

Nippon Foundation – GEBCO – Seabed 2030

First Arctic, Antarctic & North Pacific Mapping Meeting
October 8–10 | Stockholm 2018





Photograph: Björn Eriksson

Day 1:

Introduction to Seabed 2030

Presentations from participants:

- New bathymetric data from the North Pacific, Arctic and Antarctic
- Expedition coordination and opportunities

Day 2:

Continued presentations from participants:

- New bathymetric data from the North Pacific, Arctic and Antarctic
- New approaches & activities on collection of bathymetry

Group discussions aimed towards the development of an action plan

Day 3:

Summary and conclusions



Day 1:

- 10:30 – 11:30 **Seabed 2030 and Arctic, Antarctic & North Pacific status**, William-Olsson room
- 10:30 – 10:45 Introduction to Seabed 2030, Martin Jakobsson
 - 10:45 – 11:00 Southern Ocean status, Boris Dorschel
 - 11:00 – 11:15 Arctic Ocean status, Martin Jakobsson
 - 11:15 – 11:30 North Pacific status, Larry Mayer
- 11:30 – 12:00 **North Pacific – Arctic Ocean mapping**, William-Olsson room
- 11:30 – 11:45 High North program new hydrographic data in Arctic, Maurizio Demarte
 - 11:45 – 12:00 New bathymetric data in Arctic region, Hannes Hodnesdal
- 12:00 – 13:00 Lunch
- 13:00 – 14:00 Cont. **North Pacific – Arctic Ocean mapping**, Nordenskiöld room.
- 13:00 – 13:15 CHS - Ocean Mapping and Data Management, Paola Travaglini
 - 13:15 – 13:30 Nearshore Alaska Arctic bathymetry, Mark Zimmermann
- Arctic/Antarctic mapping**
- 13:30 – 13:45 Antarctic and Arctic Seabed Mapping Efforts in Spain, Miquel Canals
 - 13:45 – 14:00 Recently acquired and forthcoming data, OGS, Italy, Michele Rebesco
- 14:00 – 14:30 Coffee break
- 14:30 – 15:15 **Arctic/Antarctic mapping**, Nordenskiöld room.
- 14:30 - 14:45 Webcast: Antarctic and Arctic bathymetry data available through Global Multi Resolution Topography (GMRT), Frank Nitsche
 - 14:45 – 15:00 Fugro mapping in Arctic-Antarctic and North Pacific waters, Manfred Stender
 - 15:00 - 15:15 Webcast: New multibeam systems year around in Greenland, Karl Brix Zinglarsen
- Antarctic mapping**
- 15:15 – 15:30 Roadmap to IBCSO V2, Jan Erik Arndt
 - 15:30 – 15:45 Seabed2030: South and West Pacific Centre, Jenny Black
 - 15:45 – 16:00 From Batdrake to Central Scotia Sea, Fernando Bohoyo
- 16:00– 16:15 Webcast: New data from ESC Surveys and transits for the Arctic Ocean, Bernard Coakley
- 16:15 – 17:00 Posters and roll ups, outside Nordenskiöld room.
- 17:00 – Ice breaker (light food and beverages)

Day 2:

- 09:00 – 09:15 **cont. presentations**, Nordenskiöld room
- 08:45 – 09:00 Mapping the uncharted waters of Svalbard in aid for scientific research and education, Riko Noormets
- 9:15 – 10:00 **New approaches and activities on collection of bathymetry**, Nordenskiöld room
- 09:15 – 09:30 GEBCO-NF Alumni Team mapping solution for the Shell Ocean Discovery XPRIZE competition - autonomous technology towards Seabed 2030, Yulia Zaraskaya
 - 09:30 – 09:45 The REV Ocean Project, Alex Rogers
 - 09:45 – 10:00 Mapping Cloud – Visualize, analyze and share multibeam data in real-time, Terje Haga Pedersen
- 10:00 – 10:30 Coffee break
- 10:30 – 11:30 Metadata and technology (Demo and discussion, groups)
- 11:30 – 12:30 Lunch
- 12:30 – 17:00 Group discussions
- 12:30 – 12:45 Organization of group discussion, Nordenskiöld room
 - 12:45 – 18:00 Antarctic Group (Room U29)
 - 12:45 – 18:00 North Pacific Arctic Group (Y22)
- 14:30 – 15:00 Coffee break
- 18:00 – XX Dinner and pub, U1

Day 3:

- 9:00 – 10:00 Reports from break-out groups and discussion, Nordenskiöld room
- 10:00 – 10:30 Coffee break
- 10:30 – 12:00 Summary and development of action plan, Nordenskiöld room
- 12:00 – 13:00 Lunch
- End

Introduction to Seabed 2030



The Nippon Foundation-GEBCO Seabed 2030

Presented by:

Martin Jakobsson on behalf of the Seabed 2030 Project Team

Vision: ***100% of the World Ocean floor mapped by 2030***

Mission: ***Produce the definitive map of the World Ocean floor by 2030 to empower the world to make policy decisions, use the ocean sustainability and undertake scientific research based on detailed bathymetric information of the Earth's seabed.***



NF-GEBCO Seabed 2030: From Vision to Action



June 2016



Mr Sasakawa, Chairman of the Nippon Foundation proposed '...to map 100% of the topography of the World Ocean by 2030'

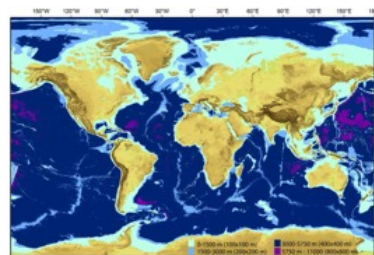


June 2017

**Nippon Foundation - GEBCO
Seabed 2030 Project
announced**



Project Operational



1st February 2018



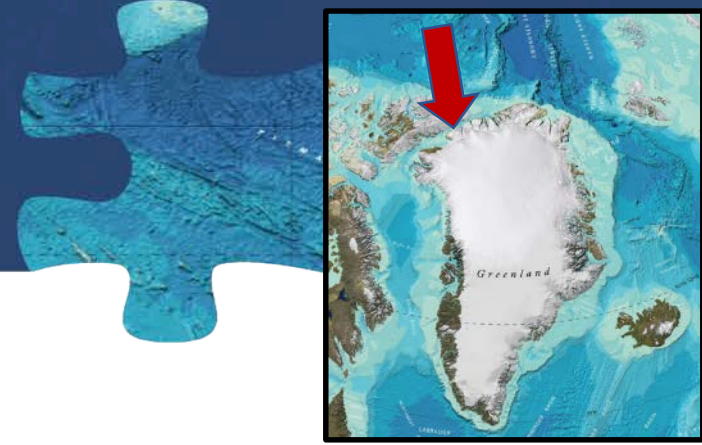
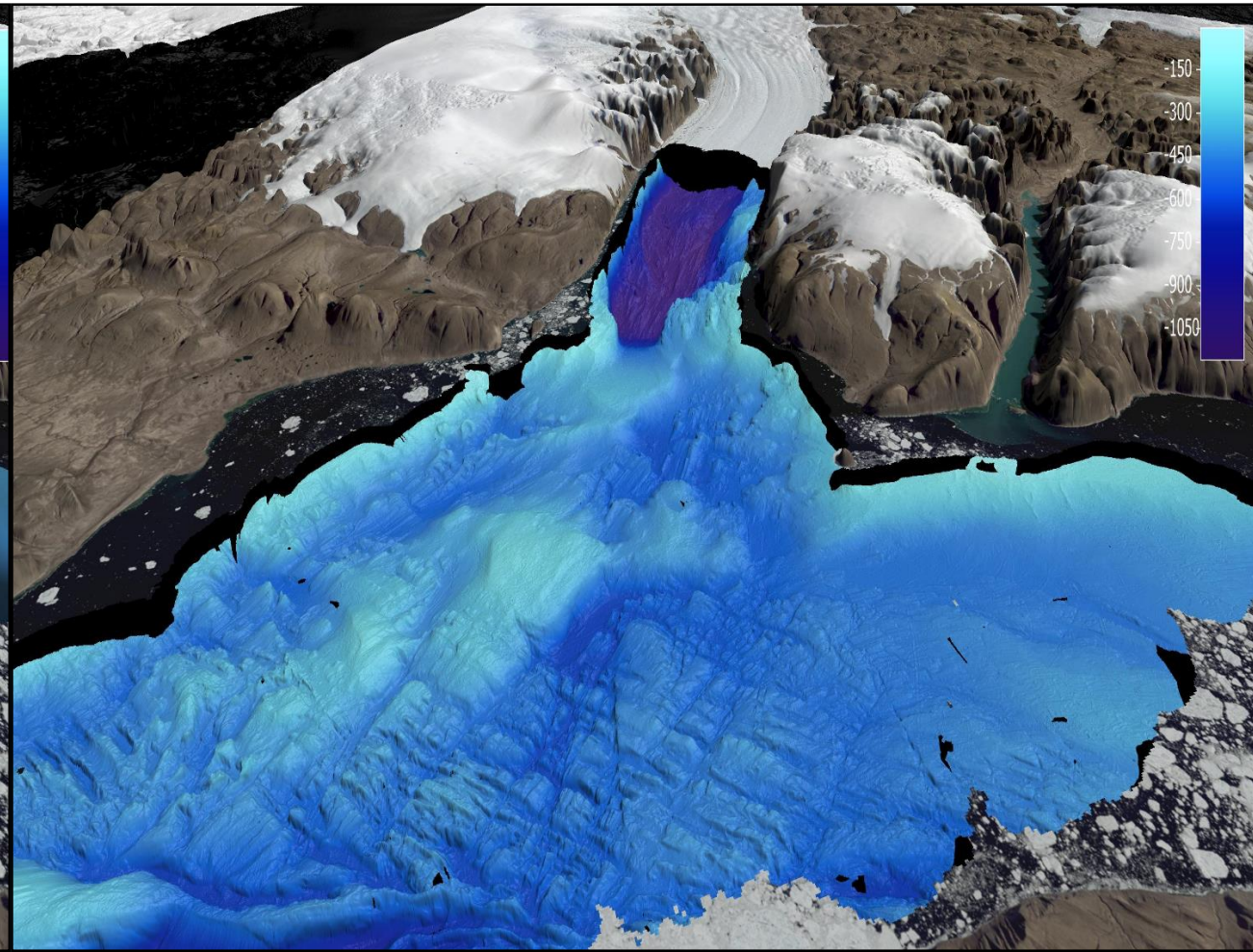
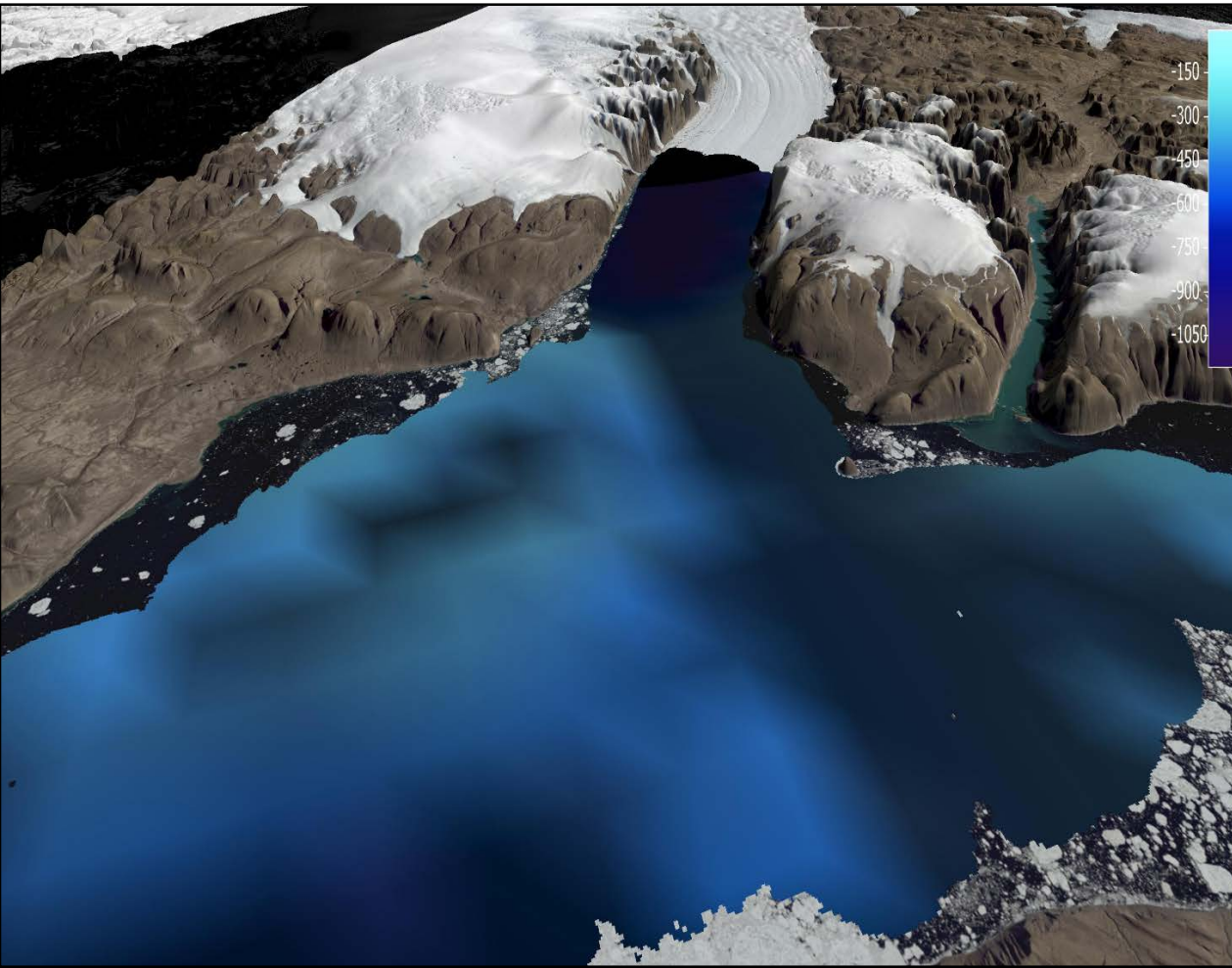
2030

100% of ocean mapped

Vision

Seabed 2030 vision
From.....

To.....



Media coverage



Media coverage



“Using data collected from underwater drones, merchant ships, fishing boats and even explorers, a new scientific project aims to map the ocean floor by 2030 and solve one of the world’s enduring mysteries. ”

-Reuters, May 2018

“If we communicate it well, Seabed 2030 will catalyse ocean mapping coordination and collaboration.””

- Rear Admiral Shep Smith, writing in Hydro International, March 2018

“A project to map the world’s ocean floor is calling on the captains of fishing and leisure boats to share their sonar data alongside some private companies which are already providing their data with the Global Seabed 2030 project.”

- BBC World Service, Science in Action, May 2018

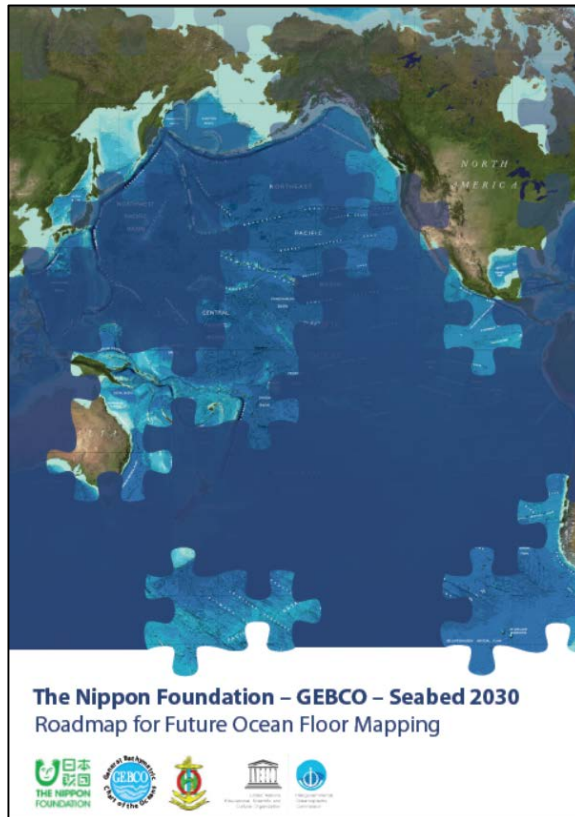
The Seabed 2030 Project





1. How is Seabed 2030 organized?
2. How does Seabed 2030 relate to IBCAO/IBCSO?
3. What is the preferred data flow?
4. What is the mapping target resolution?
5. How much of the world is mapped at the Seabed 2030 target resolutions?

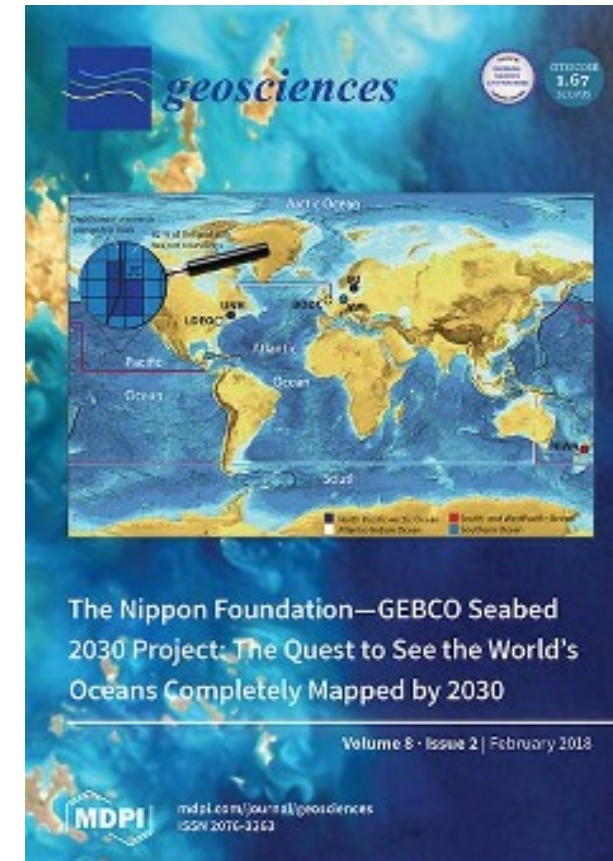
1. How is Seabed 2030 organized?

Roadmap <https://seabed2030.gebco.net/>



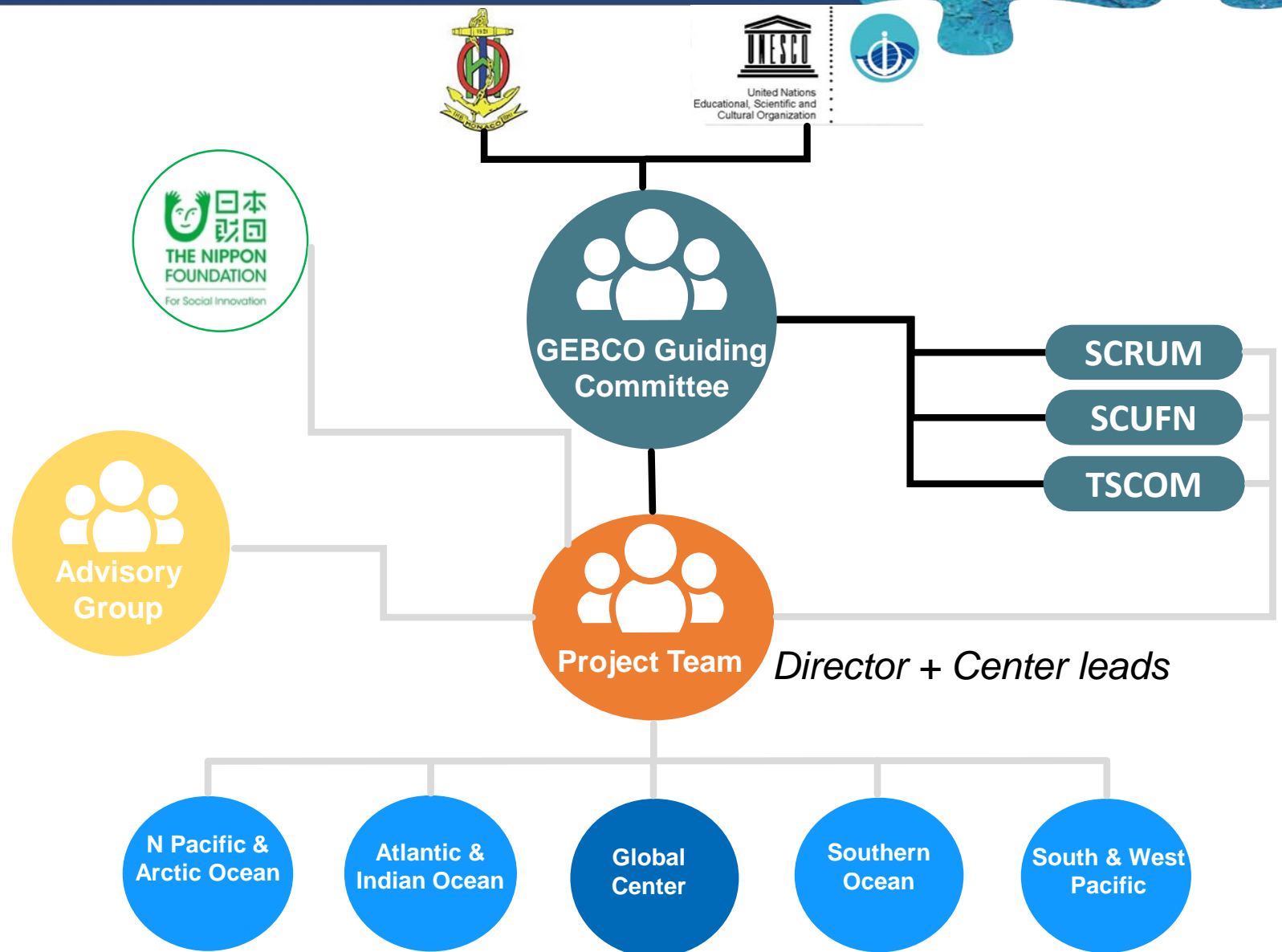
Business Plan

 	
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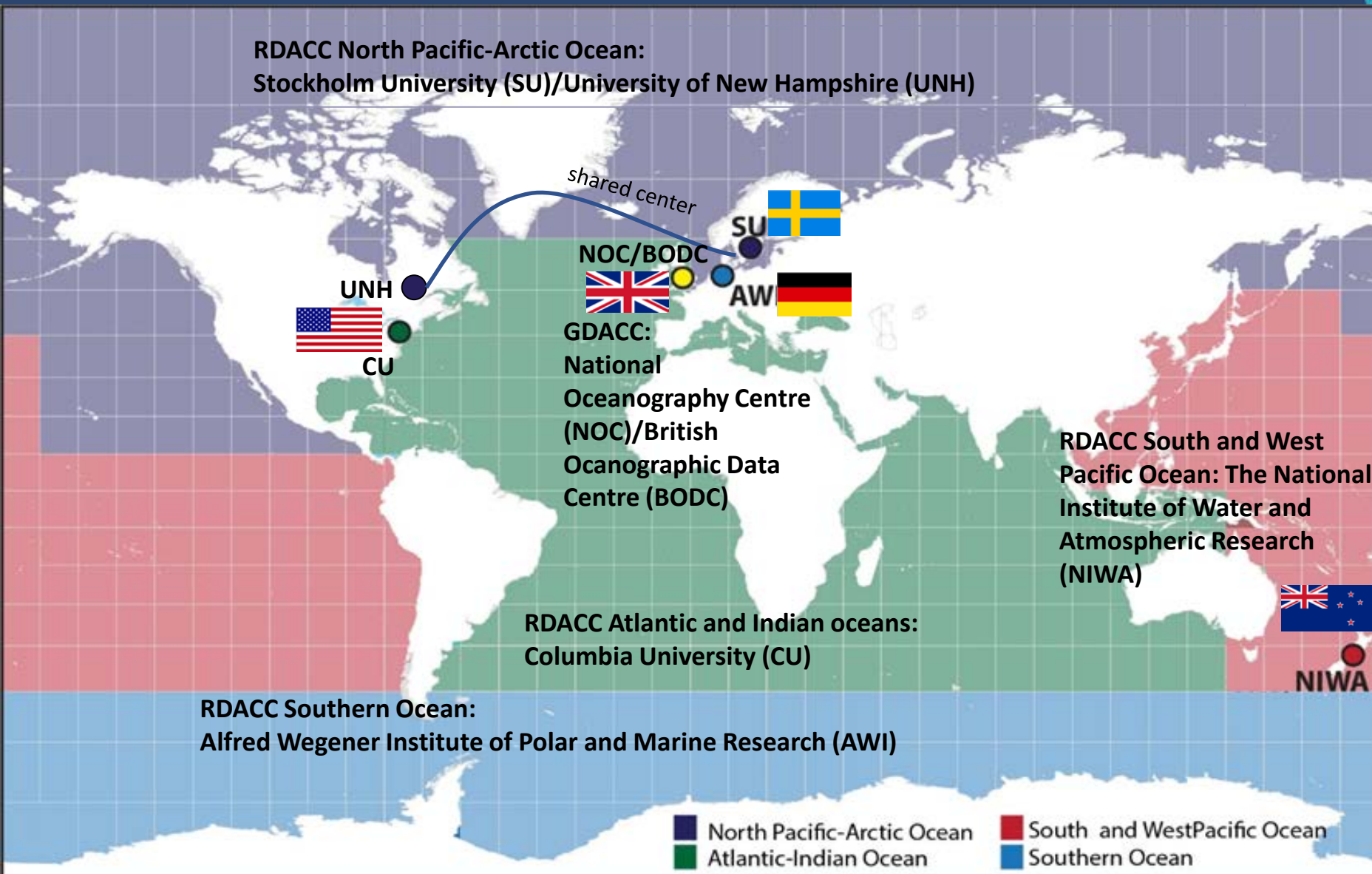


1. How is Seabed 2030 organized?

- 4 Regional Data Assembly & Coordination Centres
- 1 Global Data Assembly and Coordination Centre
- 1 International data repository: IHO Data Centre for Digital Bathymetry (DCDB)



1. How is Seabed 2030 organized?



Global Centre

Dr. Helen Snaith



Pauline Weatherall
SCRUM vice-chair



British Oceanographic Data Centre

NATURAL ENVIRONMENT RESEARCH COUNCIL



National Oceanography Centre

NATURAL ENVIRONMENT RESEARCH COUNCIL

Southern Ocean



Boris Dorschel



Jan Erik Arndt



Simon Dreutter



Laura Hehemann



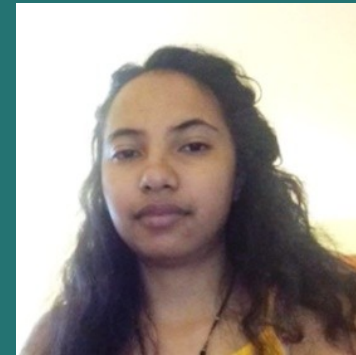
Atlantic and Indian Oceans



Vicki Ferrini
SCRUM chair



Frank Nitsche



Tinah Martin

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

South and West Pacific Ocean



Geoffroy Lamarche

NIWA
Helen Neil
Kevin Mackay
Tilman Steinmetz

GNS Science
Vaughan Stagpoole
Jenny Black

LINZ
Adam Greenland
Glen Rowe



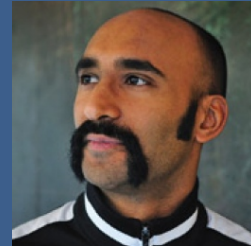
Arctic and Northern Pacific Oceans



Martin Jakobsson
Vice-chair GGC



Larry Mayer



Rezwan
Mohammad



Caroline
Bringsparr

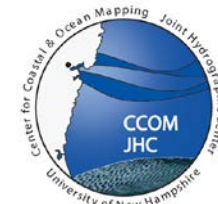


Tomer Ketter



Björn Eriksson

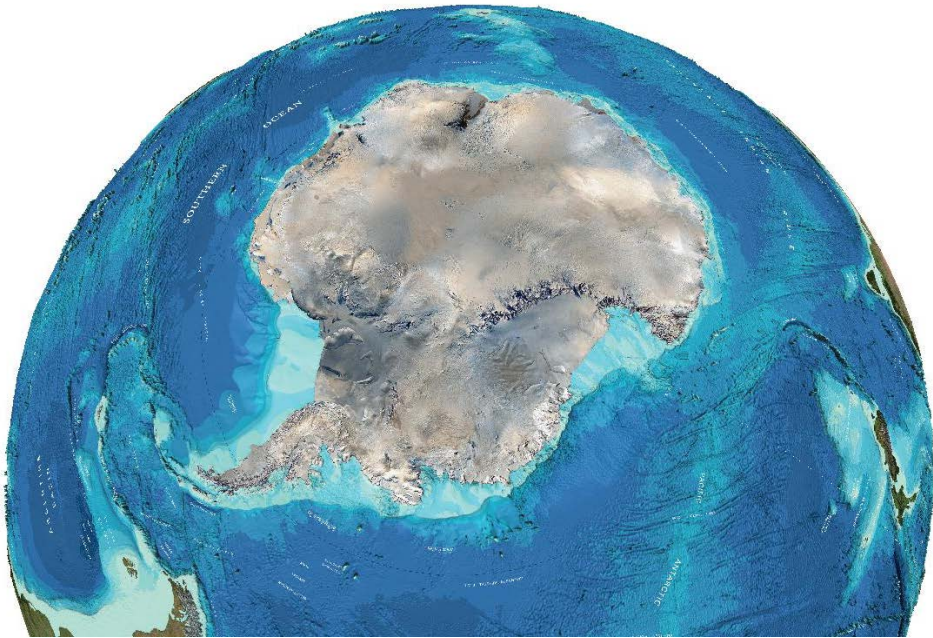
Paul Johnson



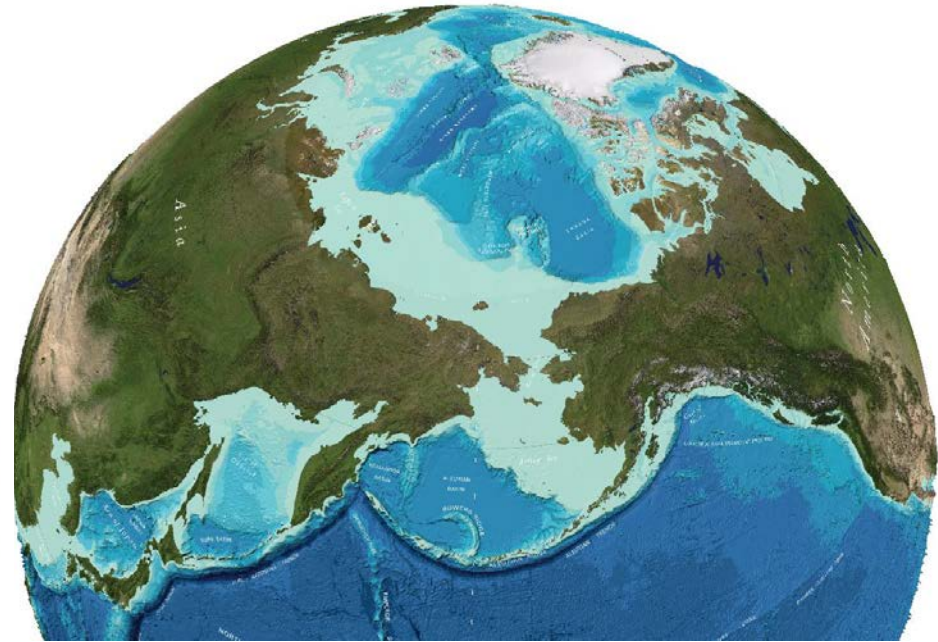
2. How does Seabed 2030 relate to IBCAO/IBCSO?

The Seabed 2030 project organization originates from the concept of a **“Regional Mapping Project”** and GEBCO’s structure within its parent organizations the International Hydrographic Organization (IHO) and Intergovernmental Oceanographic Commission of UNESCO (IOC)

International Bathymetric Chart of
the Southern Ocean (IBCSO)



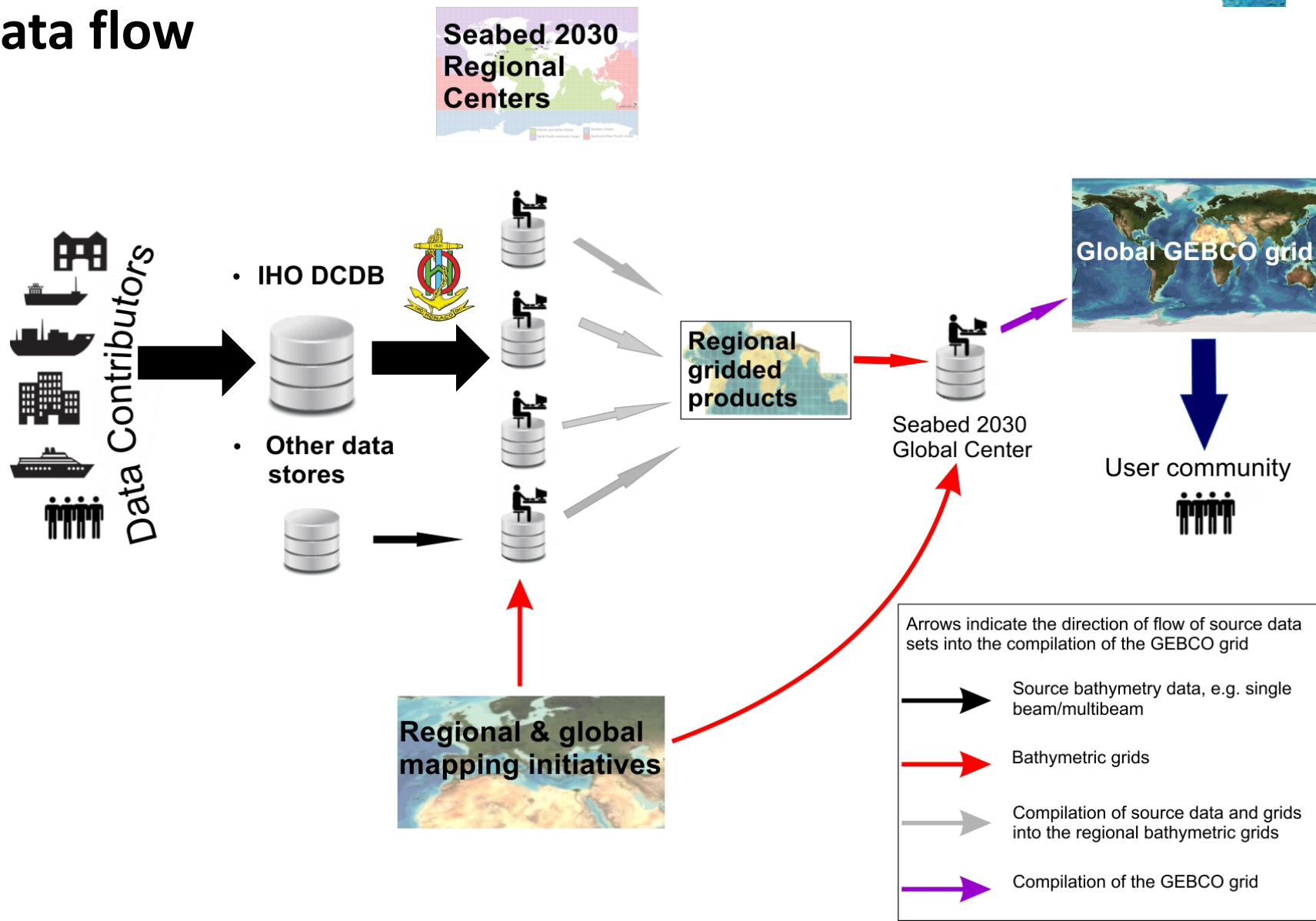
International Bathymetric Chart of
the Arctic Ocean (IBCAO)



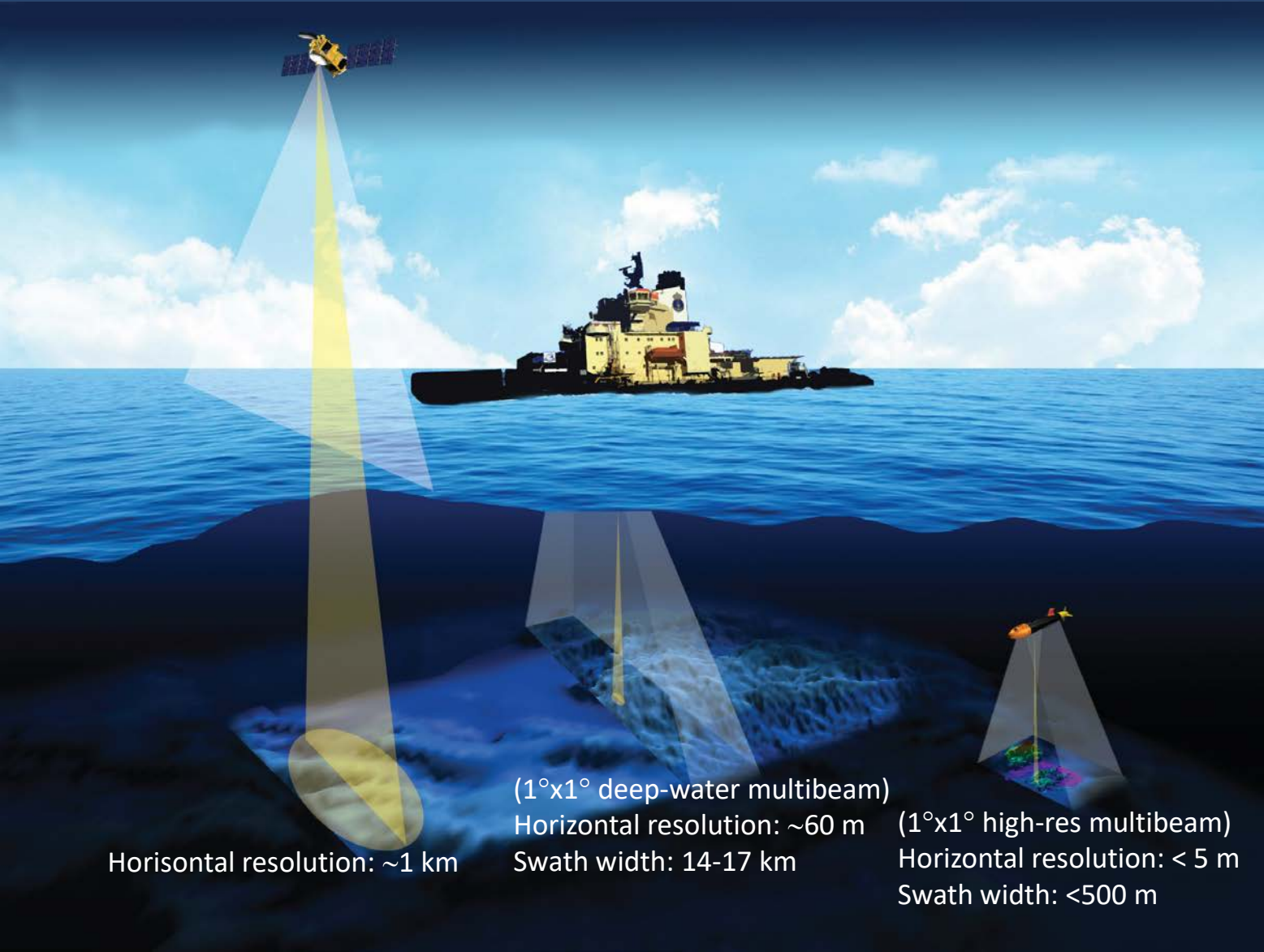
3. What is the preferred data flow?



Preferred data flow



4. What is the mapping target resolution?



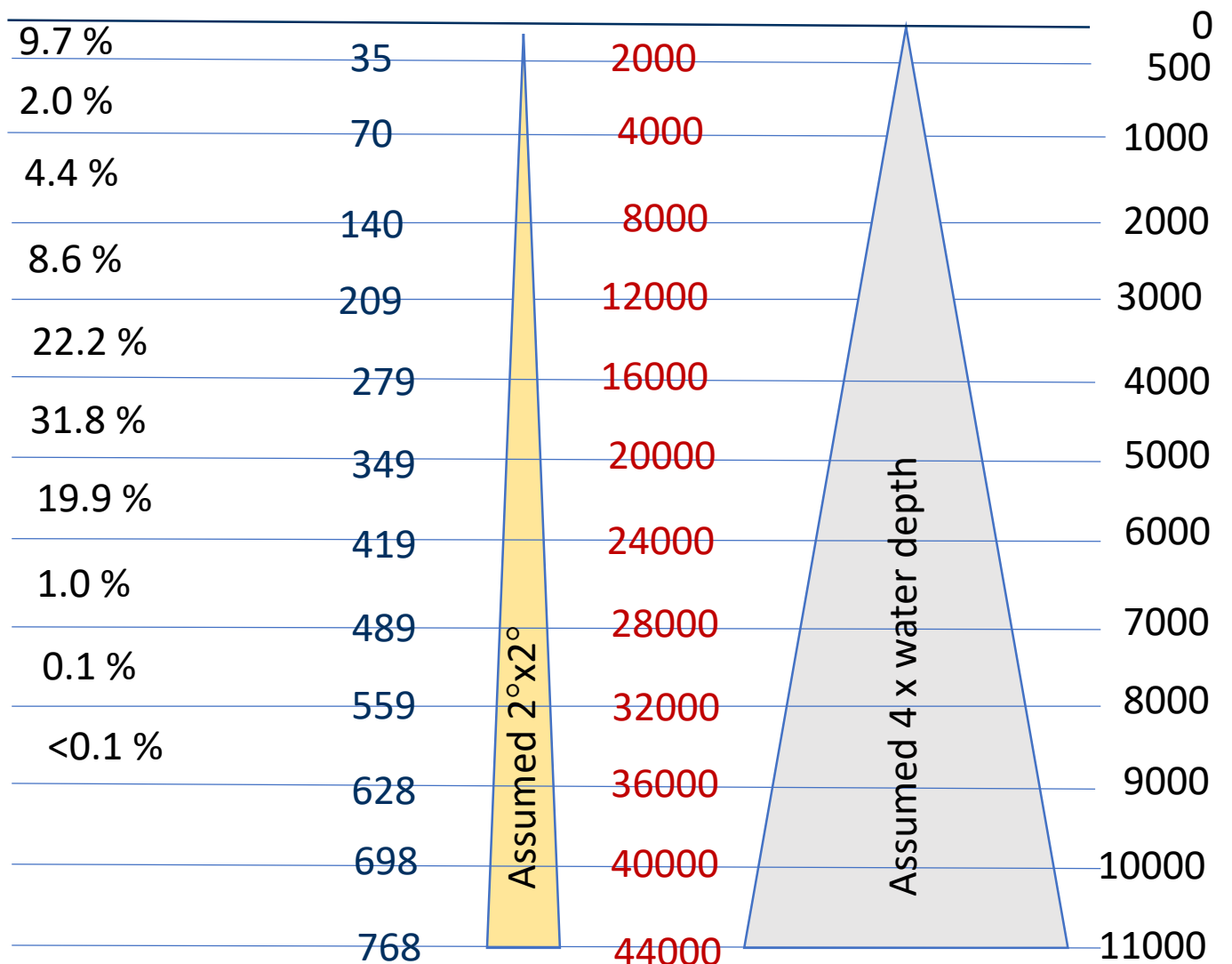
We set the target resolution based on what a modern multibeam system installed in a vessel can achieve



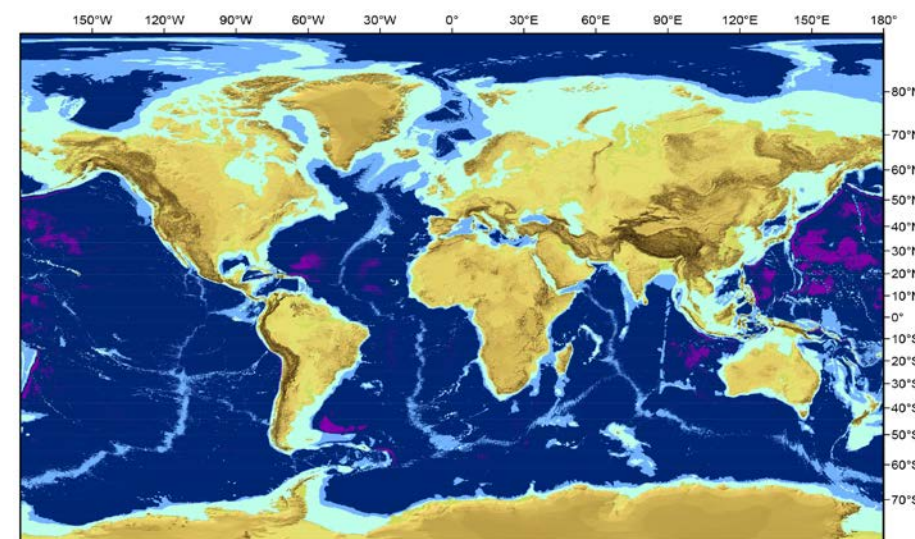
4. What is the mapping target resolution?

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

World Ocean area “Resolution” (foot print) “Coverage” (swath width)



Target resolutions

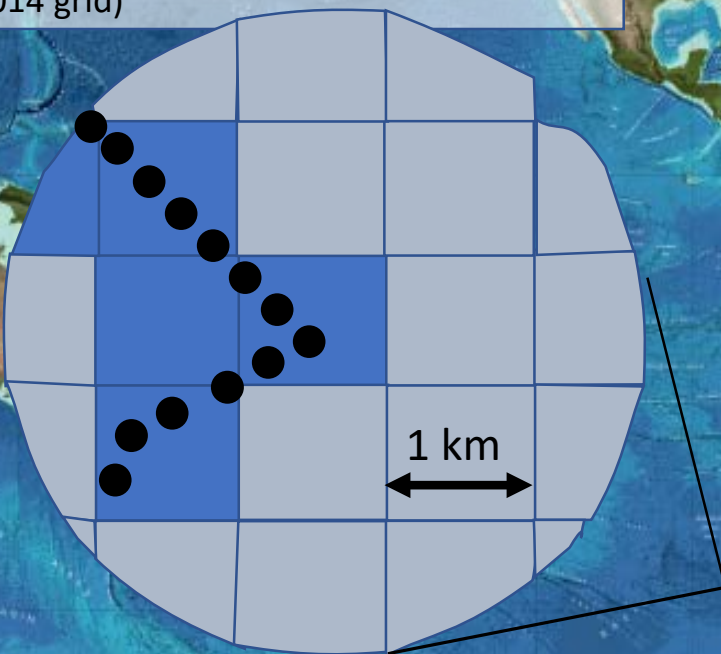


- 100x100 m (0-1500 m)
- 200x200 m (1500-3000 m)
- 400x400 m (3000-5750 m)
- 800x800 m (5750-11000 m)

5. How much of the world is mapped at the Seabed 2030 target resolutions?

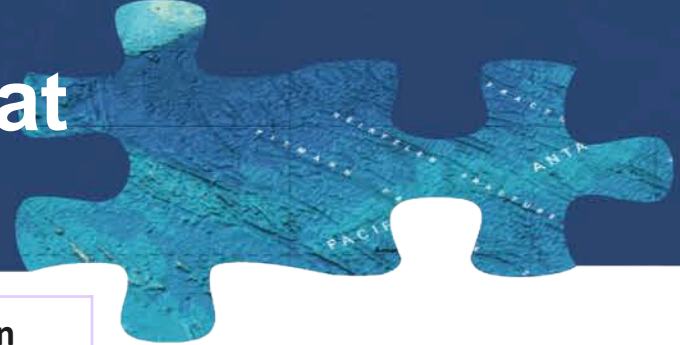
If the World Ocean is divided into 0.5'0.5' min (about 1x1 km) blocks (grid cells), about **82 %** of them do not have depth values. (Based on GEBCO 2014 grid)

18 % complete

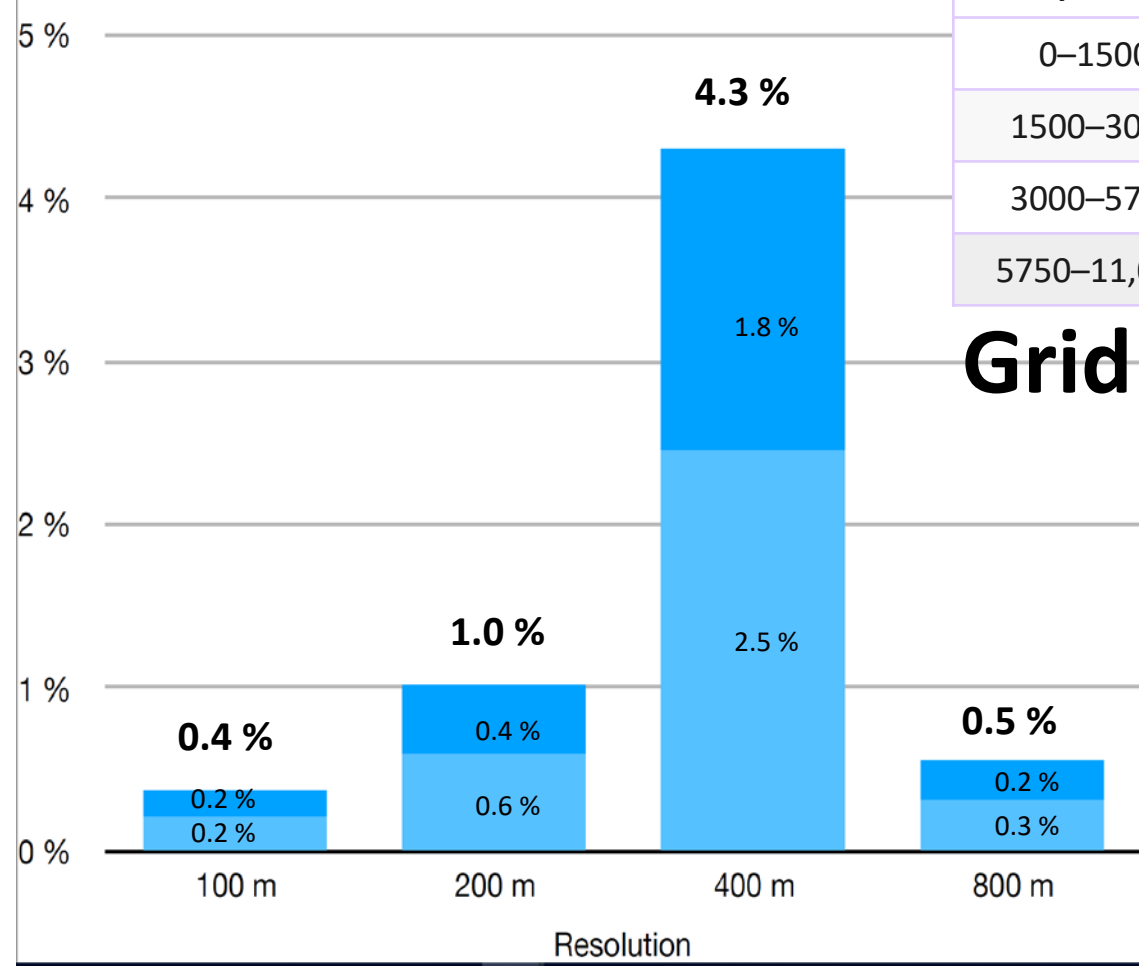


First: How much of the World Ocean was mapped by GEBCO at the GEBCO_2014 resolution of 0.5''x 0.5'' min?

5. How much of the world is mapped at the Seabed 2030 target resolutions?



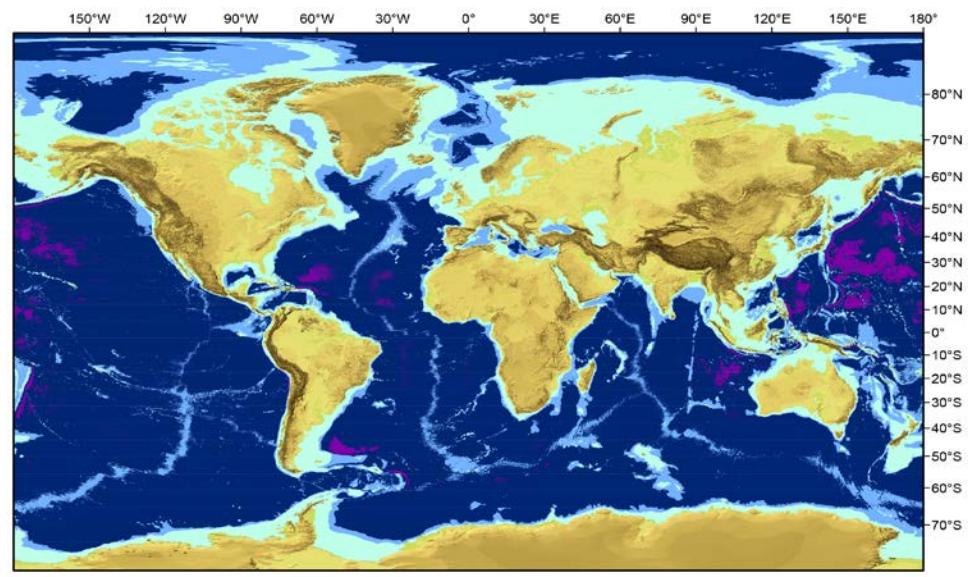
Mapped portion of entire World Ocean



Depth Range	Resolution	% of ocean
0–1500 m	100 × 100 m	13.7
1500–3000 m	200 × 200 m	11
3000–5750 m	400 × 400 m	72.6
5750–11,000 m	800 × 800 m	2.7

Grid 6.2 % complete

■ Outside EEZ
■ Within EEZ



5. How much of the world is mapped at the Seabed 2030 target resolutions?



The higher grid resolution we aim for, the smaller portion of the World Ocean have been mapped!

18 % mapped

GEBCO_2014 (grid cell size 30''x30'', ca 1000x1000 m)

6.2 % mapped

Seabed 2030 variable grid resolution

