THE NIPPON FOUNDATION-GEBCO

The North Sea Hydrographic Commission

34th Meeting

27-28 April 2021

Jamie McMichael-Phillips & Martin Jakobsson







International Hydrographic

Organization



GEBCO



GEBCO Guiding Committee

- ' The General Bathymetric Chart of the Oceans'
- '... a joint programme of **IHO** & **IOC**, managed by the GEBCO Guiding Committee (GGC)'
- '...aiming to provide the most authoritative, publicly-available bathymetry data sets of the world's oceans.'
- '... largely a **voluntary** community of international **scientists** and **hydrographers** collaborating with the support of their parent organizations.'



What is Seabed 2030?

A collaborative project between The Nippon Foundation and GEBCO to inspire the complete mapping of the world's ocean by 2030 and to compile all bathymetric data into the freely-available GEBCO Ocean Map.











Mr Sasakawa Chairman The Nippon Foundation

June 2016



The Network of Centers



North Pacific – Arctic Ocean

Stockholm University & University of New Hampshire (SU & UNH)

Southern Ocean Alfred-Wegener-Institut (AWI)

<u>Atlantic-Indian Ocean</u> Lamont-Doherty Earth Observatory, Columbia University (**CU**)

South-West Pacific Ocean

National Institute of Water & Atmospheric Research (NIWA) Land Information New Zealand (LINZ) GNS Science (GNS)

Global Center

British Oceanographic Data Centre, National Oceanography Centre (NOC/BODC)



Seabed 2030 Phase 2: Mapping the Gaps

A + B + C = 100%

Ocean NOT mapped

Data IN GEBCO

Ocean Frontier Mapping

- Use GEBCO Grid to inform location of future mapping

Data NOT in

GEBCO

- Advocate for greater mapping activity
- Identify funding for mapping expeditions

Crowd Sourced Bathymetry

- Promoting CSB around the world
- Gaining support of, and data from, contributors at all levels

> Technology Innovation

- What can Seabed 2030 do to accelerate uptake of technology to accelerate rate of bathymetric mapping?



The GEBCO 2020 Grid

- Published June 2020 with 19% coverage
- 14.5million km² of new data assembled 2019-2020
 - ~0.5 x size of Africa's landmass
- At 6% when Seabed 2030 Project began.
- Around **20%** at end of 2020
- <u>Much more mapping</u> <u>action is required</u>





The GEBCO 2020 Grid



- Published June 2020 with 19% coverage
- 14.5million km² of new data assembled 2019-2020
 - ~54 x size of New Zealand's landmass
- At 6% when Seabed 2030 Project began.
- Around **20%** at end of 2020
- <u>Much more mapping</u> <u>action is required</u>





COMMUNITY INPUT REQUESTED: Community Survey



Seabed 2030 Survey

If you would like to know more about the context for this survey, please read the explanatory article <u>'Marine Geospatial Data: The Cornerstone Of The</u> <u>Blue Economy'</u>.

Section A: About you

1. Your name

2. Your organisation

https://seabed2030.org/survey

- It is essential that Seabed 2030 and the wider community work together across all sectors:
 - Government/Industry/Academia/Philanthropy/Public
- Tell us about your data needs
- Let us know your priority areas
- Point us at available data



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The North Sea Hydrographic Commission Region

Seabed 2030 organization and status

Presented by Martin Jakobsson





International

Hydrographic





The NSHC area spans over two Seabed 2030 **Regional Centers** and is included in the International **Bathymetric Chart** of the Arctic Ocean (IBCAO) compilation area as well as **EMODnet's**

Arctic-North Pacific Ocean Regional Center







Larry Mayer



Martin Jakobsson

Rezwann Mohammad



Tomer Ketter



Paul Johnson





Vicky Ferrini

Frank Nitsche

Atlantic and Indian

Oceans Regional Center



Tinah Martin



Hayley Drennon

John Morton



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Björn Eriksson Carlos Castro



World ocean mean depth: 3441 m

Seabed 2030: A challenge with existing mapping technologies

Horizontal resolution: ~1 km

(1°x1° high-res multibeam) Horizontal resolution: < 5 m Swath width: <500 m THE NIPPON FOUNDATION-GEBCO

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

World Ocean area	"Resolution" (foot print)	"Coverage" (swath width)			
9.7 %	35	2000			
2.0 %	70	4000		1000	
4.4 %	70	4000		1000	
8.6 %	140	8000		2000	
	209	12000		3000	
22.2 %	279	16000		4000	1
31.8 %	349	20000		5000	<i>سا</i> ط
19.9 %	410	24000	lept	6000	+400
1.0 %	415	24000	ter c		
0.1 %	489	28000	wat	/000	6
<0.1.9/	559	32000	4 ×	8000	
<0.1 %	628	36000	mec	9000	
	698	40000	Assu	10000	
	768	44000		-11000	

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

Target resolutions for the Arctic



Basic concept: A grid cell is considered mapped if it has one or more soundings in it

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

□ 100x100 m

400x400 m

□ 200x200 m





Status 2021 1st Quarter







📕 100 m 📕 200 m 📕 400 m 📒 800 m 📃 No data

Singlebeam
Multibeam
Seismic
Isolated sounding
ENC sounding
Lidar
Combination of direct measurement methods
Unknown category code 30
Digital bathymetric contours from charts
Bathymetric sounding
Pre-generated grid
Unknown source
Steering points
Land (negative topography)
Upcoming, received, (not included in total)
No data

Regional Hydrographic Commissions Map Area according to Seabed 2030 specifications





North Sea Regional Hydrographic Commissior		
Total	46.56	
Singlebeam		
Multibeam		
Seismic		
Isolated sounding		
ENC sounding		
Lidar		
Combination of direct measurement methods		
Digital bathymetric contours from charts		
Bathymetric sounding		
Pre-generated grid	16.31	
Unk <mark>now</mark> n source	0.00	
Steering points	0.00	
Land (negative topography)	0.00	
Upcoming, received, (not included in total)	0.00	

Arctic Regional Hydrographic Commissior

Total	18.22	
Singlebeam		
Multibeam		
Seismic		
Isolated sounding		
ENC sounding		
Lidar	0.00	
Combination of direct measurement methods		
Digital bathymetric contours from charts		
Bathymetric sounding		
Pre-generated grid		
Unknown source		
Steering points		
Land (neg <mark>ativ</mark> e t <mark>opo</mark> graphy)	0.00	
Upcoming, received, (not included in total)	0.78	

ION-GEBCO





Thank you









Educational, Scientific and

Cultural Organization



Intergovernmental Oceanographic Commission

University of New Hampshire



National Oceanography Centre



Lamont-Doherty Earth Observatory Columbia University | Earth Institute





