

THE NIPPON FOUNDATION-GEBCO

# SEABED 2030

## Report from the Regional Center for the Atlantic and Indian Oceans

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Hosted at Columbia University's Lamont-  
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2021 SOUTHWEST ATLANTIC HYDROGRAPHIC COMMISSION (SWaTHC) VTC

# What is Seabed 2030?

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.

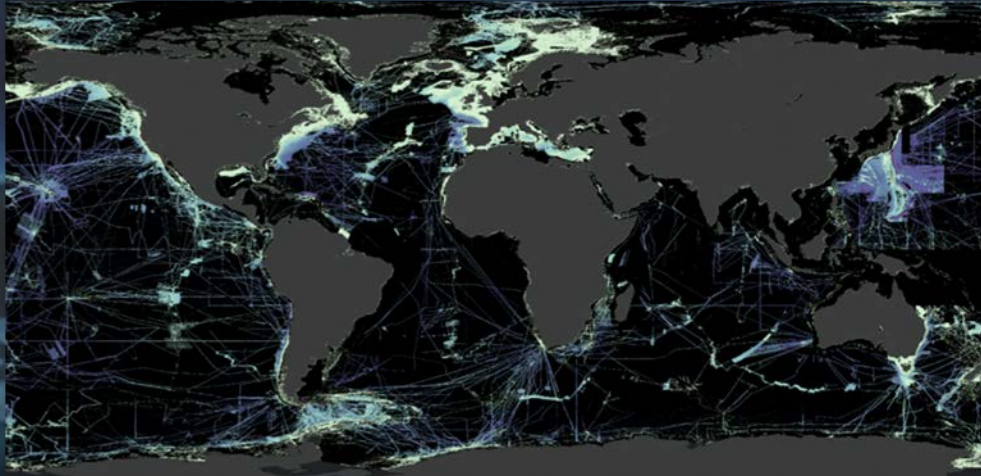
*Seabed 2030 aspires to empower the world to make policy decisions, use the ocean sustainably, and undertake scientific research that is informed by a detailed understanding of the global ocean floor.*





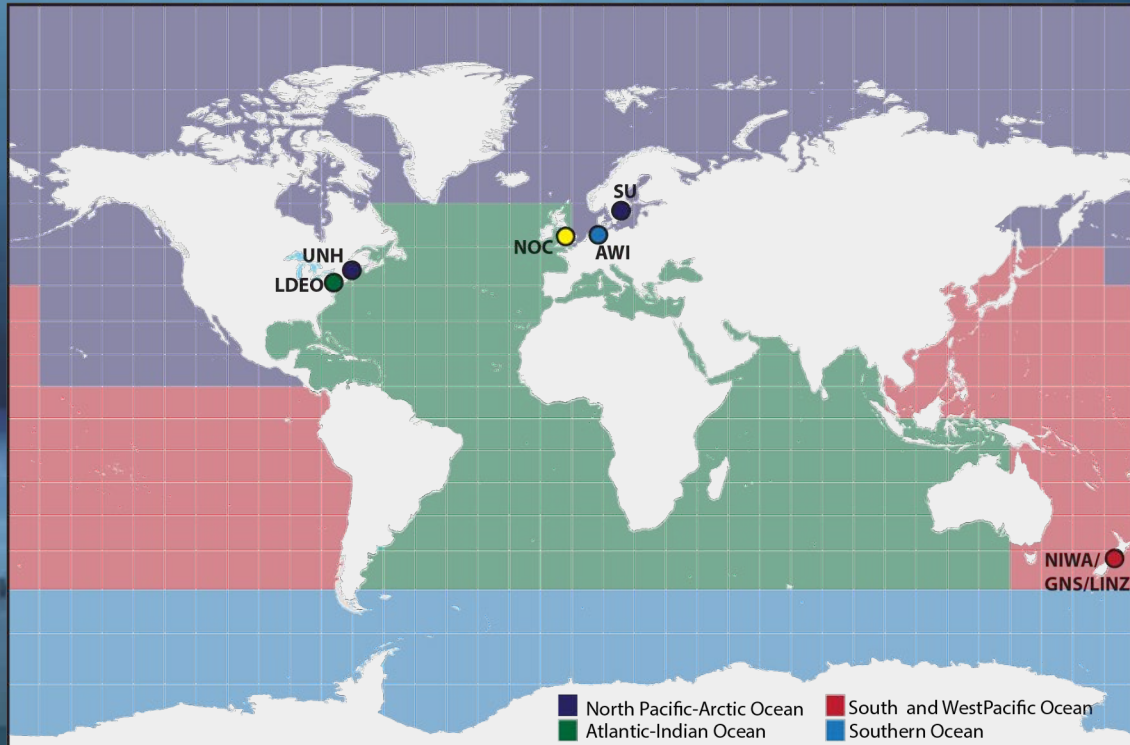
# Why is Seabed 2030 Important?

- 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



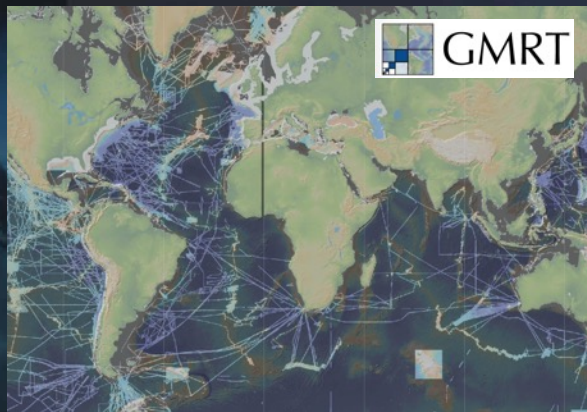
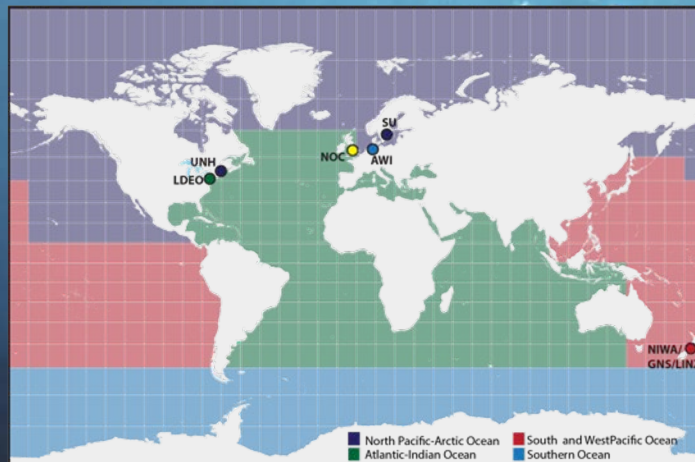
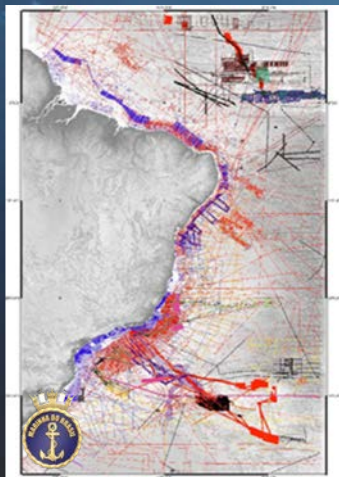
# Seabed 2030: Regional Approach

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

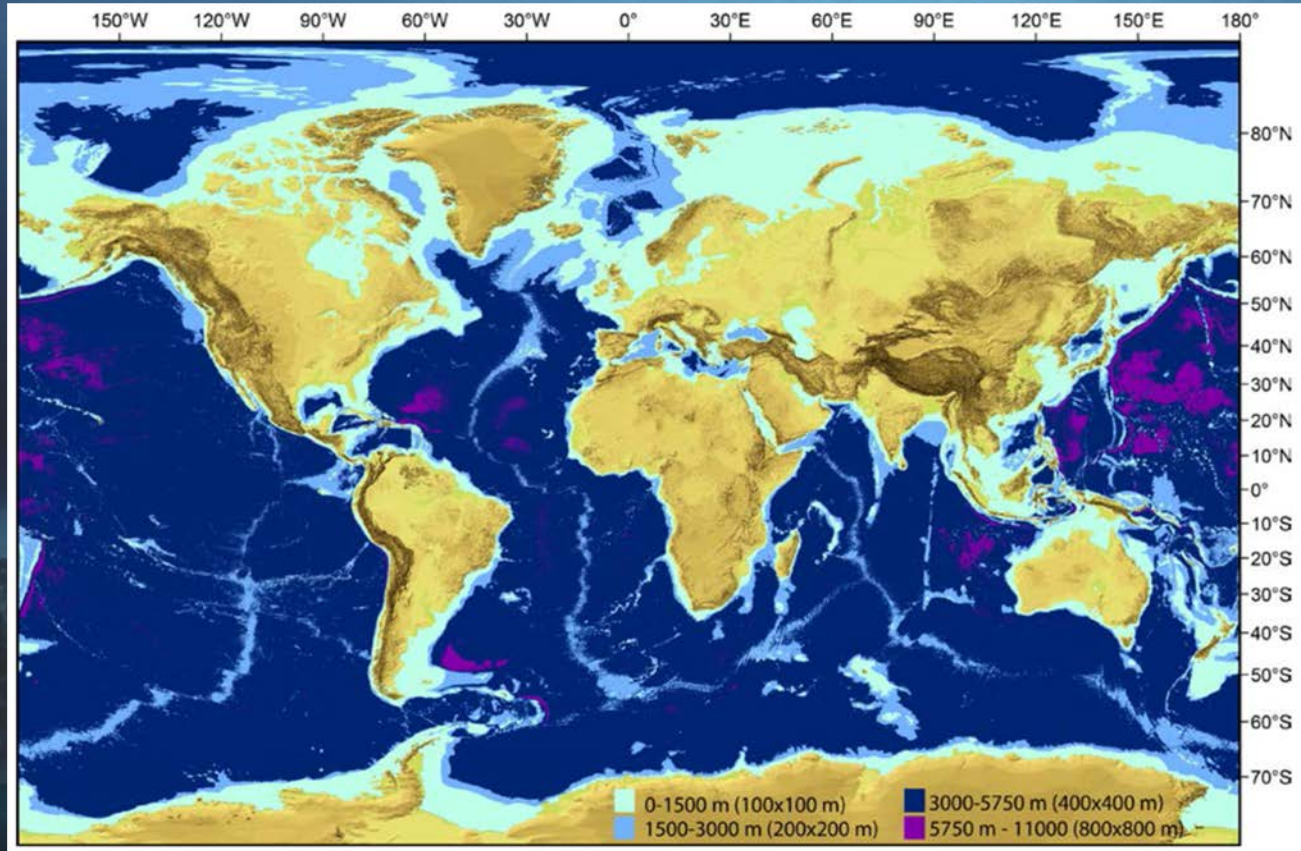




# Collaborate with existing data synthesis efforts



# What does 100% mapped mean?





# GEBCO Products

- Global gridded bathymetric data
  - 2014: 30 arc-second grid
  - 2019 - 2021: 15 arc-second grid
- Gazetteer of Undersea Feature Names
- Grid viewing software
- Printable maps
- Web Map Service (WMS)
- IHO-IOC GEBCO Cook Book



The screenshot shows the GEBCO website homepage. At the top is a navigation bar with links: Home, Data & Products, Seabed 2030, Training, News & Media, About, and Contact. Below the navigation bar are logos for the International Hydrographic Organization (IHO), the United Nations, and the International Oceanographic Commission. The main header features the GEBCO logo (General Bathymetric Chart of the Oceans) and a statement: "GEBCO aims to provide the most authoritative, publicly available bathymetry data sets for the world's oceans." Below this statement are three buttons: "Download GEBCO's global grid", "Download polar grids", and "Contribute data". The main content area is divided into three columns. The first column, titled "Gridded Bathymetry Data", shows a world map and text stating that GEBCO's gridded bathymetric data sets are global terrain models for ocean and land, available for download or access through Web Map Services, with a "Read more" button. The second column, titled "Data & Products", shows a map of the North Atlantic and text stating that GEBCO produces and makes available a range of bathymetric data sets and products, including a global bathymetric grid, gazetteer of undersea feature names, a Web Map Service, and printable maps of ocean bathymetry, with a "Read more" button. The third column, titled "Seabed 2030", shows a 3D bathymetric map of a seafloor and text stating that Seabed 2030 is a collaborative project between the Nippon Foundation and GEBCO, aiming to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030 and make it available to all, with a "Read more" button.

Home Data & Products Seabed 2030 Training News & Media About Contact

IHO International Hydrographic Organization United Nations International Oceanographic Commission

General Bathymetric Chart of the Oceans

GEBCO aims to provide the most authoritative, publicly available bathymetry data sets for the world's oceans.

Download GEBCO's global grid Download polar grids Contribute data

**Gridded Bathymetry Data**

GEBCO's gridded bathymetric data sets are global terrain models for ocean and land. The grids are available to download or access through Web Map Services.

Read more

**Data & Products**

GEBCO produces and makes available a range of bathymetric data sets and products. This includes a global bathymetric grid; gazetteer of undersea feature names, a Web Map Service and printable maps of ocean bathymetry.

Read more

**Seabed 2030**

Seabed 2030 is a collaborative project between the Nippon Foundation and GEBCO. It aims to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030 and make it available to all.

Read more

Download the GEBCO grid from: [gebco.net](http://gebco.net) or [seabed2030.org](http://seabed2030.org)

# How to Access the GEBCO Grid



Home » Data & Products » Gridded Bathymetry Data

## Global ocean & land terrain models

GEBCO's gridded bathymetric data set, the GEBCO\_2020 grid, is a global terrain model for ocean and land at 15 arc-second intervals. It is accompanied by a Type Identifier (TID) Grid that gives information on the types of source data that the GEBCO\_2020 Grid is based.

- [Download global coverage grids](#)
- [Download data for user-defined areas](#)

More [information](#) about the grid, its terms of use and attribution.

## Download global coverage grids

The GEBCO\_2020 Grid and TID Grid can be downloaded as global files in netCDF format or a set of 8 tiles (each with an area of 90° x 90°), giving global coverage, in Esri ASCII raster and data GeoTiff formats. The data files are included in a zip file along with the data set documentation.

GEBCO_2020 Grid	<a href="#">netCDF</a> (4 Gbytes, 7.5 Gbytes uncompressed)	<a href="#">Data GeoTiff</a> (4 Gbytes, 8 Gbytes uncompressed)	<a href="#">Esri ASCII raster</a> (5 Gbytes, 20 Gbytes uncompressed)
GEBCO_2020 TID Grid	<a href="#">netCDF</a> (90 Mbytes, 4 Gbytes uncompressed)	<a href="#">Data GeoTiff</a> (96 Mbytes, 7 Gbytes uncompressed)	<a href="#">Esri ASCII raster</a> (108 Mbytes, 9.5 Gbytes uncompressed)

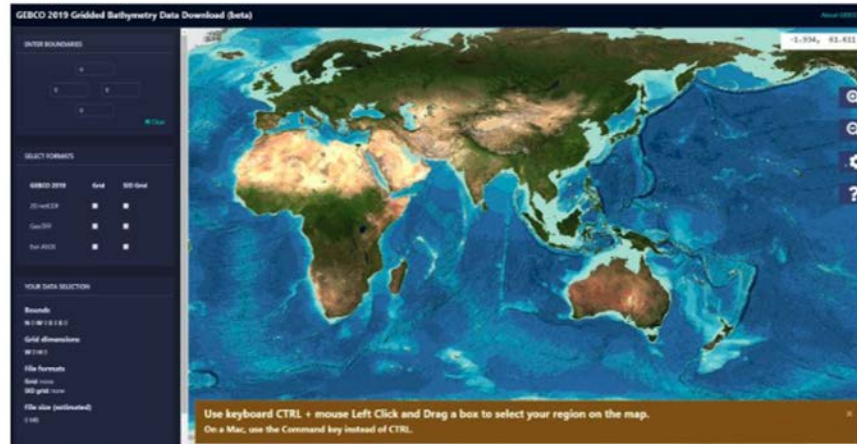
## Jump to

- > [Seabed 2030](#)
- > [Contribute data](#)
- > [IBCAO\\_v4](#)
- > [GEBCO Web Services](#)
- > [Printable maps](#)
- > [Historical GEBCO data sets](#)
- > [Imagery](#)
- > [Undersea feature names](#)
- > [Historical GEBCO charts](#)
- > [IHO-IOC GEBCO Cook Book](#)
- > [History of GEBCO book](#)

Share this

## Download data for user-defined areas

Use our [application](#) to select and download data in netCDF, Esri ASCII raster and data GeoTiff formats.



Download the GEBCO grid from: [gebco.net](http://gebco.net) or [seabed2030.org](http://seabed2030.org)



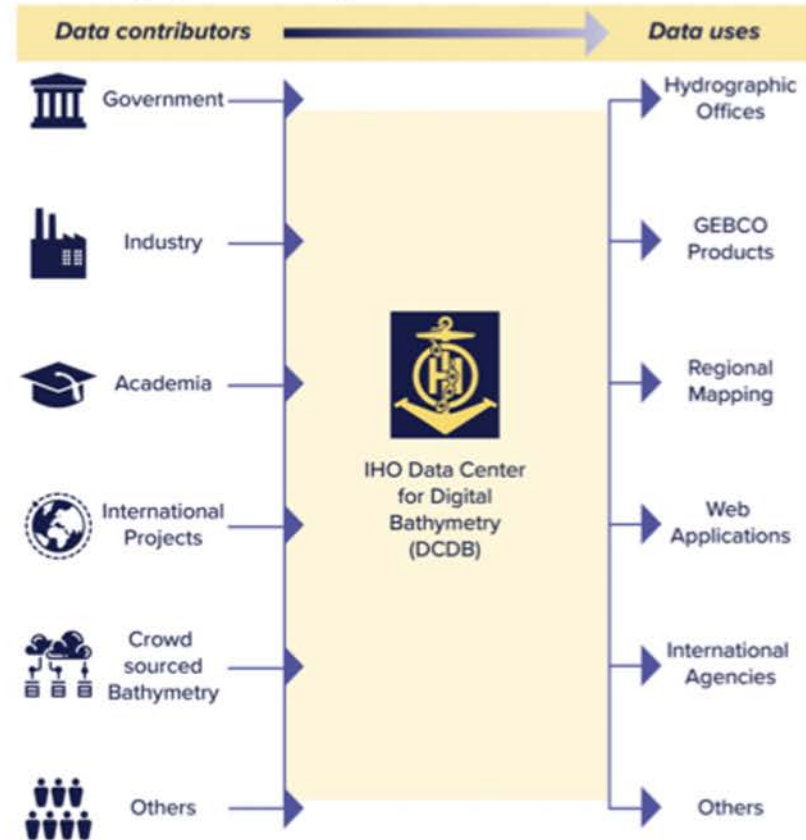


# IHO Data Center for Digital Bathymetry (DCDB)

*The IHO DCDB is the recognized IHO repository for all ocean bathymetric data.*

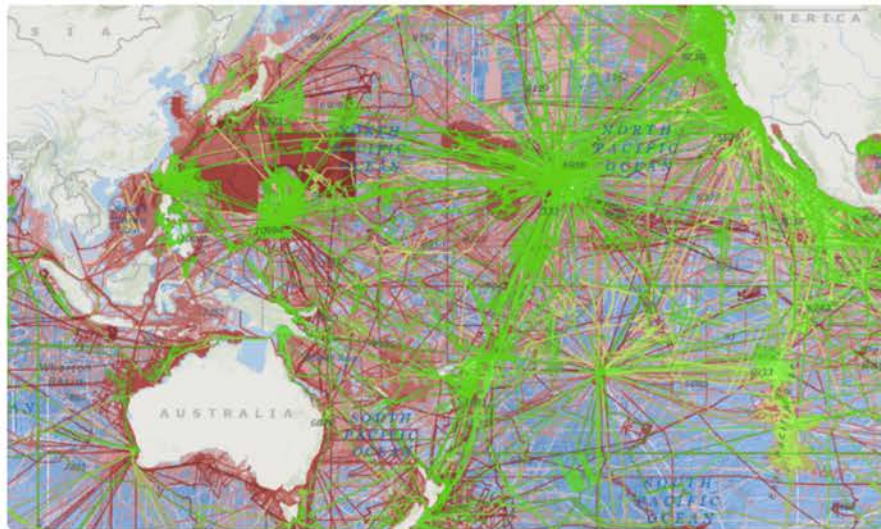
The DCDB works closely with the Seabed 2030 Project to provide long-term preservation, discovery and access of source bathymetry data.

[www.ngdc.noaa.gov/iho/](http://www.ngdc.noaa.gov/iho/)  
[maps.ngdc.noaa.gov/viewers/iho\\_dcdb/](http://maps.ngdc.noaa.gov/viewers/iho_dcdb/)



## IHO Data Centre for Digital Bathymetry (DCDB)

The IHO DCDB was established in 1990 to steward the worldwide collection of bathymetric data. The Centre archives and shares, freely and without restrictions, depth data contributed by mariners. The IHO DCDB is hosted by the [U.S. National Oceanic and Atmospheric Administration \(NOAA\)](#) on behalf of the IHO Member States.



*IHO DCDB Data Viewer highlighting ship tracks and data availability over the Pacific Ocean and neighboring regions*

The DCDB archive includes over 30 terabytes of oceanic depth soundings acquired with multibeam and singlebeam sonars by hydrographic, oceanographic and industry vessels during surveys or while on passage.

The DCDB also archives and provides access to data contributed in support of the [IHO Crowdsourced Bathymetry \(CSB\) initiative](#).

The [IHO DCDB Data Viewer](#) shows the global coverage of the DCDB's bathymetric data holdings as well as the spatial extent of data archived at other repositories via web services.

[Access Data](#)

[maps.ngdc.noaa.gov/viewers/iho\\_dcdb/](https://maps.ngdc.noaa.gov/viewers/iho_dcdb/)





# Status of Mapping: GEBCO 2021



GEBCO 2014



Envi HERE | Envi | 1521

600 km  
+ -27.057 -33.440 Degrees

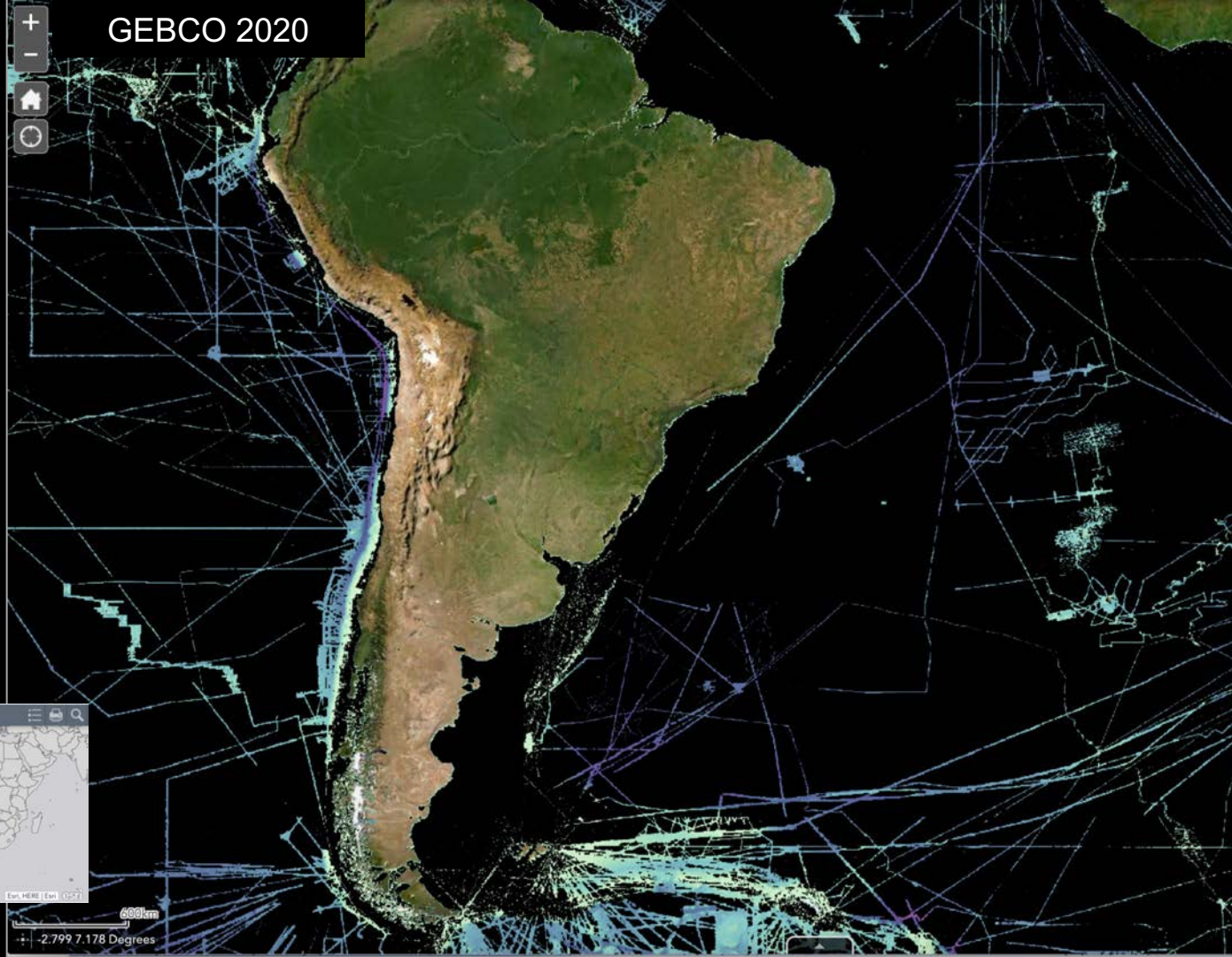


GEBCO 2019



600km  
-2.799 7.178 Degrees

GEBCO 2020



Exp. HERE | Exp. 1521

6000m  
+ -2.799 7.178 Degrees

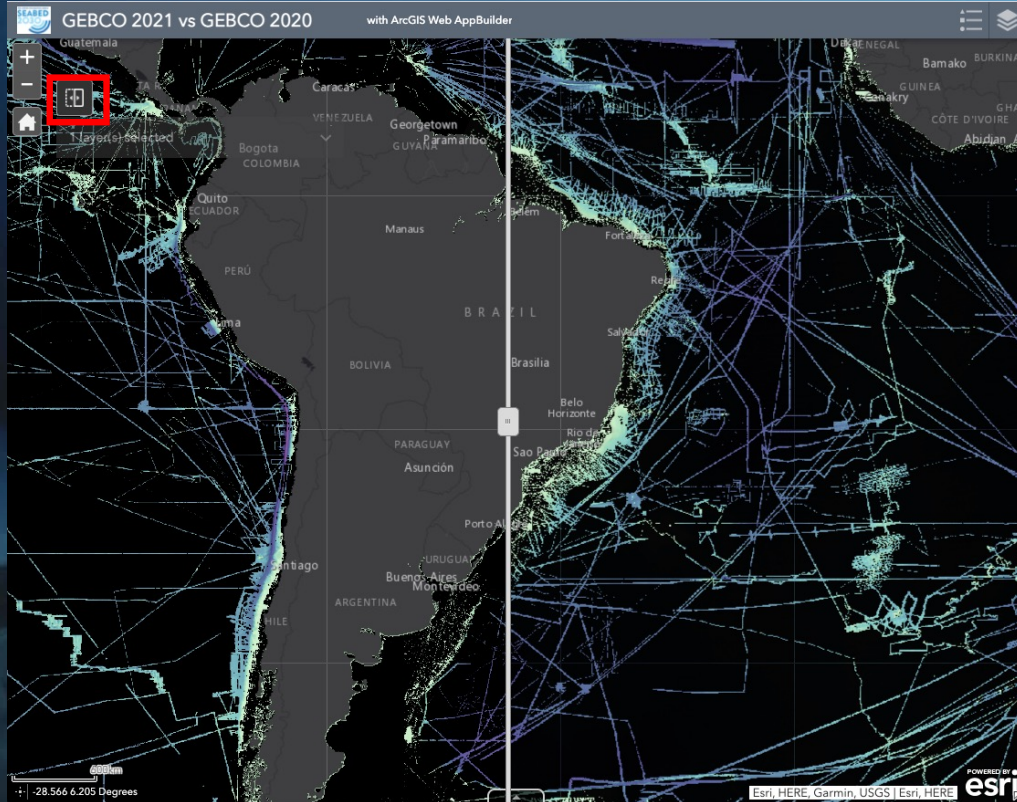


GEBCO 2021



600m  
+ -2.799 7.178 Degrees

# GEBCO 2020 vs GEBCO 2021



<https://bit.ly/3xyoJzi>

Interactive web application

- Swipe functionality to show 2021 (right) vs 2020 (left)
- Zoom
- Pan
- Explore!



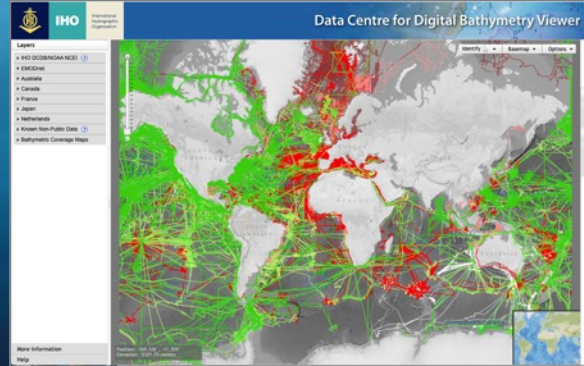


# How much of the SWAtHC region has been mapped?



**GEBCO 2021  
Data Coverage**

+



**Known existing data  
not yet shared and/or  
not yet integrated**

+

?

**Unknown  
existing data  
not yet shared**

# What to Contribute?

- Gridded products
- ENC data
- Multibeam data
- Single beam data
- CSB data
- Polygons of data coverage
- Metadata



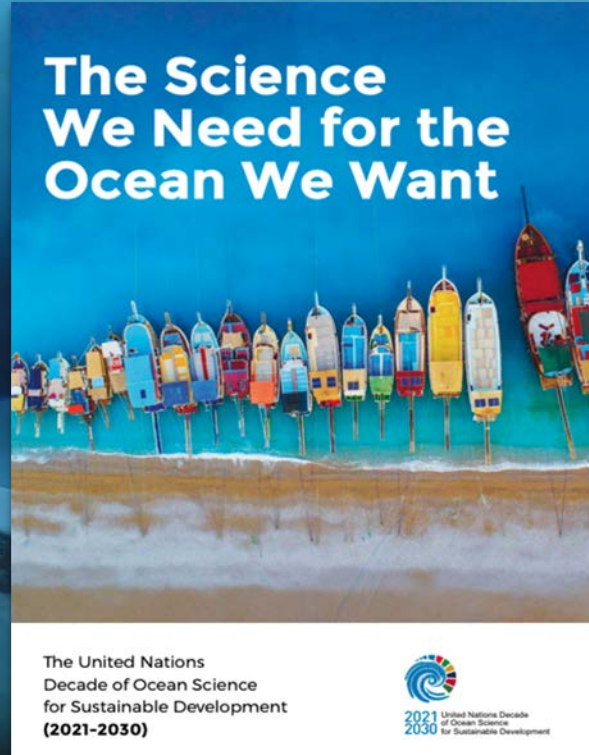


# Capacity Development

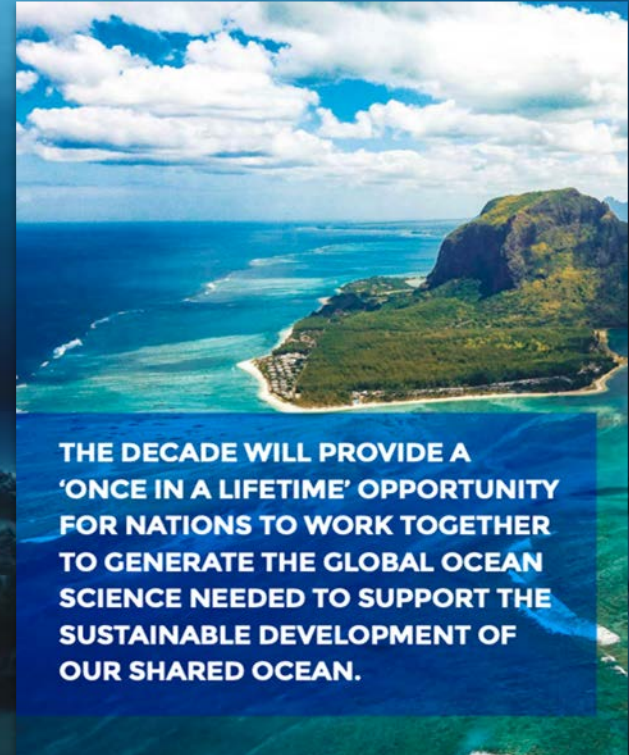


# UN Decade of Ocean Science for Sustainable Development (2021-2030)

- 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



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





# Accelerating Toward 2030: *Collaboration & Capacity Development*

- Learn from one another
- Leverage efforts to work toward common goals
- Share data, approaches, workflows, tools
- Develop new collaborations and opportunities
- Prioritization and mapping campaigns
- Capacity development
- Power of the crowd
- One ocean, one planet



# Nippon Foundation - GEBCO Training Program

## 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, USA

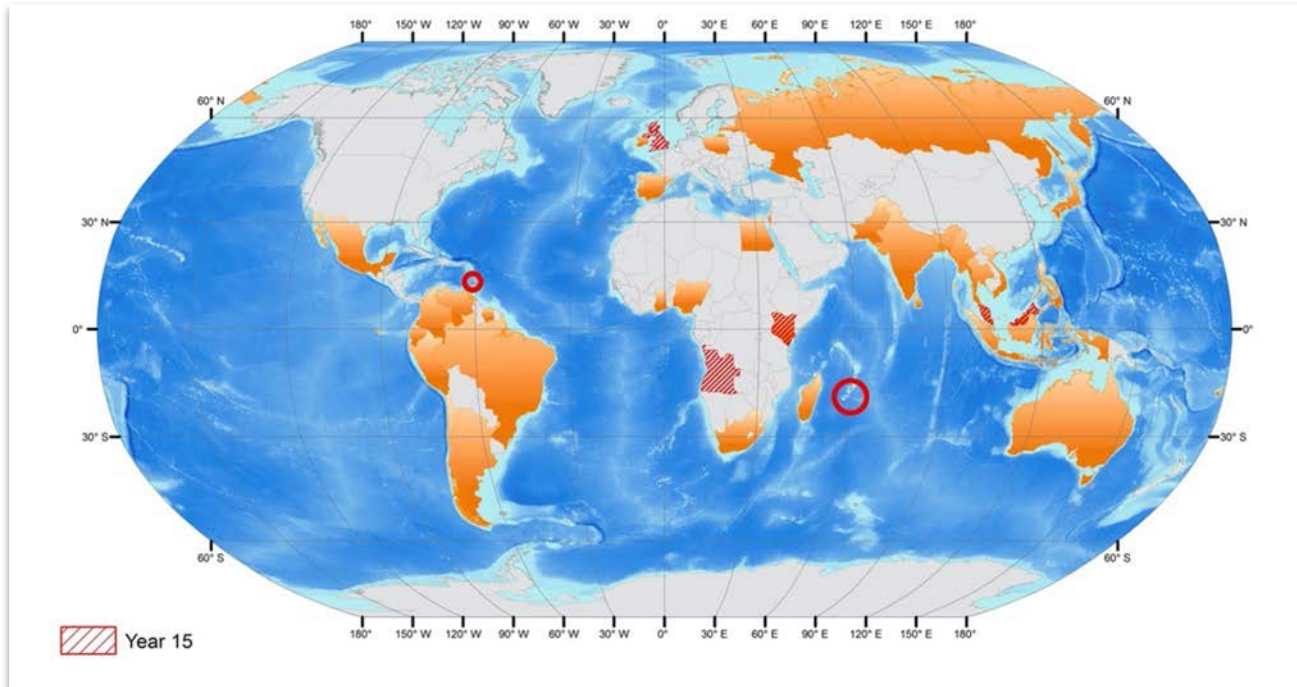




# Nippon Foundation - GEBCO Training Program



96 Scholars from 43 coastal states over last 16 years!



# Completing the Map

- Collaboration and Coordination
- Technical Innovation
  - Data Acquisition
  - Data Synthesis & Integration
- Sharing of Knowledge & Data
- Capacity Development



# Thank you!

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[www.seabed2030.org](http://www.seabed2030.org)

