



Brief Overview of LDEO-based Activities Relevant to IUGS-TGSG

June 26, 2023

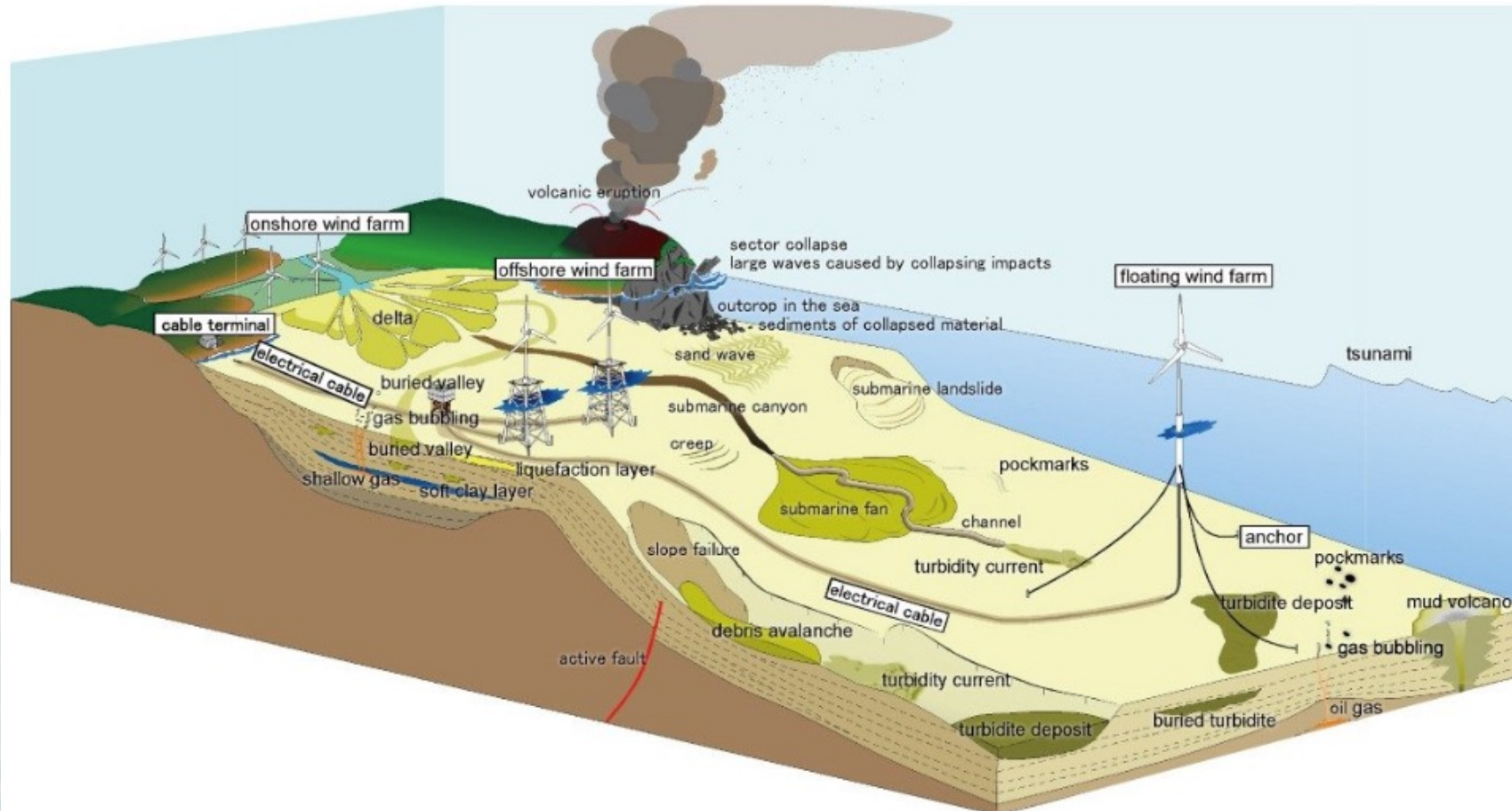
Vicki Ferrini, PhD

ferrini@ldeo.columbia.edu

Sr. Research Scientist, Marine and Large Programs
Assoc. Director, Diversity, Equity, Inclusion and Anti-Bias
Director, Marine Geoscience Data System
Head, Seabed 2030 Regional Center for the Atlantic and Indian Oceans
Assoc. Director for Data Strategy, National Deep Submergence Facility (WHOI)

IUGS - International Union of Geological Sciences

Task Group on Submarine Geohazards



Submarine geohazards and risks to offshore renewable energy developments on continental shelves and submarine slopes.

(02) Submarine Geological and Geophysical Data Archives

IUGS - International Union of Geological Sciences

Task Group on Submarine Geohazards

O2 proposes to develop a programme of work that will integrate open-source offshore geological and geophysical subsurface data for continental shelves including the subduction and transform plate boundaries across the globe. The funding support will be sought from National Institutes. This subsurface data archive will provide a single source of detailed geophysical information. The data will be reviewed to highlight potential geohazard risks. The archive is developed to serve as an initial resource for site risk assessment. Some of data sources to be integrated include:

1. Australian Government, Geoscience Australia, National Offshore Petroleum Information Management System (NOPIMS): <https://nopims.dmp.wa.gov.au/nopims>
2. British Oceanographic Data Center: <https://www.bodc.ac.uk/>
3. Geological Survey of Japan: <https://gbank.gsj.jp/geonavi/?lang=en> and https://gbank.gsj.jp/sbp_db/pages/cover-E.html
4. Japanese Coast Guard: <https://www.msil.go.jp/msil/htm/main.html?Lang=1>
5. Japan Agency for Marine-Earth Science and Technology: <http://www.jamstec.go.jp/e/database/> and http://www.jamstec.go.jp/obsmps_db/e/
6. Published data (see, e.g., <https://doi.org/10.1038/s41597-021-00969-w>)
7. Data collected by programmes of work in O1, O3 and O4.
8. Data provided by TGSG Consortium and Supporters members, for public open access.
9. Marine geohazard maps of the Italian seas provided by the Italian Civil Defence Dept. (<https://github.com/pcm-dpc/MaGIC>).
10. Marine geohazard are the Norwegian MAREANO project (<https://mareano.no/en>), the Irish INFOMAR

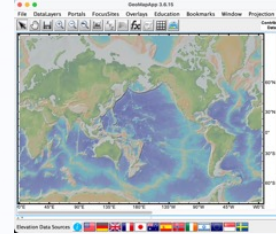
Complementary Open Data Resources

Data Exploration, Visualization & Analysis



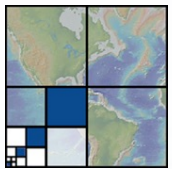
GeoMapApp (GMA):

- Data Exploration and Analysis
- GMRT, MGDS, and more
- Thousands of datasets
- Visualize & analyze data



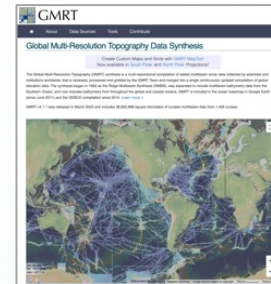
Data Assembly

Custom Map & Grid Creation



Global Multi—Resolution Topography (GMRT):

- Seamlessly Integrated Data Product
- Grids & Images
- Profiles & Points



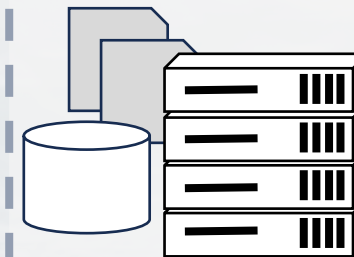
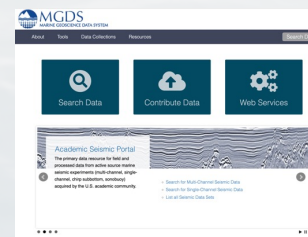
Data Synthesis & Integration

Open-Access Data Repository for Seafloor & Subseafloor



Marine Geoscience Data System (MGDS)

- Data from ships and submersible
- Bathymetry, Backscatter, Sidescan
- Seismic (MCS, SCS, Subbottom)
- Bottom photos



Data Documentation & Preservation

data curation

Larger user community

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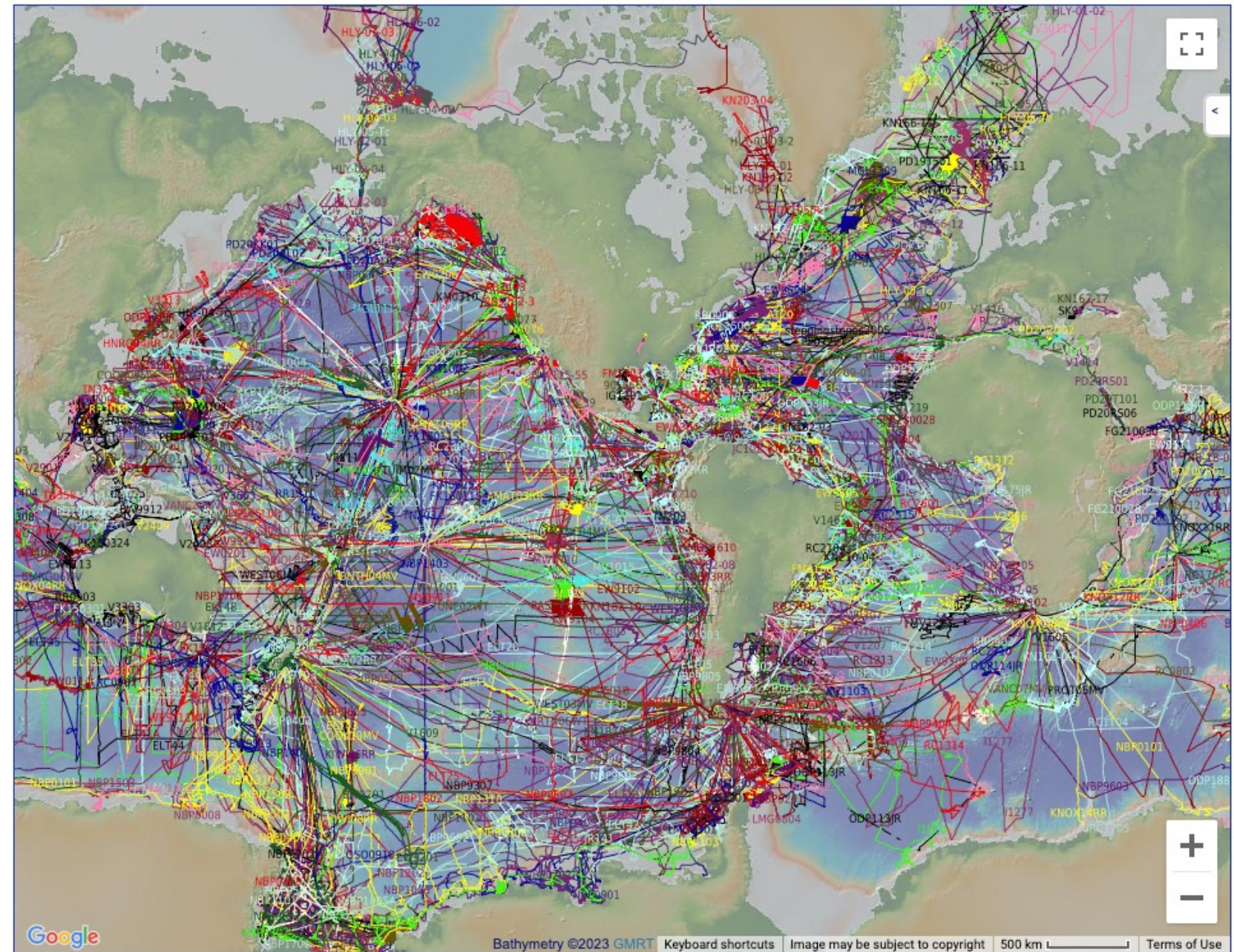
Smaller user community

A trusted marine geoscience data system providing public access to a wide range of marine geoscience products and comprehensive information and evaluation.



Search Data

Marine-Geo Explorer





A trusted marine geoscience data repository that provides free public access to a curated collection of marine geophysical data products and complementary data related to understanding *the formation and evolution of the seafloor and sub-seafloor.*



Search Data

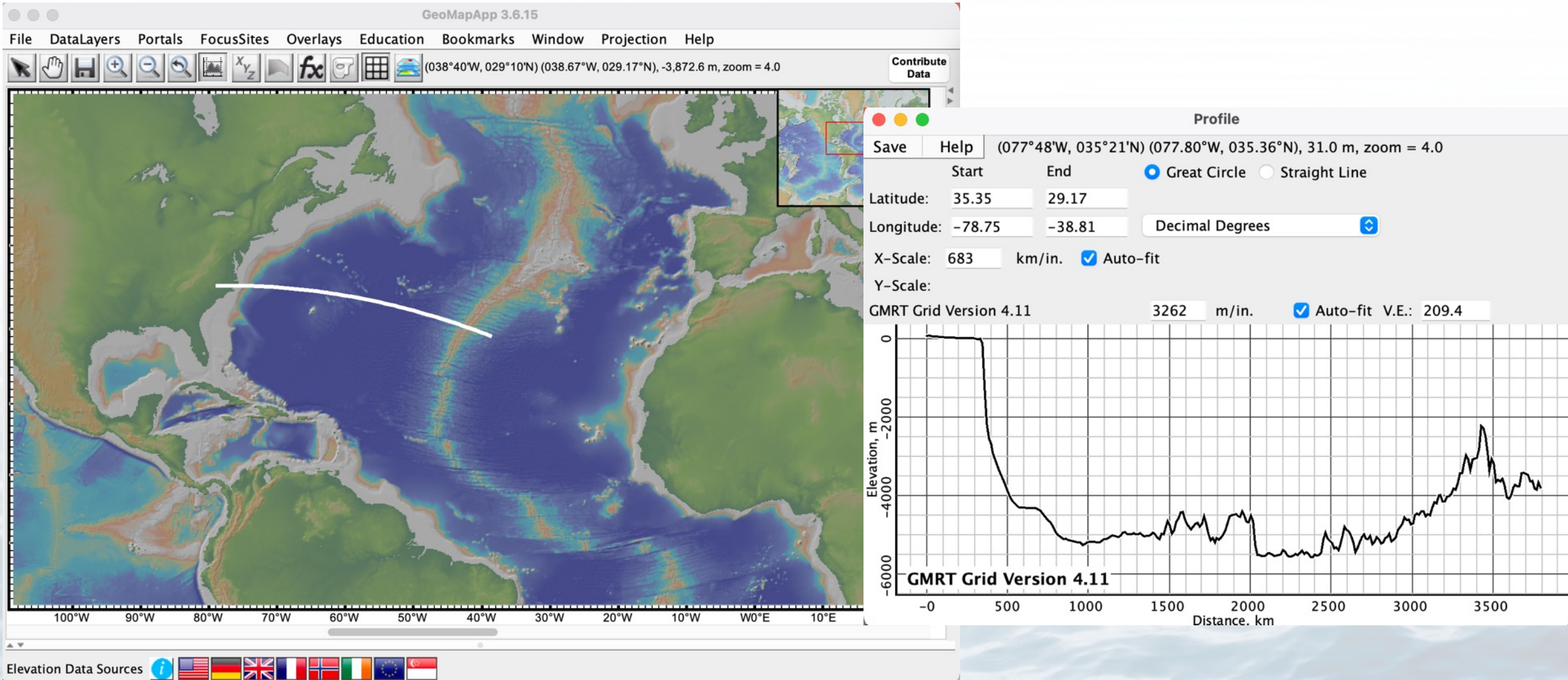


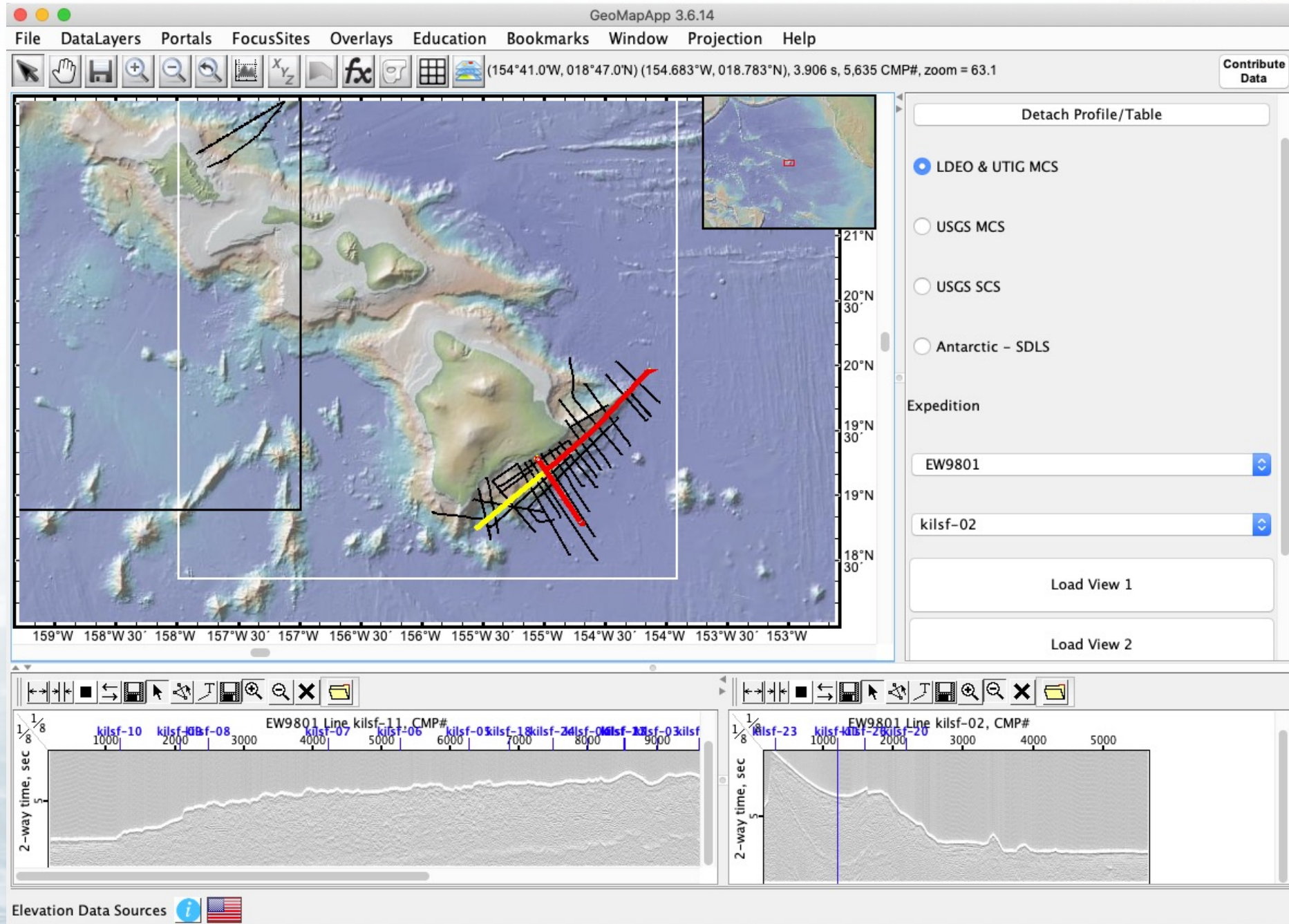
Contribute Data



Tools & Services

GMA Basemap: GMRT





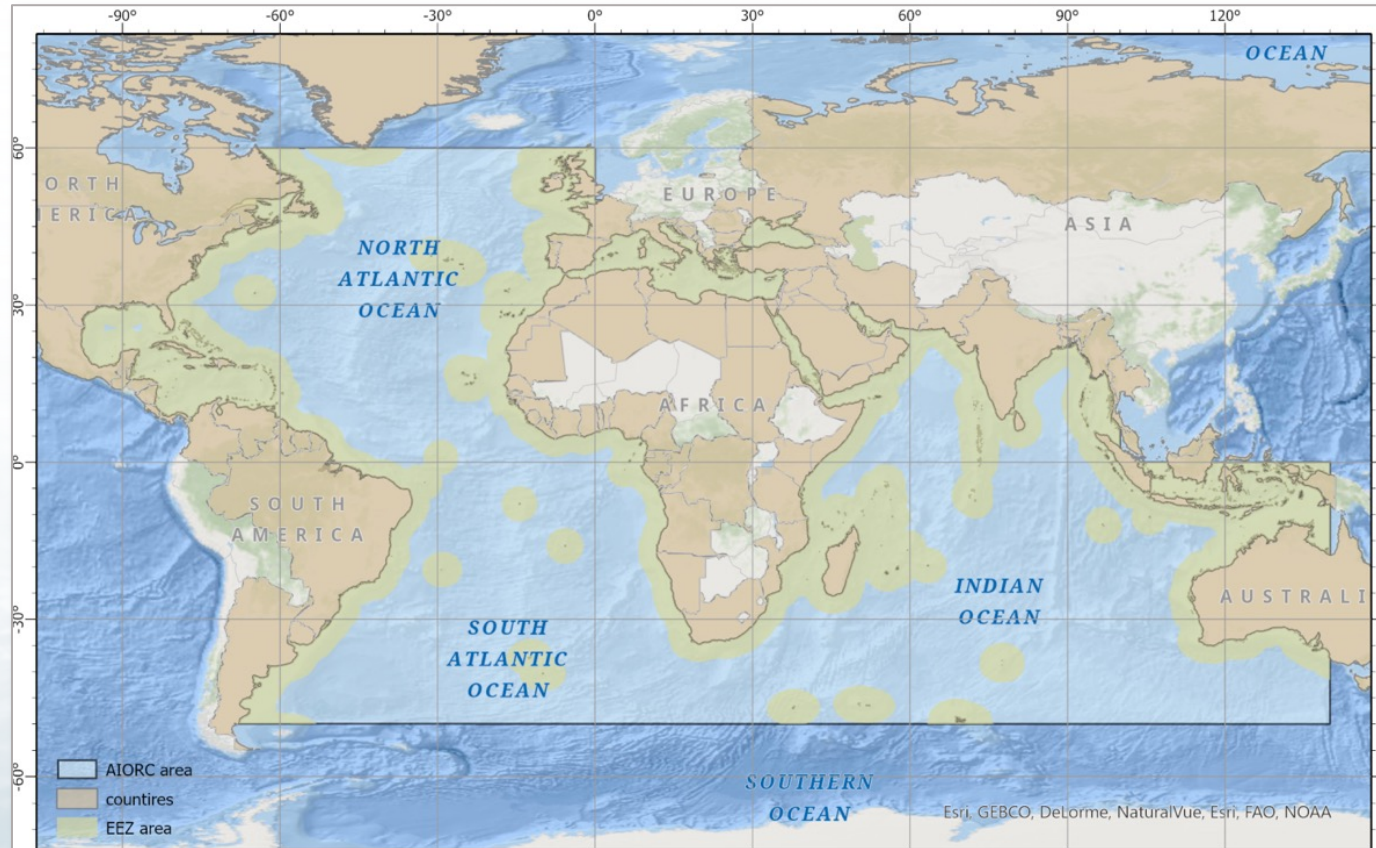
Multiple relevant data efforts @ LDEO

- Marine Geoscience Data System (MGDS): www.marine-geo.org
- Global Multi-Resolution Topography (GMRT) Synthesis: www.gmrt.org
- GeoMapApp: www.geomapapp.org
- Seabed 2030 Regional Center for the Atlantic and Indian Oceans: seabed2030.org
- Rolling Deck to Repository (R2R) Program: rvdata.us
- Multibeam Advisory Committee (MAC): mac.unols.org

Close coordination & collaboration with:

- **US efforts:** Rolling Deck to Repository, NOAA, NOMEAC, National Deep Submergence Facility
- **International efforts:** IHO-DCDB, GEBCO, Seabed 2030

The Nippon Foundation – GEBCO Seabed 2030 Project Atlantic & Indian Oceans Regional Center



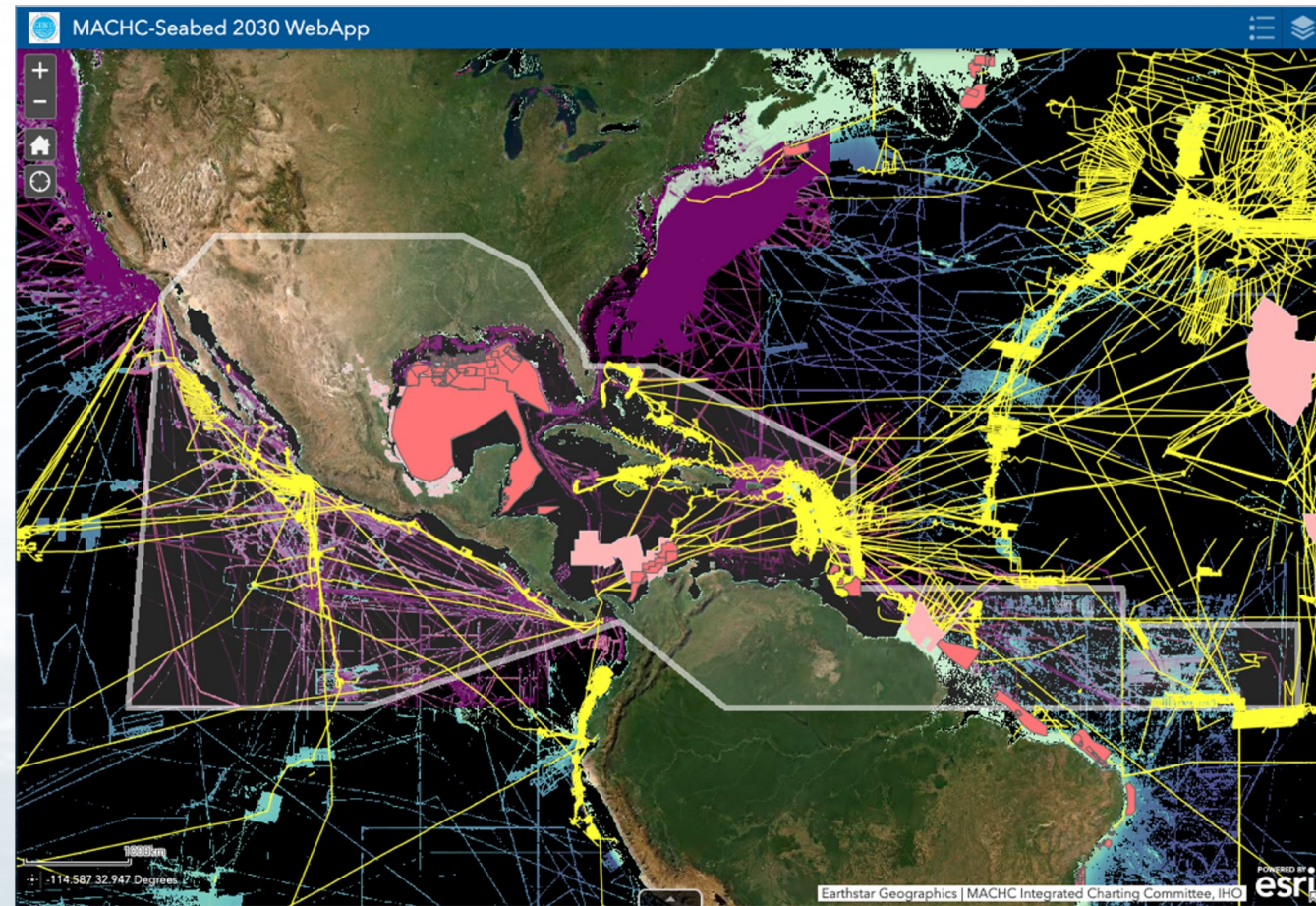
THE NIPPON FOUNDATION-GEBCO

SEABED
2030

- Total area of ~140.7 million km² (~39% of the global ocean)
- EEZs cover ~53.9 million km² (38%) of the region
- Bounded by > 100 countries on six continents

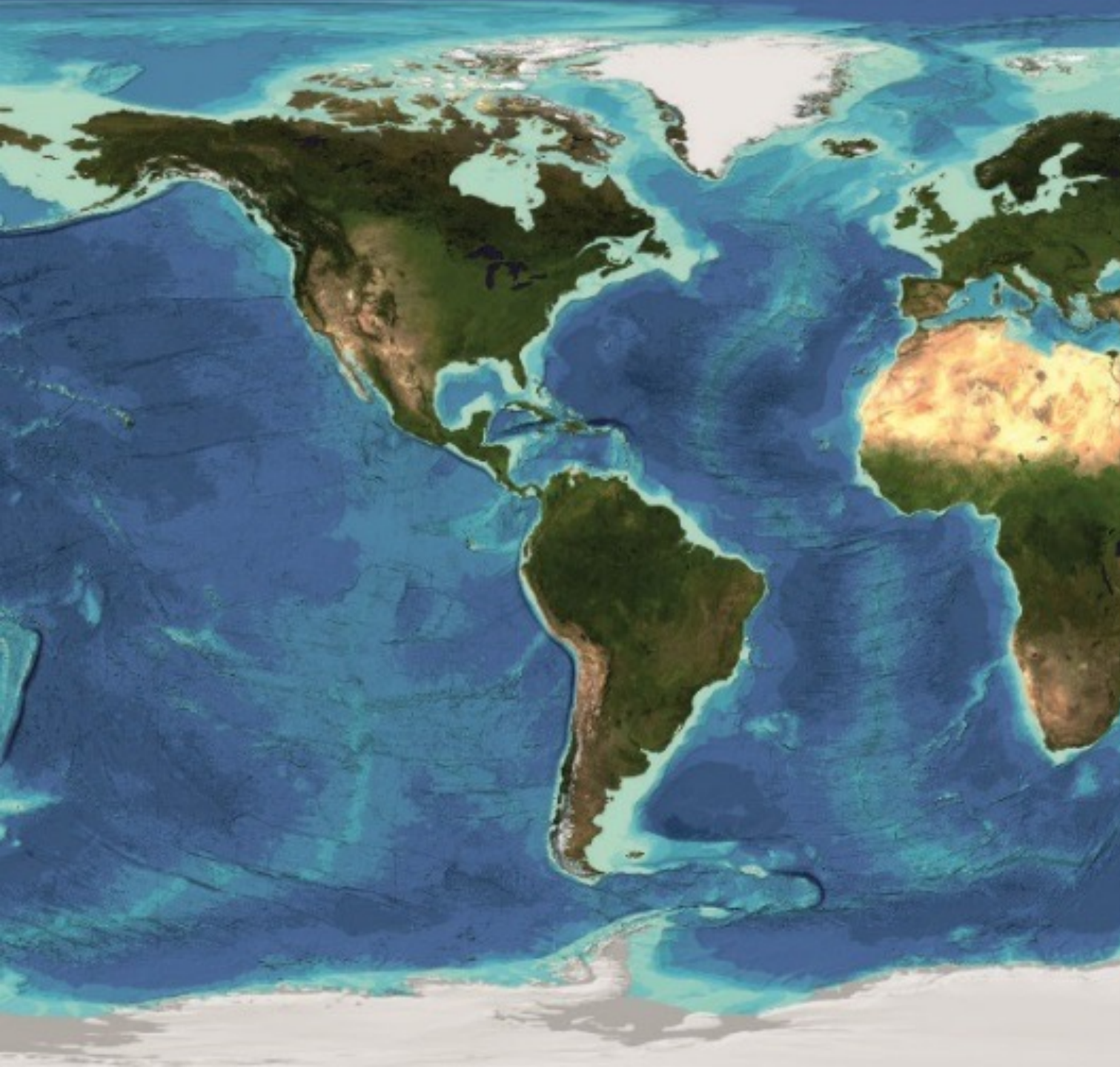
Atlantic/Indian Ocean Stakeholder Strategy

- Empower community
- Understand diverse needs & limitations
- Share tools & knowledge
- Custom interfaces
- Gratefully acknowledge all contributions



THE NIPPON FOUNDATION-GEBCO

SEABED
2030



HSH Prince Albert II of Monaco Announces a Quarter of the Ocean Now Mapped

2 May 2023

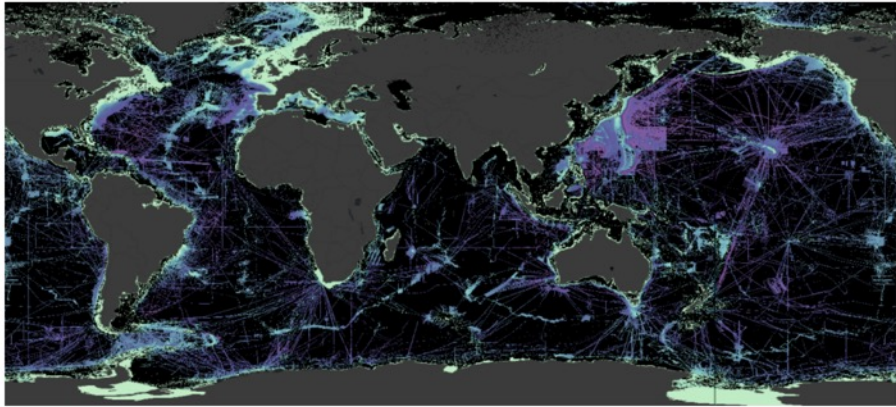


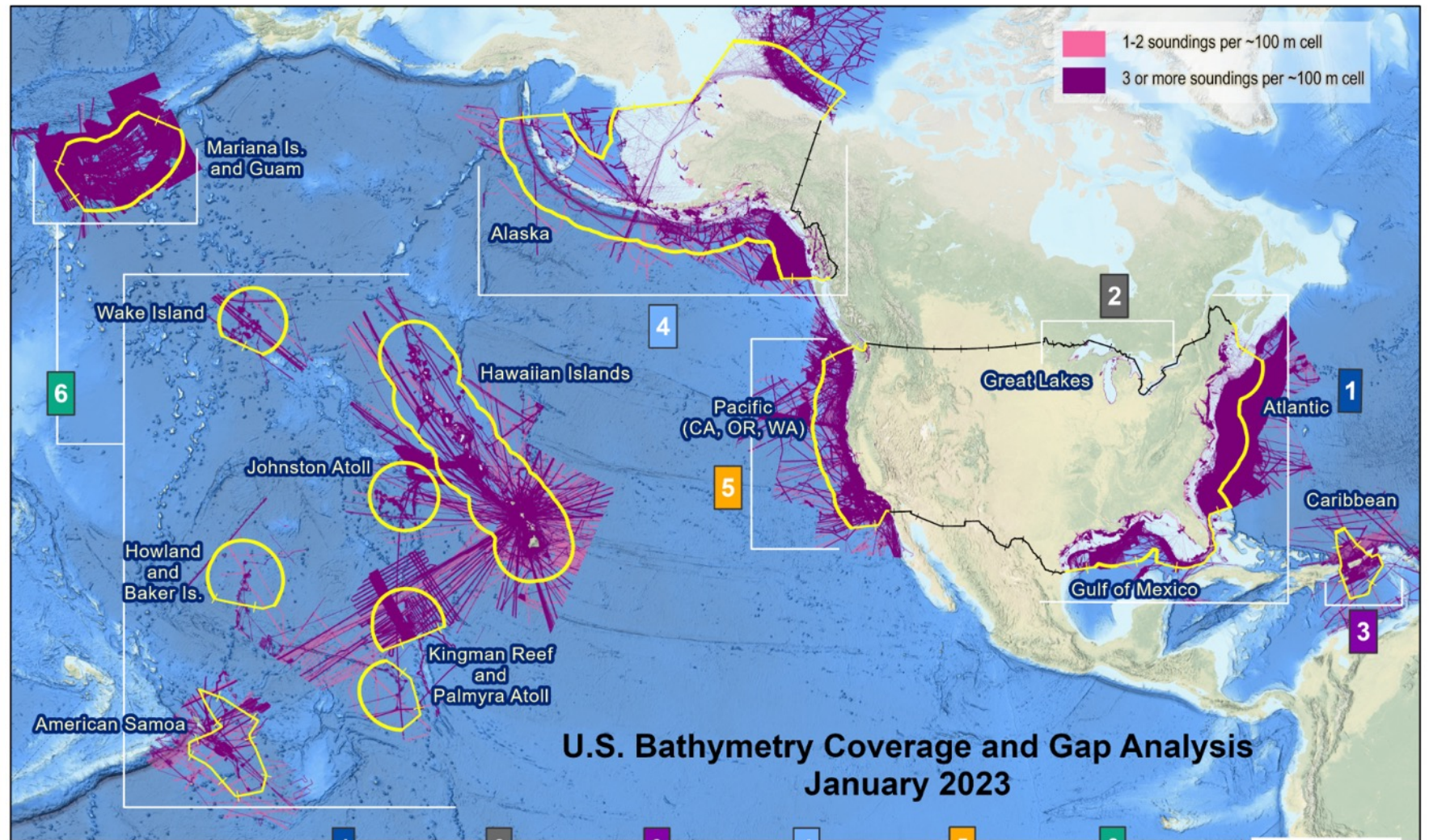
Image shows coverage in the 2023 GEBCO grid, with a focus on the Atlantic and Indian Oceans. Black areas of the ocean indicate unmapped ocean and blues-purple indicate water depth revealed by measured bathymetric data. Credit: Vicki Ferrini and Hayley Drennon

Monaco, 2 May 2023 – An additional 5.4 million square kilometres of new data - equating to an area twice the size of Argentina - has been added to the definitive map of the world's ocean floor, with 24.9 per cent of the seabed now mapped.

The latest figure was announced by HSH Prince Albert II of Monaco during the International Hydrographic Organization (IHO) Assembly, currently taking place in Monaco. Formed by the representatives of its 98 Member States and Observers, the Assembly meets triannually to discuss new developments in technical standards, ocean mapping and agree on resolutions to guide activities.

The global effort behind mapping the world's entire ocean floor before the end of the decade is being spearheaded by Seabed 2030 - a collaborative project between The Nippon Foundation and the General Bathymetric Chart of the Oceans (GEBCO), itself a joint programme of the IHO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

NOAA Bathymetry Gap Analysis



**U.S. Bathymetry Coverage and Gap Analysis
January 2023**

	1	2	3	4	5	6	Total Across Regions
	Atlantic & Gulf of Mexico	Great Lakes	Caribbean	Alaska	Pacific (CA, OR, WA)	Pac. Remote Isl. & Hawaii	
Total Area (sq nm)	472,200	45,100	61,600	1,080,200	239,700	1,691,700	3,590,500
Area Mapped in Jan 2023 (sq nm)	295,900	3,700	43,100	368,400	193,700	892,000	1,796,800
% Mapped	63%	8%	70%	34%	81%	53%	50%

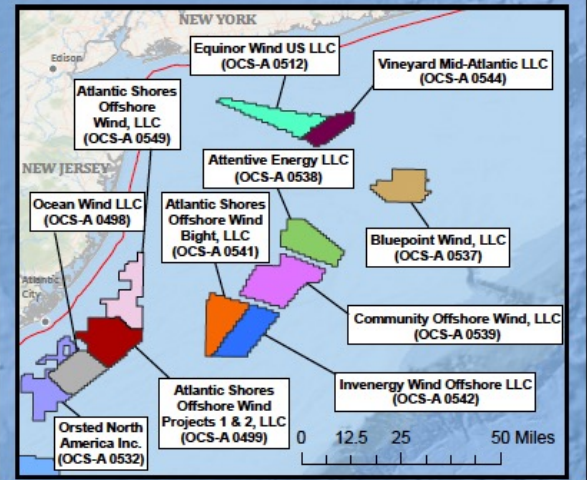
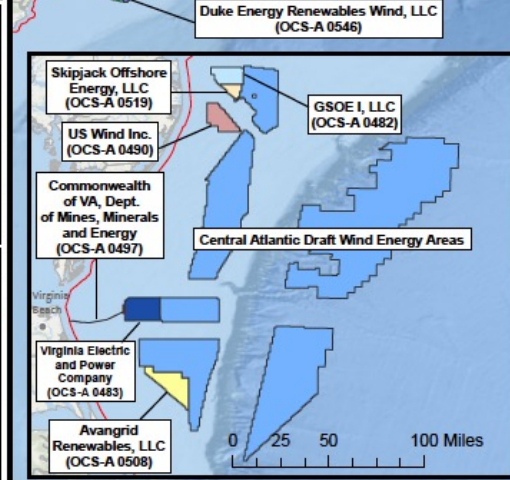
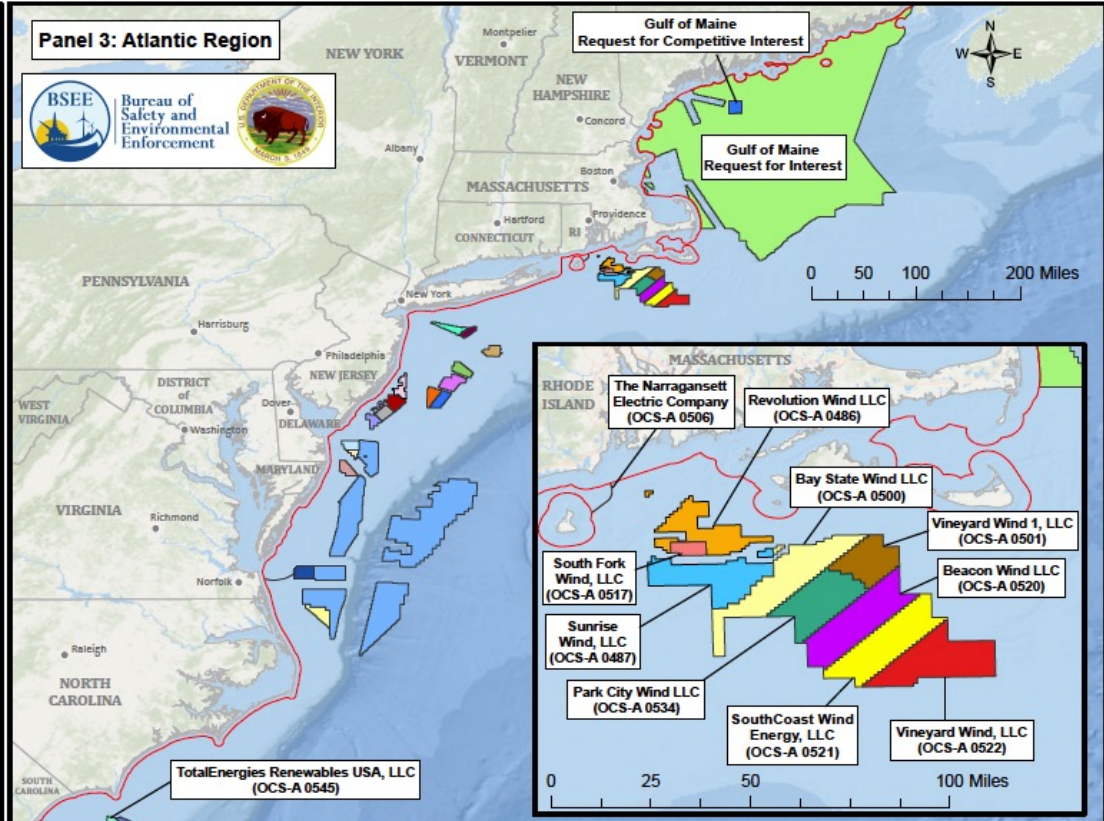
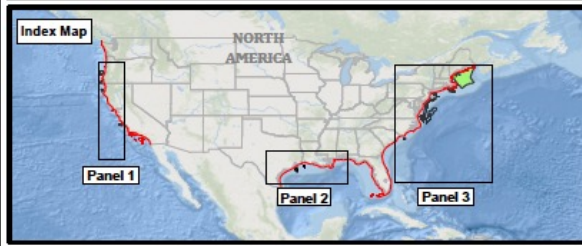




US Department of the Interior Bureau of Safety and Environmental Enforcement Outer Continental Shelf Renewable Energy

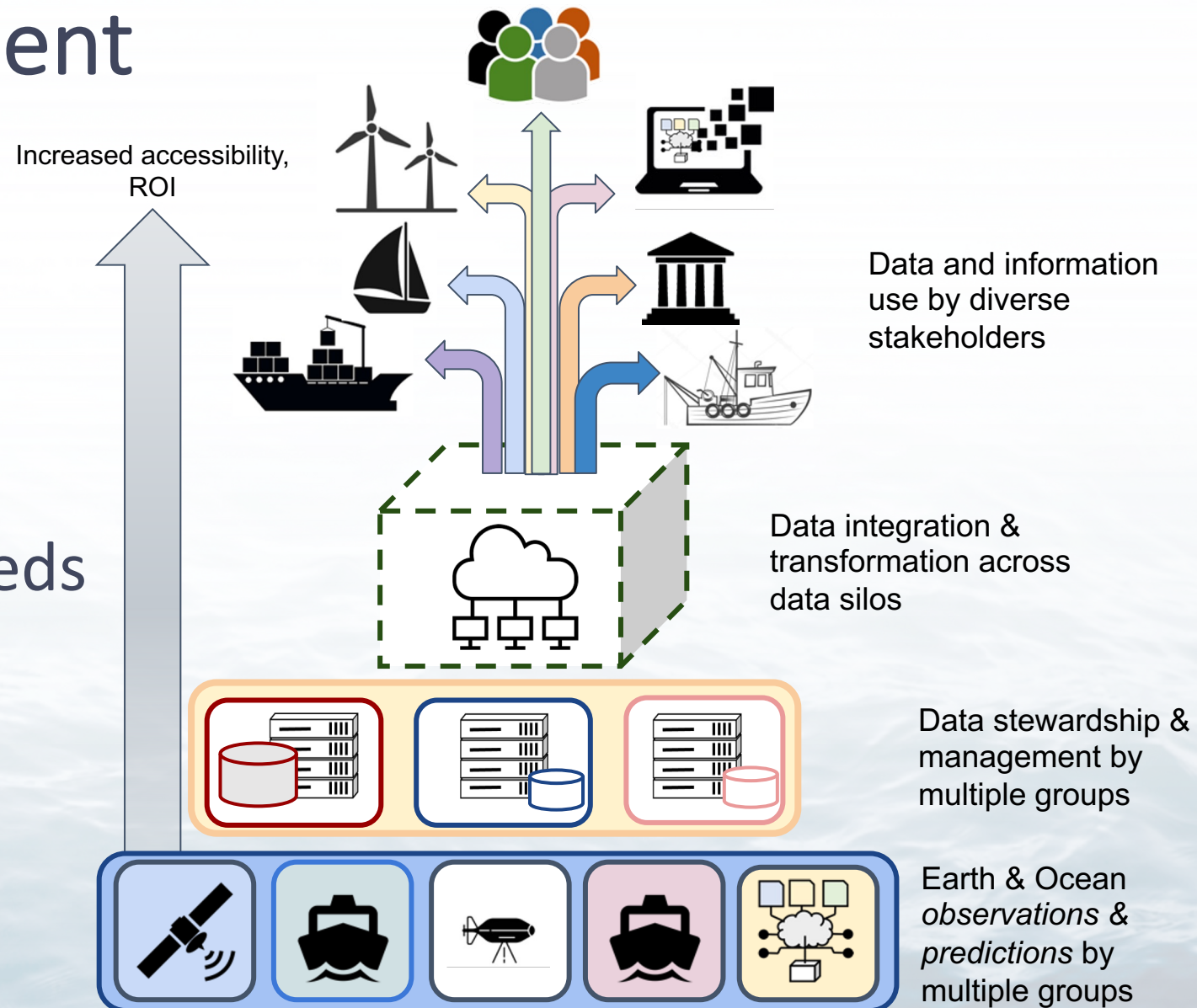
April 24, 2023

Project Name	State	Year	Capacity (MW)	Depth (ft)	Water Depth (ft)	Distance from Shore (mi)	Operator	Development Status
001 - 200.000 - Oregon State University	OR	2023	100	100	100	100	Oregon State University	Proposed
002 - 200.000 - Oregon Call Area Coos Bay	OR	2023	100	100	100	100	Oregon Call Area Coos Bay	Proposed
003 - 200.000 - Oregon Call Area Brookings	OR	2023	100	100	100	100	Oregon Call Area Brookings	Proposed
004 - 200.000 - RWE Offshore Wind Holdings, LLC	CA	2023	100	100	100	100	RWE Offshore Wind Holdings, LLC	Proposed
005 - 200.000 - California North Floating, LLC	CA	2023	100	100	100	100	California North Floating, LLC	Proposed
006 - 200.000 - Equinor Wind US, LLC	CA	2023	100	100	100	100	Equinor Wind US, LLC	Proposed
007 - 200.000 - Central California Offshore Wind, LLC	CA	2023	100	100	100	100	Central California Offshore Wind, LLC	Proposed
008 - 200.000 - Invenergy California Offshore LLC	CA	2023	100	100	100	100	Invenergy California Offshore LLC	Proposed
009 - 200.000 - Oahu North Call Area	HI	2023	100	100	100	100	Oahu North Call Area	Proposed
010 - 200.000 - Oahu South Call Area	HI	2023	100	100	100	100	Oahu South Call Area	Proposed



Multi-use Environment

- Multiple groups
 - Government agencies
 - Industry
 - Academic researchers
- Disparate data holdings & needs
- Huge potential for
 - Coordination
 - Integration
 - Research
 - Training



Overall Interests & Potential Contributions

- Promote data sharing, preservation, discovery, & synthesis
- Improve data accessibility for diverse users
- Create interfaces for data discovery/integration
- Cultivate networks of data & people