Nippon Foundation - GEBCO Seabed 2030 project:

Links with Nippon Foundation / GEBCO training program alumni

Rochelle Wigley

The Center for Coastal and Ocean Mapping/Joint Hydrographic Center, University of New Hampshire

2019 Nautical Cartography Open House
26 July 2019

Seabed 2030

A collaborative project between The Nippon Foundation and GEBCO to inspire the complete mapping of the world's ocean by 2030 and to compile all bathymetric data into the freely-available GEBCO Ocean Map.

- *The **Nippon Foundation** is a private Japanese-based, non-profit grant-making organization with a mission based around philanthropic activities to pursue global maritime development and assistance for humanitarian work.*

- *The **General Bathymetric Chart of the Oceans (GEBCO)** organization operates under the joint auspices of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO*

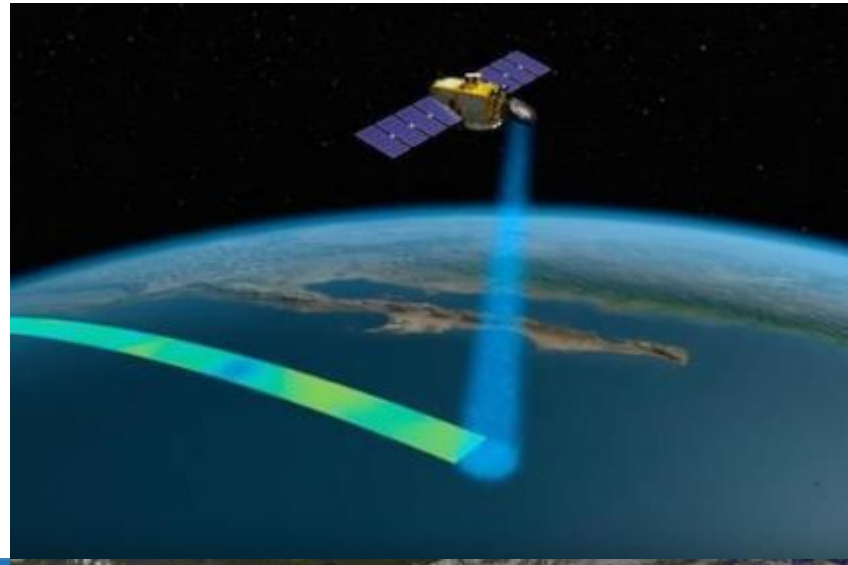
Empower the world to ***make policy decisions***, ***use the ocean sustainably***, and ***undertake scientific research*** that is informed by a detailed understanding of the global ocean floor.

Only a small portion of the ocean has been mapped with direct measurement.
~ 50% of the world's coastal waters remain unsurveyed*

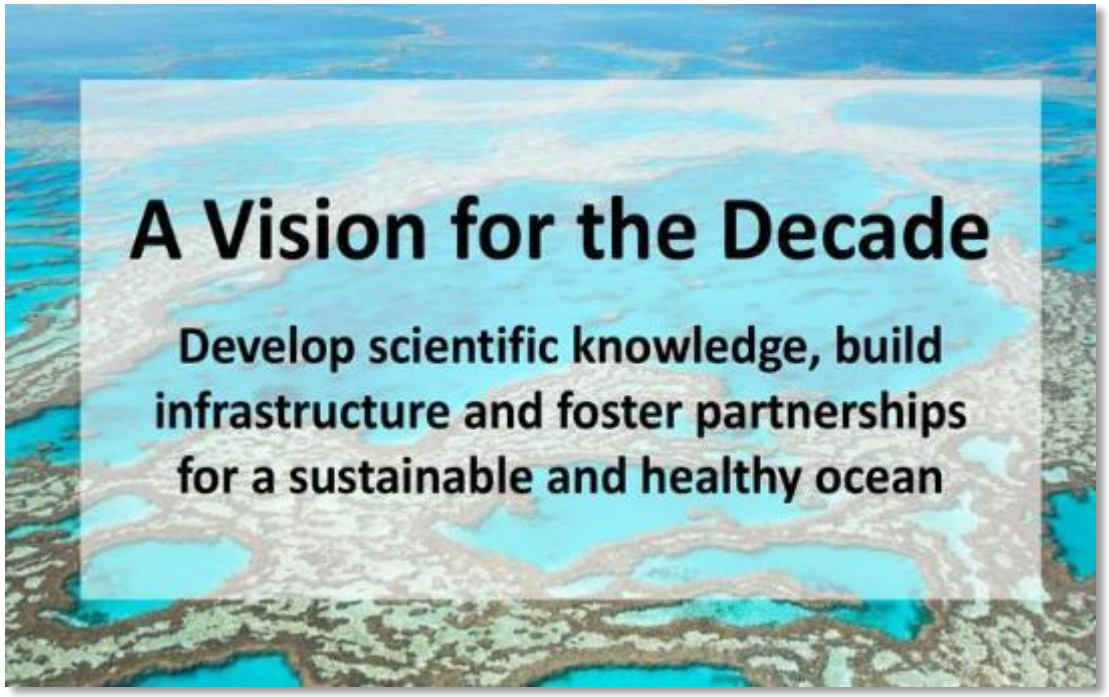
*IHO publication C-55, Status of Surveying and Charting Worldwide

Why are Bathymetry Data Important?

- Nautical charts
- Oil and gas exploration
- Safety and storm surge/tsunami inundation models
- Ecosystem identification and management
- Emergency response
- Satellite verification models
- Ocean Models
- Coastal/Marine Spatial Planning
- Coastal Hazard Assessment
- Ocean Exploration
- Coastal Change Analysis
- Sea Level Rise Mitigation
- New Energy Siting
- Marine heritage



The UN Decade of Ocean Science for Sustainable Development (2021-2030)

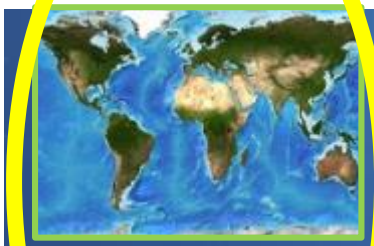


SDG14 will not be achievable without a comprehensive map of the world ocean floor

United Nations Educational, Scientific and Cultural Organization · Intergovernmental Oceanographic Commission · Sustainable Development Goals

Research and Development Proposed Priority Areas

2021 2030 United Nations Decade of Ocean Science for Sustainable Development



Map the entire ocean floor and processes

Bolster ocean observation systems in all basins

Conduct an inventory of ecosystems and their functioning

Develop a data and information portal

Establish an integrated multi-hazard warning system

New integrated models for ocean prediction

Strengthen capacities and accelerate technology transfer and ocean literacy

Kaveau / Shutterstock

Seabed 2030 Strategy

Partnership

- Work with all stakeholders to form a global coalition dedicated to giving the world a complete GEBCO Ocean Map.

Sharing and acknowledging

- Encourage and facilitate the sharing of bathymetric data, giving due acknowledgement to Partners and data contributors.

Invest in human capacity development

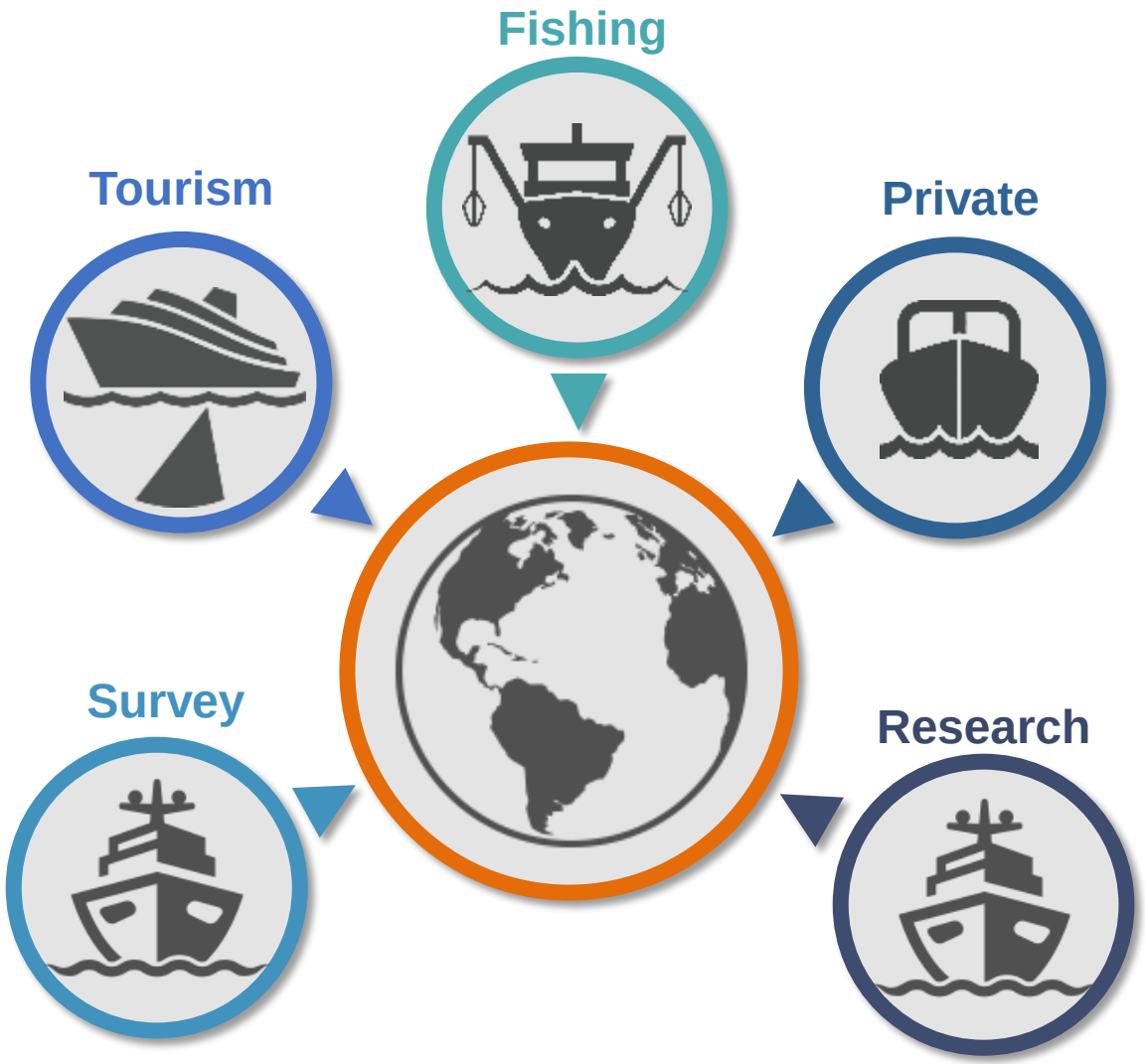
- Invest in capacity development to increase skills and greater capacity in ocean mapping, and meet growing needs of big data analysis and visualization.

Leverage technology innovation

- Work with technology partners to apply new mapping and data analysis techniques to support Seabed 2030's mission.

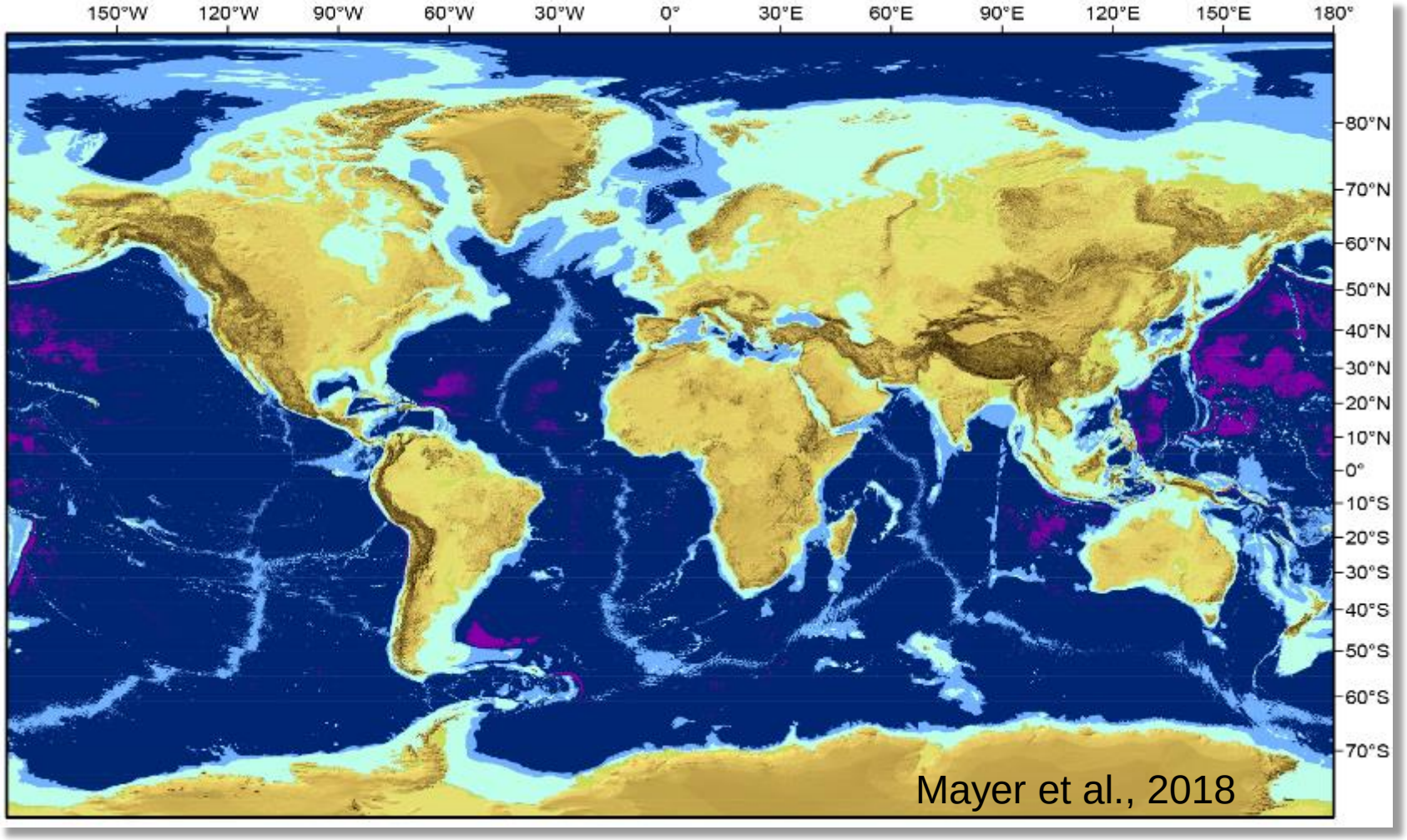
Data Sources: Power of the Crowd

- **Government**
  - Survey Vessels
- **Academic**
  - Research Vessels
- **Industry**
  - Survey Vessels
  - Cruise Ships
  - Fishing Boats
- **Public**
  - Private Boats and Yachts
  - Recreational Mariners

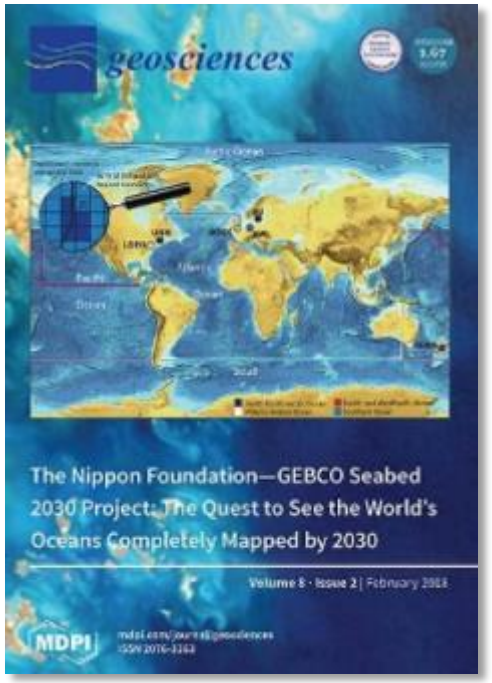


What does “100% mapped” mean?

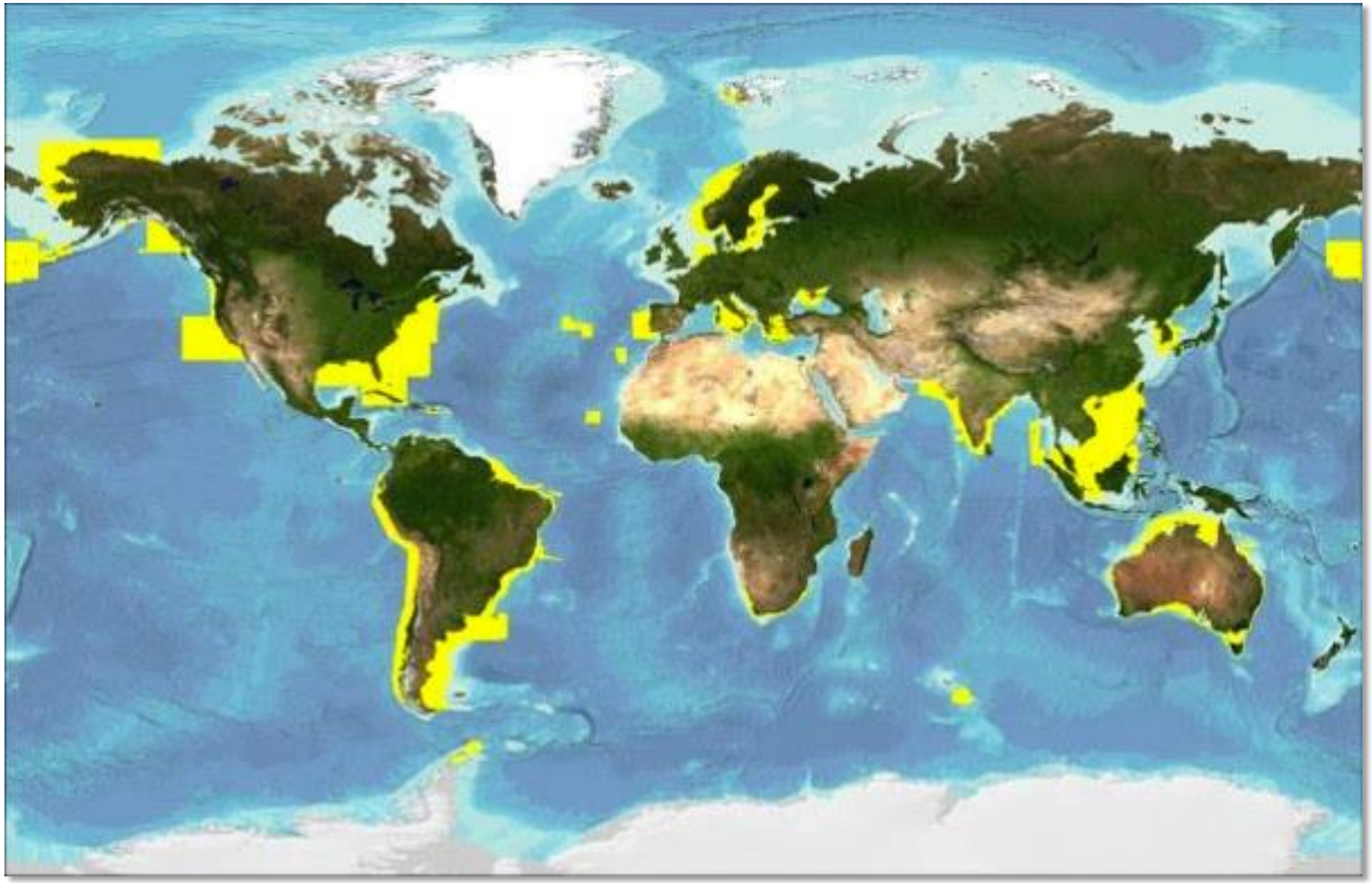
Depth-dependent resolution goals



- 100x100 m (0-1500 m)
- 200x200 m (1500-3000 m)
- 400x400 m (3000-5750 m)
- 800x800 m (5750-11000 m)



ENC Data Contributions to GEBCO



Capacity-building Initiative: Postgraduate Certificate in Ocean Bathymetry

Training a new generation of scientists and hydrographers in ocean bathymetry

Funded by:

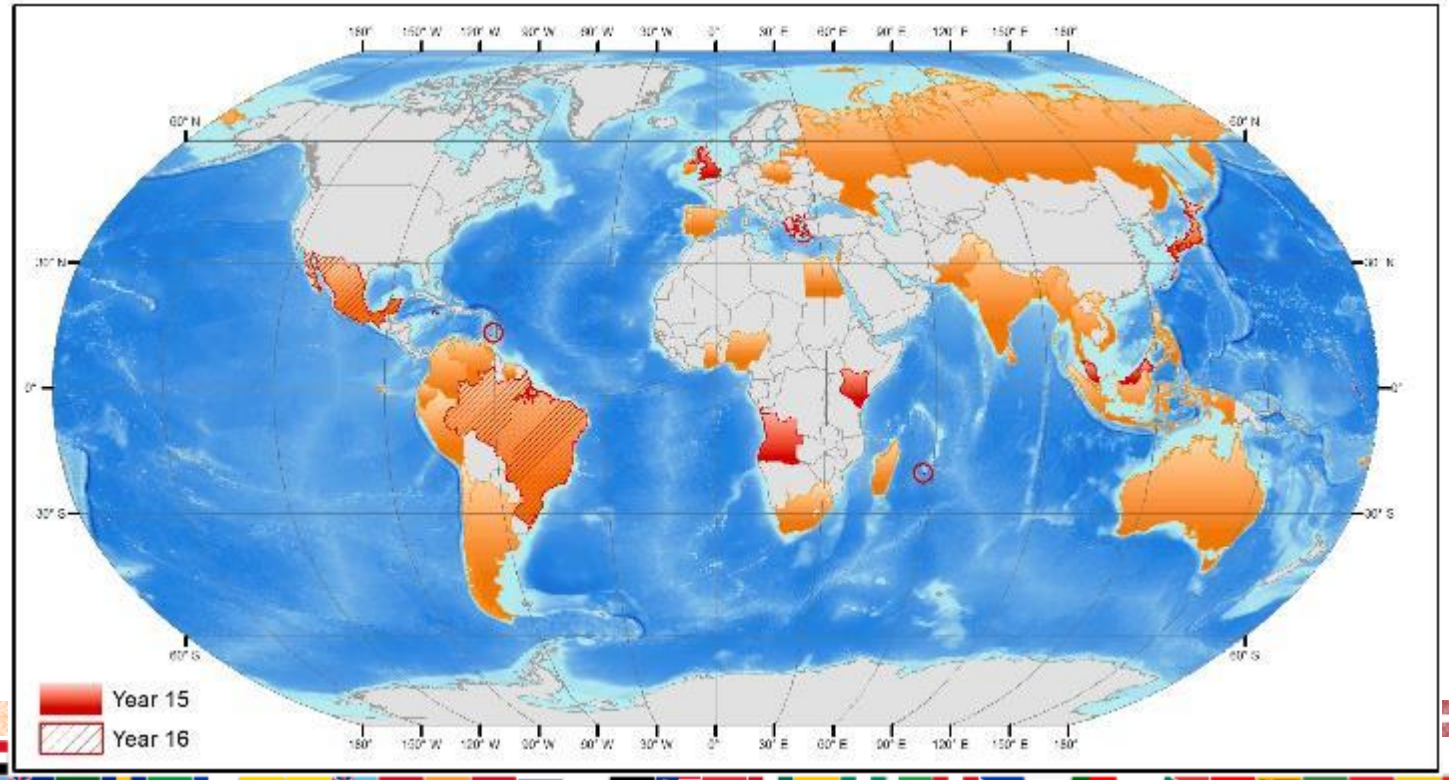
The Nippon Foundation of Japan

Taught at:

The Center for Coastal and Ocean Mapping / Joint Hydrographic Center
University of New Hampshire

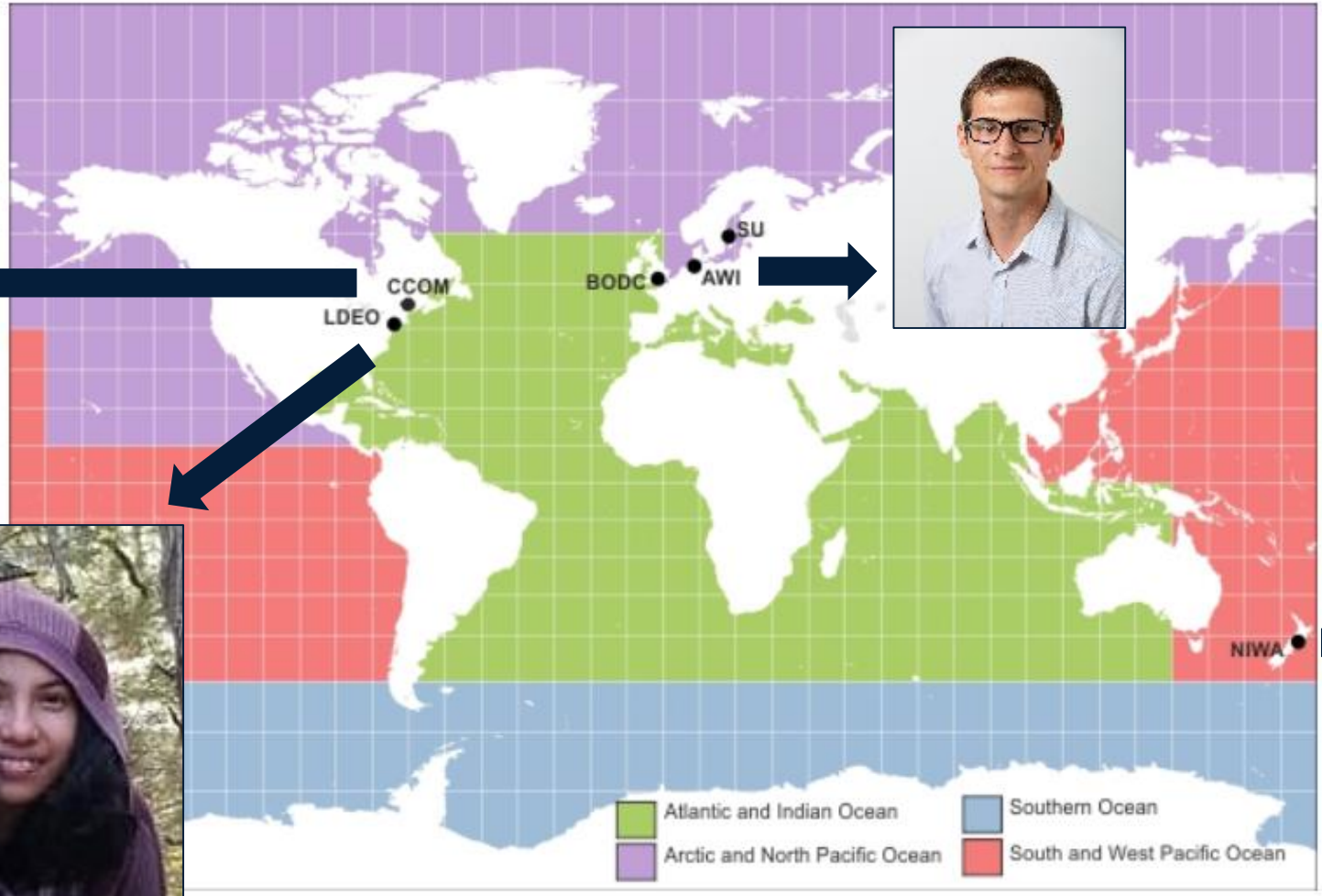
Capacity-building Initiative: Postgraduate Certificate in Ocean Bathymetry

90 Scholars from 40 coastal states over last 15 years!



Seabed 2030 Centers

Seabed 2030 consists of four Regional Centers and a Global Center



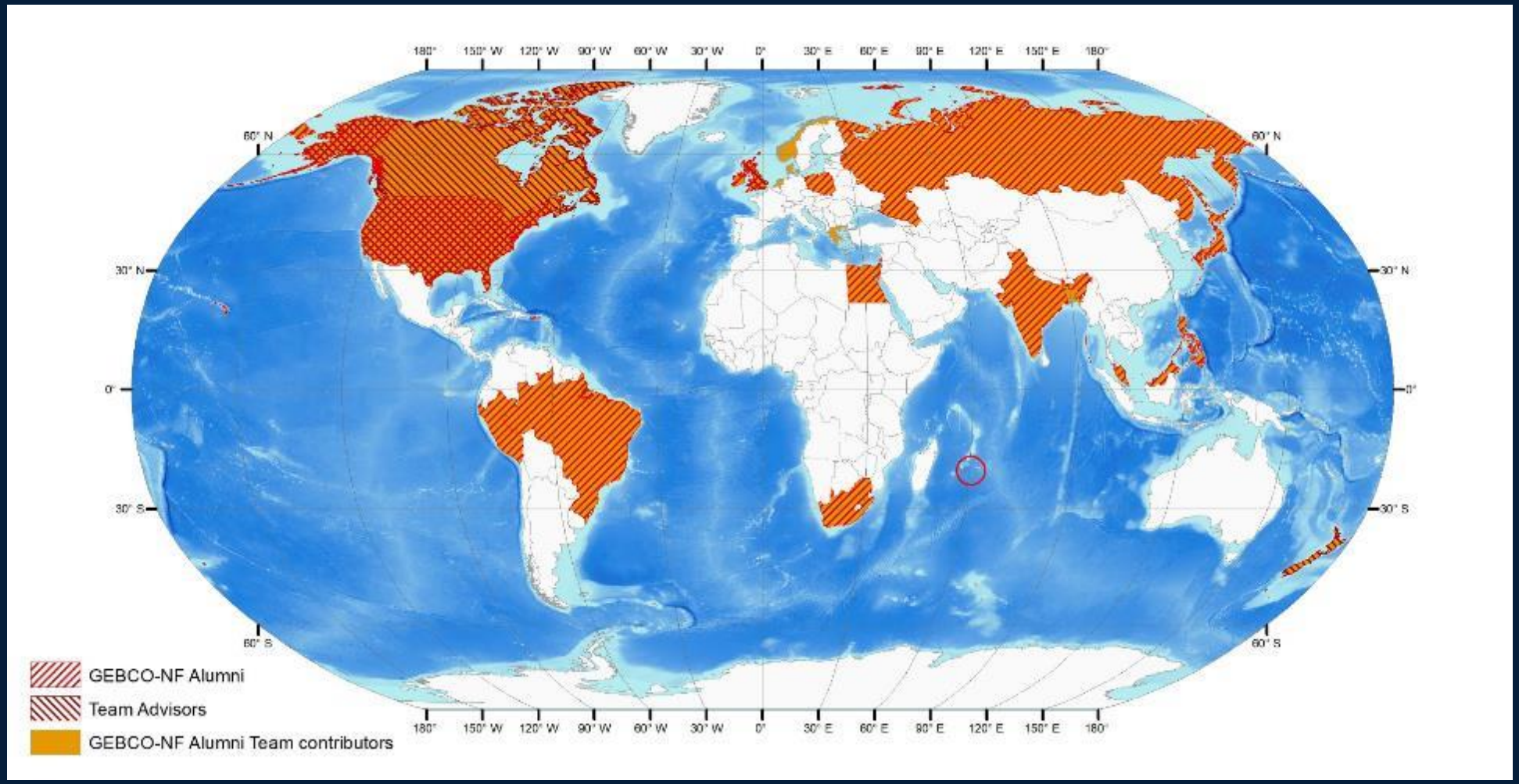
Seabed 2030: Data Centers

- Coordinate with stakeholders
- Build upon ongoing regional efforts including IBCs
- Develop mechanisms for attribution
- Assemble regional & global data products

GEBCO-Nippon Foundation Alumni Team

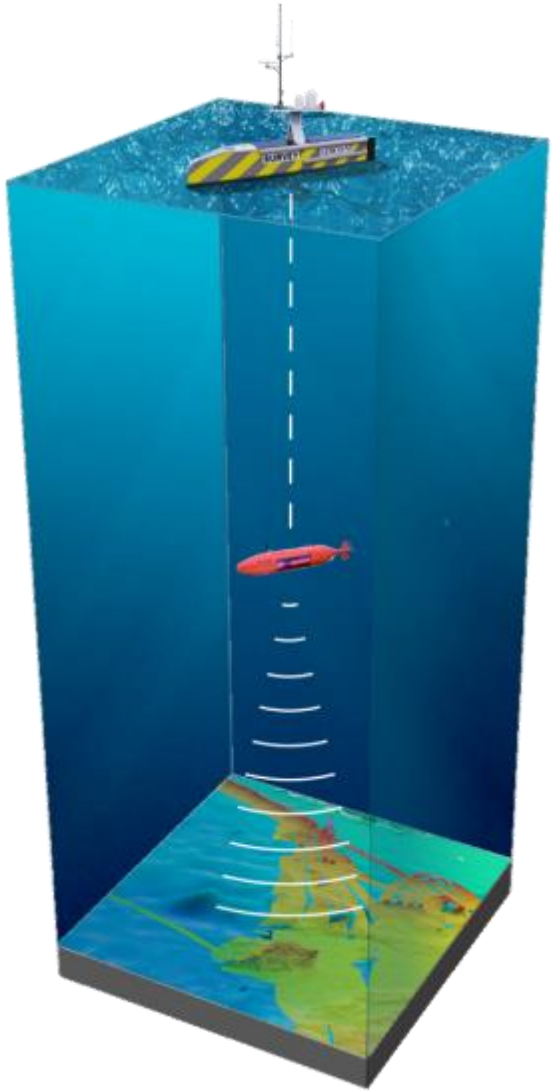
International team of alumni, advisor, industry experts, partners and suppliers

New deep-sea technologies for autonomous, fast and high-resolution ocean exploration
Create solutions that advance the autonomy, scale, speed, depths and resolution of ocean exploration



> **78** People from **22** countries

Integrating Existing Technology with Innovative New Ideas



New autonomous surface vessel capable of deployment and retrieval of AUV

- Hushcraft Limited designed SEA-KIT USV *Maxlimer* with Kongsberg Maritime HiPAP
- Remote and Autonomous operations facilitated by Kongsberg Maritime K-MATE.

Commercially available Kongsberg Maritime HUGIN AUV

- Round 1: Ocean Floor Geophysics AUV *Chercheur* : 3,000 m
- Round 2: Kongsberg Maritime AUV *Rental 1*: 4,500 m

Autonomous and cloud-based data processing for fusion of seafloor bathymetry and imagery

- Fusion of EM2040 MBES, HISAS real aperture bathymetry, HISAS synthetic aperture side-scan imagery, and spot-focused synthetic aperture HISAS imagery and bathymetry.


XPRIZE
Shell OCEAN DISCOVERY XPRIZE
Shell OCEAN DISCOVERY XPRIZ


SHELL DISCOVERY XPRIZE
GRAND PRIZE WINNER
Shell OCEAN DISCOVERY XPRIZE
Date 31 May, 2019
GEBCO-NF Alumni $ 4,000,000
Four Million 00/100 Dollars
Ocean Discovery XPRIZE Grand Prize Winner
MEMO
ANOUSHEH ANSARI

NIPPON FOUNDATION / GEBCO SEABED 2030 SPECIAL SESSION
The 11th WIOMSA Scientific Symposium at the University of Mauritius
1st – 7th July 2019

Alumni-led session as regional ambassadors for Seabed 2030 to engage and communicate and to raise awareness for regional collaboration

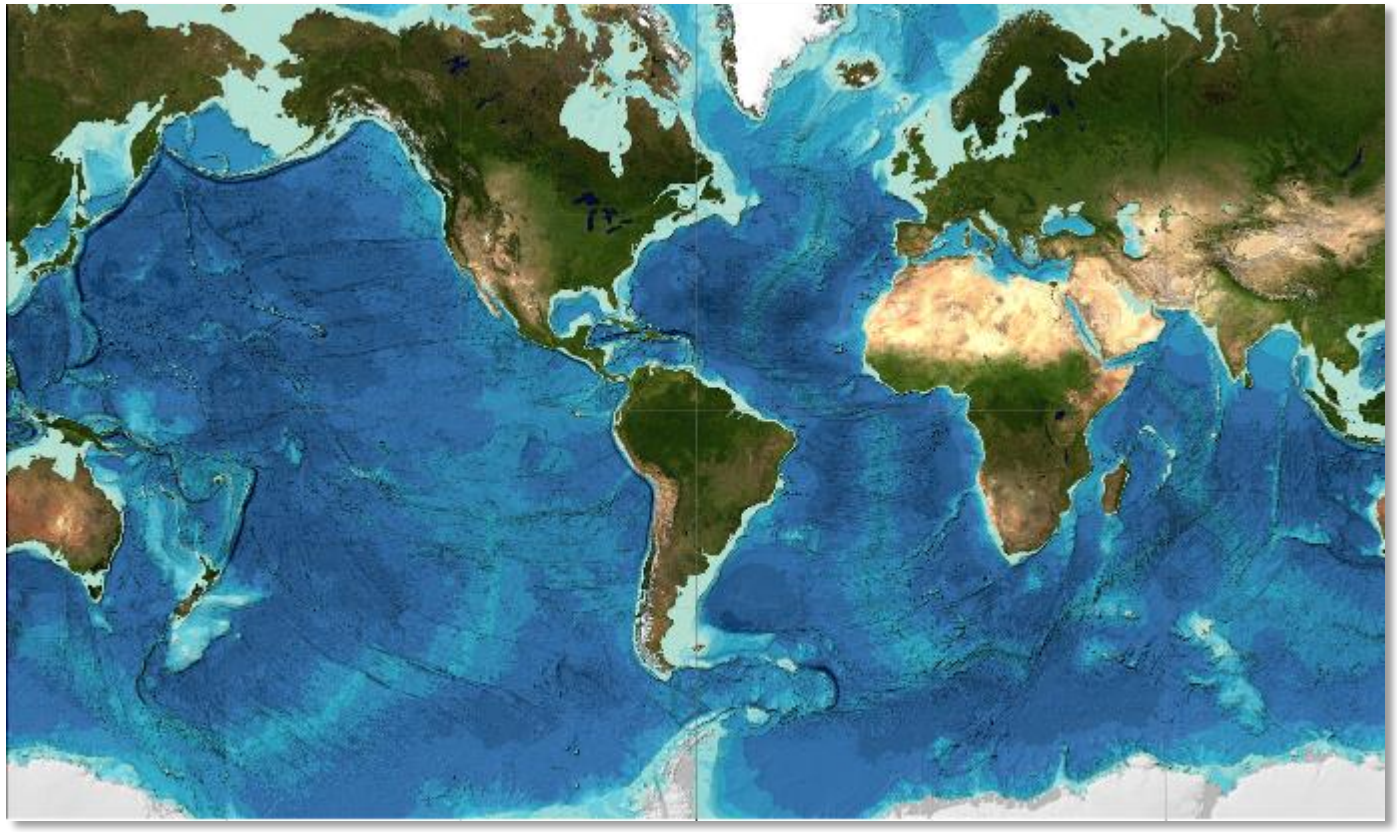
One of conference conclusions:

- Significance of ocean mapping
- Call to the WIO scientific community to collaborate in sharing data and contribute to the endeavor to map the seafloor

WIOMSA
Coasts Ocean and People
WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION

WHY? - GEBCO 2019

- Released April 2019
- 15 arc second grid
- Coverage more than doubled
  - GEBCO 2014: 6% of goal
  - GEBCO 2019: 15% of goal
- Data from all sectors
  - Government
  - Academia
  - Industry
  - Private



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How to participate in Seabed 2030

- Contribute information about existing data coverage
- Contribute data
  - Gridded data products
  - Points from ENCs
- Share information about future mapping plans
- Engage with Data Centers
- Support and promote GEBCO activities and products

seabed2030.org

@seabed2030

Thank you!

www.gebco.net