

GMRT Update

Vicki Ferrini

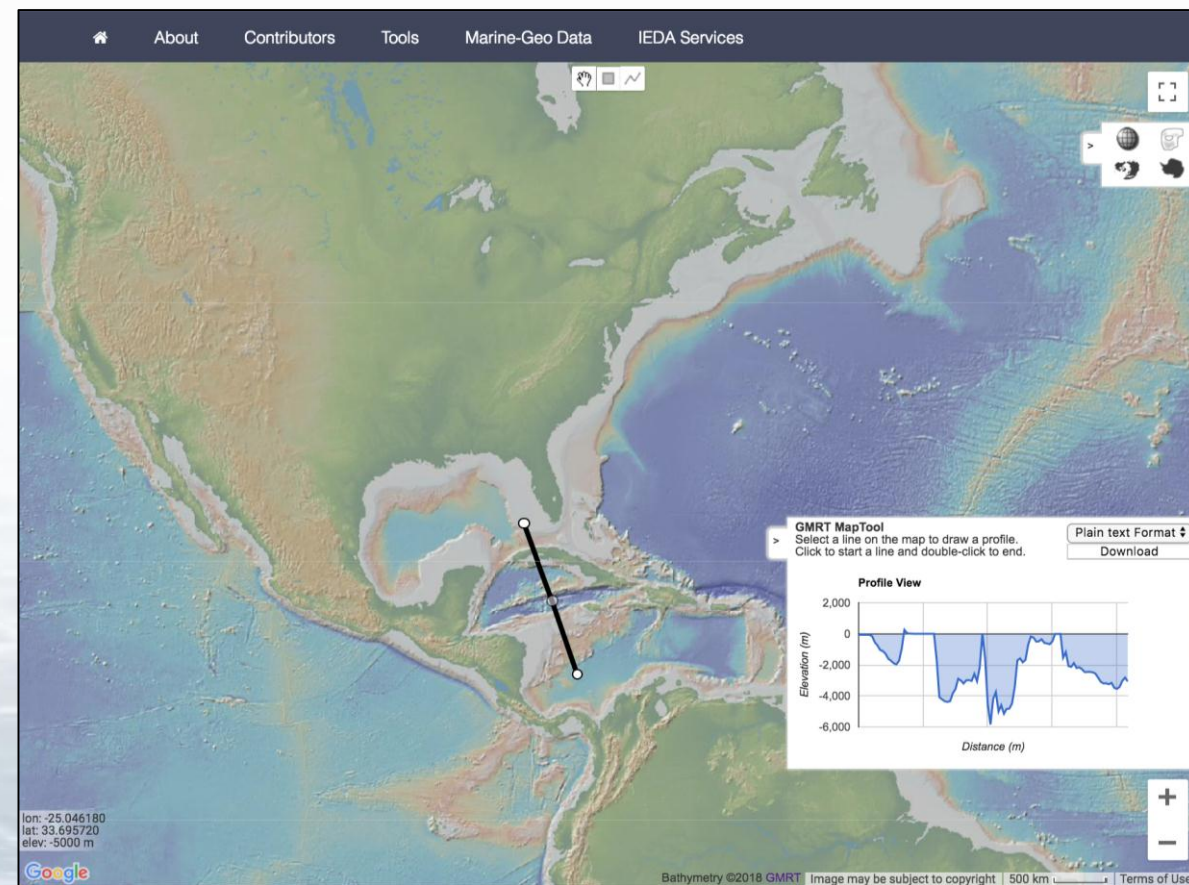


Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE



GMRT: Global Multi-Resolution Topography

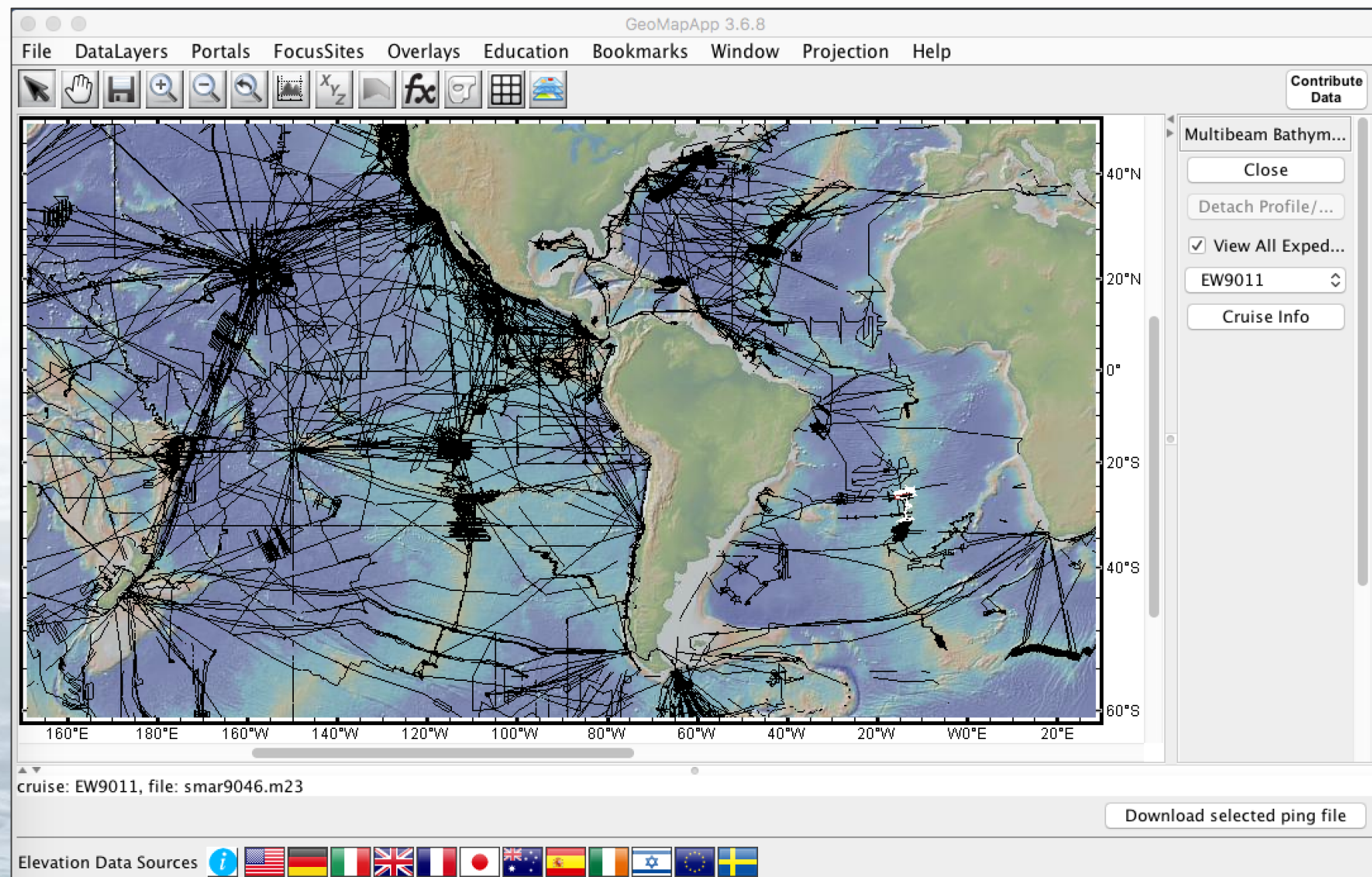
- Multi-resolutional tiled synthesis
 - Topography and bathymetry
- Comprehensive metadata
 - Full attribution to sources & access to source data
- Compilation available in many formats
 - Grids, Images, Points, Profiles
- Accessible via:
 - GMRT MapTool Web App
 - GeoMapApp Desktop App
 - GMRT Web Services
- Global in extent, but focused on regional access





GMRT Access through GeoMapApp

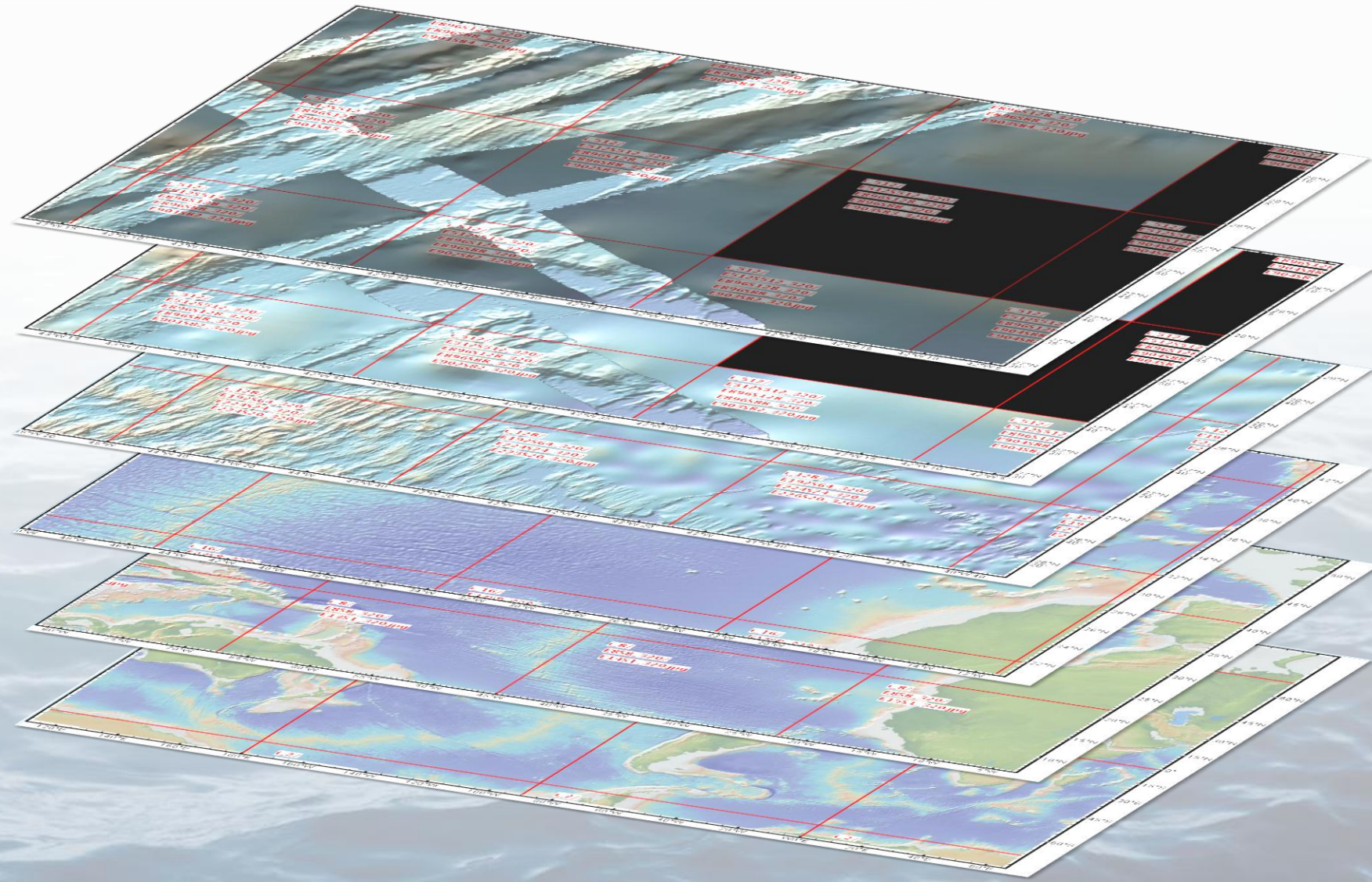
- Default basemap
- Custom grids & images
- Select & download source swath files
- Identify data gaps





Tiled Multi-Resolutional Architecture

- Manage and integrate sparse high-resolution data
- Provide access to variable resolution data from 1km to sub-meter scale
- Assemble and deliver gridded products on-demand at user-declared resolution for user-defined region
- Multiple resolutions of tiled rasters





GMRT Grid Composer

- Four discrete tiled elevation components
- Maintain and update components independently and on different schedules
- Merged on-the-fly

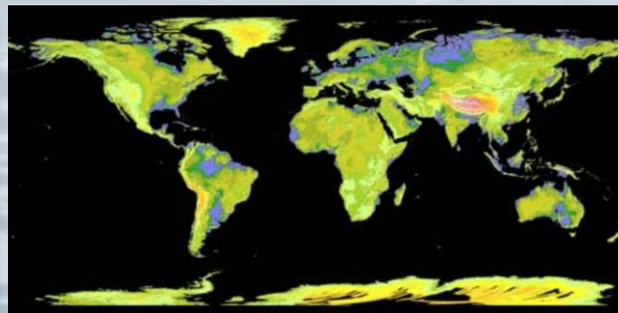
Custom grids delivered to users (netCDF, GeoTiff, ArcAscii)



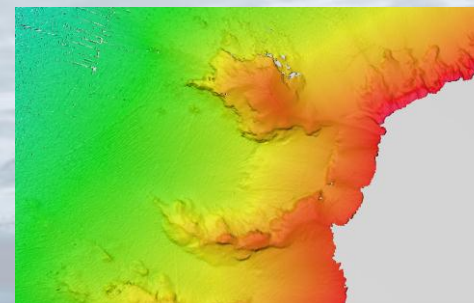
GECO 2014 (~1 km)



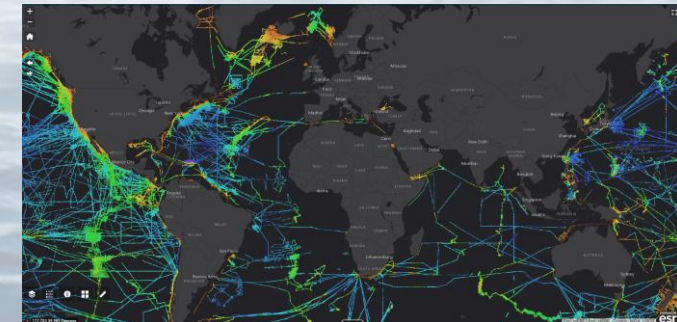
Topography (10-30 m)



Contributed Grids
(1 to 100s of m)

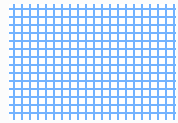


GMRT Multibeam (100m)

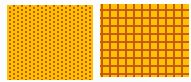




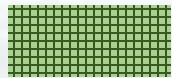
GMRT Grid Composer



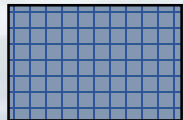
GMRT Multibeam (100m)



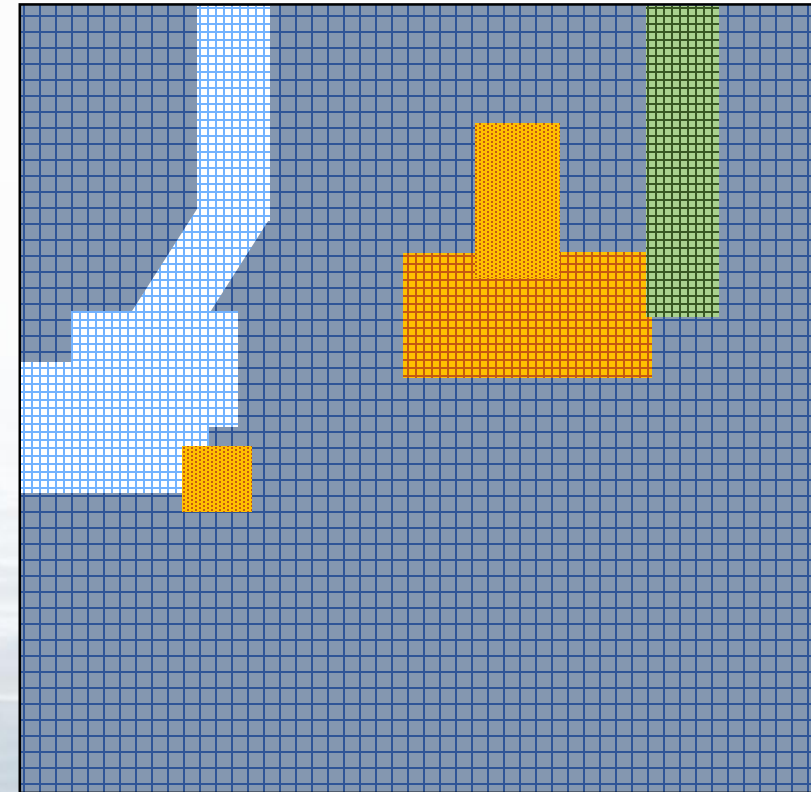
Contributed Grids
(1 to 100s of m)

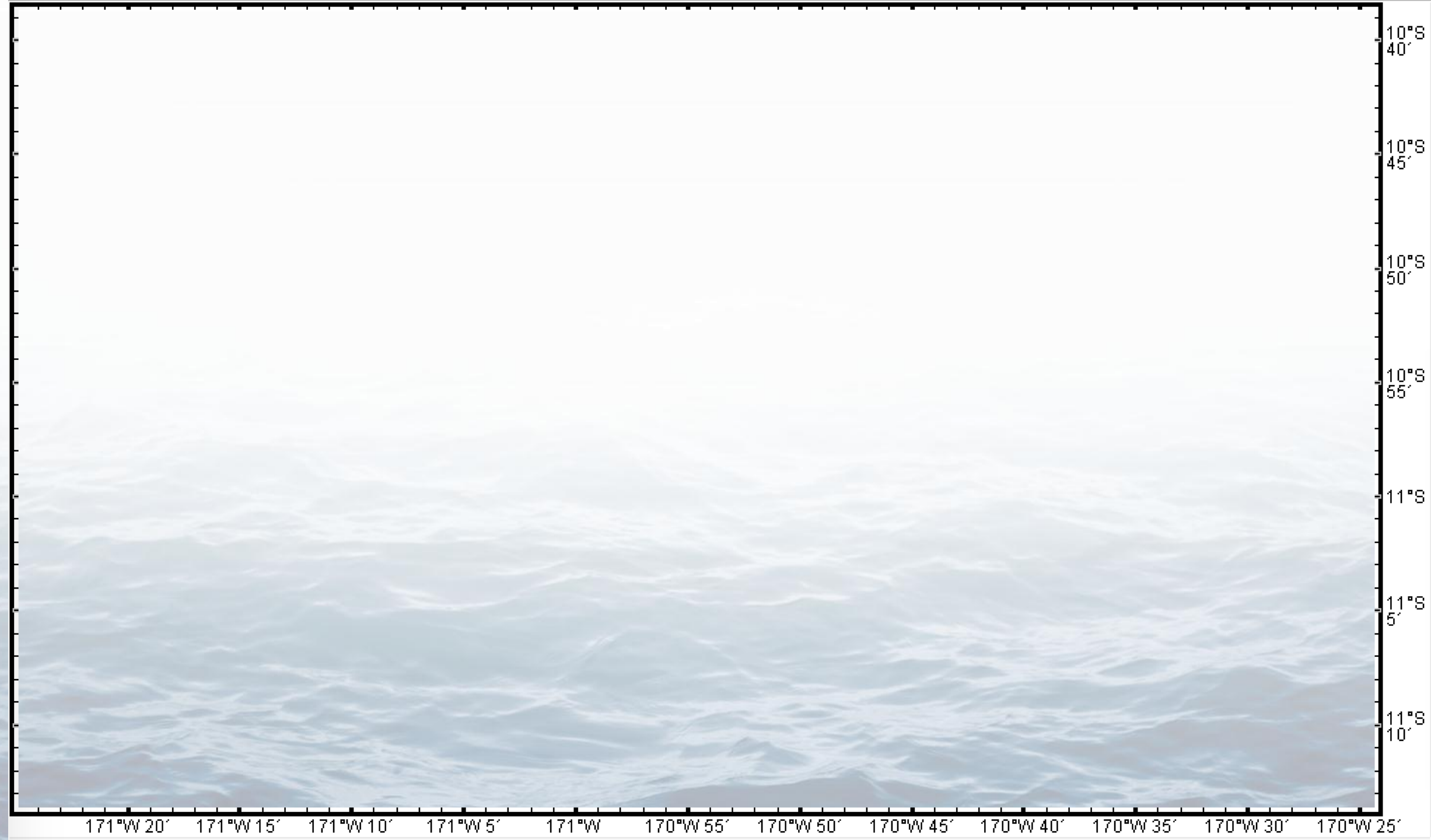


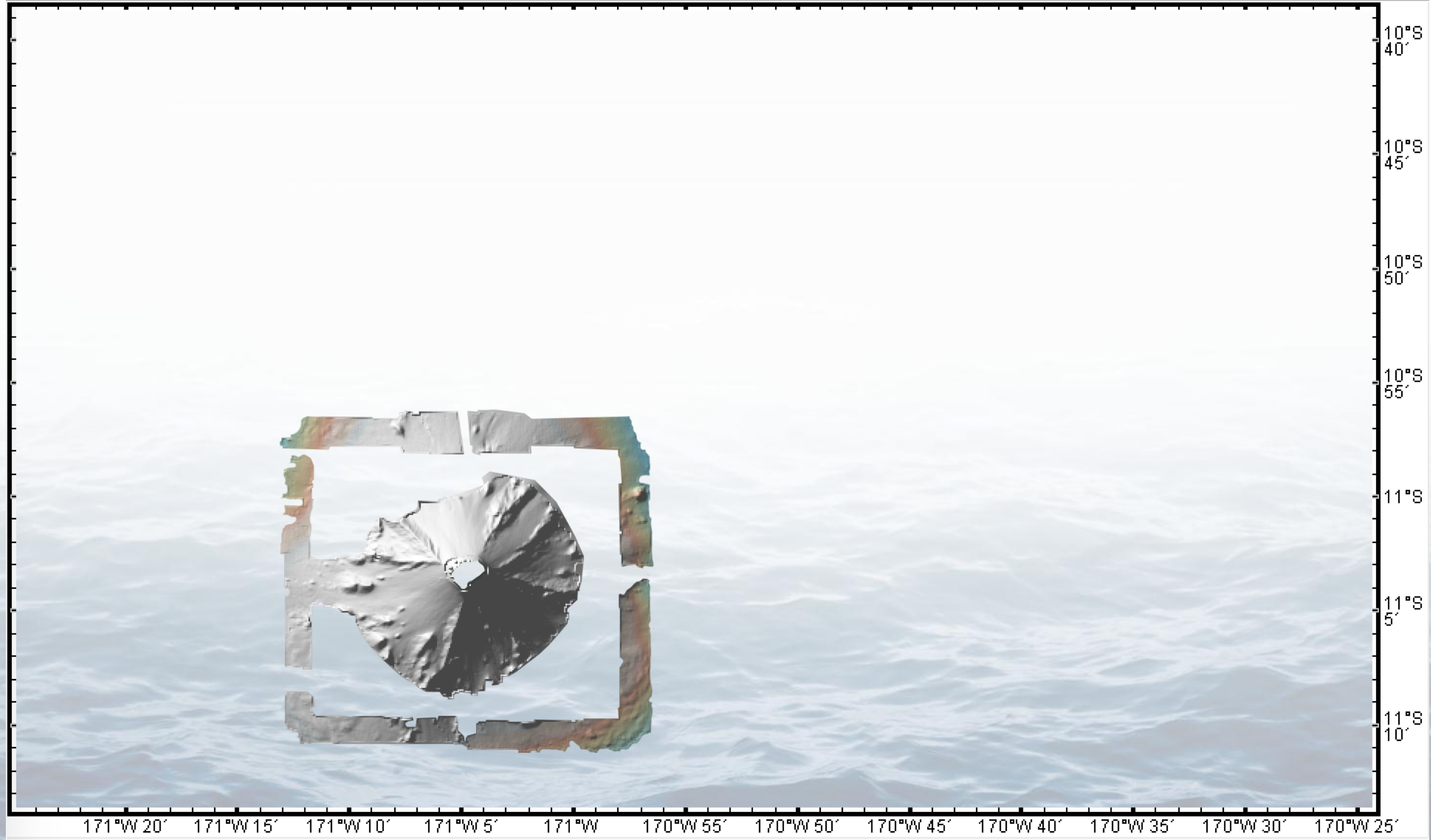
Topography (10-30 m)

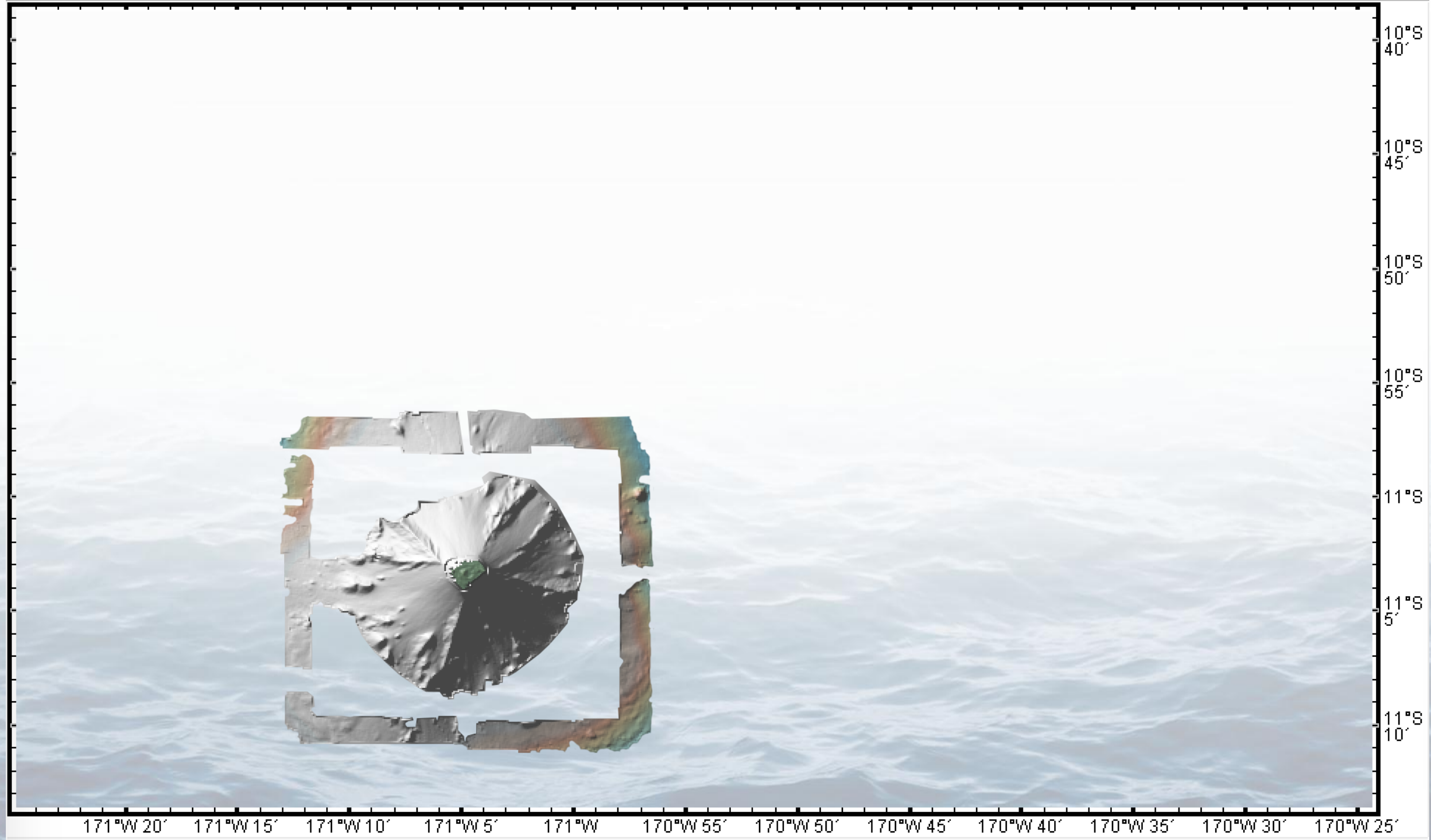


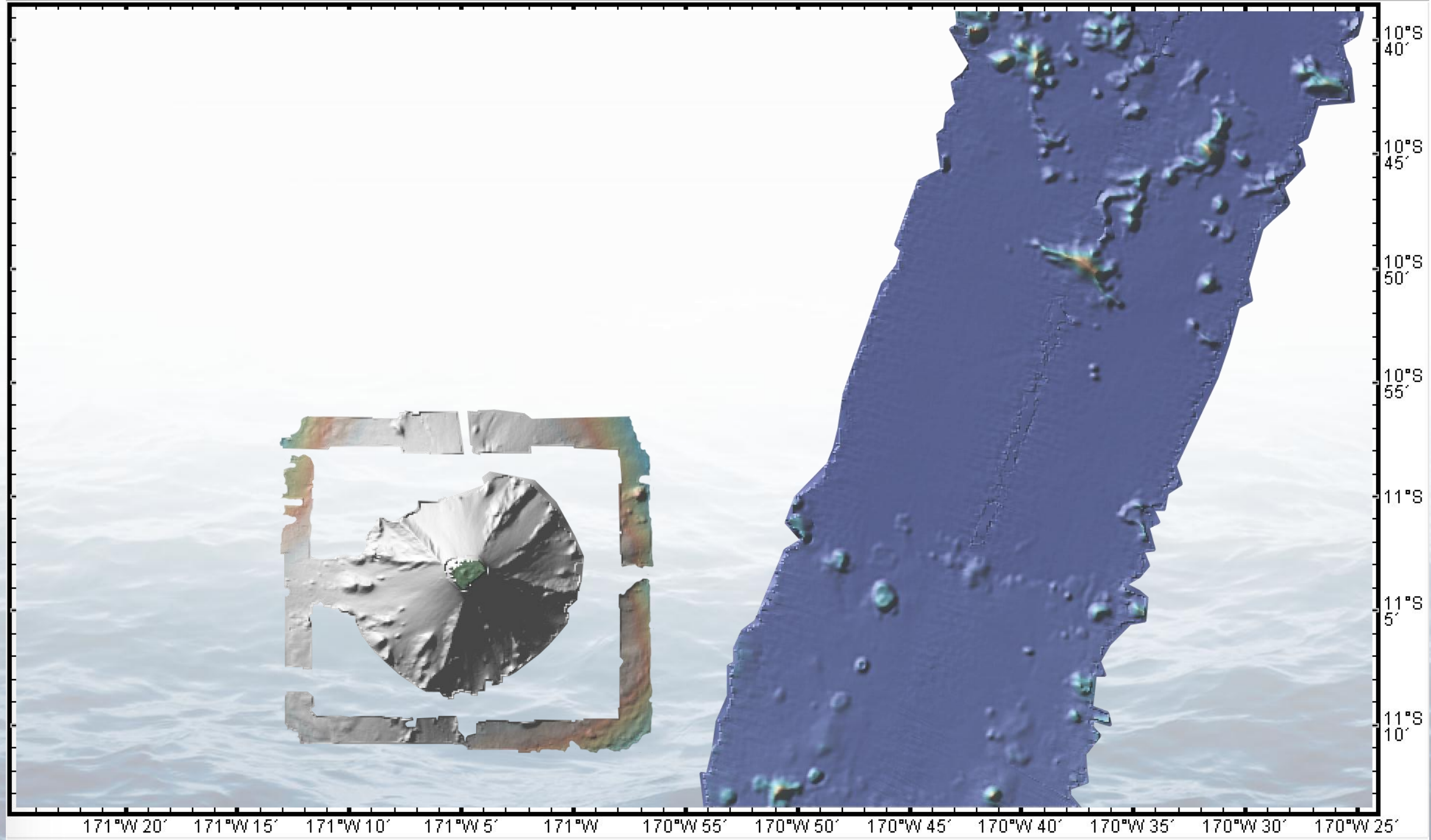
GEBCO 2014 (~1 km)

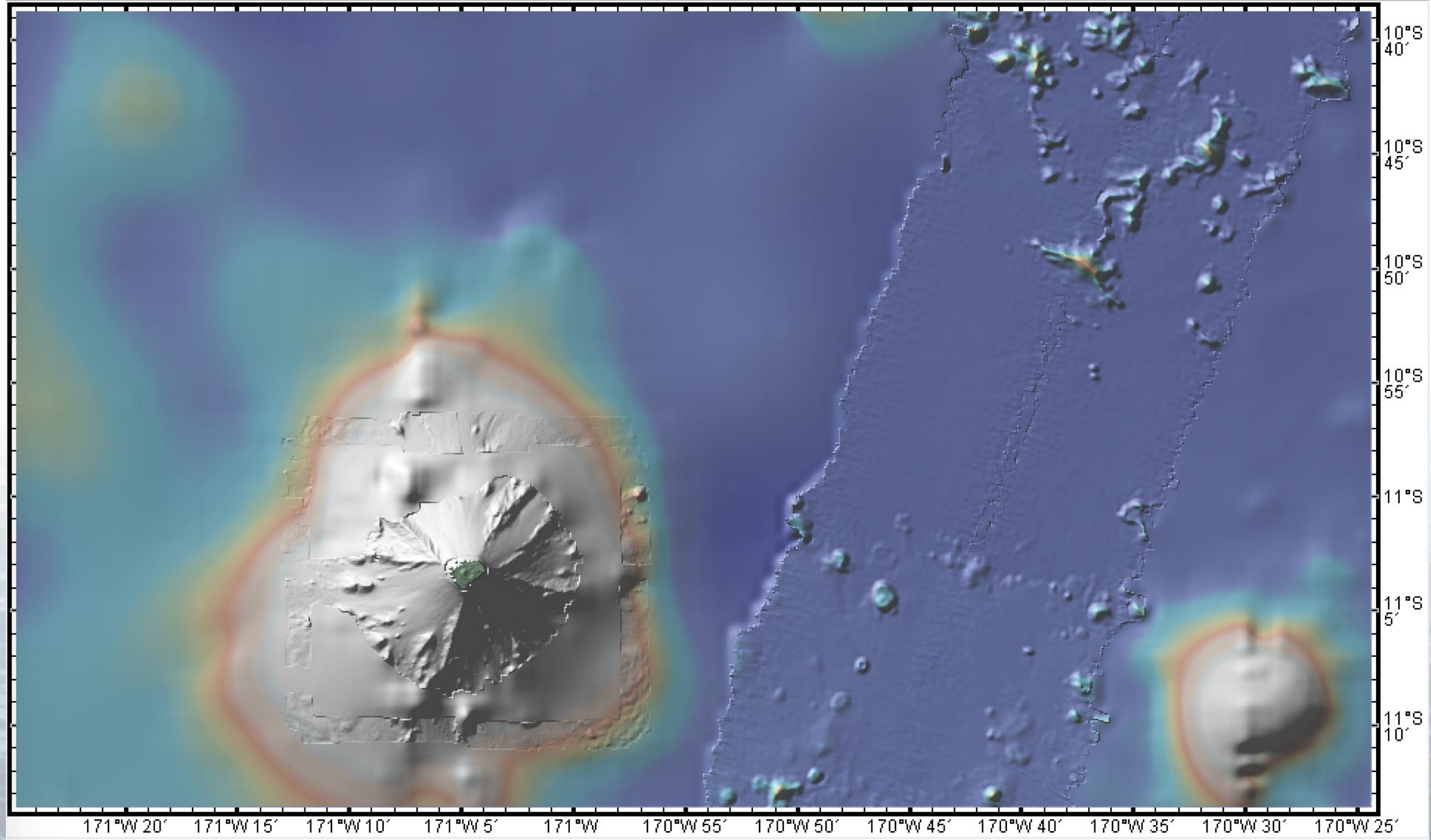


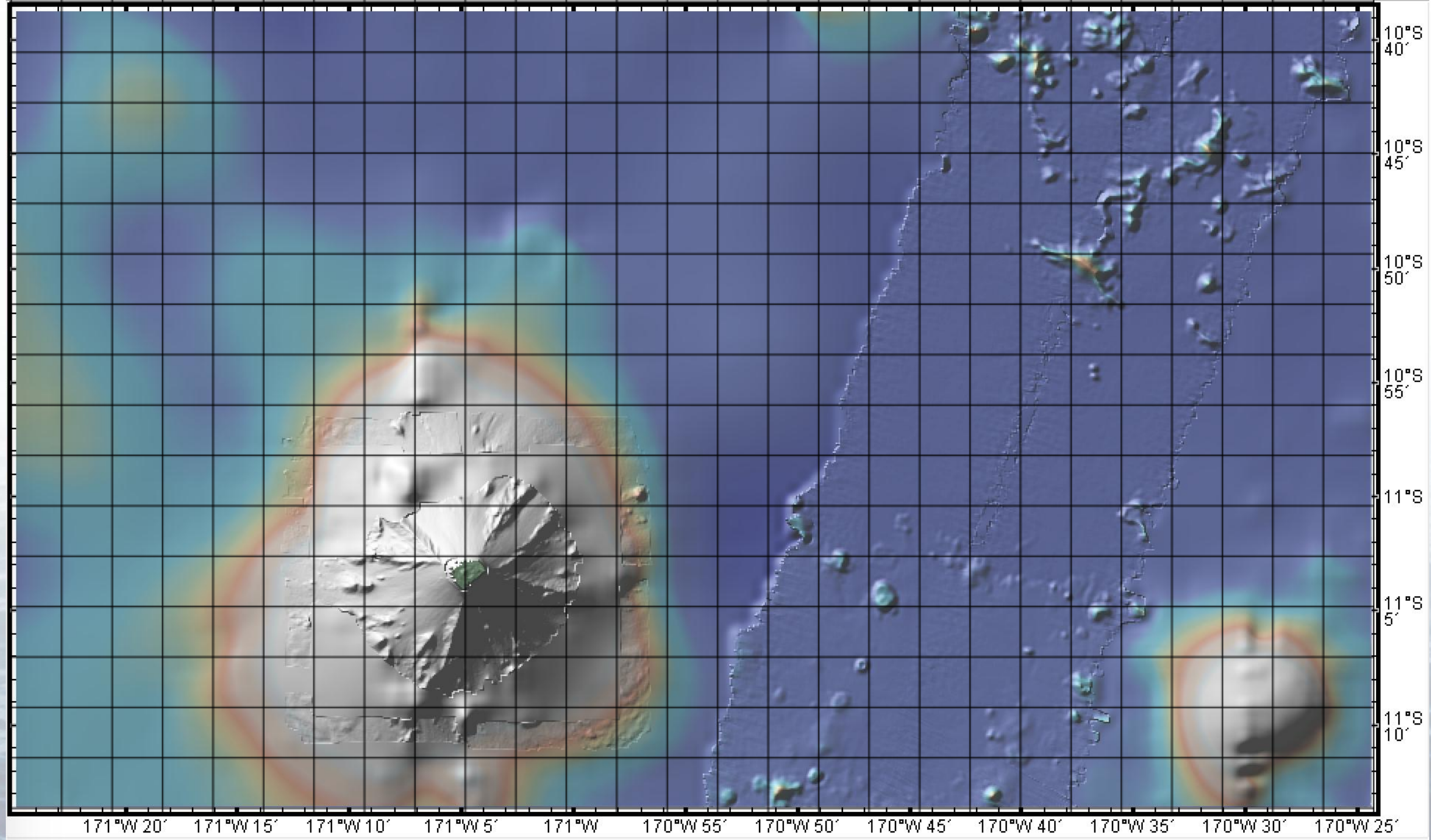


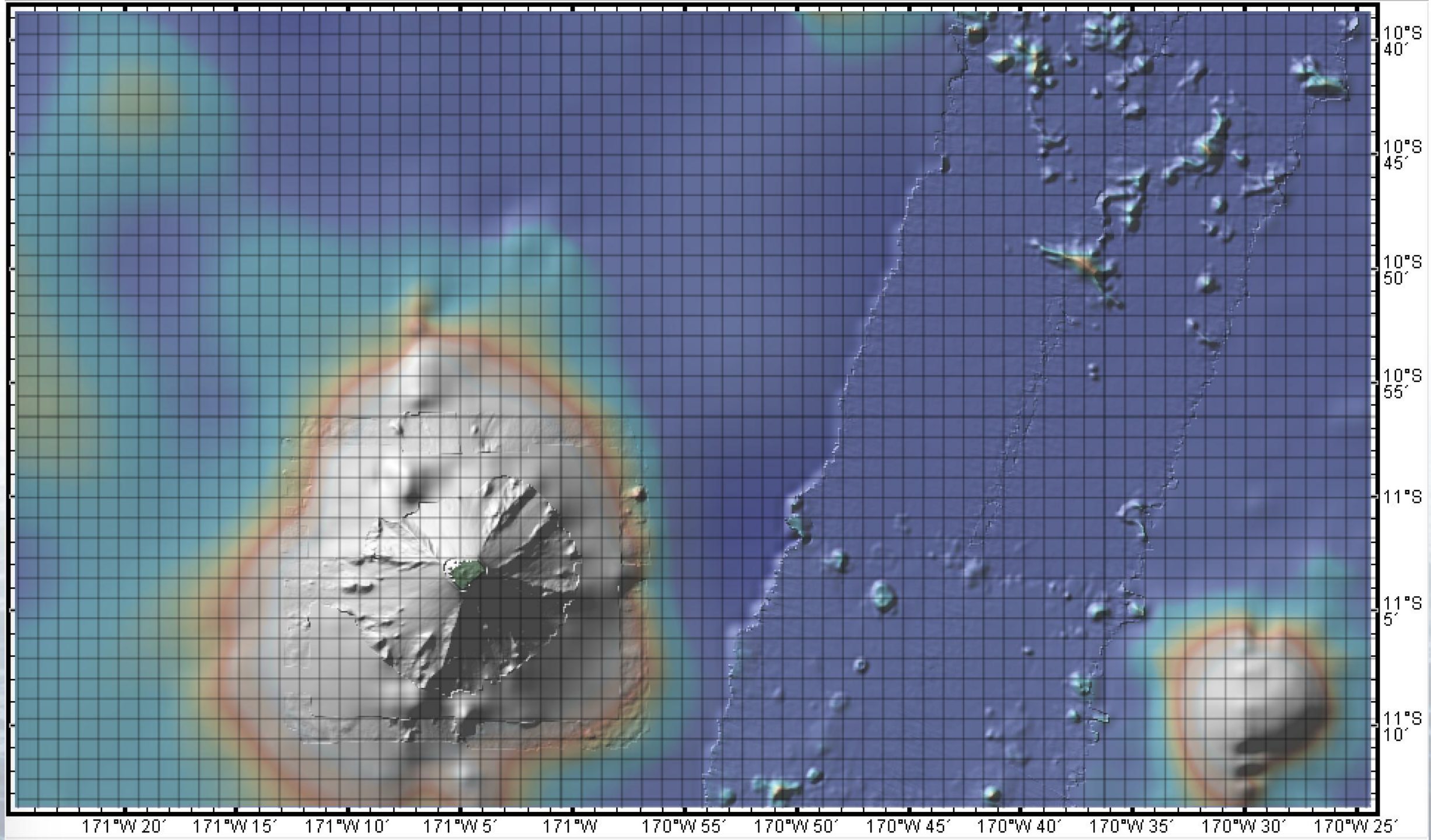














GMRT: Multibeam Data Preparation

- 100-m grid resolution
- Primarily US Academic transit data
- Cleaning cannot be easily automated
- Target ~ 80 cruises per year
- Maintain access to source swath files
- Data Processing Reports
- MB-System



GMRT Multibeam Data Report

[<< Back](#)



AT18-13 Transit (2011)

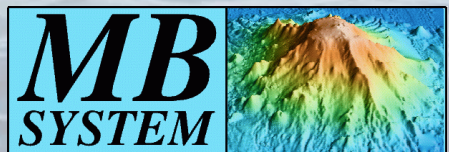
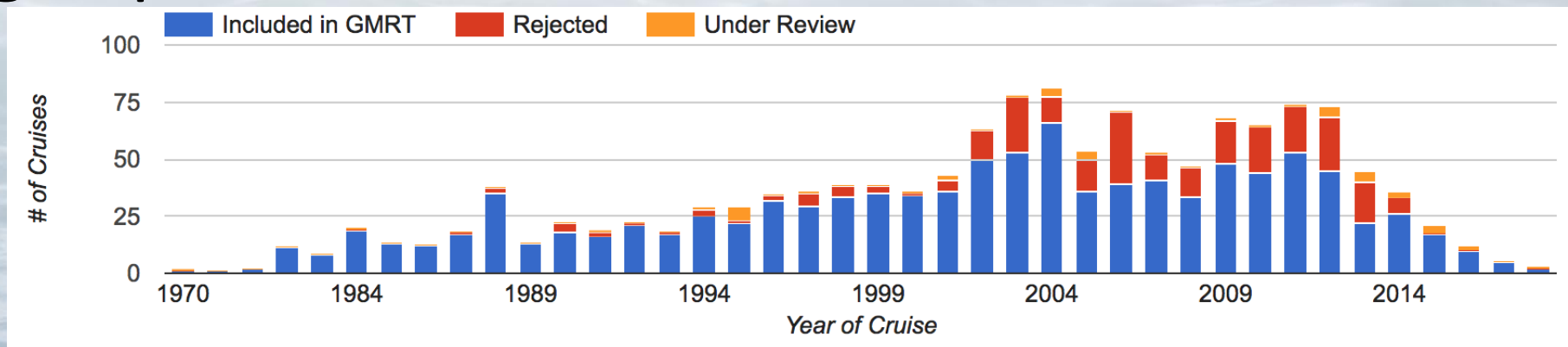
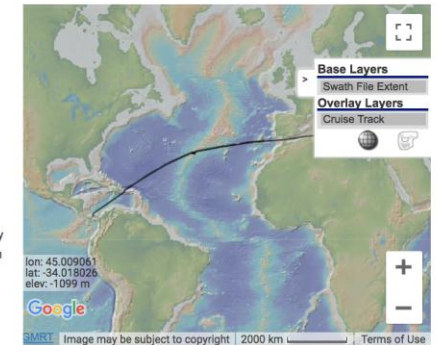
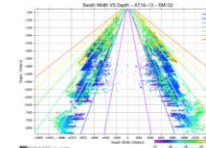
R/V Atlantis
Kongsberg EM122
Chief Scientist: WHOI SSSG
[Related Information at MGDS](#)

Data Summary

488 Data Files Processed
Total Ship-Track Coverage: 5,591 km
Total Area Mapped: 77,550 km²

Sonar Extinction Plots (swath width vs depth):

Extinction plots show the swath width of the MB echosounder as a function of depth. This information can be important for planning survey line spacing and can be a diagnostic tool when reviewing sonar system health.

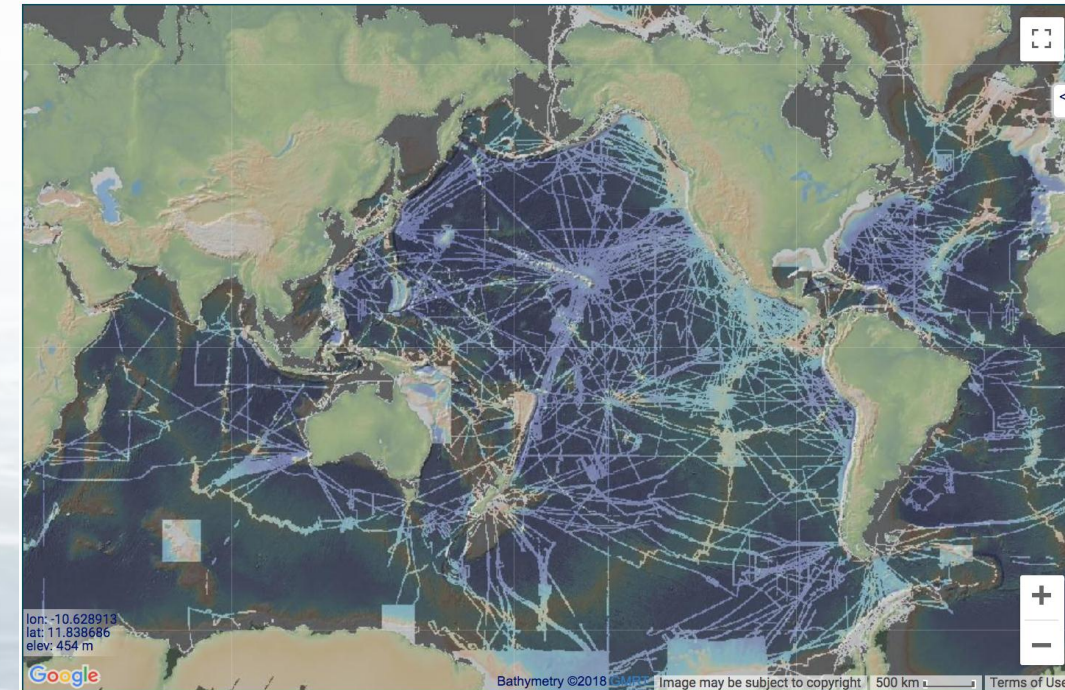




GMRT: Multibeam Data Curation

GMRT v. 3.5 Metrics

% Ocean mapped	8.3%
Total Curated Swath Data Files	212,689
Total Pings	200,602,365
Total Input Data Points	>31 Billion
Total swath file size	4.2 TB
Total Cruises	1,007
Total Tracklength (km)	~5 Million
Total km ²	> 30 Million
Years of data acquisition	1980 - 2017



GMRTv3.6 will include an additional
~1.5 Million km²



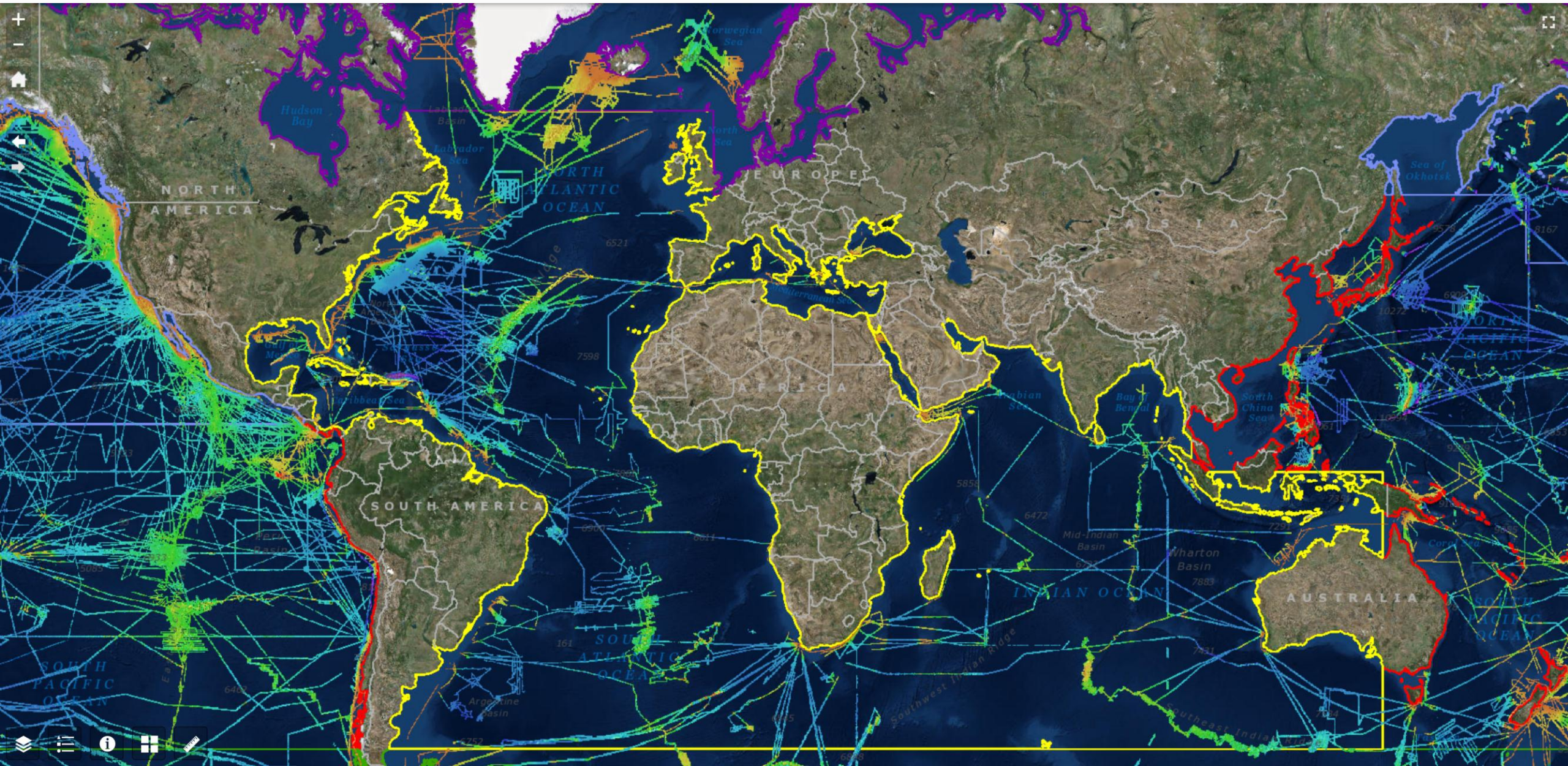
GMRT: What's New



- GMRT v3.5 released in February
- GMRT v3.5 MB synthesis contributed to GEBCO
- Content and Tools deployed in Amazon cloud
- New Web Services deployed to facilitate extraction of high resolution grids over larger areas
- Ongoing Enhancements to Web Services to facilitate interoperability



GMRT 3.5 Contributed to GEBCO





GMRT: What's Next

- GMRT v3.6 to be released this month
 - Additional 38 cruises (1,046 total)
 - ~1.4 million km² Multibeam data
- Enhance metadata web services
 - Facilitate attribution of GMRT sources
 - Develop and deploy dashboards describing data sources