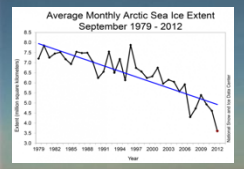
THE NIPPON FOUNDATION-GEBCO

SEABED 2030

Geo-Enabling for Our One Ocean

Jamie McMichael-Phillips
Director

THE NIPPON FOUNDATION | GEBCO General Bathymetric Chart of the Oceans | 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

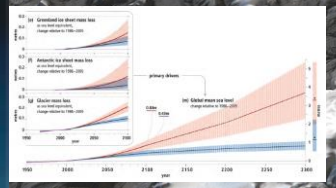
Ocean Pollution

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

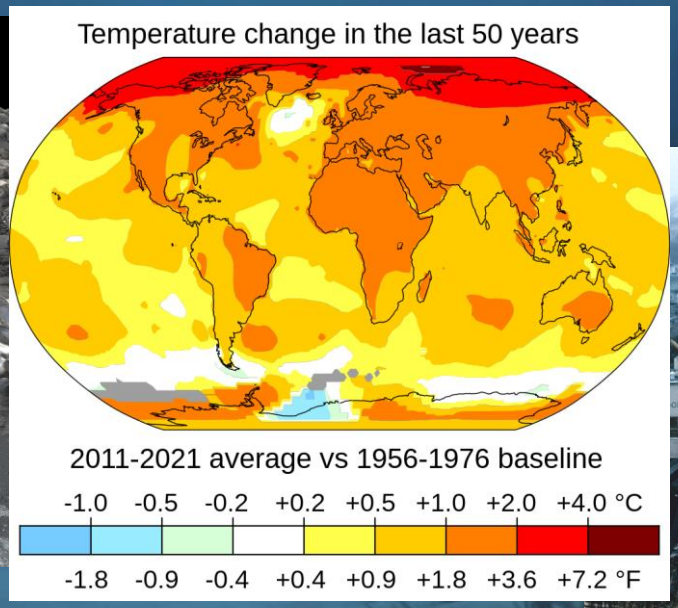


RCP8.5

RCP2.6

Ryder Fjord, N Greenland

Courtesy: Martin Jakobsson, SU



Climate

Courtesy: NASA

Alaska 1975

Courtesy: NOAA

DECADE OUTCOMES

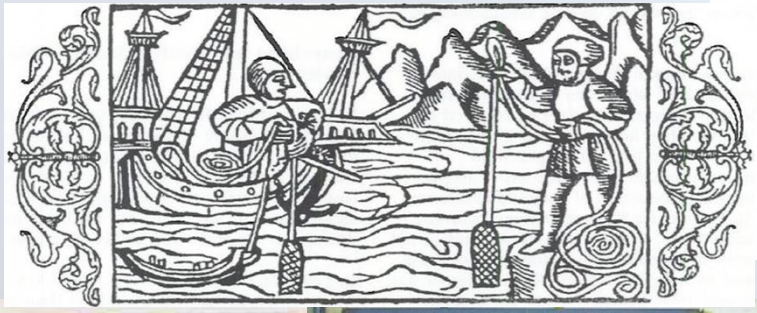
"THE OCEAN WE WANT"

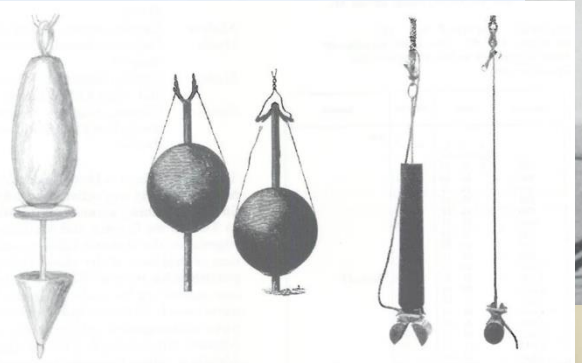
- A <u>clean</u> ocean
- A <u>healthy and resilient</u> ocean
- A <u>productive</u> ocean
- A <u>predicted</u> ocean
- A <u>safe</u> ocean
- An <u>accessible</u> ocean
- An <u>inspiring and engaging</u> ocean

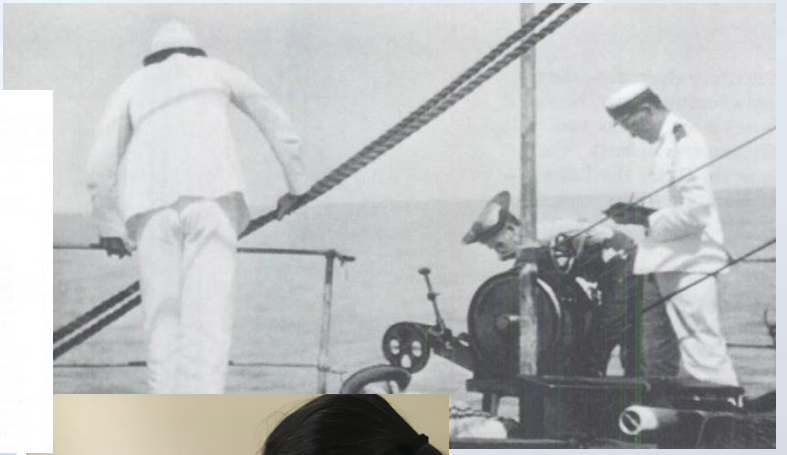
OCEAN DECADE CHALLENGES

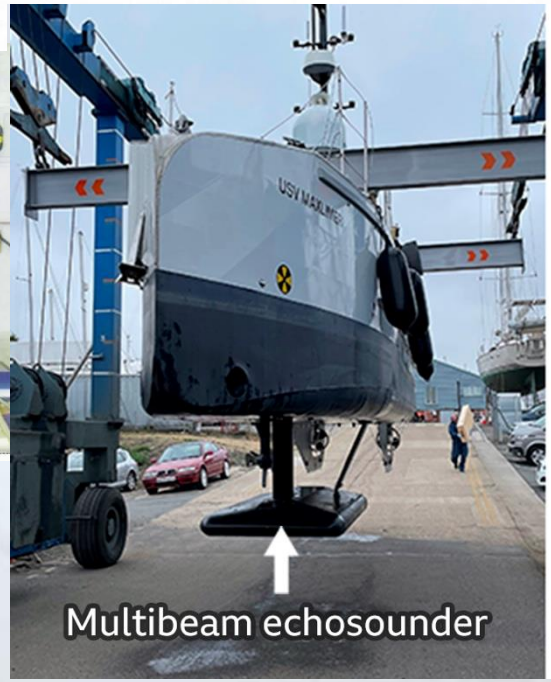
Pollutants	Coastal -bathymetry
Ecosystems	Mapping central
Food from the Ocean	Bathymetry dependent
Ocean economy	Mapping intensive
Ocean-climate nexus	Modelling, SLR, etc.
Ocean-related risks	Bathymetry intensive
Ocean observing system	Georeferencing
Ocean digital representation	Central facility
Capacity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

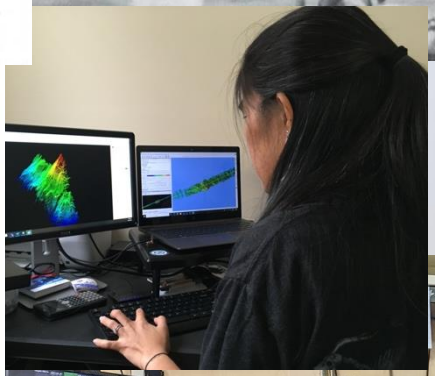
Gathering Depth Information

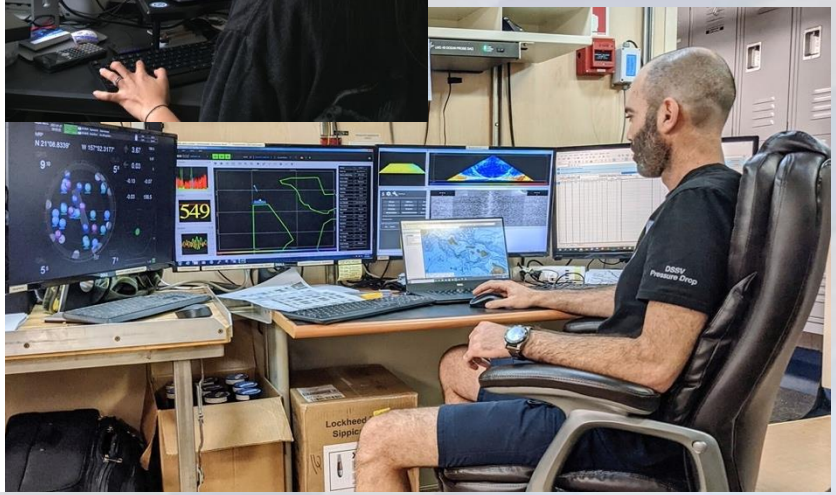












The General Bathymetric Chart of the Oceans
GEBCO

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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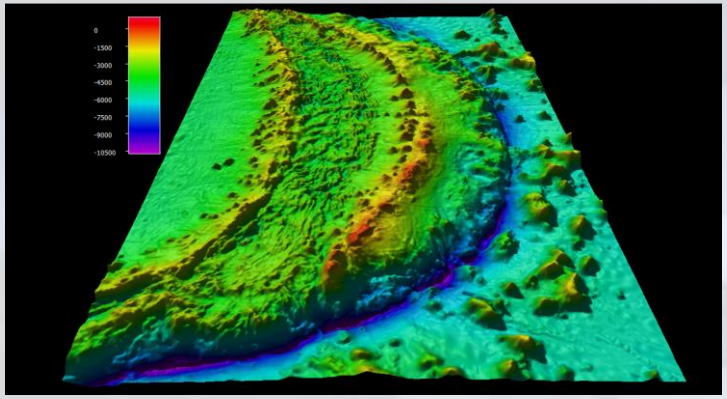
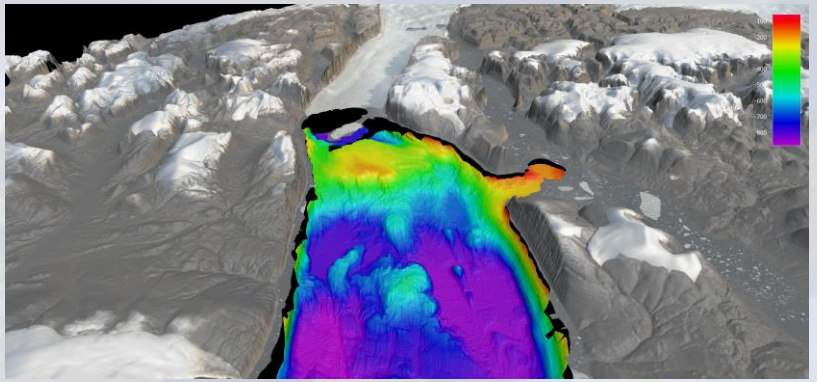
World Hydrography Day Theme

Hydrography
contributing to the
United Nations Ocean Decade



Courtesy: Larry Mayer, UNH

Courtesy: Martin Jakobsson, SU



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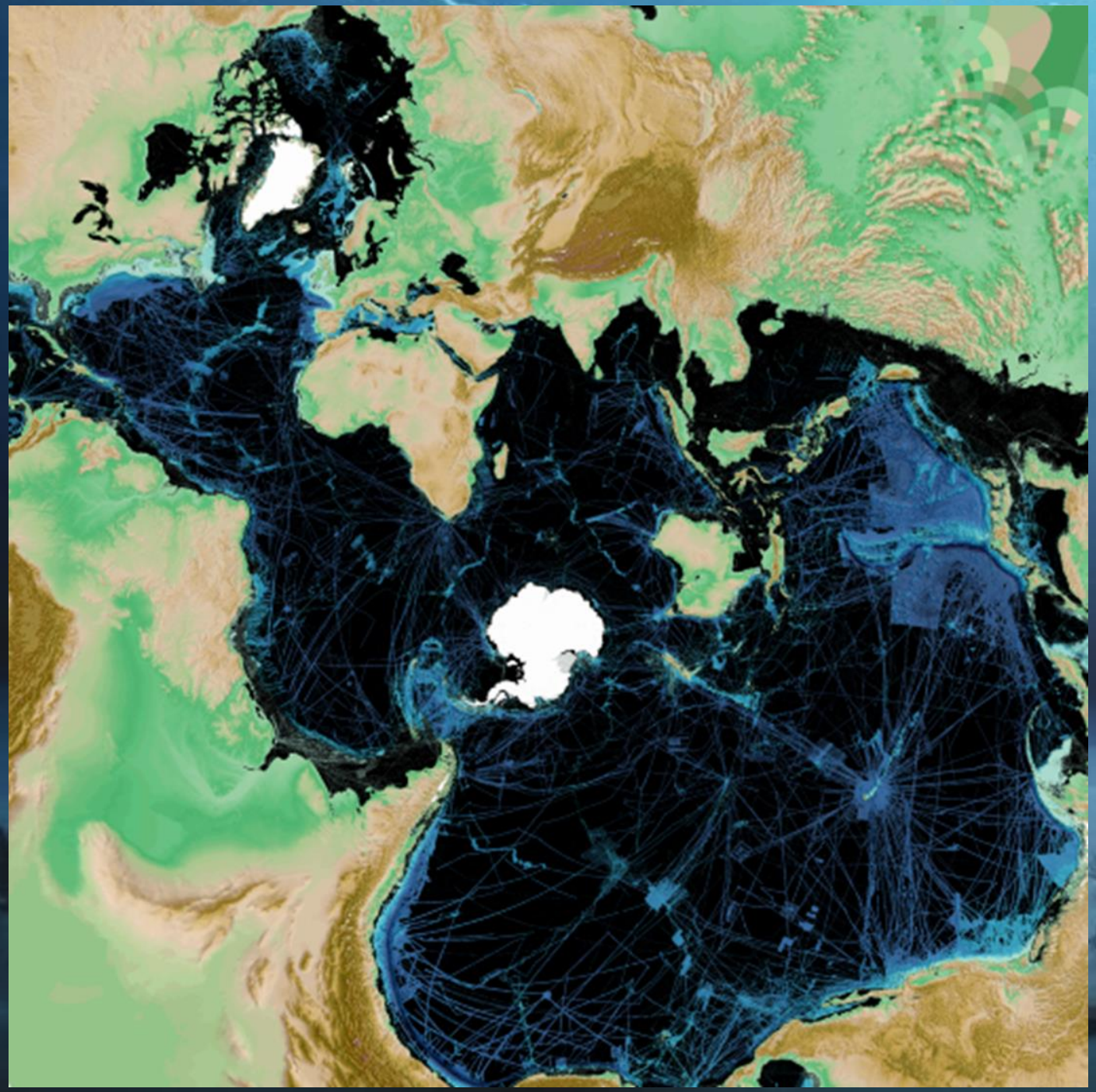

It really is …..

Our One Ocean!

Seabed 2030 Vision:

100% of our Ocean Floor mapped by 2030

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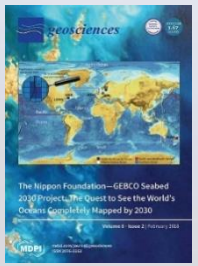
Seabed 2030

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



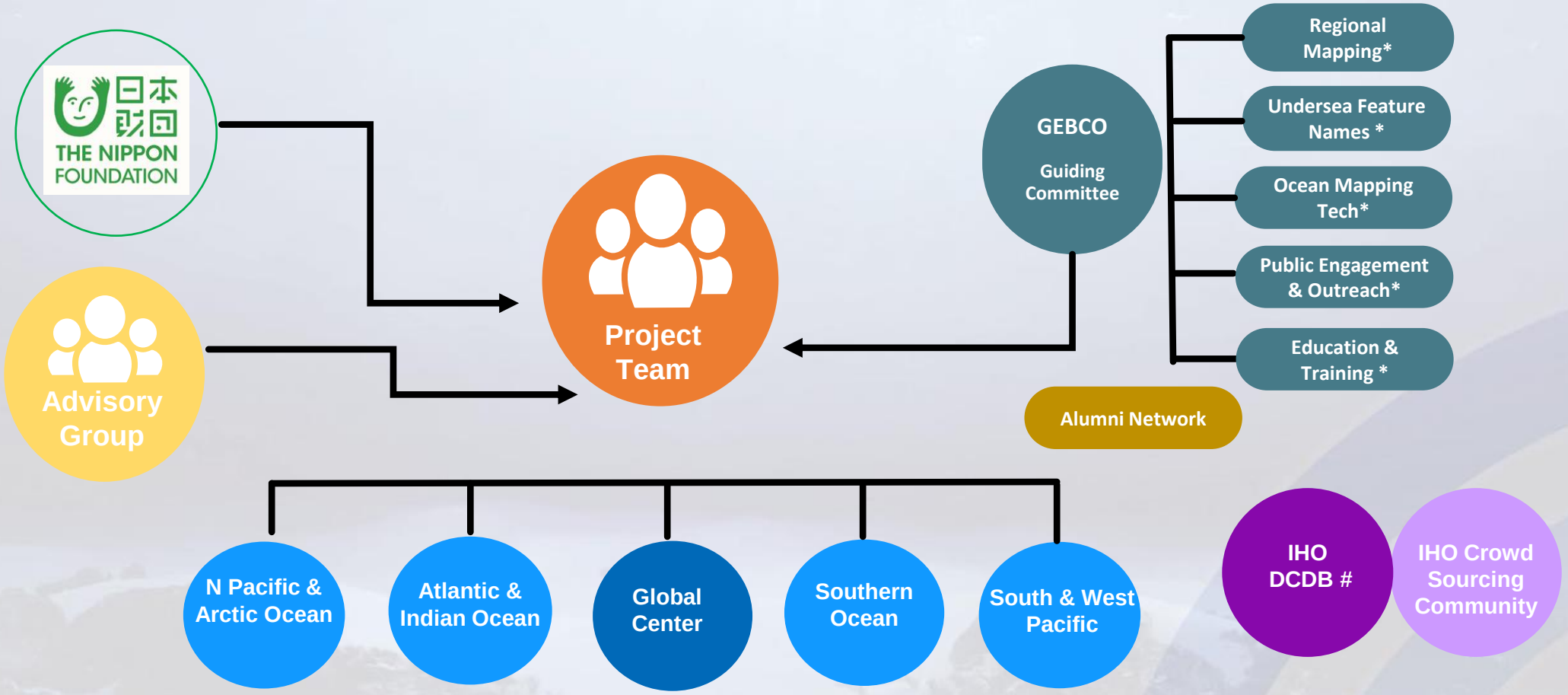
THE OCEAN CONFERENCE
UNITED NATIONS, NEW YORK, 5-9 JUNE 2017

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Endorsed Decade Programme

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

Seabed 2030 Network

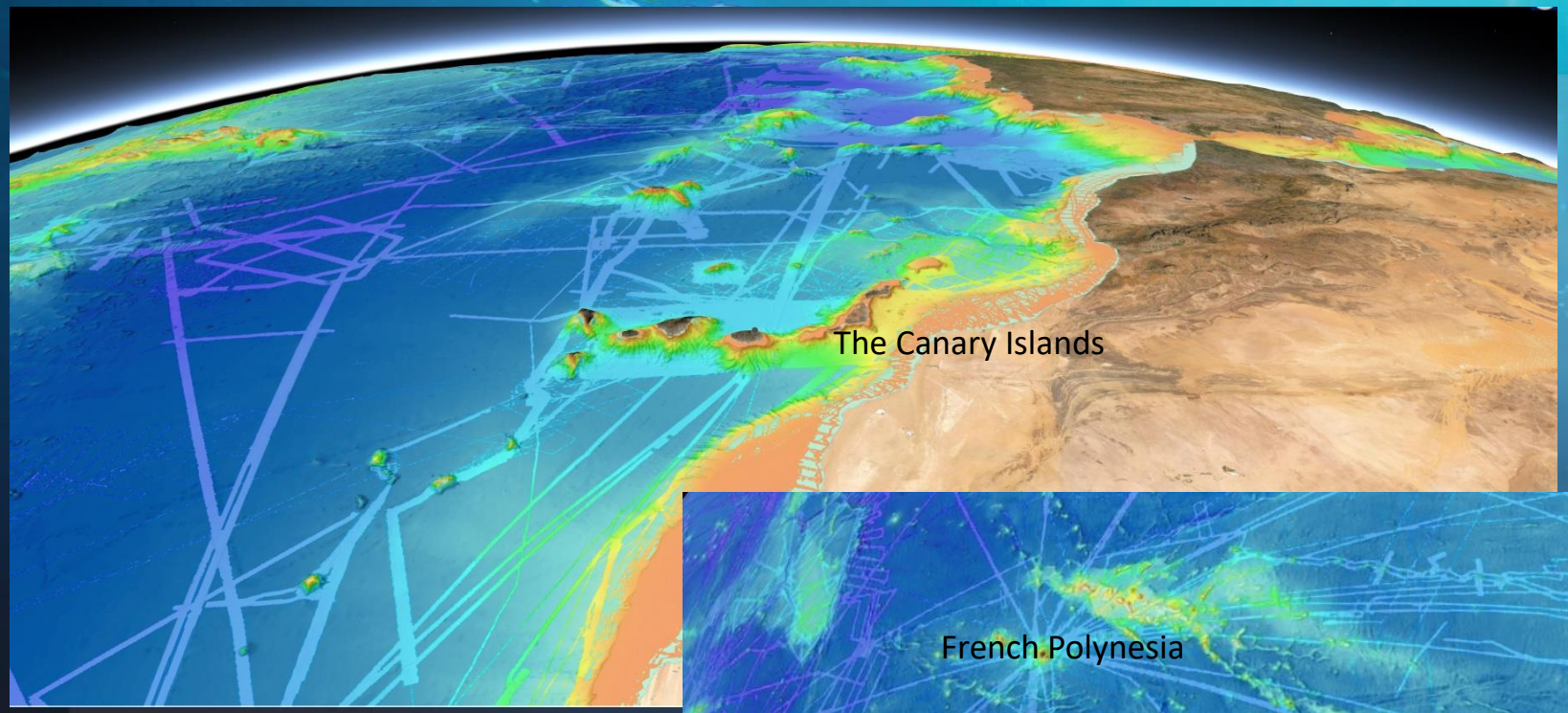


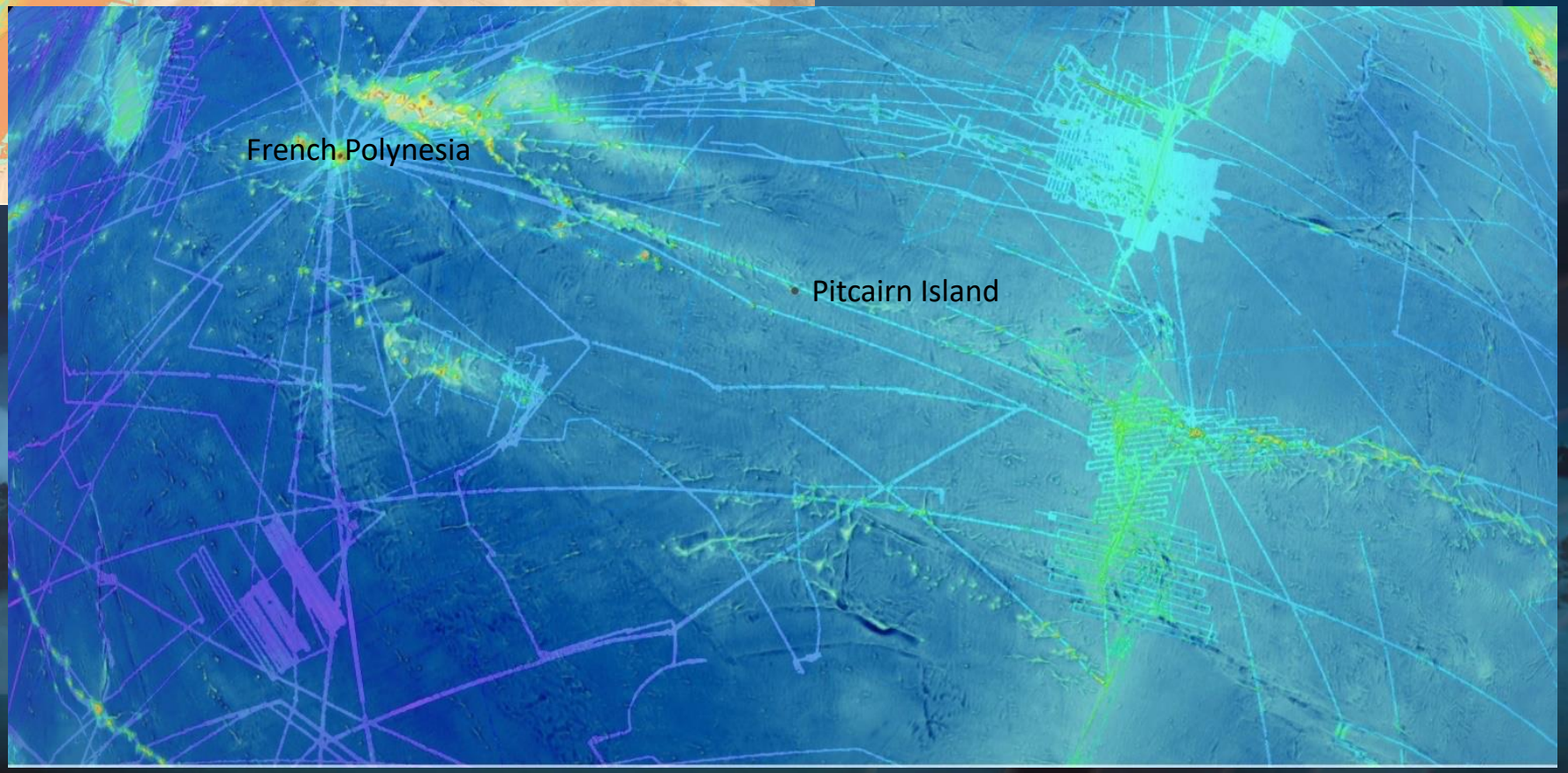
4 "Regional Centers" + 1 "Global Center"

(* GEBCO Sub Committees)

(# Data Centre for Digital Bathymetry)

Paucity of Depth Information

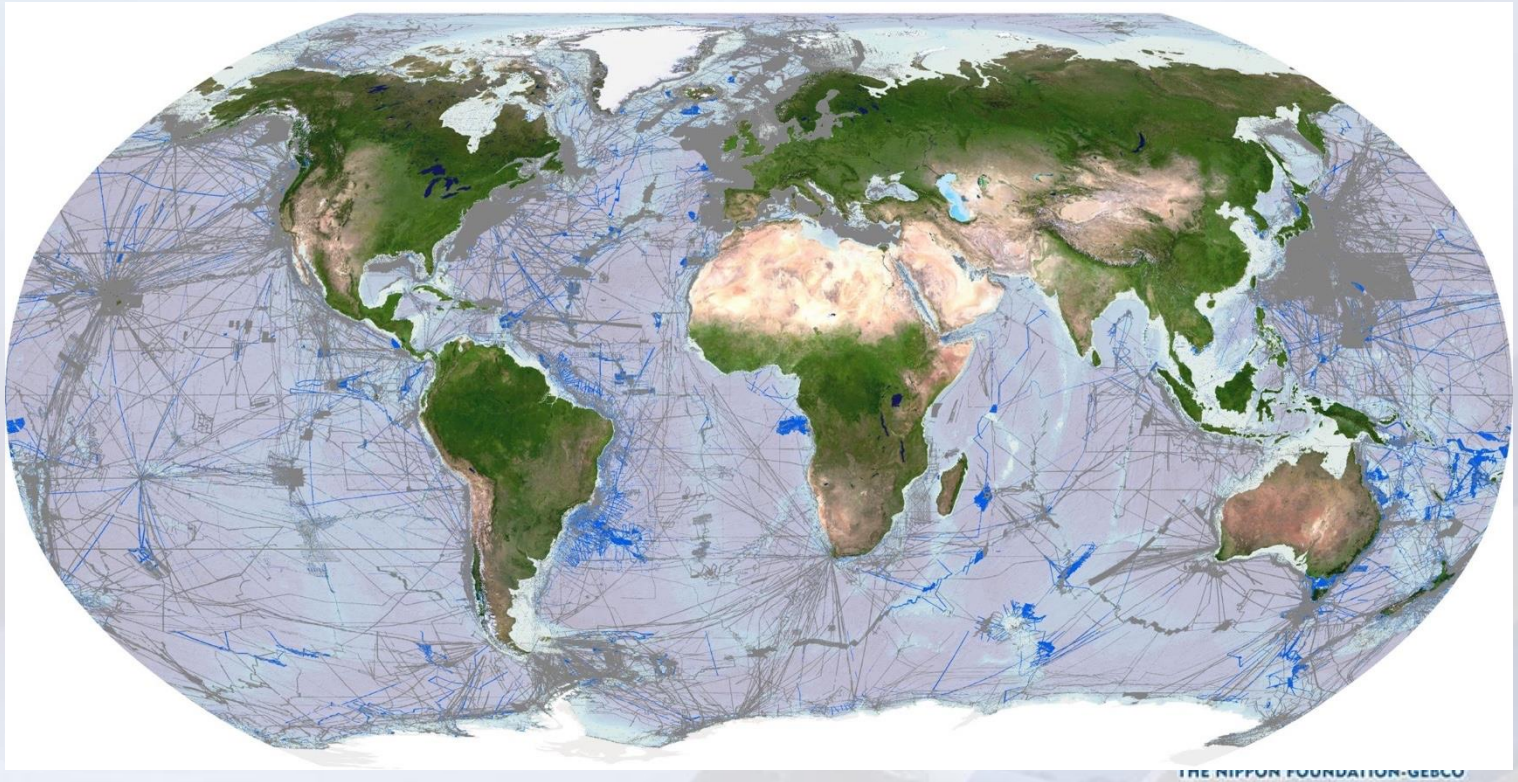




Progress so far…

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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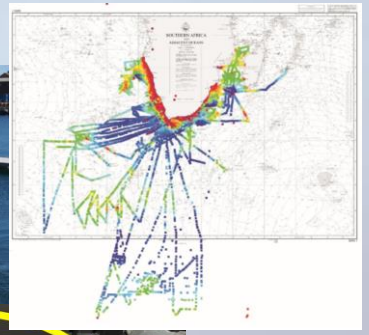
Collaboration through Partnerships

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



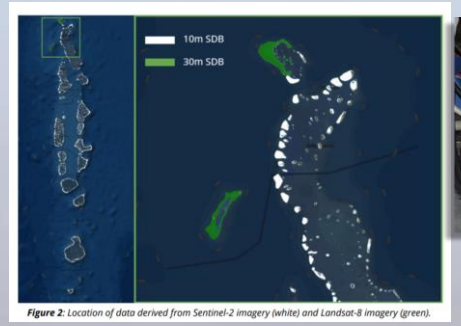


Figure 2: Location of data derived from Sentinel-2 imagery (white) and Landsat-8 imagery (green).

Courtesy: SANHO

Copyright: Fugro

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Seabed 2030 TRUSTED NODE

- Global Center (hosted by UK NOC) acting as a Trusted Node.
- Processing data from collectors using loggers provided via Seabed 2030
  - 14 data sets received to date.
  - Majority from International SeaKeepers Society
- Supported by UNH, in-house app developed to process raw data to GeoJSON
- Option to upload the data to IHO DCDB via their data submission API
- Work underway to modify app to include QC checks to:
  - enable identification of data files that will fail DCDB data acceptance criteria
  - highlight issues in the data files for further investigation.
- Collaborating with TerraDepth to look at utility/cost of Absolute Ocean platform:
  - to provide visualizations of submitted CSB data back to contributors

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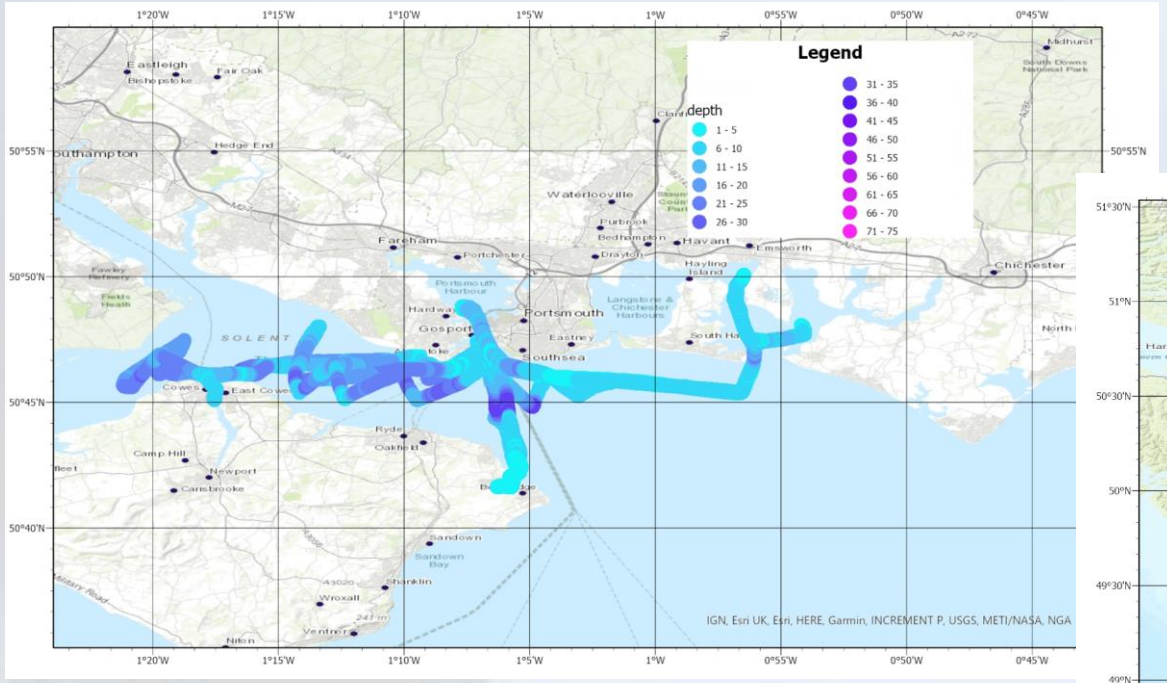
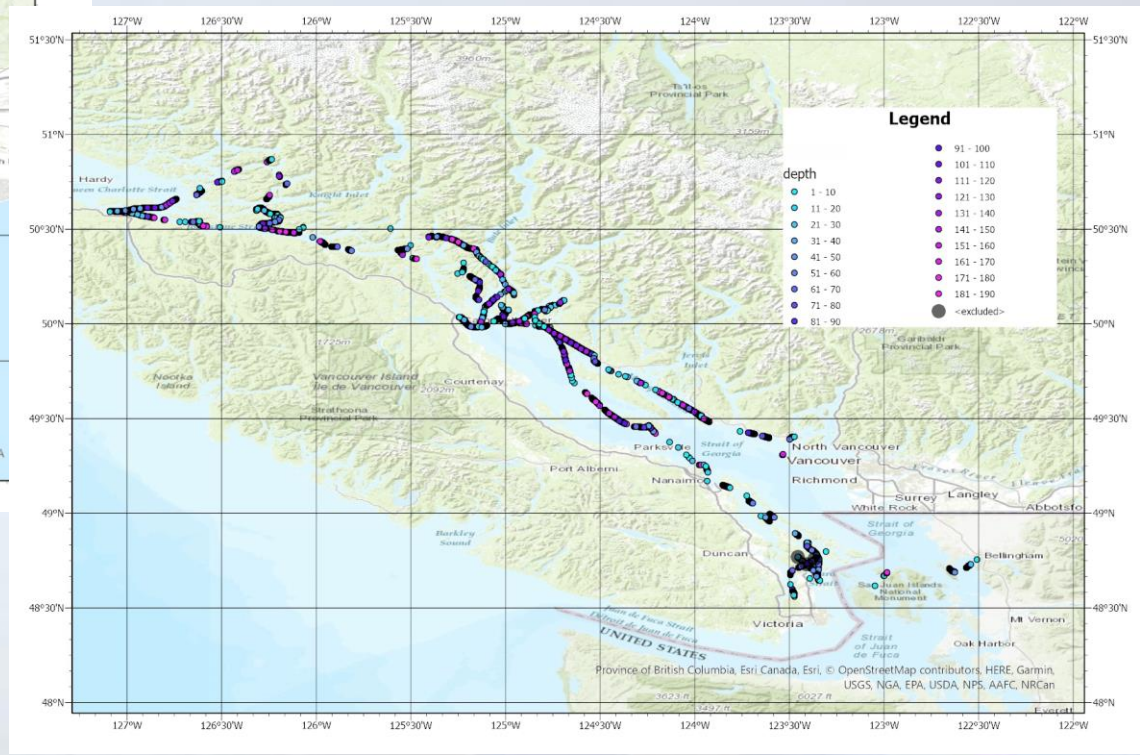
TRUSTED NODE – FEEDBACK TO COLLECTORS





Collaboration through Partnerships

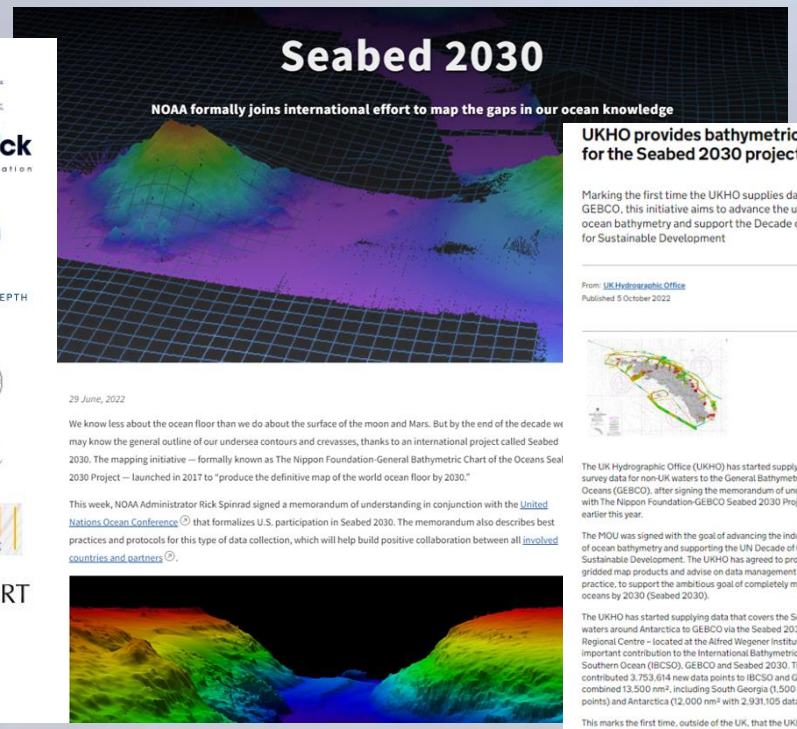
- **Wide variety of data donors**

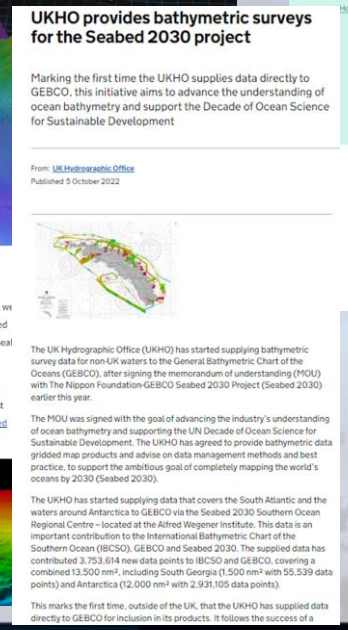
plus

- **Growing number of MOU partners**

and

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





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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