IRCC14-07G

Crowdsourced Bathymetry Working Group

Report to IRCC14

Denpasar - Bali, Indonesia + VTC (Hybrid Meeting)

6 – 8 June 2022

By Jennifer Jencks

CSBWG Chair

CSB Working Group Meetings

- **Meetings:** CSBWG 11: 14-16 Sept ‘21; Intersessionals (Dec ‘21-Feb ‘22); CSBWG 12: 7-10 Mar ‘22
- **Chair:** Jennifer Jencks, USA; **Vice Chair**: Peter Wills, Canada
- **Representatives from 18 Member States:** Canada, China, Denmark, France, Germany, India, Italy, Lebanon, Mexico, Netherlands, New Zealand, Norway, Portugal, South Africa, Sweden, UK, Uruguay, USA
- **IHO Secretariat:** IHO Assistant Director David Wyatt & Sam Harper, IHO Director Luigi Sinapi
- **Observers and expert contributors:** CCOM-JHC, CIDCO, Da Gamma Maritime Ltd, Dongseo U, ECC AS, ESRI, FarSounder, FLIR Systems AB, Fugro, GMATEK, Inc., James Cook U, JAMSTEC, Navico/C-Map, ONE Data Tech Co., Olex, PYA, Seabed 2030, Sea-ID, SevenCs/ChartWorld, TeamSurv, Teledyne CARIS, World Maritime University, and World Ocean Council

CSB Working Group Meetings – Primary Meeting Objective

To COMPLETE & FINALIZE the update of IHO Publication B-12: CSB Guidance Document.

B-12 has been in circulation for over 2 years and, apart from including feedback from operational use and experience, there was a strong desire to make the document more "***equipment agnostic***" with the intent of soliciting data from ALL sources, not just single beam echo sounders.

Another intent was to simplify the document and make it more accessible to ALL readers (data collectors, providers and users).

IRCC 14 Website:

CSBWG Highlights: Work Programme

Completing B-12

Document Sections: *Introduction - Data Contribution - Data Collection - Data & Metadata - Uncertainty (Data Quality) - Additional Considerations - Annexes*

CSBWG11 (Sept 2021)

- Initial work and discussion began, led by Drafting Team leads for each section

Intersessional Period (Dec 2021 - Feb 2022):

- Meetings for each section took place
- Suggestions/comments, noted consensus, and further discussed and developed proposed solutions for areas of concern/disagreement
- Leads incorporated all in a Track Changes and Clean Copy version for WG to review before CSBWG12 meeting.

CSBWG12 (Mar 7-10; hybrid):

- Drafting Team Leads led WG in a review of intersessional decisions made, outstanding issues and proposed solutions; MUCH discussion
- Updated proposed solutions presented, discussed, consensus sought and achieved

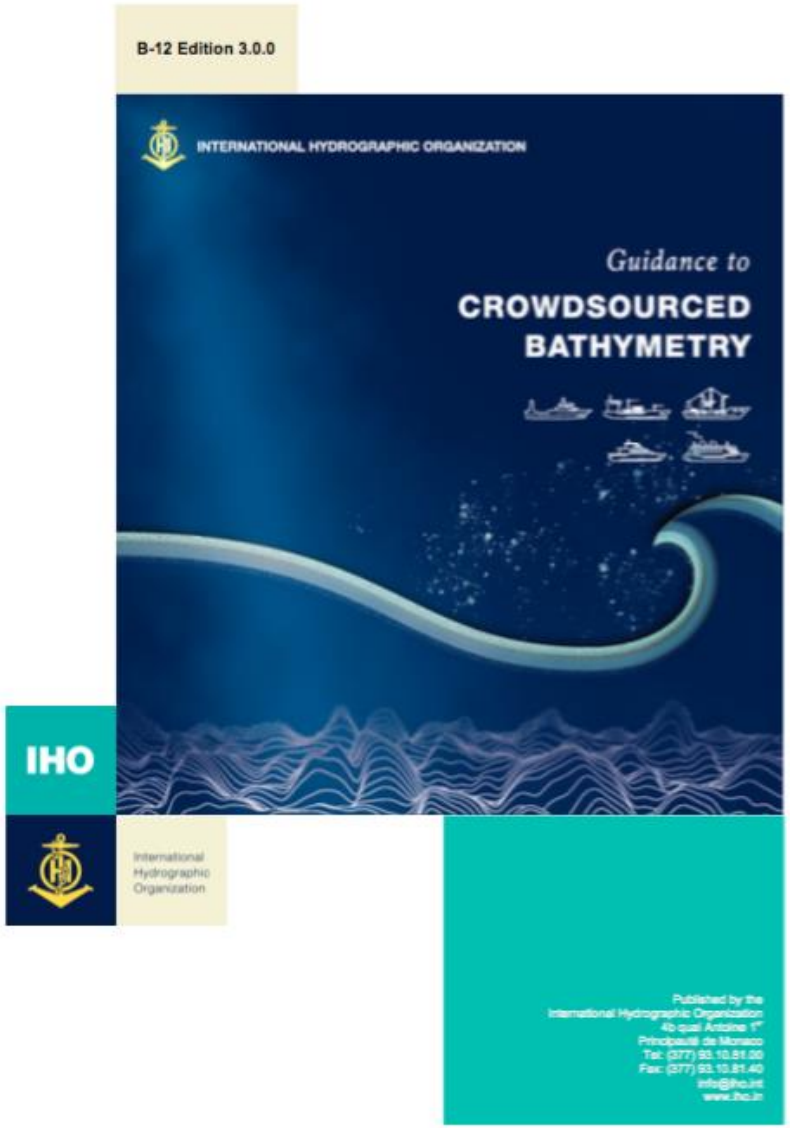
CSBWG Highlights: Work Programme

Completing B-12

On 5 April, B-12 IHO Guidance on Crowdsourced Bathymetry Edition 3.0.0 was endorsed by the CSBWG

Action Requested of IRCC:

To endorse B-12 IHO Guidance on Crowdsourced Bathymetry Edition 3.0.0.



IRCC 14 Website:

iho.int/uploads/user/Inter-Regional%20Coordination/IRCC/IRCC14/IRCC14-07Ga_CSB-Guidance_Document-Edition_3.0.pdf

CSBWG Highlights: Work Programme

Outreach to RHCs

IRCC12 Action 14: Have RHC's identify Seabed 2030 / CSB Coordinators

RHC	Country	Coordinator Name
NHC (Nordic)	Norway	Evert Flier
NSHC (North Sea)	Norway	Evert Flier
MBSHC (Mediterranean and Black Seas)	Lebanon	Joud Sayah
ARHC (Arctic)	Norway	Evert Flier
BSHC (Baltic Sea)	Denmark Sweden	Jens Peter Hartmann (CSB) Hans Öiås (SB2030)
USCHC	USA	Andy Armstrong
EAHC (East Asia)	Japan	Kentaro Kaneda
EAtHC (Eastern Atlantic)	Portugal	LCDR Telmo Geraldes Dias
SEPRHC (South-East Pacific)		
SWPHC (South-West Pacific)	New Zealand	Stuart Caie
MACHC (Meso American & Caribbean Sea)	Mexico	Cecilia Cortina Guzman
SAIHC (Southern African and Islands)	S. Africa	Cdr Christoff Theunissen
NIOHC (N. Indian Ocean)	India	Cdr Rahul Bhatt
RSAHC (ROPME Sea Area)		
SWAtHC (SW Atlantic)	Uruguay	Cdr Niki Eugenio Silvera
HCA (HC on Antarctica)	Norway	Evert Flier

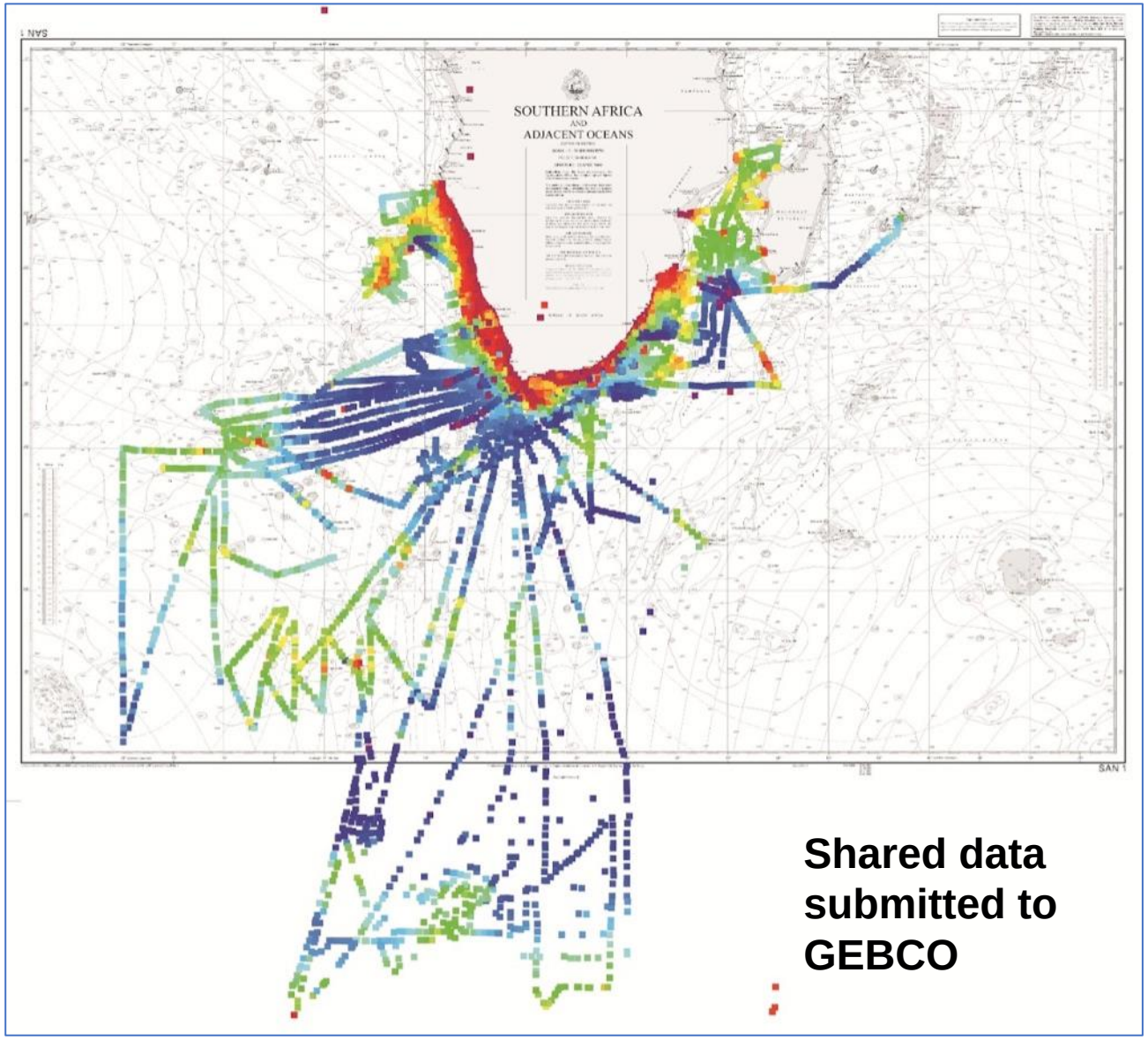
CSBWG Highlights: Work Programme

Outreach to RHCs

- Brief updates provided by Seabed 2030 / CSB Coordinators from the USCHC, ARHC, SAIHC, SWPHC, NSHC, MACHC & MBSHC.

- Presentation provided by Cdr Christoff Theunissen (SAIHC): ***Seabed 2030 Update & Lessons Learned from SAIHC Coordinator***

- ***IRCC14-9A: MACHC Paper on establishing a Seabed 2030/CSB Coordinator Collaboration Team -*** Progress in these activities would likely improve if a coordinated collaborative mechanism existed for all RHC Coordinators to participate in.



Shared data submitted to GEBCO

CSBWG Highlights: Work Programme

General Outreach - 2 Pagers

- Super yacht & leisure community
- Survey
- Geophysical & Submarine Cable industry
- Fisheries
- Cruise Line industry
- Software/hardware industry
- Hydrographic Offices
- Academic/Scientific Research

IHO

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CITIZEN SOURCED DATA

HELP REVEAL THE DEEP AND SHARE YOUR DATA

CROWDSOURCED DEPTH INFORMATION

Commercially owned ships can participate in increasing our knowledge of the ocean by sharing depth measurements from navigation instruments while out at sea. Known as Crowdsourced Bathymetry (CSB), this information can help identify uncharted features such as seamounts and canyons, verify charted information, and help fill the gaps where no data exists.

CRUISE SHIPS

Many expedition cruise ships explore the world's oceans, often in areas where data is sparse, non-existent, or of poor quality. These are exactly the places where contributions to global seafloor mapping efforts can have the greatest impact.

To minimise effort on the part of the ship's crew, data collection and contribution of data can occur by using either built-in navigation software systems that are participating in the CSB initiative, or through a small hardware data logger that can be interfaced to the ship's NMEA data bus. Routinely measured parameters such as under keel depth and position, can then be stored, uploaded and contributed to local and global mapping initiatives. These contributions can also benefit navigational safety, detect unknown hazards, and aid other mariners and ocean scientists.

By contributing data, cruise ships can help avoid accidents, environmental damage and make the oceans a safer place for all. Additionally, participation in this global effort can be included in the cruise line's marketing materials highlighting the various ways they contribute to scientific endeavors.

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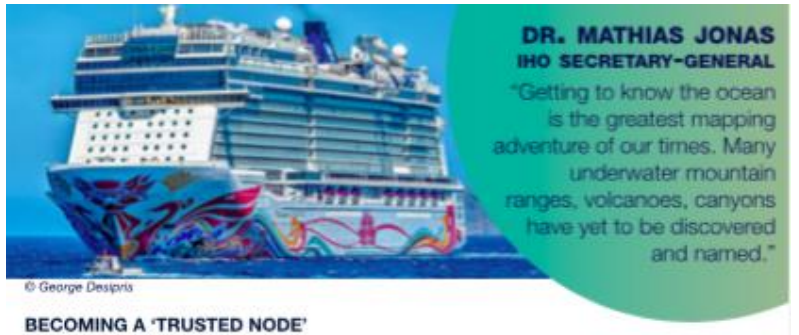

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DR. MATHIAS JONAS
IHO SECRETARY-GENERAL

"Getting to know the ocean is the greatest mapping adventure of our times. Many underwater mountain ranges, volcanoes, canyons have yet to be discovered and named."

BECOMING A 'TRUSTED NODE'

The IHO's Data Centre for Digital Bathymetry (DCDB) accepts CSB data contributions through organizations, companies or universities that serve as data aggregators and / or liaisons between mariners (data collectors) and the DCDB. These "trusted nodes" help the CSB effort in a variety of ways ranging from supplying data logging equipment or software, providing technical support to vessels, downloading data from data loggers, aggregating collected data and facilitating data transfer. The IHO DCDB will help identify the best-suited "trusted node" type for you.

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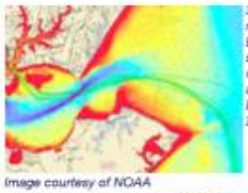
Contributed data should include depth, position and time stamp. While additional information is encouraged, data does not need to include vessel name, IMO number or anything else with the vessel identification prior to uploading to the IHO DCDB database. By contributing data to the IHO DCDB, the provider will not be held liable for the data submitted.

FIND OUT MORE

Further information about collecting or contributing data can be found at the IHO DCDB website (ngdc.noaa.gov/iho/) or by contacting representatives of the IHO Crowdsourced Bathymetry Working Group at bathydata@iho.int

Visit seabed2030.org to learn more about the Nippon Foundation-GEBCO Seabed 2030 project, which aims to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030.

NOAA's Bay Hydro II crowdsourced bathymetry test tracks in green overlaid on multibeam survey data demonstrates how changes can be detected.



3D view of northern Great Barrier Reef showing all vessel tracks as of December 2019.

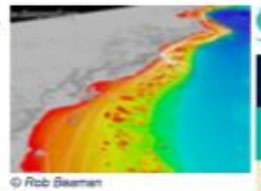


Image courtesy of NOAA

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iho.int/en/bathymetric-publications

iho.int/en/communication-material

Thank you to Christophe Buzzi and Sarah Couture (IHO)

Progress on IRCC Action Items

<u>IRCC 13 Action 4</u>: CSBWG, IRCC Chair and IHO Secretariat to consider ways to streamline the updates of B12 after the next CSBWG meeting.

Update: Due to the enduring challenges associated with finalizing B-12 remotely, we propose this action be carried over to CSBWG13.

Problems Encountered

International Hydrographic Organization

The principal challenge for the CSBWG was the enforced remote working regime due to the ongoing COVID19 Pandemic.

Producing a new edition of B-12 was an extremely challenging endeavor to undertake via remote working and as a result, took longer than expected and required a significant amount of intersessional work.

IHO

International Hydrographic Organization

Problems Encountered

A considerable degree of confusion continues to exist between the opportunistic and random CSB data gathering activity and the UNCLOS regulated planned scientific data gathering and systematic hydrographic survey operations.

It is clear that many coastal states continue to misunderstand the objectives and focus of the CSB initiative, which is to collect data in poorly surveyed or unsurveyed areas.

Increased awareness and information as well as continued stakeholder engagement/involvement should all help to overcome these reservations.

Problems Encountered

There continues to be concern over the apparent lack of dedicated resources available within national HOs to process CSB data available via the DCDB.

It should be considered that the quantities of data likely to be generated and of interest to individual HOs will be relatively small.

Any significant variance with published data highlighted during CSB collection should be reported directly to the relevant HO via Hydrographic Note, as is the current practice.

The remaining CSB data is therefore unlikely to be of major interest to HOs, except in areas where data is sparse or non-existent.

Other Items of Note

The continued importance of liaison with other IHO bodies, as well as appropriate engagement with industry to progress the work items, continues to be a key enabler for the project.

There is a continued need to showcase various use cases of CSB data to indicate the benefits and how MS can utilize ‘free’ data for their own national uses.

A sincere appreciation to the CSBWG members, expert contributors and observers that dedicated a significant amount of their time to complete B-12.

Actions Requested of IRCC

a) Note the contents of this report;

b) Endorse B-12 IHO Guidance on Crowdsourced Bathymetry Edition 3.0.0.

c) Encourage all Member States to respond to IHO CL 21/2020 and, if possible, offer a positive response, even if qualified, to enable provision of CSB data into the public domain collected from ships within waters subject to their national jurisdiction.

d) Encourage all RHC Chairs to bring the IRCC CL 1/2020 to the attention of all coastal states within their respective RHC, encouraging them to offer a positive response, even if qualified, to enable provision of enable provision of CSB data into the public domain collected from ships within waters subject to their national jurisdiction.

e) Encourage Member States to release datasets or subsets into the public domain via the IHO DCDB;

f) Encourage Member States to support the CSB initiative with positive actions, such as requiring all research vessels to collect bathymetric data for late uploading, when on passage or when it does not interfere with other research activities;

g) Take what other action is deemed necessary.