

# GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO) an IHO-IOC Joint Project

19<sup>th</sup> North Indian Ocean Hydrographic Commission (NIOHC) Meeting, Muscat, Oman  
26-28 March 2019

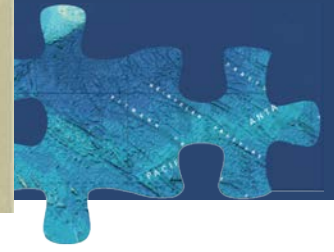
# What is GEBCO?

## The General Bathymetric Chart of the Oceans (GEBCO) (see [www.gebco.net](http://www.gebco.net))

- Aims to provide the most authoritative, publicly-available bathymetric data sets for the world's oceans
- Operates under the joint auspices of the
  - International Hydrographic Organization (IHO), and
  - Intergovernmental Oceanographic Commission (IOC) of UNESCO
- First GEBCO paper chart series initiated in 1903
- Forum for Future Ocean Floor Mapping (June 2016):  
[www.iho.int/mtg\\_docs/com\\_wg/GEBCO/FOFF/index.html](http://www.iho.int/mtg_docs/com_wg/GEBCO/FOFF/index.html)



# GEBCO Project organisational structure



- GEBCO is led by a Guiding Committee consisting of five IHO-appointed members; five IOC-appointed members; Sub-committee Chairs and the Director of the IHO-DCDB
- It has 4 sub-committees and a number of working groups:
  - Sub-Committee on Undersea Feature Names (SCUFN)
  - Technical Sub-Committee on Ocean Mapping (TSCOM)
  - Sub-Committee on Regional Undersea Mapping (SCRUM)
  - Sub-Committee on Communications, Outreach and Public Engagement (SCOPE)
  - IHO-IOC GEBCO Cook Book

[www.gebco.net/about\\_us/committees\\_and\\_groups/](http://www.gebco.net/about_us/committees_and_groups/)

# GEBCO products

## Our bathymetric data sets and products:

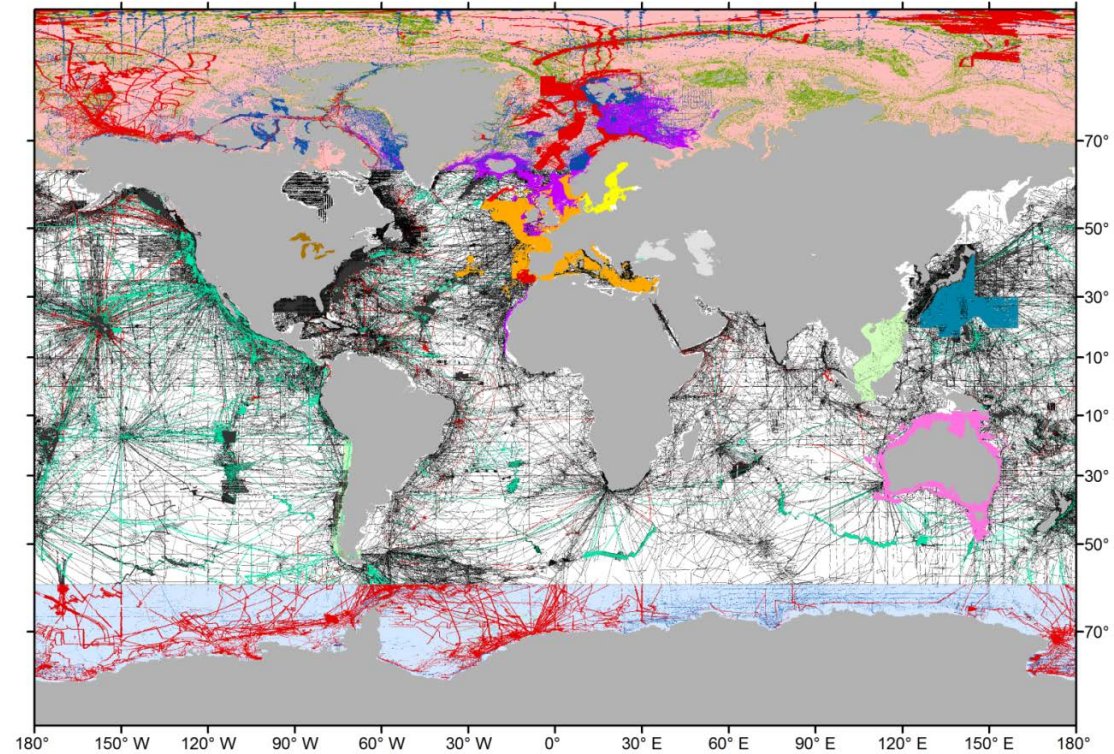
- Global gridded bathymetric data set (30 arc-second interval)
- GEBCO Gazetteer of Undersea Feature Names
- GEBCO Digital Atlas
- Grid viewing software
- Printable maps
- Web Map Service (WMS)
- IHO-IOC GEBCO Cook Book

[www.gebco.net/data\\_and\\_products/](http://www.gebco.net/data_and_products/)

# GEBCO products: Source Identifier Grid

The GEBCO Source Identifier (SID) Grid:

Shows the source of depth value in each grid cell, *i.e.* if it is based on track-line data; pre-existing grids or if it is based on interpolation



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



# Filling the data gaps

- Raising awareness of the ‘data gaps’ to encourage data collection in these regions
- Encouraging organizations to make their bathymetric data sets easily discoverable and accessible, either directly or by contributing data to international publically-available databases such as the IHO Data Center for Digital Bathymetry (IHO-DCDB)
- Crowdsourced bathymetry (CSB) initiatives – such as the IHO CSB Working Group
- GEBCO initiative to request shallow water bathymetry data extracted from Electronic Navigation Charts from the Hydrographic Community

# Seabed 2030



*Seabed 2030* is a global initiative to cooperatively work towards creating a high resolution complete map of the world's ocean floor by 2030.



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission

-The *Nippon Foundation* is a private Japanese-based, non-profit grant-making organization with a mission based around philanthropic activities to pursue global maritime development and assistance for humanitarian work.

-The *General Bathymetric Chart of the Oceans (GEBCO)* organization operates under the joint auspices of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO





Empower the world to *make policy decisions, use the ocean sustainably*, and *undertake scientific research* that is informed by a detailed understanding of the global ocean floor.

*Only a small portion of the ocean has been mapped with direct measurement.  
~ 50% of the world's coastal waters remain unsurveyed*

*As of GEBCO 2019 - only 6% of our global goal is met*



# The UN Decade of Ocean Science for Sustainable Development (2021-2030)



**14 LIFE BELOW WATER**

**CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT**

## A Vision for the Decade

Develop scientific knowledge, build infrastructure and foster partnerships for a sustainable and healthy ocean





# Seabed 2030 Regional Data Assembly





# Seabed 2030: Regional Centers

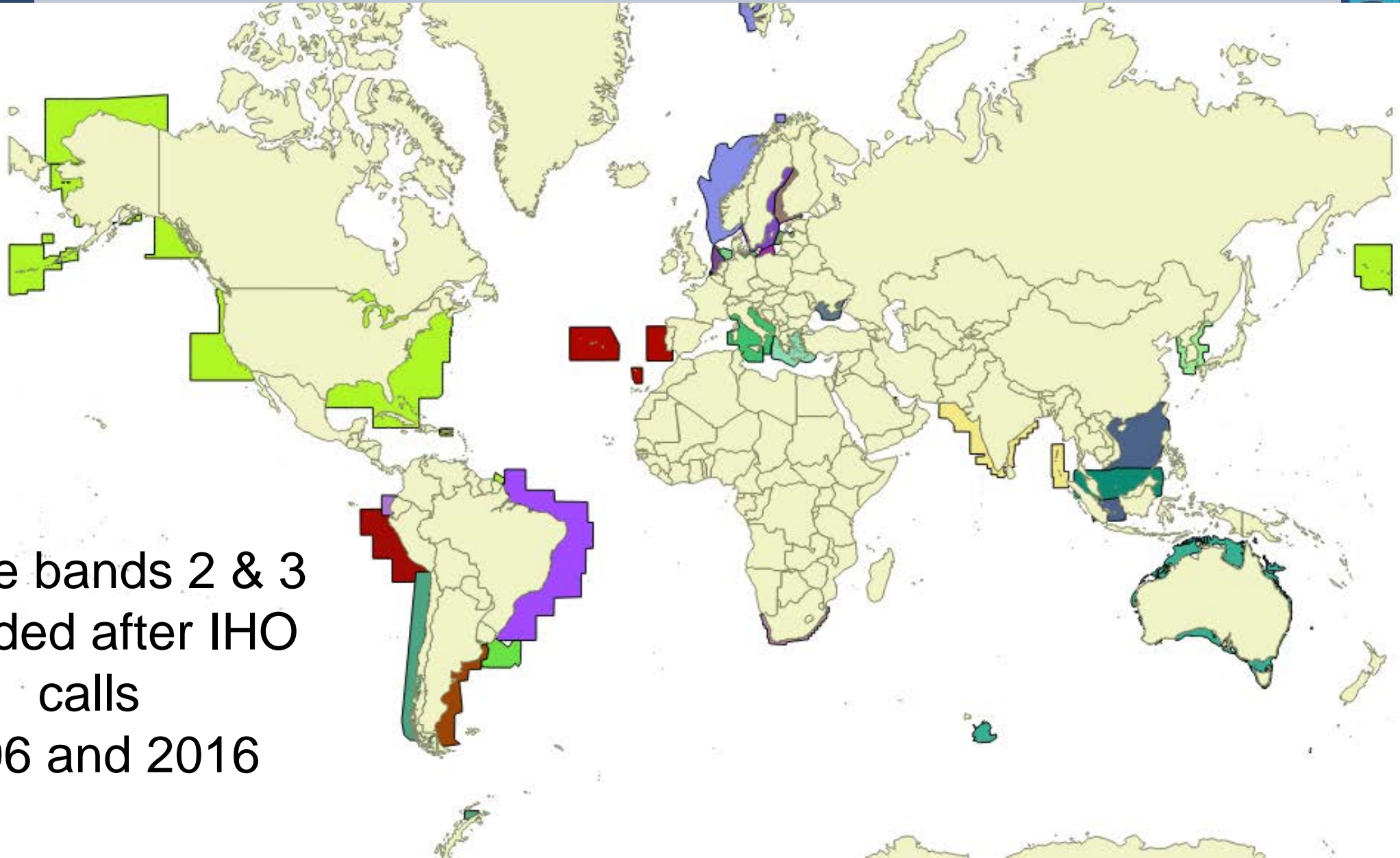


- Coordinate with stakeholders
- Build upon ongoing regional efforts including IBCs
- Develop mechanisms for attribution
- Assemble regional data products

North Pacific-Arctic Ocean      South and West Pacific Ocean  
Atlantic-Indian Ocean      Southern Ocean



# ENC Data Contributions to GEBCO



Usage bands 2 & 3  
provided after IHO  
calls  
2006 and 2016



# Coordinating with IBCs



- Seabed 2030 Atlantic/Indian Oceans RDACC
  - IBC of the Caribbean Sea & Gulf of Mexico (IBCCA)
  - IBC of the Central Eastern Atlantic (IBCEA)
  - IBC of the Mediterranean (IBCM)
  - IBC of the Western Indian Ocean (IBCWIO)
- Seabed 2030 South & West Pacific RDACC
  - IBC of the South Eastern Pacific (IBCSEP)
- Seabed 2030 Arctic/North Pacific RDACC
  - IBC of the Arctic Ocean (IBCAO)
  - IBC of the Caribbean Sea & Gulf of Mexico (IBCCA)
- Seabed 2030 Southern Ocean RDACC
  - IBC of the Southern Ocean (IBCSO)



# Seabed 2030 Status & Next Steps



- ✓ Data centers established 2018
- ✓ Initial regional data products generated and passed to Global Center
- New GEBCO grid to be released at spring of 2019
- Establishing connections with regional stakeholders

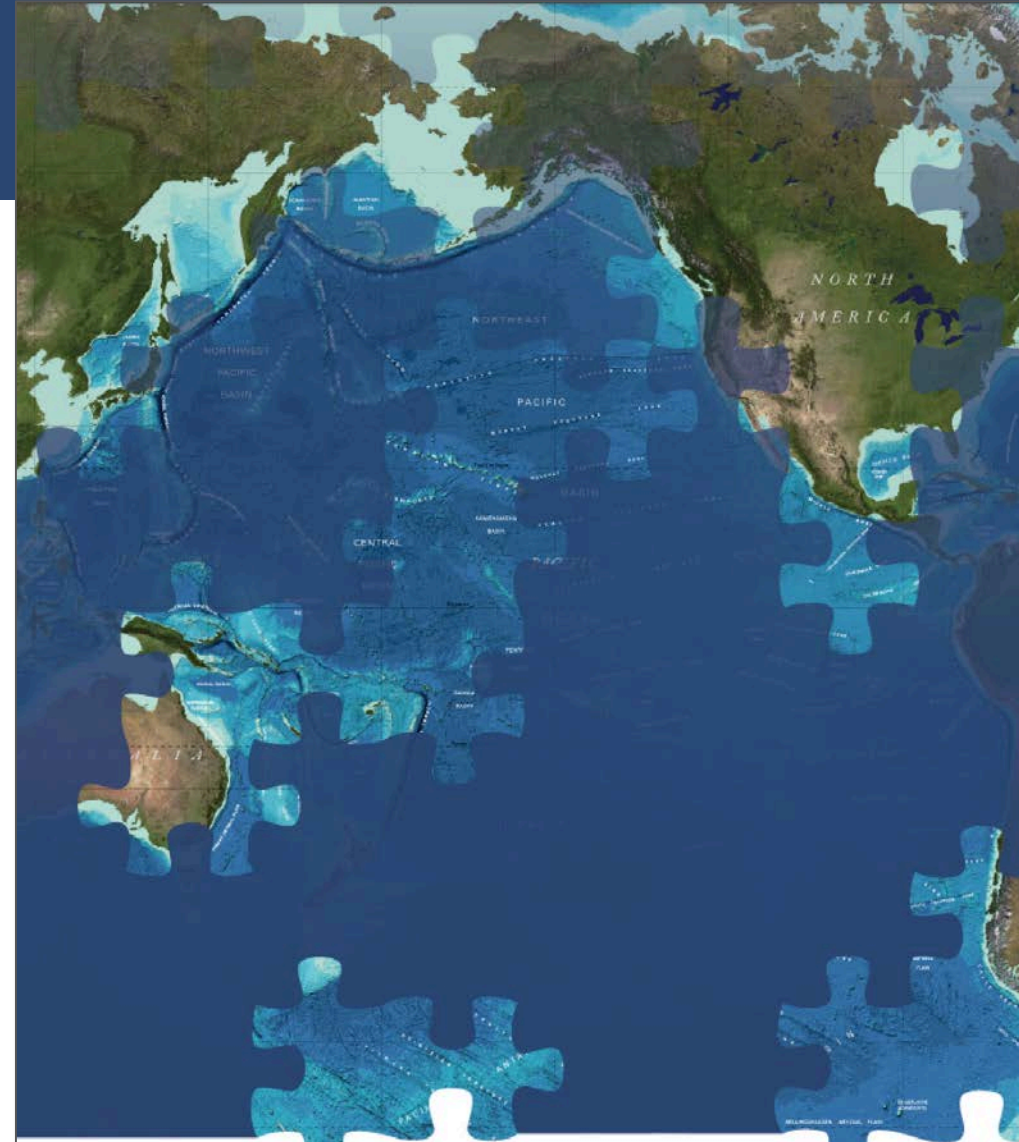




# How to participate

- Contribute information about existing data coverage
- Contribute data
  - Gridded data products
  - Points from ENC's
- Share information about future mapping plans
- Participate in 2019 Regional Mapping Meetings & GEBCO Meetings

[atlantic-indian@seabed2030.org](mailto:atlantic-indian@seabed2030.org)



**The Nippon Foundation – GEBCO – Seabed 2030**  
Roadmap for Future Ocean Floor Mapping



# Capacity-building initiative:

## The Postgraduate Certificate in Ocean Bathymetry

*Designed to train a new generation of scientists and hydrographers in ocean bathymetry*

is funded by:



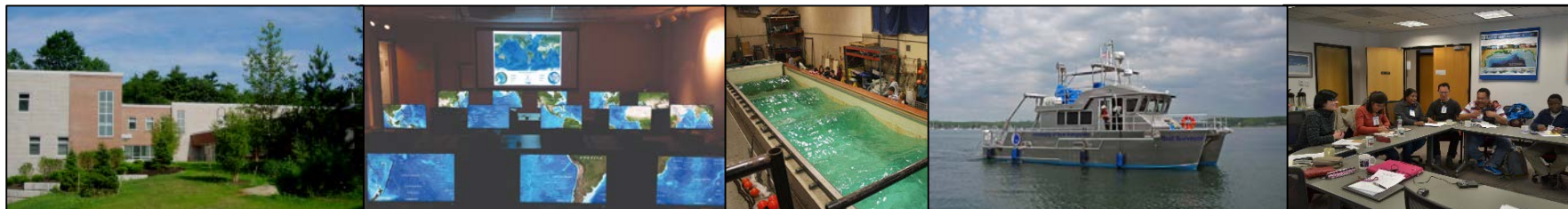
**The Nippon Foundation of Japan**

[www.nippon-foundation.or.jp/en/](http://www.nippon-foundation.or.jp/en/)

and taught at:

**The Center for Coastal and Ocean Mapping /  
Joint Hydrographic Center; University of New Hampshire, USA**

**SEE CIRCULAR LETTER 12/2019 - 11 February 2019**





A world map with a complex network of blue and white lines overlaid, representing oceanographic data or survey tracks. The map shows continents and oceans, with labels for 'NORTH AMERICA', 'SOUTH AMERICA', 'NORTH PACIFIC OCEAN', 'SOUTH PACIFIC OCEAN', 'NORTH ATLANTIC OCEAN', and 'SOUTH ATLANTIC OCEAN'. A semi-transparent white box is centered over the map, containing the text 'Thank you!'.

# Thank you!

**David Wyatt**

*Assistant Director, Survey and Operations*

*IHO Secretariat*

*adso@iho.int*

<https://seabed2030.gebco.net>