

The Nippon Foundation – GEBCO Seabed 2030 programme

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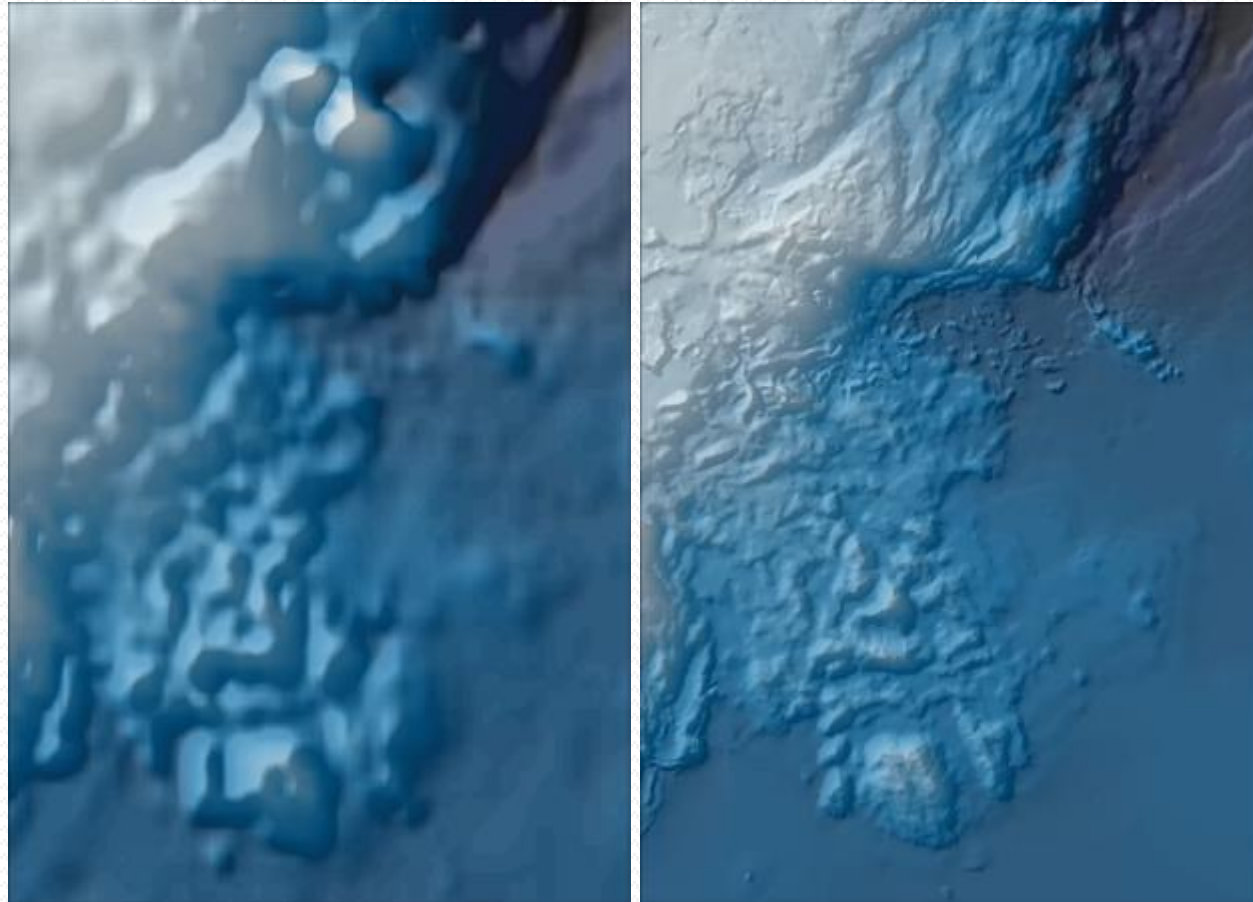




Outline

- Resolution / Grid Size
- 2014: Digital bathymetric model
- The Seabed 2030 project
- The South and West Pacific Centre
- A selection of challenges we face !

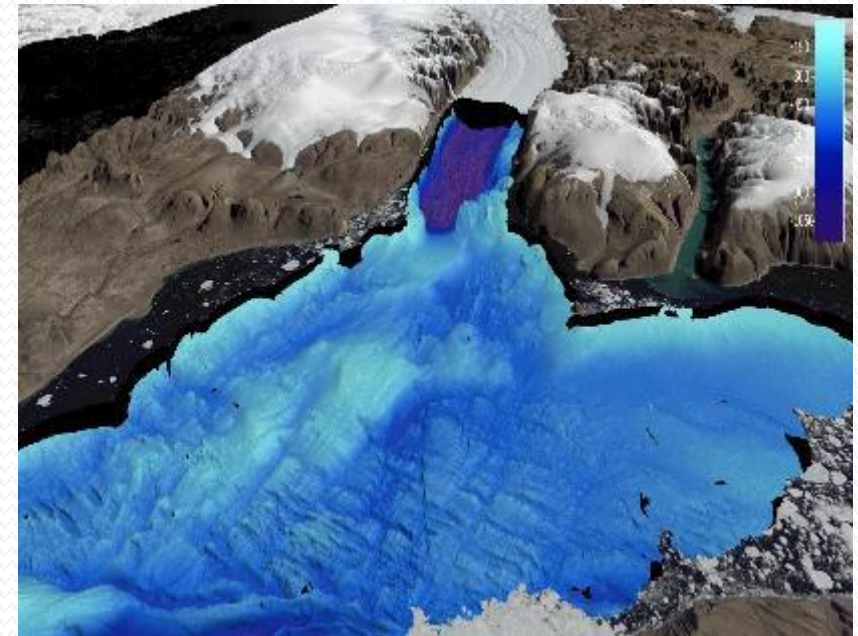
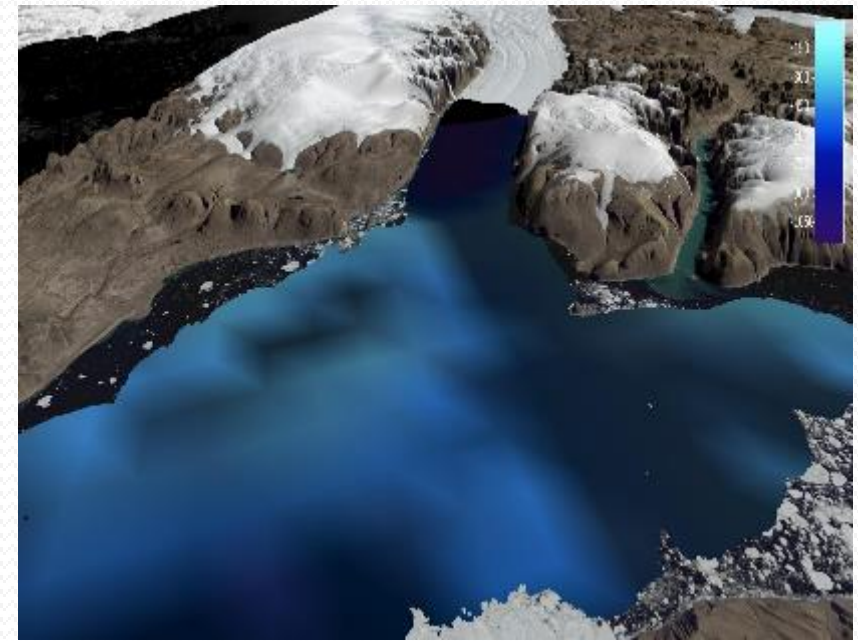
Resolution / grid size



1 km

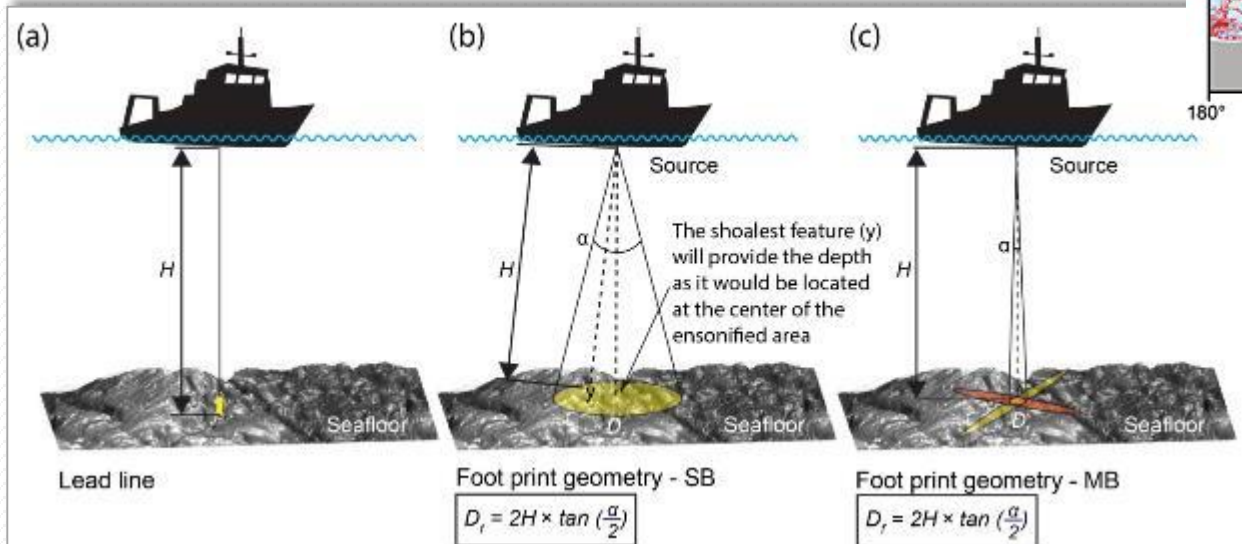
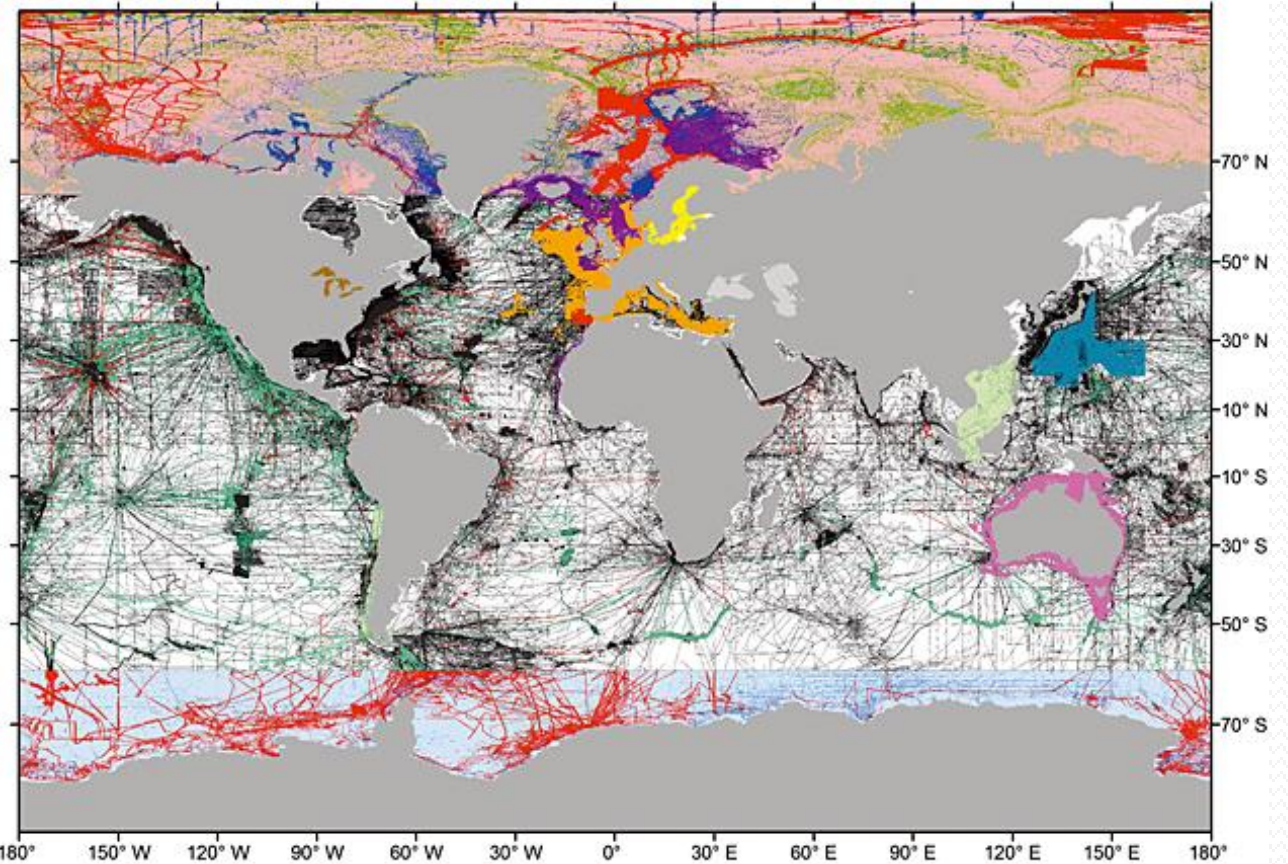
vs

400 m



2014: Digital bathymetric model (DTM)

But...
Only 15% of ocean accurately in-situ mapped

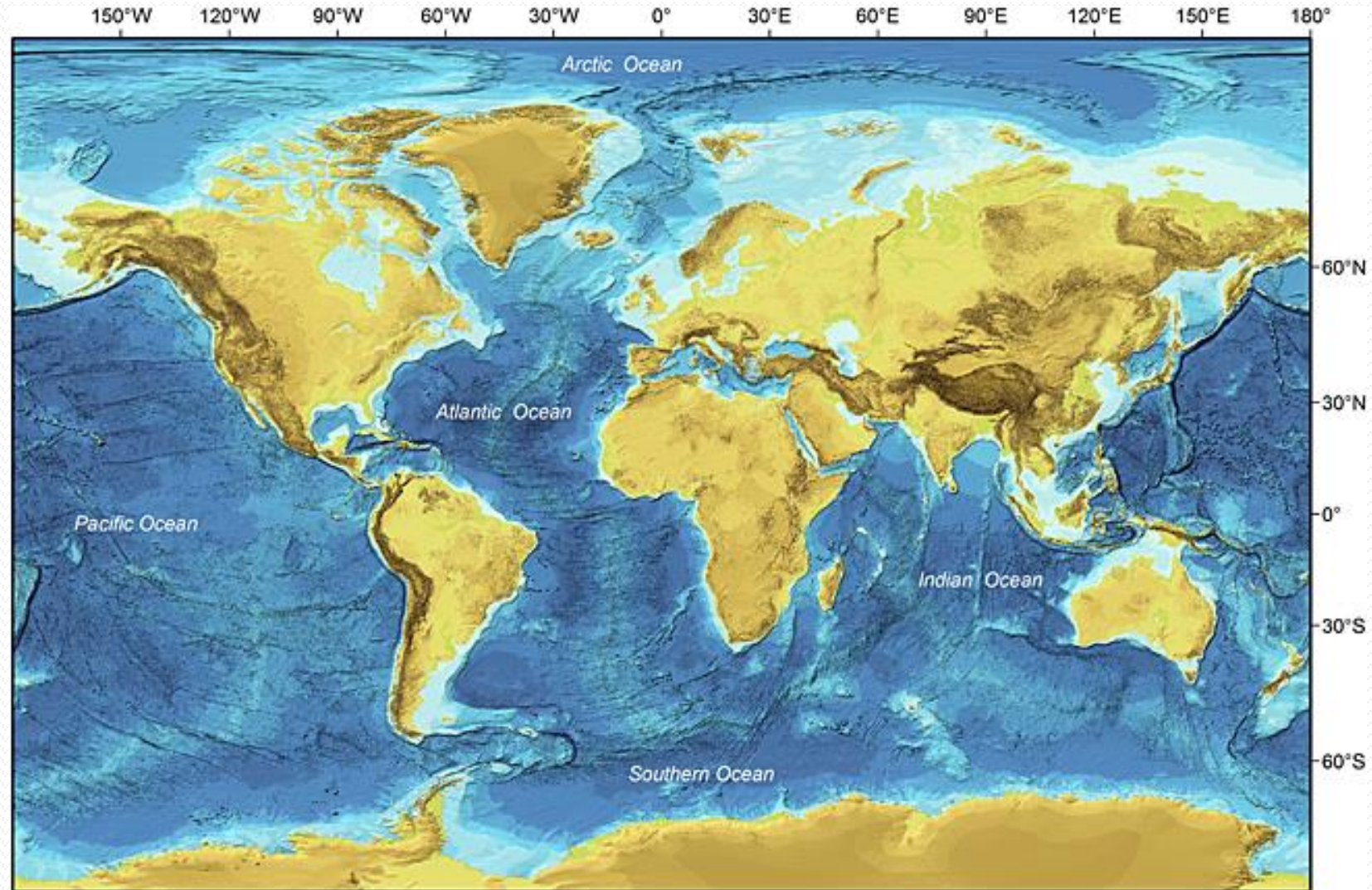


- Region taken from IBCAO V3
- Region taken from IBCSO V1
- EMODNet 2013
- Baltic Sea Bathymetry Database
- Geoscience Australia Grid 2009
- JHO0 grid
- Onix AS data
- LOEIO Global Multi-Resolution Topography Synthesis
- Multibeam bathymetry
- Single beam bathymetry
- Bathymetric contours from charts
- North American Great Lakes bathymetry
- Coastal area updated using ENC soundings
- Regions based on pre-prepared grids, (first included in the GEBCO_08 Grid)
- Trackline control information from the SRTM30_plus (v5) base grid
- Region based on interpolation guided by satellite-derived gravity data within the SRTM30_plus (v5) base grid

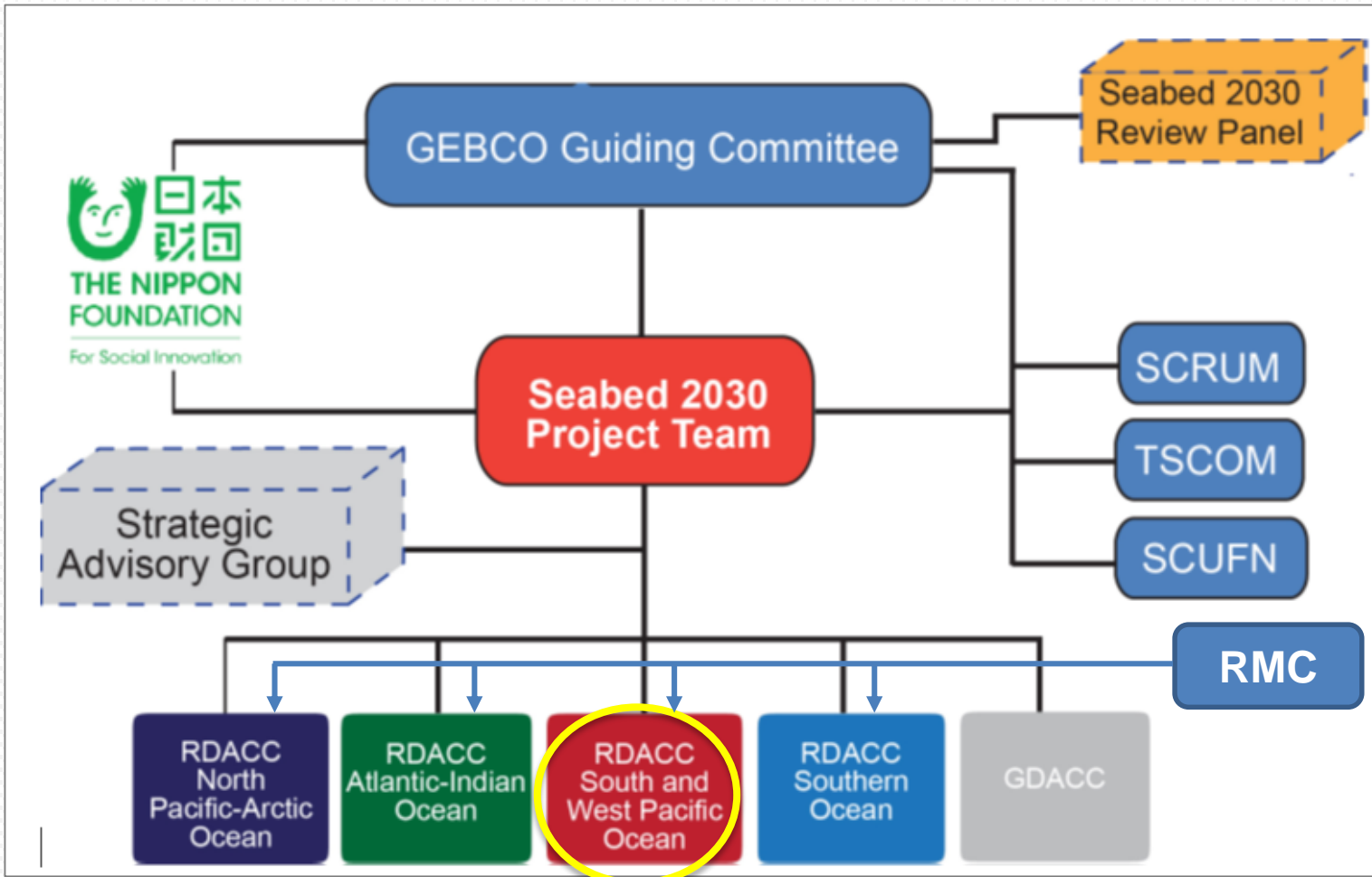
Vision: 100% of the World Ocean floor mapped by 2030

Seabed 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.



The Nippon Foundation – GEBCO – Seabed 2030



Project Team:

- Project Director
- RDACC leads (x4)
- GDACC Lead

RMC: Regional Mapping Committee: experts from e.g., hydrographic agencies, research institutes, alumni of the Nippon Foundation/GEBCO

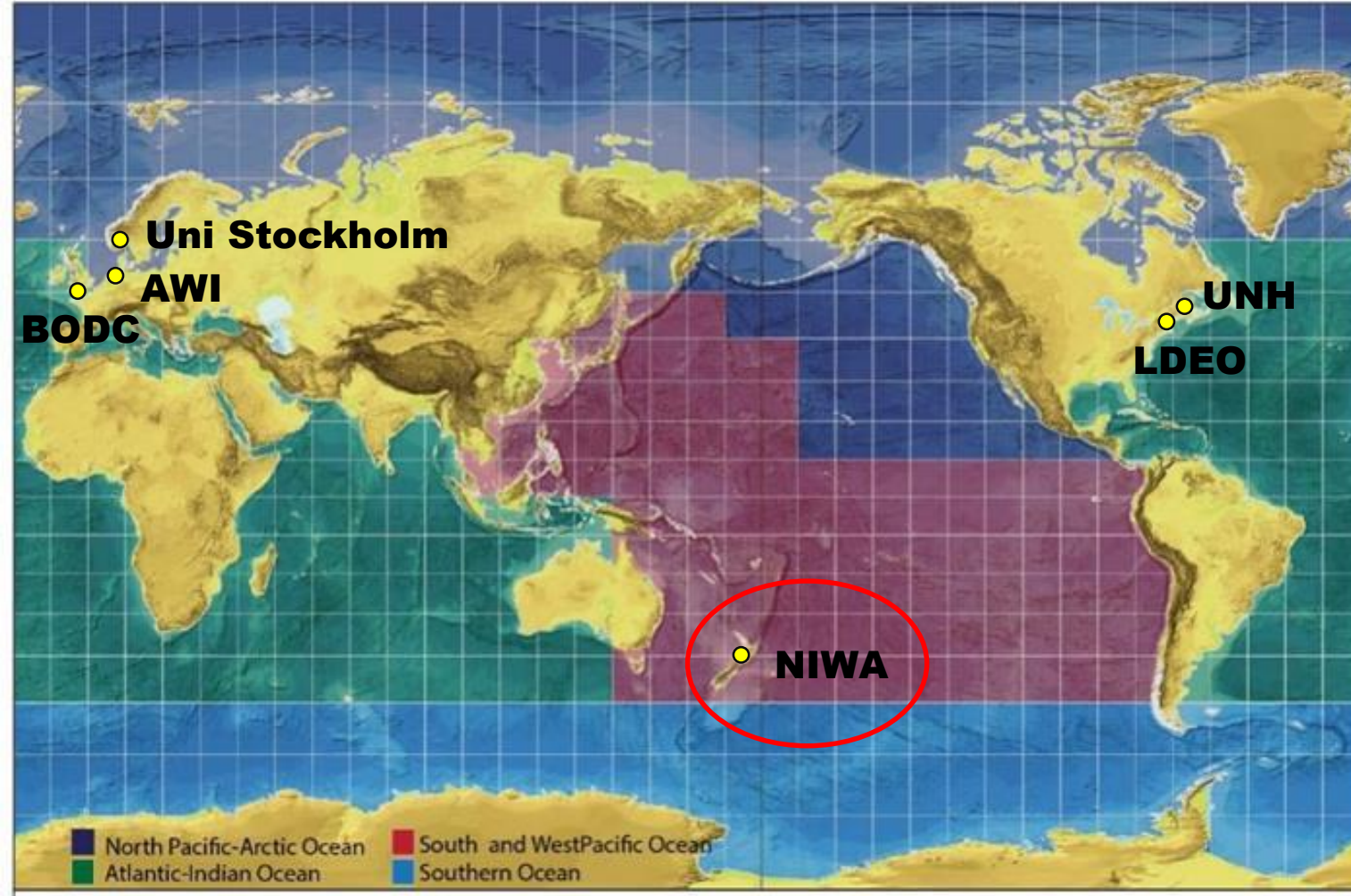
- GDACC: Global Data Assembly and Coordination Centre
- RDACC: Regional Data Assembly and Coordination Centre
- SCRUM: Committee for Regional Undersea Mapping (IOC)n

- TSCOM: Technical Sub-Committee on Ocean Mapping (GEBCO)
- SCUFN: Sub-Committee on Undersea Feature Names (IHO)n

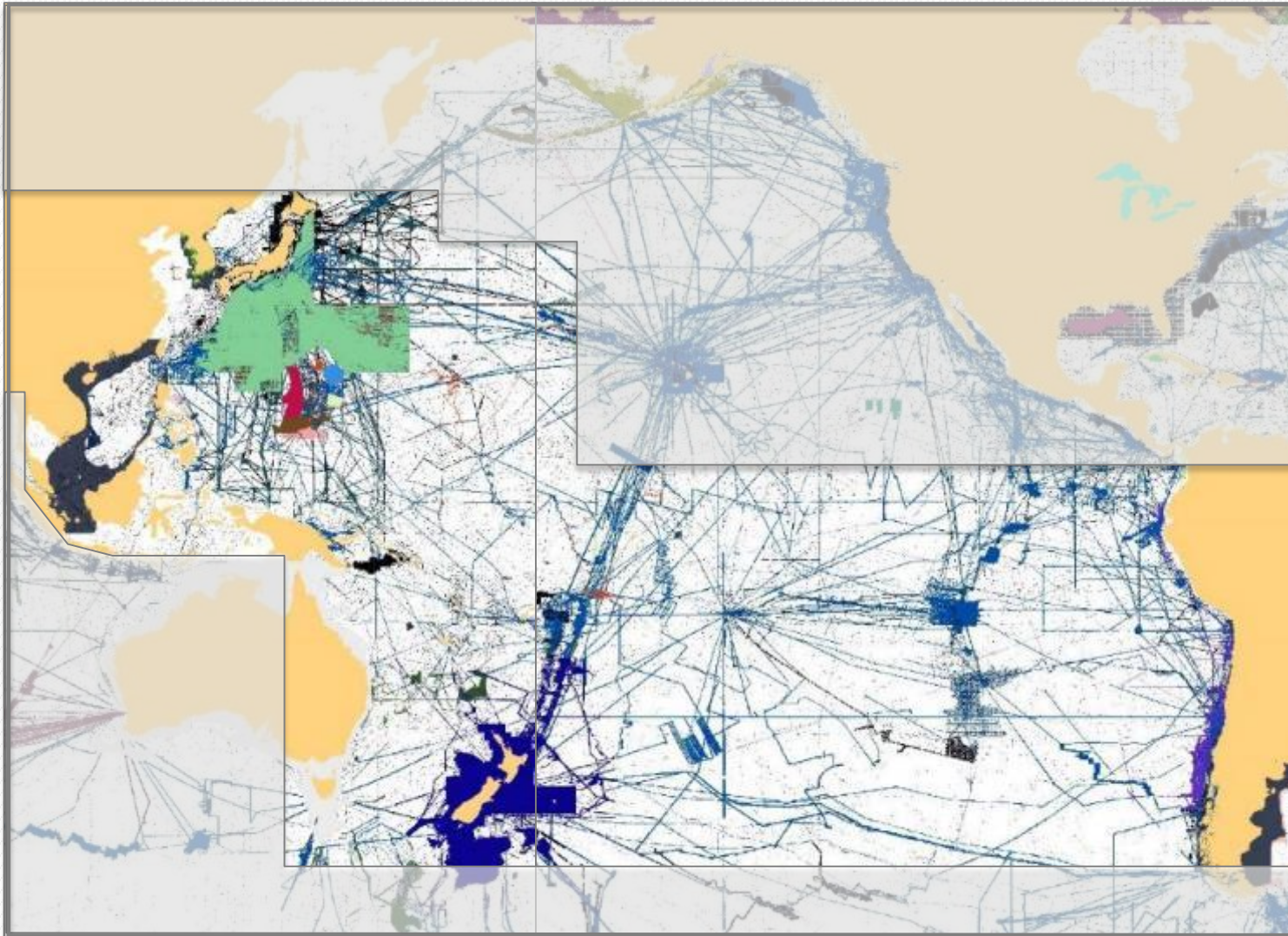
RDACCs & GDACC

Regional Data Assembly and Coordination Centres Global Data Assembly and Coordination Centres

- Assembling regional database and production of a bathymetric grid.
- Identify existing data
- Develop appropriate metadata and standards and gridding tools
- Identify data gaps and opportunities for new data collection
- Facilitate new mapping endeavors
- Coordinate ongoing activities among stakeholders.
- Establish Regional Mapping Committees
- Work on issue of protected data for reasons of national security and/commercial protection.



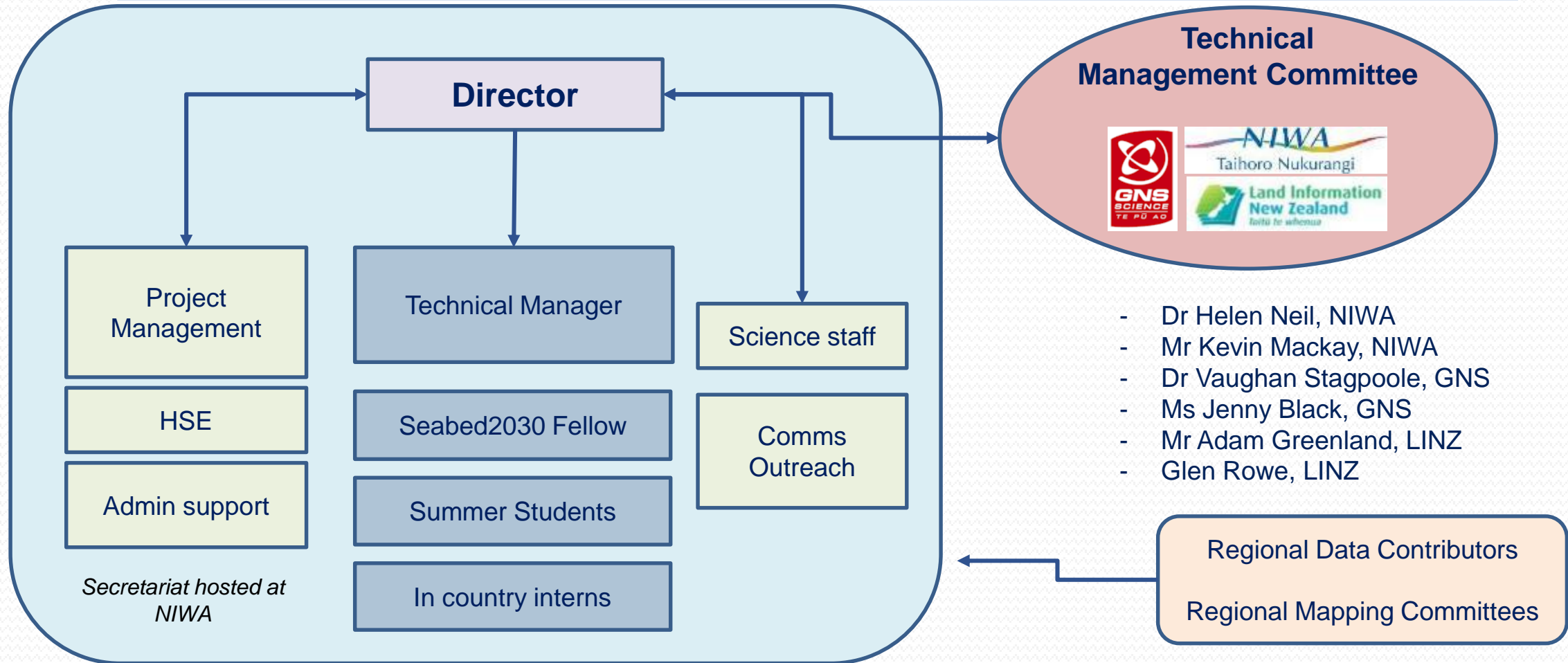
The Seabed 2030 South and West Pacific Centre



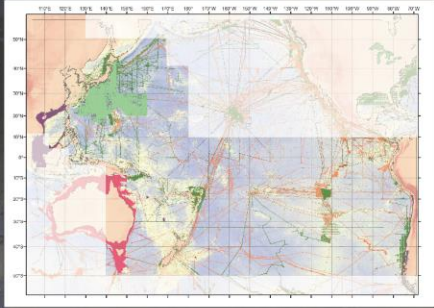
- 39 countries (China → Tonga)
- ~150,000,000 km²
- Southern Ocean
- Shallow internal seas
- EEZ + ECS
- Contested areas
- Highly mapped and unknown regions

Seabed2030 South and West Pacific Regional Data Assembly and Coordination Centre

South and West Pacific Centre (SaWPac)



The Nippon Foundation GEBCO Seabed2030 Project South and West Pacific Centre



Source Identifier (SID) grid used for the GEBCO world map 2014 (www.gebco.net). Note the very low density of data in high latitudes

Seabed 2030 is a joint project between The Nippon Foundation of Japan and the General Bathymetric Chart of the Oceans (GEBCO).

The South and West Pacific Centre (SaWPaC) covers approx 200,000 km² of ocean. It includes Exclusive Economic Zones of 34 countries, from South America to Australia and Southeast Asia, as well as the Pacific's Small Island Developing States. It also encompasses regions outside the countries' Extended Continental Shelves known as "The Area".

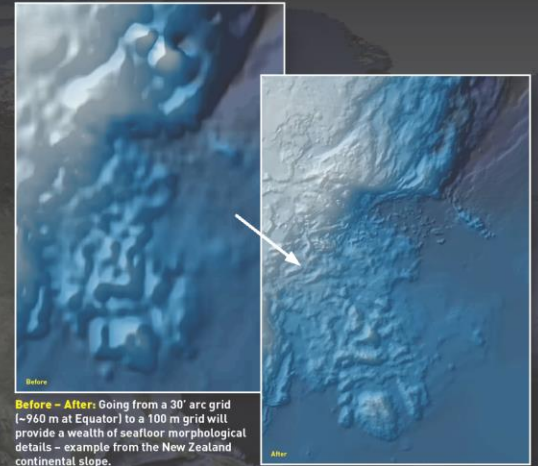
The Centre is based at the National Institute of Water and Atmospheric Research (NIWA) in Wellington, New Zealand. SaWPaC's Technical Management Committee includes representatives from NIWA, LINZ and GNS Science.



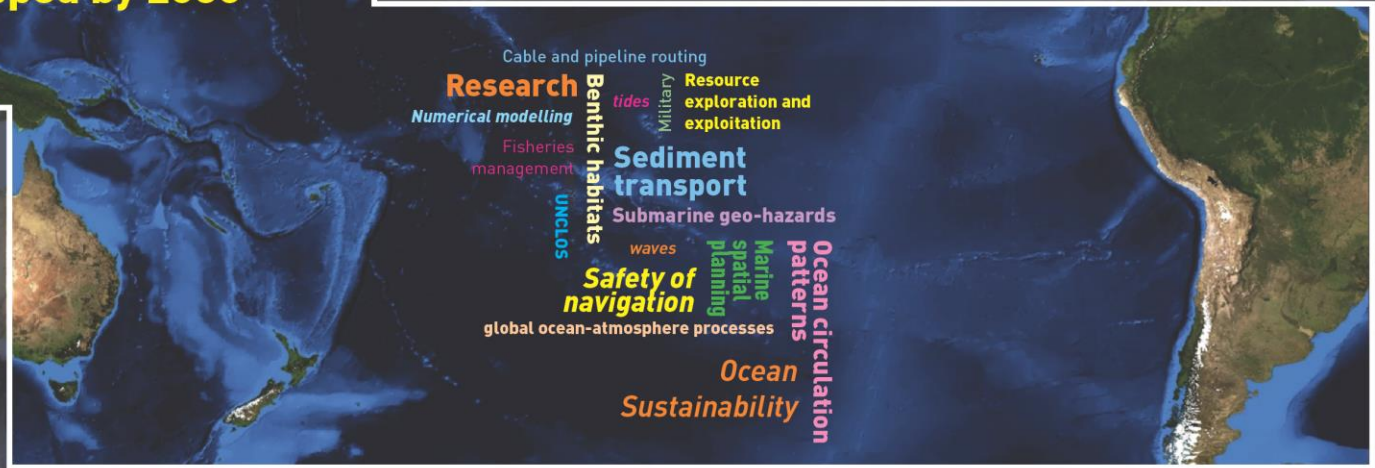
"100% of the World's ocean floor mapped by 2030"

The responsibilities of the SaWPaC include:

1. Assembling a regional database and bathymetric grid
2. Identifying existing data and data gaps
3. Developing metadata, standards and gridding tools
4. Coordinating and facilitating new mapping endeavors
5. Establishing and coordinating Regional Mapping Committees



Before - After: Going from a 30' arc grid (~9.6 m at Equator) to a 100 m grid will provide a wealth of seafloor morphological details - example from the New Zealand continental slope.



Cable and pipeline routing
Research
 Numerical modelling
 Fisheries management
 UNCTOLS
 Benthic habitats
 Military
 Resource exploration and exploitation
Sediment transport
 Submarine geo-hazards
 waves
Safety of navigation
 global ocean-atmosphere processes
 Marine spatial planning
 Ocean circulation patterns
Ocean Sustainability

How can I help?

We need knowledgeable people willing to liaise with the Centre to help us bring together bathymetric data held by government agencies, industry, universities, and research organisations.

Please contact SaWPaC director, NIWA marine geologist Dr. Geoffroy Lamarche at pacific@seabed2030.org

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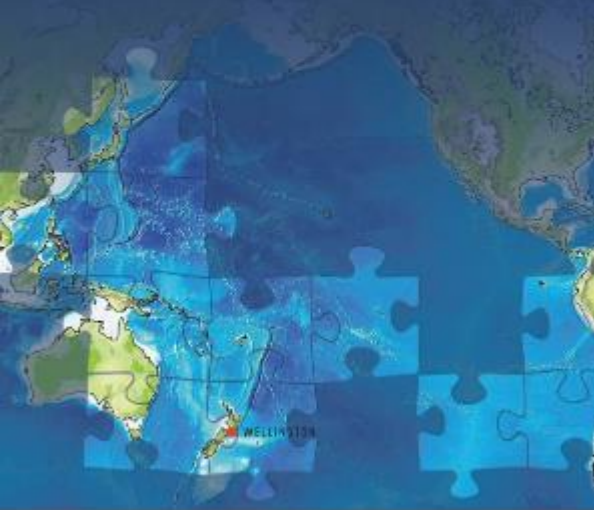
1 - National Institute of Water and Atmospheric Research (NIWA), Wellington, New Zealand
 2 - Institute of Geological and Nuclear Sciences, Lower Hutt, New Zealand
 3 - Land Information New Zealand, Wellington, New Zealand



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

Seabed2030 South and West Pacific Centre

100% of the World's ocean
floor mapped by 2030



Take home points!

- <15% of the ocean floor have been mapped at an acceptable resolution
- Seabed 2030 aims at facilitating the complete mapping of the world ocean by 2030
- Seabed 2030 will be organised in 4 Regional Data Assembly and Coordination centres and 1 Global centre
- Grid-cell size will vary 100x100m; 200x200m; 400;400m
- Responsibilities of RDACCs include
 - Organizing/facilitating surveys
 - Working with countries/industry/public so they provide data
 - Identifying and prioritize critical data gaps
 - Participating and encourage development of new mapping technologies
 - Developing tools to continuously update data coverage

1 Gathering, synthesizing, publishing bathymetric data

- Develop/maintain communities for bathymetric data providers, industry, government, academia
- Establish and implement data standards
- **GDACC**: produce and distribute centralized bathymetric products. Responsible for data management of non-regionally sourced data
- **RDACC**: Lead and coordinate regional mapping efforts through established centers and regional Editorial Boards

2 Dev. of standards, data assembly and delivery tools

- **GDACC**: Lead the development data assembly tools, e.g. data upload and visualization tools to show the accumulated database. Develop automated grid generation tools.
- **RDACC**: Implement data assembly tools developed at GDACC in regional communities.

3 Technological innovation

- Implement the latest technology for ocean mapping, e.g. satellite derived near shore bathymetry
- Establish working groups, spanning industry and academia on specific target areas, e.g. bathymetric mapping with drones.

4 Networking: Map the gaps

- Coordinate mapping expeditions
- Develop scheme for funding expeditions to map identified gaps.
- Initiate Seabed 2030 components to expeditions
- Network with crowd source initiatives
- Network with international programs and organization

