

24th Baltic Sea Hydrographic Commission Conference

10-12 September 2019 – Gdańsk, Poland

IHO Crowdsourced Bathymetry Initiative



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**BALTIC SEA
HYDROGRAPHIC
COMMISSION**



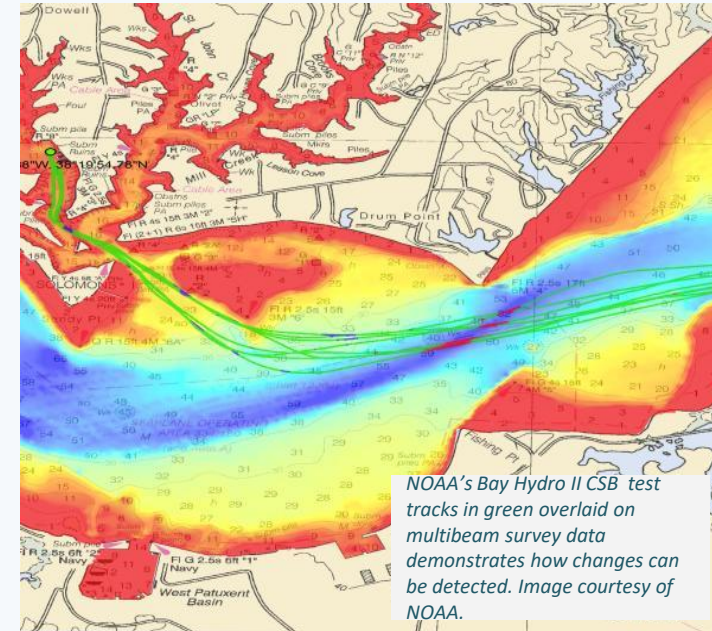


An IHO-led collaborative project to better enable mariners and professionally manned vessels to collect “crowdsourced bathymetry”

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

The Role of CSB Data

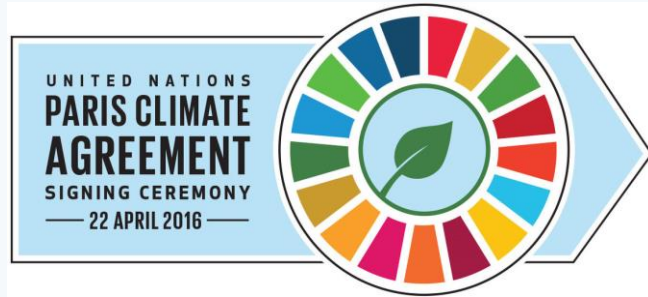
- Support national and regional development activities
- Fill gaps where data is scarce (eg: Arctic, SIDS, open ocean)
- Useful along shallow, complex coastlines that are difficult for traditional survey vessels to access (areas that may be more frequently visited by recreational boaters)
- Identify uncharted features
- Assist in verifying charted information
- Confirm whether charts are appropriate for the latest traffic patterns.



Global Initiatives



UN's 2030 Agenda for Sustainable Development Goals



The Paris Agreement under the UN Framework Convention on Climate Change



Seabed 2030



The Sendai Framework for Disaster Risk Reduction 2015-2030

IHO CSB Working Group Task

The CSBWG was tasked by the IRCC to develop a draft IHO publication on policy for trusted crowdsourced bathymetry (CSB).

This document will provide guidelines on the collection and assessment of CSB data for inclusion in the global bathymetric data set which is maintained in the IHO Data Centre for Digital Bathymetry (DCDB).



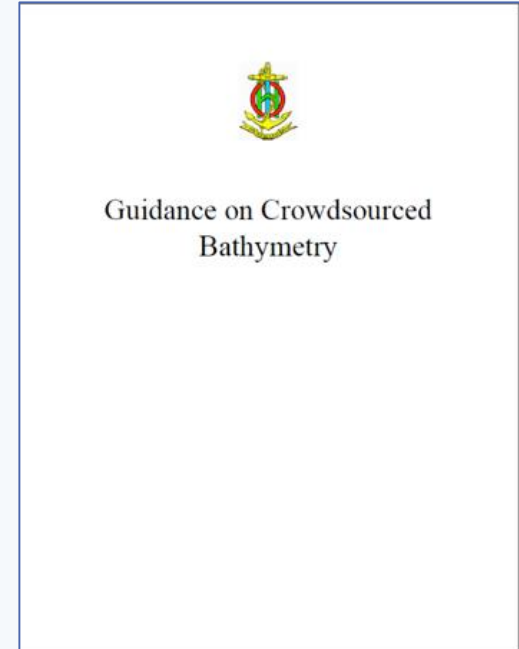
IHO CSB Working Group Task

B-12 Edition 1.0.0 submitted to Council-2.

Subsequent changes required by C-2 incorporated into Edition 2.0.1 for approval by IHO Member States under IHO CL 11/2019 dated 25 January 2019.

35 Member States approved the adoption of B-12 out of 38 replies.

IHO CL 28/2019 dated 13 June 2019, provides the full details, including responses to the comments provided.



To access the document:

https://www.iho.int/iho_pubs/bathy/B_12_Ed2.0.2_2019.pdf

CSB Industry Workshop

Goal: To showcase a variety of current industry CSB participants and discuss the potential for future collaborations to advance the IHO CSB Initiative.

Key Objectives:

- Raise awareness of corporate leadership/opportunities to stimulate action for the collection and sharing of CSB data;
- Discuss CSB acquisition methods/procedures/opportunities;
- Information sharing on transit/CSB data acquisition and exchange formats and protocols;
- Determine tools, methods and protocols to leverage/stimulate a generic participative approach for CSB data collection
- Develop synergies with global initiatives including Seabed 2030

Representatives from: CIDCO, Da Gama Maritime, EGS Survey (representing ICPC), ECC, ESRI, FarSounder, Fugro, GMATEK, Hypack, Olex, Secunda, SevenCs/ChartWorld and Teledyne CARIS



Hosted by the Canadian Hydrographic Service, Quebec City, Canada, on 12-13, February 2019



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CSB Working Group 7th Meeting

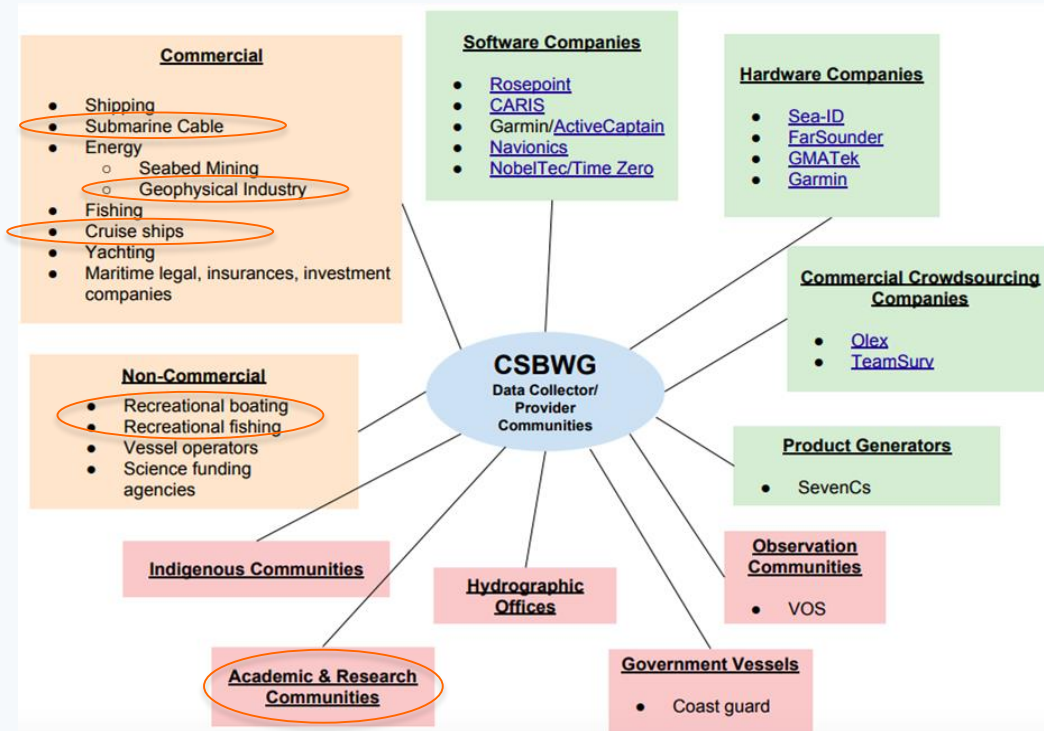
- Chair (Jennifer Jencks, USA) and Vice-Chair (Serge Gosselin, Canada) of CSBWG
- Representatives from eight Member States
 - Canada, Denmark, India, Italy, New Zealand, Norway, UK and USA
- Observers and expert contributors from ONE Data Technology Co, Dongseo University, Farsounder INC, Da Gamma Maritime Ltd, GMATEK Inc, and Fugro.
- Assistant Director David Wyatt represented the IHO Secretariat



*Hosted by the Canadian Hydrographic Service, Quebec City, Canada, on **13-14, February 2019***


CSB Working Group 7th Meeting

- Representation at events & meetings is essential to raise awareness & progress contributions & participation.
- Current outreach strategies will focus on the Geophysical, Research Vessel, Cruise Liner, Submarine Cable, & Recreational Leisure sectors.
- Leading organizations & companies within each sector to be identified & approached to act as CSB ambassadors.
- Closer liaison with various IHO bodies, groups/organizations, & projects still needs to take place (eg: DQWG, MSDIWG, Seabed 2030)



Hosted by the Canadian Hydrographic Service, Quebec City, Canada, on 13-14, February 2019

IHO DCDB Database



International Hydrographic Organization
Organisation Hydrographique Internationale

Data Centre for Digital Bathymetry Viewer

Layers

- ▼ IHO DCDB/NOAA NCEI ?
 - ☐ Multibeam Surveys ?
 - ☐ Multibeam Bathymetry Mosaic ?
 - ☐ Single-Beam Surveys ?
 - ☐ Single-Beam Sounding Density ?
 - ☐ NOAA Hydrographic Surveys: ?
 - ☒ All Surveys with Digital Data
 - ☐ Surveys with BAGs
 - ☐ BAG Shaded Relief Imagery ?
- ☒ Crowdsourced Bathymetry Files ?
 - ☒ Search CSB Files ?
- ☐ U.S. Bathymetry Coverage and Gap Analysis ?

► Australia

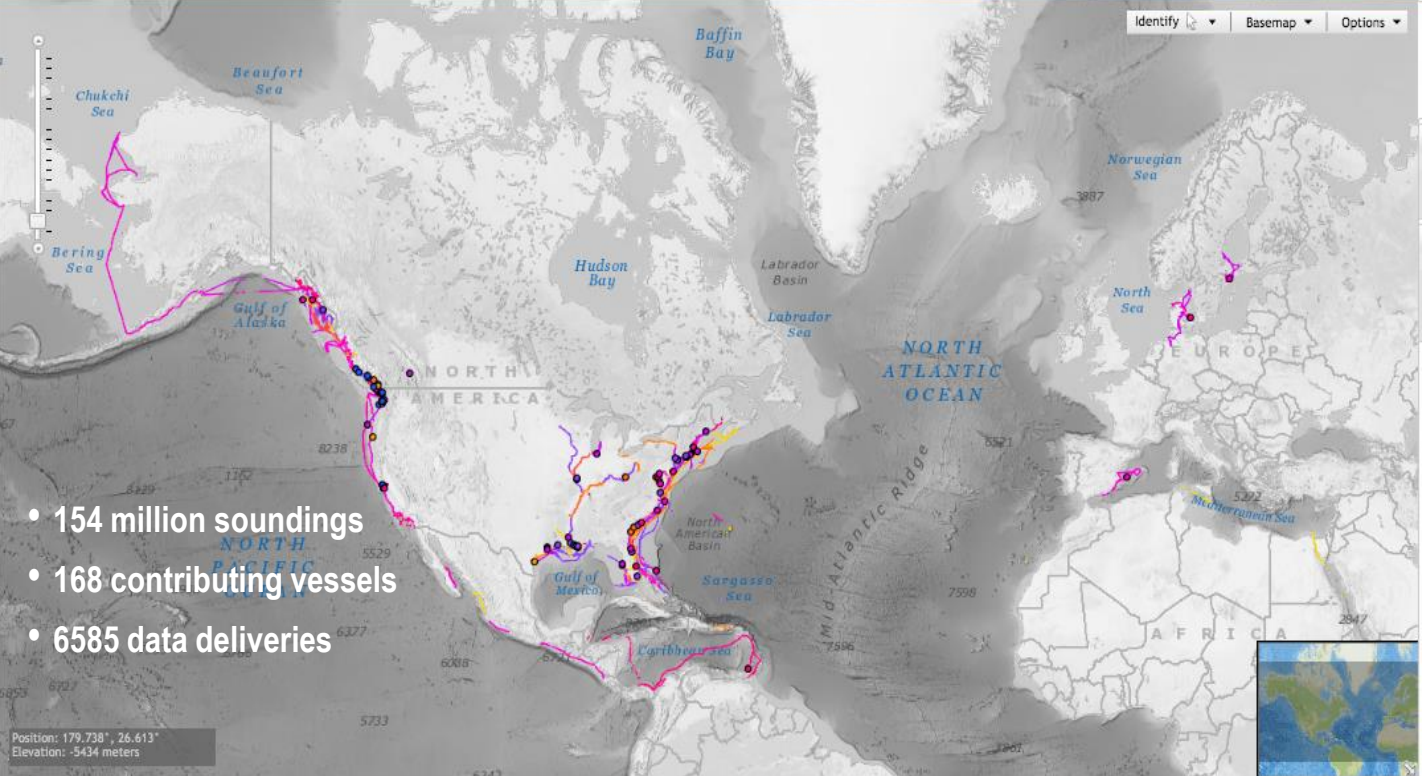
► Canada




► EMODnet

► Bathymetric Coverage Maps

More Information

Help



Identify  Basemap  Options 

154 million soundings
168 contributing vessels
6585 data deliveries

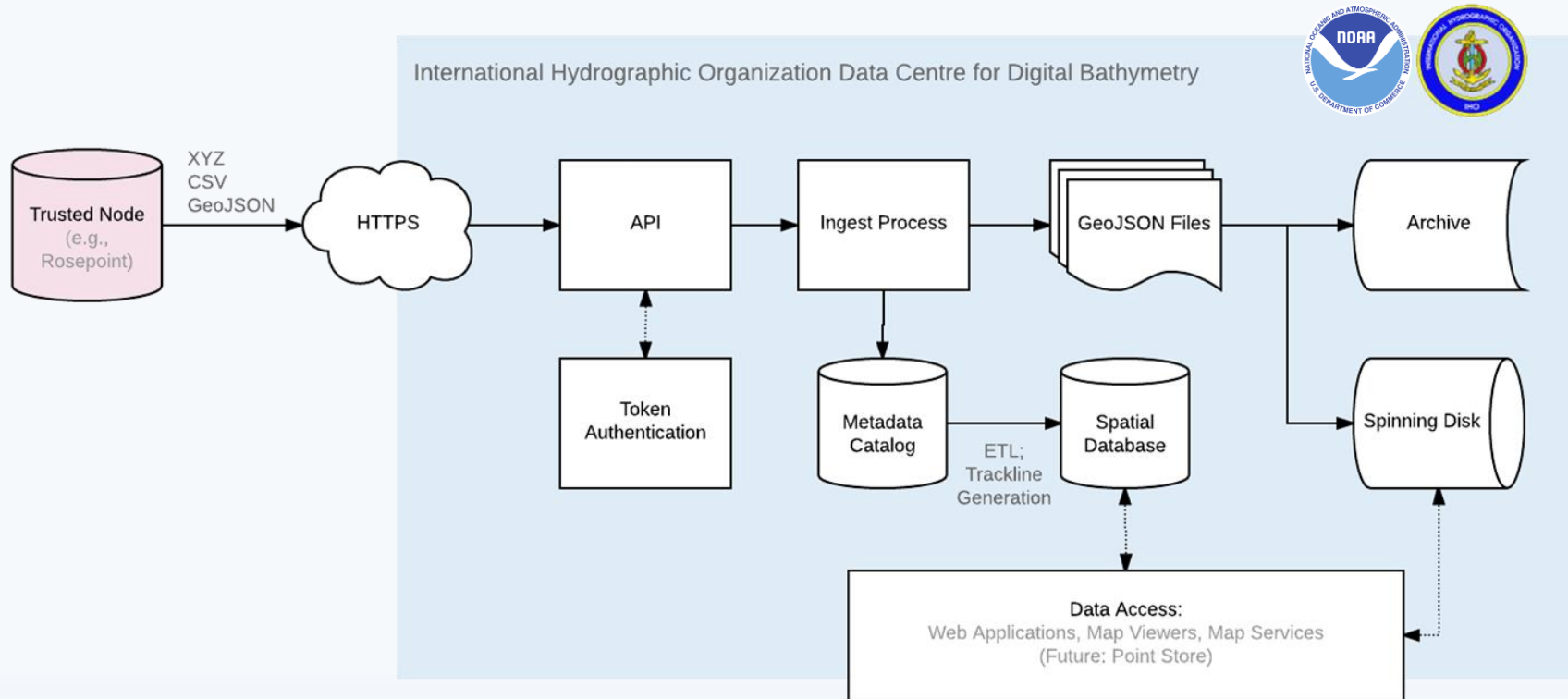
Mercator

Arctic

Antarctic

https://maps.ngdc.noaa.gov/viewers/iho_dcdb/
mb.info@noaa.gov

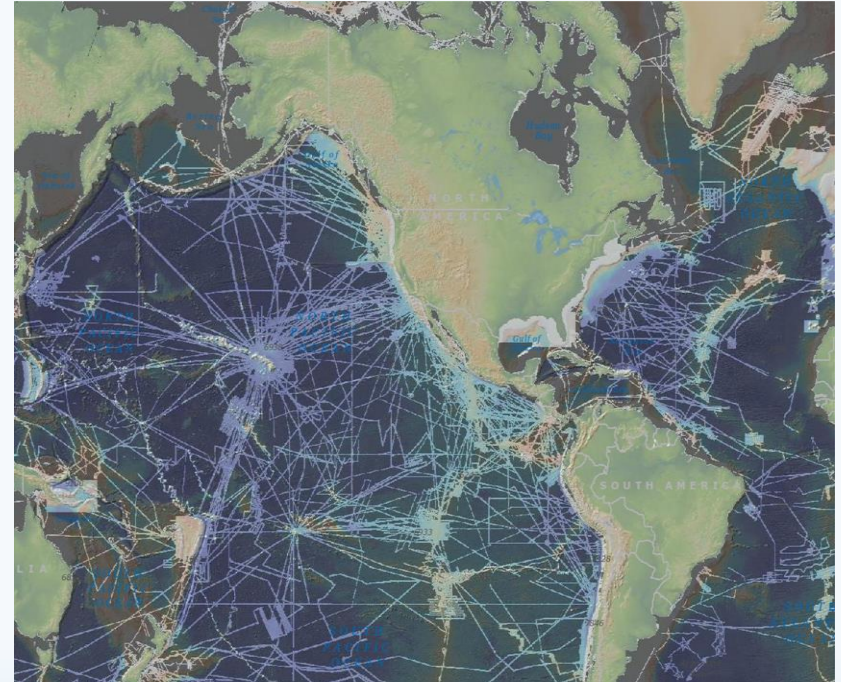
CSB Pilot Project – NOW OPERATIONAL



The Role of CSB Data

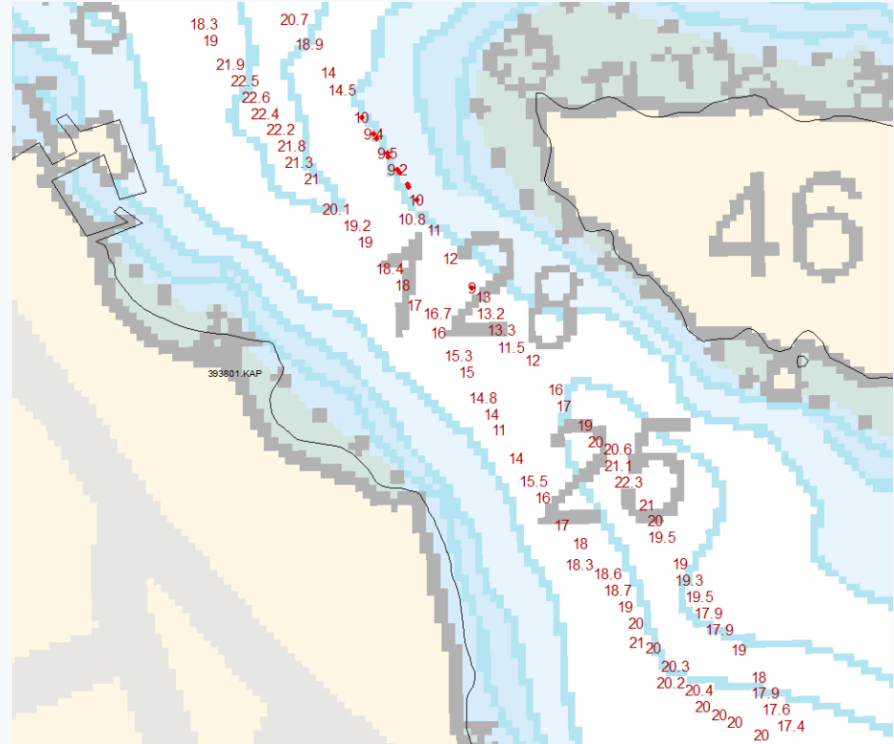
While CSB data may not meet accuracy requirements for charting areas of critical under-keel clearance, it holds limitless potential for myriad other uses.

CSB is a powerful source of information to supplement the more rigorous and scientific bathymetric coverage done by hydrographic offices, industry, and researchers around the world.



Use Case – CHS Pacific

- CSB data was treated by the Canadian Hydrographic Service Pacific as just another Mariner Report; ISO processes were used accordingly.
- ~4.5 million soundings in British Columbia
- 6 potential Notice to Mariners identified in the waters off British Columbia
- Lots of zero values and values where small vessel sonar lost the bottom in deep water.

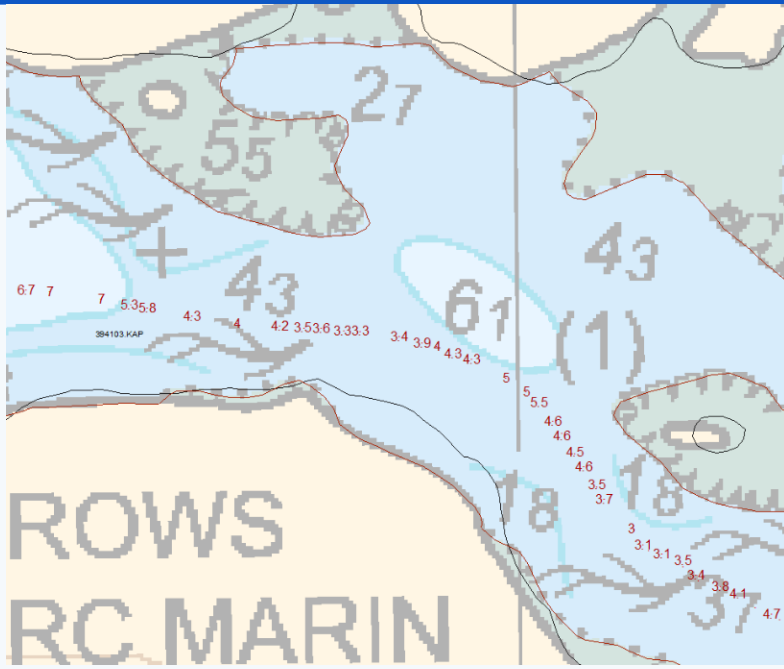


Some CSB agreed with shoaler superseded leadline data and NOT with more recent charted single beam data that met survey specifications at the time. Marked for revisory survey to resolve.

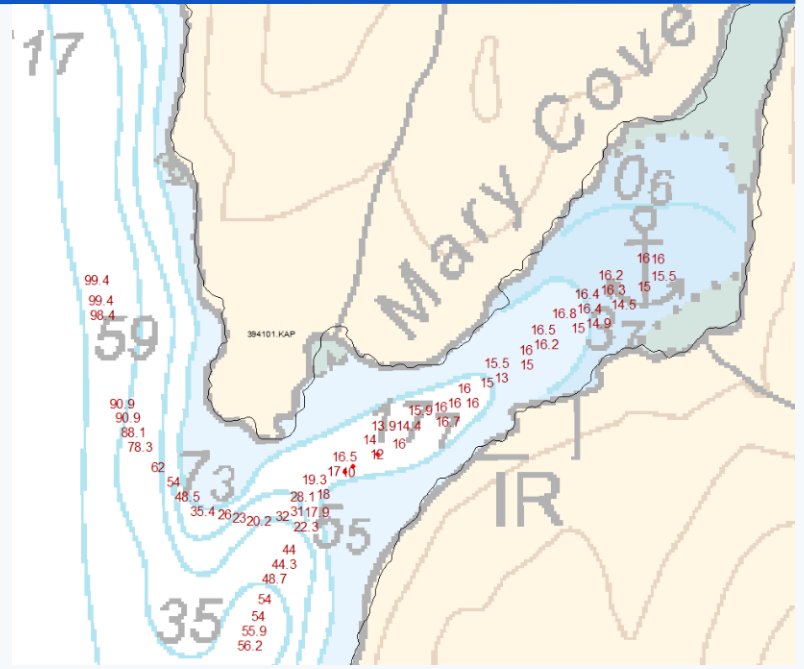


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Use Case – CHS Pacific



CSB filled in between systematic line spacing in a narrows giving a better limiting depth.



CSB revealed some chart compilation problems.
Don't use chart to figure out how much anchor chain you need!

CSBWG Next Steps

- Increase awareness
- Increase data contributions
- Develop incentives on how and why to become involved in the initiative
- Identify potential uses of CSB data
- Provide guidance on data quality and standards for CSB for potential future use
- Liaise with industry, organizations and IHO bodies involved with and potential uses of CSB data.

“If we got 1% of all seagoing vessels logging data, and on average they spent half their time at sea, then that’s about 5 billion data points a day.”

- Tim Thornton, TeamSurv

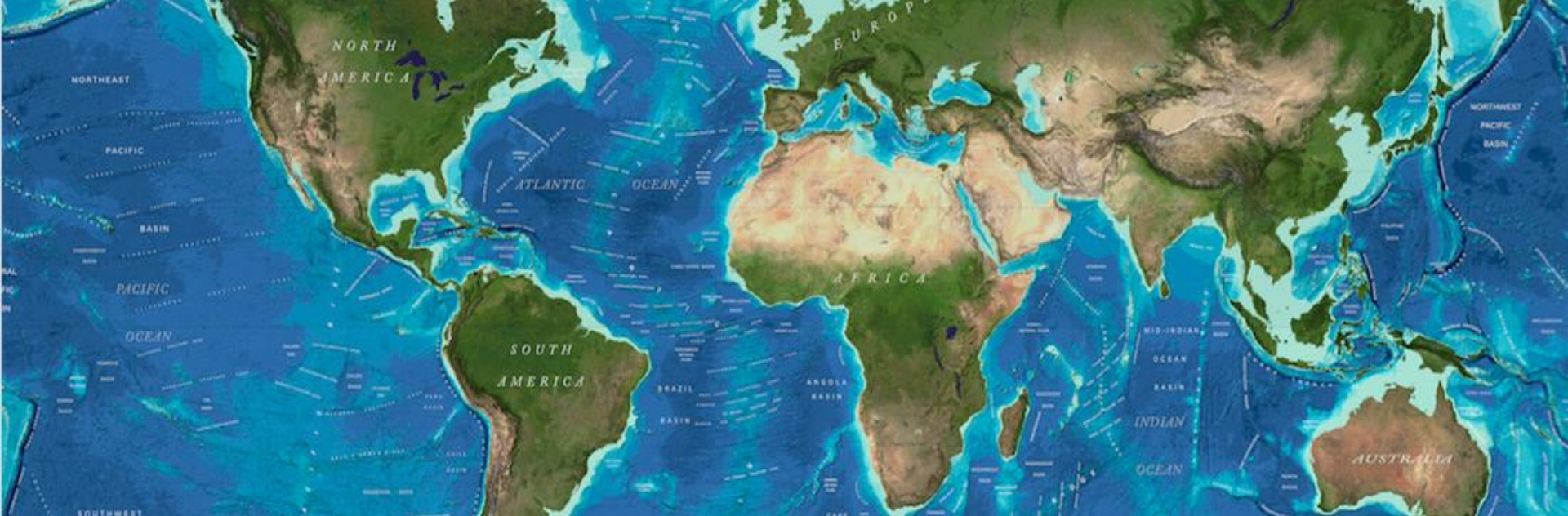


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Final Thought – *UN Decade of Ocean Science for Sustainable Development*

- **195 UN member states** have given their support/approval
- SDG14 will not be achievable without a comprehensive map of the world ocean floor
- Some of these same member states do not fully support the CSB activity in their EEZ, yet have limited resources or capability to collect the data themselves.





CSBWG8 – October 23-25 – Monaco

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