

A world map showing ocean bathymetry with depth contours and labels for major ocean basins and continents. The map uses a color scale from light blue (shallow) to dark blue (deep).

# Crowdsourced Bathymetry

Evert Flier

CSB/Seabed 2030 Coordinator

CSBWG Member

[evert.flier@kartverket.no](mailto:evert.flier@kartverket.no)



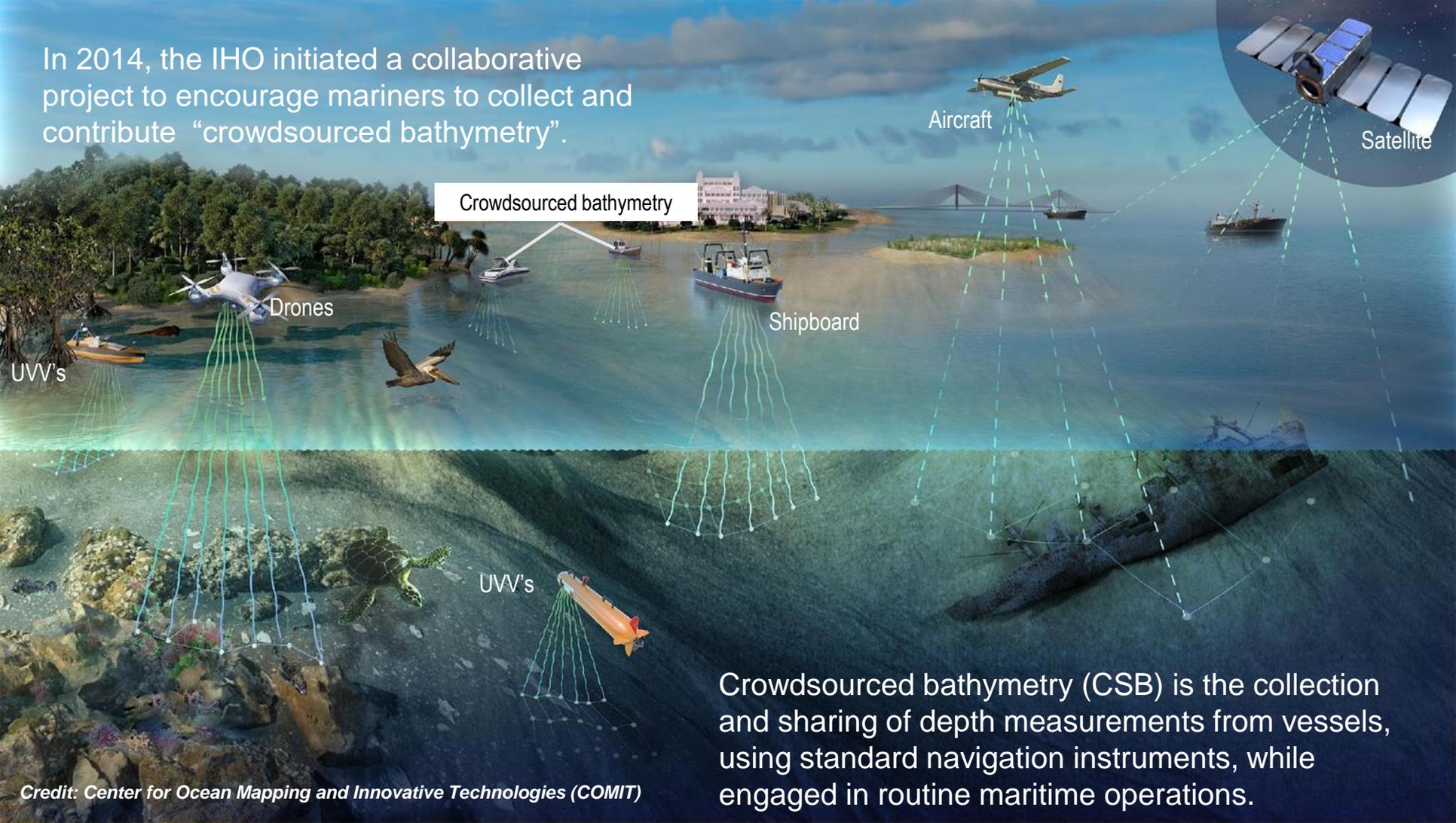
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International  
Hydrographic  
Organization

Arctic Regional Hydrographic Commission (ARHC) 13

5-7<sup>th</sup> September 2023

In 2014, the IHO initiated a collaborative project to encourage mariners to collect and contribute “crowdsourced bathymetry”.



Crowdsourced bathymetry (CSB) is the collection and sharing of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.



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# The IHO Crowdsourced Bathymetry Initiative

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The Working Group was formed and tasked to develop ***B-12 IHO Guidance on Crowdsourced Bathymetry*** that states the IHO's policy towards, and best practices for, the collection and contribution of CSB.

Chapters cover: How to contribute, How to collect, Data & Metadata, & Data Quality Assessment

Edition 3.0.0 was published in October 2022.

[iho.int/uploads/user/pubs/bathy/B\\_12\\_CSB-Guidance\\_Document-Edition\\_3.0.0\\_Final.pdf](https://iho.int/uploads/user/pubs/bathy/B_12_CSB-Guidance_Document-Edition_3.0.0_Final.pdf)

B-12 Edition 3.0.0



INTERNATIONAL HYDROGRAPHIC ORGANIZATION

## Guidance to CROWDSOURCED BATHYMETRY



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Published by the  
International Hydrographic Organization  
40, quai Antoine 1<sup>er</sup>  
Principauté de Monaco  
Tel: (377) 93 10 81 00  
Fax: (377) 93 10 81 40  
iho@iho.int  
www.iho.int



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# CSB Working Group

- **Chair:** Jennifer Jencks, USA; **Vice Chair:** Peter Wills, Canada
- **Representatives from 18 Member States:** Canada, China, Denmark, France, Germany, India, Iran, Italy, Lebanon, Mexico, Netherlands, New Zealand, Norway, Portugal, South Africa, Sweden, UK, Uruguay, USA
- **IHO Secretariat:** IHO Assistant Director Sam Harper, IHO Director Luigi Sinapi
- **Observers and expert contributors:** CCOM-JHC, CIDCO, CIRES, Da Gama Maritime Ltd, Dongseo U, Dock Tech, ECC AS, ESRI, FarSounder, FLIR Systems AB, Fugro, GMATEK, Inc., Great Lakes Observing System (GLOS), H2i, James Cook U, JAMSTEC, Navico/C-Map, ONE Data Tech Co., Orange Force Marine, PYA, Seabed 2030, Sea-ID, SevenCs/ChartWorld, Teledyne CARIS, World Maritime University, and World Ocean Council



**CSBWG14 - Stavanger, Norway  
August 2023**

***[iho.int/en/csbwg14-august-2023](https://iho.int/en/csbwg14-august-2023)***



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## New Work Items

- A. Maintain and update IHO CSB Guidance Document (B-12)
- B. Submit IHO CSB initiative as a UN Decade Action
- C. Gather, prioritize and respond to HO-specific issues/opportunities regarding national policy/regulations related to CSB
- D. Gather and prioritize HO-specific issues relating to CSB data, including but not limited to Nautical Cartography
- E. Support CSB/SB2030 Coordinators in their RHC engagement
- F. Discuss and propose potential software tool support for HOs
- G. Clarify support identified by current Trusted Nodes needed for current and future Trusted Nodes.
- H. Clarify all aspects of the CSB data cycle and capture known issues, requirements and suggested enhancements.
- I. Develop a communication plan in coordination and collaboration with related efforts (SB2030, GEBCO, etc)
- J. Develop a recognition & incentive strategy plan



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# IHO CL 01/2020 & IRCC CL 21/2020

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- All coastal States are requested to indicate their position on the **provision of CSB data** from ships within waters subject to their jurisdiction into the public domain
- To date, 34 coastal States (green) have replied positively\*



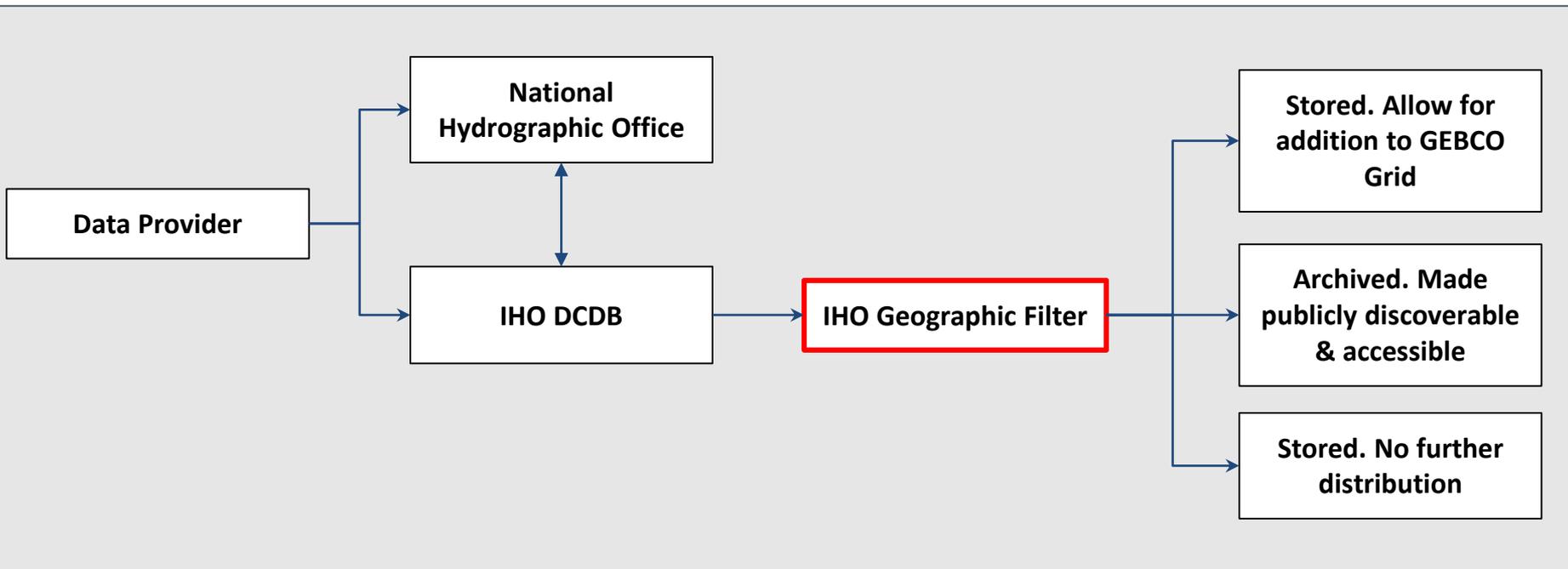


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# Geographic Filter

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In response to feedback provided to the IHO, the DCDB implemented (and continues to update) a geographic filter for incoming data to take into account coastal countries' positions on the distribution of CSB collected in their areas of jurisdiction.





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# Geographic Filter

International Hydrographic Organization

The DCDB is currently working to automate the notification and approval process of data for coastal states who have provided positive responses but request pre-approval of data before the public distribution from DCDB.

*Many thanks to Denmark who have agreed to test the application this Fall.*

The screenshot shows the DCDB Geographic Filter interface. At the top, there is a navigation bar with 'Home' and 'Manage' options, and a user profile for 'Chris Slater' with a 'Log Out' button. The main area features a map of the French Exclusive Economic Zone (EEZ) with a 'Layer Chooser' and 'Show' button. A search panel on the left includes a 'Search Areas' button, a 'Search CSB Data' button, and a search input field with 'Search' and 'Clear' buttons. A modal window titled 'French Exclusive Economic Zone' is open, displaying a table of metadata for the selected area.

ID	296
GEONAME	French Exclusive Economic Zone
TERRITORY1	France
ISO_TER1	FRA
SOVEREIGN1	France
TERRITORY2	
ISO_TER2	
SOVEREIGN2	
TERRITORY3	
ISO_TER3	
SOVEREIGN3	
ISO_SOV1	FRA
ISO_SOV2	
ISO_SOV3	
EXCLUDE	manual
DATA_SET	EEZ

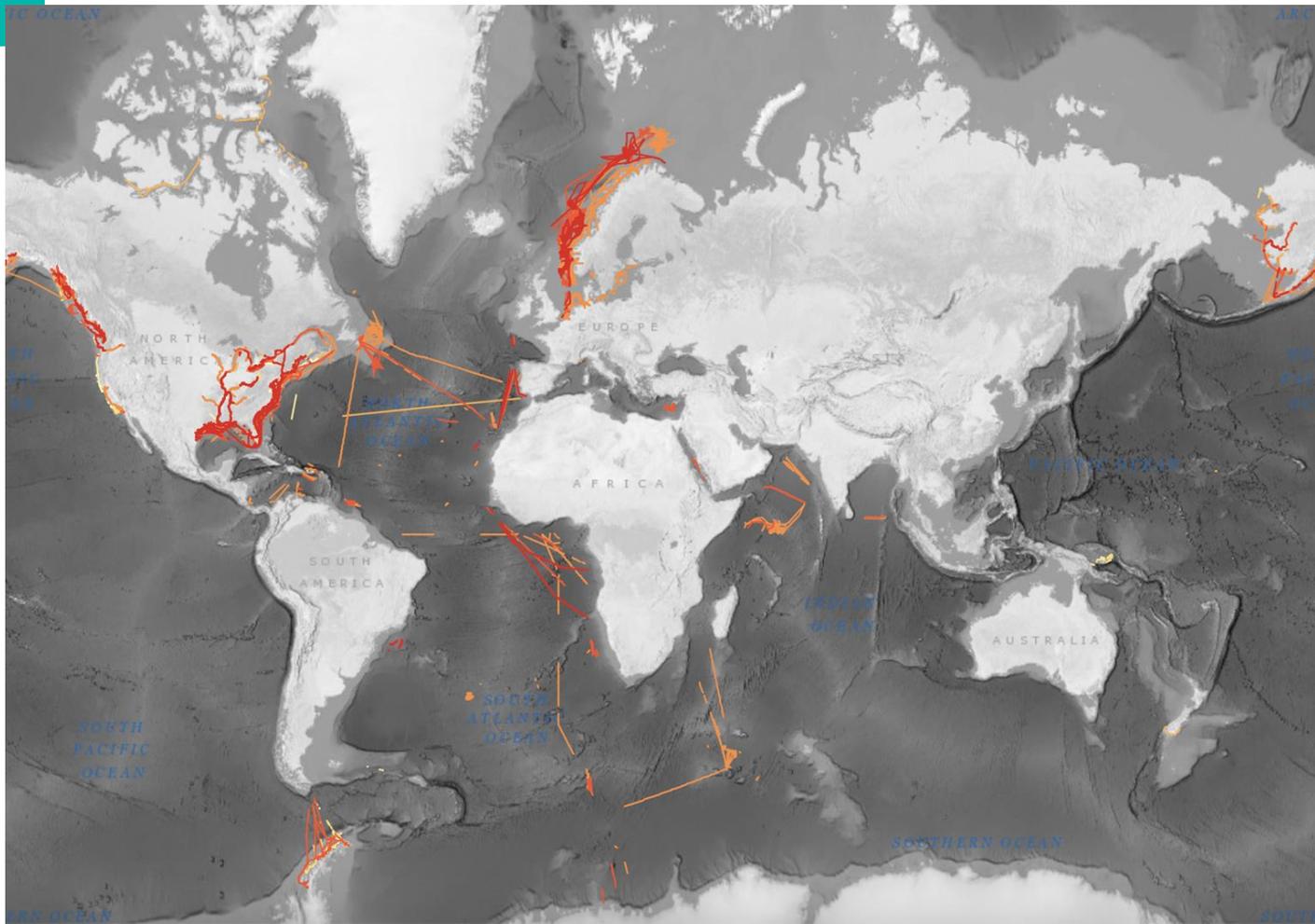
Trace Id	Publish	External Id	Provider	Platform	Instrument	Start Time	End Time	File Name	File Size	Last Updated
000033e4-759c-4591-af98-04c29f6b967b	true <a href="#">Change</a>	MACGR-9221566-AIDAAURA-oyHjp011	MacGregor	Anonymous		2020-03-28T03:08:33Z	2020-03-28T03:10:16Z	20220322085844674039_9221566-AIDAAURA-oyHjp011.tar.gz	965	2022-03-28T21:17:48.738516Z
000042ca-d435-4d84-ae4-ec04163d4dc2	true <a href="#">Change</a>	MACGR-9221566-AIDAAURA-oyHjp011	MacGregor	Anonymous		2020-04-29T03:00:32Z	2020-04-29T03:02:36Z	20220322083434750180_9221566-AIDAAURA-oyHjp011.tar.gz	798	2022-03-28T15:16:03.354039Z



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# CSB Data Holdings

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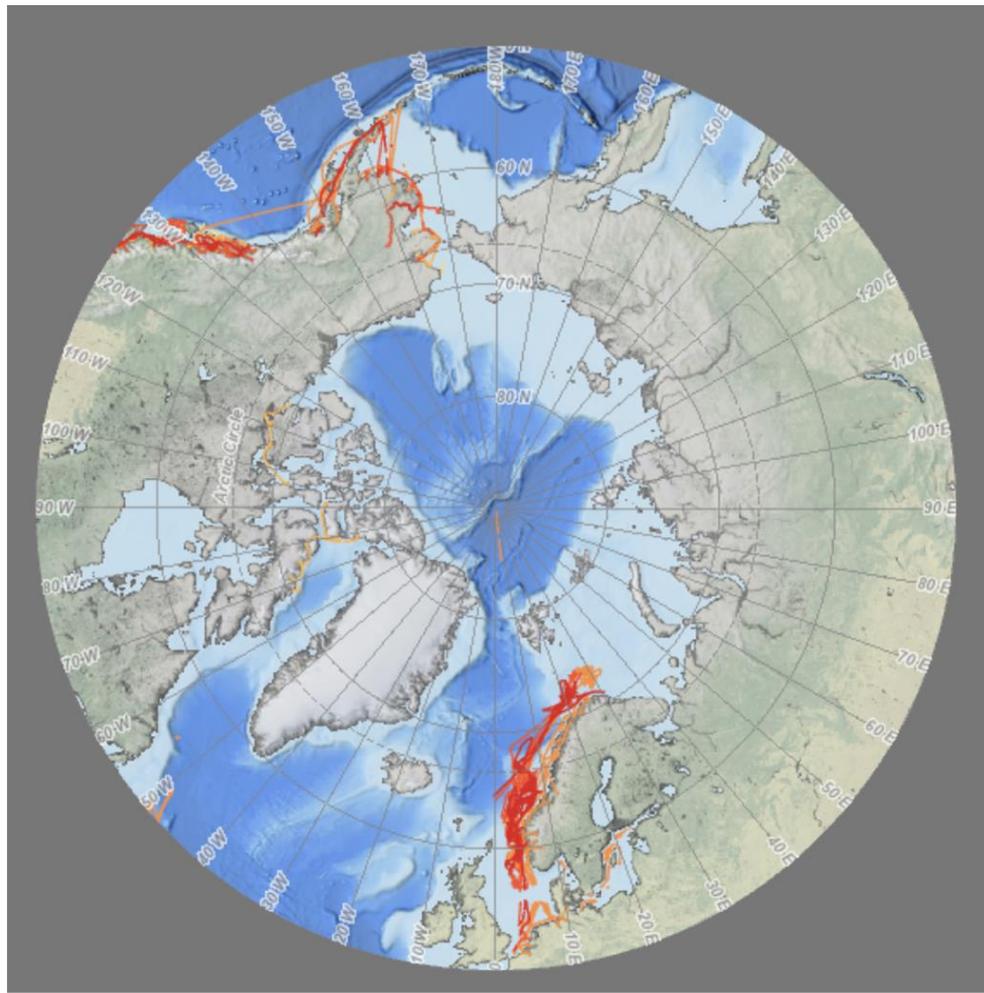




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# CSB Data Holdings - Regional

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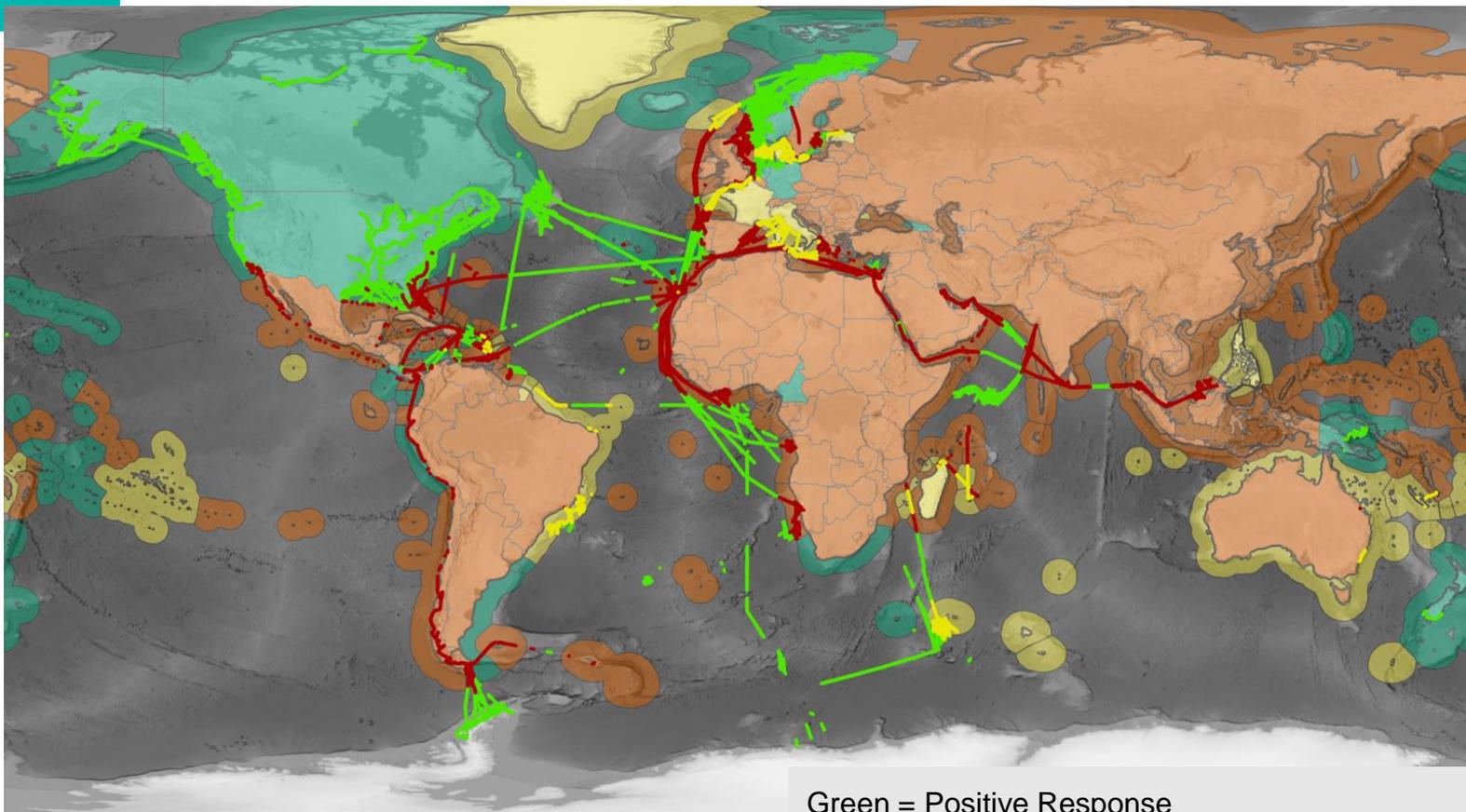




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# Geographic Filtering

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Green = Positive Response

Yellow = Positive Response w/ caveats unable to adhere to

Red = Negative Response, No Response

*Map for illustrative purposes only. (Credit: Marine Regions)*



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# CSBWG14 Highlights - ChartWorld Group

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## CIO+ Services

Enhancing Safety of Navigation with ENC overlays

Stavanger, Norway

16 - 18 August 2023

**ChartWorld**  
Group



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# CSBWG14 Highlights - ChartWorld Group

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## What is CIO+ StayAway?

- StayAway is a cutting-edge solution designed to revolutionize navigation safety for mariners and vessels worldwide.
- StayAway's primary goal is to reduce navigation risks by making uncharted shoals and underwater obstructions visible to mariners.



StayAway addresses the challenge of inadequate or outdated ENC data by providing digitized information on the precise location and extent of uncharted shallow obstructions.

CIO+



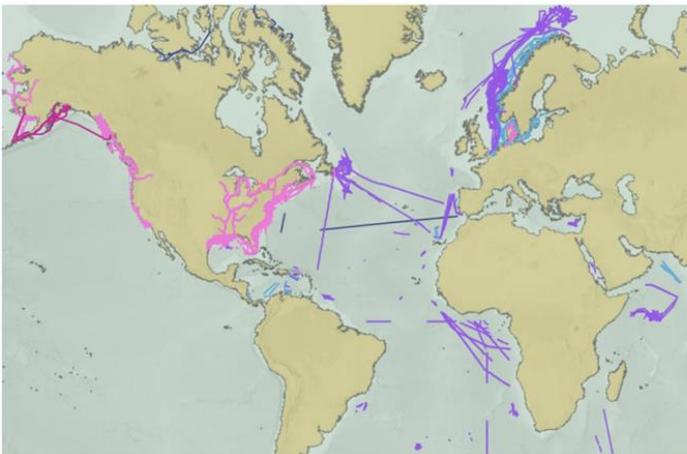


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# CSBWG14 Highlights - ChartWorld Group

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## CSB as ENC Overlays?



Presenting adequate CSB data as ENC overlays could potentially establish a strong use case of CSB in enhancing ENC chart coverage with bathymetric information in areas with limited coverage.

Just like with StayAway's approach, CSB data can be processed and transformed into ENC overlays to be displayed on an ECDIS for navigation.

### Replicating Existing Process

StayAway overlays sets a precedent for generating CSB overlays, making it a viable approach to harness CSB data to fill data gaps.

Potential Use Case

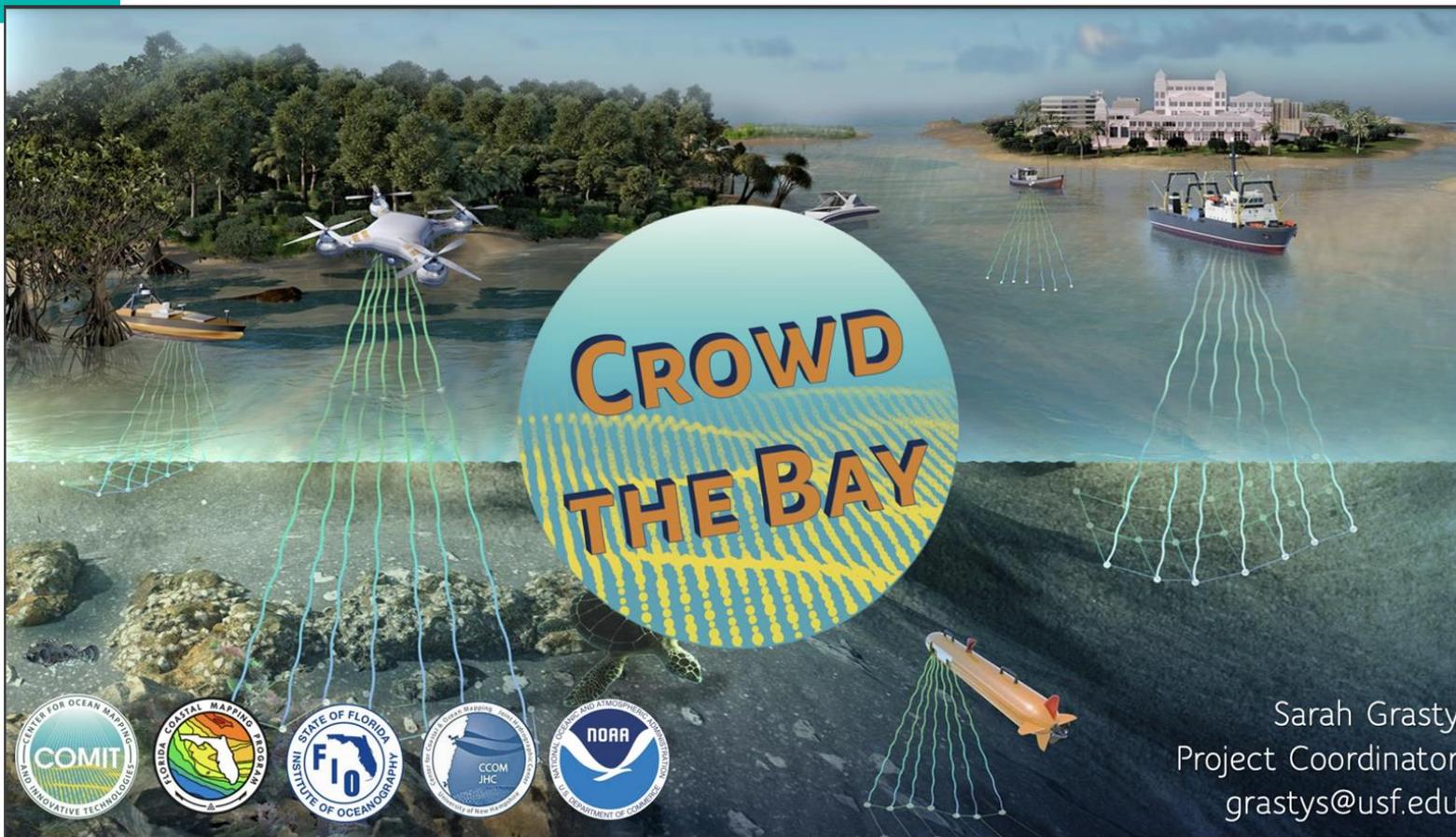




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# CSBWG14 Highlights - Crowd the Bay Program

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# CSBWG14 Highlights - Crowd the Bay Program

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## Crowd the Bay Overview



Phased pilot in Tampa Bay with an eye towards a sustained, diverse crowdsourced bathymetry program in coastal Florida.



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# CSBWG14 Highlights - Crowd the Bay Program

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Crowd the Bay

## Pilot Program Priorities

Develop  
Outreach &  
Support Materials



Generate  
Buy-In



Evaluate Logger  
Performance &  
Change Detection



Collect  
Additional  
Data



CROWD  
THE BAY



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# CSBWG14 Highlights - SeaID Nemo 30 Data Logger

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- NEMO 30 data logger that connects to the ships GPS and echosounder
- Versatility to plug into a range of onboard systems and to upload data to the cloud ⇒ minimising operator input and maximising access to collected data





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# How can your HO become involved?

- Offer a positive response to the IHO CL
- Determine local interest in participating.
- Determine how your community can become involved.

Options include:

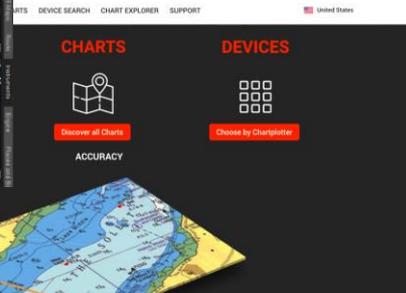
- Utilizing participating navigation software systems (eg: Rosepoint, Navico-CMAP)
- Utilizing VDRs for larger seagoing vessels
- Installation of data loggers (NMEA0183 or 2000)
  - Consider identifying funding opportunities for logger purchases and distributions
  - Request support from Seabed 2030



SmartLog USB data logger



www.rosepointnav.com



**Please contact your CSB/Seabed 2030 Coordinator - [evert.flier@kartverket.no](mailto:evert.flier@kartverket.no)**