

THE NIPPON FOUNDATION-GEBCO

SEABED 2030

*A brief overview of the
Seabed 2030 Project, IHO
DCDB & CSB Activities*

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United States of America
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IHO

International
Hydrographic
Organization



Intergovernmental
Oceanographic
Commission



2021
2030 United Nations Decade
of Ocean Science
for Sustainable Development

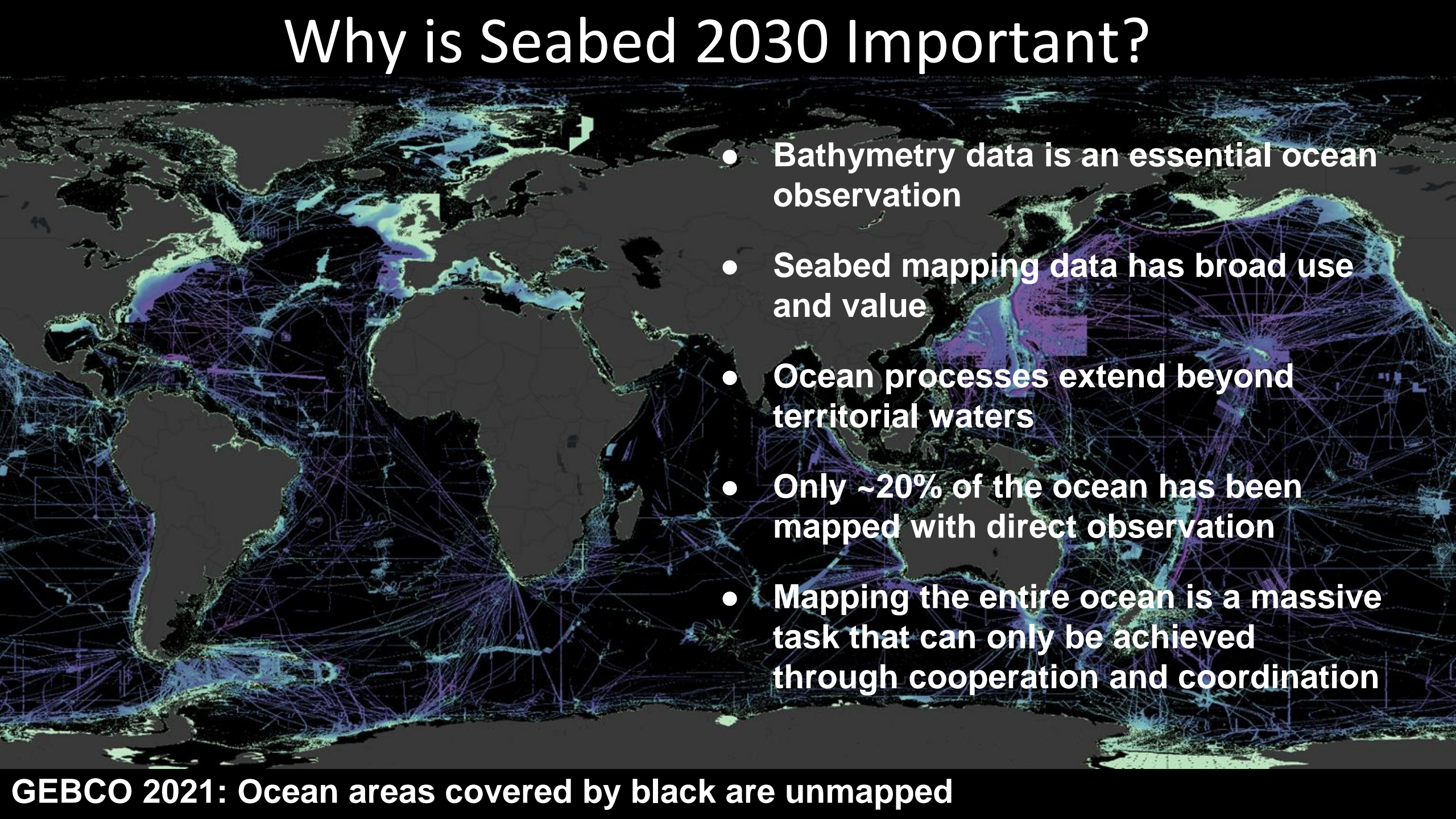


The Nippon Foundation - GEBCO Seabed 2030 Project is a collaborative project to inspire the complete mapping of the world's ocean by 2030, and to compile all bathymetric data into the freely-available GEBCO Ocean Map.

Seabed 2030 aspires to 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.



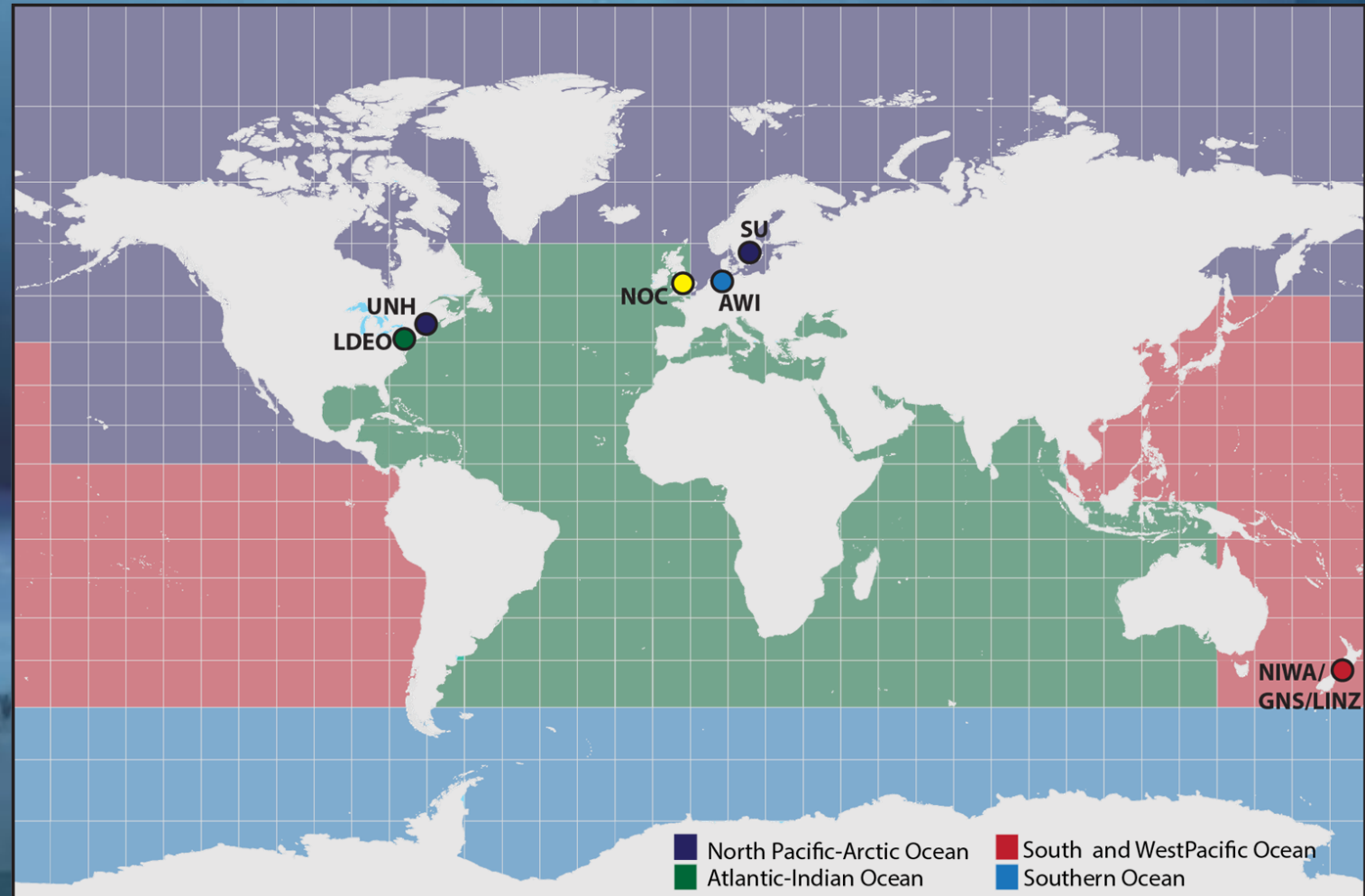
Why is Seabed 2030 Important?

- 
- A world map where the oceans are filled with a dense network of thin, light-colored lines representing seabed mapping data. The lines are most concentrated in the Atlantic, Indian, and Pacific Oceans, while the Arctic and Antarctic regions are mostly black, indicating unmapped areas. The map is overlaid with a grid of latitude and longitude lines.
- Bathymetry data is an essential ocean observation
 - Seabed mapping data has broad use and value
 - Ocean processes extend beyond territorial waters
 - Only ~20% of the ocean has been mapped with direct observation
 - Mapping the entire ocean is a massive task that can only be achieved through cooperation and coordination

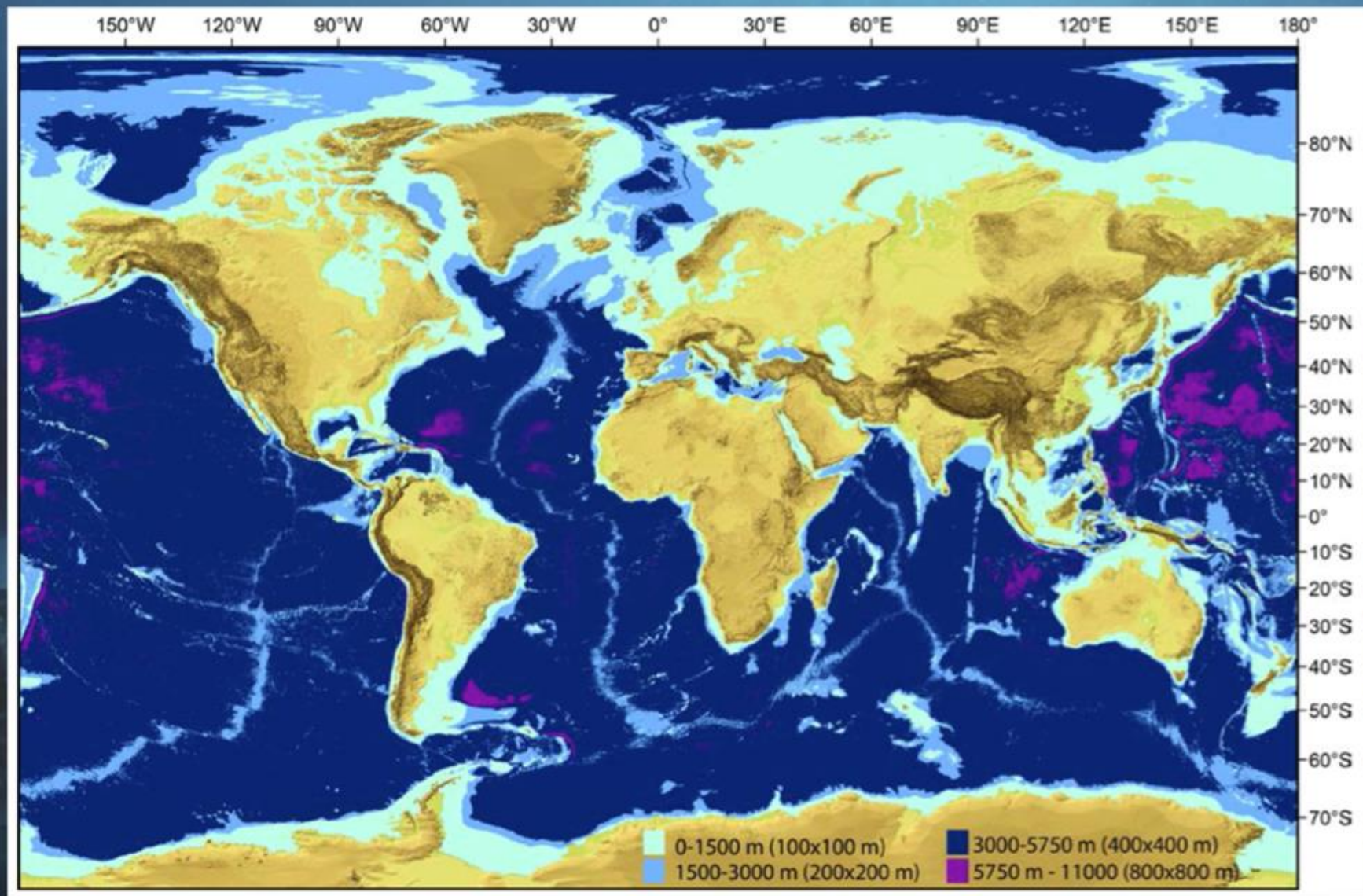
GEBCO 2021: Ocean areas covered by black are unmapped

Seabed 2030: Regional Approach

- Regional Centers
 - Engage with stakeholders
 - Build upon existing efforts
 - Assemble regional products
 - Identify gaps
- Global Center
 - Assemble global products
 - Disseminate global products



What does 100% mapped mean?



Mapping the Gaps

- **Ocean Frontier Mapping**

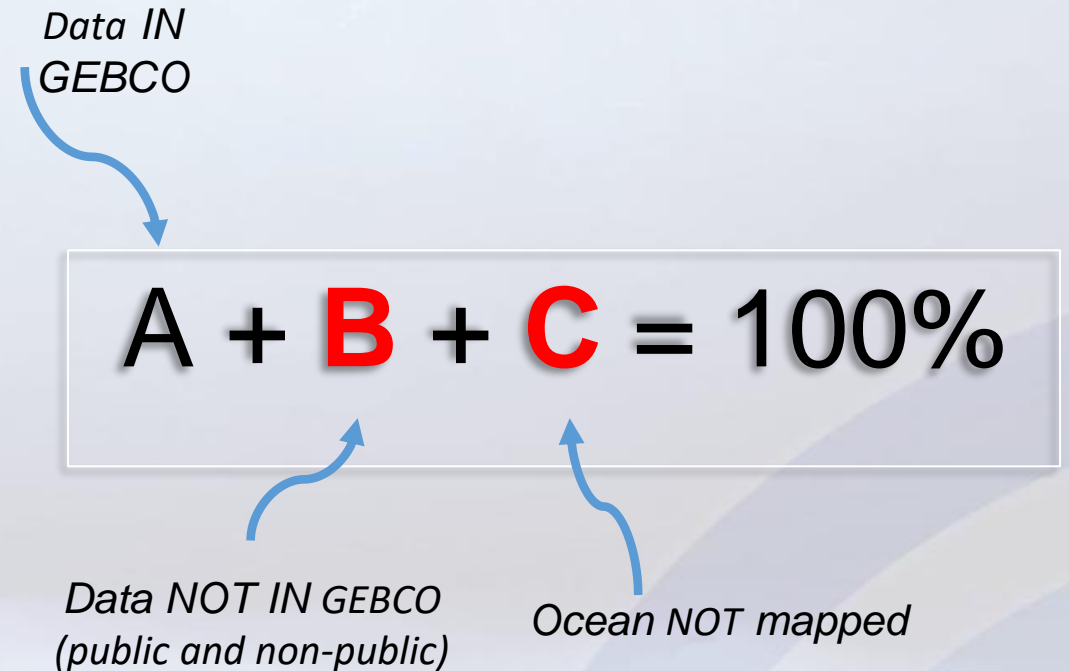
- Use GEBCO grid to inform location of future mapping
- Advocate for greater mapping activity
- Identify funding for mapping expeditions

- **Crowdsourced Bathymetry**

- Promote CSB around the world
- Gain support of/data from contributors at all levels

- **Technology Innovation**

- What can Seabed 2030 do to accelerate update of technology to accelerate rate of bathymetric mapping?



Contributing Data

- Bathymetry data in a variety of formats from a variety of devices
- IHO Data Center for Digital Bathymetry offers long-term archiving and access services
- More information available at:

www.seabed2030.org/contribute/



Home » About » Contributing data

How to contribute data

Please use the form below to make contributions of multibeam and/ or single-beam survey data, individual soundings or existing grids to help update our gridded data sets and products. If you have any problems in completing the form, then please email this information to the Global Center (gdacc@seabed2030.org).

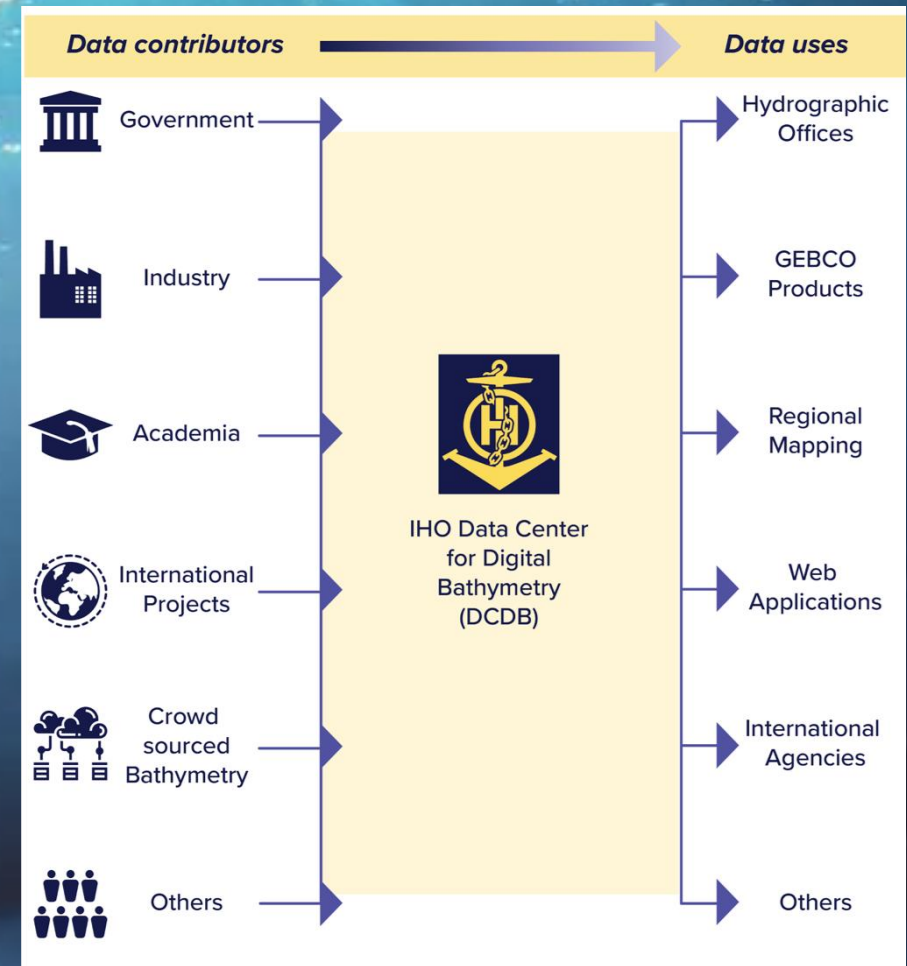
GEBCO Data Contribution Form

GEBCO's aim is to provide the most authoritative, publicly-available bathymetry of the world's oceans. It operates under the joint auspices of the International

Jump to

- > [Our data contributors](#)
- > [Join the Crowdsourced Bathymetry initiative](#)

Share this





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International Hydrographic Organization
Organisation Hydrographique Internationale

ngdc.noaa.gov/iho/

[IHO DCDB Home](#)

[Contribute Data](#)

[Crowdsourced Bathymetry](#)

[CSB Mapping Projects](#)

How to Contribute Data to the IHO DCDB

Contact bathydata@iho.int for more information on contributing data or sharing web services to the IHO DCDB.
Refer to [Submitting Marine Geophysical Data to the IHO DCDB](#) for how to package and submit data.

Governments, organizations, academia, industry and individuals are encouraged to contribute data to the IHO DCDB.

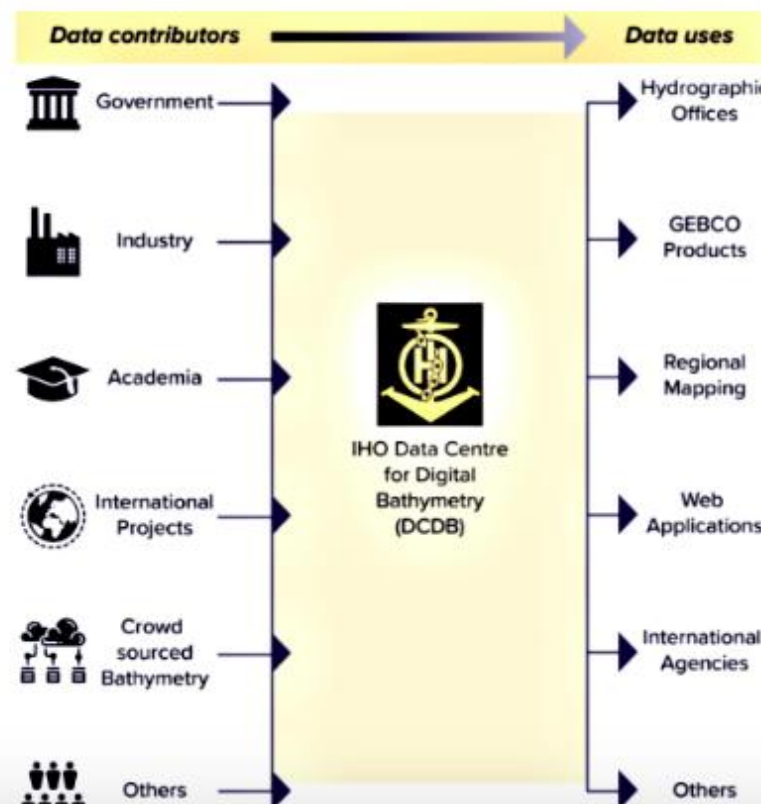
Bathymetric data and metadata can be submitted via File Transfer Protocol (FTP), email, or mail (hard drive) in the formats listed below.

- **Raw sonar data:** MGD77T or the original manufacturer's format
- **Processed data:** gsf, BAG, NetCDF, tiff, xyz, sd, asc, etc.
- **Metadata:** XML or text

Other formats and products will be considered on a case-by-case basis.

Learn more about contributing [crowdsourced bathymetry](#).

IHO Member States are invited to provide sounding data extracted from their Electronic Navigational Charts (ENC). Only soundings from ENC cells in navigational purpose bands 2 and 3 are requested. For more information, please refer to [IHO Circular Letter 11/2016](#).



ON-GEBCO

ED



IHO DCDB = World Reference for Raw Bathymetry

Data Centre for Digital Bathymetry Viewer



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Layers

IHO DCDB/NOAA NCEI

- Multibeam Surveys
- Multibeam Survey Footprints
- Multibeam Bathymetry Mosaic
- Single-Beam Surveys
- Single-Beam Sounding Density
- NOAA Hydrographic Surveys:
 - All Surveys with Digital Data
 - Surveys with BAGs
- BAG Shaded Relief Imagery

Search NCEI/DCDB Surveys

Crowdsourced Bathymetry Files

Search CSB Files

U.S. Bathymetry Coverage and Gap Analysis

EMODnet

Australia

Canada

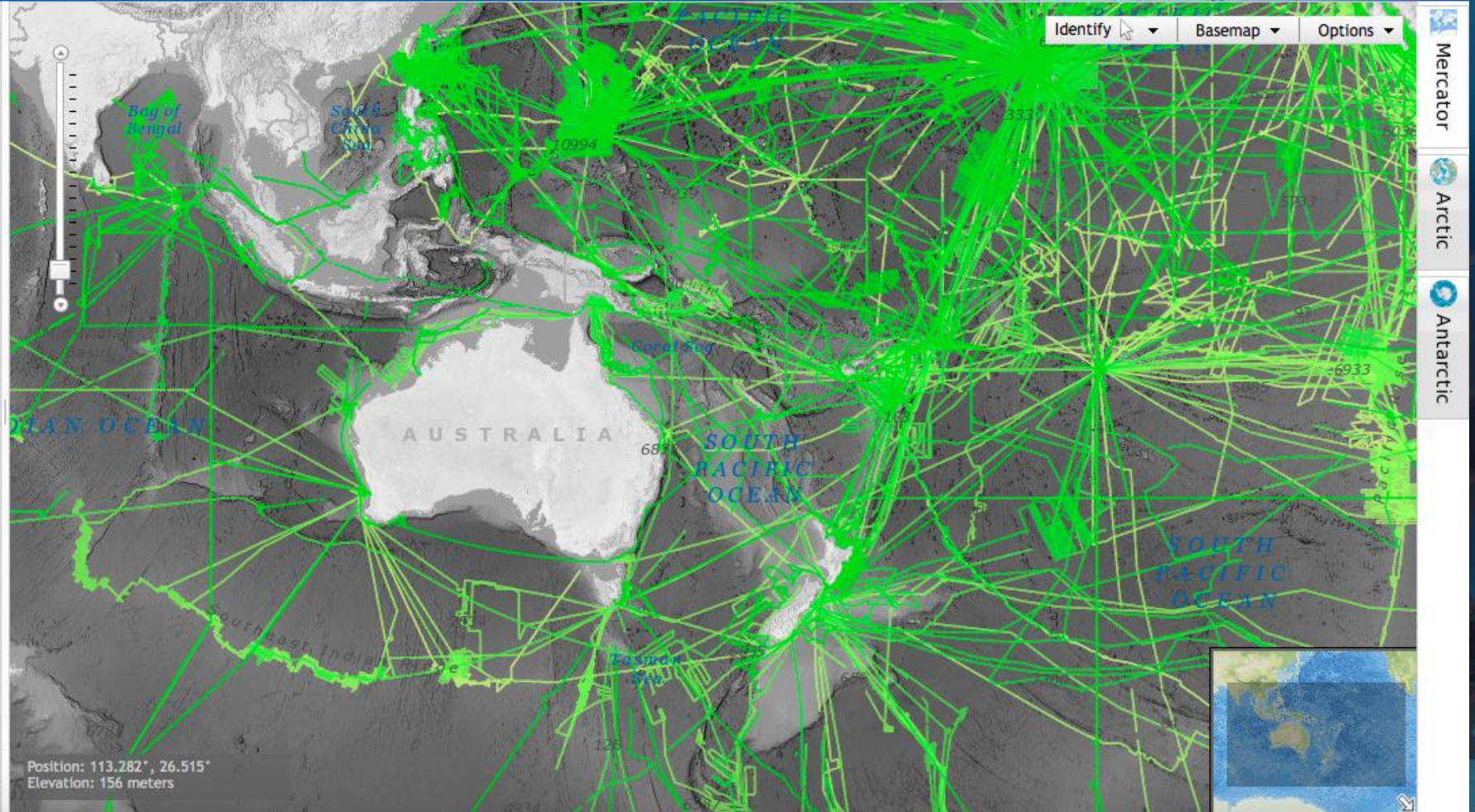
France

Germany

Japan

Grid Extract

More Information



Identify Basemap Options

- Mercator
- Arctic
- Antarctic



IHO Data Centre for Digital Bathymetry

Data Centre for Digital Bathymetry Viewer



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BAG Shaded Relief

Search NCEI/DCDB

Crowdsourced Bathymetry

Search CSB Files

U.S. Bathymetry Coverage

EMODnet

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France

Germany

Japan

Grid Extract

More Information

Help

Attributes: FK200110 (2020)

Multibeam Bathymetric Survey: FK200110

[Link to Data](#)

Survey ID: FK200110

Platform Name: Falkor

Survey Year: 2020

Source Organization: Rolling Deck to Repository

Chief Scientist: SOI Data Manager

Instrument: Kongsberg EM302; Kongsberg EM710

File Count: 234

Track Length: 3654 km

Total Time: 214 hours

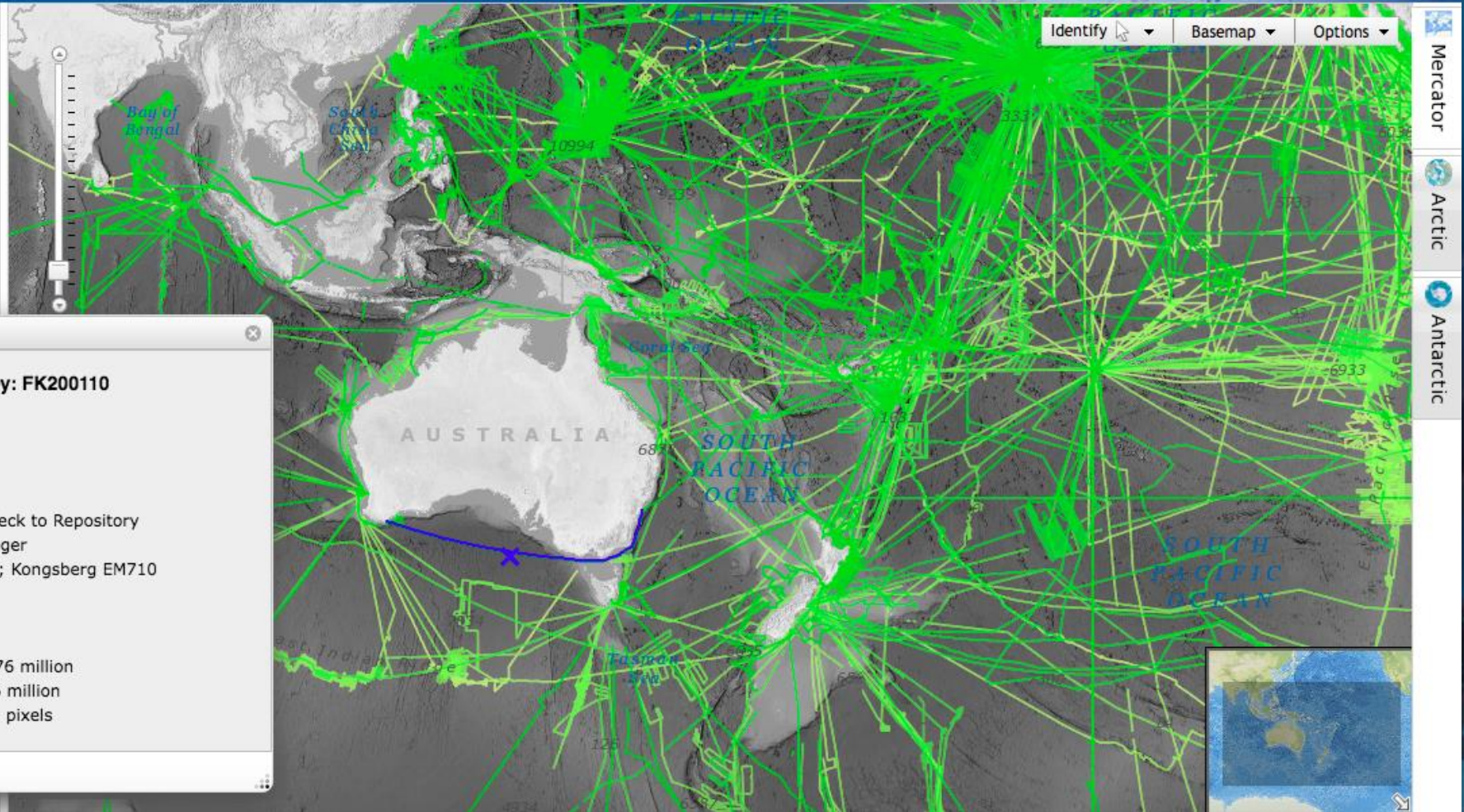
Bathymetry Beams: 278.500576 million

Amplitude Beams: 278.500576 million

Sidescan: 1398.194176 million pixels

Back

Zoom to



Multibeam Mosaic



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Layers

▼ IHO DCDB/NOAA NCEI ?

- Multibeam Surveys ?
- Multibeam Survey Footprints ?
- Multibeam Bathymetry Mosaic ?

- Single-Beam Surveys ?
- Single-Beam Sounding Density ?

- NOAA Hydrographic Surveys: ?
 - All Surveys with Digital Data
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- BAG Shaded Relief Imagery ?

?

- Crowdsourced Bathymetry Files ?

?

- U.S. Bathymetry Coverage and Gap Analysis ?

► EMODnet

► Australia

► Canada

► France

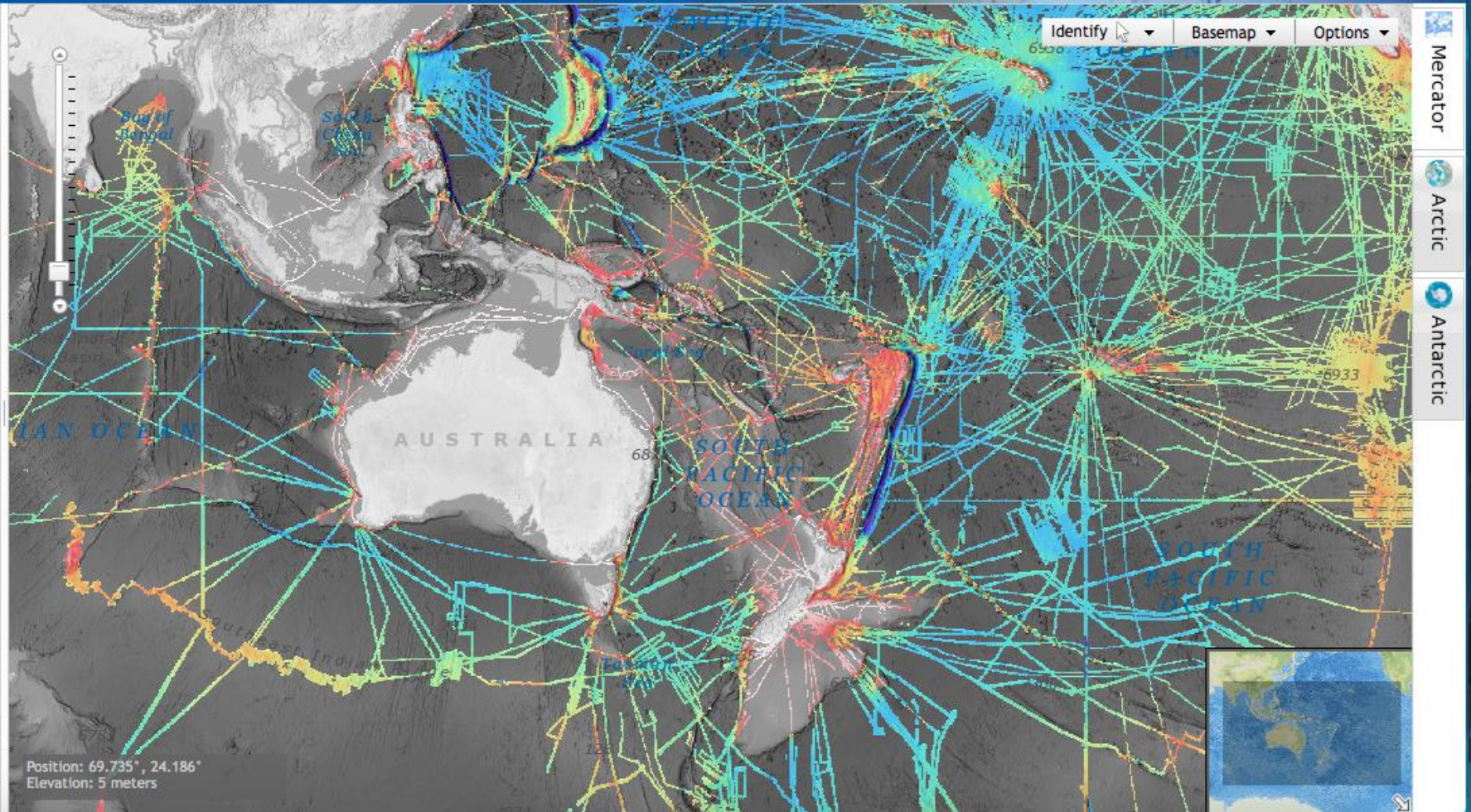
► Germany

► Japan

Grid Extract

More Information

Help



Grid Extract



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Layers

Grid Extract

► Help

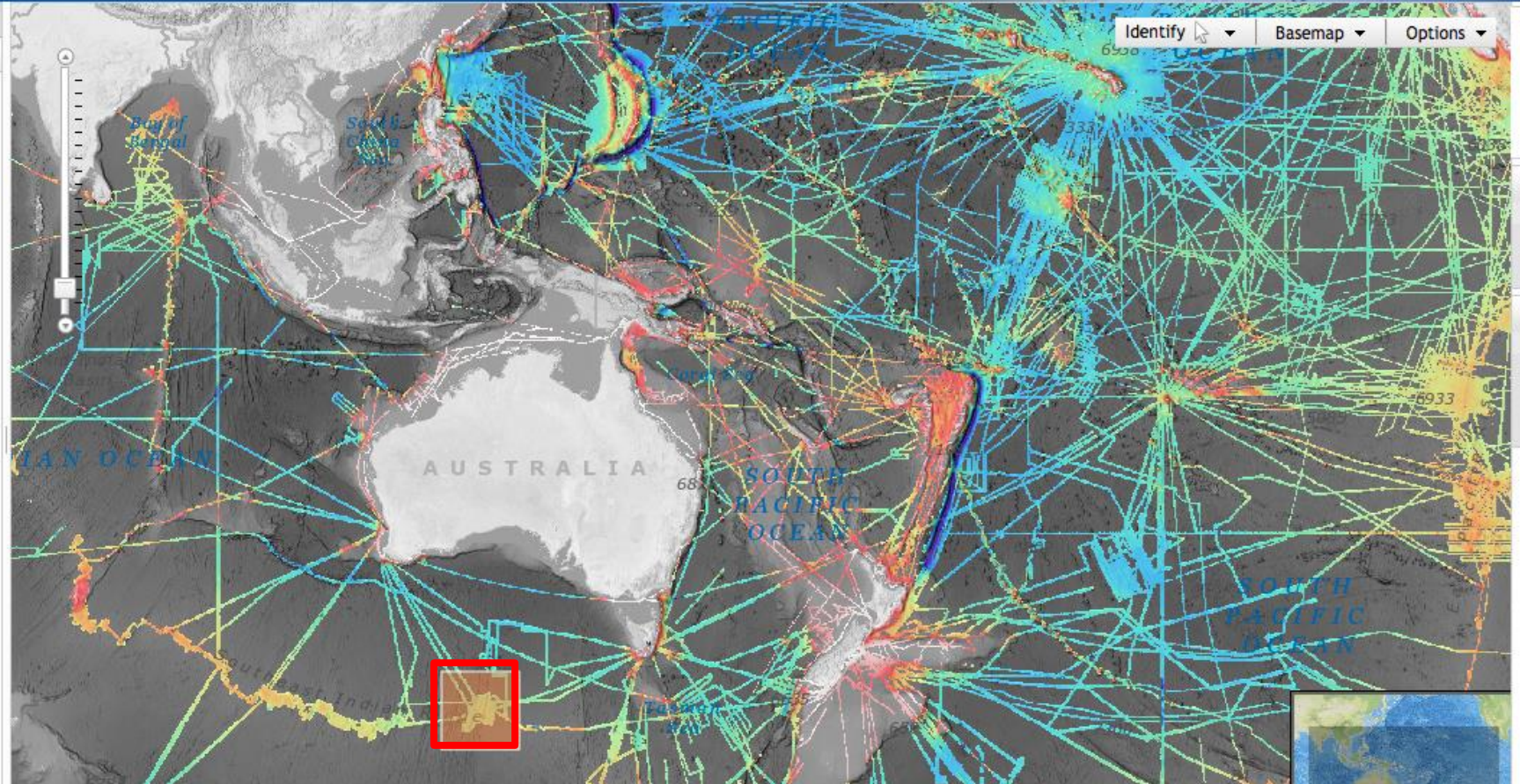
Multibeam Mosaic

Extract a bathymetric grid from the [NCEI Multibeam Bathymetry Mosaic](#). The depth values are in meters, stored as 32-bit floating point values. The cell size is 3 arcseconds (approx. 90m).

Area of Interest: 122.29, -51.74, 131.79, -45.48

Output image dimensions: 11391 x 7518 pixels

[Download Data](#)



exportImage.tiff

Show All



Web Services



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Layers

▶ IHO DCDB/NOAA NCEI ?

▼ EMODnet

EMODnet Multibeam Surveys ?

MAREANO Multibeam Surveys ?

MAREANO Multibeam Shaded Relief ?

EMODnet Single-Beam Surveys ?

MAREANO Single-Beam Surveys ?

EMODnet Digital Terrain Model (DTM) ?

▶ Australia

▶ Canada

▶ France

▶ Germany

▶ Japan

▶ Netherlands

▶ New Zealand

▶ United Kingdom

▶ Other Data Sources

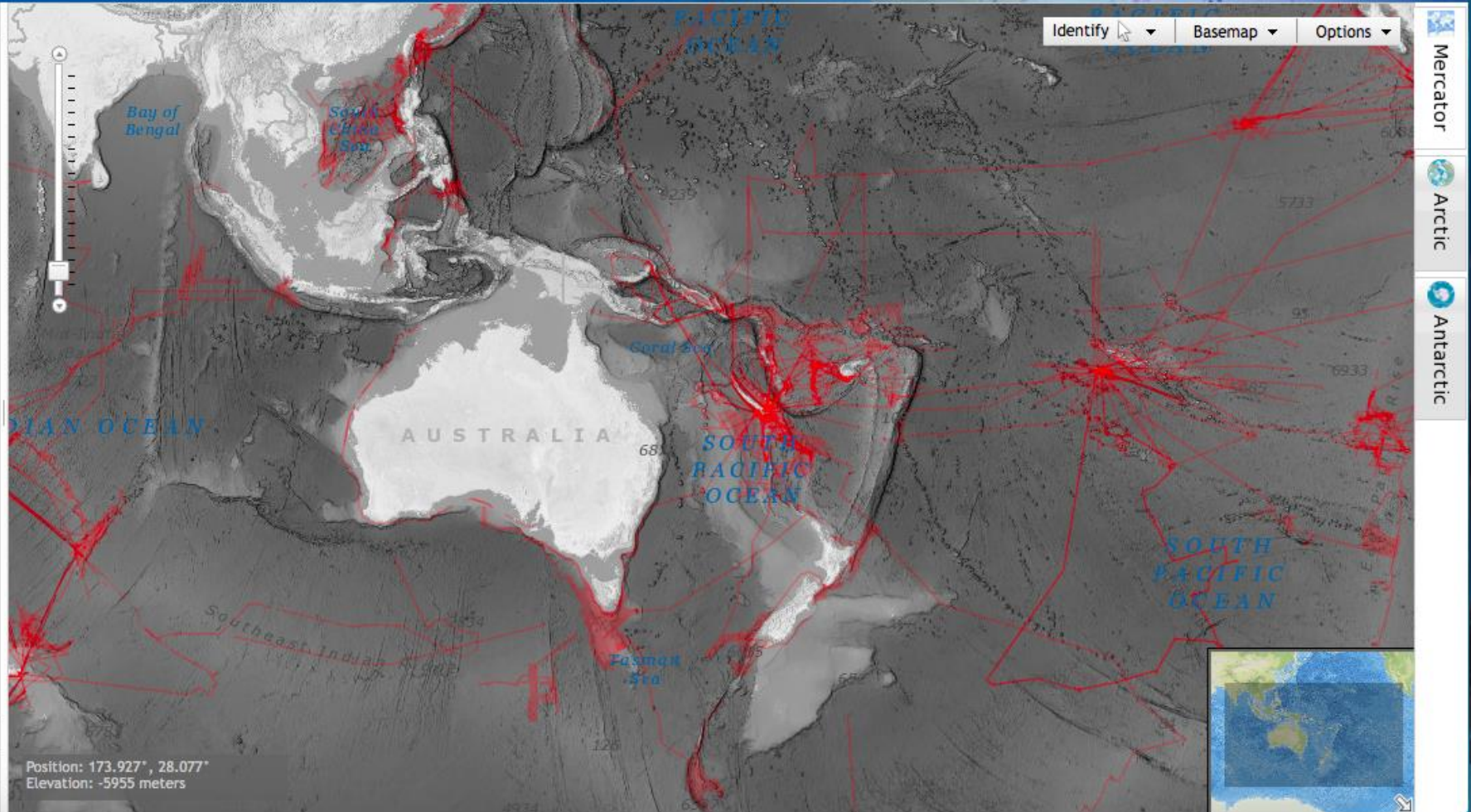
▶ Known Non-Public Data ?

▶ Bathymetric Coverage Maps

Grid Extract

More Information

Help



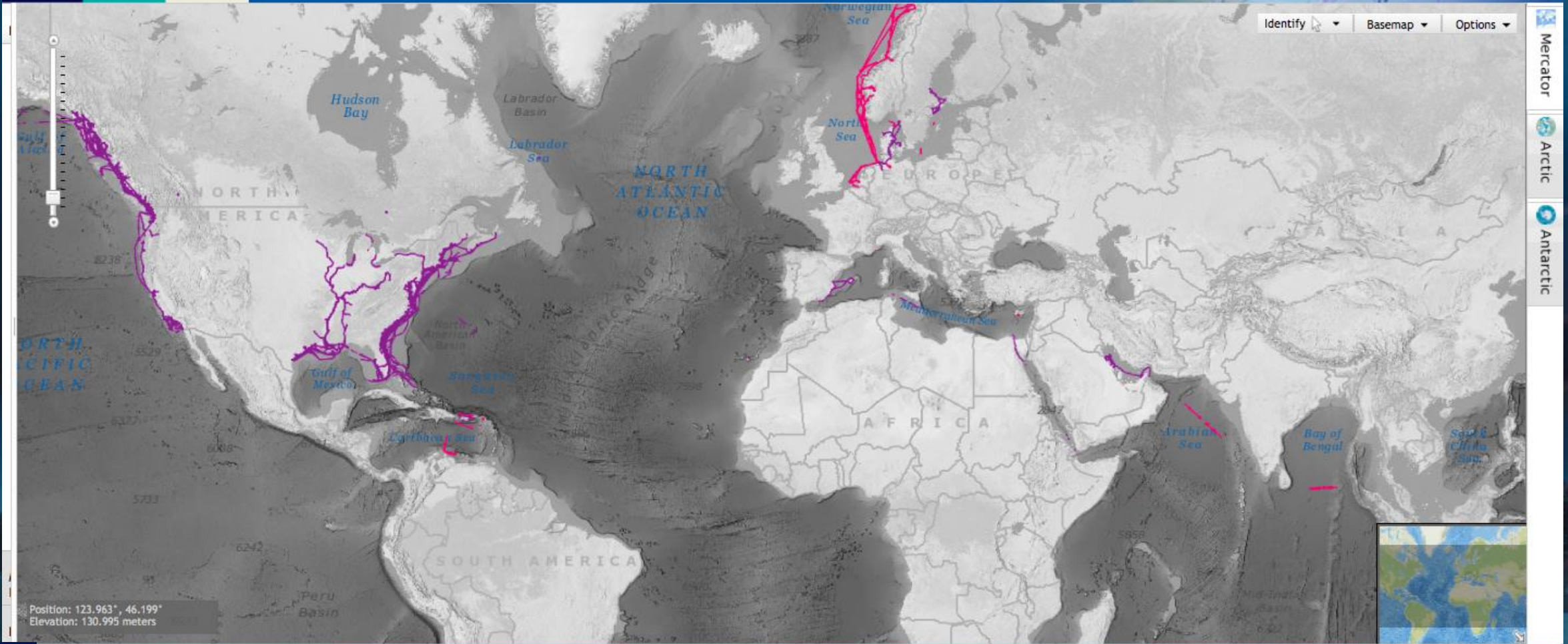
Crowdsourced Bathymetry Data



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Crowdsourced bathymetry (CSB) is the collection and sharing of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.



The IHO Crowdsourced Bathymetry Initiative

In 2014, the IHO initiated a collaborative project to encourage mariners to collect and contribute crowdsourced bathymetry.

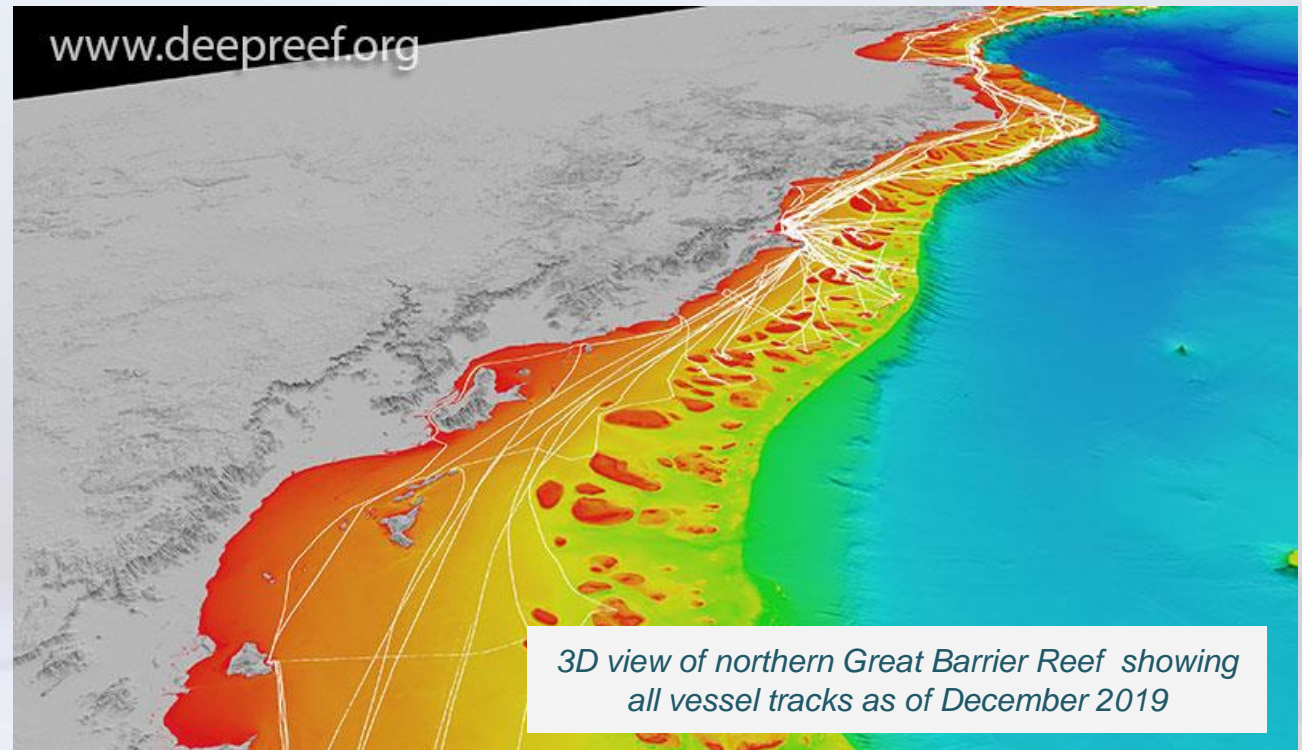
A Working Group was tasked to develop ***B-12 IHO Guidance on Crowdsourced Bathymetry*** that states the IHO's policy towards, and best practices for, the collection and contribution of CSB.

iho.int/uploads/user/pubs/bathy/B_12_Ed2.0.3_2020.pdf



The Value of Crowdsourced Bathymetry Data

- Data with scientific, commercial & research value at no cost to the public sector
- Fill gaps where data is scarce (eg: Arctic, SIDS)
- Useful along shallow, complex coastlines
- Identify uncharted features
- Assist in verifying charted information
- Confirm whether charts are appropriate for the latest traffic patterns.



...but only if vessels collect depth information while on passage!

Coastal States' Position

- All coastal States are requested to indicate their position on the **provision of CSB data** from ships within waters subject to their national jurisdiction into the public domain
- To date, 30 coastal states (green) have replied positively
- A geographic filter was implemented to reflect current coastal state positions.





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~185 contributing vessels
~275,000 data contributions
~25 Gb total data volume

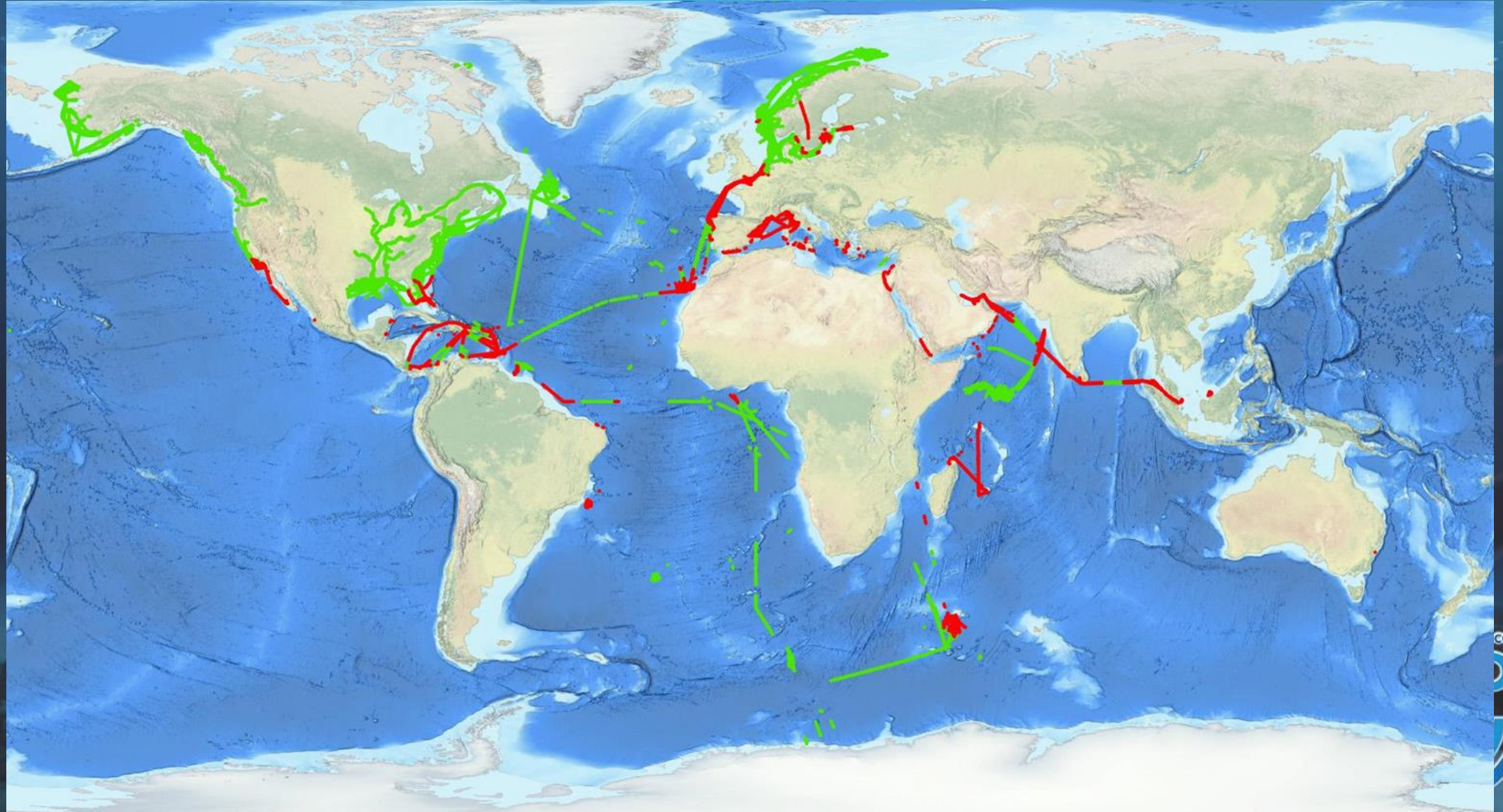


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International Hydrographic Organization

Data Centre for Digital Bathymetry Viewer





Seabed 2030-funded CSB Field Trials

Objective:

1. Facilitate field trials that will accelerate CSB activity
2. Collect data in data scarce areas
3. Grow excitement about the CSB initiative
4. Develop a repeatable regional CSB mapping project strategy

In return, a potential program must guarantee the provision of staff to:

1. Hand out data loggers to the community
2. Assist local mariners in set up
3. Act as a data assembly center
4. Provide a copy of these data to the IHO DCDB for inclusion into the GEBCO grid.



Support includes provision of data loggers (NMEA0183 and NMEA2000) and installation support (where needed).



Seabed 2030-funded CSB Field Trials

- **Greenland Institute of Natural Resources**
 - Phase 1: aim to engage approximately 50 vessels of various sizes- 30 data loggers deployed so far.
- **South African Navy Hydrographic Office (SANHO) and Institute of Maritime Technology (IMT)**
 - 100 data loggers deployed to SANHO/IMT.
 - Planning of trials: identification of stakeholders, establish relationships, feasibility studies, regular communication via various channels.
- **Palau Bureau of Marine Transportation**
 - 100 data loggers received (NMEA0183 and NMEA2000)
 - Coordinating with South & West Pacific Seabed 2030 Data Center
 - Will receive support from U.S. Navy for logger installation and setup in 2022.



Credit: Karl Zinglensen



"Sea Lab 1", IMT – trial deployment (Credit: Cdr Christoff Theunissen)



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

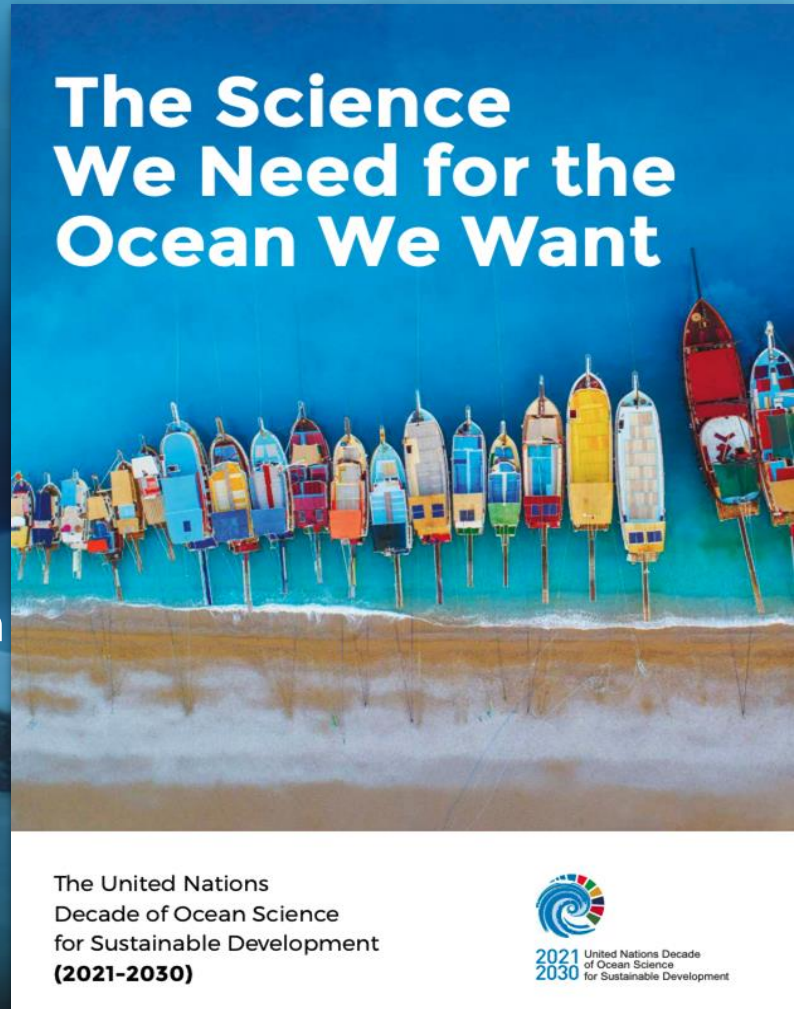


**CONSERVE AND SUSTAINABLY USE THE
OCEANS, SEAS AND MARINE RESOURCES
FOR SUSTAINABLE DEVELOPMENT**

14 LIFE
BELOW WATER




- A clean ocean
- A healthy and resilient ocean
- A productive ocean
- A predicted ocean
- A safe ocean
- An accessible ocean
- An inspiring and engaging ocean

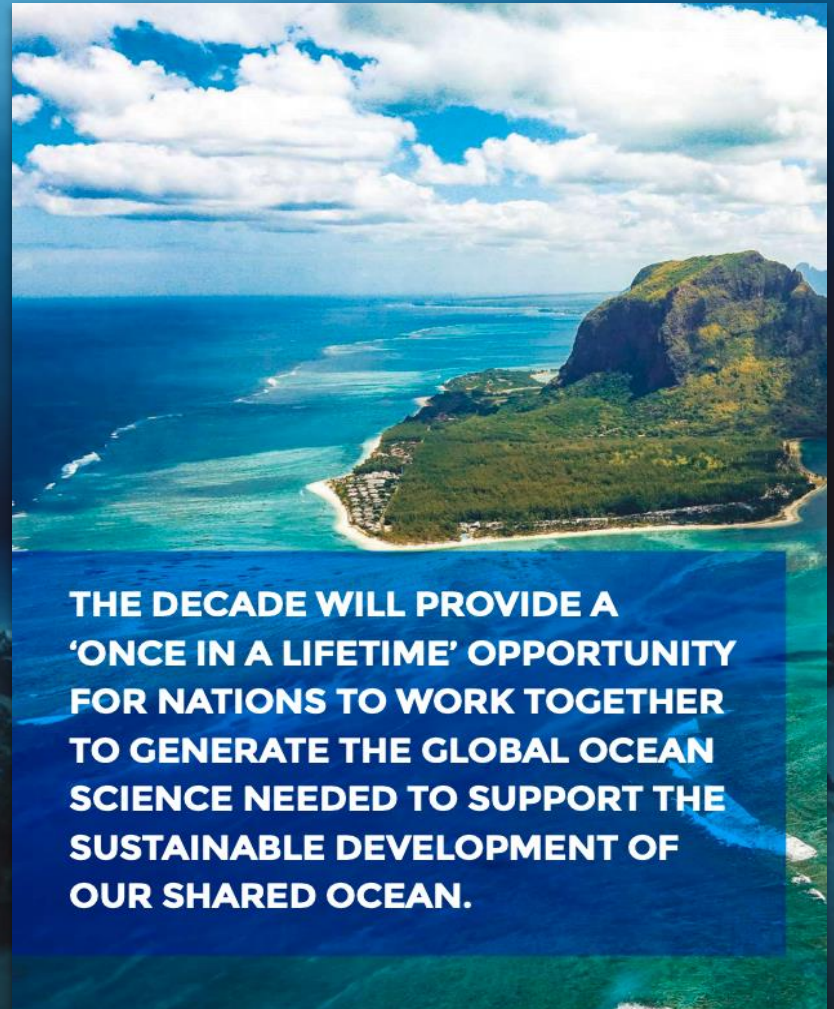


The Science We Need for the Ocean We Want

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



2021 United Nations Decade
of Ocean Science
2030 for Sustainable Development



**THE DECADE WILL PROVIDE A
'ONCE IN A LIFETIME' OPPORTUNITY
FOR NATIONS TO WORK TOGETHER
TO GENERATE THE GLOBAL OCEAN
SCIENCE NEEDED TO SUPPORT THE
SUSTAINABLE DEVELOPMENT OF
OUR SHARED OCEAN.**

Final Thought:

SDG14 – and likely, other SDGs – will not be achievable without a comprehensive map of the world ocean floor

CONSERVE AND SUSTAINABLY USE THE
OCEANS, SEAS AND MARINE RESOURCES
FOR SUSTAINABLE DEVELOPMENT



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SCIENCE NEEDED TO SUPPORT THE
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OUR SHARED OCEAN.**

Help Us Reveal the Deep

Consider sharing your data.

Encourage your governments to support CSB.

We are here to help you!

Help us to achieve our 2030 goal.

Further information: bathydata@iho.int, csb@seabed2030.org



Thank you.

