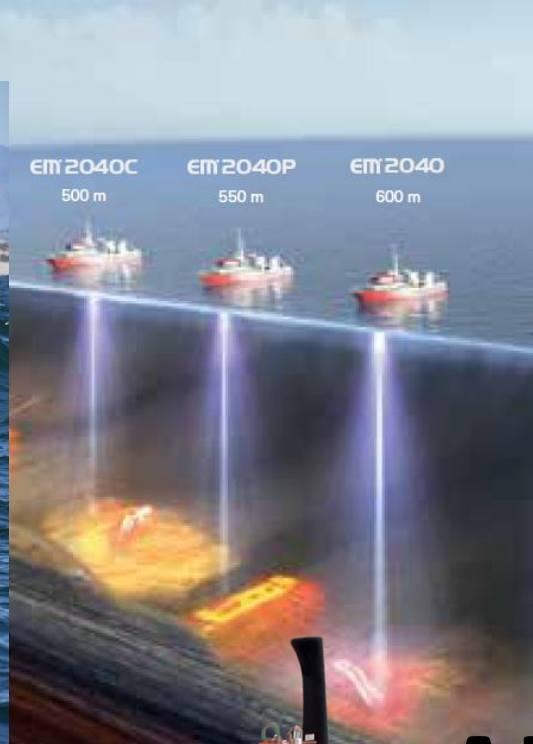
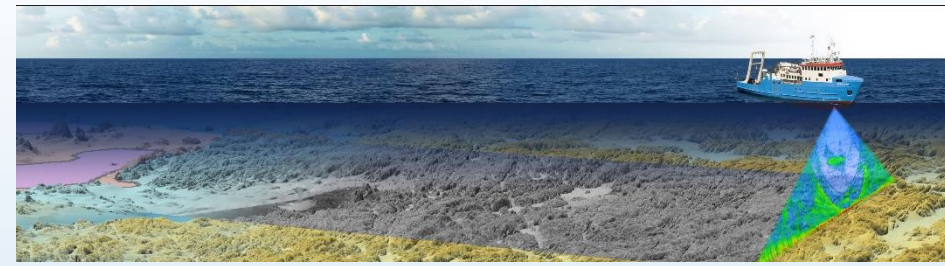
?)
(m)



requ
echo
retu

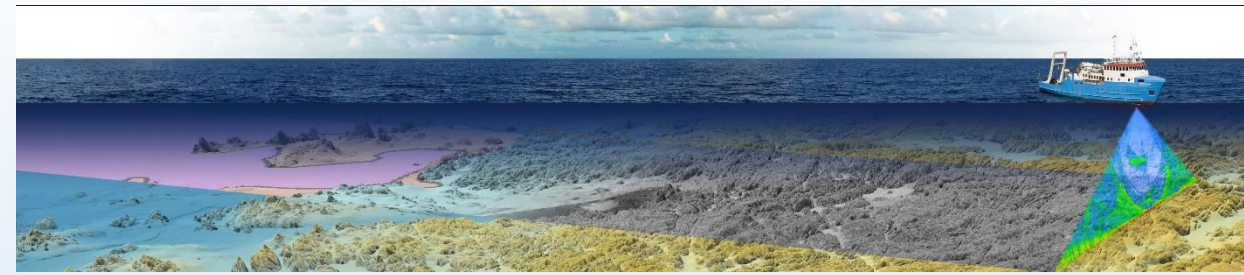


MBES Installation and survey:



KONGSBERG

Modern Day Example



The data behind the search

https://geoscience-au.maps.arcgis.com/apps/Cascade/index.html?appid=038a72439bfa4d28b3dde81cc6ff3214

Australian Government The data behind the search for MH370

Guide MH370 The initial response The search Collecting the data **The data** Geological insights Scientific use Phase Two data Debris analysis Data access Further information MH370 Data Release

This newly acquired data is the first high resolution data available for these areas; the search area is now among the most thoroughly mapped regions of the deep ocean on the planet.

Bathymetry (depth in metres)

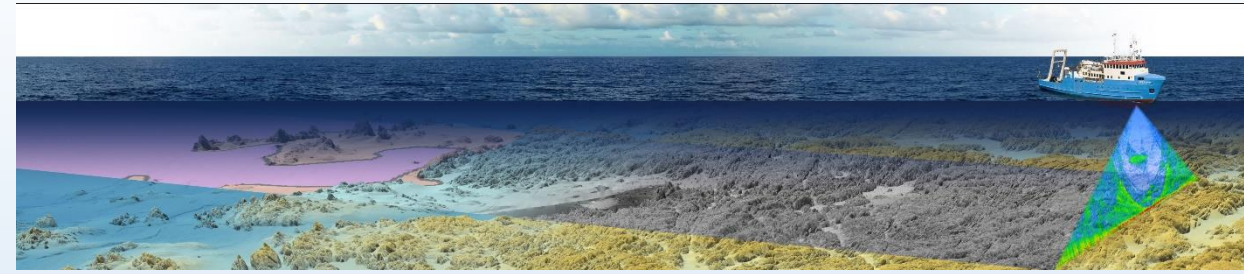
<1400
2060
2720
3380
4040
>4700

Explore the interactive maps by double-clicking or using the buttons to **zoom in and out**, and **drag to move the map**.

Earthstar Geographics | Geoscience Australia | NIWA, GeosciencesAustralia, Fari, GEBCO, DeLorme, NaturalVue | Esri, HERE

POWERED BY esri

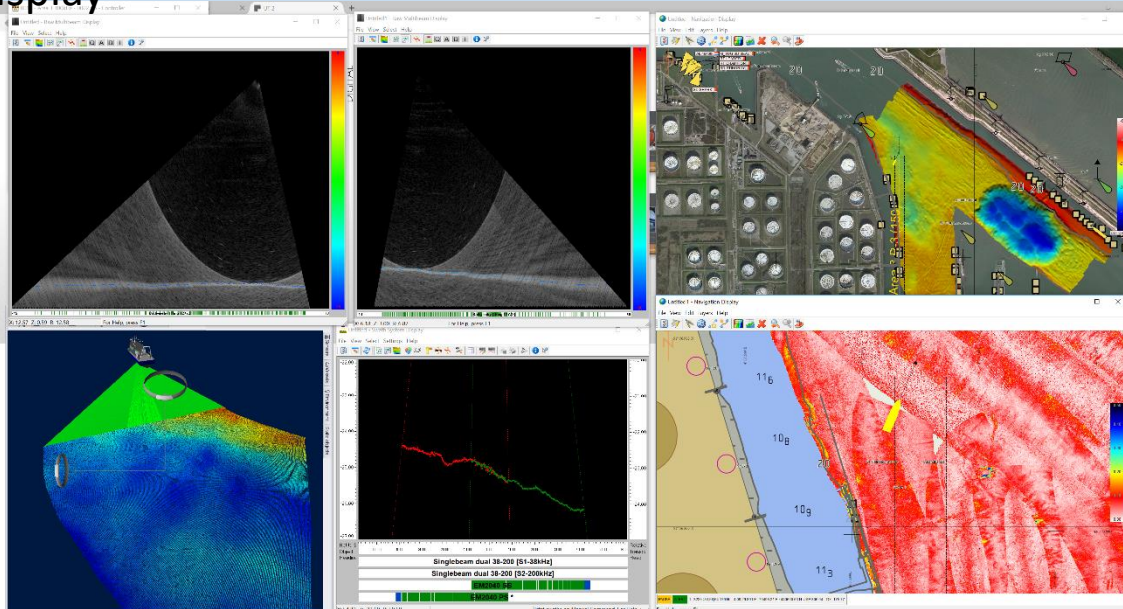
MBES Data Types



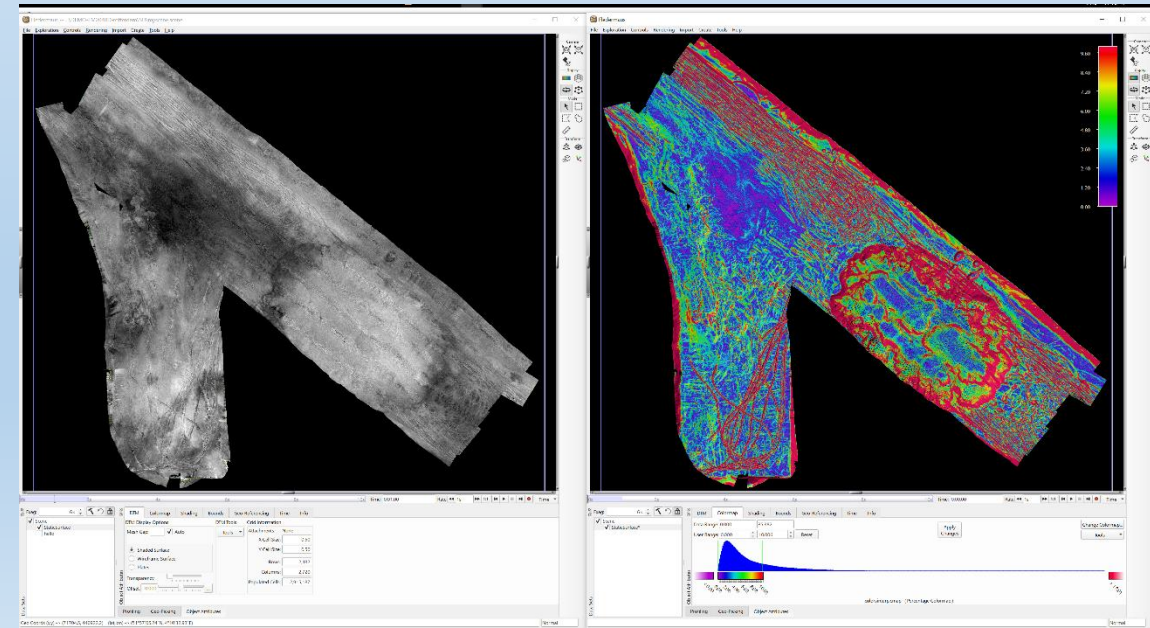
geo-referenced:

- Bathymetry; point cloud or surface, and derived slope/roughness
- Backscatter (amplitude / signal strength)
- Water Column

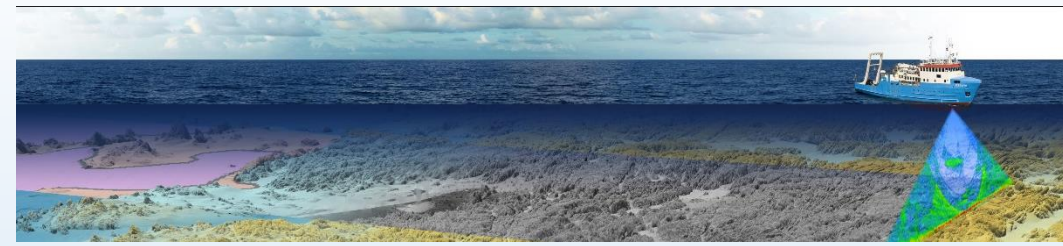
Data display



Processed results

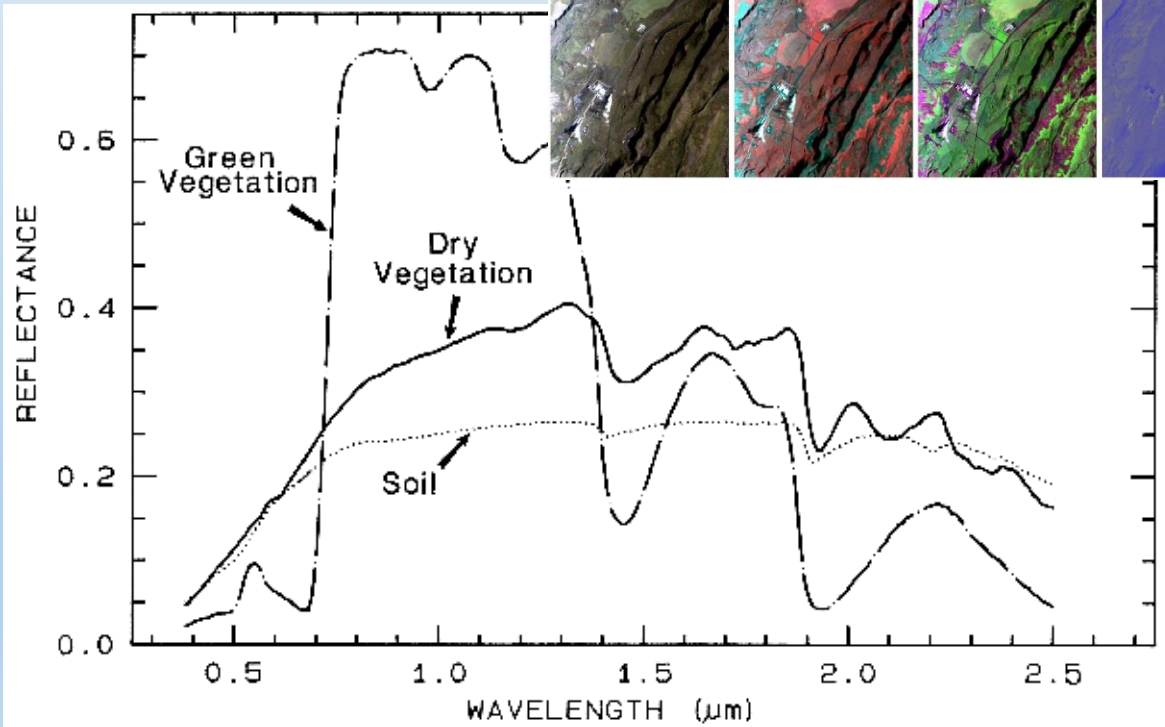
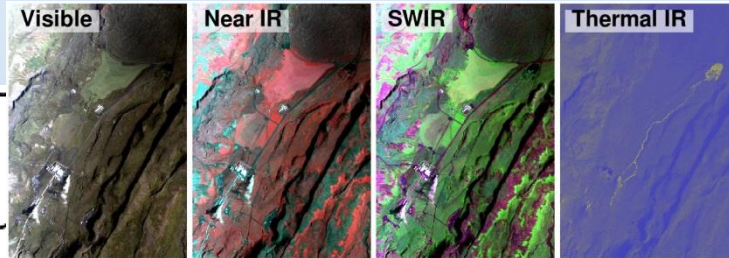


Multi-Spectral Multibeam

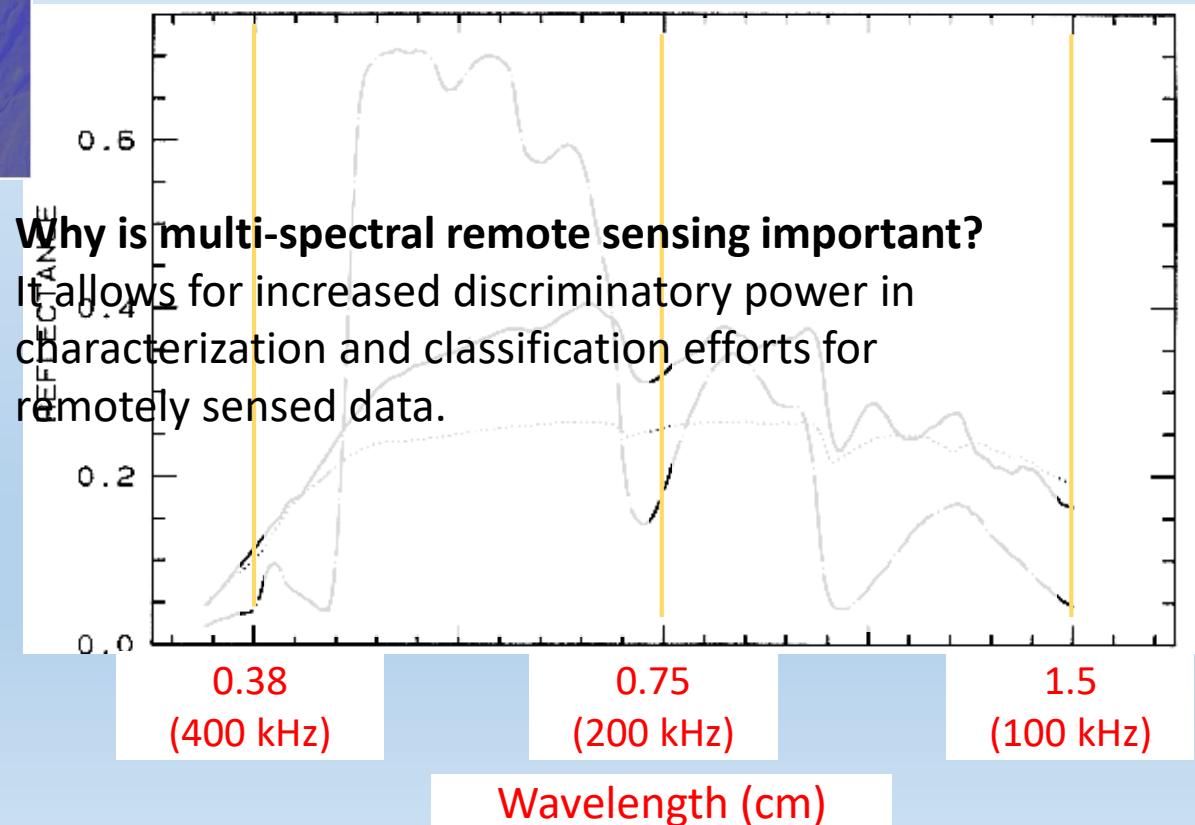


Multi-Frequency MBES backscatter, and learning from Remote Sensing:

Electro-Magnetic



Acoustics

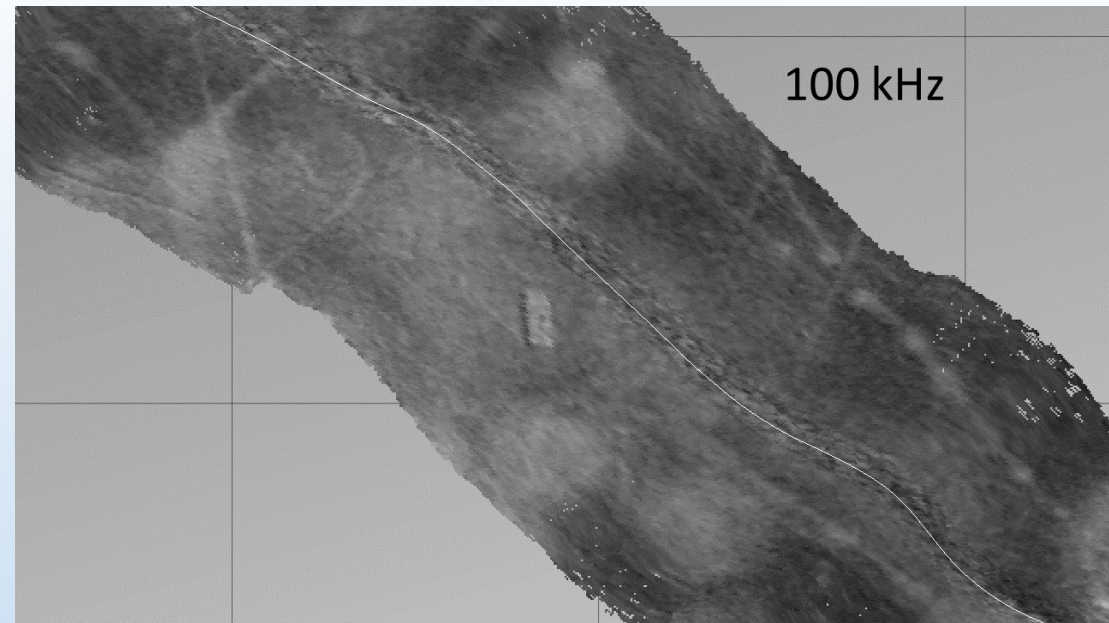
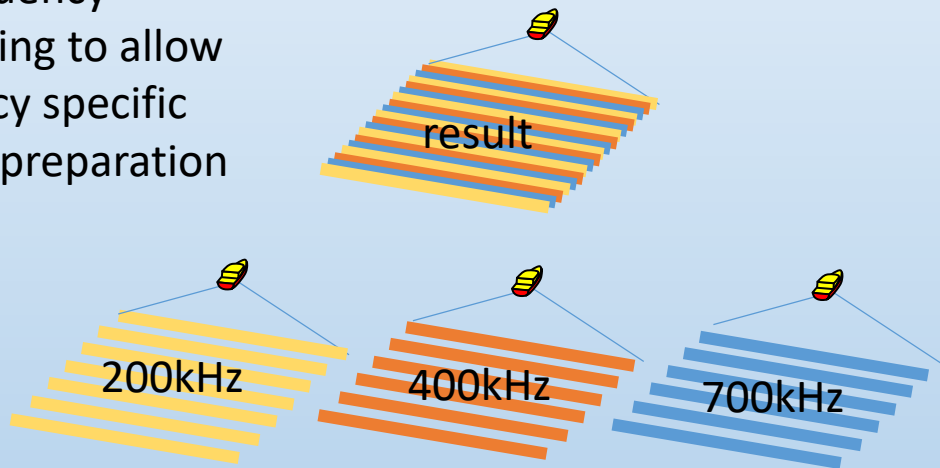


Why is multi-spectral remote sensing important?
It allows for increased discriminatory power in characterization and classification efforts for remotely sensed data.

If we can do this with electromagnet sensors, can we do it with acoustic sensors?

Multi-Spectral Multibeam: New Capabilities

1. Need to unravel the frequency sequencing to allow frequency specific product preparation

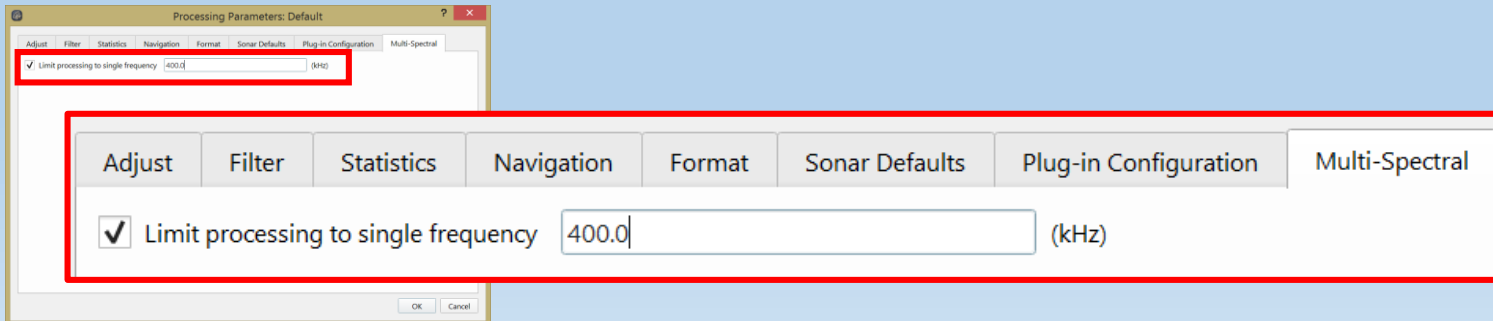


2. Need to honour the physics, specifically frequency dependent radiometric and geometric corrections. FMGT has always done this.

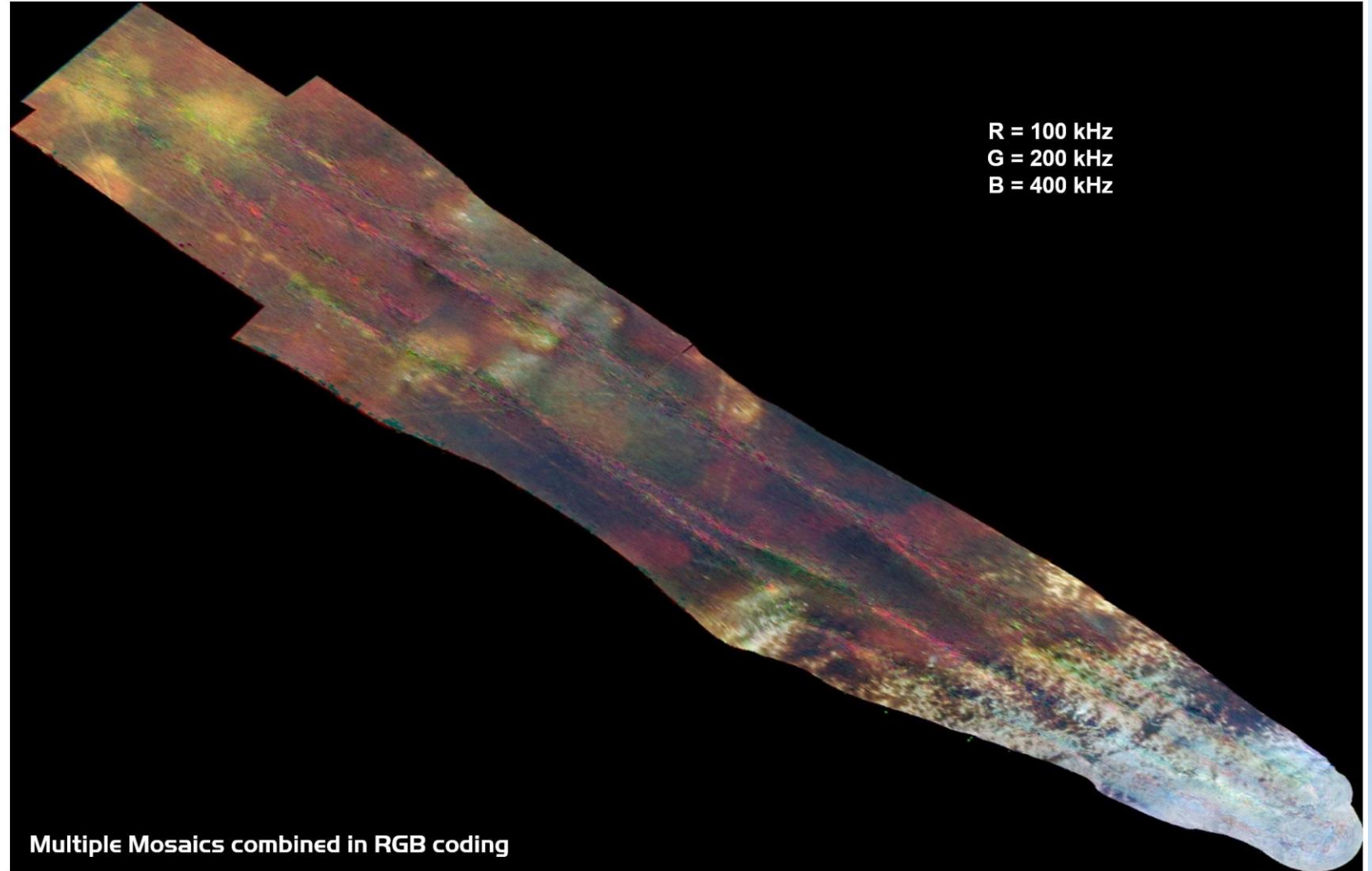
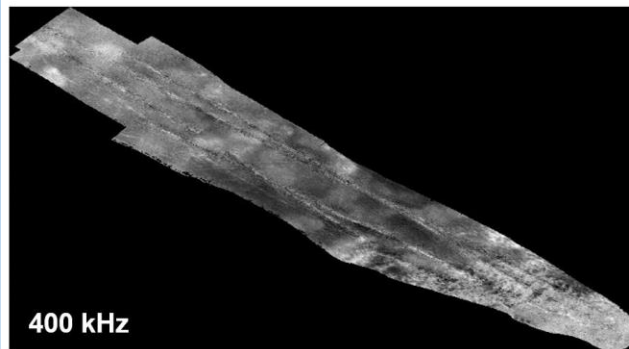
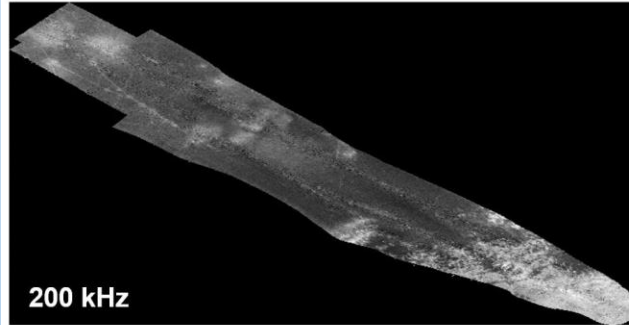
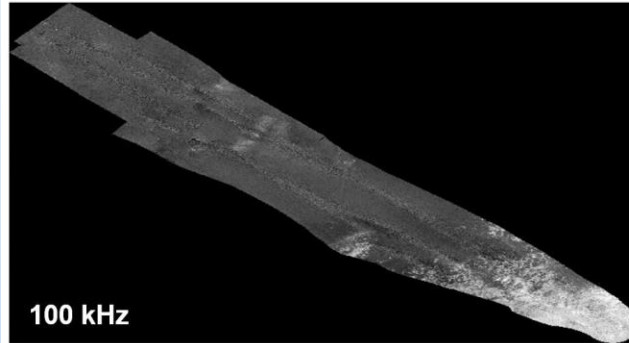
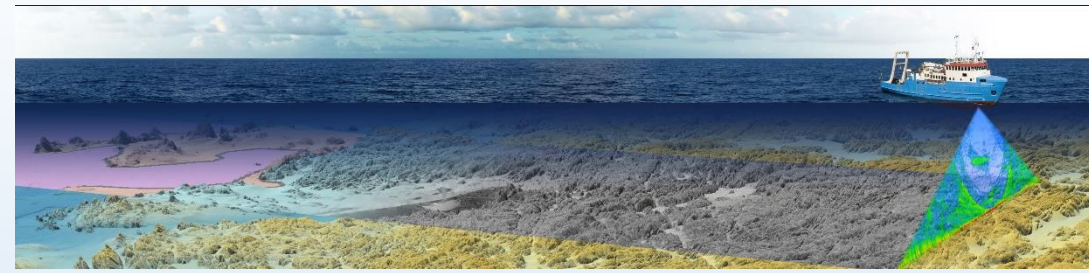
$$BS = EL - SL + 2TL - 10\log_{10}(A) + BP(\theta)$$

Frequency dependent ensonified area (A) can vary by factor of 4 to 16 (~6-12 dB), depending on beamwidth/pulsewidth limited regime

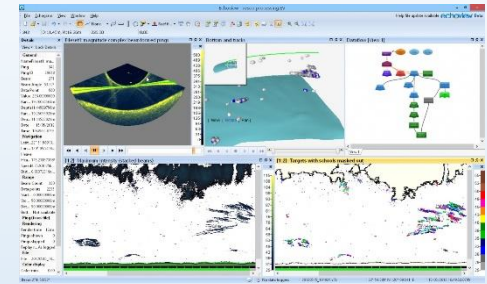
Frequency dependent attenuation (in TL) can vary by tens of dB, depending on water depth



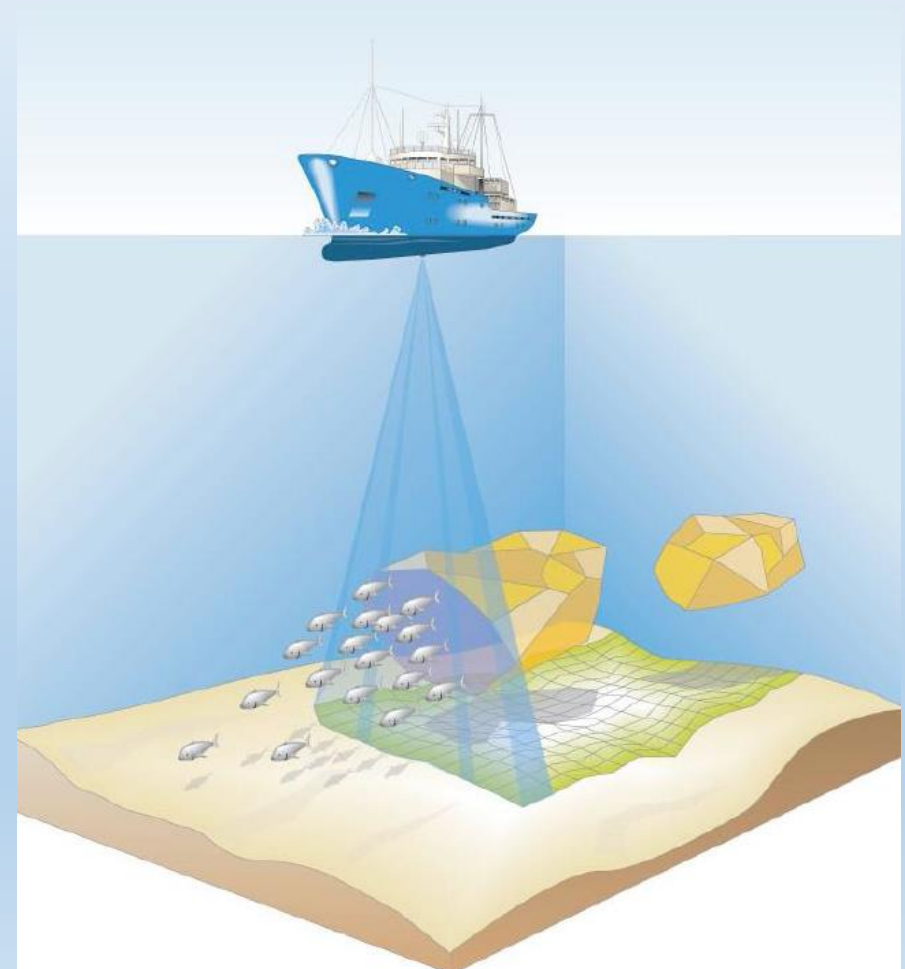
Multi-Spectral Multibeam



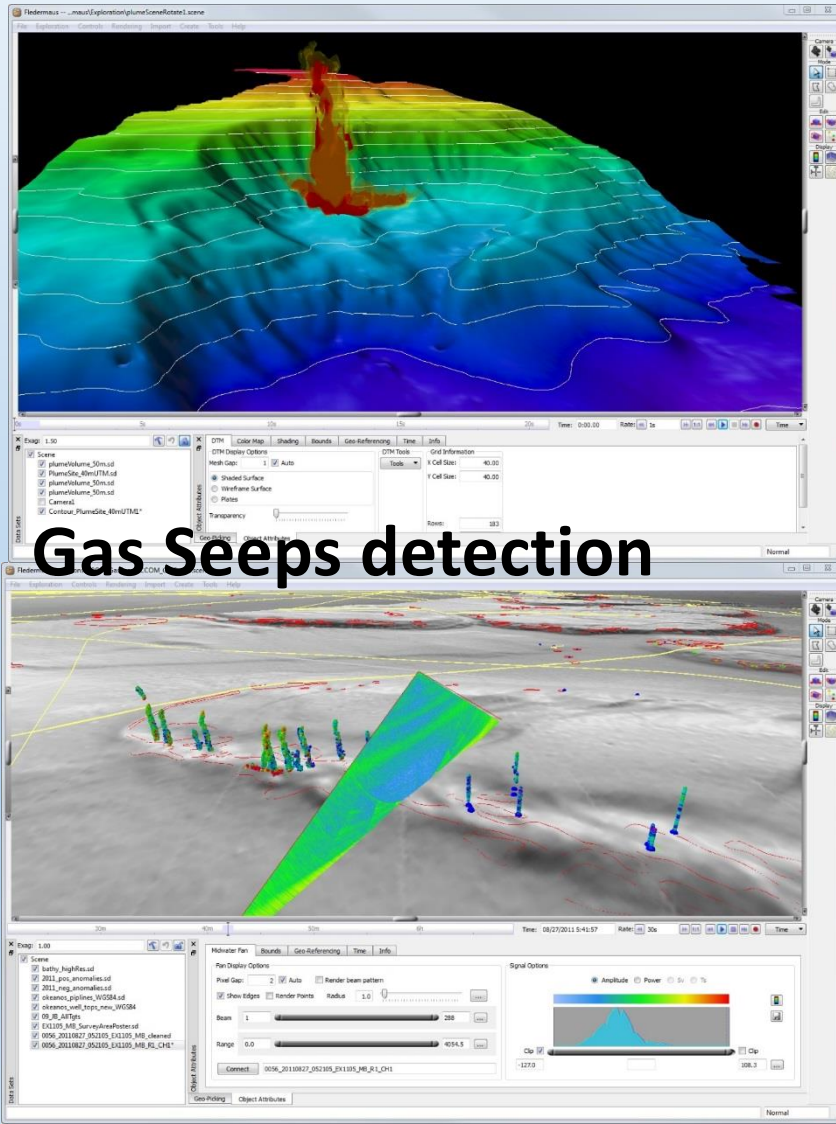
MBES And Water Column Data



- Fish Stock Assessment
 - Schools and individual fish
 - Biomass and density
- Fish Behaviour & Ecology
 - Swimming movement
 - Fish size
 - Interactions
- Seabed Habitat Classification
 - Bottom feature calculations
 - Substrate classification (PCA; k-means)

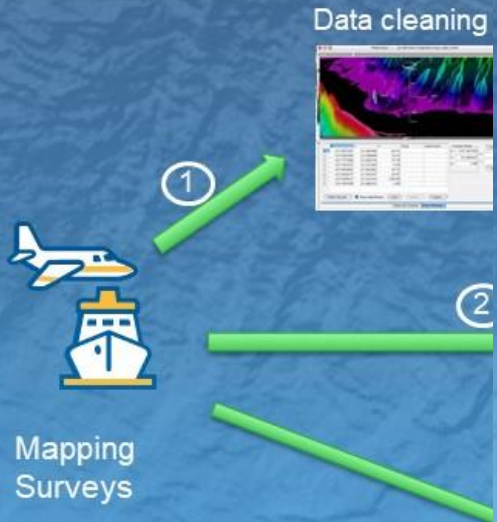


MBES And Water Column Data



GIS And Sharing Ocean Mapping Data

A Maritime Data



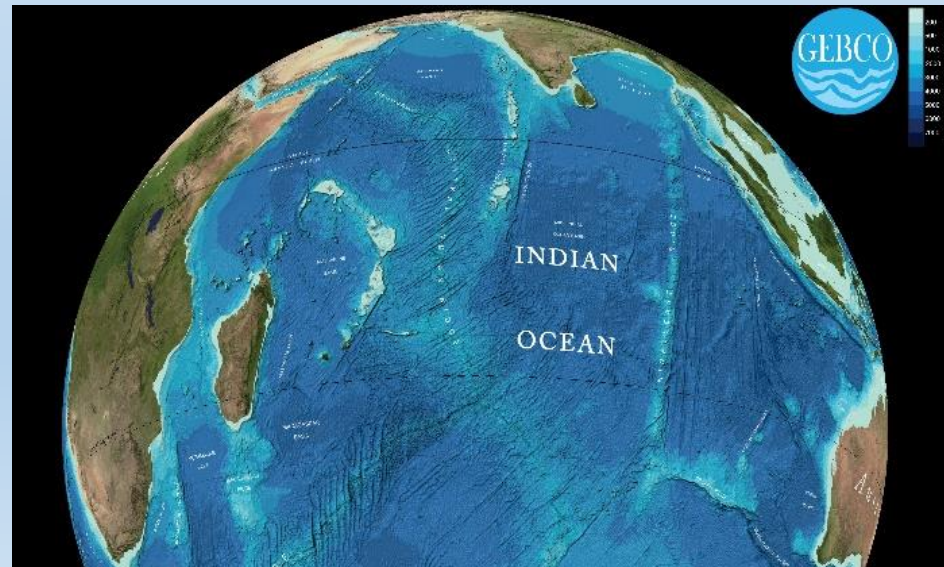
Making Mapping and GIS Available Across Organization(s)

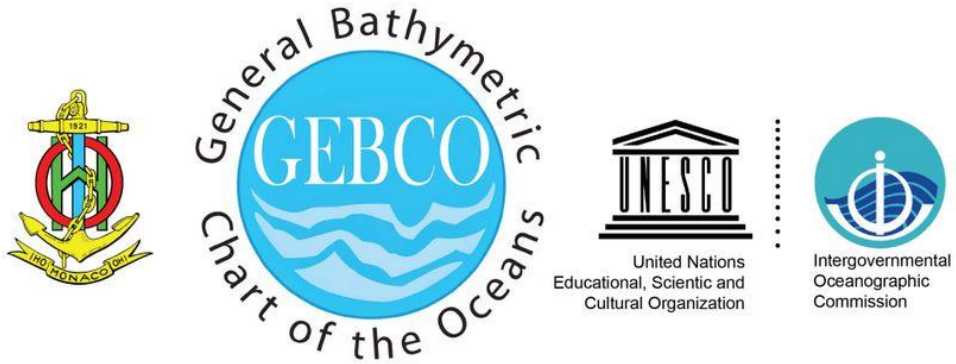


- ① New bathymetry and metadata
- ② Geodetic, AtoNs, Hazards, Po
- ③ SVP, CTD, Tides, Currents, Se backscatter, etc.

Take Home Message:

- Ocean Mapping Is Exciting!
- **Collect once, use many times.**
Other data than just bathymetry (physical nature of seabed), and other consumers (e.g. habitat mappers and ocean scientists).





15 NOVEMBER 2017
BUSAN, SOUTH KOREA

Hosted by:
THE HYDROGRAPHIC SOCIETY OF KOREA
and
KOREA HYDROGRAPHIC AND OCEANOGRAPHIC AGENCY



THANK YOU.

Email : sales@qps.nl
Marketing and Sales manager : Frans Nijsen