Crowdsourced Bathymetry

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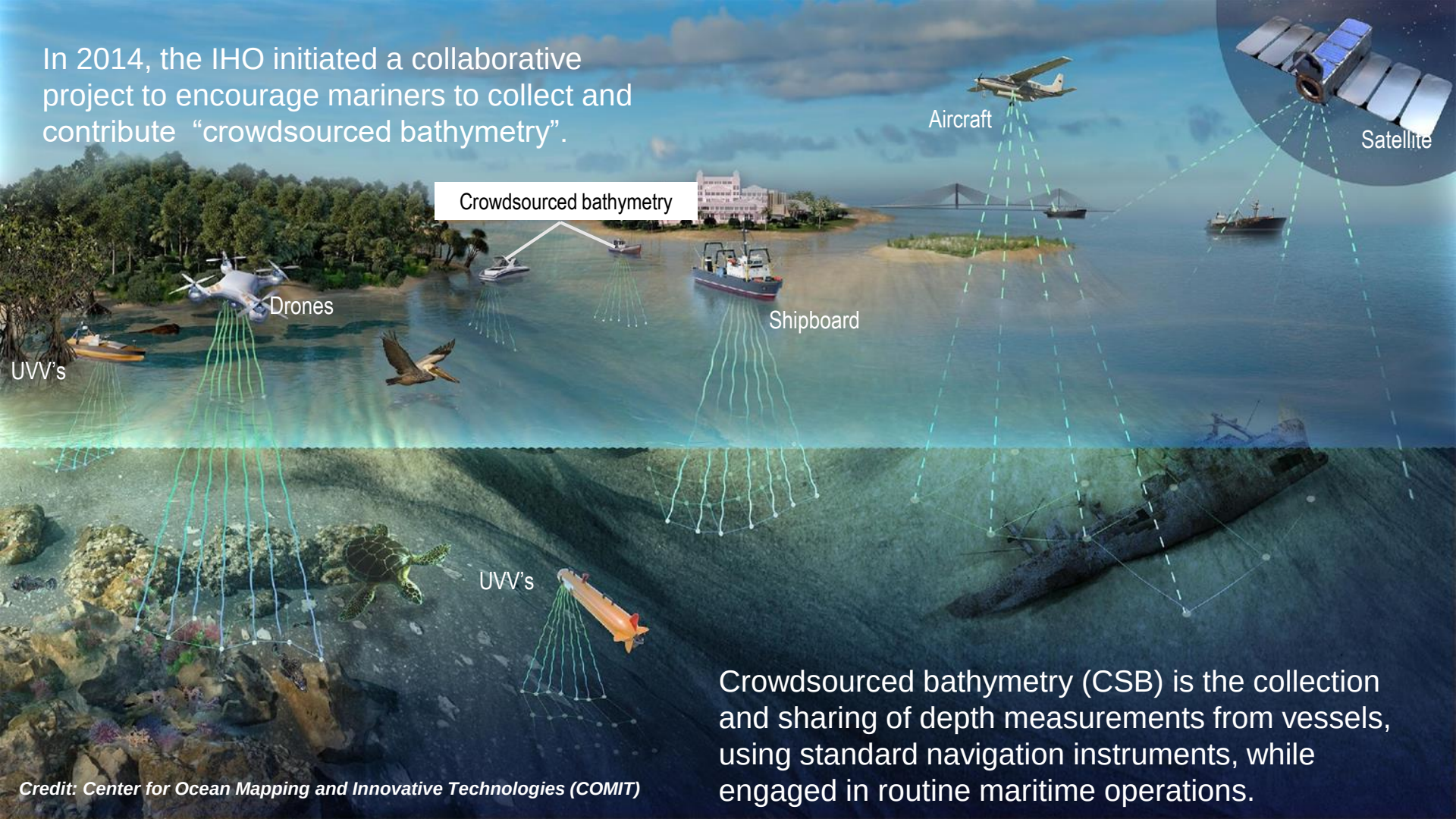
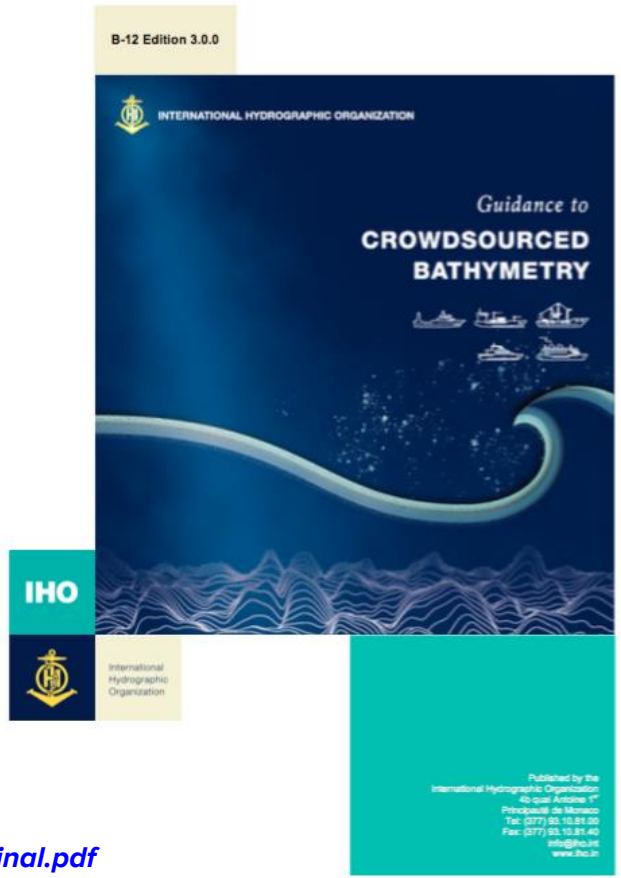

In 2014, the IHO initiated a collaborative project to encourage mariners to collect and contribute “crowdsourced bathymetry”.
Crowdsourced bathymetry
Aircraft
Satellite
Drones
Shipboard
UVV’s
UVV’s
Crowdsourced bathymetry (CSB) is the collection and sharing of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.
Credit: Center for Ocean Mapping and Innovative Technologies (COMIT)

The IHO Crowdsourced Bathymetry Initiative

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

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

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

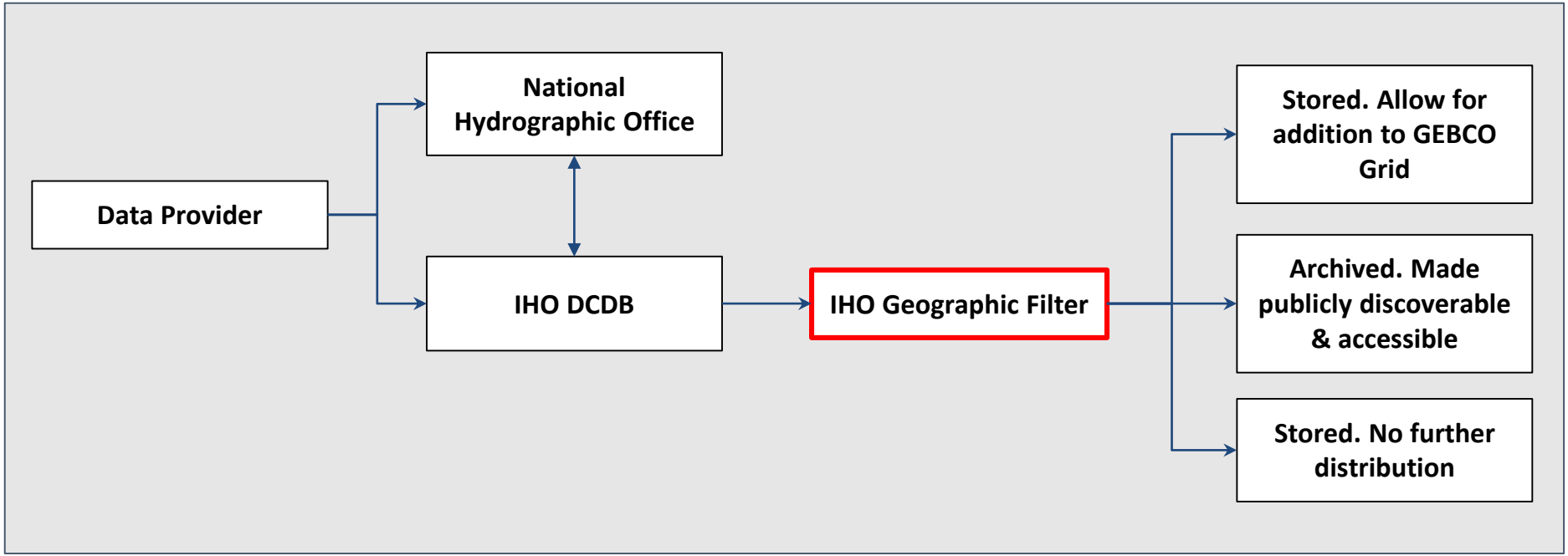
IHO CL 01/2020 & IRCC CL 21/2020

- 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*

Geographic Filter

International Hydrographic Organization

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.

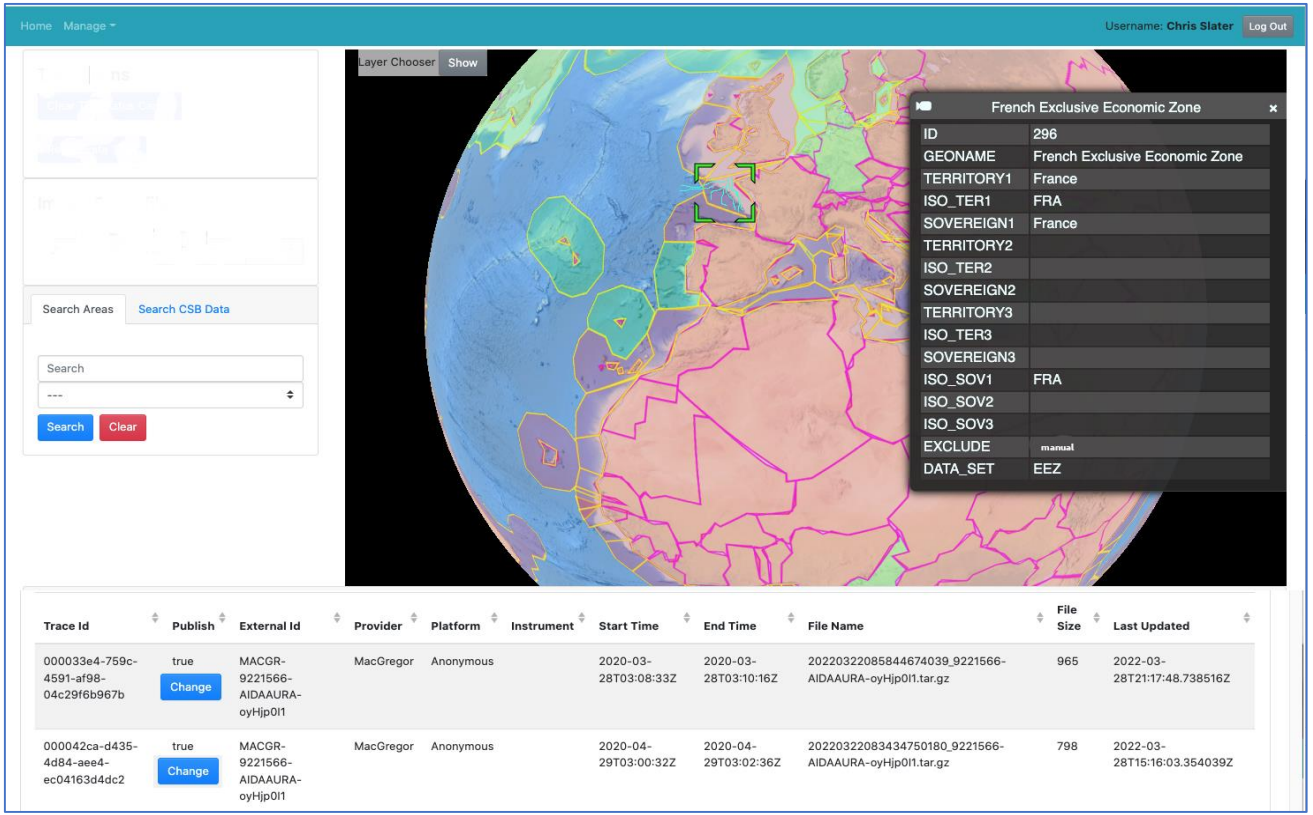


Geographic Filter

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.



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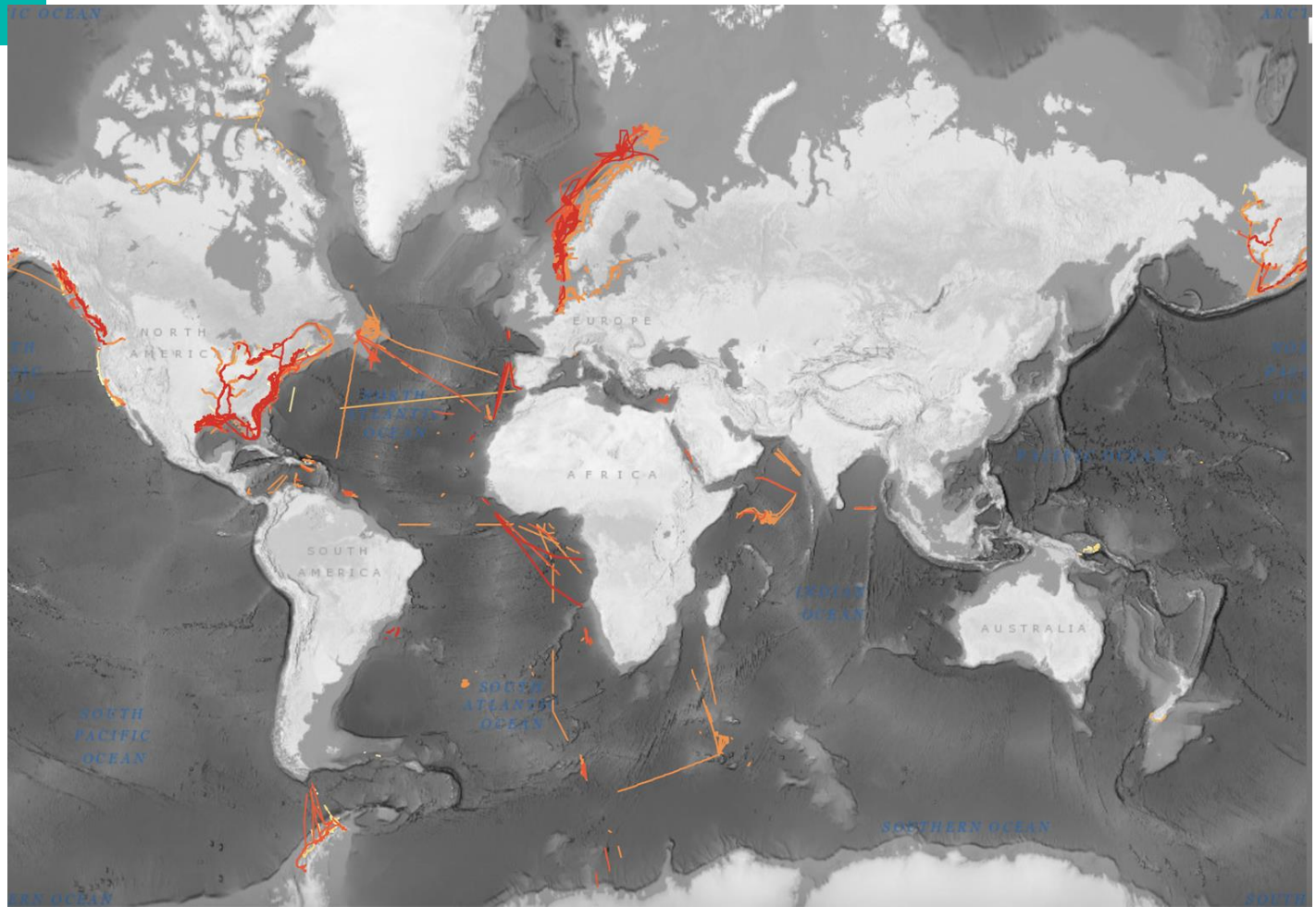
CSB Data Holdings



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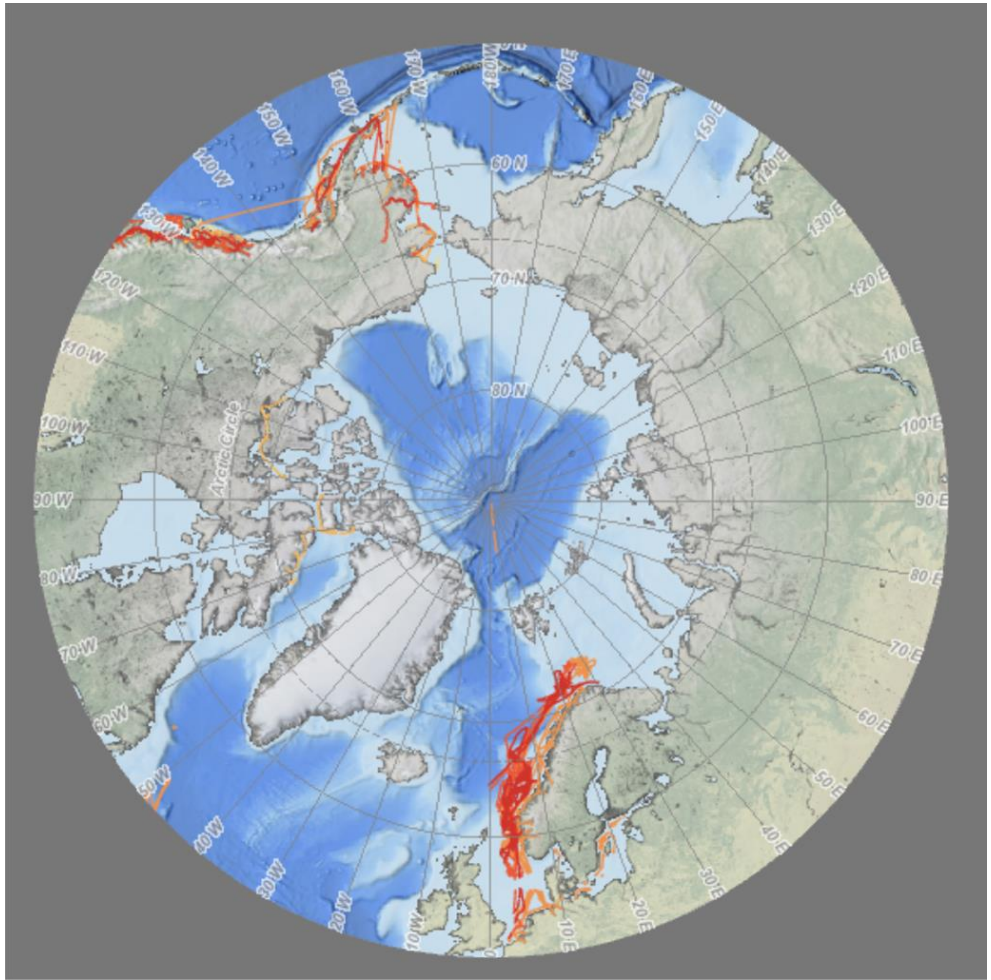
CSB Data Holdings - Regional



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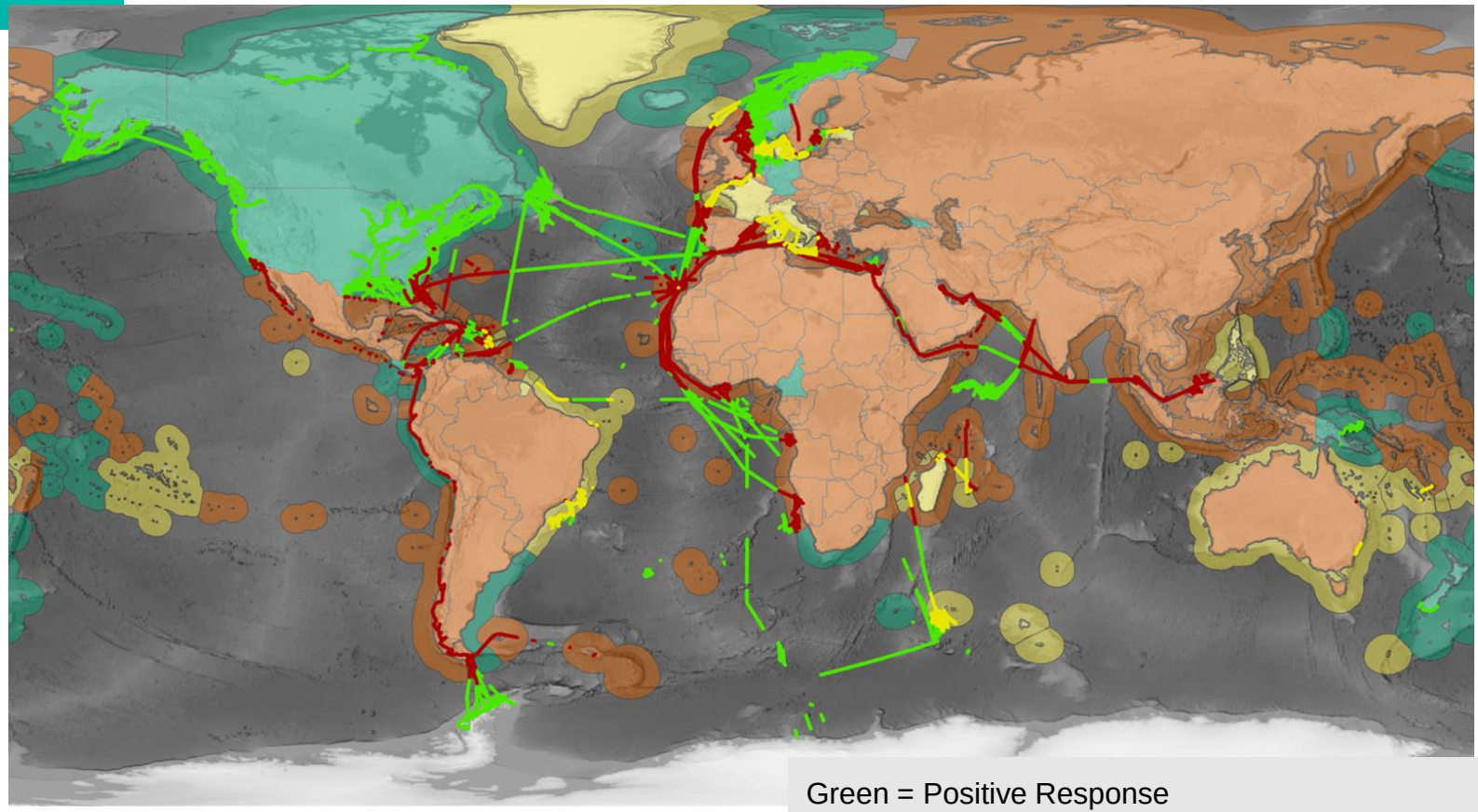
Geographic Filtering



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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International Hydrographic Organization

CSBWG14 Highlights - ChartWorld Group

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.

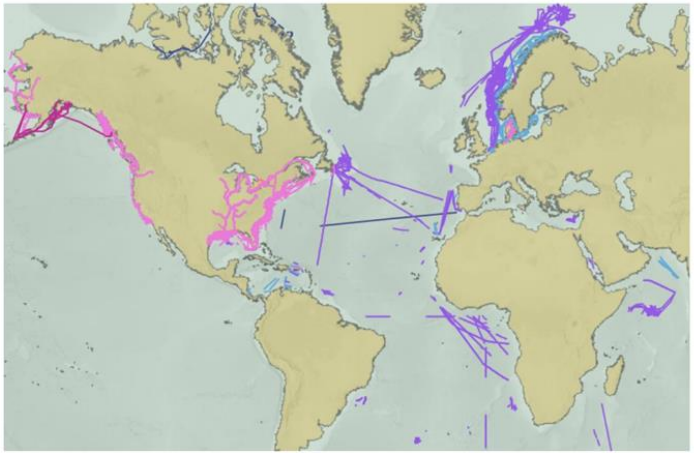
StayAway addresses the challenge of inadequate or outdated ENC data by providing digitized information on the precise location and extent of uncharted shallow obstructions.

CIO+

CSBWG14 Highlights - ChartWorld Group

International Hydrographic Organization

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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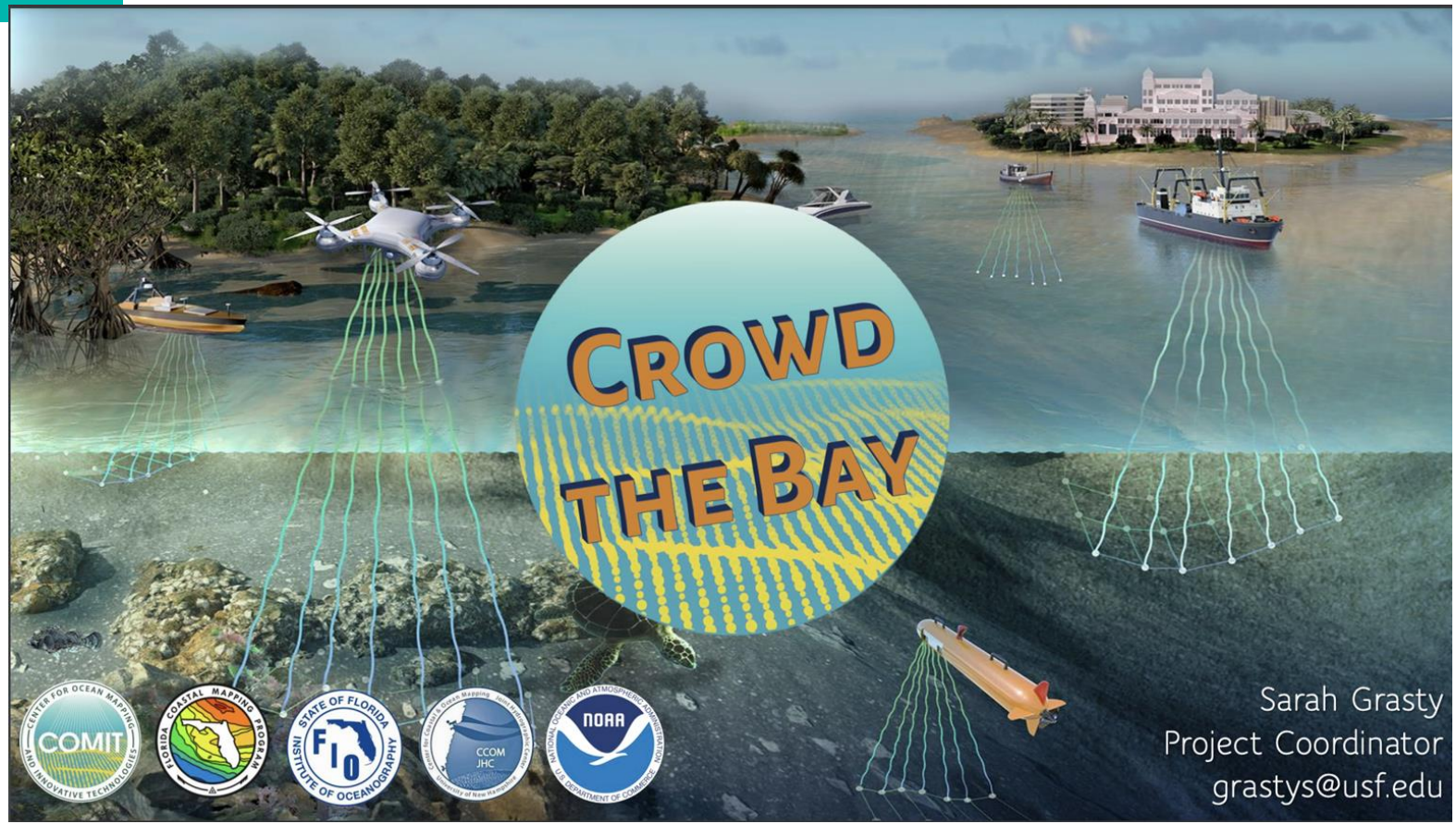
CSBWG14 Highlights - Crowd the Bay Program



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CSBWG14 Highlights - Crowd the Bay Program

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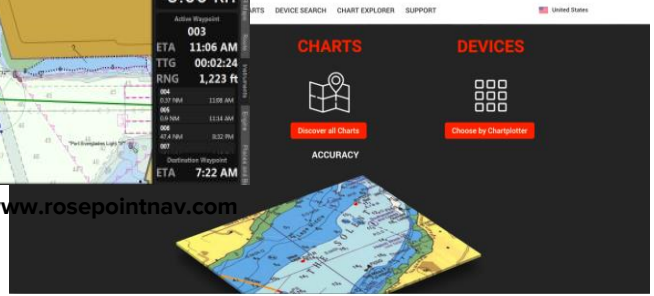
CSBWG14 Highlights - SeaID Nemo 30 Data Logger

- 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

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