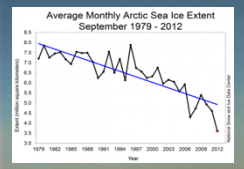
THE NIPPON FOUNDATION-GEBCO

SEABED 2030

Geo-Enabling for Our One Ocean

Jamie McMichael-Phillips
Director

THE NIPPON FOUNDATION | General Bathymetric Chart of the Oceans | GEBCO | IHO International Hydrographic Organization | unesco Intergovernmental Oceanographic Commission | 2021 2030 United Nations Decade of Ocean Science for Sustainable Development



13 September 2008

Arctic Ocean 80°N/156°W

Courtesy: Larry Mayer, UNH

12 September 2012

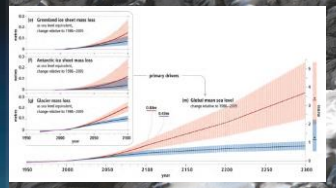
Ocean Pollution

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

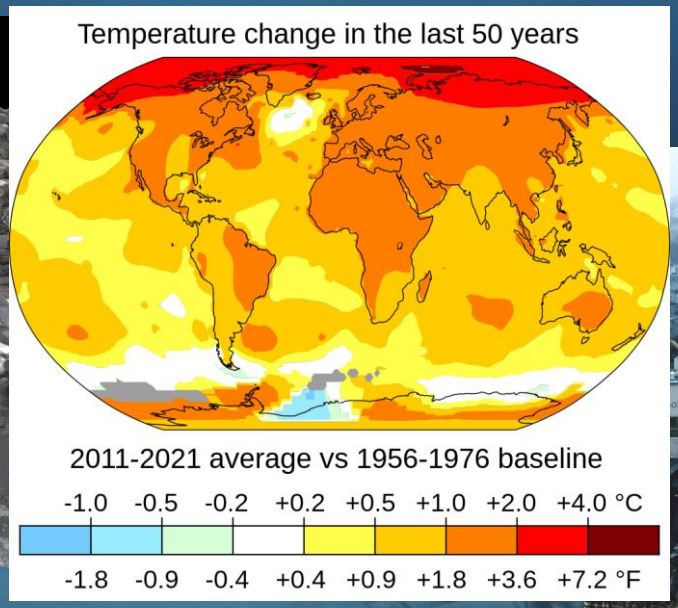


RCP8.5

RCP2.6

Ryder Fjord, N Greenland

Courtesy: Martin Jakobsson, SU



Climate

Courtesy: NASA

Alaska 1975

Courtesy: NOAA

DECADE OUTCOMES

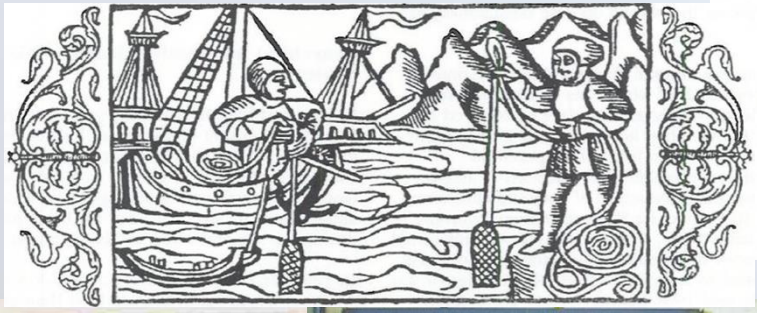
"THE OCEAN WE WANT"

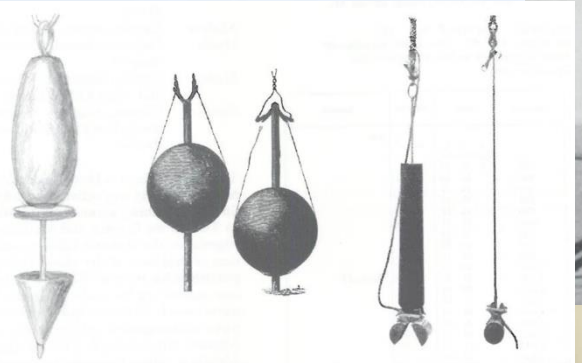
- A <u>clean</u> ocean
- A <u>healthy and resilient</u> ocean
- A <u>productive</u> ocean
- A <u>predicted</u> ocean
- A <u>safe</u> ocean
- An <u>accessible</u> ocean
- An <u>inspiring and engaging</u> ocean

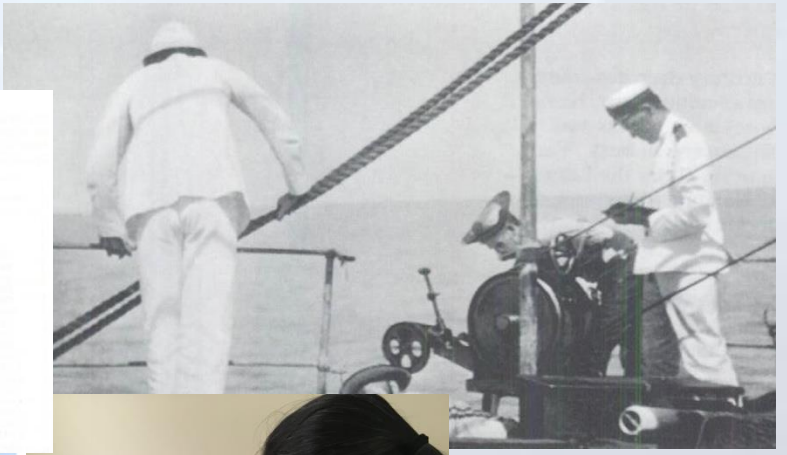
OCEAN DECADE CHALLENGES

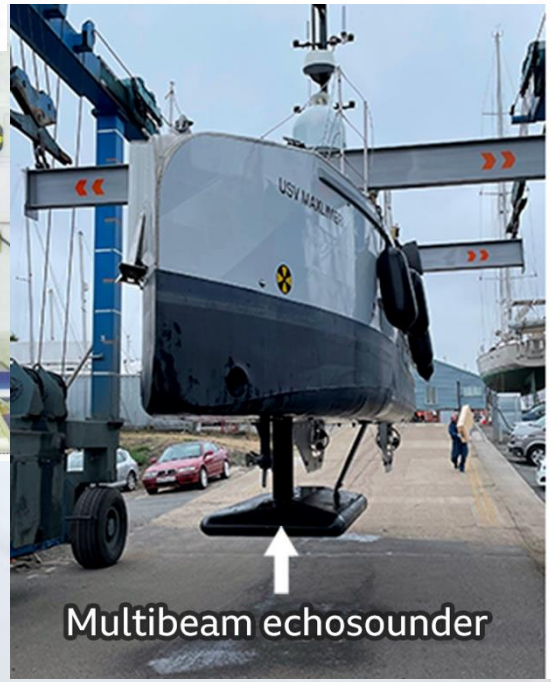
Pollutants	Coastal -bathymetry
Ecosystems	Mapping central
Food from the Ocean	Bathymetry dependent
Ocean economy	Mapping intensive
Ocean-climate nexus	Modelling, SLR, etc.
Ocean-related risks	Bathymetry intensive
Ocean observing system	Georeferencing
Ocean digital representation	Central facility
Capacity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

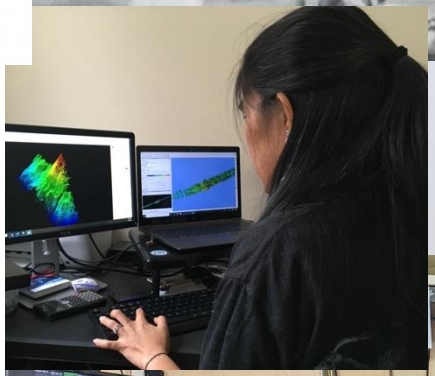
Gathering Depth Information

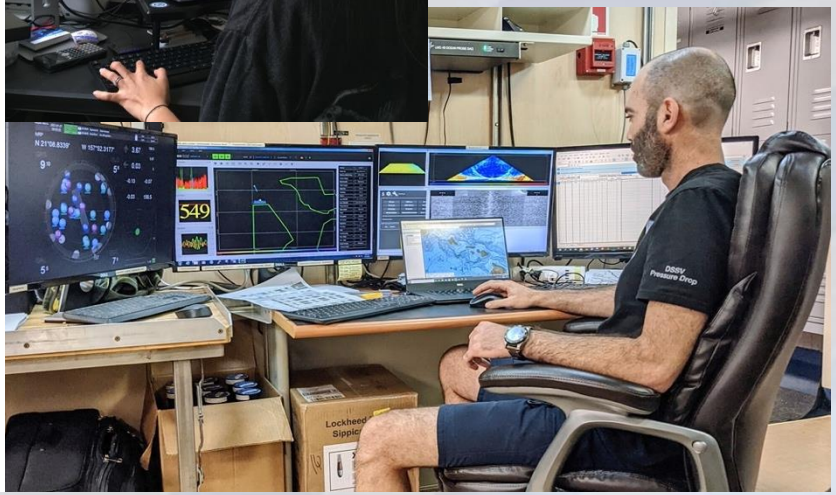




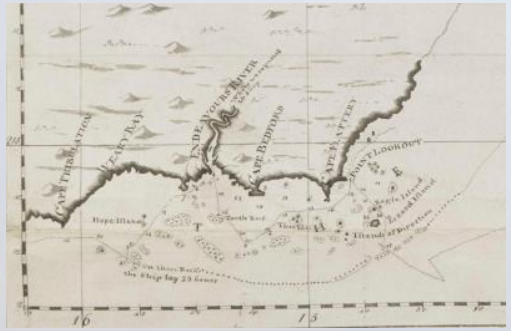




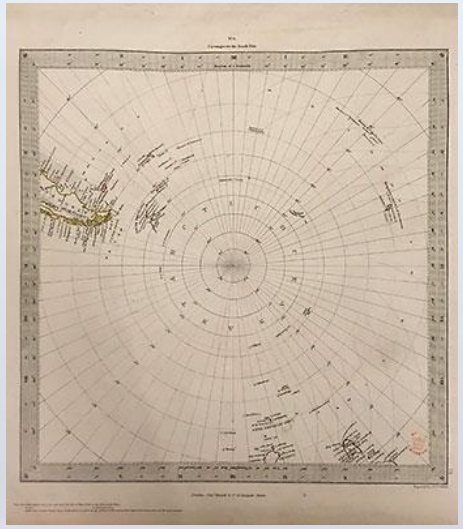




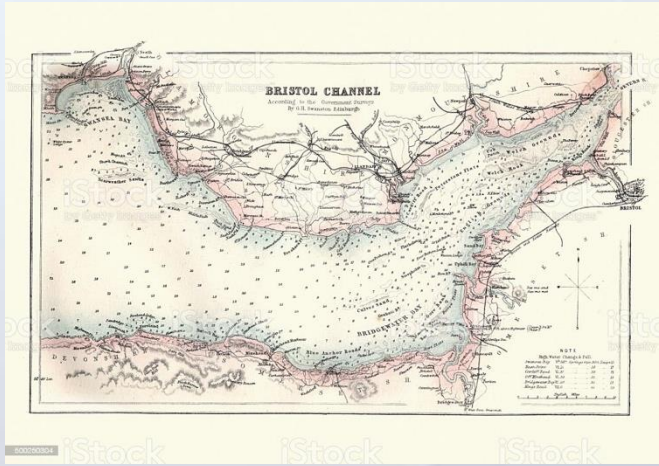
Portrayal as a Necessity



James Cook, 1770



Edward Bransfield, 1820 observation on 1844 chart



Bristol Channel, 1880

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The General Bathymetric Chart of the Oceans
GEBCO

Established 1903

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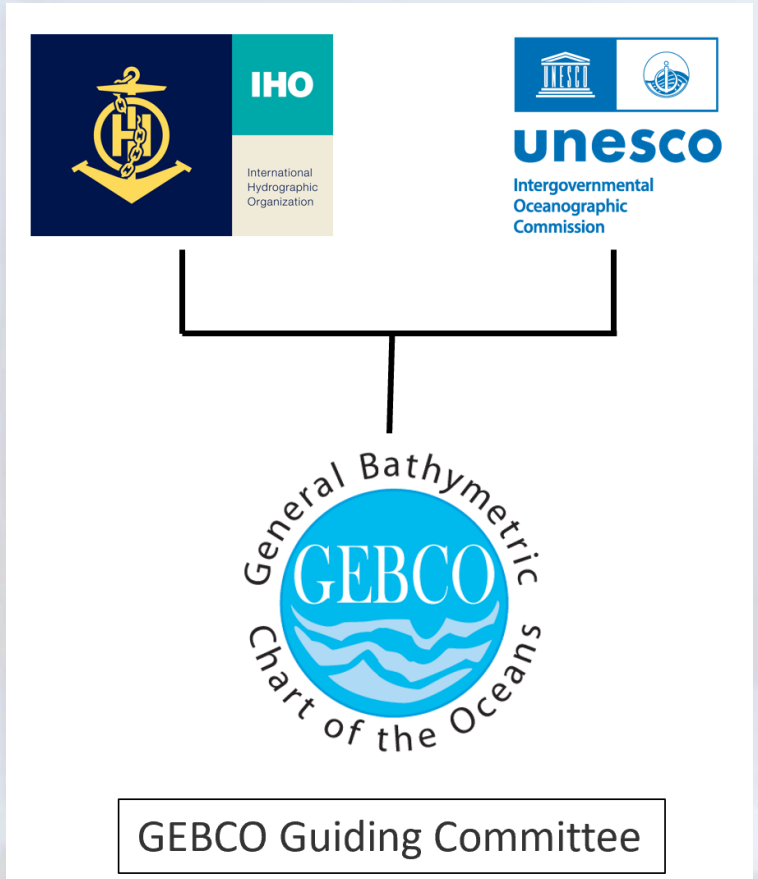
GEBCO



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 and hydrographers

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

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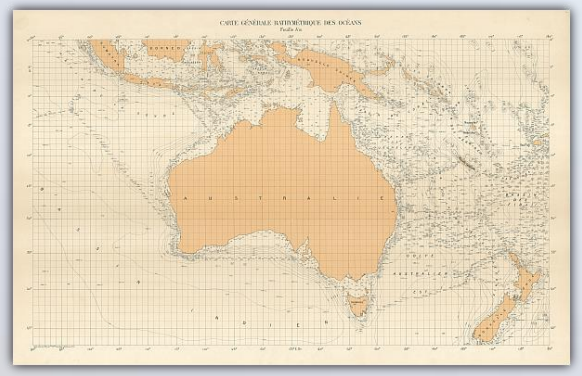
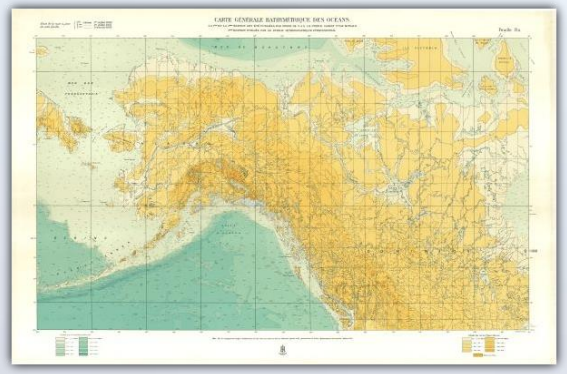
GEBCO over the decades

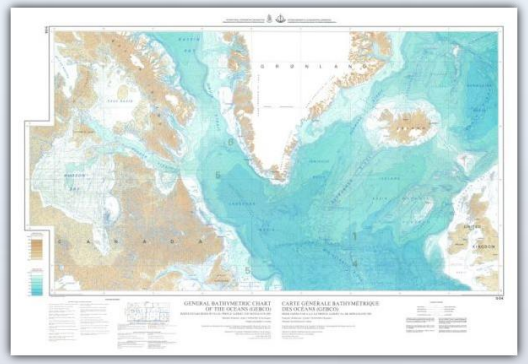
1st Edition 1903



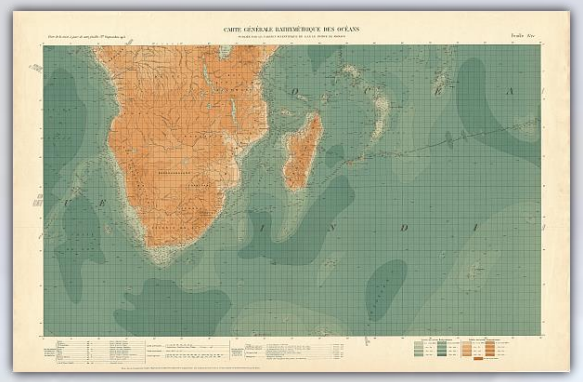
3rd Edition 1932-66



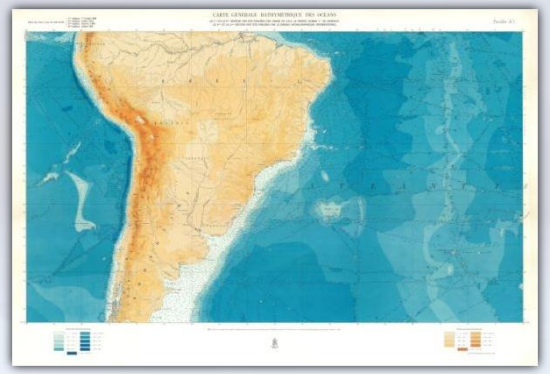
5th Edition 1973-82



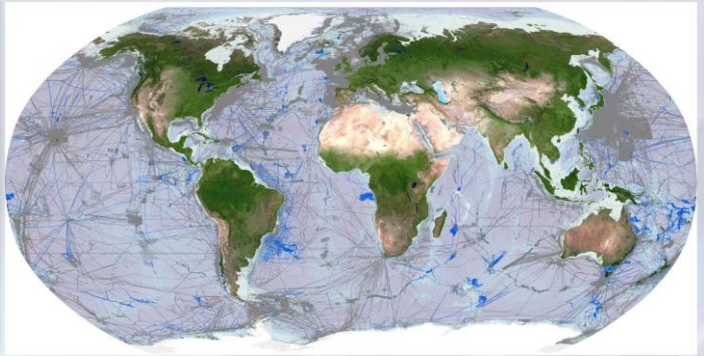
2nd Edition 1910-30



4th Edition 1958-73



2022 Release



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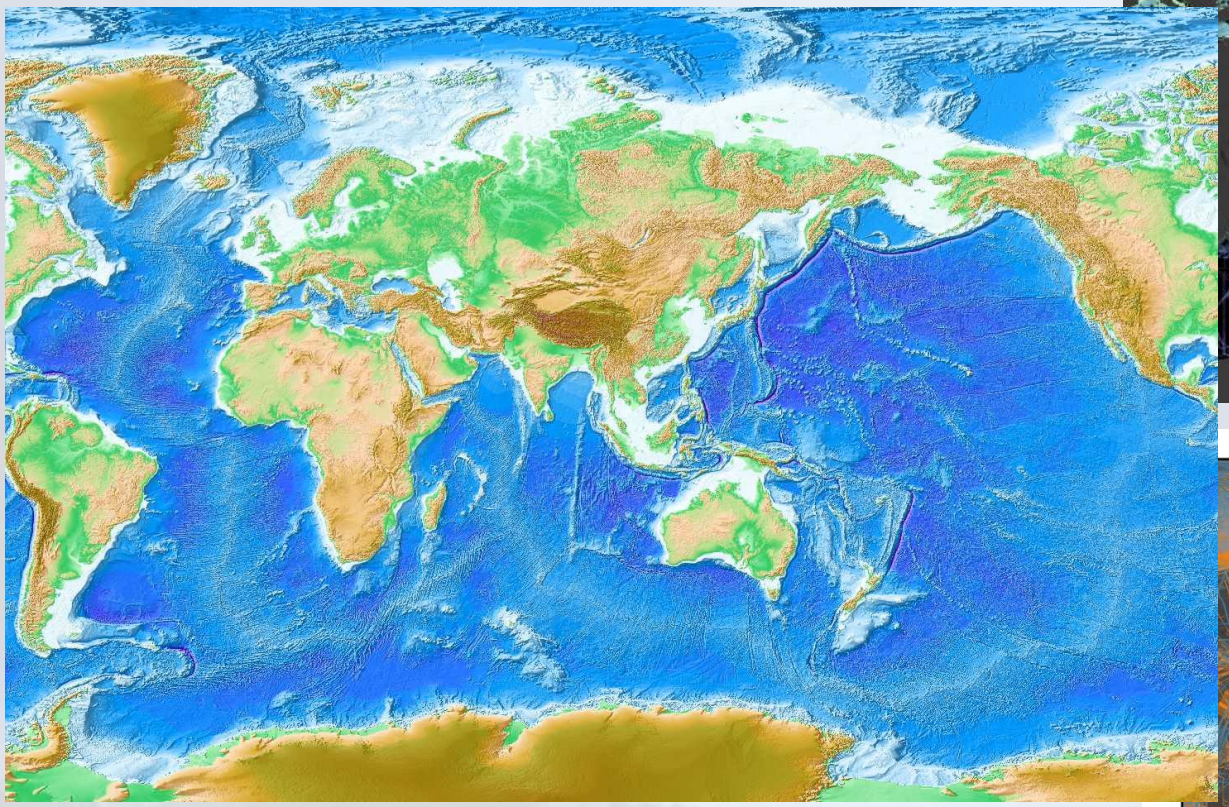
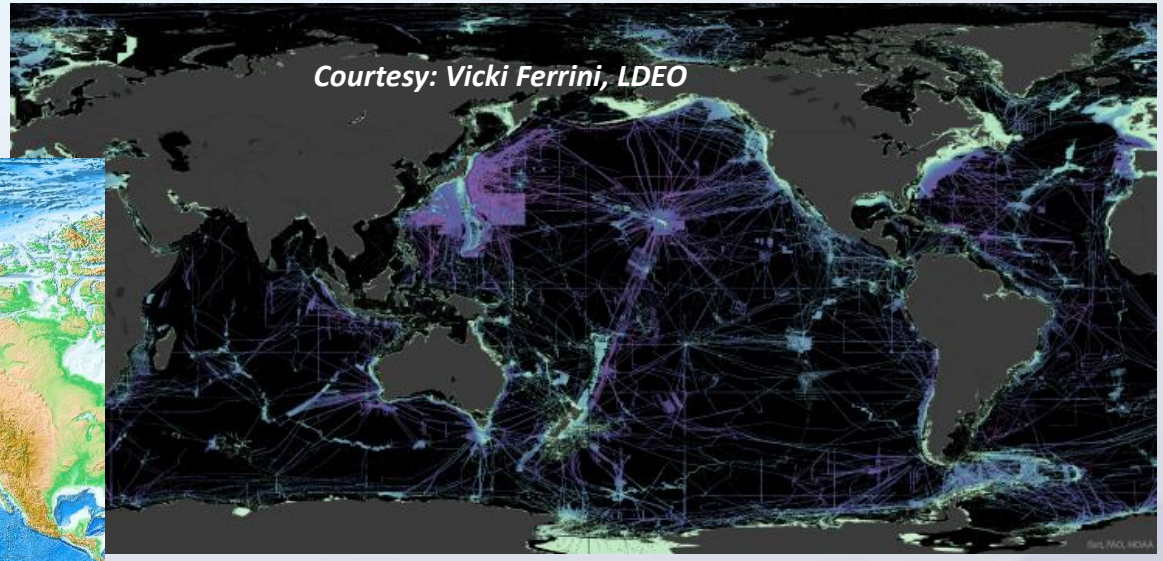
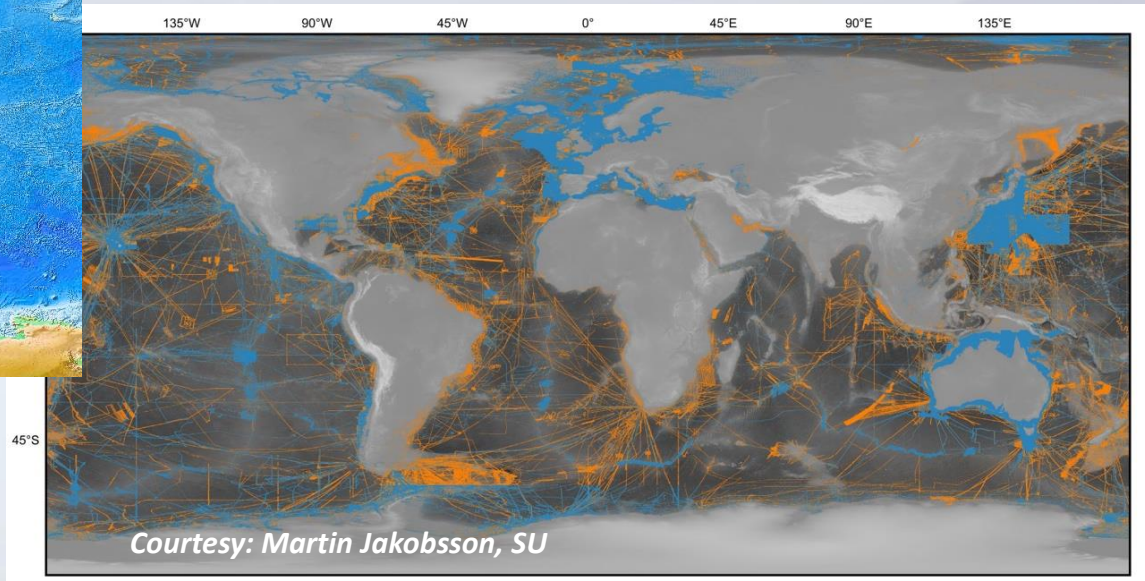
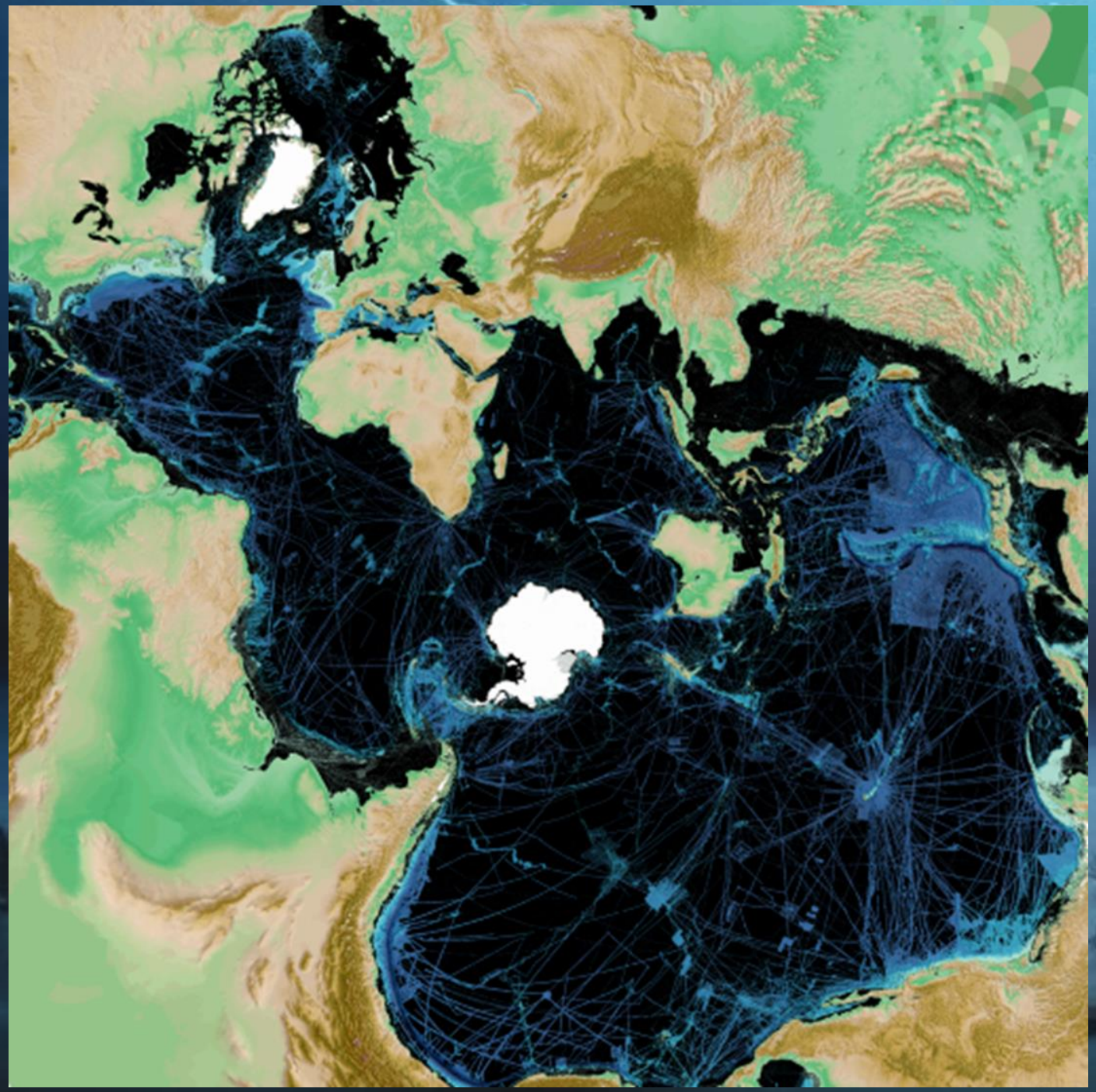
GEBCO Map Portrayal

Courtesy: GEBCO Atlas Manager









It really is …..

Our One Ocean!

Seabed 2030 Vision:

100% of our Ocean Floor mapped by 2030

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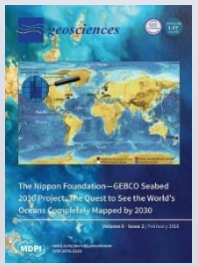
Seabed 2030

Collaborative project between The Nippon Foundation and GEBCO to inspire complete mapping of the world's ocean by 2030 and 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



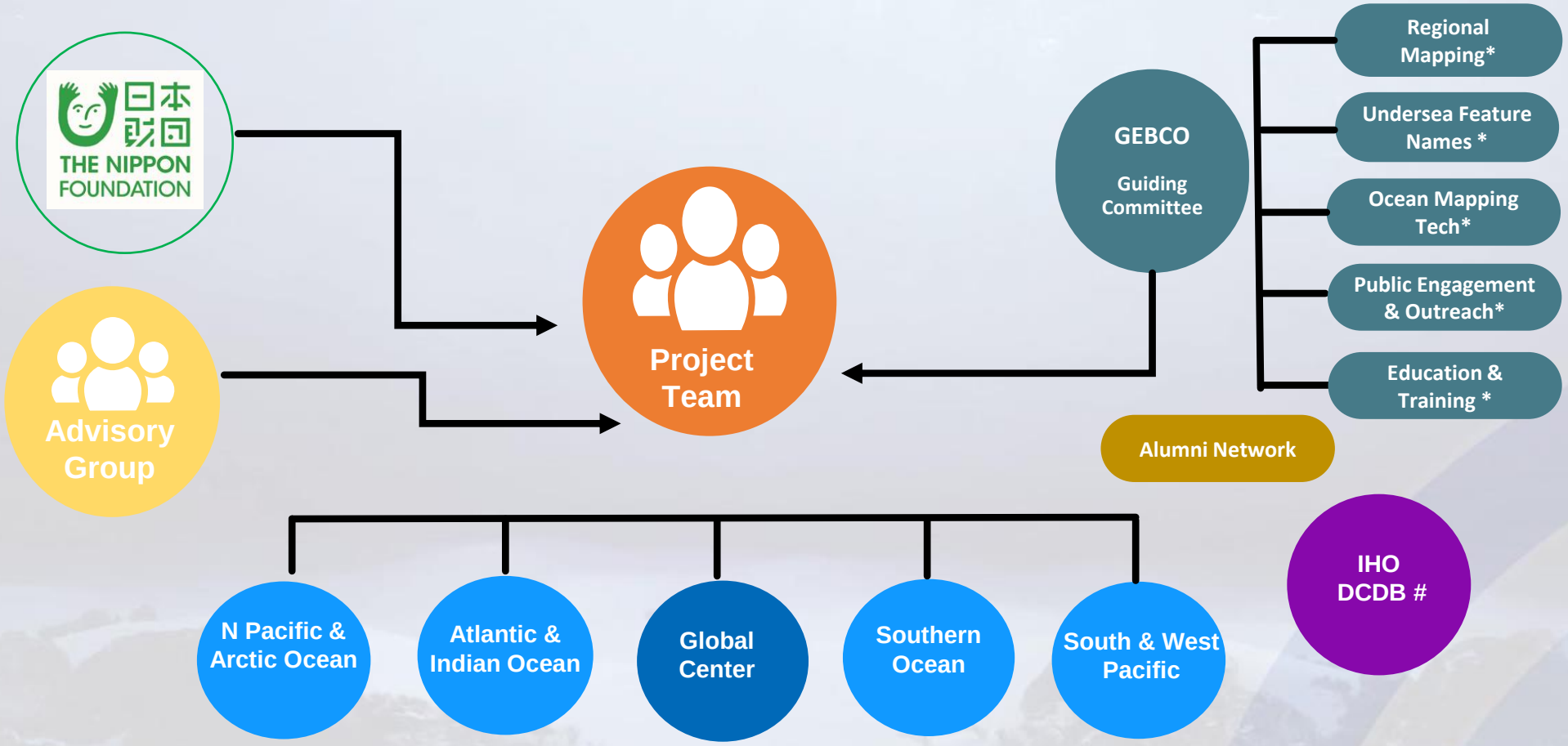
THE OCEAN CONFERENCE
UNITED NATIONS, NEW YORK, 5-9 JUNE 2017

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Endorsed Decade Programme

June 2016 → **June 2017** → **June 2021**

Seabed 2030 Network

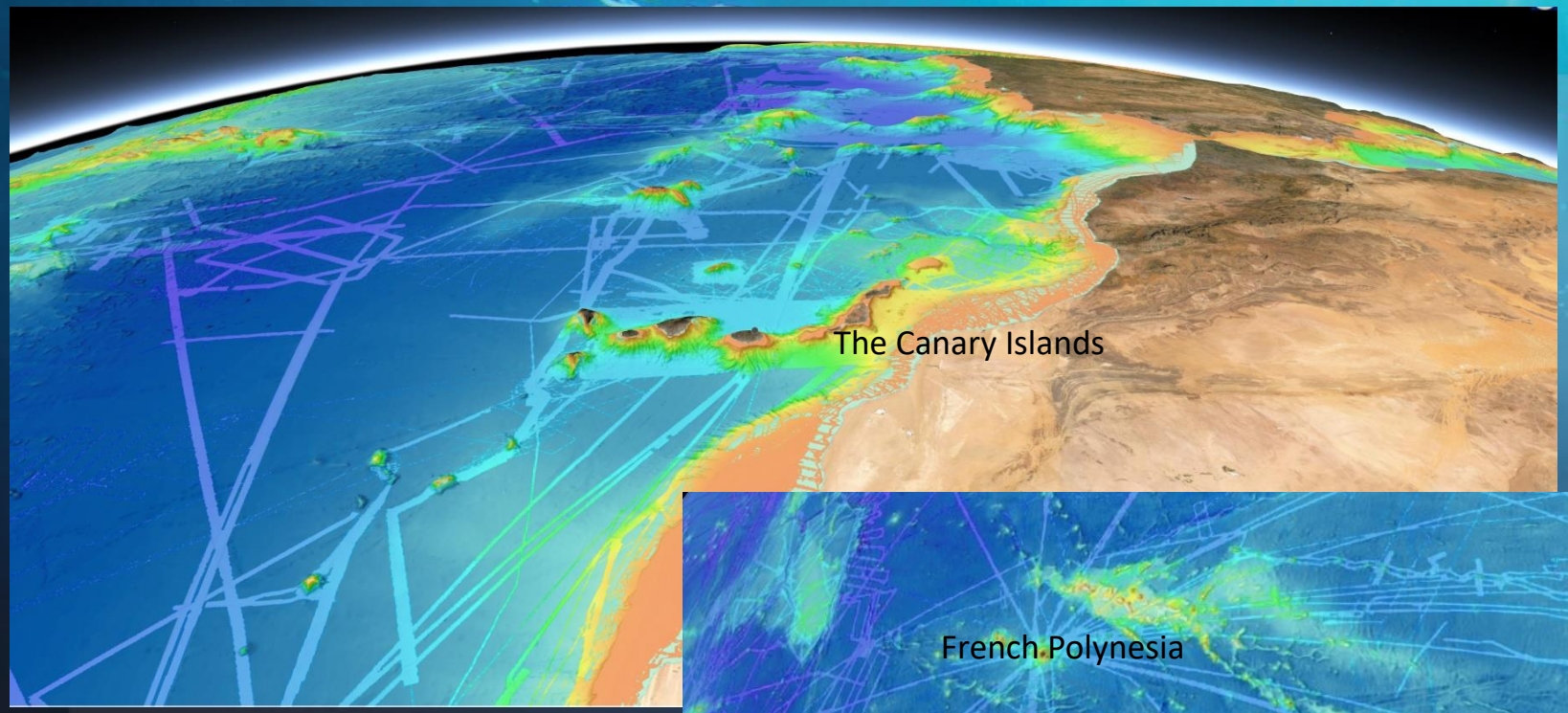


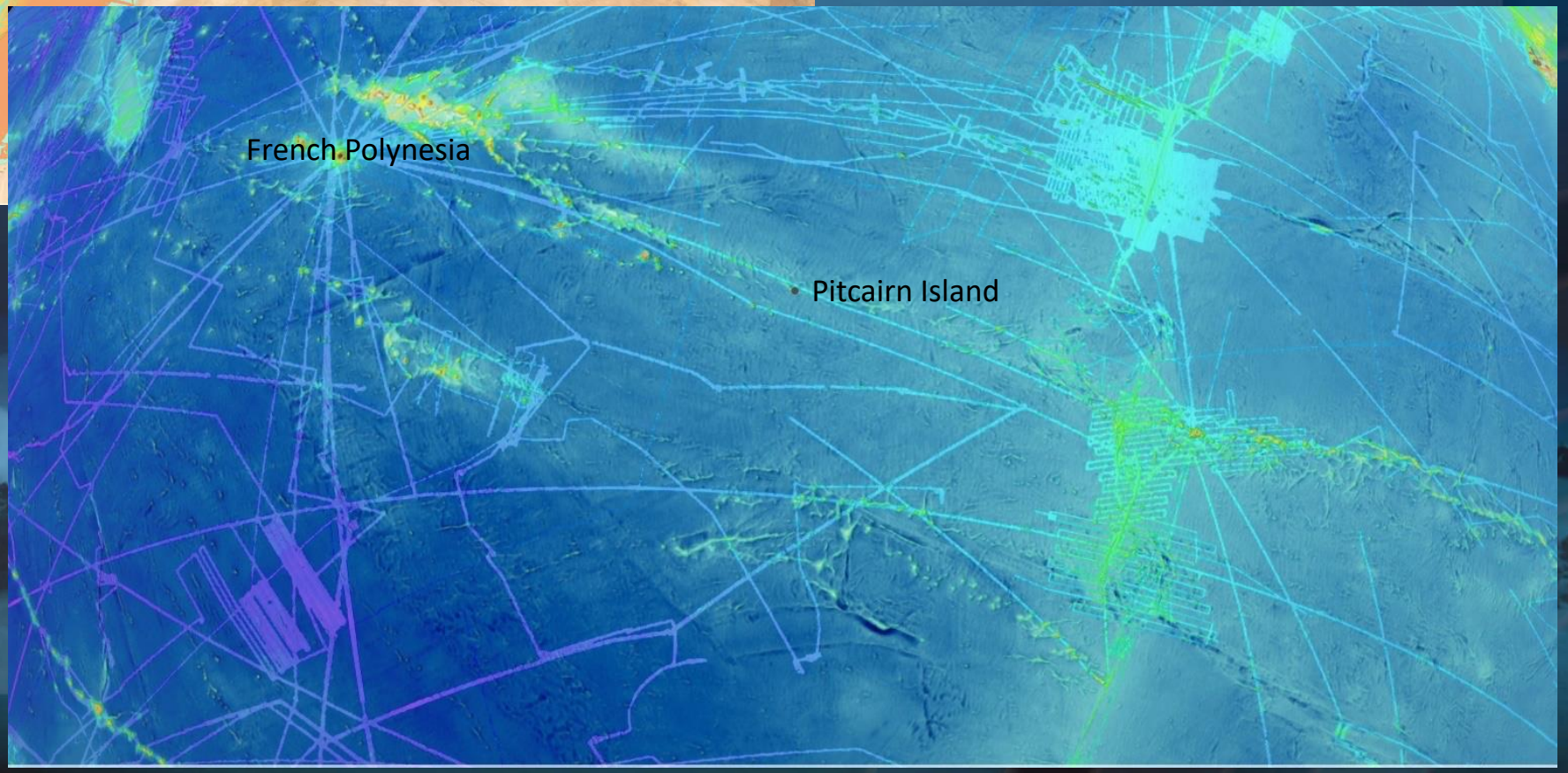
4 “Regional Centers” + 1 “Global Center”

(* GEBCO Sub Committees)

(# Data Centre for Digital Bathymetry)

Paucity of Depth Information

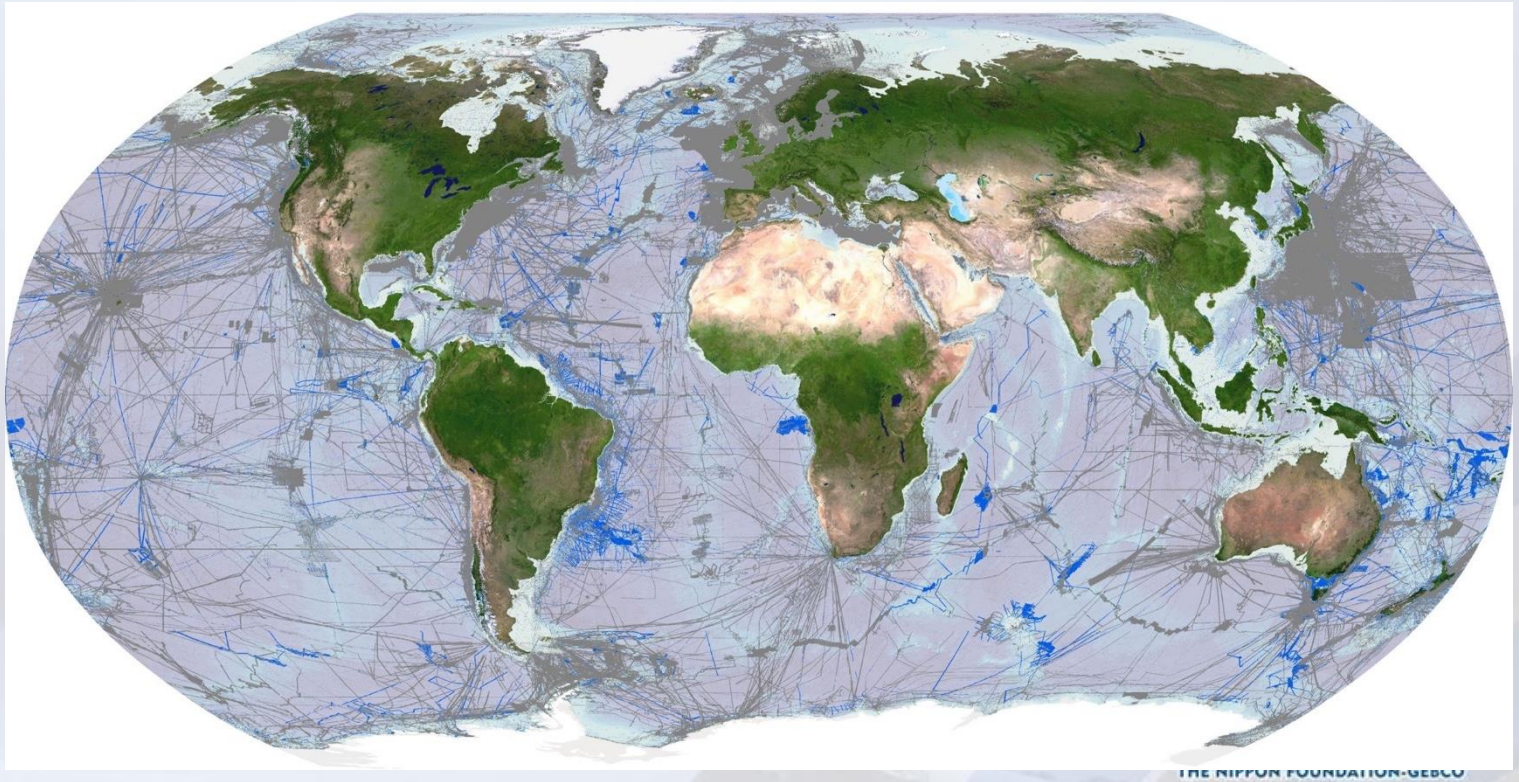




Progress so far…

GEBCO 2022 Grid Delivery

- GEBCO Grid stood at 6% coverage when Seabed 2030 began
- Ocean mapping coverage now stands at **23.4%** (June 2022)
- Still over 3/4 of the ocean floor to be mapped



Data to GEBCO 2021
Data additions to 2022

Courtesy: Pauline Weatherall, NOC

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Collaboration through Partnerships

- **Mapping our Ocean Frontiers**
  - **IB *Oden* - Arctic**
  - **EV *Nautilus* & DSSV *Pressure Drop* - Pacific**
  - **USCGC *Healy* - NW Passage**
  - **RV *Polarstern* - Atlantic & Southern Ocean**
  - **RV *Tangaroa* - Pacific**
  - **CCGS *John P Tully* – Pacific**
  - **RV *Pourquoi Pas* - Atlantic**

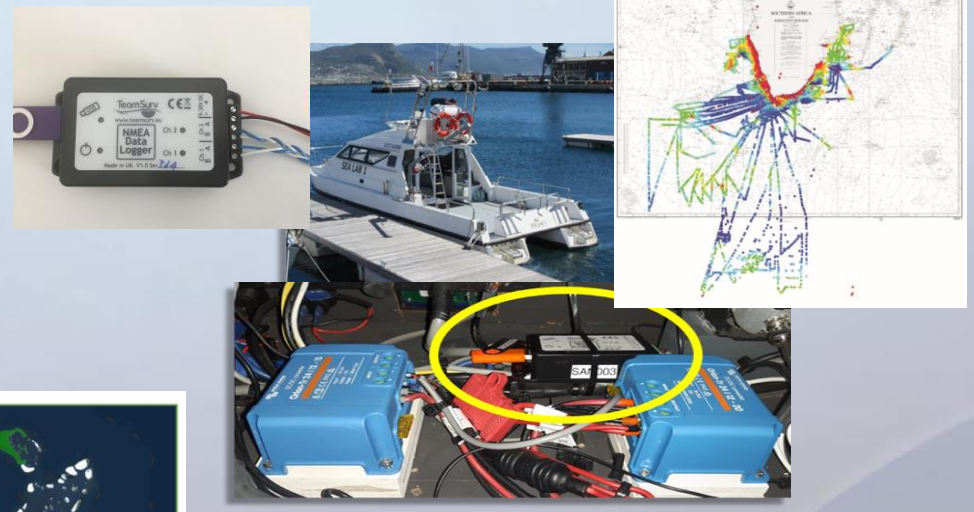
Credits (clockwise from top left): Stockholm University, Ocean Exploration Trust , Caladan Oceanic, Canadian Coast Guard, Genavir/Ifremer, NIWA,, AWI, US Coast Guard

Collaboration through Partnerships

- **IHO Crowd Sourcing Initiative – SB2030 support**
  - **South Africa/Greenland/Palau**
  - **SW Pacific**
  - **Global organisations**

- **Satellite Derived Bathy (SDB)**
  - **Madagascar**
  - **Federated States of Micronesia**
  - **Maldives**

- **Fugro transit bathy - 2 million sq km milestone**



Courtesy: SANHO

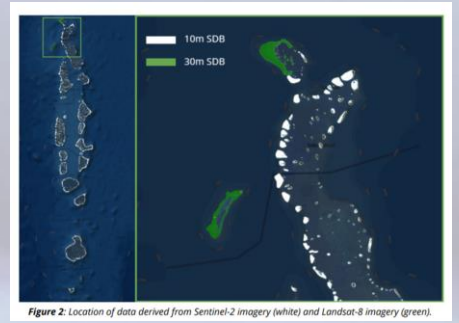


Figure 2: Location of data derived from Sentinel-2 imagery (white) and Landsat-8 imagery (green).

Copyright: Fugro

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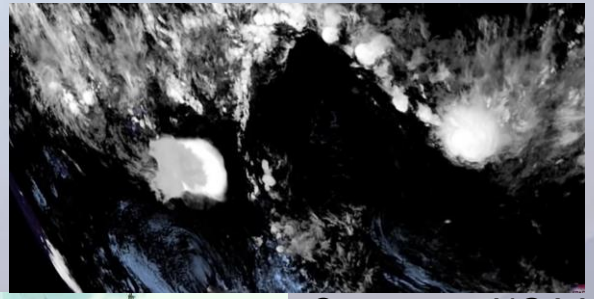
Collaboration through Partnerships

NIWA- Nippon Foundation Tonga Eruption Site Mapping Project TESMaP

- HTHH multi-science initiative
  - including bathymetry
- Phase 1 - RV Tangeroa
  - Conventionally crewed
- Phase 2 - USV Maxlimer
  - Remotely controlled from afar



Courtesy: NOAA

Courtesy: NIWA

Courtesy: SKI

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Collaboration through Partnerships

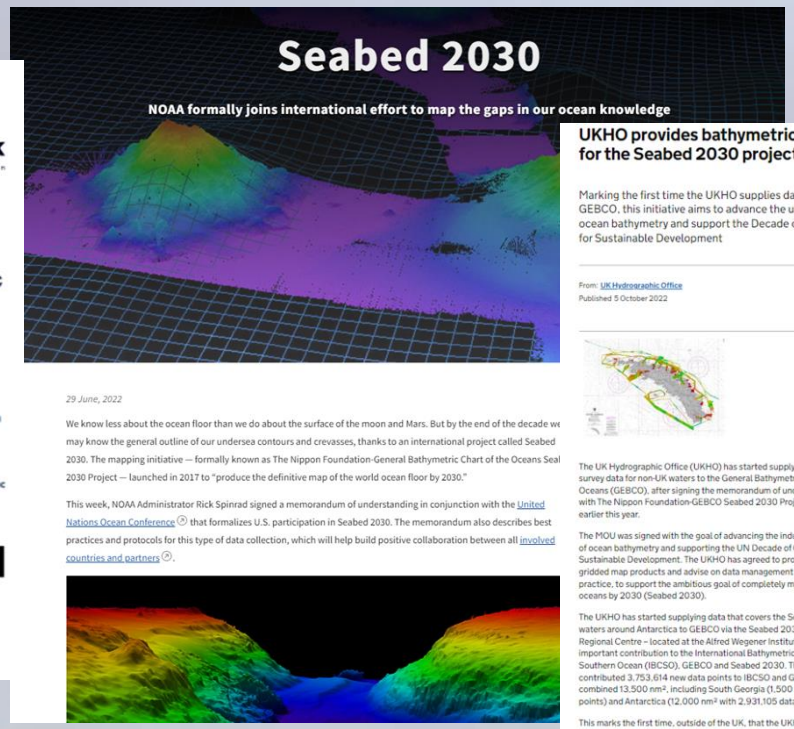
- **Wide variety of data donors**

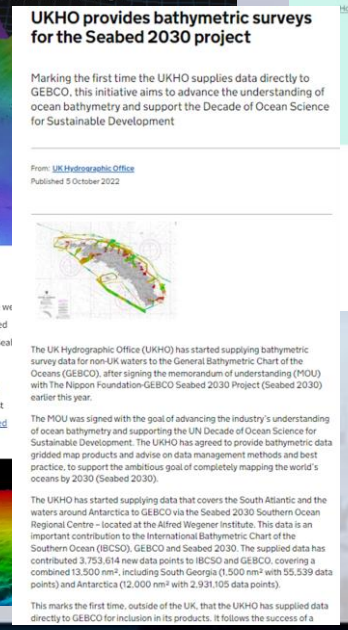
plus

- **Growing number of MOU partners**

and

- **Increasing collaboration with academia, industry, philanthropy & governments**





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How do I contribute my data?

The process will vary 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

THE NIPPON FOUNDATION-GEBCO SEABED 2030

Thank you

THE NIPPON FOUNDATION

General Bathymetric Chart of the Oceans
GEBCO

IHO
International Hydrographic Organization

unesco
Intergovernmental Oceanographic Commission

University of New Hampshire

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

National Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

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

Stockholm University

NIWA
Taihoro Nukurangi

GNS SCIENCE

Land Information New Zealand
Toitū te whenua

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