

THE NIPPON FOUNDATION-GEBCO

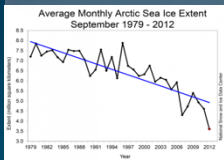
SEABED
2030

SEABED 2030

Energizing Ocean Floor Mapping



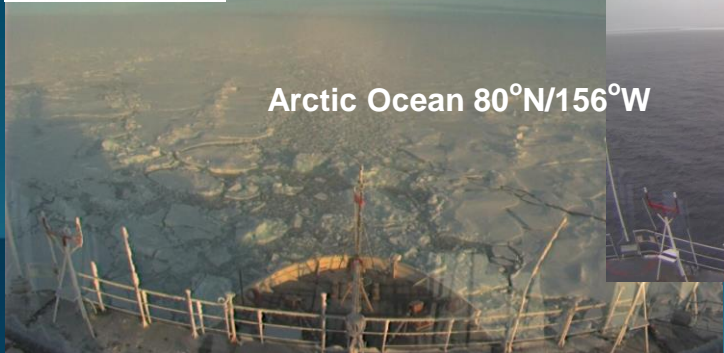
Jamie McMichael-Phillips
Seabed 2030 Director



13 September 2008

12 September 2012

Arctic Ocean 80°N/156°W



Courtesy: Larry Mayer, UNH



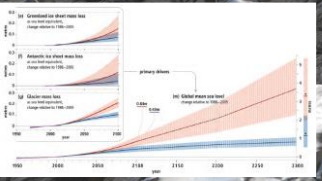
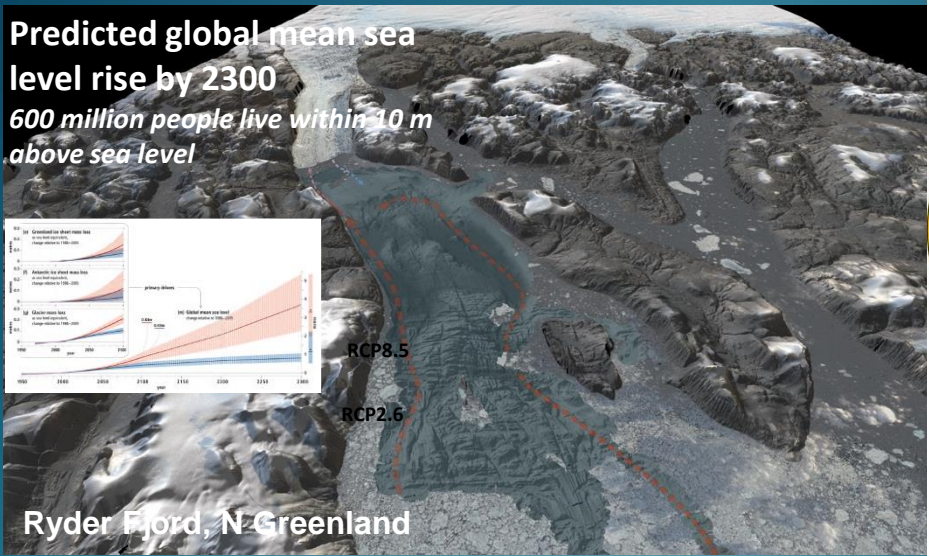
Ocean Pollution

Courtesy: Larry Mayer, UNH



You Can't Properly Manage what you Haven't Measured

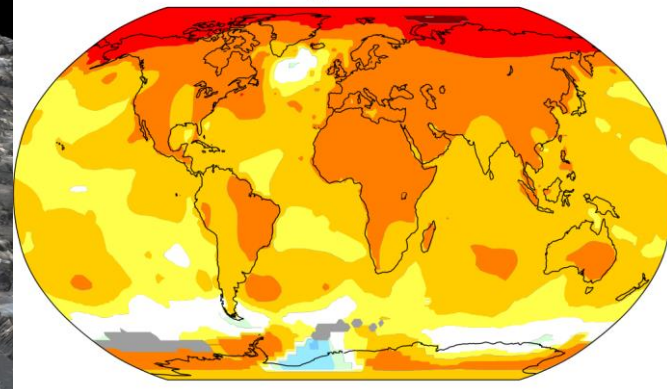
Predicted global mean sea level rise by 2300
600 million people live within 10 m above sea level



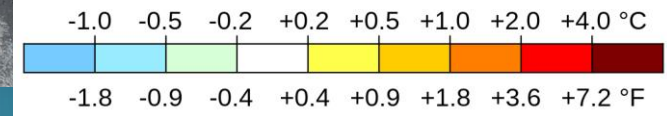
Ryder Fjord, N Greenland

Courtesy: Martin Jakobsson, SU

Temperature change in the last 50 years



2011-2021 average vs 1956-1976 baseline



Climate

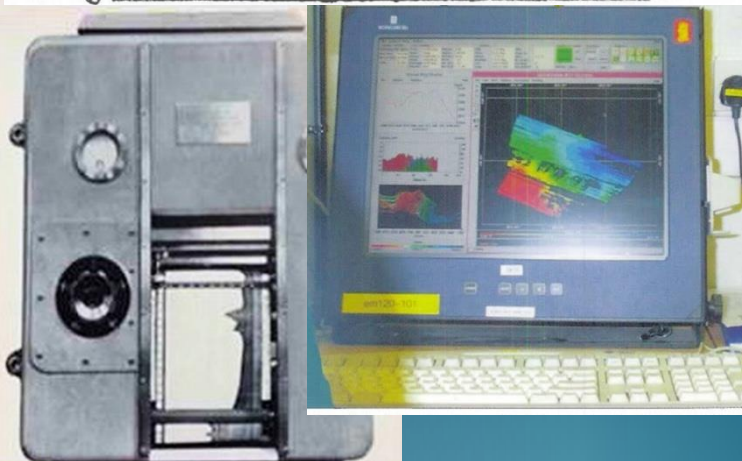
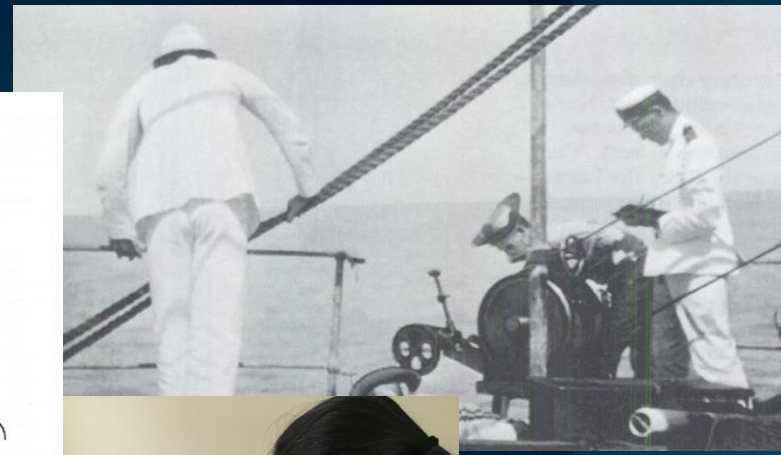
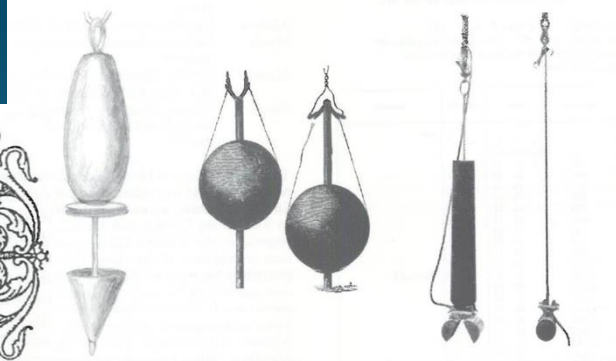
Courtesy: NASA



Alaska 1975

Courtesy: NOAA

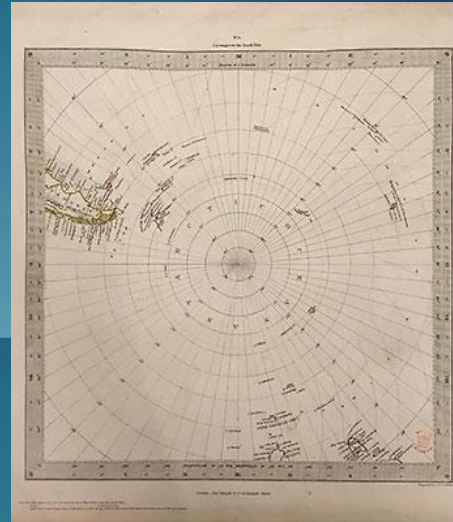
Gathering Depth Information



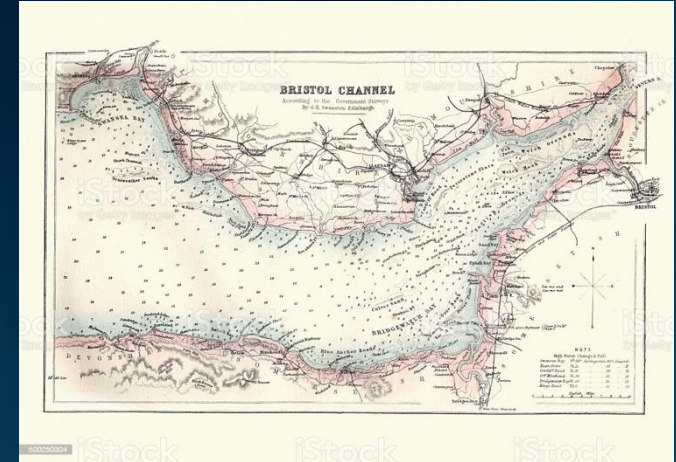
Portrayal as a Necessity



James Cook, 1770

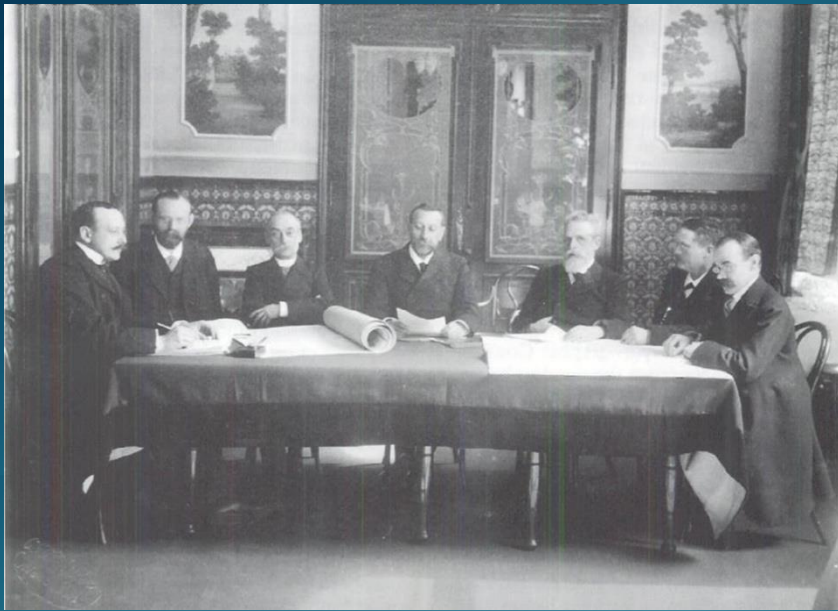


Edward Bransfield, 1820 observation on 1844 chart



Bristol Channel, 1880

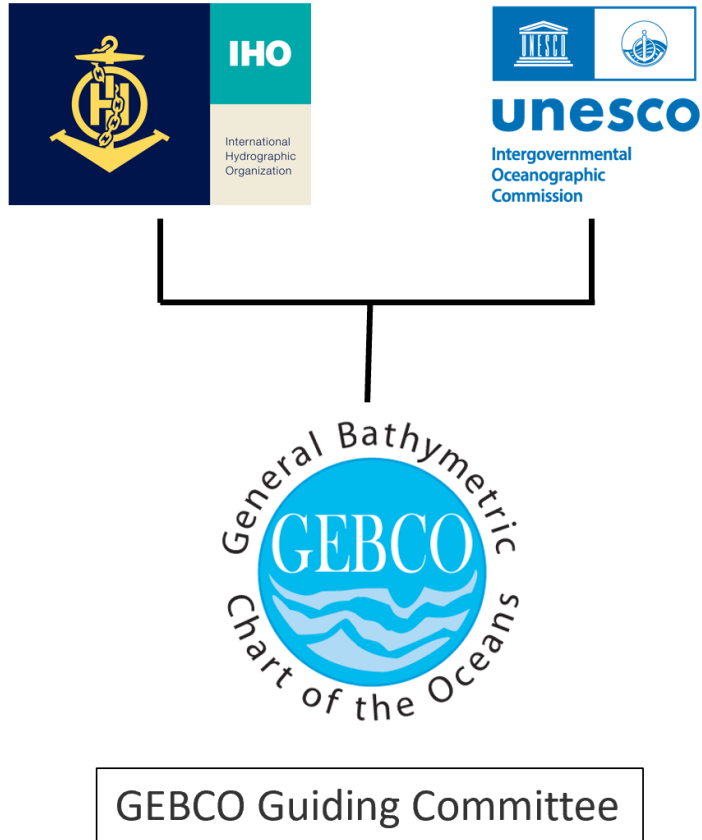
The General Bathymetric Chart of the Oceans GEBCO



Established
1903



GEBCO



Joint programme of:

- The International Hydrographic Organization (IHO)
- &
- The Intergovernmental Oceanographic Commission (IOC/UNESCO)

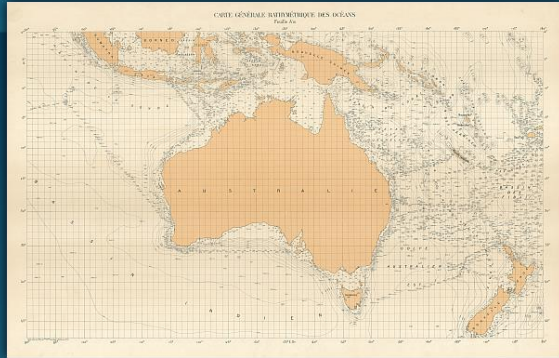
Aim: provide authoritative, publicly-available bathymetry (depth) data sets of the world's oceans

Mainly voluntary international community of:

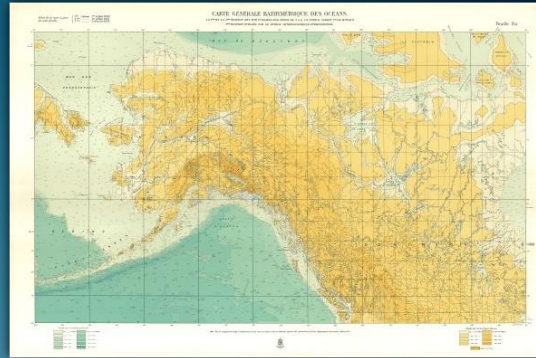
- Scientists
- Oceanographers
- Hydrographers
- Citizens

GEBCO over the decades

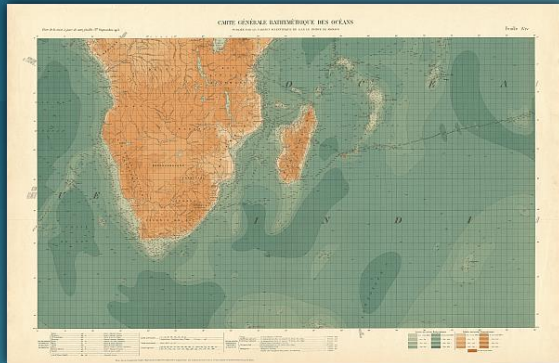
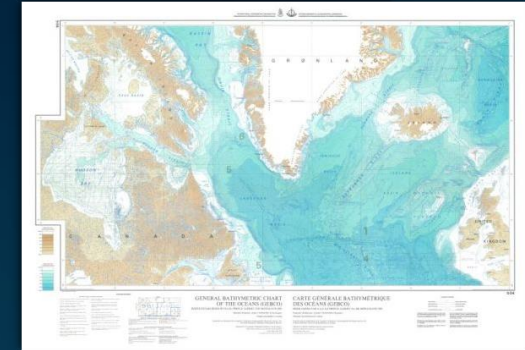
1st Edition 1903



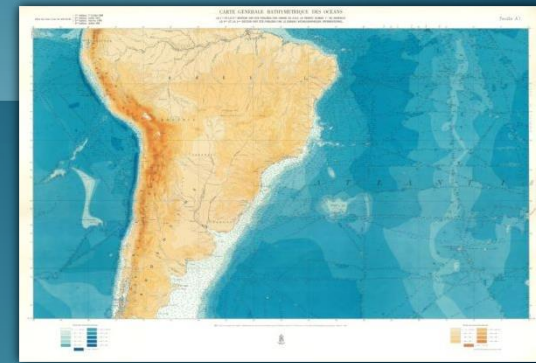
3rd Edition 1932-66



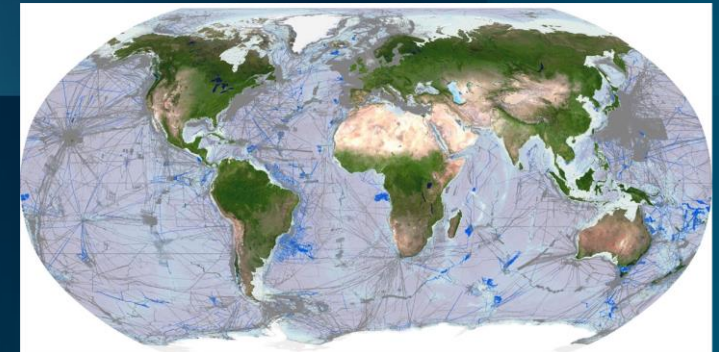
5th Edition 1973-82



2nd Edition 1910-30



4th Edition 1958-73

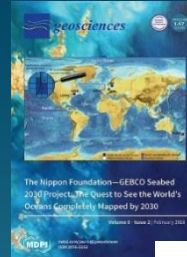


2023 Release

The Nippon Foundation-GEBCO Seabed 2030 Project



June 2016



June 2017



June 2021

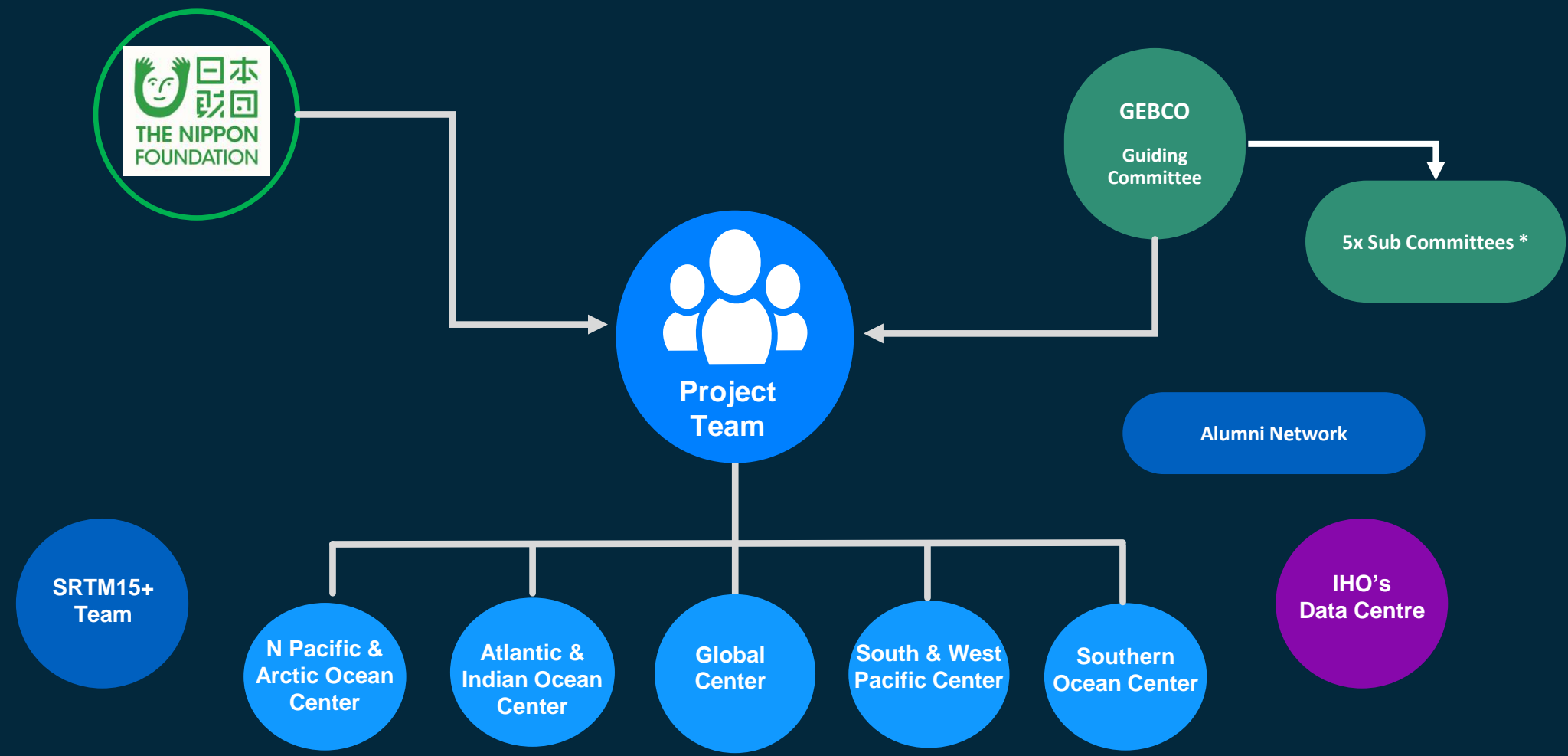


Seabed 2030 = accelerator to GEBCO's aim

Collaboration to:

- inspire 100% seabed mapping by 2030
- compile the GEBCO Map

Seabed 2030 Simplified Network













* *Technical | Regional | Undersea Feature Names | Engagement & Outreach | Education & Training*



- **Clean**
- **Healthy & Resilient**
- **Productive**
- **Predicted**
- **Safe**
- **Accessible**
- **Inspiring & Engaging**

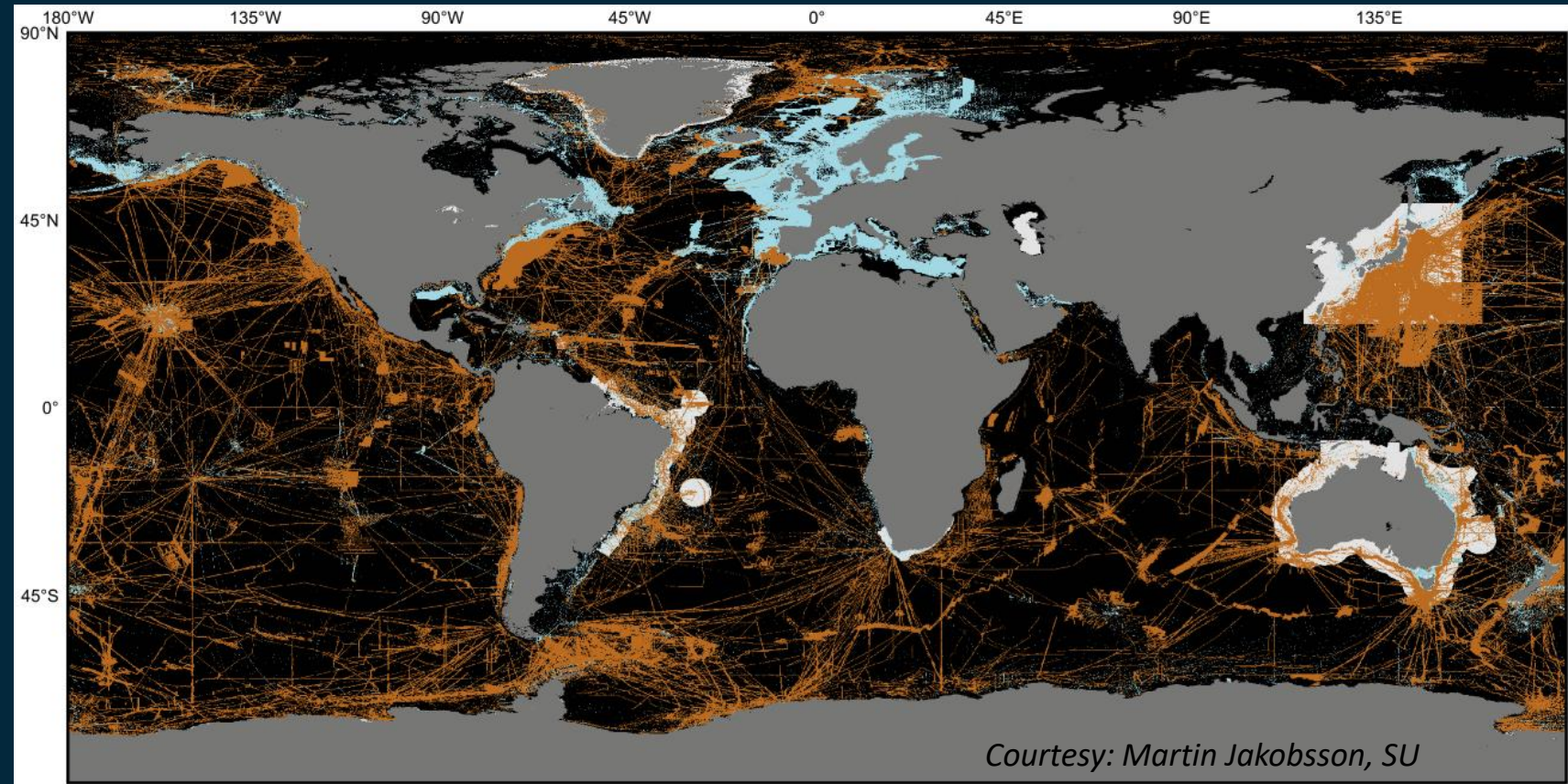
OCEAN DECADE CHALLENGES

	Pollutants	Coastal -bathymetry
	Ecosystems	Mapping central
	Food from the Ocean	Bathymetry dependent
	Ocean economy	Mapping intensive
	Ocean-climate nexus	Modelling, SLR, etc.
	Ocean-related risks	Bathymetry intensive
	Ocean observing system	Georeferencing
	Ocean digital representation	Central facility
	Capacity development	Strongly needed
	Behaviour change	Resonates with people

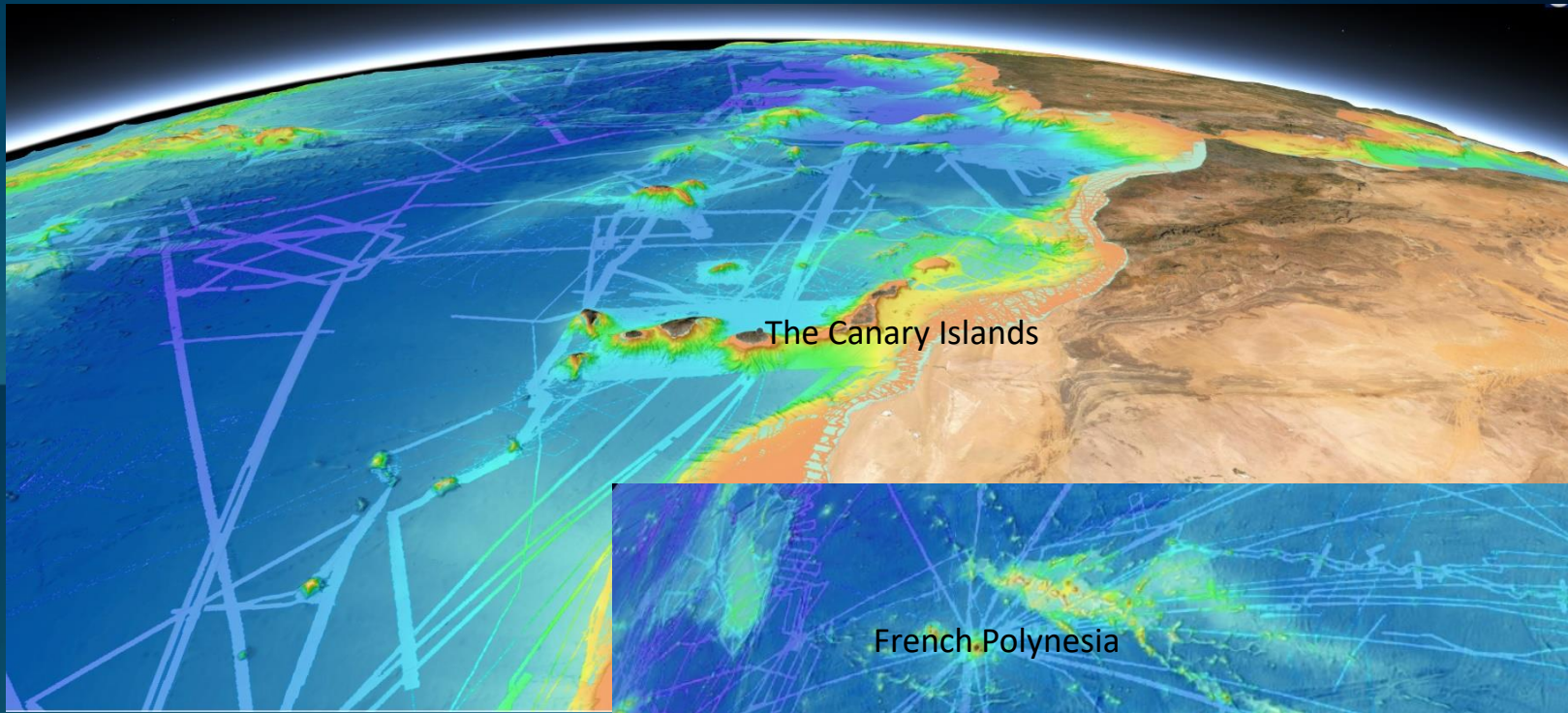
Progress so far ...

GEBCO Map:

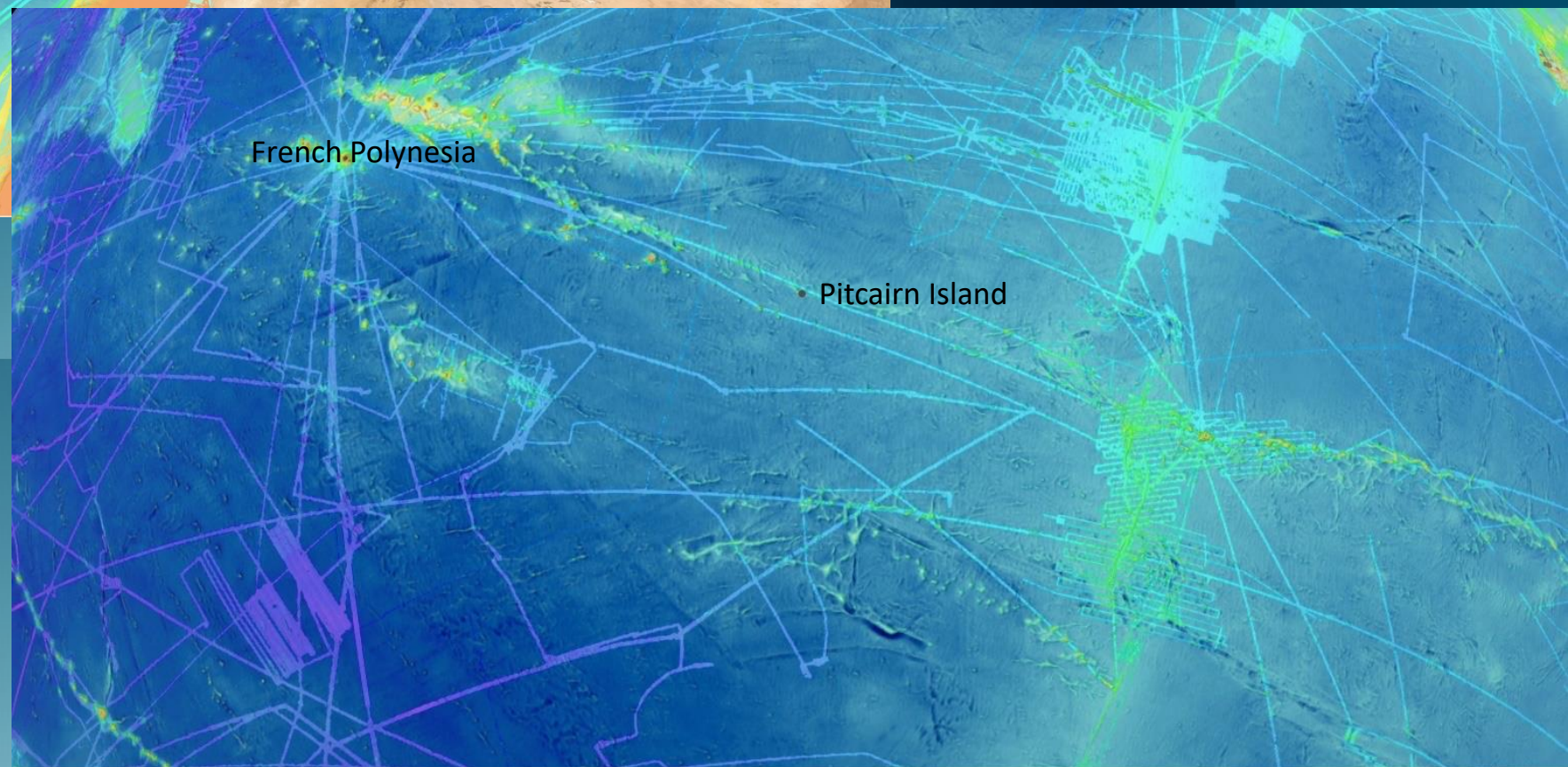
- *6% in 2017*
- Now **24.9%**
 - *90.1 million KM2*
 - *5 x South America*
 - *3 x Africa*



3/4 of ocean floor still to go



**Paucity of
Depth Information**



**To manage
effectively**
...we must map

Target Resolutions

- Depth dependent
- We will never ask for data of any higher resolution than:
 - 1 x depth value in 100x100m box

At best only one depth value in area ~ size of a soccer pitch





The IHO Crowdsourced Bathymetry Initiative

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

The screenshot shows the website for the IHO Crowdsourced Bathymetry Initiative. At the top, there are logos for IHO and the International Hydrographic Organization. Below the logos is a navigation bar with links for 'IHO DCDB Home', 'Contribute Data', 'Crowdsourced Bathymetry', and 'CSB Mapping Projects'. The main content area has a heading 'IHO Crowdsourced Bathymetry Initiative' followed by a paragraph defining CSB as the collection of depth measurements from vessels during routine maritime operations. Below this is a paragraph explaining the initiative's goal to 'map the gaps' by leveraging data from commercial vessels. A section titled 'Contributing CSB Data to the DCDB' describes the process of becoming a 'Trusted Node' and provides information on data formats (CSV or GeoJSON) and contact details for the DCDB.

IHO Crowdsourced Bathymetry Initiative

Crowdsourced bathymetry (CSB) is the collection of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations. CSB can be used to supplement the more rigorous and scientific bathymetric coverage done by hydrographic offices, industry, and researchers around the world.

In 2014, the IHO recognized that traditional survey vessels alone could not be relied upon to solve data deficiency issues and agreed there was a need to encourage and support all mariners in an effort to "map the gaps." An initiative was established to support and enable mariners and professionally manned vessels to collect CSB. This approach leverages underway x, y, z, t data already being collected on vessels with common commercial echo sounders and Global Navigation Satellite System receivers.

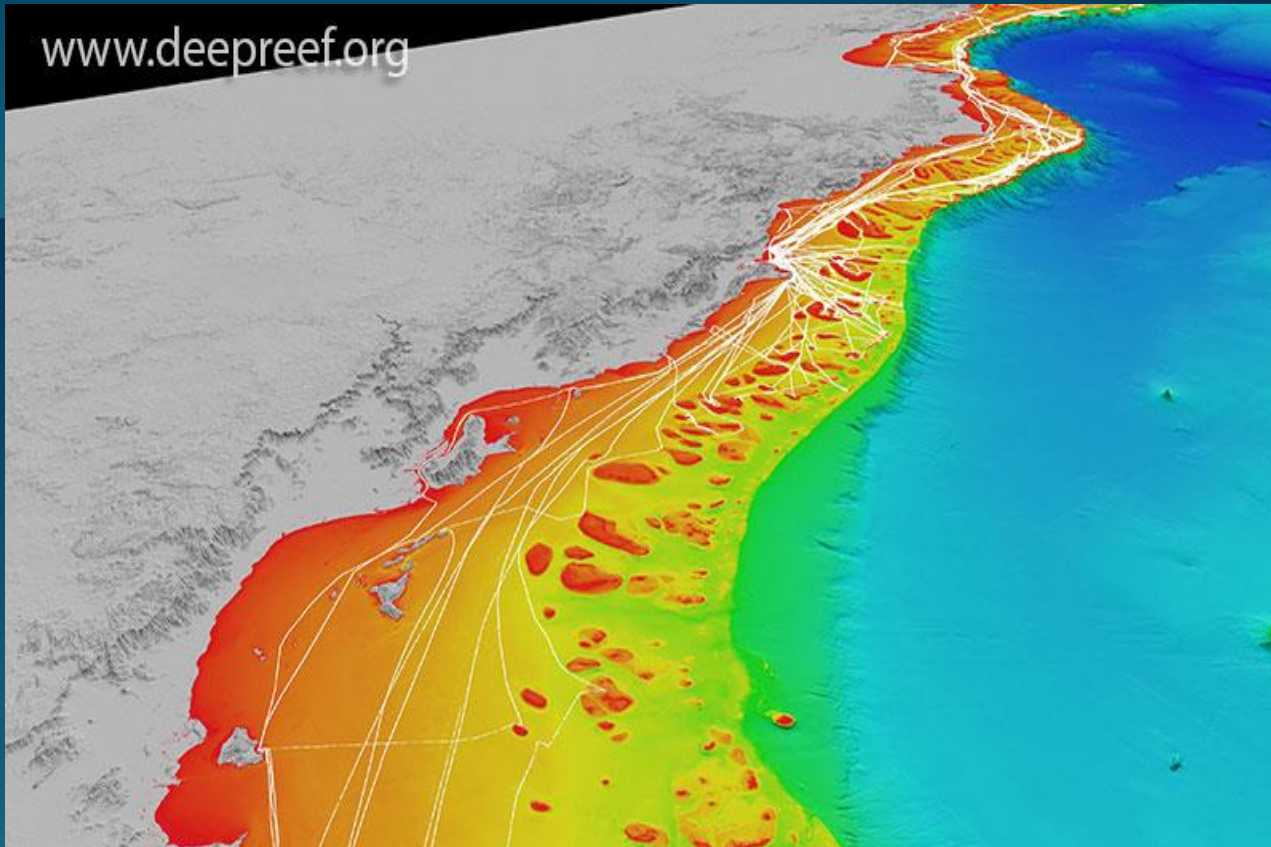
Contributing CSB Data to the DCDB

The DCDB accepts CSB contributions through a network of "Trusted Nodes," which may be organizations, companies or universities serving as data liaisons between mariners (data collectors) and the DCDB. Trusted Nodes may supply data logging equipment, provide technical support to vessels, download data from data loggers, and be responsible for data transfer directly to the DCDB.

CSB data must be provided in either CSV or GeoJSON, and capture the minimum required information (XYZ, timestamp). Examples of both data formats can be found in our [Ingest API documentation](#). As a trusted node, you will be asked to provide additional information about yourself (provider contact point/organization name, provider email, and unique ID).

Those interested in contributing data or becoming a Trusted Node should contact the DCDB at bathydata@iho.int.

The Value of Crowdsourced Bathymetry Data



- Data at no cost to the public sector
- Fill gaps where data is scarce
- Useful along shallow, complex coastlines
- Identification of uncharted features
- Assistance in verifying charted information
- and more

3D view of northern Great Barrier Reef showing all vessel tracks as of December 2019

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

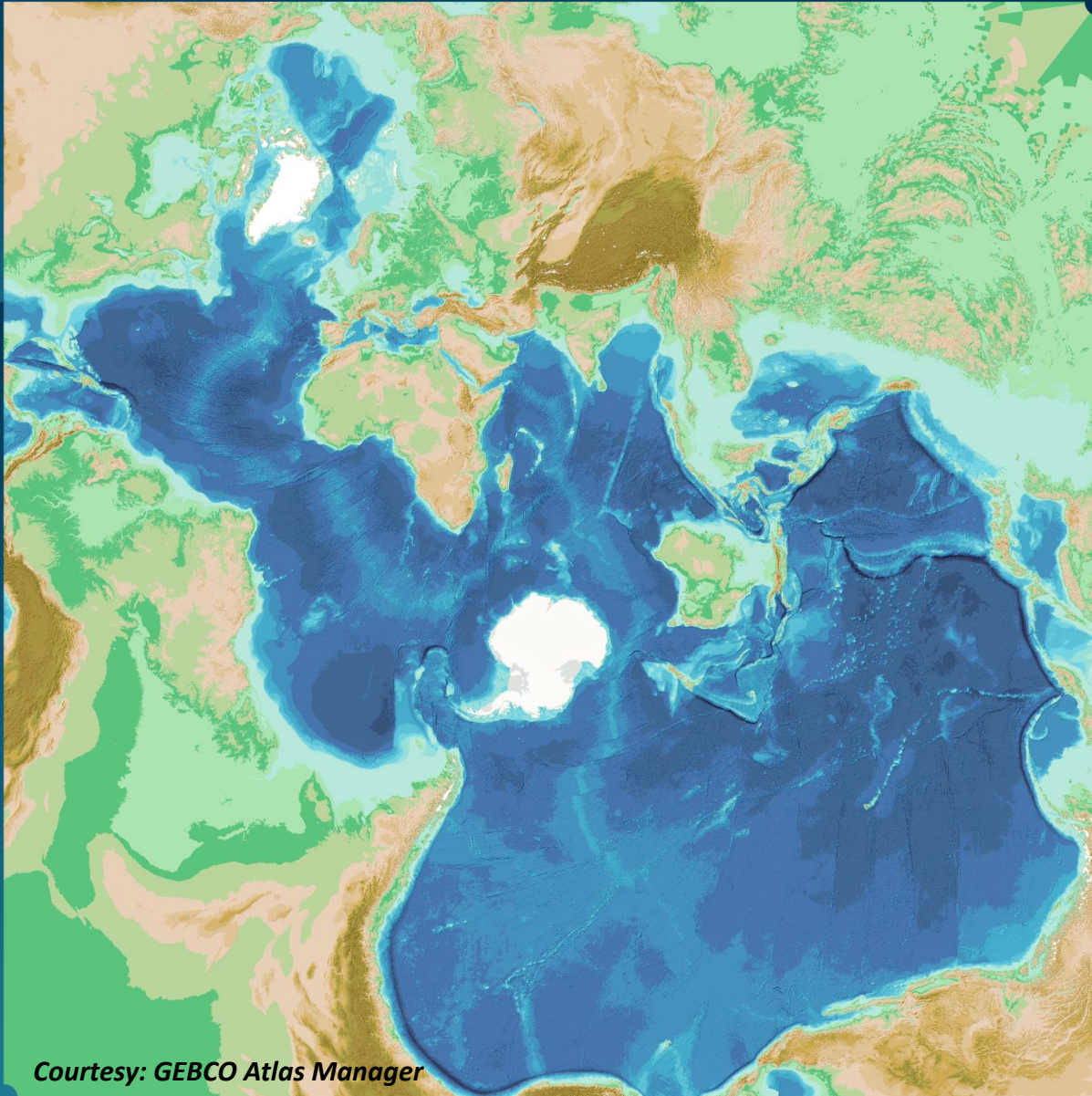
Nemo 30 Seafloor Logger



- Collaborative development between University of New Hampshire & Sea_ID
- NMEA0183/2000 compact data logger for CSB



Helping us make it happen



Courtesy: GEBCO Atlas Manager

It really is

Our One Ocean!

Vision:

**100% Ocean Floor
mapped by 2030**

Thank you

