

THE NIPPON FOUNDATION-GEBCO

SEABED

2030

Geo-Enabling
for
Our One Ocean

Jamie McMichael-Phillips
Director



IHO

International
Hydrographic
Organization

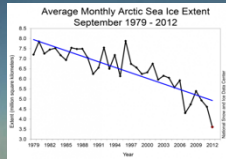


Intergovernmental
Oceanographic
Commission



2021
2030 United Nations Decade
of Ocean Science
for Sustainable Development

Courtesy: Larry Mayer, UNH

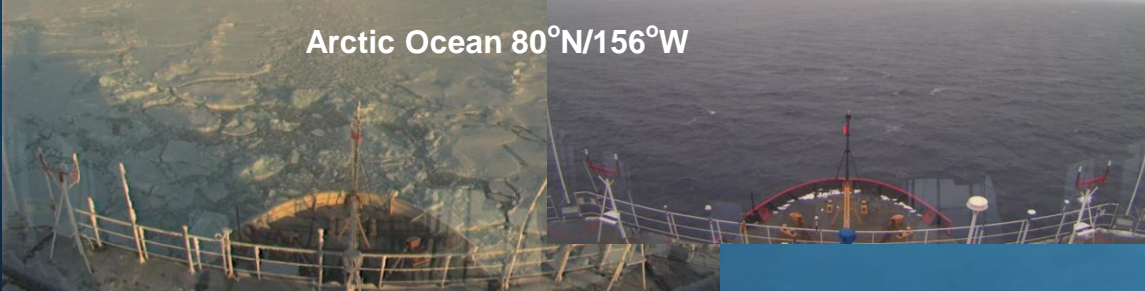


13 September 2008



12 September 2012

Arctic Ocean 80°N/156°W



Ocean Pollution

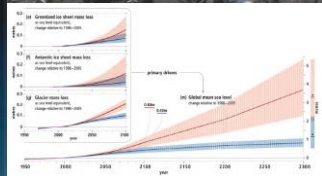
Courtesy: Larry Mayer, UNH



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



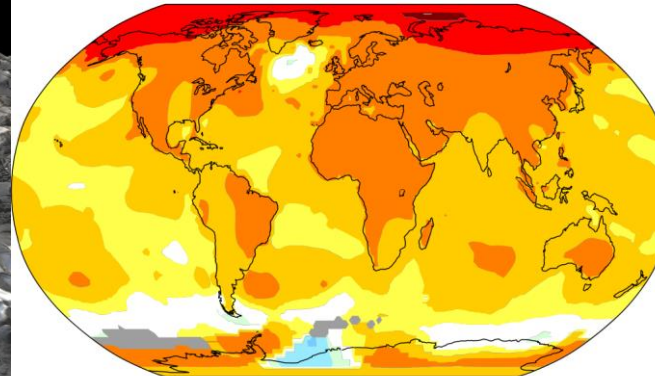
RCP8.5

RCP2.6

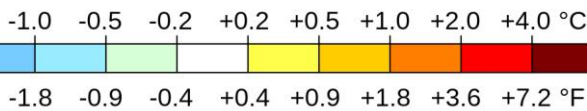
Ryder Fjord, N Greenland

Courtesy: Martin Jakobsson, SU

Temperature change in the last 50 years



2011-2021 average vs 1956-1976 baseline



Climate

Courtesy: NASA



Alaska 1975

Courtesy: NOAA

OCEAN DECADE CHALLENGES



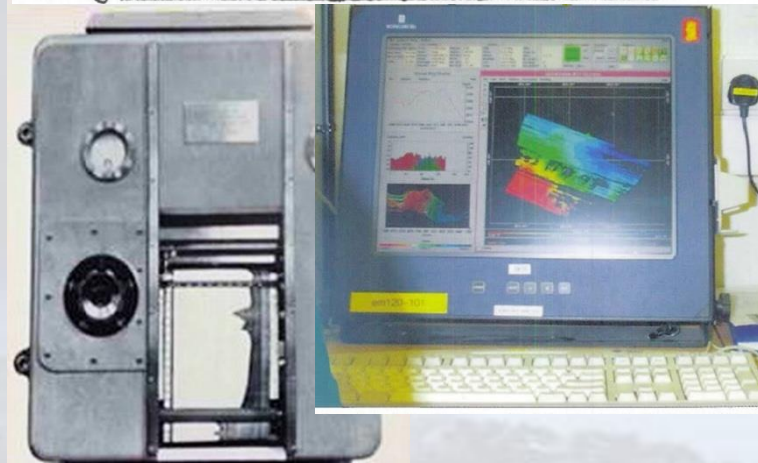
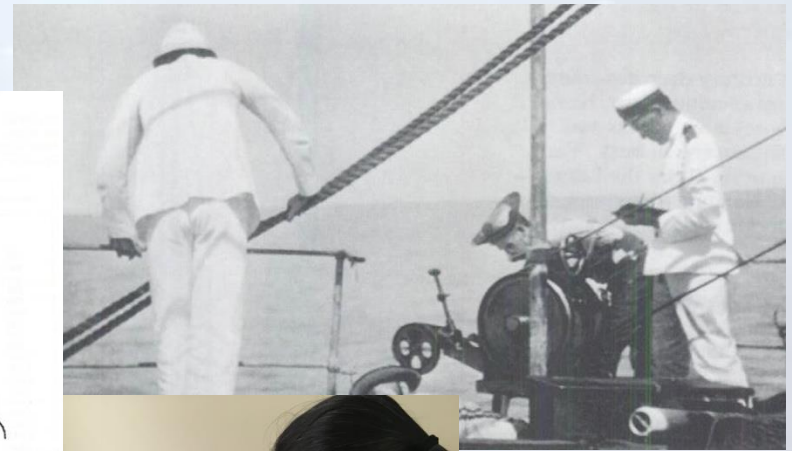
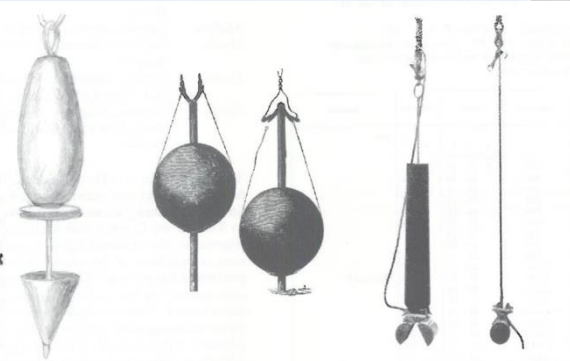
DECADE OUTCOMES

"THE OCEAN WE WANT"

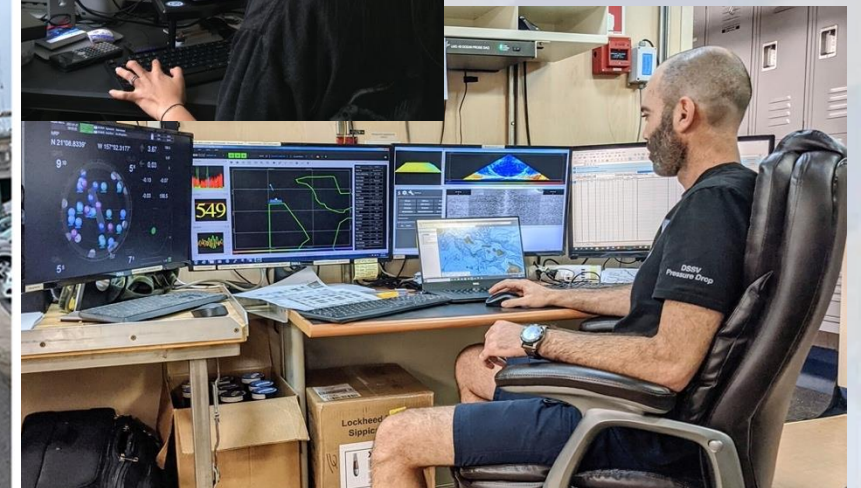
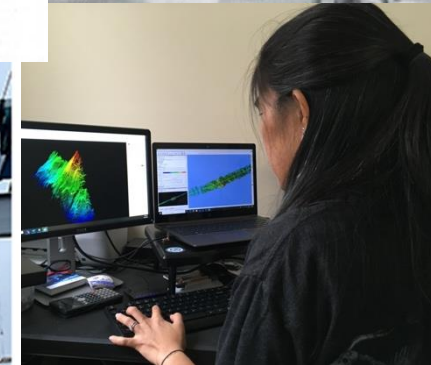
- A clean ocean
- A healthy and resilient ocean
- A productive ocean
- A predicted ocean
- A safe ocean
- An accessible ocean
- An inspiring and engaging ocean

	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



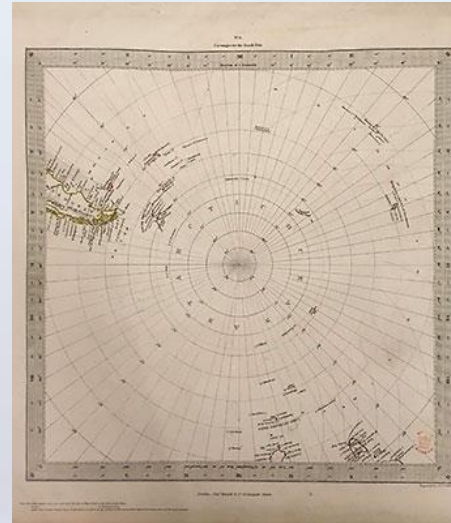
Multibeam echosounder



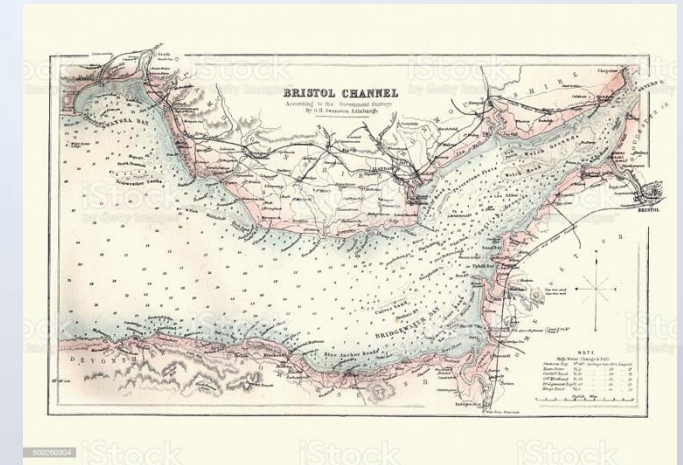
Portrayal as a Necessity



James Cook, 1770



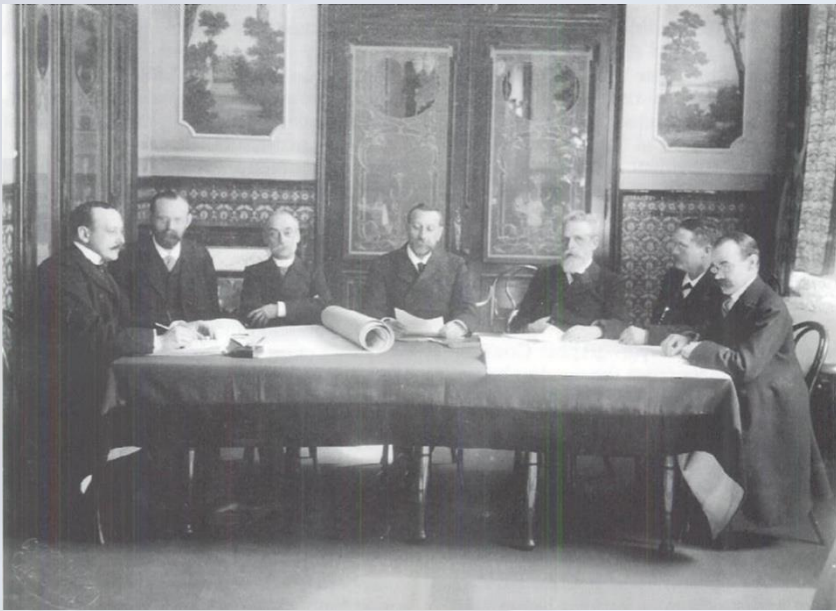
Edward Bransfield, 1820 observation on 1844 chart



Bristol Channel, 1880

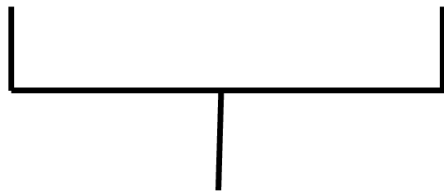
The General Bathymetric Chart of the Oceans

GEBCO



Established
1903





GEBCO Guiding Committee

GEBCO

Today the **General Bathymetric Chart of the Oceans** 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

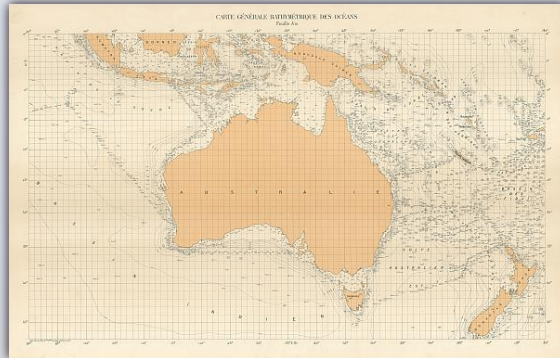
The GEBCO community is largely a voluntary force of international scientists and hydrographers

Seabed 2030 is an “accelerator” to fast-track GEBCO’s aim

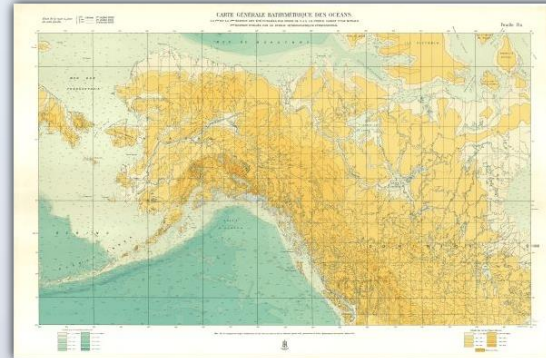


GEBCO over the decades

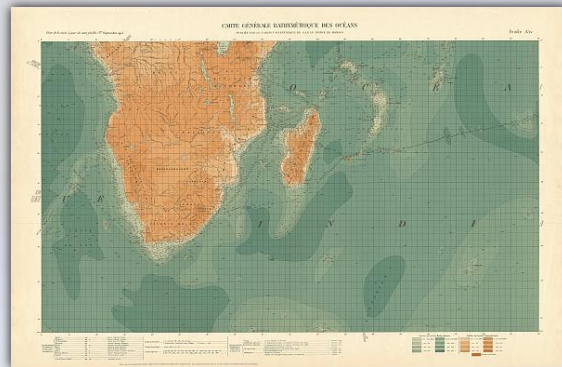
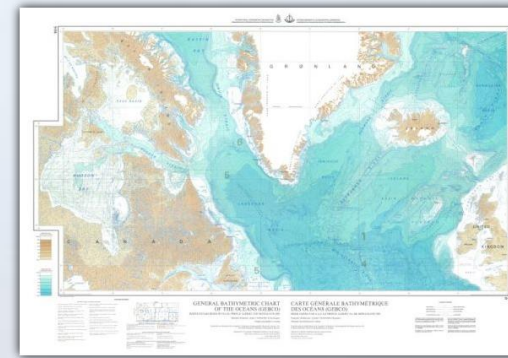
1st Edition 1903



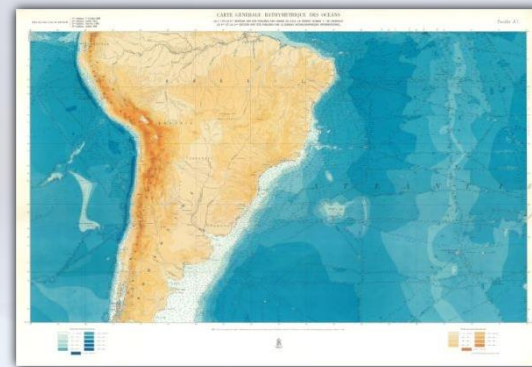
3rd Edition 1932-66



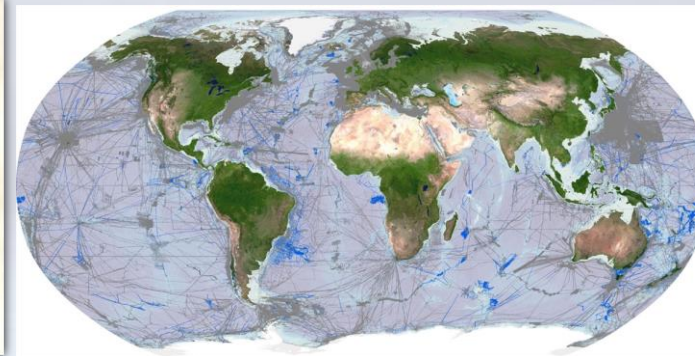
5th Edition 1973-82



2nd Edition 1910-30



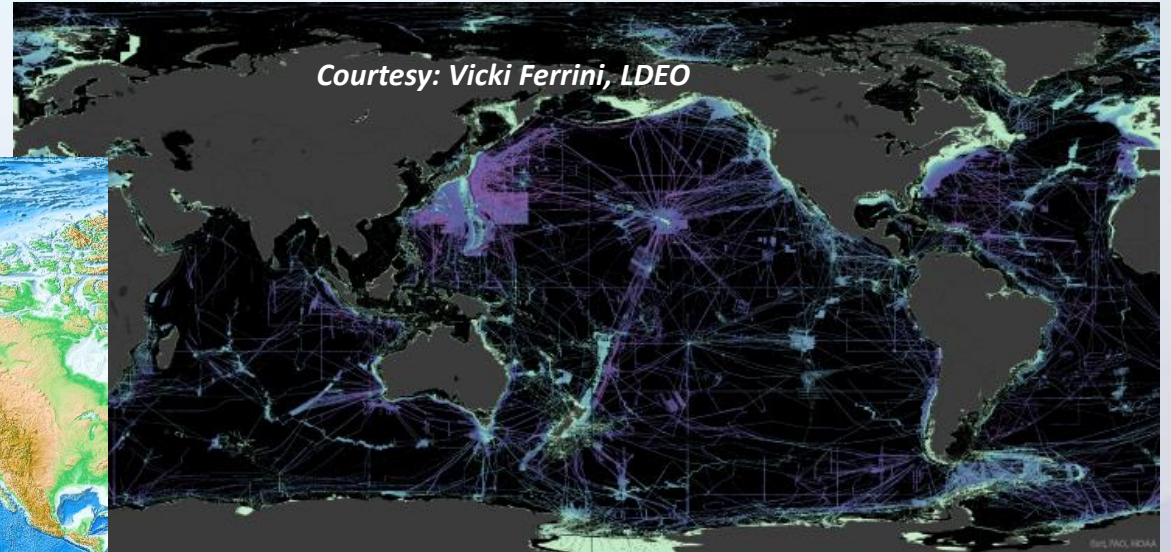
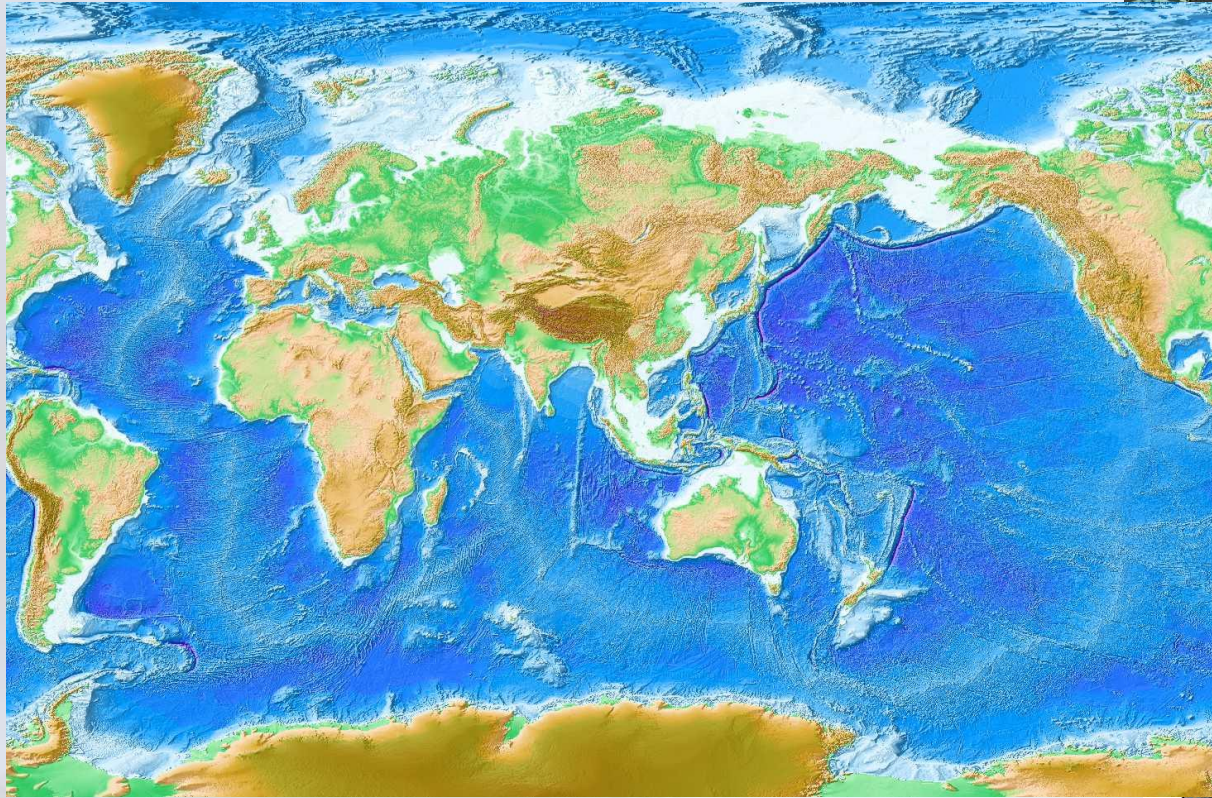
4th Edition 1958-73



2022 Release

GEBCO Map Portrayal

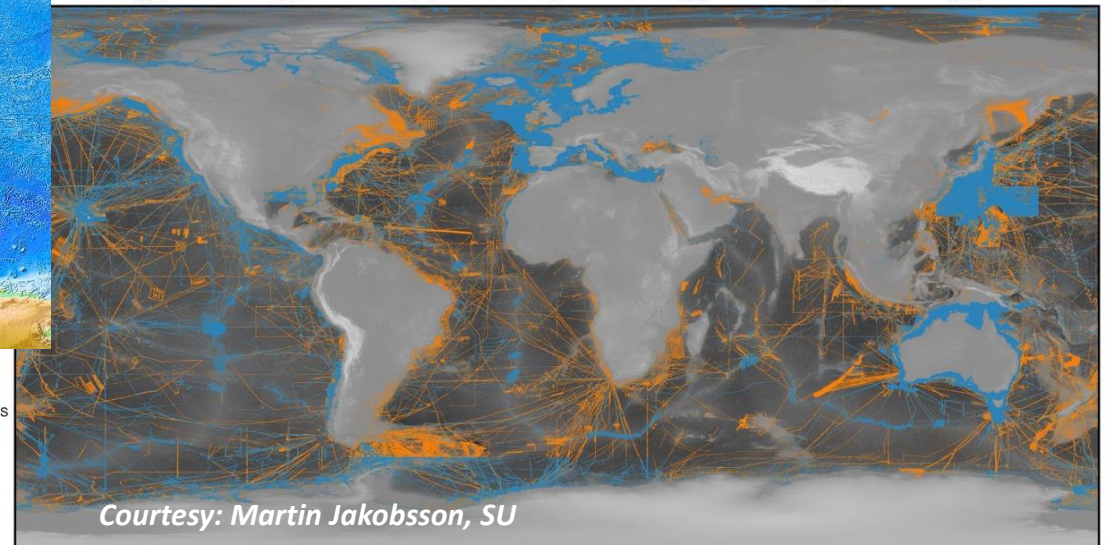
Courtesy: GEBCO Atlas Manager



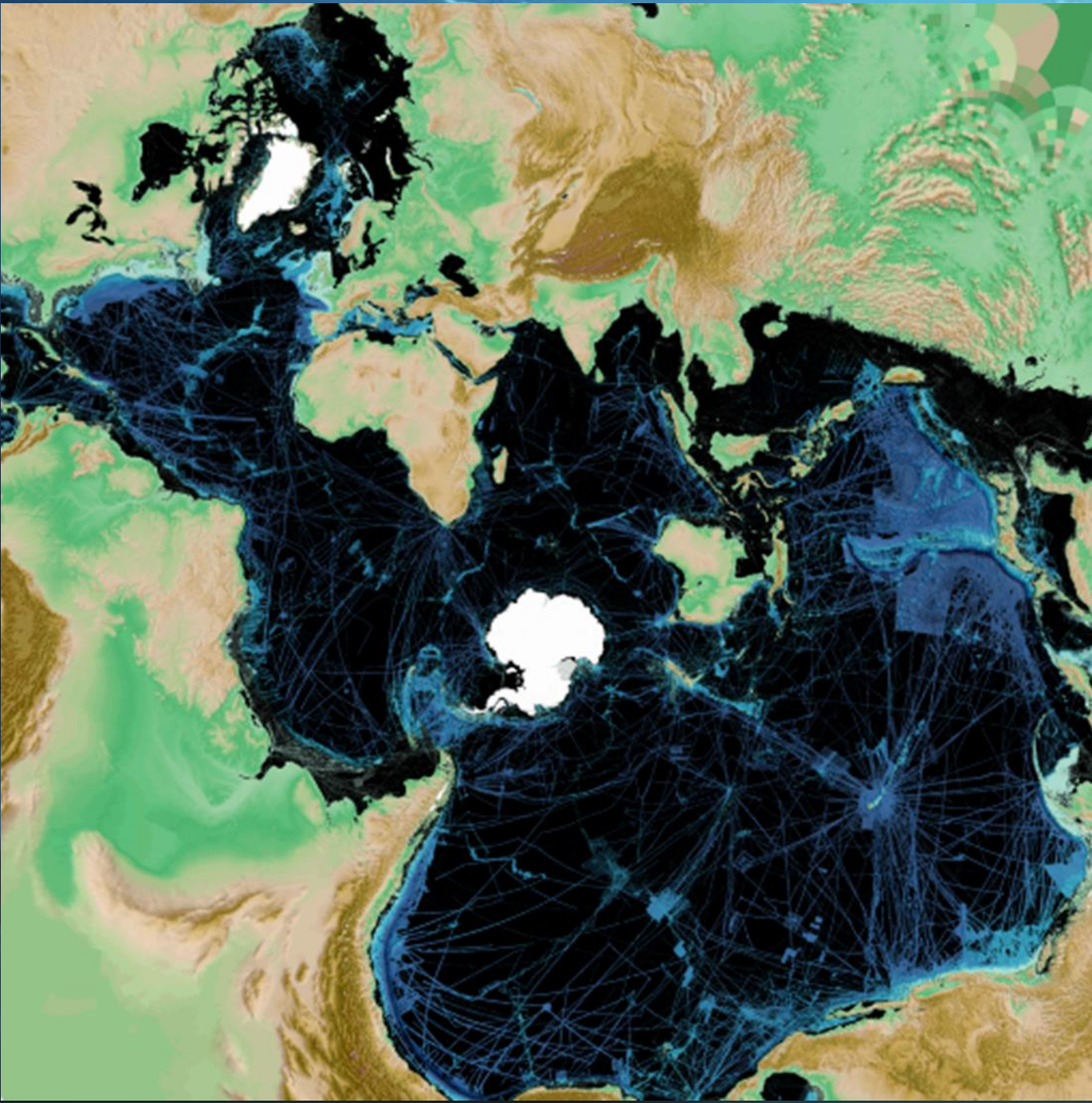
Courtesy: Vicki Ferrini, LDEO

135°W 90°W 45°W 0° 45°E 90°E 135°E

45°S



Courtesy: Martin Jakobsson, SU



It really is

Our One Ocean!

Seabed 2030 Vision:

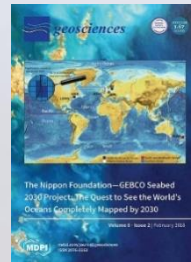
**100% of our Ocean Floor
mapped by 2030**



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



Endorsed Decade Programme

June 2016

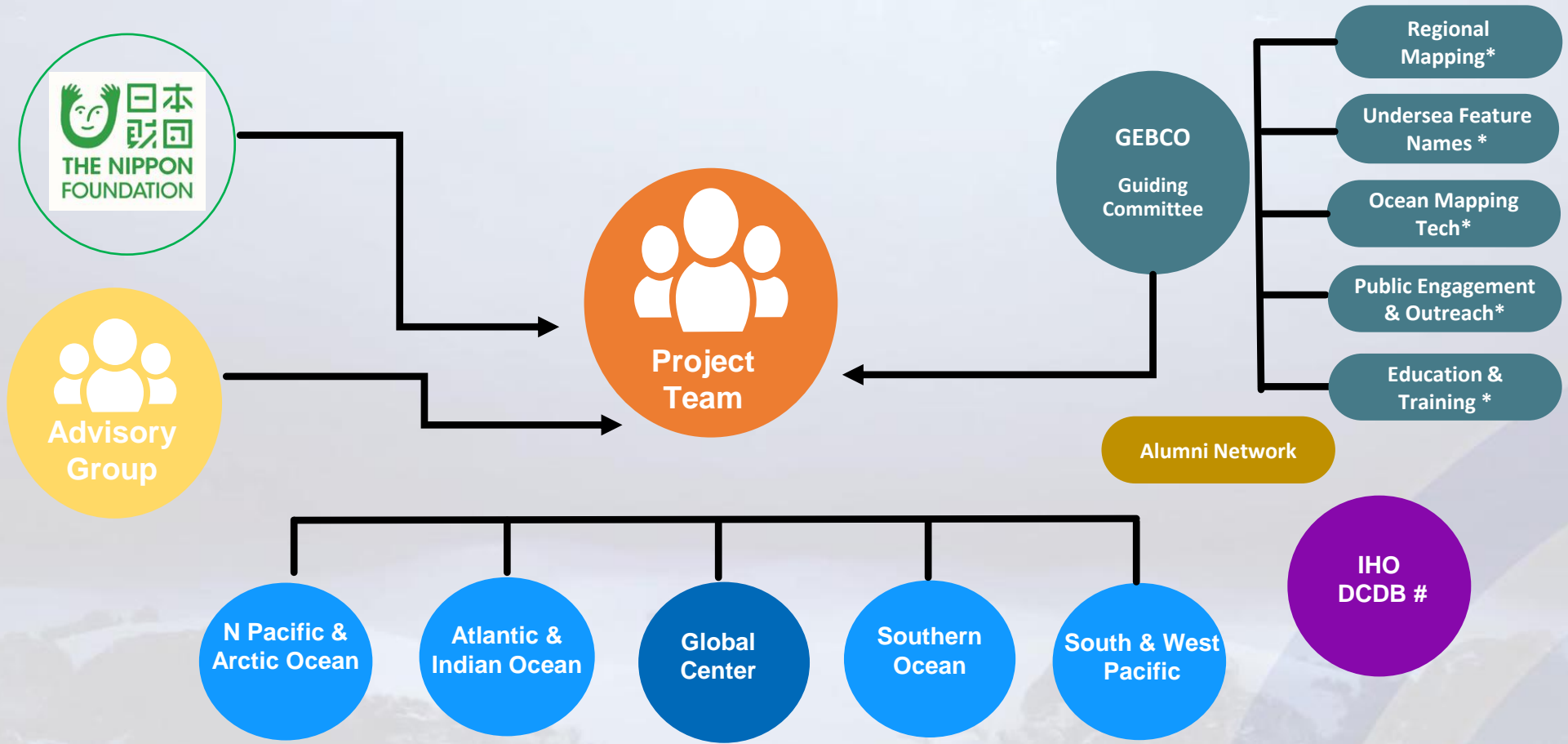


June 2017



June 2021

Seabed 2030 Network

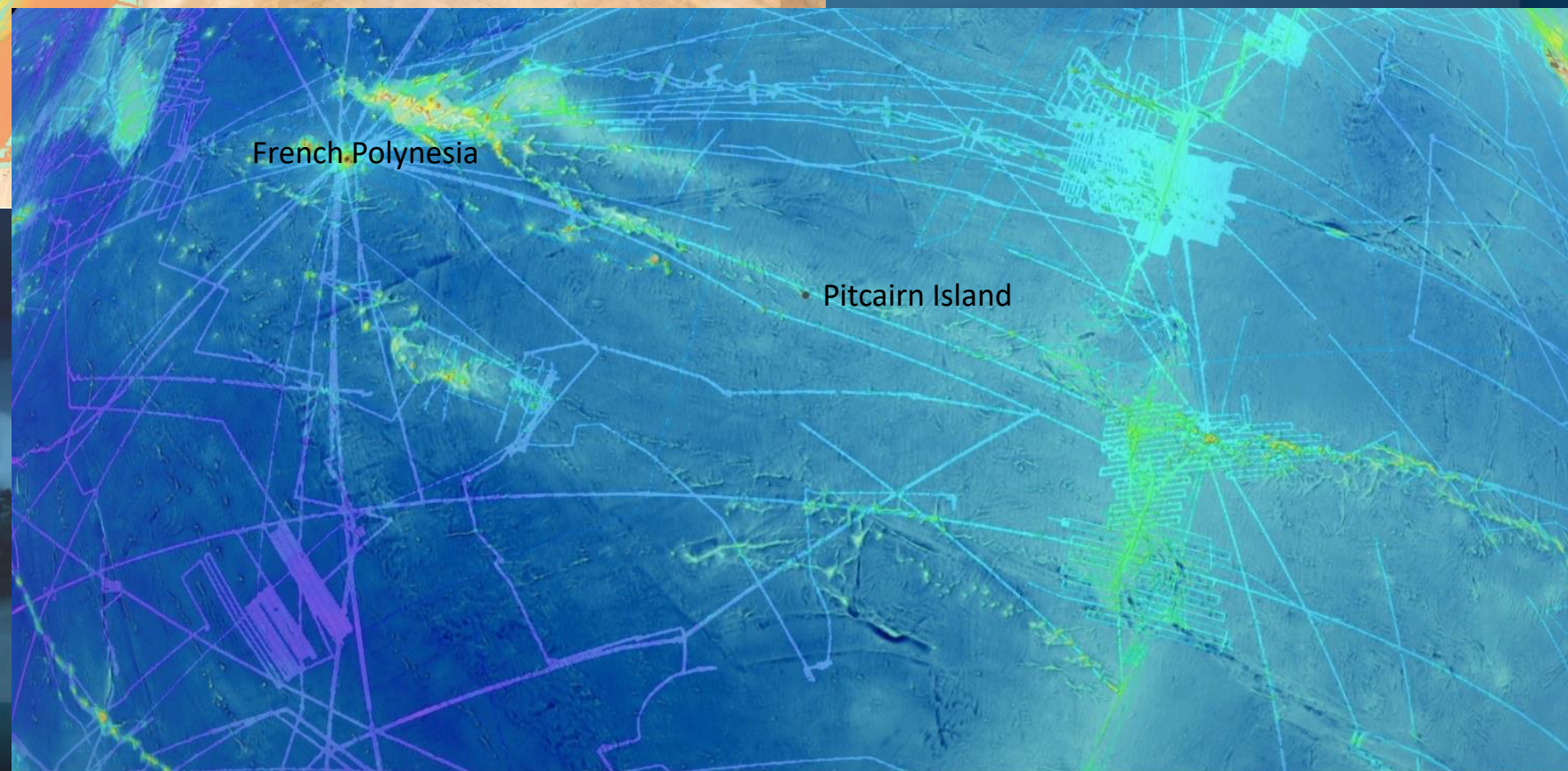
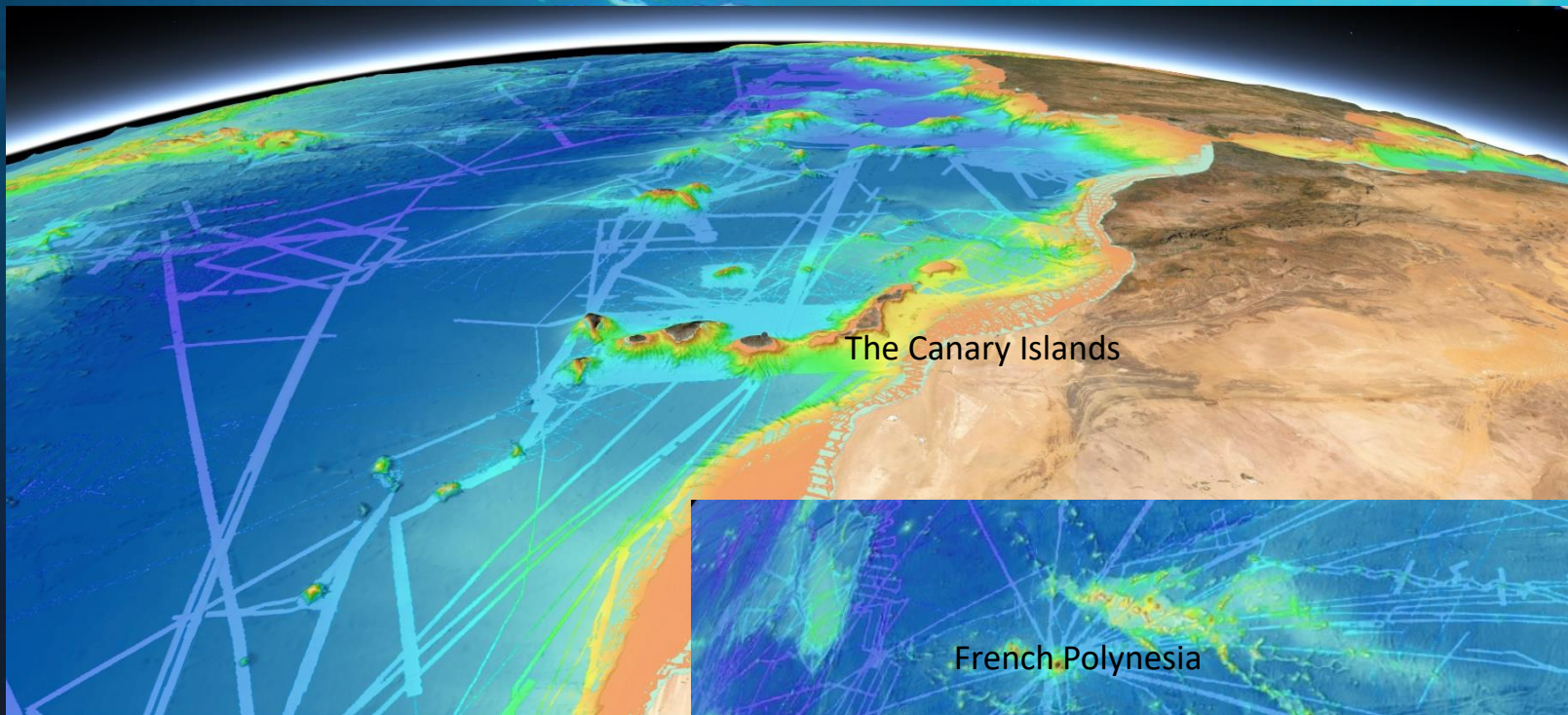


4 “Regional Centers” + 1 “Global Center”

(* GEBCO Sub Committees)

(# Data Centre for Digital Bathymetry)

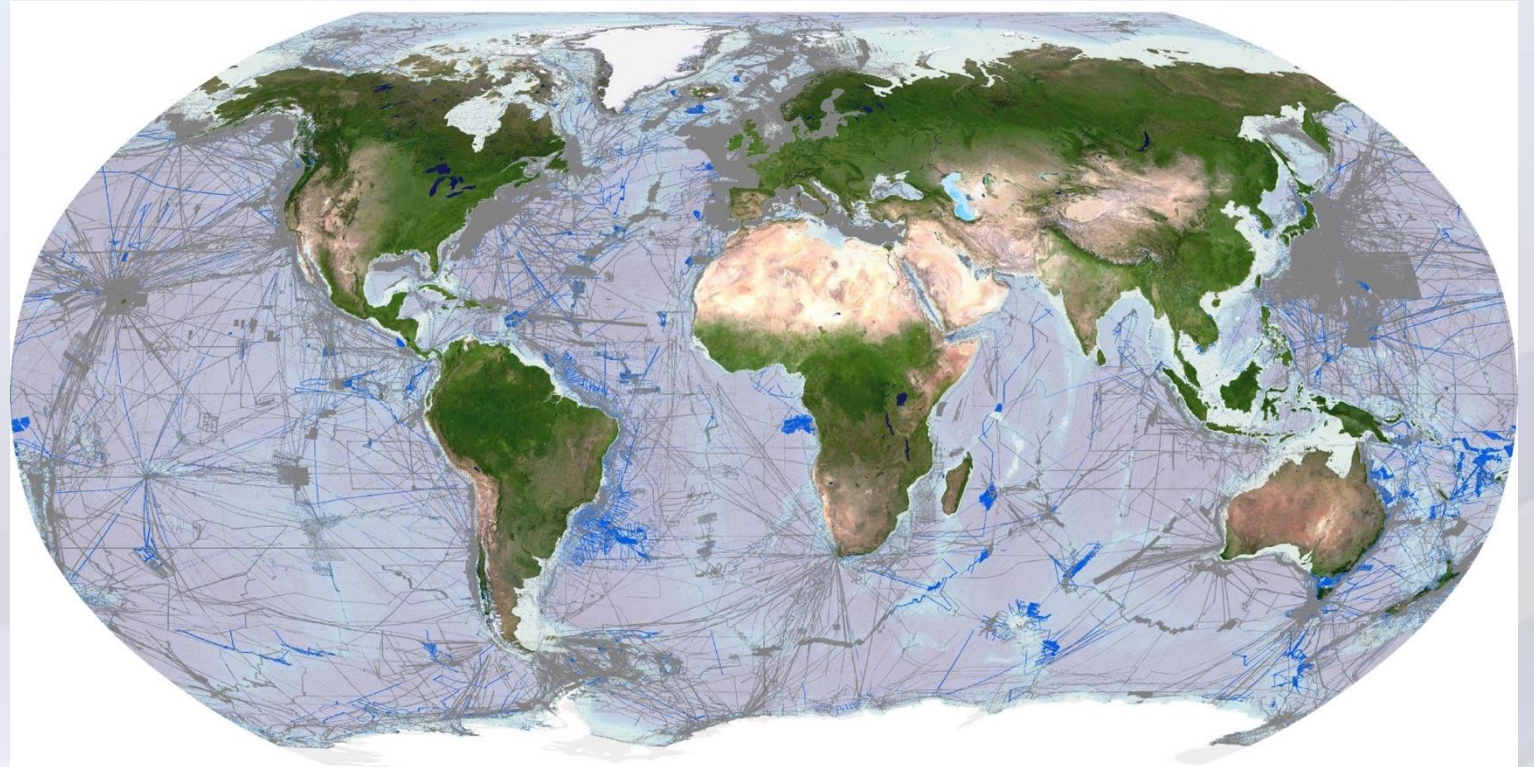
Paucity of Depth Information



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



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 Bathymetry (SDB)
 - Madagascar
 - Federated States of Micronesia
 - Maldives
- Fugro transit bathy - 2 million sq km milestone

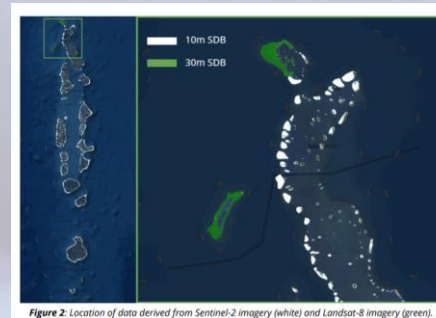
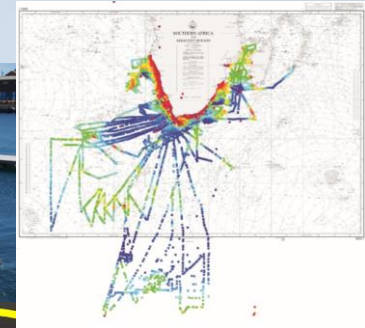


Figure 2: Location of data derived from Sentinel-2 imagery (white) and Landsat-8 imagery (green).

Courtesy: SANHO



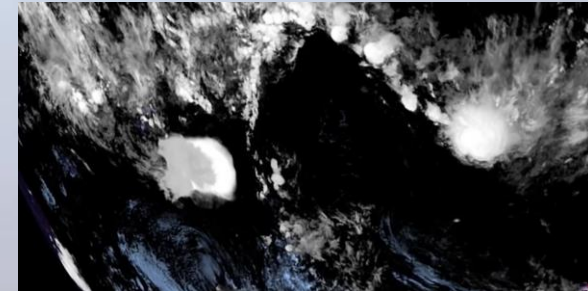
Copyright: Fugro



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



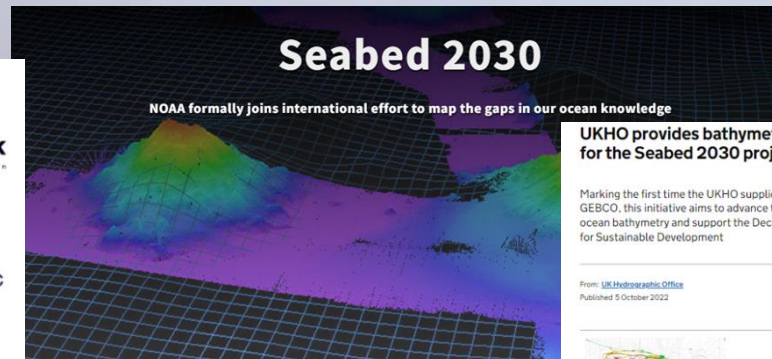
Courtesy: SKI

Collaboration through Partnerships

- Wide variety of data donors
- Growing number of MOU partners
- Increasing collaboration with academia, industry, philanthropy & governments

plus

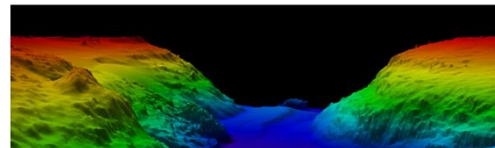
and



29 June, 2022

We know less about the ocean floor than we do about the surface of the moon and Mars. But by the end of the decade we may know the general outline of our undersea contours and crevasses, thanks to an international project called Seabed 2030. The mapping initiative — formally known as The Nippon Foundation-General Bathymetric Chart of the Oceans Seabed 2030 Project — launched in 2017 to “produce the definitive map of the world ocean floor by 2030.”

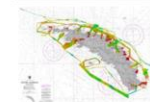
This week, NOAA Administrator Rick Spinrad signed a memorandum of understanding in conjunction with the [United Nations Ocean Conference](#) that formalizes U.S. participation in Seabed 2030. The memorandum also describes best practices and protocols for this type of data collection, which will help build positive collaboration between all [involved countries and partners](#).



UKHO provides bathymetric surveys for the Seabed 2030 project

Marking the first time the UKHO supplies data directly to GEBCO, this initiative aims to advance the understanding of ocean bathymetry and support the Decade of Ocean Science for Sustainable Development

From: [UK Hydrographic Office](#)
Published: 5 October 2022



The UK Hydrographic Office (UKHO) has started supplying bathymetric survey data for non-UK waters to the General Bathymetric Chart of the Oceans (GEBCO) after signing the memorandum of understanding (MOU) with The Nippon Foundation-GEBCO Seabed 2030 Project (Seabed 2030) earlier this year.

The MOU was signed with the goal of advancing the industry’s understanding of ocean bathymetry and supporting the UN Decade of Ocean Science for Sustainable Development. The UKHO has agreed to provide bathymetric data gridded map products and advise on data management methods and best practice, to support the ambitious goal of completely mapping the world’s oceans by 2030 (Seabed 2030).

The UKHO has started supplying data that covers the South Atlantic and the waters around Antarctica to GEBCO via the Seabed 2030 Southern Ocean Regional Centre — located at the Alfred Wegener Institute. This data is an important contribution to the International Bathymetric Chart of the Southern Ocean (IBCSO), GEBCO and Seabed 2030. The supplied data has contributed 3,753,614 new data points to IBCSO and GEBCO, covering a combined 13,500 nm², including South Georgia (1,500 nm² with 55,539 data points) and Antarctica (12,000 nm² with 2,931,105 data points).

This marks the first time, outside of the UK, that the UKHO has supplied data directly to GEBCO for inclusion in its products. It follows the success of a



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



Thank you

