THE NIPPON FOUNDATION-GEBCO

SEABED 2030

Webinar 1: Where are we now? Introduction, Goals & Status of Mapping in the Region

Webinar Chair:
Mr. Stuart Caie, SWPHC Seabed 2030/CSB Coordinator

Presenters:
Mr. Kevin Mackay, Head, Seabed 2030 South and West Pacific Regional Center

Ms. Jaya Roperez, Data Manager, Seabed 2030 South and West Pacific Regional Center

Ms. Jennifer Jencks, Director IHO Data Center for Digital Bathymetry

2022 SWPHC Seabed 2030/CSB Webinar Series: Webinar 1, May 10, 2022

Welcome

SWPHC Chair, Mr Adam Greenland

Goal	Target	SPI		Activities	Lead	Timeframe
IHO Goal 2 Increasing the use of hydrographic data for the benefit of society	Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI)		16	Undertake a discover and catalogue exercise for SWPHC coastal states existing marine spatial data holdings	MSDIWG	2022
	Promote new tools and methods to accelerate and increase coverage, consistency, quality of surveying poorly surveyed areas	2.2.1	17	Promote the use of CSB & SDB tools and methodologies in SWP region	IHO CSBWG; SWPHC CSB/ Seabed 2030 Coordinator	2022-2030
			18	Report on gaps and opportunities in SWP data coverage	MSDIWG	SWPHC-20
	Apply UN shared guiding principles for geospatial information management in order to ensure interoperability and extended use of hydrographic data in combination with other marine-related data	2.3.1	19	Adoption and implementation of UN GGIM-IGIF-H	MSDIWG, Coastal states	2022 onwards
			20	Engage with regional organisations to encourage Coastal States to share data within the region and adopt open data policies	MSDIWG, Coastal States	
			21	Collaborate with regional bodies and coastal states to develop and promote a "data value proposition" and share within the region	MSDI WG TBC	TBC
			22	Engage with international and regional Donors and Development Partners to adopt open data policies when funding regional activities	IHO Sec, SWPHC Chair, MSDIWG	
			23	Share MSDI catalogue within the region (IHO portal of portals)	MSDIWG	Q4 2022
IHO Goal 3 Participating actively in international initiatives related to the knowledge and the sustainable use of the ocean	Collaborate with other bodies who deliver capacity building and training to improve effectiveness of capacity building activities and programmes	3.1.1	24	Deliver IHO CB funded workshop on Hydrographic Governance	SWPHC CB Coordinator	TBC f2f SWPHC20 - Q1 2023
			25	Deliver IHO CB funded workshop to SWPHC on MSI	SWPHC CB Coordinator	virtual 2022
			26	Engage with Pacific Community (SPC)	SWPHC Chair	Ongoing
			27	Engage with new IMO regional representative	SWPHC Chair	2022
			28	Engage with international and regional Donors and Development Partners	IHO Sec, SWPHC Chair, MSDIWG	2022
			29	Deliver IHO CB funded SWP Disaster response plan exercise	SWPHC Sec; SWPHC CB Coordinator	SWPHC21 2024
			30	Invite IHO Secretary General to consider a regional engagement plan and potential visit	SWPHC Chair	2022/ 2023
	improve knowledge of the worlds seafloors	3.2.3	31	Engage with regional bodies and coastal states and collaborate on projects under UN Decade of the Ocean	SWPHC /MS /AM	2022-2030
			32	Engage with Seabed 2030 project to support coverage goals	SWPHC CSB/ Seabed 2030 Coordinator	2022-2030
			33	Encourage MS and coastal states to supply ENC sounding data to Seabed 2030 and IHO DCDB	SWPHC MS / Coastal States	2022-2030
		3.2.1	34	Deliver Seabed 2030 webinar series in the region	SWPHC CSB/ Seabed 2030 Coordinator	2022
		3.2.1 3.2.2 3.2.3	35	Promote, initiate and coordinate CSB & SDB programs in SWP region and encourage coastal states to submit bathymetry data to Seabed 2030 and IHO DCDB	IHO CSBWG; SWPHC CSB/ Seabed 2030 Coordinator	2022-2030
	implement a comprehensive IHO digital communication strategy in order to enhance its visibility and	3.3.1	36	Develop SWPHC digital communications strategy	SWPHC MS - HLP Cohort	2022
			37	Ensure IHO digital Communication strategy adequately covers the needs of the region	IHO Secretariat / SWPHC	TBC

Today's Agenda

13:00 - 13:15 Welcome & logistics (SWPHC Chair, SWPHC Seabed 2030/CSB Coordinator)

13:15 - 14:15 Introduction and Overview (SWPHC SB2030/CSB Coordinator, Head of RDACC for the South & West Pacific, Director of IHO DCDB)

- Objectives for these webinars
- What we are doing and why?
- Why we need to do this together?
- How we can help you?
- Review of status of mapping in the region

14:15 - 14:45 Discussion

14:45 - 15:00 Conclusions and Homework for Next Session (SWPHC Seabed 2030/CSB Coordinator)

Overview of Webinar Series

Objectives of this Webinar Series

- Overview & Introduction:
  - Objectives, strategy and motivation of the Nippon Foundation - GEBCO Seabed 2030 Project
- Promote collaboration and coordination
- Review current status of ocean mapping for this region
- Demonstrate online tools that are available
- Engage the community of stakeholders
  - Gather information about existing data, planned mapping efforts
  - Input on needs of stakeholders with respect to tools, workflows, regional mapping priorities

Webinar Schedule

- Webinar 1 – 10 May: Where are we now? Introduction and Goals including review of current mapping status in the region

- Webinar 2 – 24 May: How do we build the map? How can you contribute data?

- Webinar 3 – 21 June: Increasing Data Coverage: Crowdsourced Bathymetry and Data Coverage Polygons

- Webinar 4 – 1 July: Moving Ahead Together: Summary, Next Steps and Wrap up.

THE NIPPON FOUNDATION-GEBCO SEABED 2030

Goals for today

- Introduction to Seabed 2030
- Review status of mapping in the SWPHC region
- Introduction to the IHO Data Center for Digital Bathymetry
- Discussion: Status of mapping in the region
- Homework for next Webinar

THE NIPPON FOUNDATION-GEBCO

SEABED 2030

Introduction

Mr. Kevin Mackay, Head, Seabed 2030
South and West Pacific Regional Center

2022 SWPHC Seabed 2030/CSB Webinar Series: Webinar 1, May 10, 2022

GEBCO

` The **Ge**neral **B**athymetric **C**hart of the **O**cean'

'… a joint project 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.'

THE NIPPON FOUNDATION-GEBCO SEABED 2030

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.

Forum for Future Ocean Floor Mapping

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

June 2016

June 2017

THE NIPPON FOUNDATION-GEBCO SEABED 2030

The Network of Centers

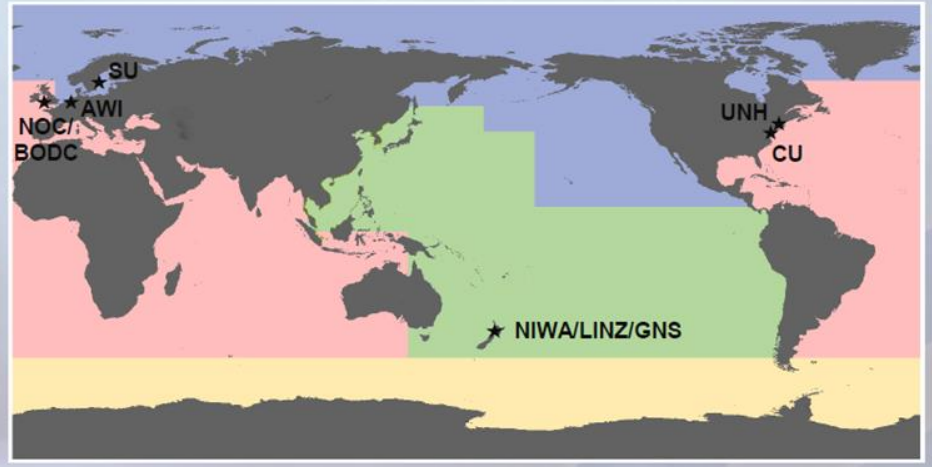
North Pacific –Arctic Ocean
Stockholm University & University of New Hampshire
(**SU** & **UNH**)

Southern Ocean
Alfred-Wegener-Institut (**AWI**)

Atlantic-Indian Ocean
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**)

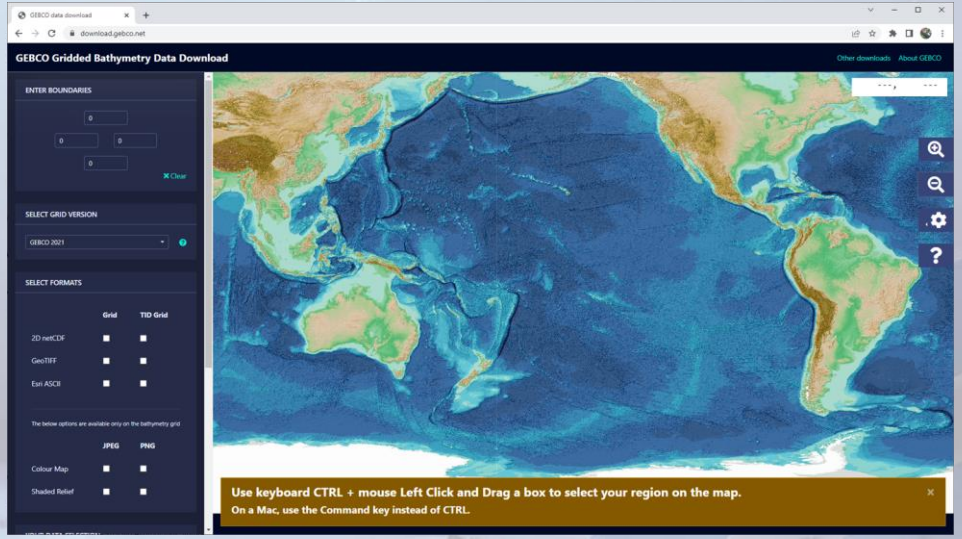
Global Center
British Oceanographic Data Centre,
National Oceanography Centre (**NOC/BODC**)



THE NIPPON FOUNDATION-GEBCO SEABED 2030

GEBCO Gridded Bathymetry Data

- The GEBCO_2021 grid, is a global terrain model for ocean and land at 15 arc-second (~480 m) intervals.
- It is accompanied by a Type Identifier (TID) Grid that gives information on the types of source data that the GEBCO_2021 Grid is based
- It is NOT a portal to the underlying data
- Ultimately to move to a variable resolution grid by 2030.

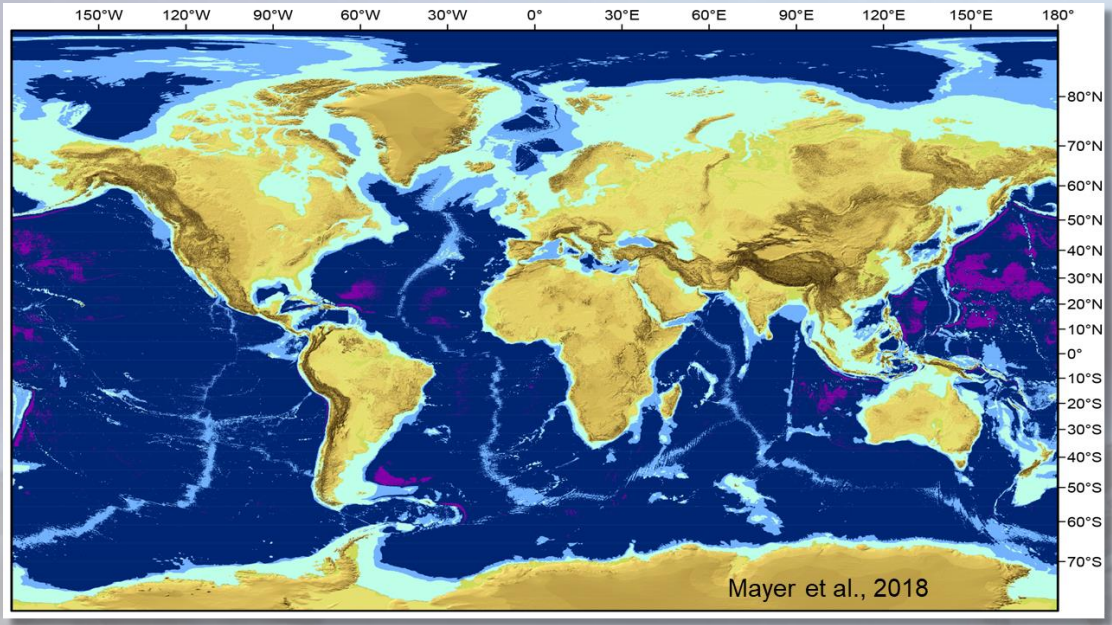


https://download.gebco.net/

THE NIPPON FOUNDATION-GEBCO SEABED 2030

What does 100% mapped mean?

Depth-dependent resolution goals



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

THE NIPPON FOUNDATION-GEBCO SEABED 2030

Seabed 2030 Phase 2: Mapping the Gaps

$$X + Y + \mathbf{Z} = 100\%$$

Ocean Frontier Mapping

- Use GEBCO Grid to inform location of future mapping
- 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?

SAILDRONE Missions

https://seabed2030.org/news/saildrone-surveyor-completes-maiden-voyage-san-francisco-hawaii

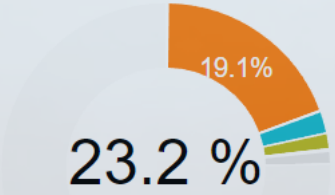
UTAS: Two Oceans Two Technologies

https://www.mapthegaps.org/projects/utas-operations

THE NIPPON FOUNDATION-GEBCO SEABED 2030

Global Coverage as of Feb 2022

Data categories



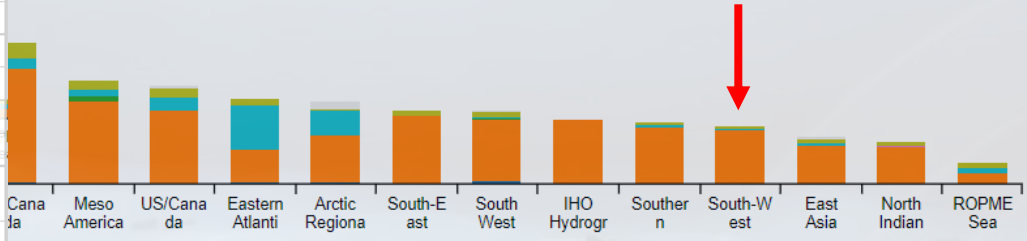
Singlebeam Multibeam Seismic Isolated sounding ENC sounding Lidar Depth measured by optical light sensor
Combination of direct measurement methods Bathymetric sounding Land (negative topography) Upcoming, processing,
Interpolated based on a computer algorithm Digital bathymetric contours from charts Predicted based on helicopter/flight-derived gravity data
Depth estimated by calculating the draft of a grounded iceberg using satellite-derived freebord measurement Grid compilation including interpolated
Unknown source Steering points No data

https://seabed.geo.su.se/stat/#2/-14.6/25.3

South West Pacific Hydrographic Commission Coverage

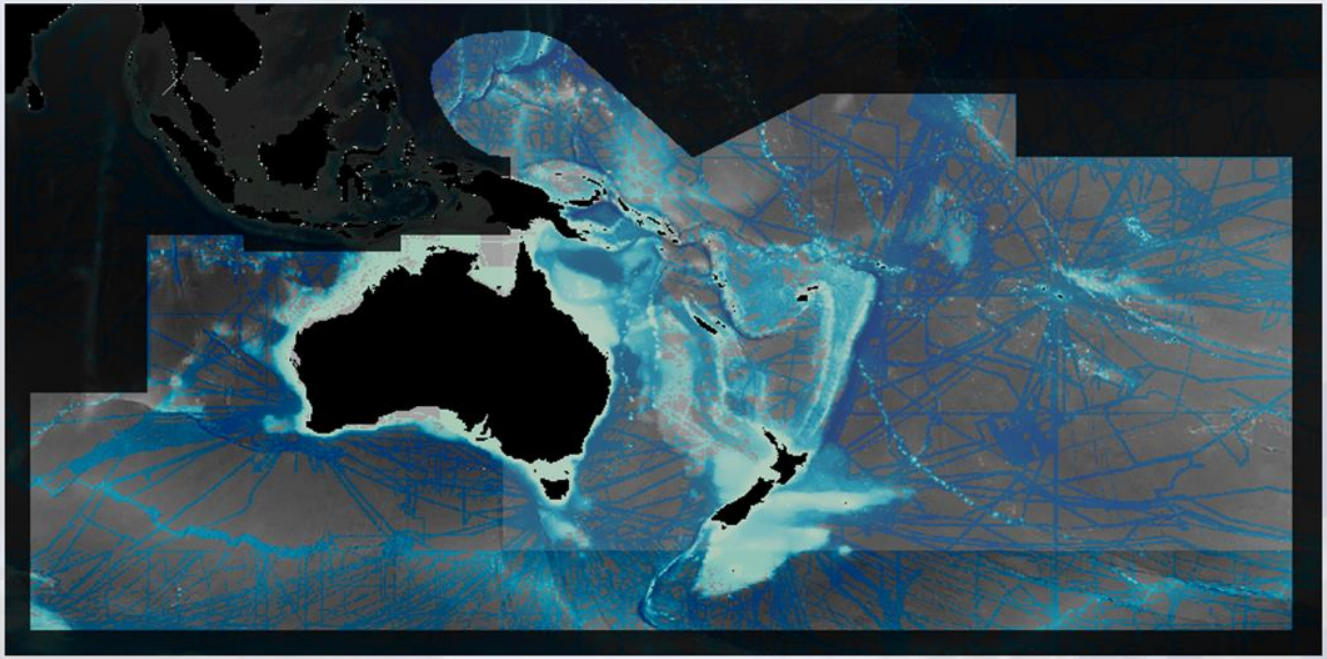
Regional hydrographic commissions (as of February 2022)

South-West Pacific Hydrographic Commission	
Total	13.98
Singlebeam	0.12
Multibeam	12.83
Seismic	0.02
Isolated sounding	0.00
ENC sounding	0.00
Lidar	0.00
Depth measured by optical light sensor	0.00
Combination of direct measurement methods	0.21
Bathymetric sounding	0.80
Land (negative topography, not included in total)	0.00
Upcoming, processing, (not included in total)	0.00
Interpolated based on a computer algorithm (not included in total)	0.00
Digital bathymetric contours from charts (not included in total)	0.01
Predicted based on helicopter/flight-derived gravity data (not included in total)	0.00
Depth estimated by calculating the draft of a grounded iceberg using satellite-derived freebord measurement (not included in total)	0.00
Grid compilation including interpolated (not included in total)	0.00
Unknown source (not included in total)	0.00
Steering points (not included in total)	0.00



https://seabed.geo.su.se/stat/#2/-14.6/25.3

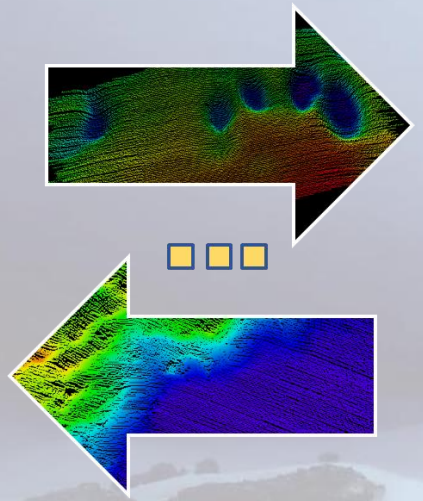
Data Contributions* within SWPHC Region (as of 15 Feb 2022)



- NIWA
- LINZ
- CSIRO
- AusSeabed
- NOAA NCEI / IHO DCDB
- LDEO (GMRT)
- Calypso Science
- Caladan Oceanic LLC
- Waikato Regional Council
- MGDS
- PANGAEA
- JAMSTEC
- SOPAC
- UNOLS R2R

** to SaWPaC from Feb 2021*

Current Engagement with Countries / Entities



Data Discovery and Exchange

- Kiribati (MICTTD)
- Palau (Coral Reef Research Foundation)
- Niue (Ministry of Infrastructure)
- Federated States of Micronesia (NORMA)
- Ecuador (INOCAR)
- Philippines (NAMRIA)
- Japan (JAMSTEC)
- SHOM
- NGA
- AusSeabed
- MY Dapple
- NIWA Partners

THE NIPPON FOUNDATION-GEBCO SEABED 2030

Target Engagement with countries/entities in the region

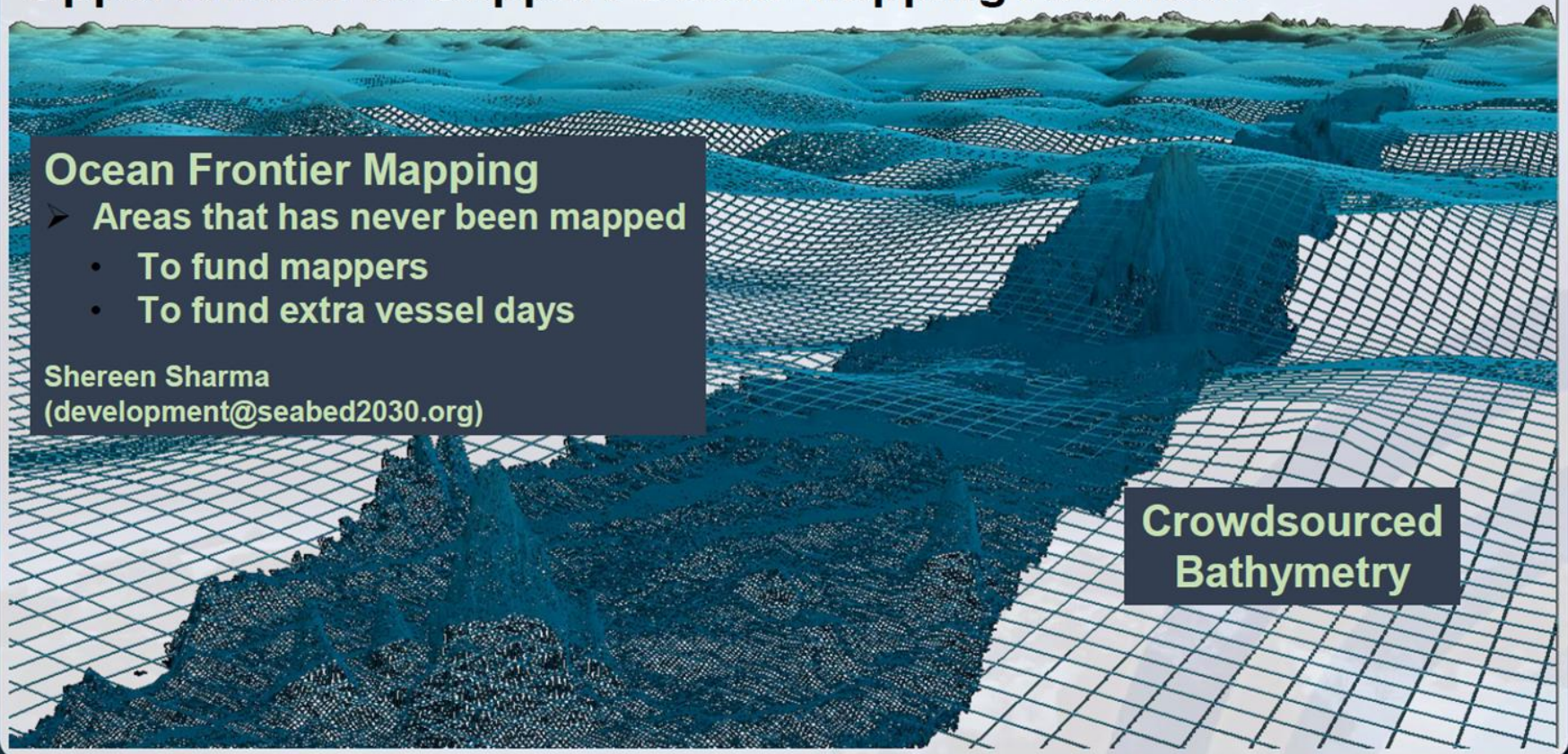
Working with the IHO Regional Hydrographic Commission CSB/Seabed 2030 Coordinator – Mr Stuart Caie

- **Promote ocean mapping activities**
- **Promote CSB**
- **Capacity-building**
- **Data gaps identification**
- **Coordinate mapping missions**

Please answer the SaWPaC Community Survey

https://arcg.is/0ibPqm

Opportunities to Support Ocean Mapping Activities



Ocean Frontier Mapping

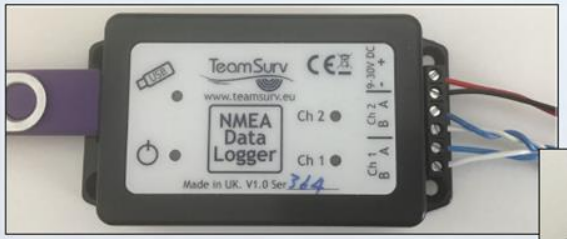
- Areas that has never been mapped
  - To fund mappers
  - To fund extra vessel days

Shereen Sharma
(development@seabed2030.org)

Crowdsourced Bathymetry

Crowdsourced Bathymetry Activities

- IHO CSBWG
- Palau
- New Zealand
- Solomon Islands
- Samoa
- Shipping Industry



CSBWG Document: DataLogger_ConnectionInstructions

World Ocean Council Workshop to Advance Seabed Data Collection by Shipping Sector

WOC & Seabed 2030 Collaborate on Opportunity for Companies to Support Safe & Sustainable Shipping

Many shipping companies already have the tools needed to be a part of the solution for sustainable ocean use. The Seabed 2030 project aims to create a complete map of the world ocean floor by 2030, using equipment commonly available on marine vessels.

As a core partner of Seabed 2030, the World Ocean Council (WOC) is hosting workshops about the project, which aligns with the WOC's SMART Ocean-SMART Industries (SO-SI) program. SO-SI's mission is to ensure industry data collection and sharing is coordinated, efficient and available to public agencies and the scientific community, in support of a safe and sustainable maritime industry.

https://www.oceancouncil.org/media/world-ocean-council-workshop-to-advance-seabed-data-collection-by-shipping-sector/

Parting Words

IRCC12 Action Item 19

Encourage all Member States to make existing seabed mapping data available for use by Seabed 2030 in the GEBCO Grid.

Seabed 2030 provides Member States with a mechanism to respond to **UN General Assembly Resolution A/RES/72/73**

'285. *Encourages* Member States to consider contributing to mechanisms that encourage the **widest possible availability of all bathymetric data**, so as to support the sustainable development, management and governance of the marine environment;'

Seabed 2030 allows Member States to make a cost-effective contribution to:

- ✓ UN Ocean Decade activities and SDG 14
- ✓ completing the GEBCO Ocean Map,
- ✓ producing the 'comprehensive digital atlas of the ocean' (UNGA R&D Priority 1)

Questions?

Introduction to the IHO Data Center for Digital Bathymetry

International Hydrographic Organization
Organisation Hydrographique Internationale

ngdc.noaa.gov/iho/

IHO DCDB Home | Contribute Data | Crowdsourced Bathymetry | CSB Mapping Projects

How to Contribute Data to the IHO DCDB

Contact bathydata@iho.int for more information on contributing data or sharing web services to the IHO DCDB.
Refer to Submitting Marine Geophysical Data to the IHO DCDB for how to package and submit data.

Governments, organizations, academia, industry and individuals are encouraged to contribute data to the IHO DCDB.

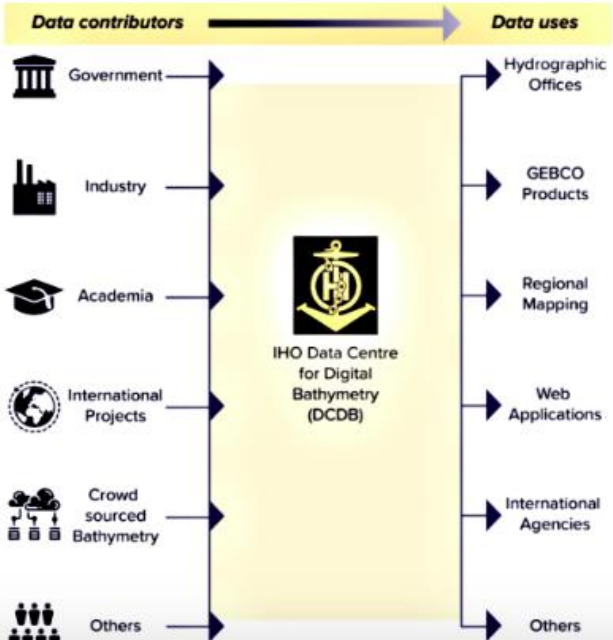
Bathymetric data and metadata can be submitted via File Transfer Protocol (FTP), email, or mail (hard drive) in the formats listed below.

- **Raw sonar data:** MGD77T or the original manufacturer's format
- **Processed data:** gsf, BAG, NetCDF, tiff, xyz, sd, asc, etc.
- **Metadata:** XML or text

Other formats and products will be considered on a case-by-case basis.

Learn more about contributing *crowdsourced bathymetry*.

IHO Member States are invited to provide sounding data extracted from their Electronic Navigational Charts (ENC). Only soundings from ENC cells in navigational purpose bands 2 and 3 are requested. For more information, please refer to IHO Circular Letter 11/2016.



International Hydrographic Organization
Organisation Hydrographique Internationale

ngdc.noaa.gov/iho/

IHO DCDB Home | Contribute Data | Crowdsourced Bathymetry | CSB Mapping Projects

IHO Data Centre for Digital Bathymetry (DCDB)

The IHO DCDB was established in 1990 to steward the worldwide collection of bathymetric data. The Centre archives and shares, freely and without restrictions, depth data contributed by mariners. The IHO DCDB is hosted by the U.S. National Oceanic and Atmospheric Administration (NOAA) on behalf of the IHO Member States.

IHO DCDB Data Viewer highlighting ship tracks and data availability over the Pacific Ocean and neighboring regions

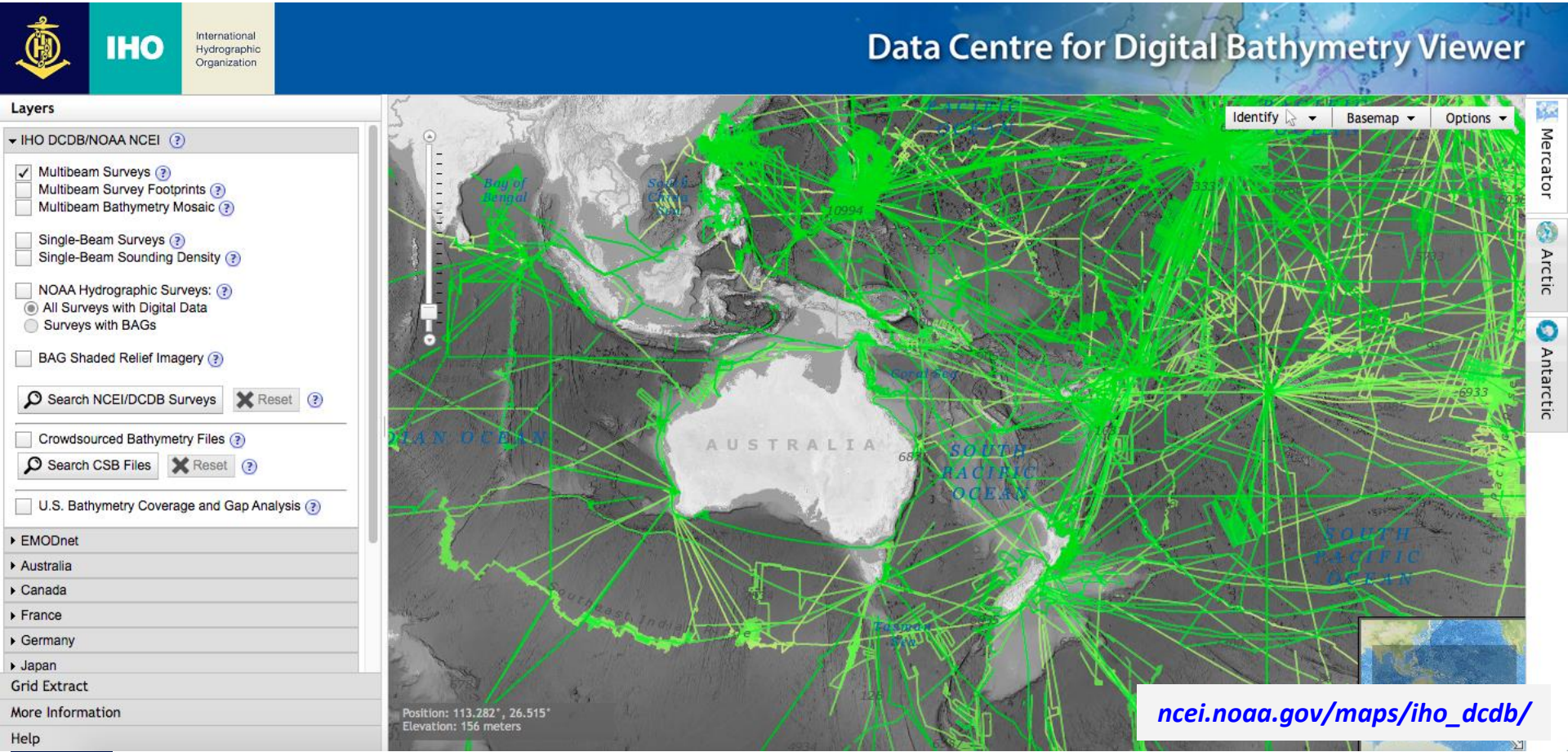
The DCDB archive includes over 30 terabytes of oceanic depth soundings acquired with multibeam and singlebeam sonars by hydrographic, oceanographic and industry vessels during surveys or while on passage.

The DCDB also archives and provides access to data contributed in support of the IHO Crowdsourced Bathymetry (CSB) initiative.

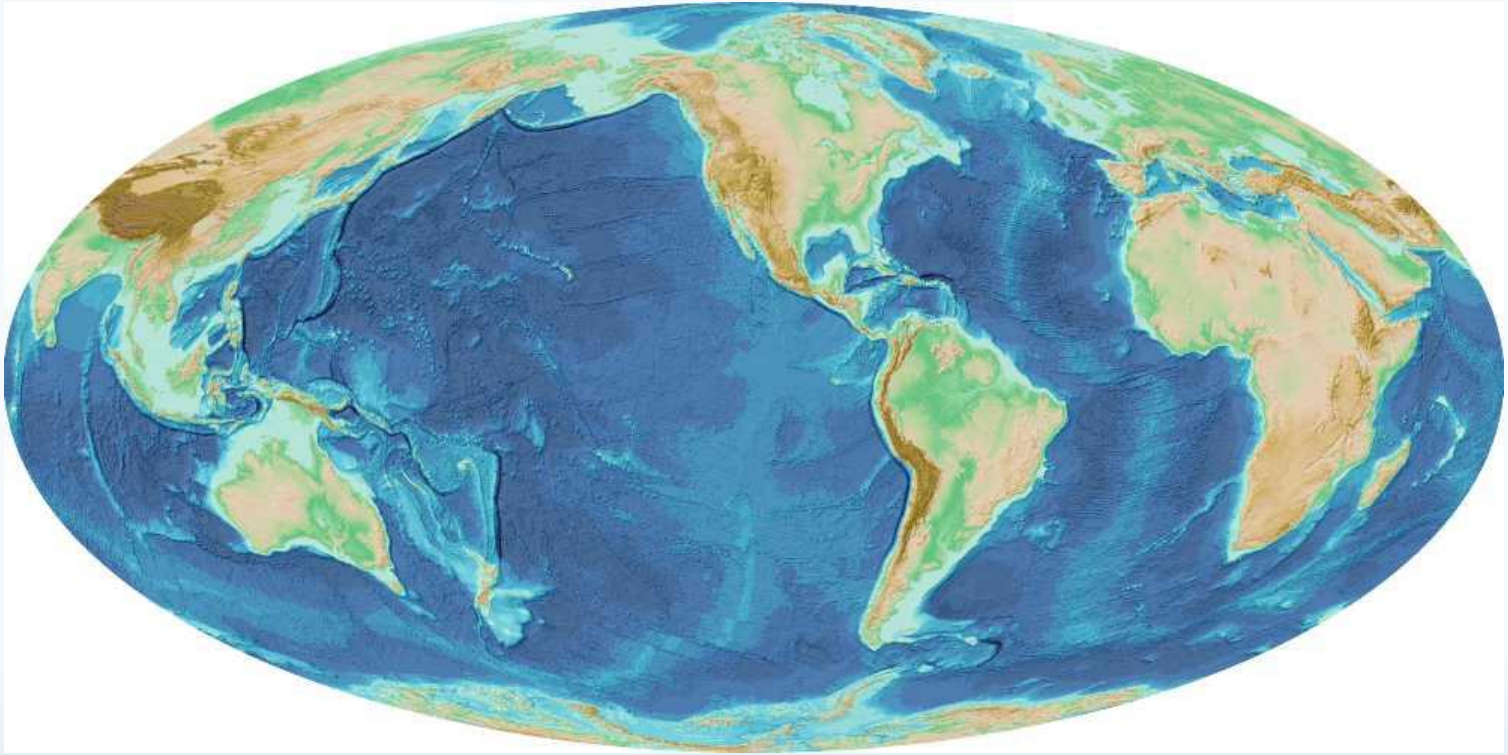
The IHO DCDB Data Viewer shows the global coverage of the DCDB's bathymetric data holdings as well as the spatial extent of data archived at other repositories via web services.

Access Data

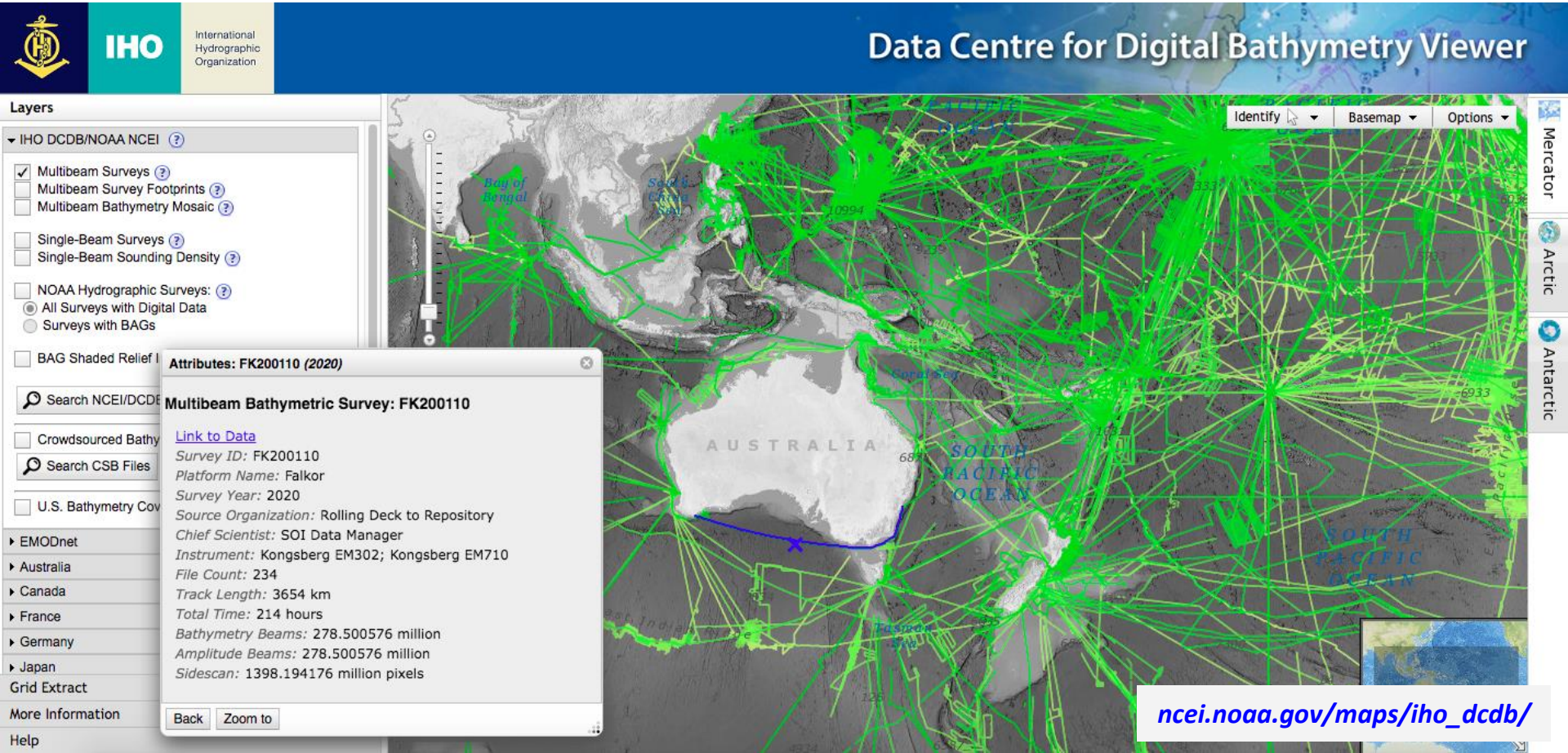
IHO DCDB = World Reference for Raw Bathymetry



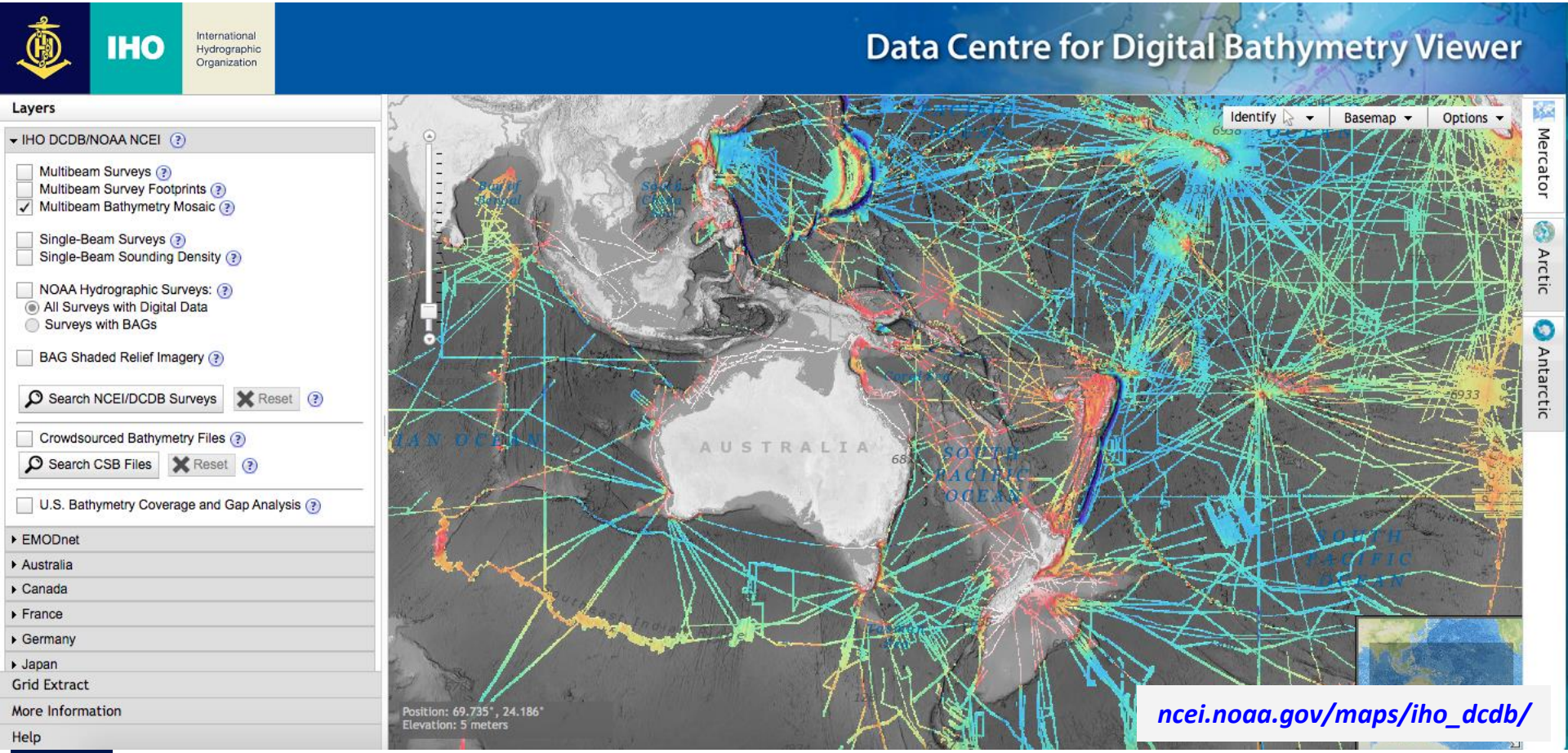
15 arc second GEBCO_2021 grid



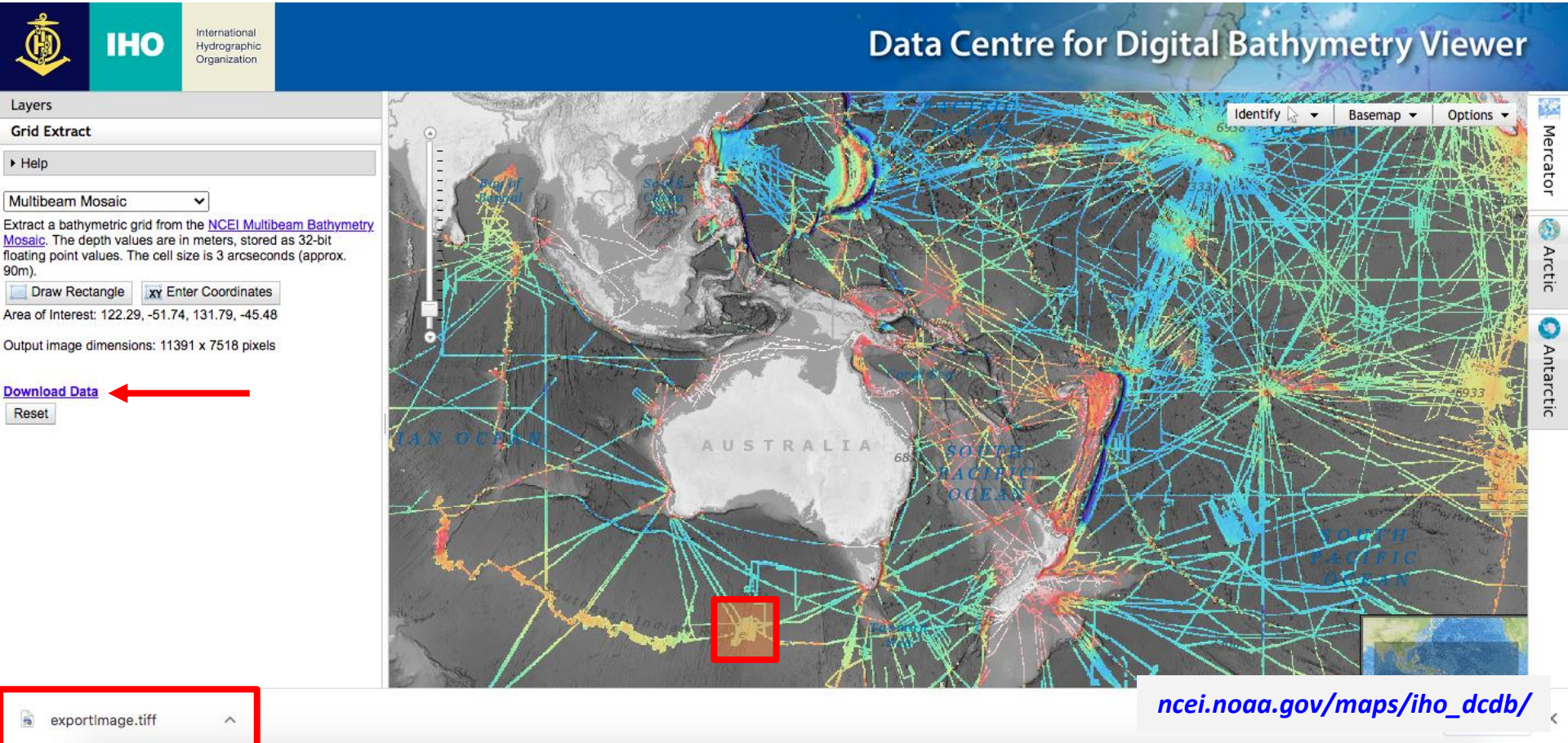
IHO DCDB & NOAA NCEI Data Holdings



Multibeam Mosaic

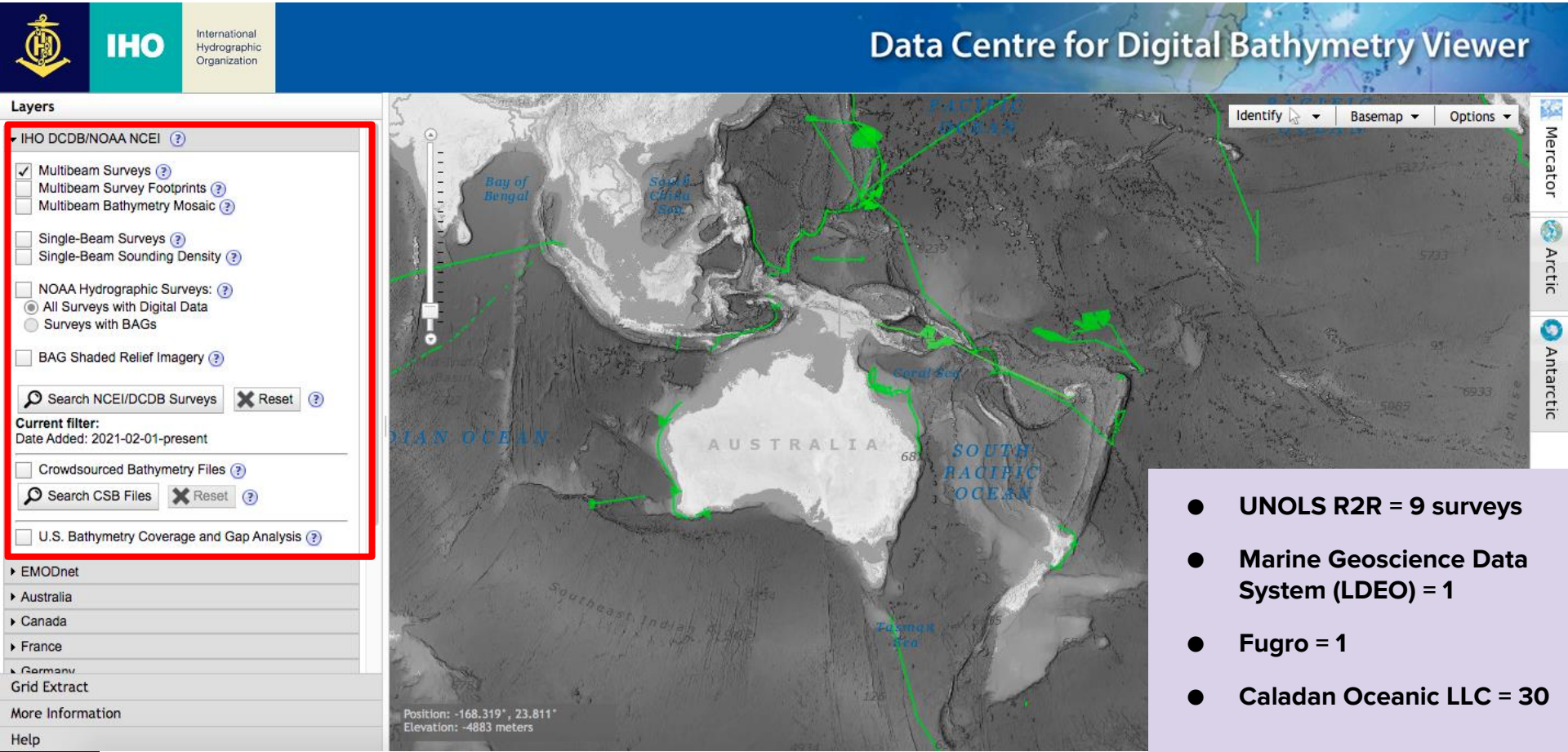


NEW - Grid Extract for MB Mosaic



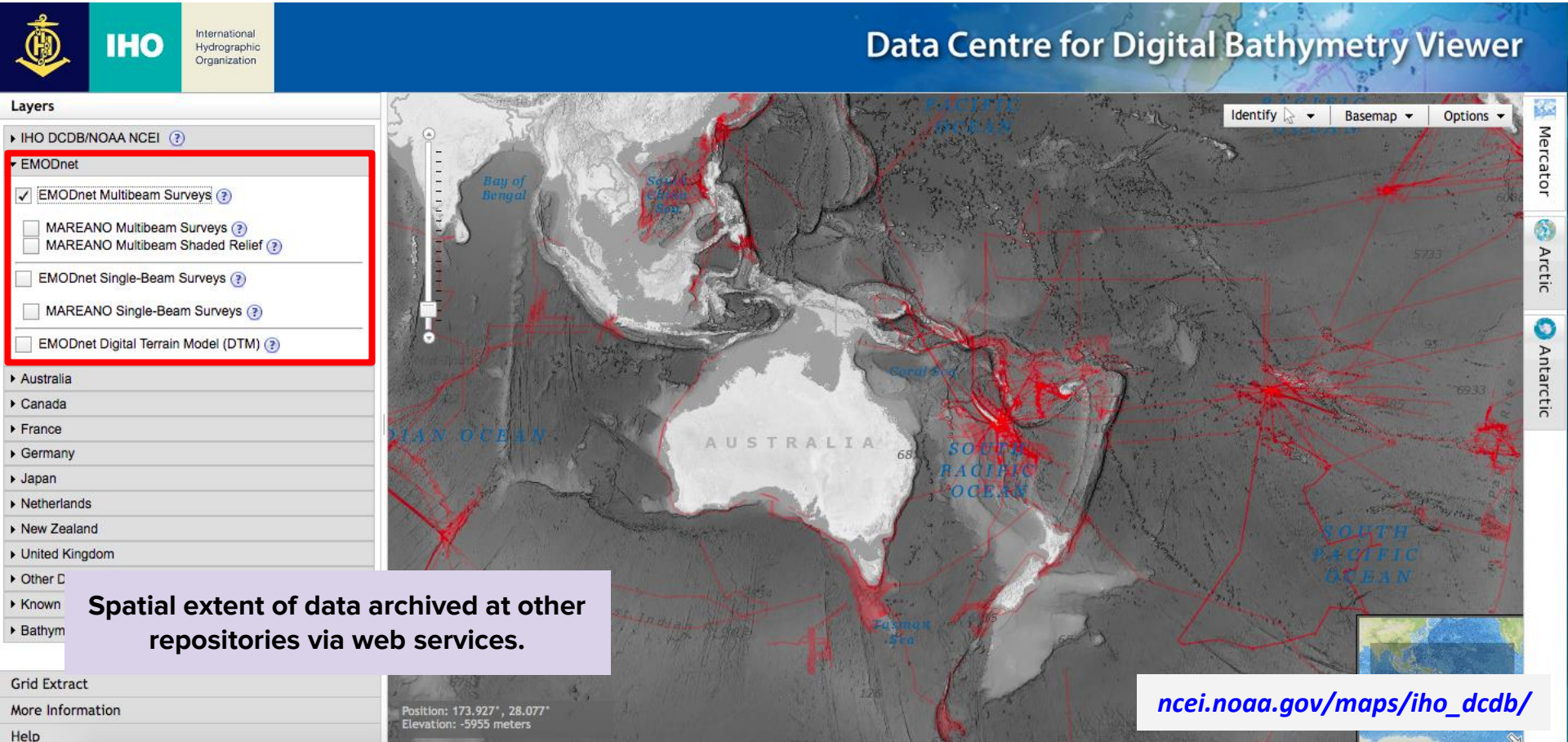
ncei.noaa.gov/maps/iho_dcdb/

NEW data - uploaded since Feb. 2021

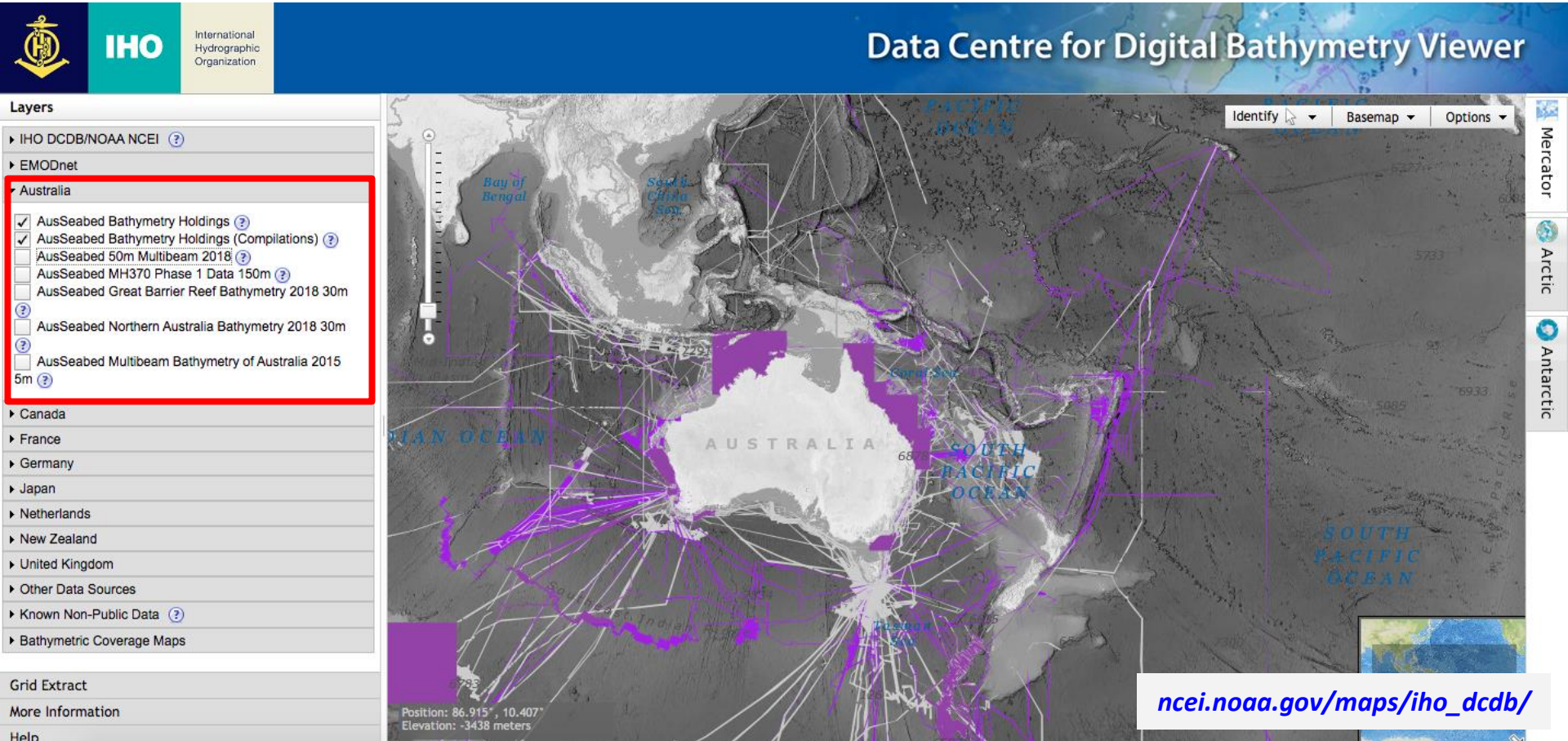


- **UNOLS R2R = 9 surveys**
- **Marine Geoscience Data System (LDEO) = 1**
- **Fugro = 1**
- **Caladan Oceanic LLC = 30**

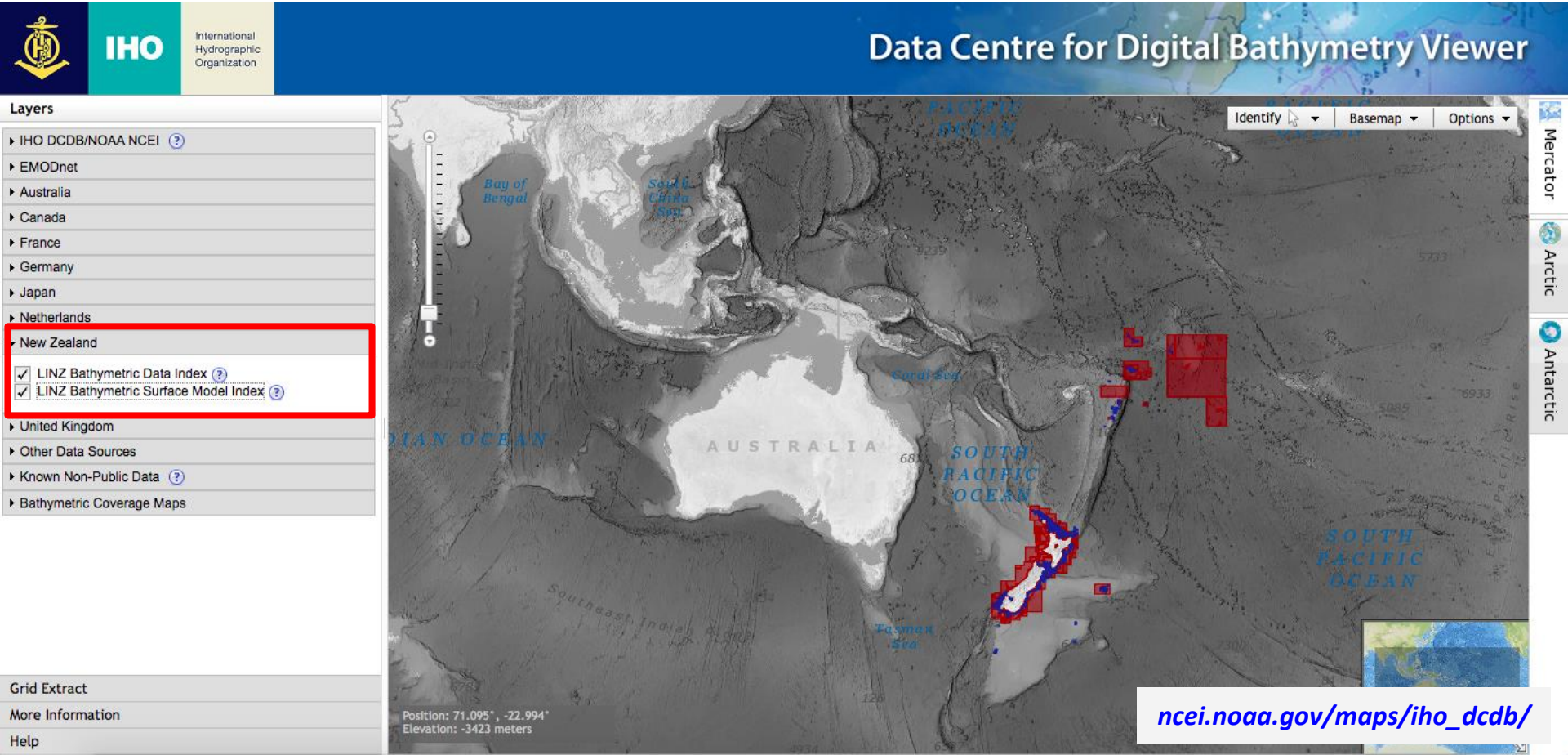
EMODnet Web Services



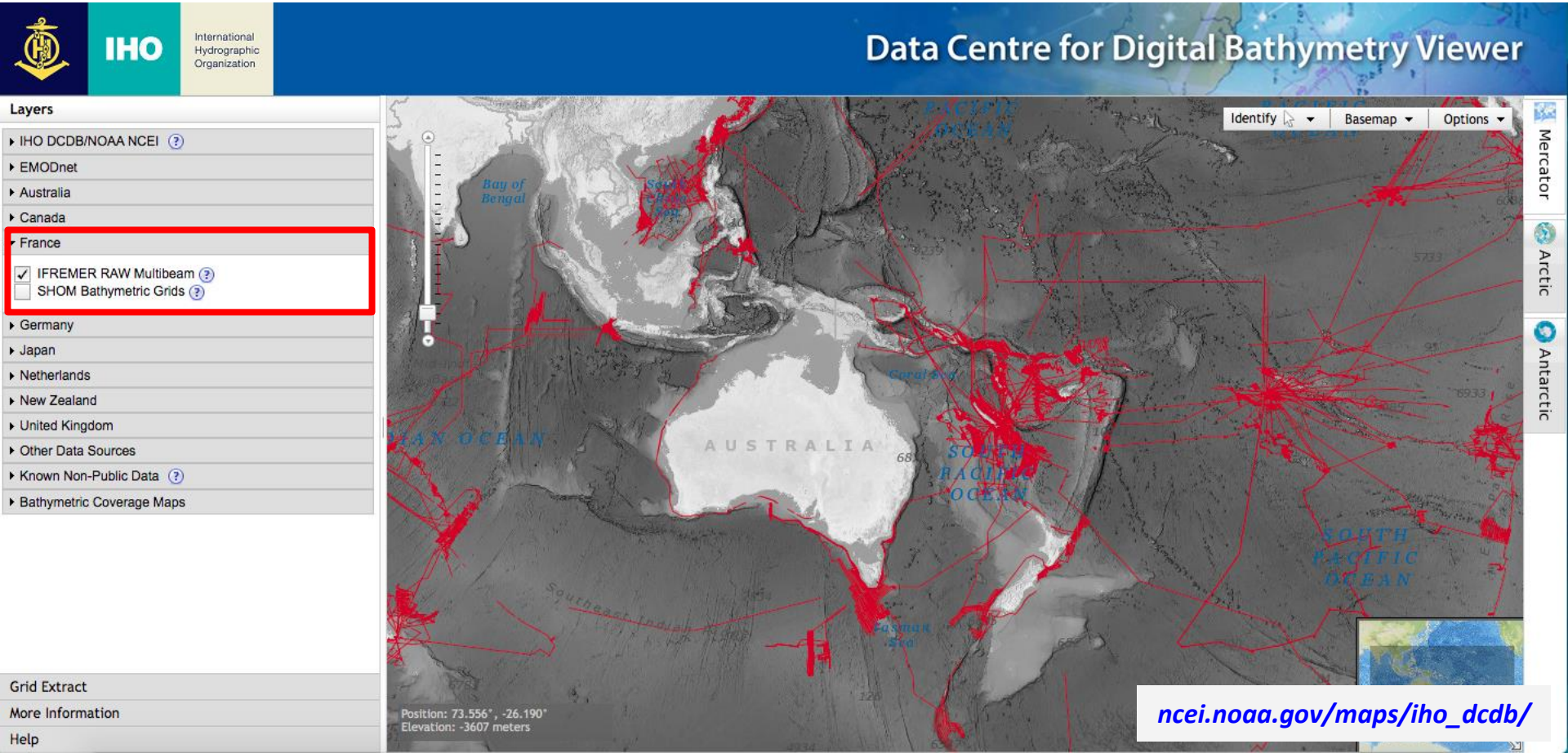
AusSeabed Web Services



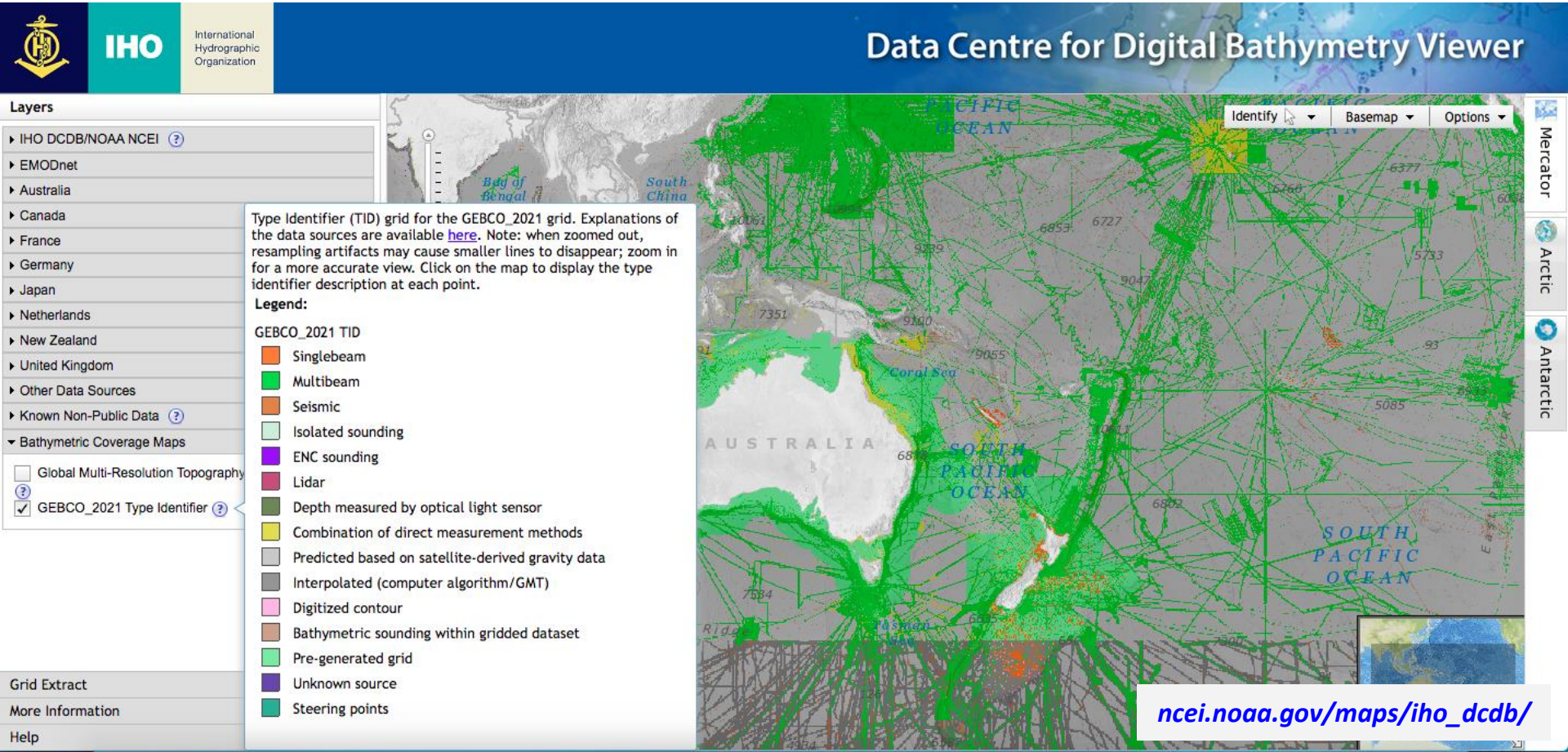
NEW - LINZ Web Services



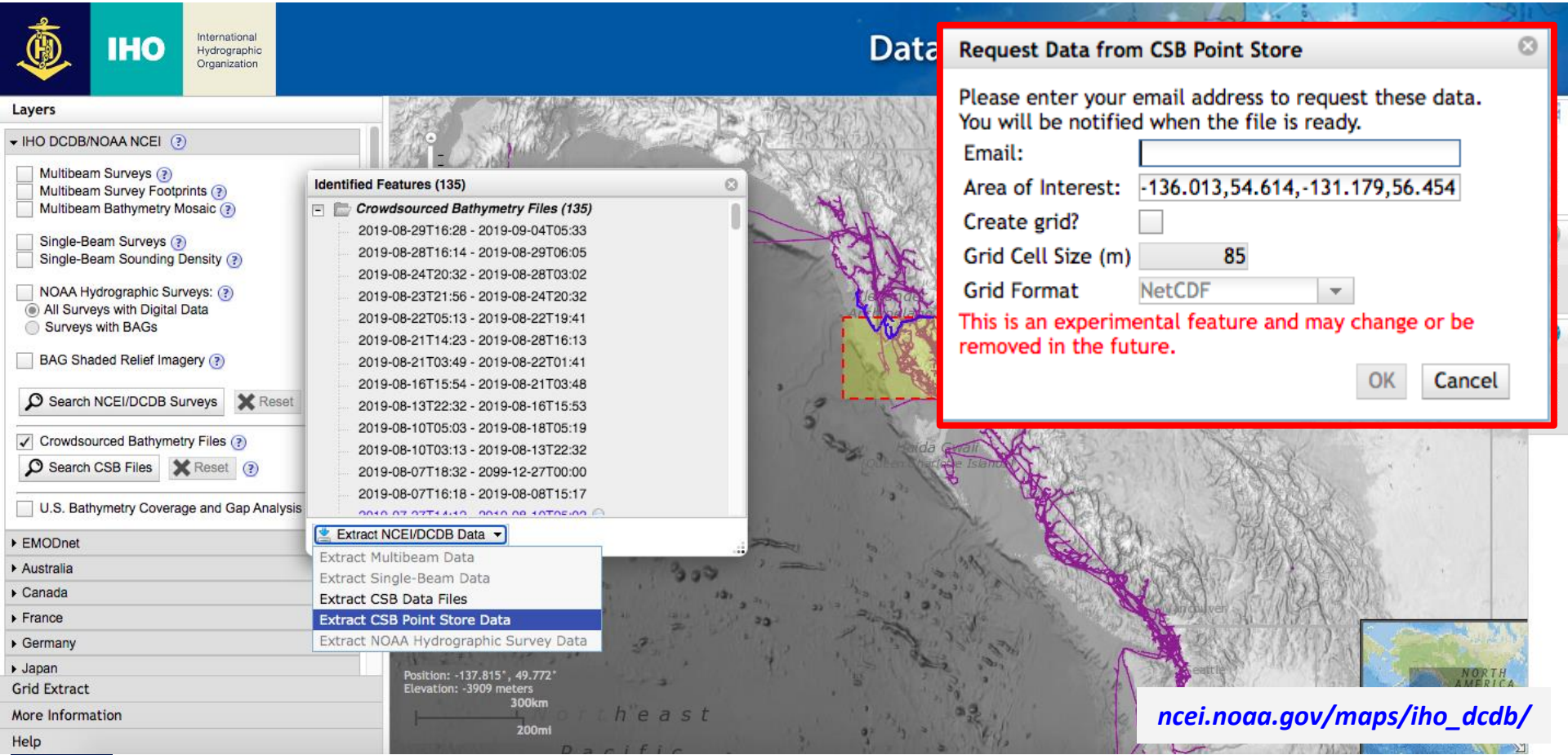
NEW - IFREMER Web Services



GEBCO 2021 Type Identifier Grid Web Service



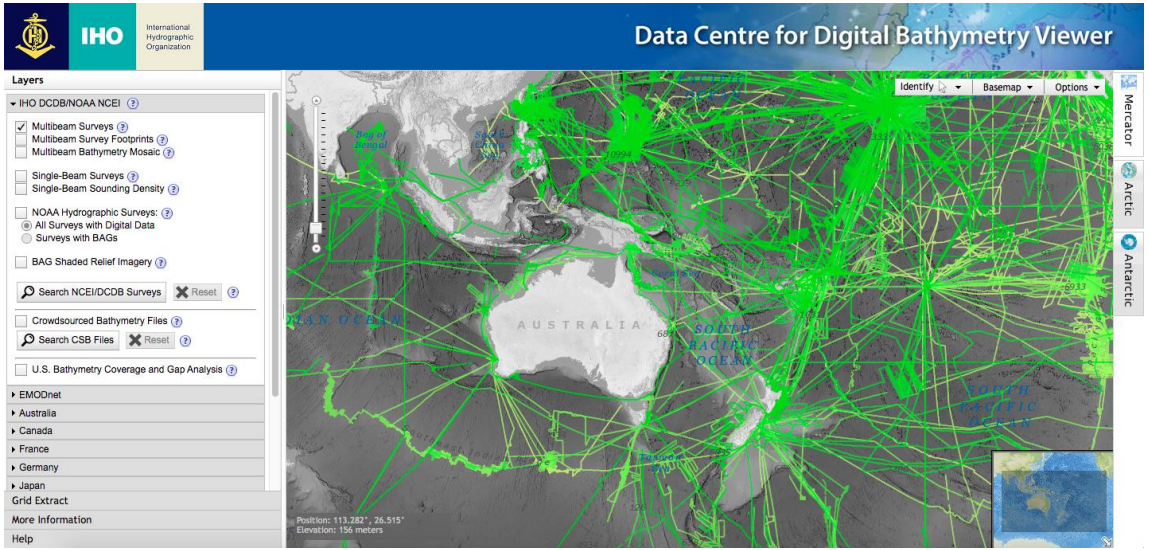
Crowdsourced Bathymetry Data



The IHO DCDB is a Member State Resource

Webinar #2:

- How to package/submit data and metadata
- How to download and access data



Questions?

Discussion: Status of mapping in the region
Existing data
Planned surveys

What data exists in the region?

- Where is it stored?
- Is it available/can it be shared?
- Are there any barriers to sharing?

What surveys are planned in the region?

- LiDAR
- Echo sounder
- Satellite Derived Bathymetry
- Crowdsourced Bathymetry
- Marine Science Research (UNCLOS)

Webinar 1: Summary & Conclusions

- Introduction to Seabed 2030
- Review status of mapping in the SWPHC region
- Introduction to the IHO Data Center for Digital Bathymetry
- Status of mapping in the region

Next Webinars in this Series

- Webinar 2 – 24 May: How do we build the map? How can you contribute data?
- Webinar 3 – 21 June: Increasing Data Coverage: Crowdsourced Bathymetry and Data Coverage Polygons
- Webinar 4 – 1 July: Moving Ahead Together: Summary, Next Steps and Wrap up.

Homework

- Identify and assemble information about existing datasets that are held by your country (e.g. web services, polygons, etc)
- Identify and assemble information about planned surveys in your area of jurisdiction (e.g. polygons of areas)
- Assemble information about technical challenges that we might be able to help you address.
- Input on strategies for gaining access to non-public data?
- Send questions and correspondence to: **scaie@linz.govt.nz, cc: SWPHC@linz.govt.nz**

Thank you!

Please join us for Webinar 2 on 24 May:
How do we build the map? How can you contribute data?