THE NIPPON FOUNDATION-GEBCO SEABED 2030

IHO 3rd Assembly
Thematic Block 1:

4 MAY 2023

Ocean Mapping

Jamie McMichael-Phillips
Seabed 2030 Director

THE NIPPON FOUNDATION | GEBCO | 120 1903–2023 | International Hydrographic Organization / Organisation Hydrographique Internationale / IHO | unesco Intergovernmental Oceanographic Commission | 2021 2030 United Nations Decade of Ocean Science for Sustainable Development

GEBCO

Today the **Ge**neral **B**athymetric **C**hart of the **O**ceans is a joint programme of:

- The **International Hydrographic Organization**

&

- The **Intergovernmental Oceanographic Commission**

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

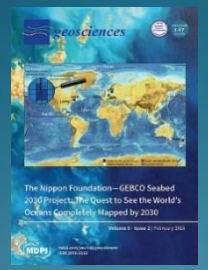
The GEBCO community is largely a voluntary force of international scientists, oceanographers and hydrographers

Seabed 2030 is an "accelerator" to fast-track GEBCO's aim

Seabed 2030

Collaborative project between The Nippon Foundation & GEBCO to inspire complete mapping of the world's ocean by 2030 & to compile all bathymetric (depth) data into the freely-available GEBCO Ocean Map.

Seabed 2030 is an "accelerator" to fast-track GEBCO's aim



Forum for Future Ocean Floor Mapping

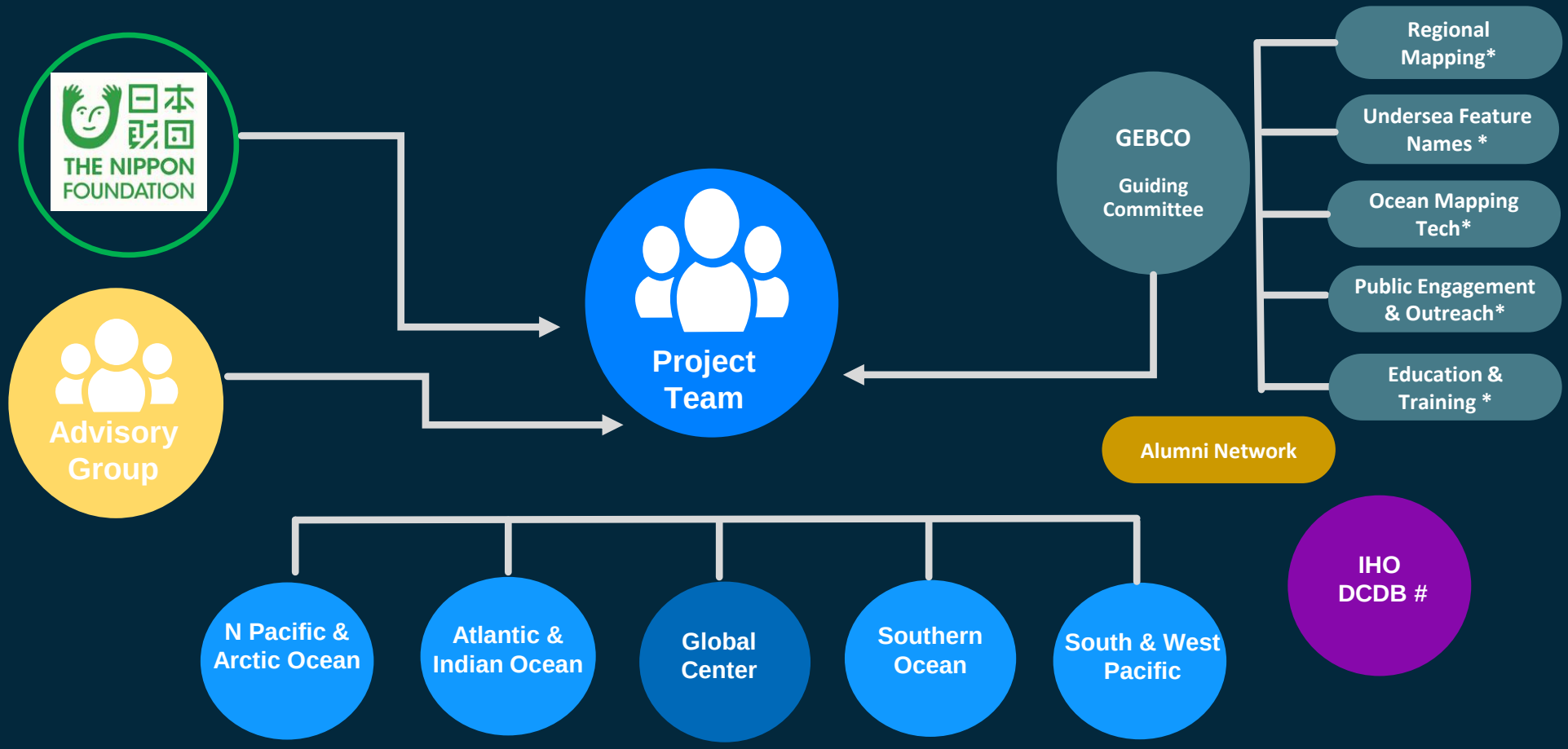
THE OCEAN CONFERENCE
UNITED NATIONS, NEW YORK, 5-9 JUNE 2017

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Endorsed Decade Programme

June 2016 → June 2017 → June 2021

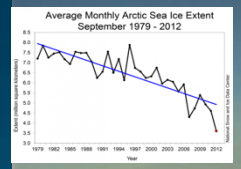
Seabed 2030 Network



4 x Regional Centers + 1 x Global Center

(* GEBCO Sub Committees)

(# Data Centre for Digital Bathymetry)



13 September 2008

Arctic Ocean 80°N/156°W

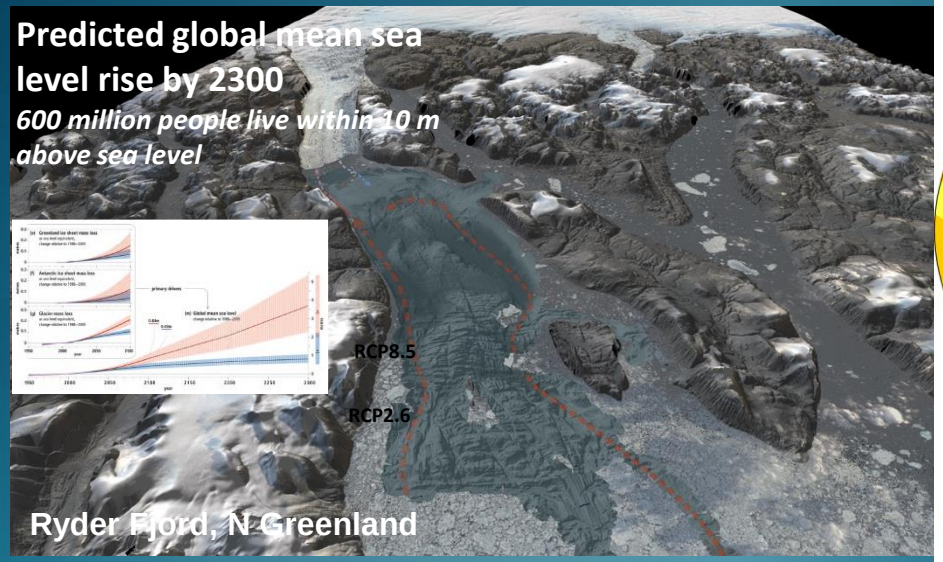
12 September 2012

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

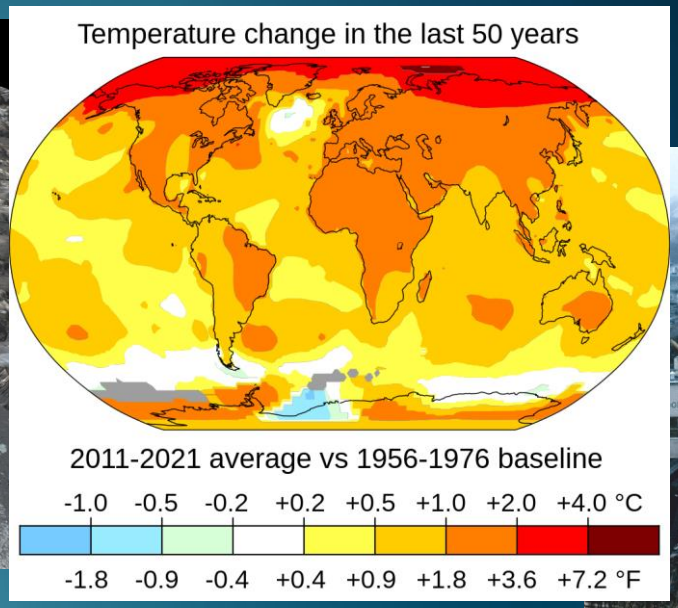
600 million people live within 10 m above sea level

RCP8.5

RCP2.6

Ryder Fjord, N Greenland

Courtesy: Martin Jakobsson, SU



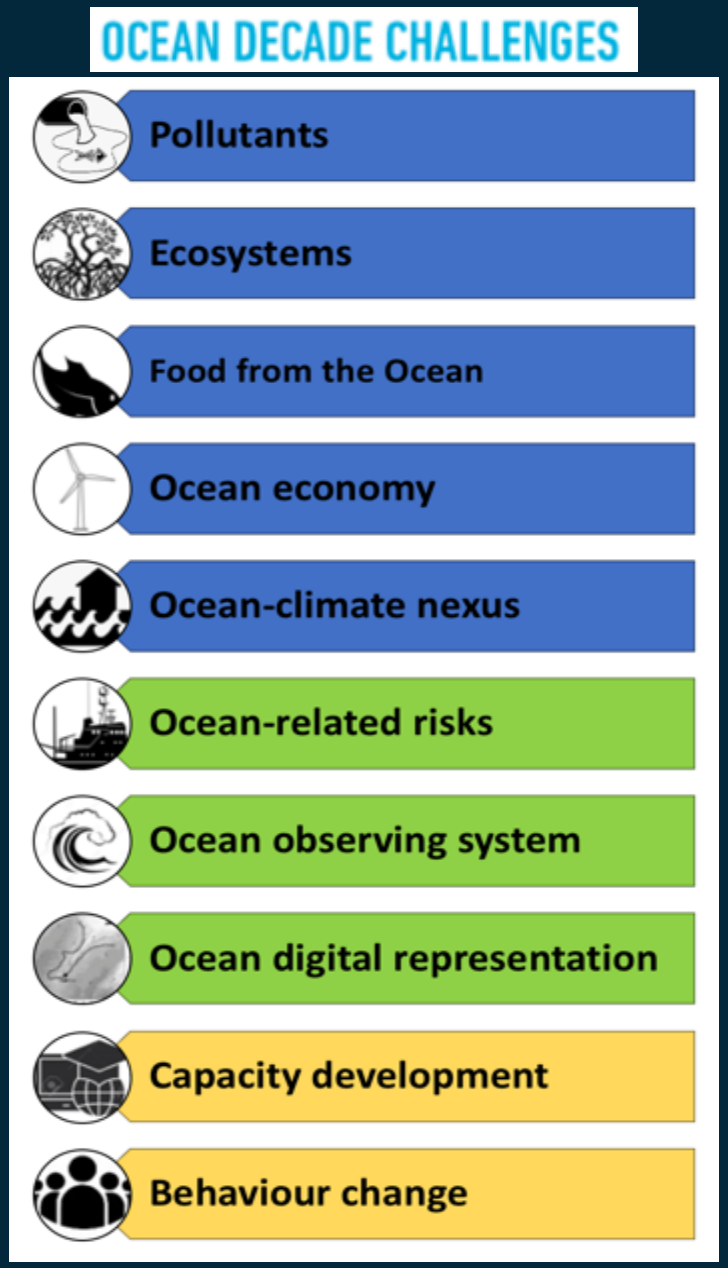
Climate

Courtesy: NASA

Alaska 1975

Courtesy: NOAA

- A <u>clean</u> ocean
- A <u>healthy and resilient</u> ocean
- A <u>productive</u> ocean
- A <u>predicted</u> ocean
- A <u>safe</u> ocean
- An <u>accessible</u> ocean
- An <u>inspiring and engaging</u> ocean



Coastal -bathymetry

Mapping central

Bathymetry dependent

Mapping intensive

Modelling, SLR, etc.

Bathymetry intensive

Georeferencing

Central facility

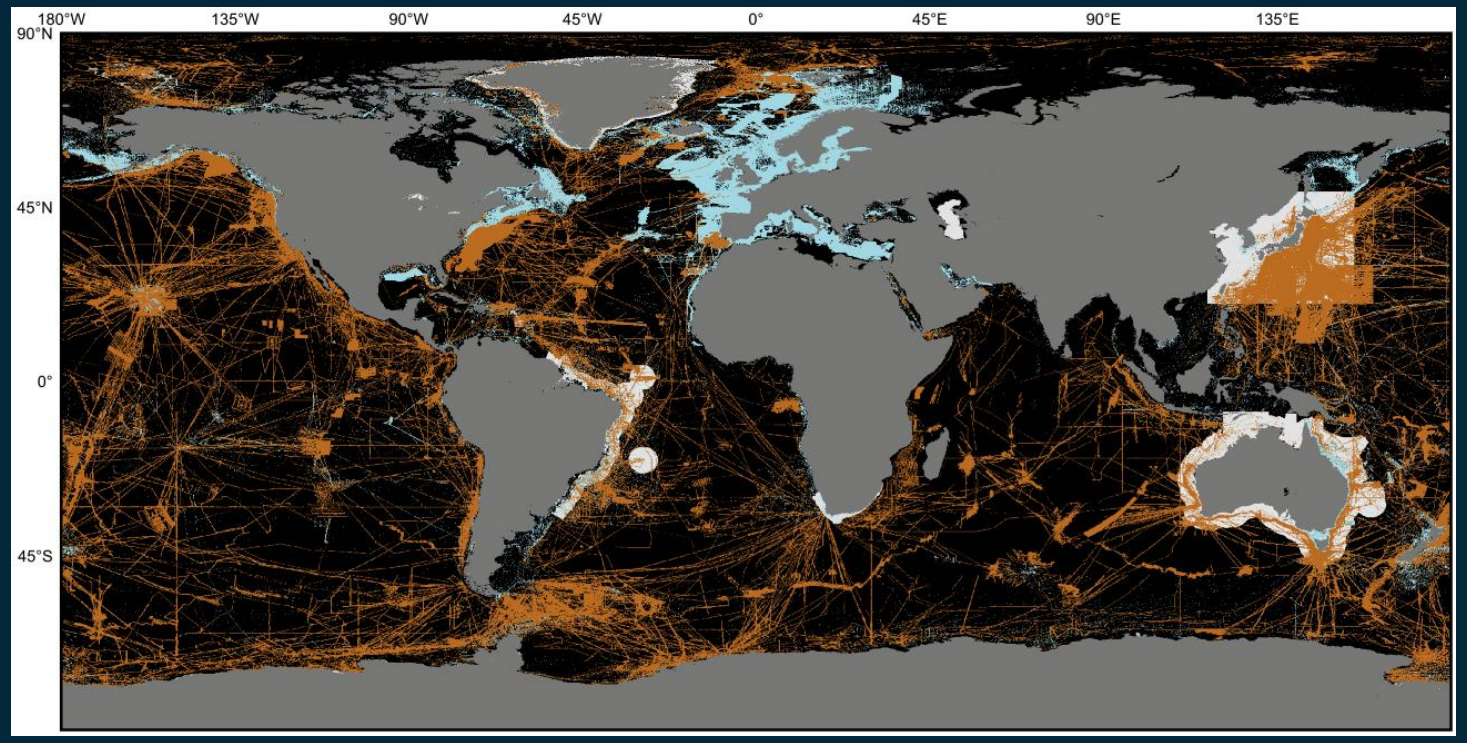
Strongly needed

Resonates with people

Progress so far…

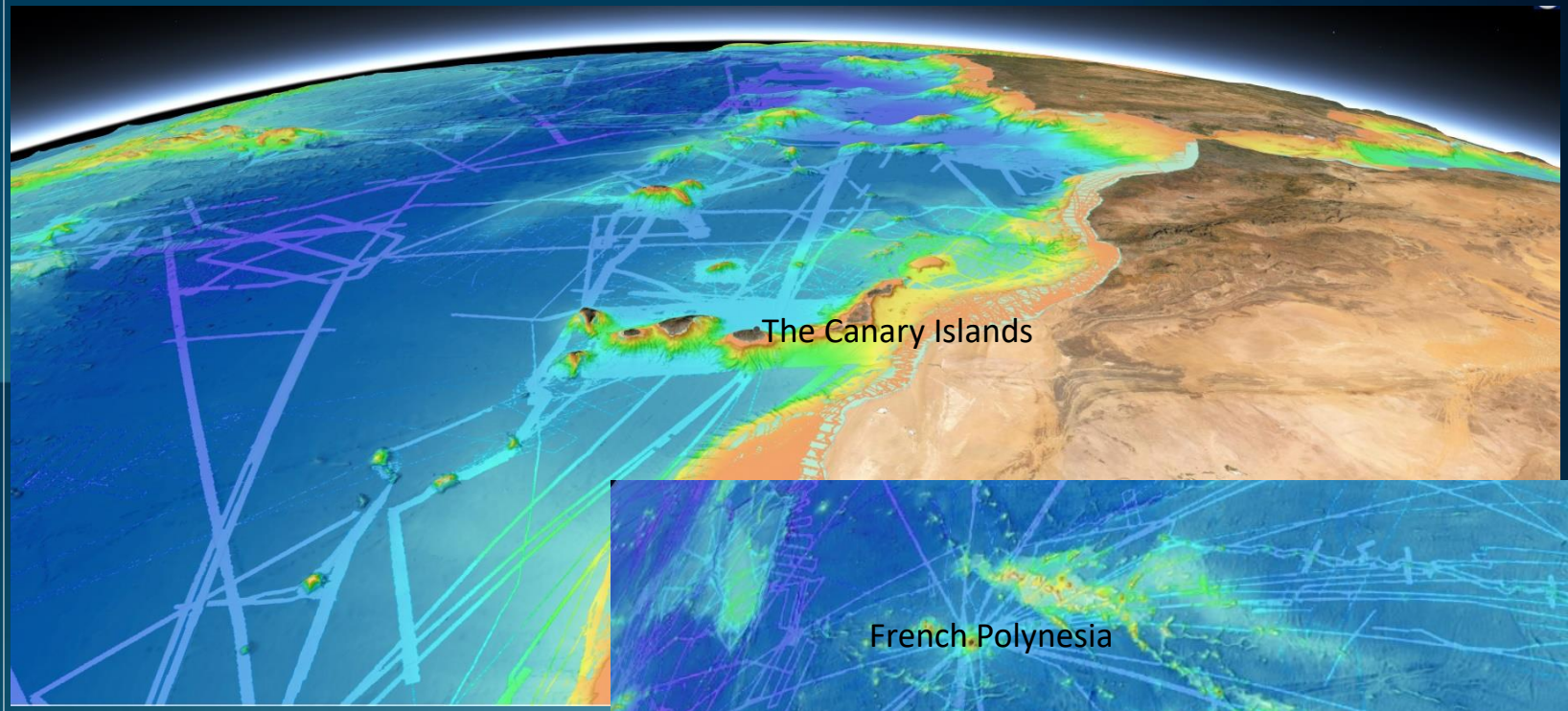
GEBCO 2023 Grid Delivery

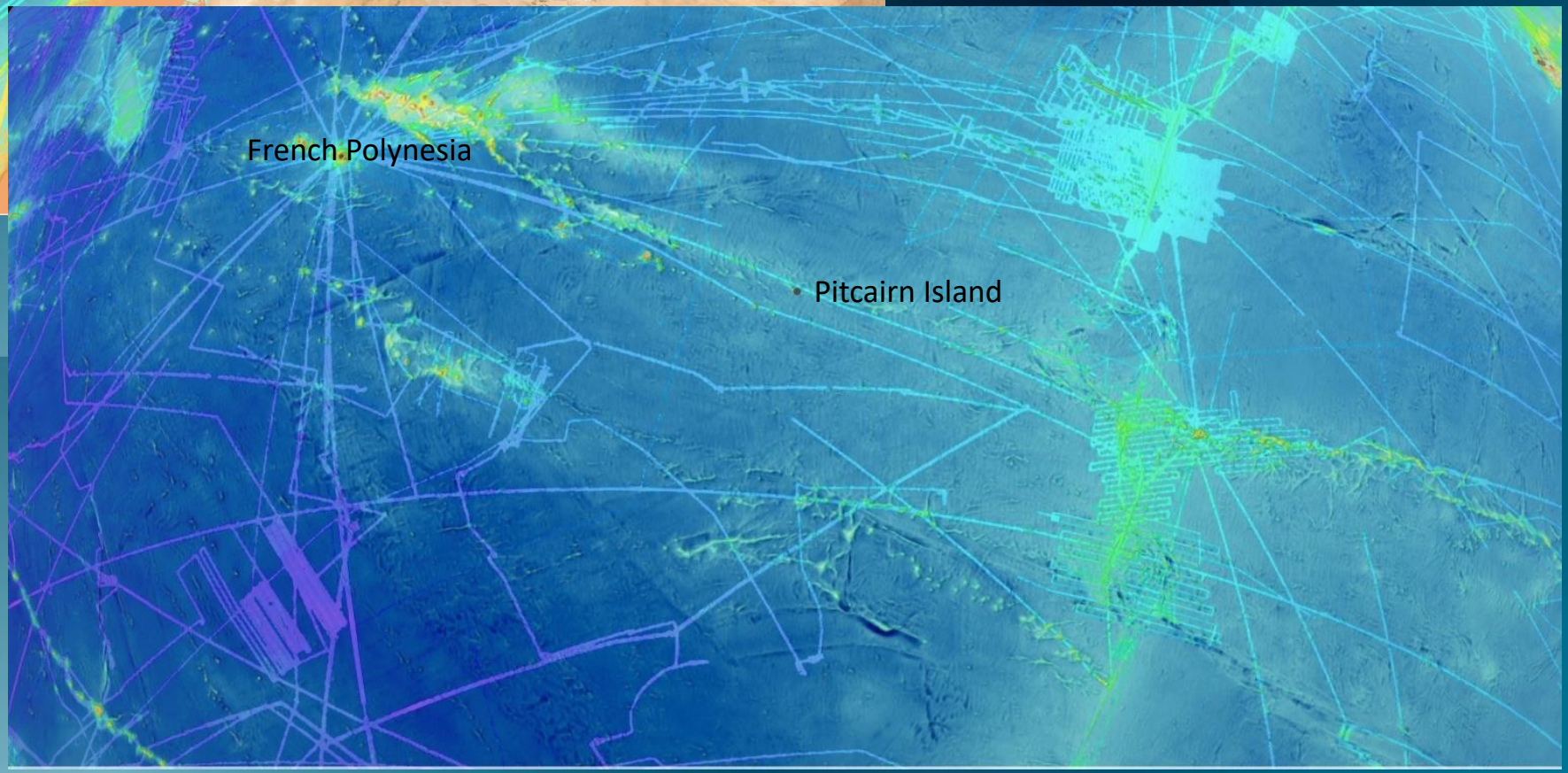
- GEBCO Grid stood at 6% coverage when Seabed 2030 began
- Ocean mapping coverage now stands at **24.9%** (May 2023)
- Still 3/4 of the ocean floor to be mapped



Courtesy: Martin Jakobsson, SU

Paucity of Depth Information

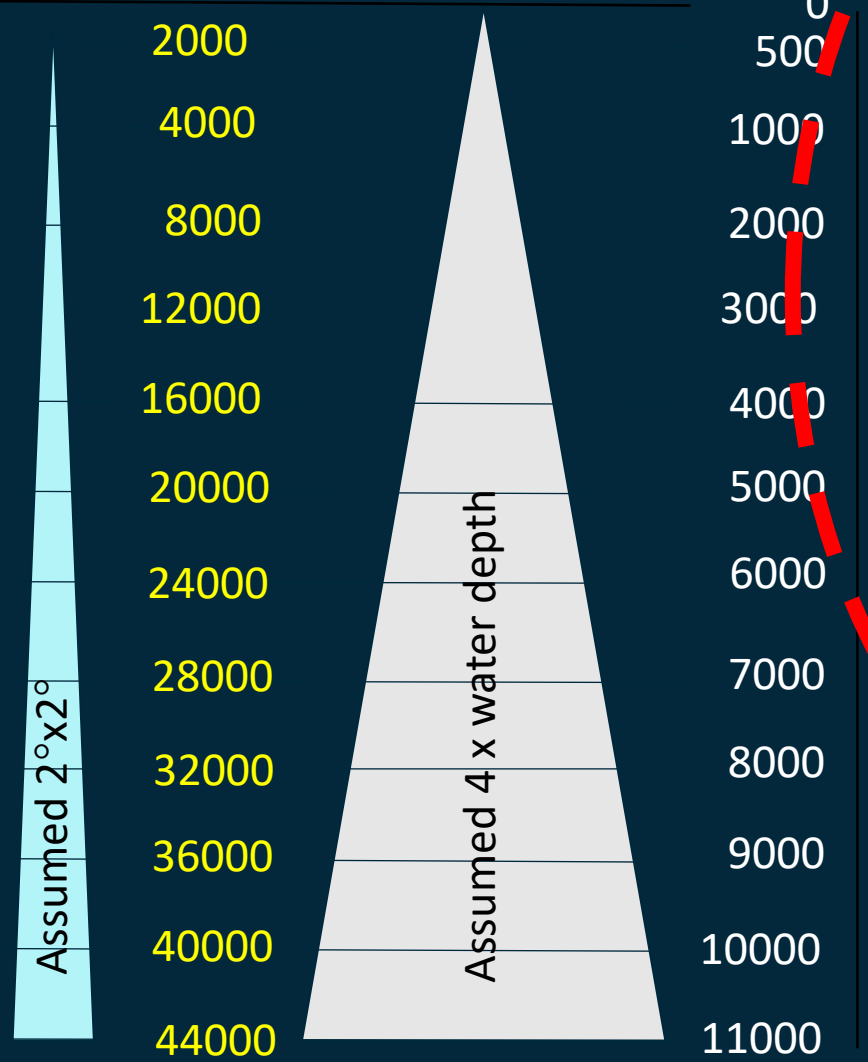




SEABED 2030

Mapping with surface vessel, deep water multibeam (12 kHz 2°x 2°, 60 ° from nadir)

World Ocean area	"Resolution" (foot print)	"Coverage" (swath width)
9.7 %	35	2000
2.0 %	70	4000
4.4 %	140	8000
8.6 %	209	12000
22.2 %	279	16000
31.8 %	349	20000
19.9 %	419	24000
1.0 %	489	28000
0.1 %	559	32000
<0.1 %	628	36000
	698	40000
	768	44000

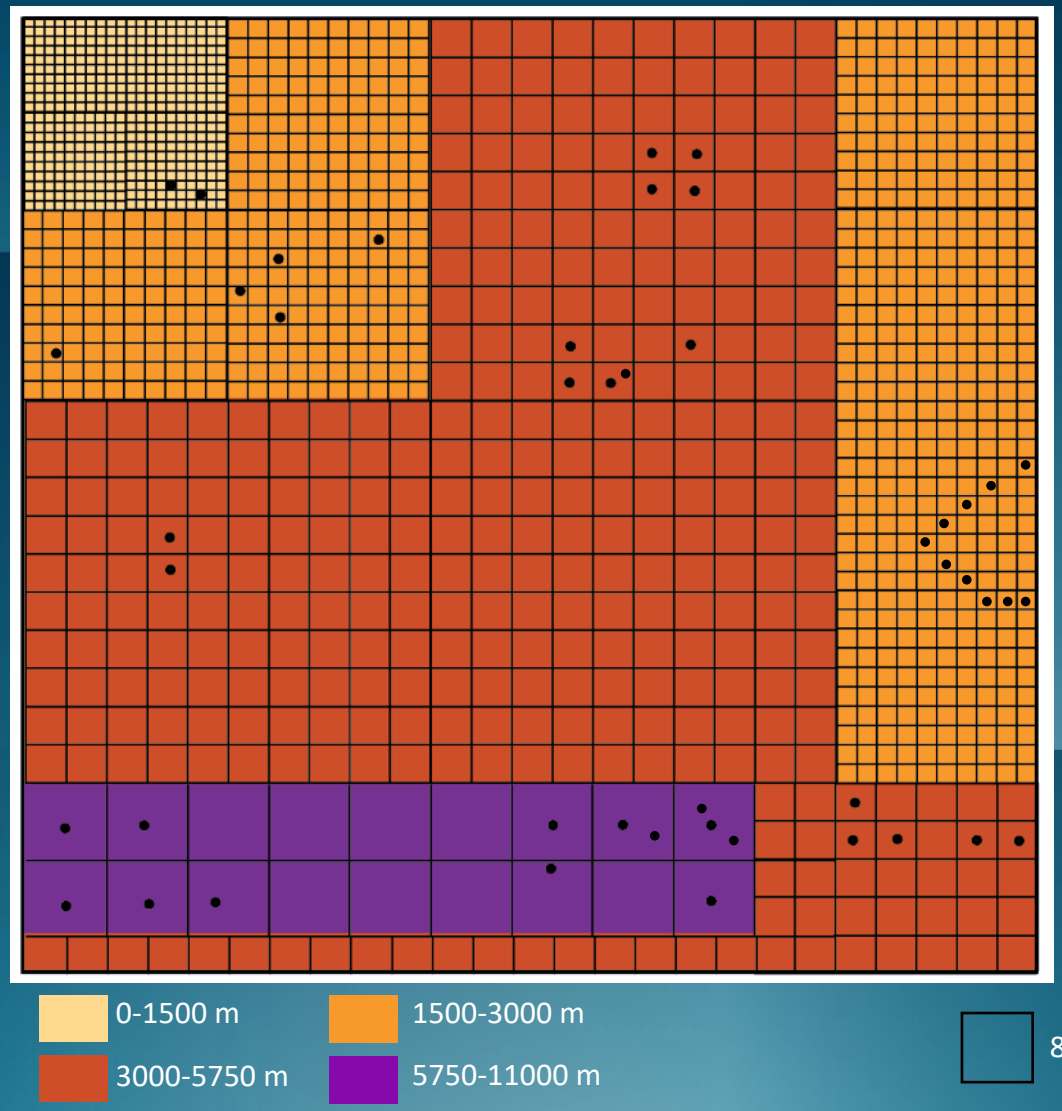


Target Resolutions

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

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

Courtesy: Martin Jakobsson, SU



Courtesy: Martin Jakobsson, SU

Grid cell mapped if it contains at least one depth value.

Data used to compute values in the GEBCO Ocean Map product (aka the GEBCO Grid) but data not distributed as part of the end product.

Happy to accept decimated data resolutions if higher resolutions are considered sensitive.

How do I contribute my data?

Process varies according to what you have – physical media such as tapes and paper files, versus digital media.

The GEBCO community that Seabed 2030 serves will assist you to make it as smooth and straightforward as possible.

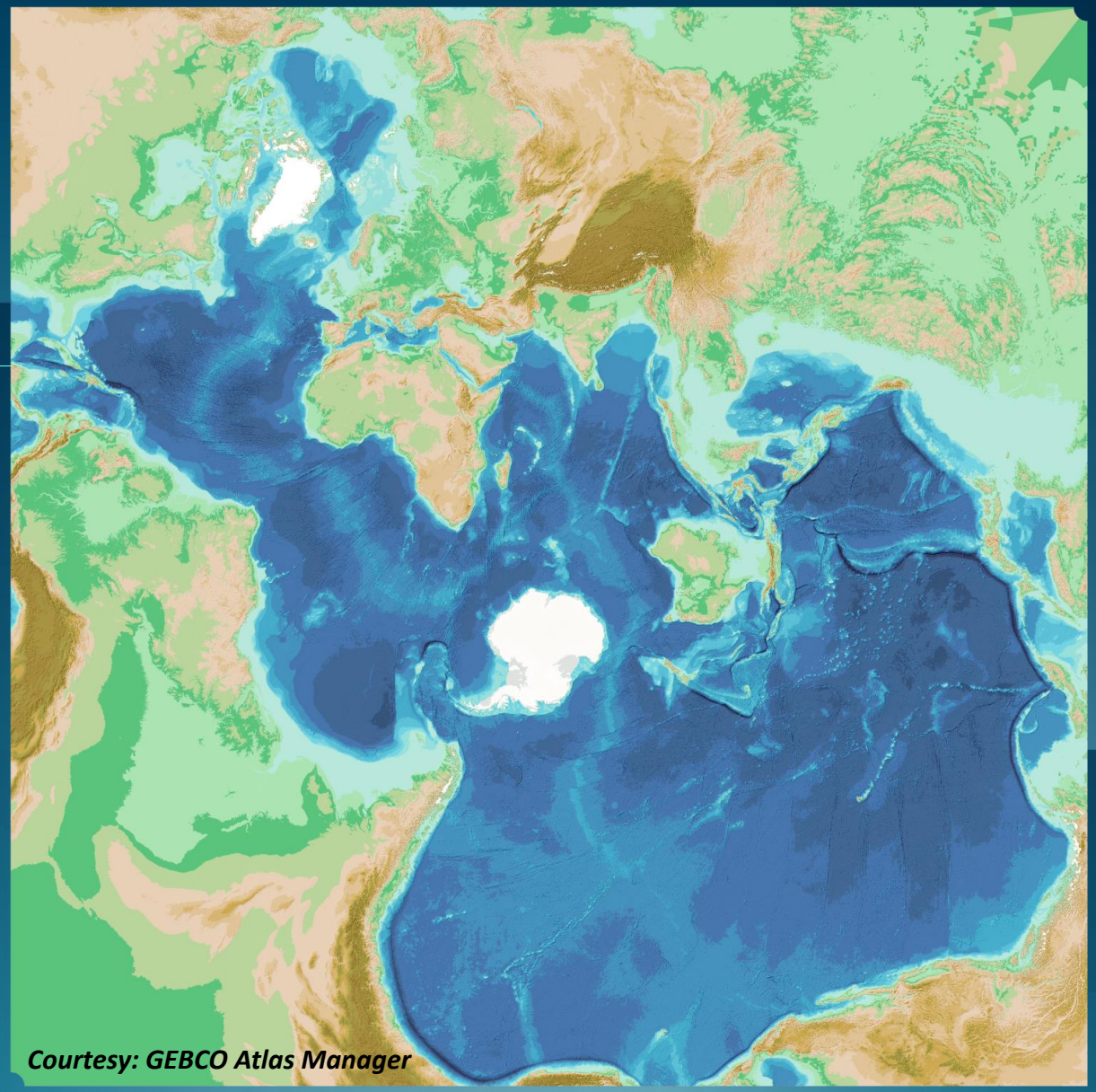
Go to http://seabed2030.org/contribute to see the form used to describe your data, and a short video that describes the process.

Contact Seabed 2030 via admin@seabed2030.org

Seabed 2030 Study – Online Survey

- Development of benefits analysis and prioritization modelling on global scale
- Seeking views from hydrographic & oceanographic authorities
- Via:
  - IOC CL 2937
  - IHO CL 11/2023
- 58 country responses
  - *Happy to receive more ……*

Seabed 2030 website: https://seabed2030.org/news/calling-all-hydrographic-and-oceanographic-authorities
Seabed 2030 Study Questionnaire: https://www.surveymonkey.com/r/S2030Survey



Courtesy: GEBCO Atlas Manager

It really is …..

Our One Ocean!

Seabed 2030 Vision:

100% of our Ocean Floor mapped by 2030

SEABED 2030

Thank you

THE NIPPON FOUNDATION

GEBCO 120 1903–2023

IHO International Hydrographic Organization

unesco Intergovernmental Oceanographic Commission

University of New Hampshire

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

National Oceanography Centre

AWI ALFRED-WEGENER-INSTITUT HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Stockholm University

NIWA Taihoro Nukurangi

GNS SCIENCE

Land Information New Zealand