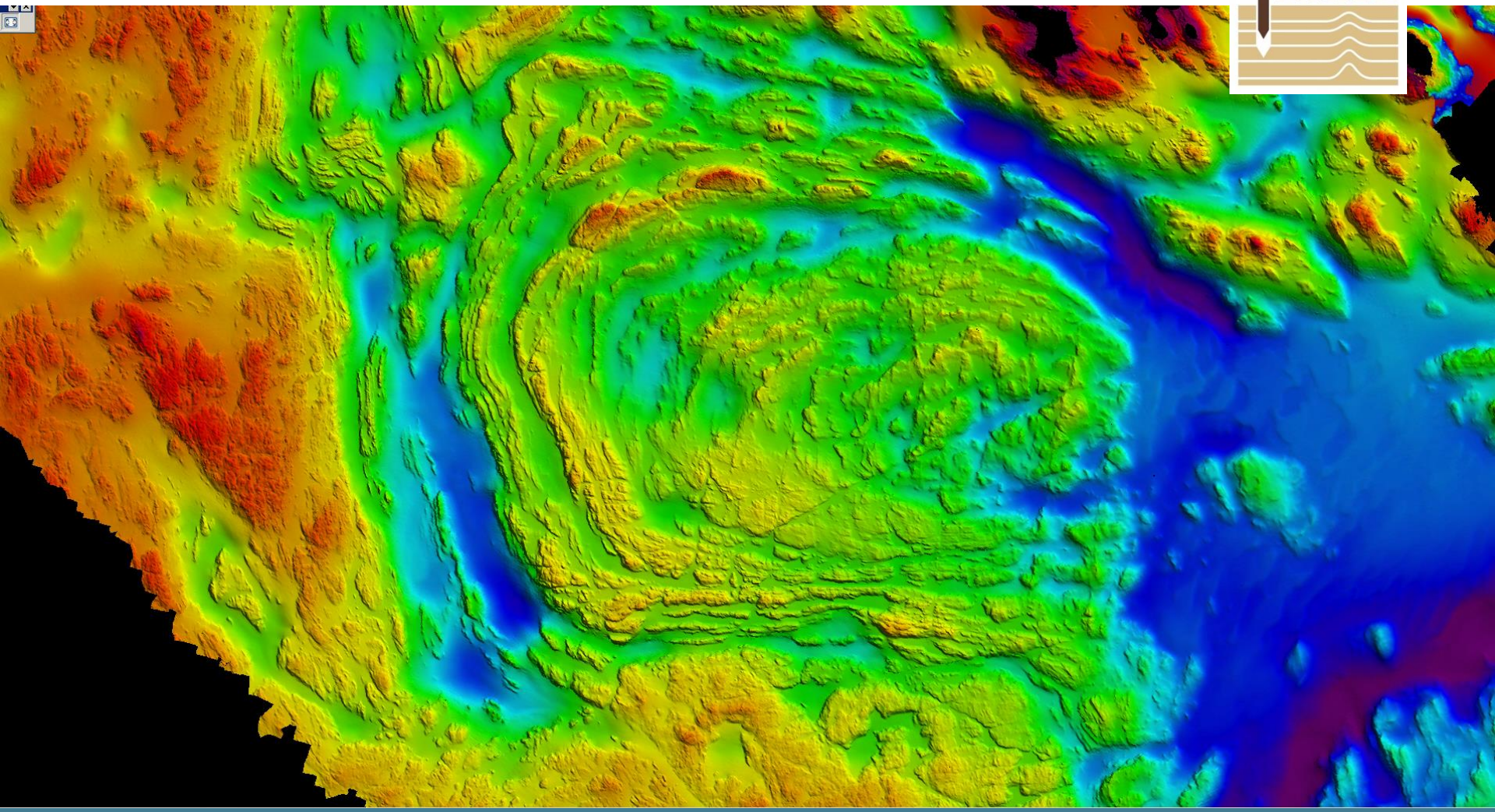


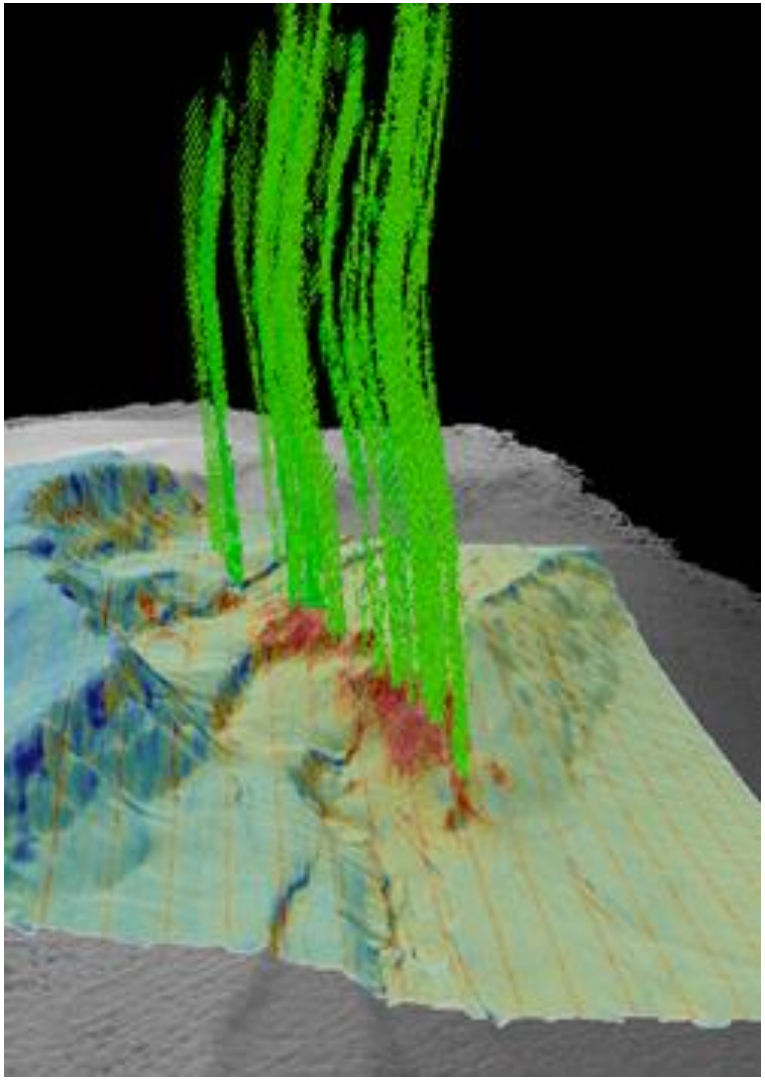
Seabed 2030: Industry Contributions to Cartographic Source Data

NOAA's Open House on Nautical Cartography – Silver Spring, MD – July 7, 2017

David Millar - Fugro

Presentation Outline

- The Need for Ocean Mapping
- GEBCO
- GEBCO Bathymetric Database
- Forum for Future Ocean Floor Mapping
- The Role of Industry
- Initial Industry Contributions



The Need for Ocean Mapping

- 70% of the Earth's surface is covered by ocean. Approximately 85% of the world's oceans (shallow and deep water) are yet to be mapped using modern survey techniques.
- Global baseline bathymetry data will help inform ocean policy, guide sustainable use, improve ocean/weather models, and identify future research, exploration, and development needs.
- Beneficiaries of these data will include:
  - Oil and gas industry
  - Deep sea mining industry
  - Marine shipping industry
  - Cruise line industry
  - Commercial fishing industry
  - Telecommunications industry
  - Coastal infrastructure (ports & harbors)
  - First responders
  - National defense
  - Coastal communities
  - Scientific research communities

We Have Better Maps of Mars than our Own Oceans

The World's Oceans

- Satellite altimeter data
- 5km horizontal resolution
- +/- 1km vertical accuracy

Mars

- Stereo camera
- 20m horizontal resolution
- +/- 13m vertical accuracy

It's impossible to map the ocean floor using radio or other electromagnetic waves

2,300 miles

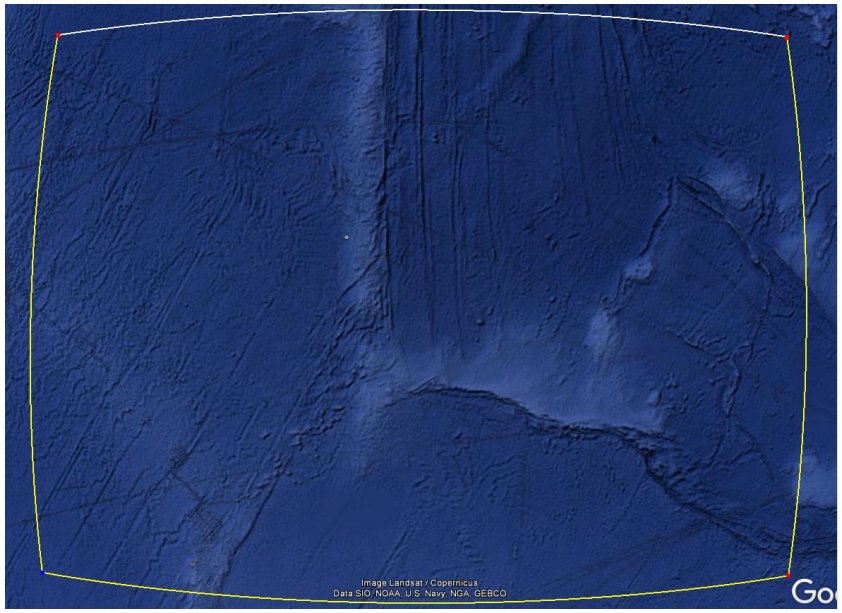


Image from Google Earth

2,300 miles

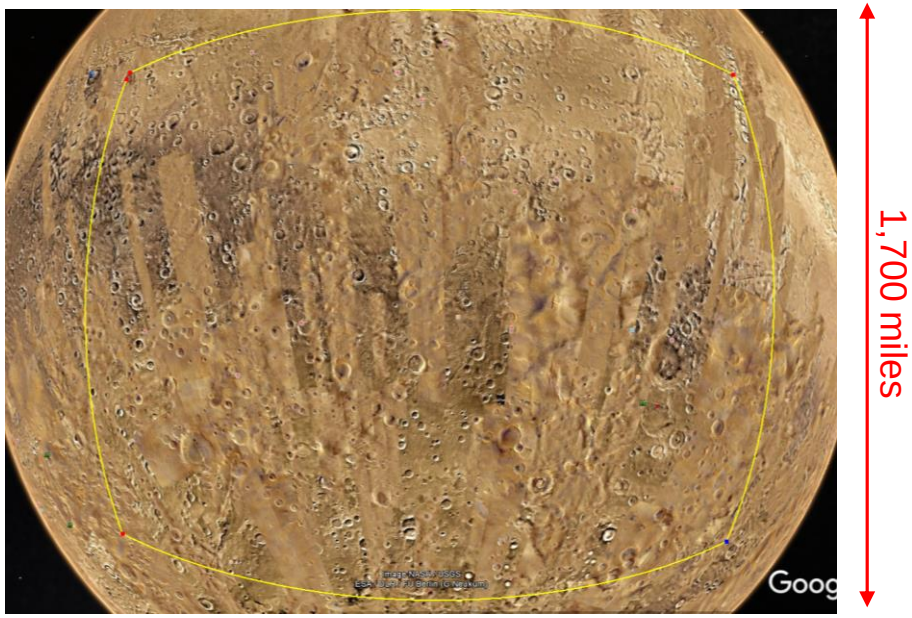
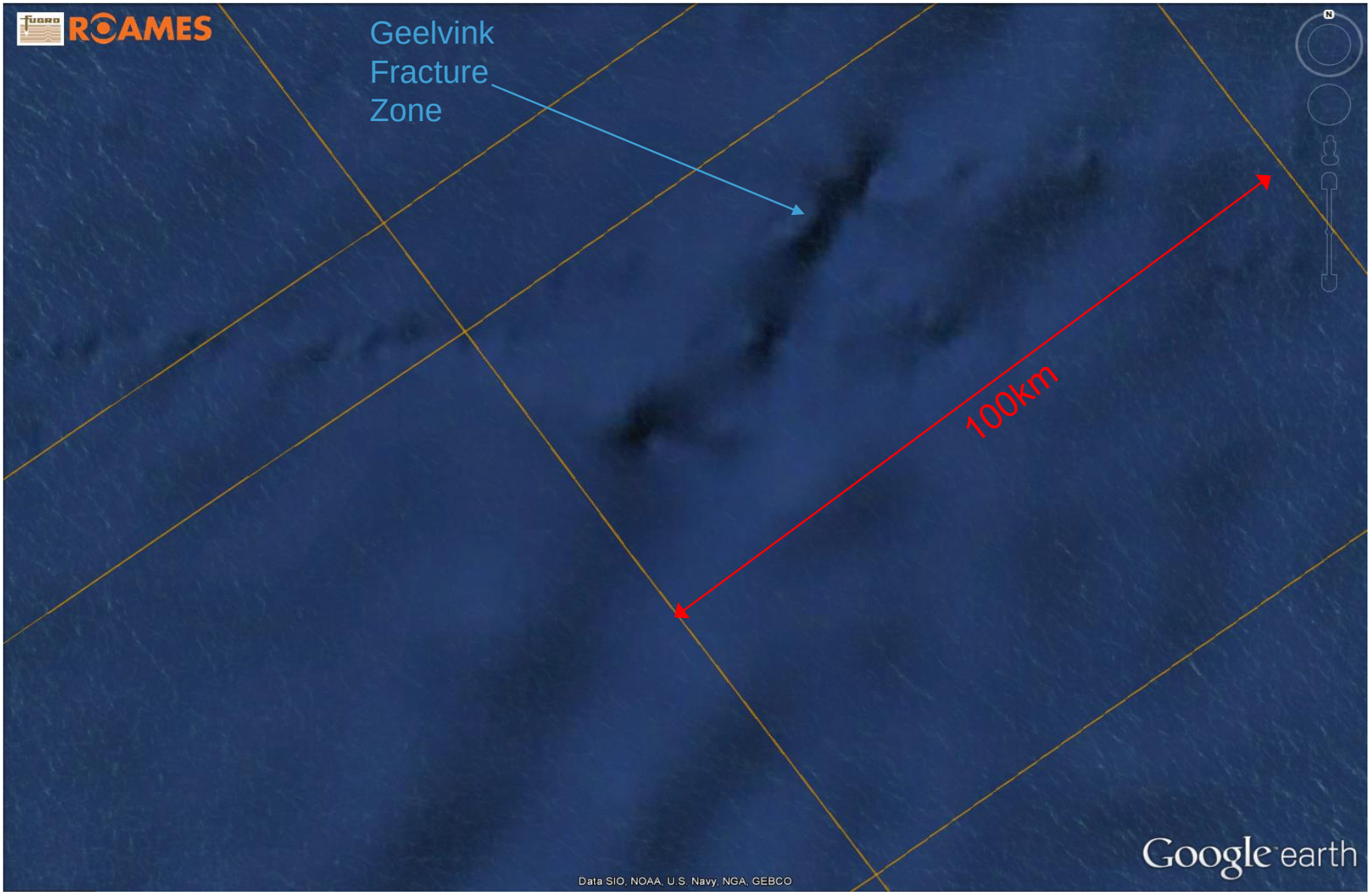
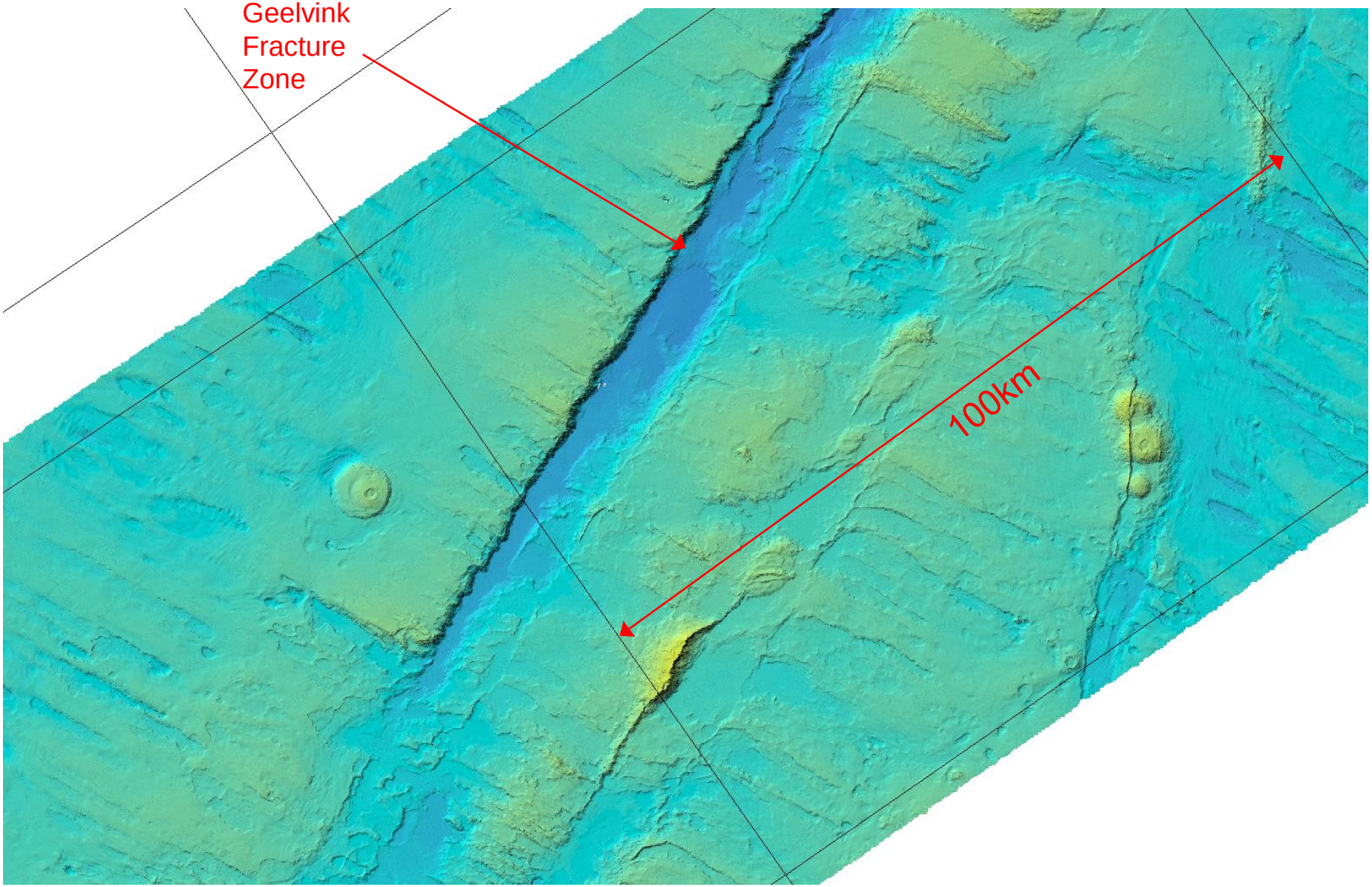


Image from Google Mars

MH370 Survey - Bathymetry from Satellite Altimeter Data



MH370 Survey - Bathymetry from Hull Mounted Multibeam Data



Mapping Resolution on Mars

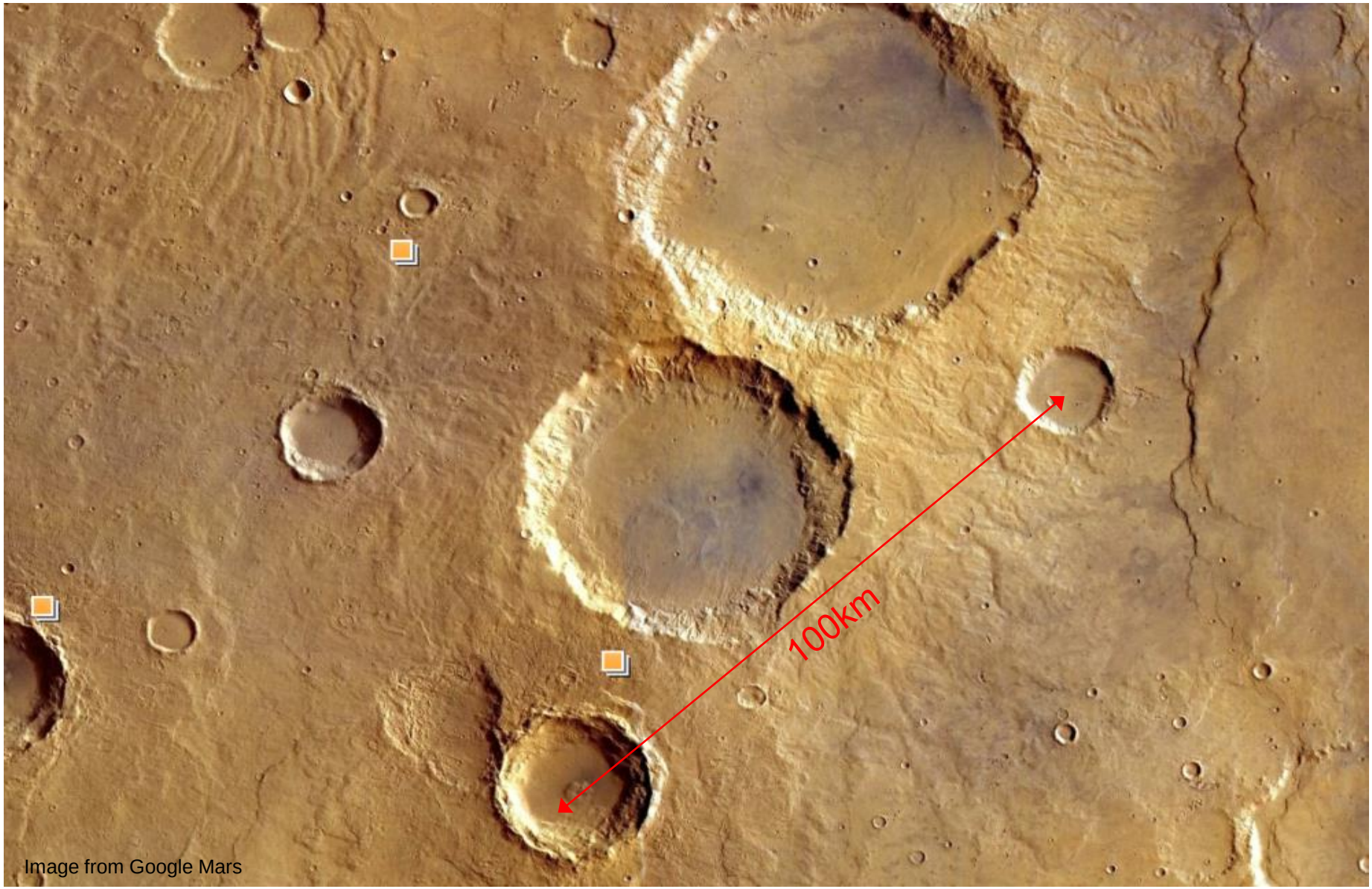
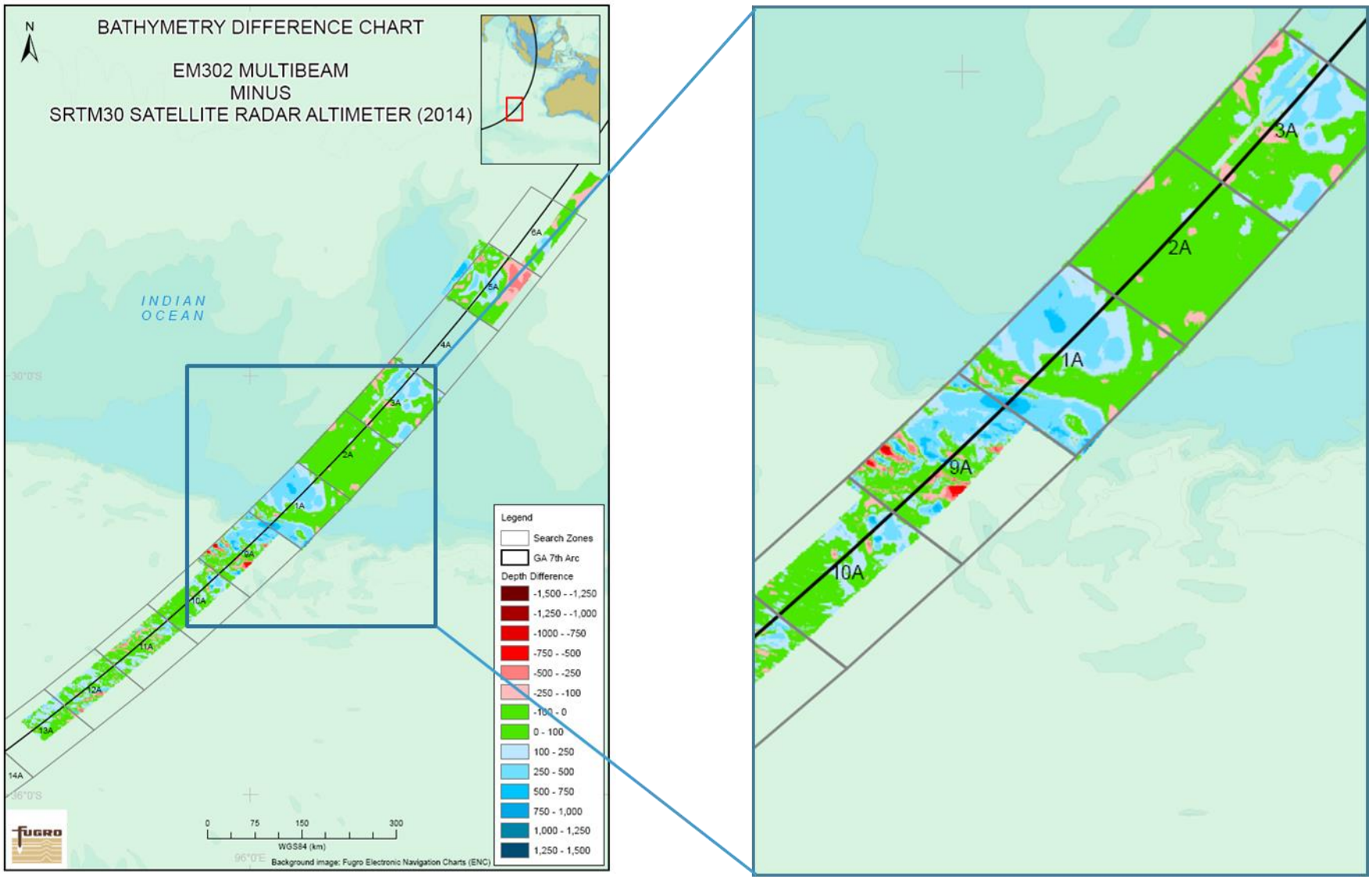
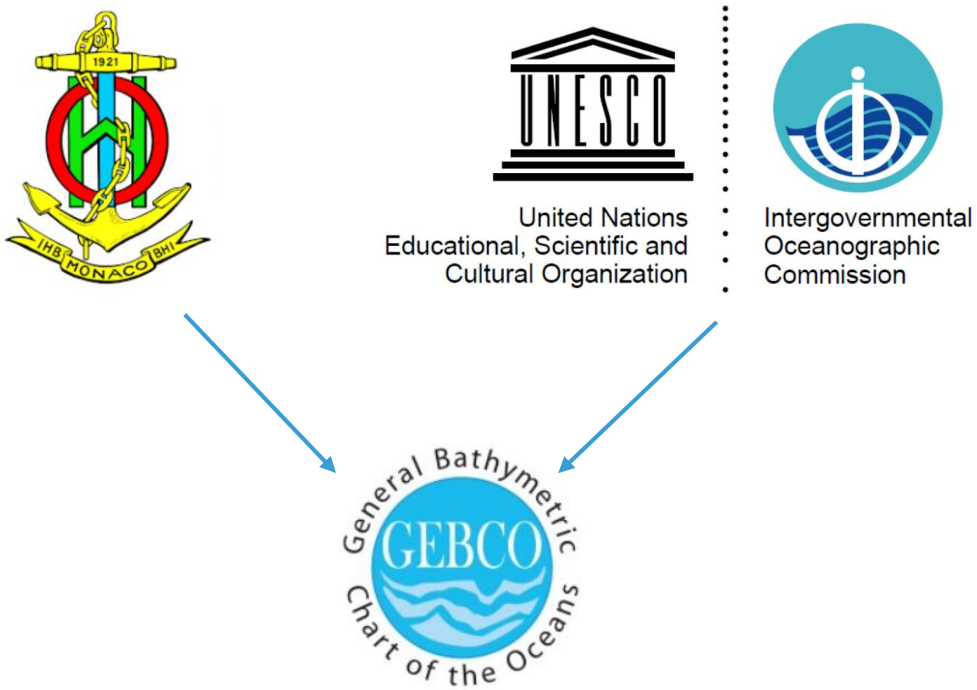


Image from Google Mars

MH370 Survey – Satellite Altimeter Bathymetry Vertical Accuracy



GEBCO - General Bathymetric Chart of the Oceans



- Non-profit making organization established in 1903 by Prince Albert of Monaco
- Aim is to provide the most authoritative publicly-available bathymetry of the world's oceans
- Products include:
  - Gridded bathymetric datasets
  - Global set of digital bathymetric contours
  - GEBCO Gazetteer of Undersea Feature Names
  - GEBCO Digital Atlas
  - GEBCO World Map
  - IHO-IOC GEBCO Cookbook

GEBCO 2014 Bathymetric Data Coverage

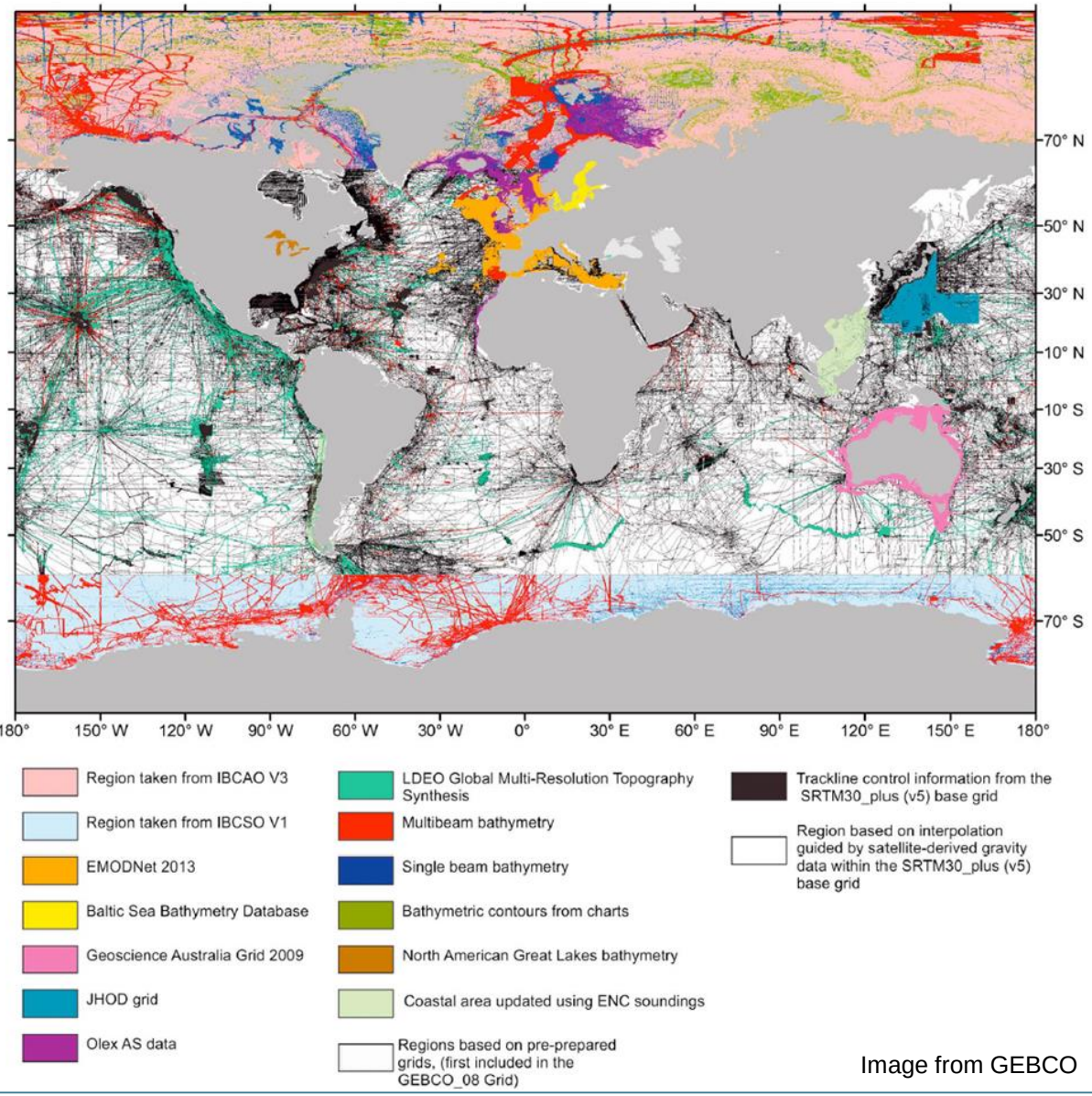


Image from GEBCO

GEBCO 2014 Bathymetric Data Coverage

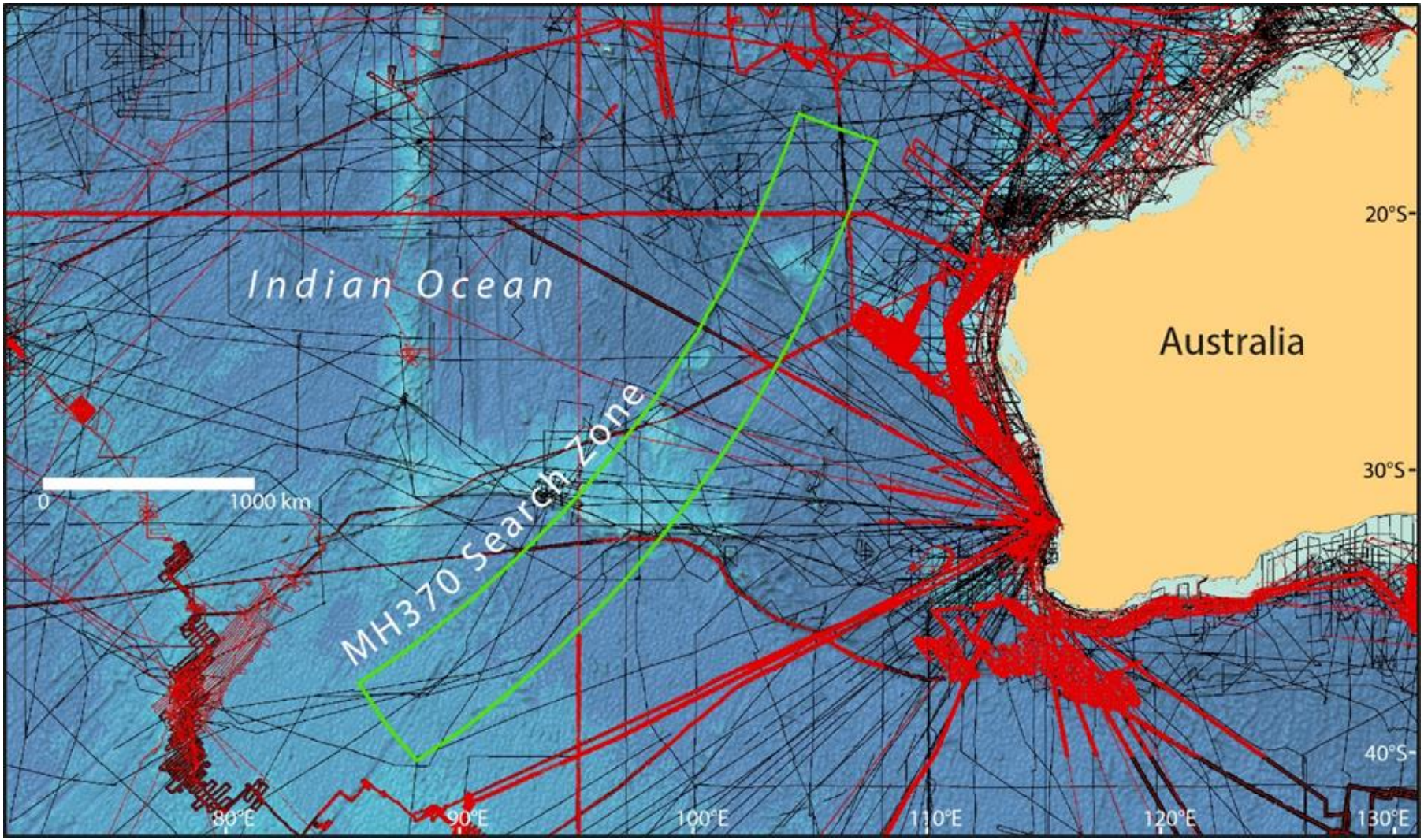


Image from GEBCO

Forum for Future Ocean Floor Mapping (F-FOFM)

- Monaco - June 2016
- Meeting of 200 individuals from 45 countries
  - Experts on ocean mapping to stakeholders and users of bathymetric information
  - Participants from academia, industry, governmental institutions, international and national organizations with interests in the ocean
- Plenary presentations + 2 days of intensive panel discussions and breakout sessions

Provide a comprehensive, high resolution map of the world's ocean floor with no feature larger than 100 m left unmapped by the year 2030

Forum Conclusions

- GEBCO tasked with developing a roadmap
- Initially identify and access existing bathymetric data from hydrographic offices, industry, research organizations and individual mariners
- Bathymetric gaps can be filled using coordinated regional compilations, basin scale mapping campaigns, satellite derived bathymetry, crowd sourcing, LIDAR and innovative new tools and techniques
- Greater access to tools and technology (through capacity building) for developing coastal nations
- Strong partnerships for collecting, sharing and compiling data

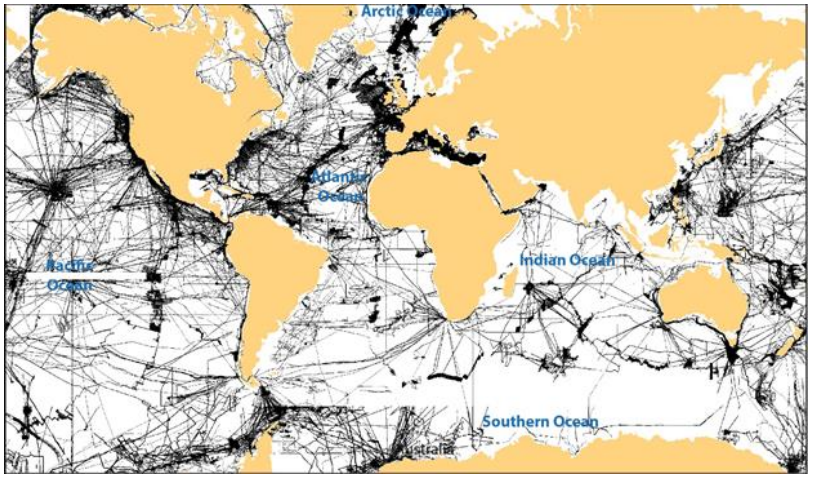


Image from GEBCO

Supports the United Nations Sustainable Development Goal 14 – to conserve and sustainably use the world's oceans, seas and marine resources

The Role of Industry

- GEBCO tasked with developing a roadmap
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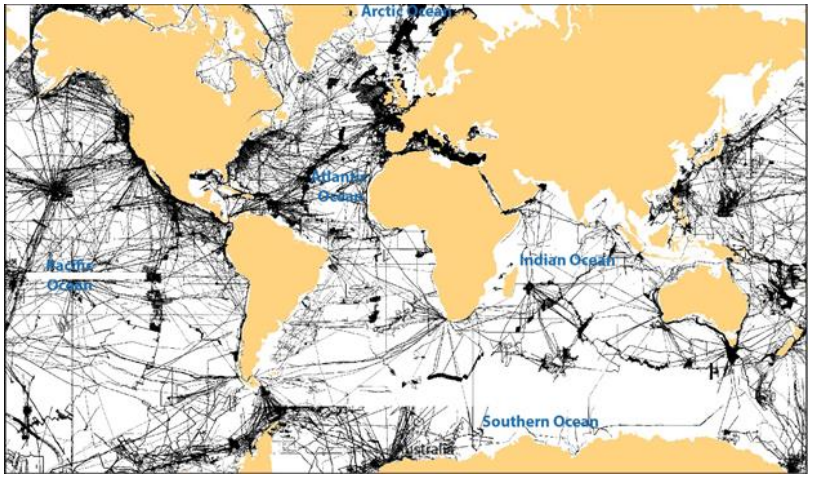

Image from GEBCO

Supports the United Nations Sustainable Development Goal 14 – to conserve and sustainably use the world's oceans, seas and marine resources

Initial Industry Contributions - Fugro

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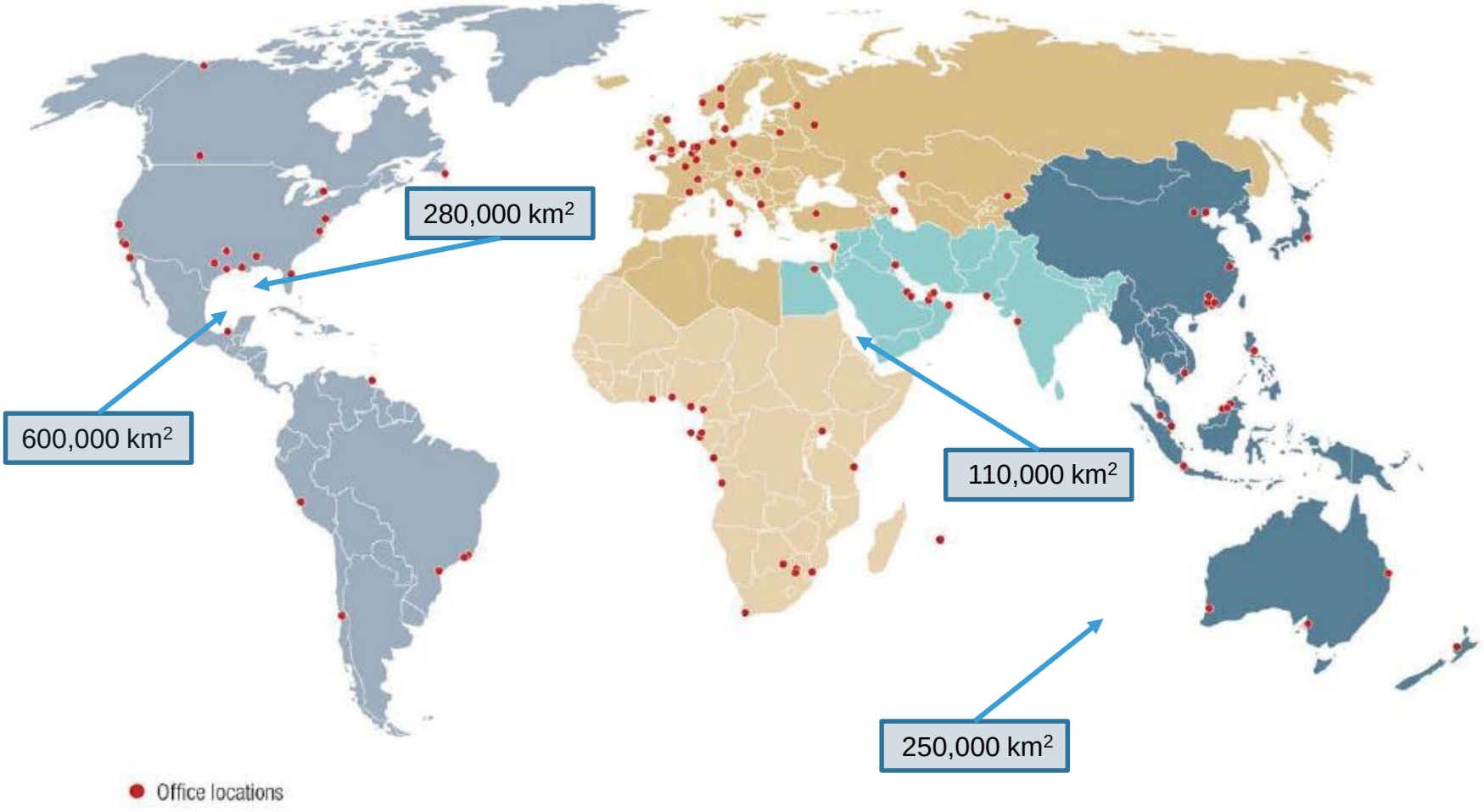
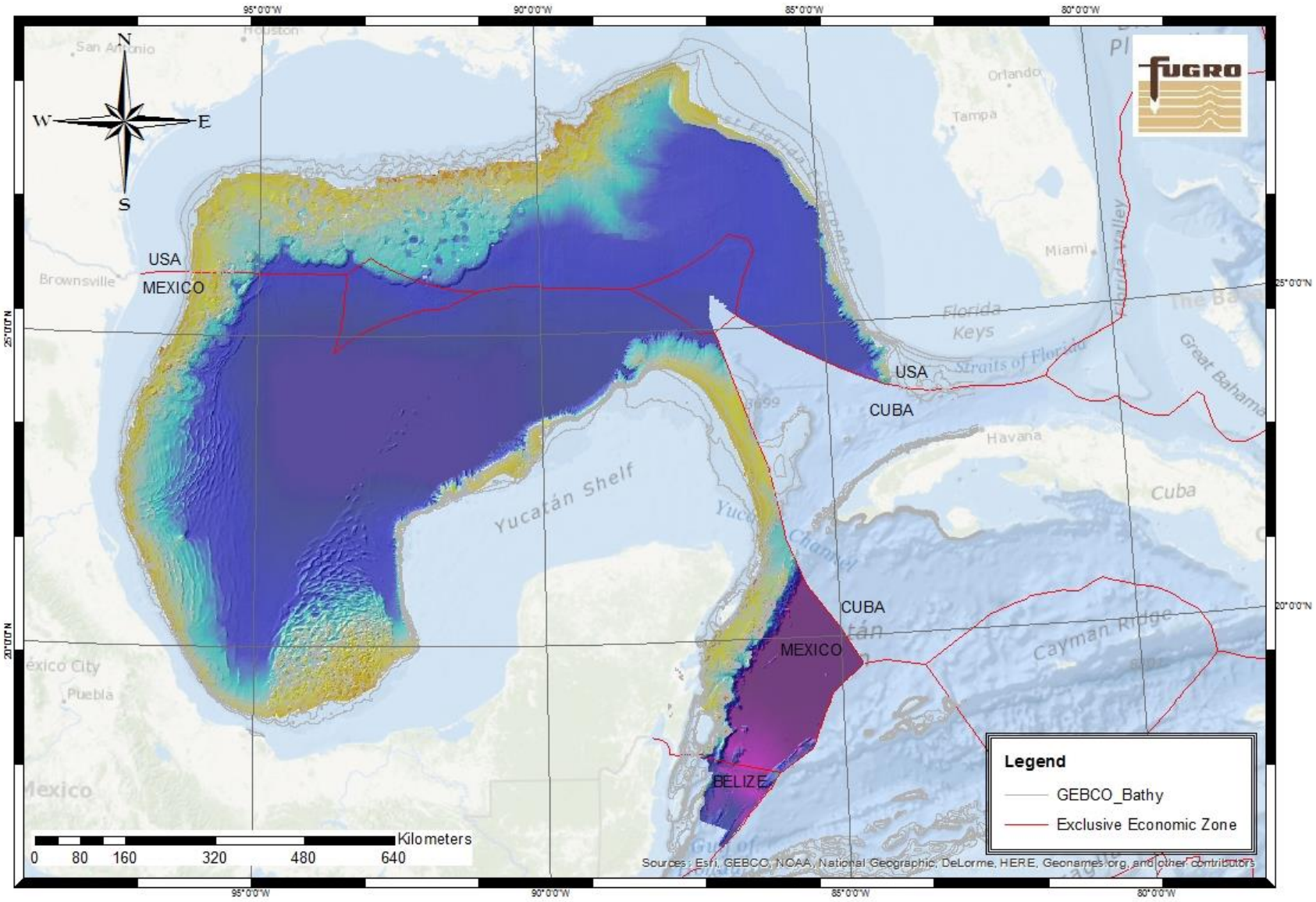
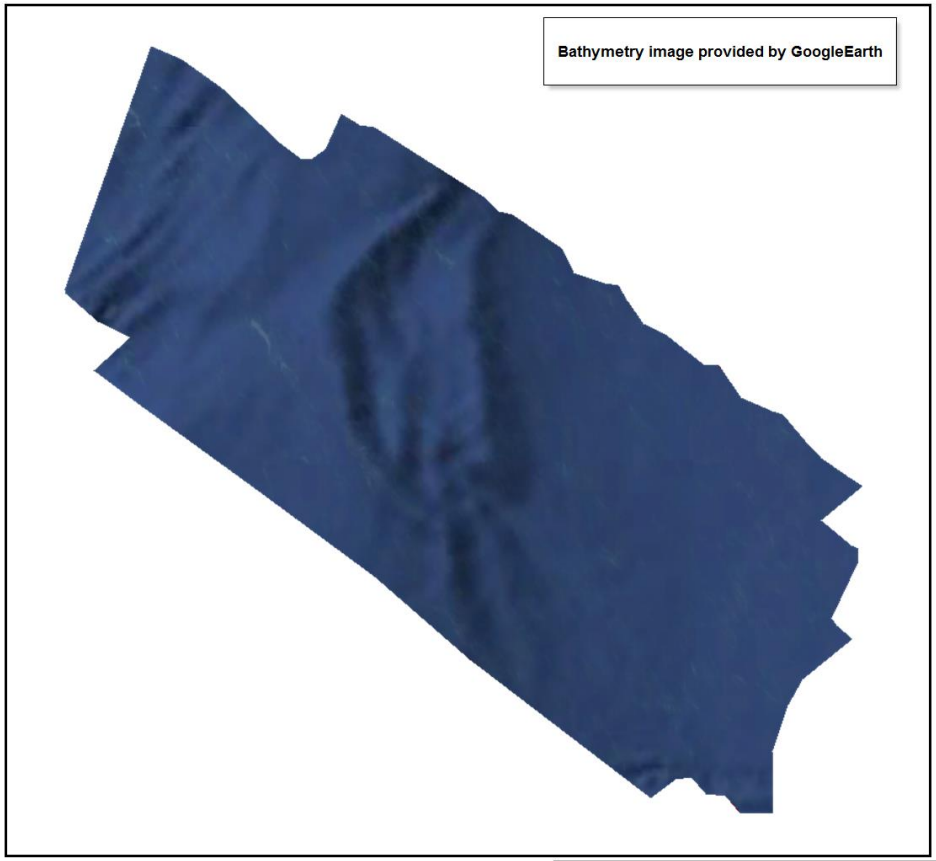


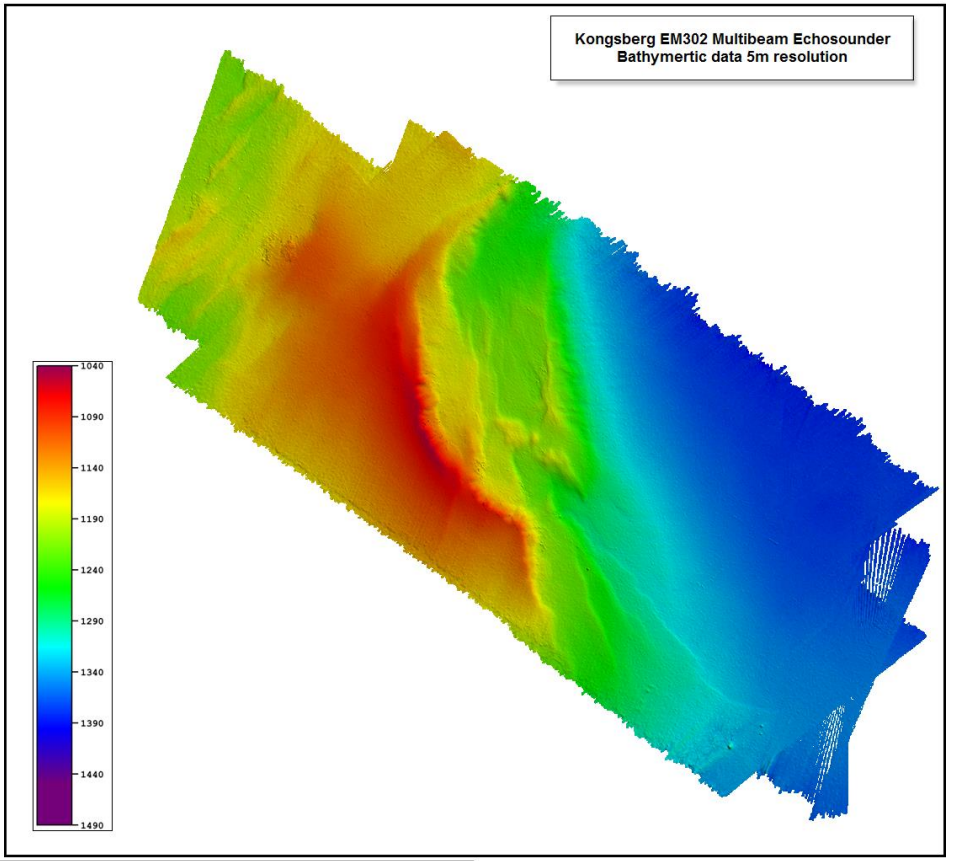
Fugro acquires on the order of 1,000,000 km² of MBES data per year, but these data are most often owned by our customers

Identify and Access Existing Data



Can Decimated Data be Made Available?

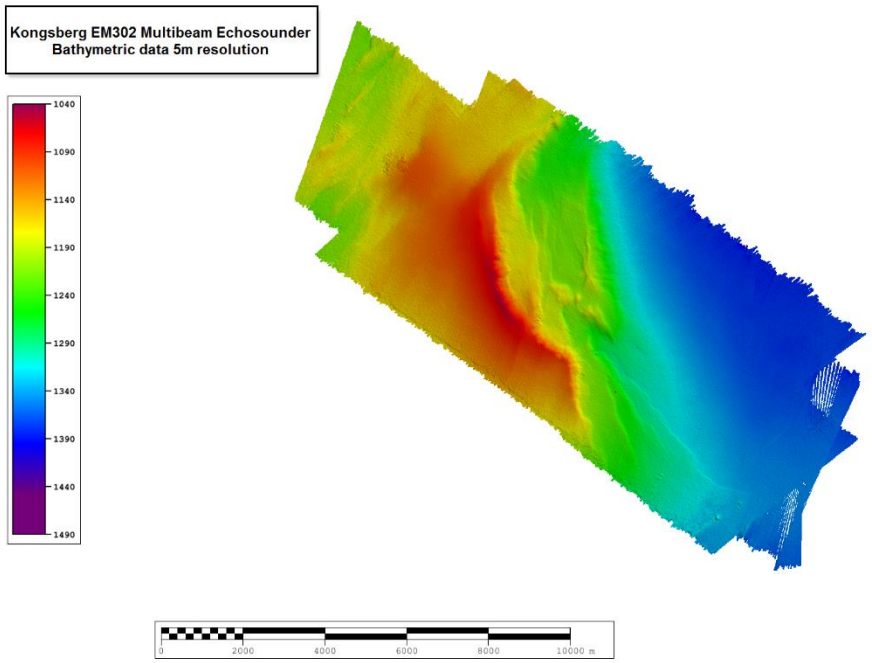




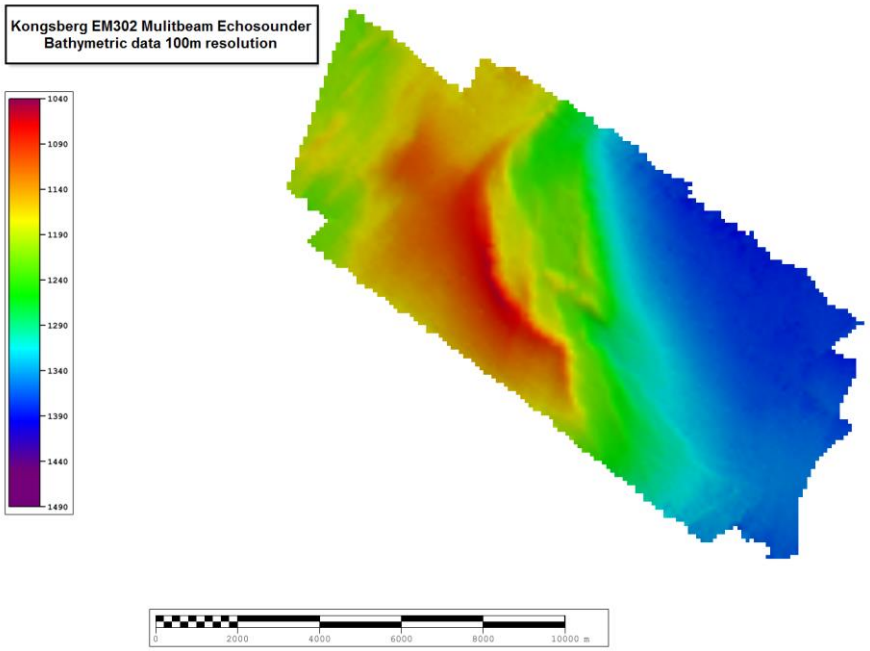
Google Earth

MBES - 5m Grid

What Level of Decimation is Acceptable?



MBES – 5m Grid



MBES – 100m Grid

Nippon Foundation-GEBCO Seabed 2030 Project

Nippon Foundation-GEBCO Seabed 2030 Project

The Nippon Foundation and GEBCO are pleased to announce the launch of **Seabed 2030**. This project aims to facilitate the complete mapping of the ocean floor by the year 2030.

The announcement was made by Mr Yohei Sasakawa, Chairman of The Nippon Foundation, at the United Nations Ocean Conference in New York on 6 June 2017.

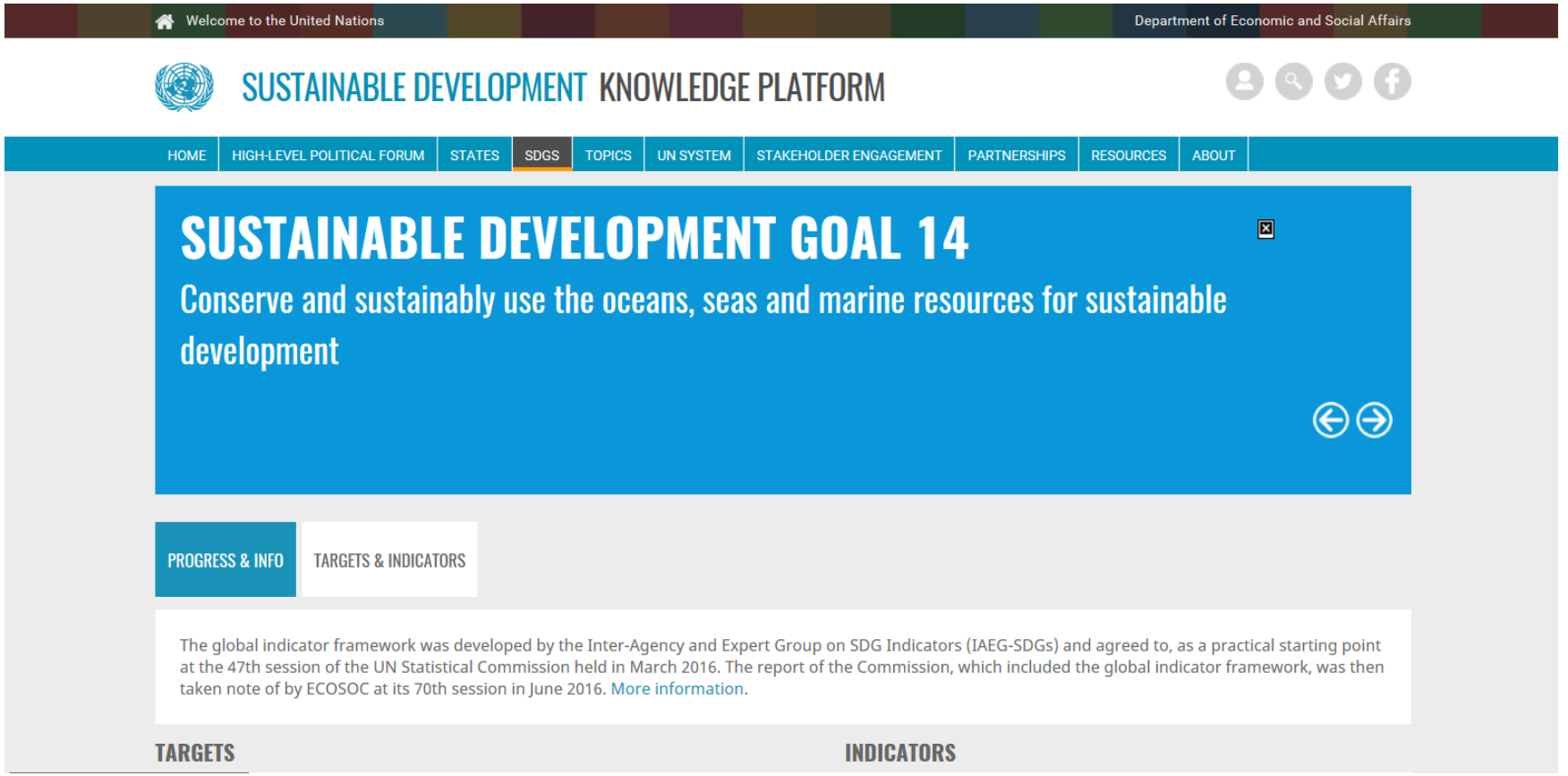
Seabed 2030 is a collaborative project between GEBCO and the Nippon Foundation. GEBCO is the only long-term international project with a mandate to map the entire ocean floor.

THE NIPPON FOUNDATION
For Social Innovation

Find out more

- Mr Sasakawa's speech to the UN (155 KB)

Ocean Stewardship



Difficult to achieve without a comprehensive map of the world's oceans

Image from XPRIZE

Thank You

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