

Report of the Crowdsourced Bathymetry Working Group

Submitted by: Chair

Related Documents: IHO CSBWG6 report, IHO CSBWG7 report, Industry Workshop report, IHO CSB Guidance Document (B-12) Edition 2.0.1

Related Projects: none

Chair: Jennifer Jencks, USA

Vice-Chair: Serge Gosselin, Canada

Secretary: David Wyatt, IHO

Member States: Canada, Denmark, Finland, France, Germany, India, Italy, New Zealand, Nigeria, Norway, Philippines, Portugal, UK, USA

Expert Contributors: Caris, Da Gamma Maritime Ltd, Dongseo University, Farsounder, GMATEK, Olex AS, Sea-ID, PYA, TeamSurv, GEBCO, ONE Data Technology Co, SevenCs/Chartworld

See Annex A for full details

1. Meetings Held During Reporting Period

The working group held its 6th meeting at the offices of the National Oceanic and Atmospheric Administration (NOAA) - National Centers for Environmental Information (NCEI) in Boulder, Colorado, USA from 19 to 21 June 2018. The Chair of the CSBWG, Ms Jennifer Jencks (USA, Director of the DCDB), chaired the meeting which was attended by representatives from four Member States (Canada, Norway, UK and USA), and observers and expert contributors from the World Ocean Council, the NF-GEBCO Seabed 2030 Project, ONE Data Technology Co, Dongseo University and Farsounder INC. Denmark, GMATEK, Sea-ID, ChartWorld/SevenCs and TeamSurv participated remotely for various agenda items and subsequent discussions. Assistant Director David Wyatt (Secretary) represented the IHO Secretariat.

The working group held its 7th meeting in Québec City, Canada from 12 to 14 February 2019. The Chair of the CSBWG, Ms Jennifer Jencks (USA, Director of the DCDB), chaired the meeting which was attended by representatives from eight Member States (Canada, Denmark, India, Italy, New Zealand, Norway, UK and USA), and observers and expert contributors from the ONE Data Technology Co, Dongseo University, Farsounder INC, Da Gamma Maritime Ltd, GMATEK Inc, and Fugro. Assistant Director David Wyatt (Secretary) represented the IHO Secretariat.

Prior to the meeting, an Industry Workshop was conducted with representatives from CIDCO, Da Gama Maritime, EGS Survey (representing ICPC), ECC, ESRI, FarSounder, Fugro, GMATEK, Hypack, Olex, Secunda, SevenCs/ChartWorld and Teledyne CARIS. The main goal of the Workshop was to showcase a variety of current industry participants and discuss

the potential for future collaborations to advance the IHO Crowdsourced Bathymetry Initiative.

2. Work Programme

CSBWG6

The CSBWG briefly reviewed the final draft version of the B-12 Guidelines which was presented to the IRCC at its 10th meeting in Goa, India, in June 2018; this was followed by consideration by the IHO Council at its 2nd meeting in October and submitted for adoption by the IHO Member States towards the end of 2018.

The participants received presentations updating activities on a number of ongoing projects related to CSB.

The participants spent time considering the future tasks which had been approved by IRCC10 as a result of the adoption of the revisions to the ToRs of the CSBWG. In particular, the discussions focused on Member States' data gathering policies and future outreach strategies, for which five headline topics (need, how, what, incentives and benefits) were identified to increase contributions and participation, these would be further developed at the next meeting.

CSB Industry Workshop

The invited industry representatives at the Workshop were given an overview of the IHO CSB initiative, which was followed by short presentations on current industry partner projects, examples of CSB data usage by hydrographic offices and habitat mapping projects and technology perspectives. AORA/ASMIWG, Sea-ID, NF-GEBSCO Seabed 2030 and James Cook University gave presentations by remote link. There was much discussion among Workshop participants on how to expand the initiative into the various maritime sectors, what methodologies were appropriate to incentivise data gathering activities, how the data could be made available and what recognition strategies were desirable.

CSBWG7

At its 7th meeting, the CSBWG briefly reviewed the final draft version of the B-12 Guidelines which was presented to Member States for adoption via IHO Circular Letter 11/2019. A full explanation was provided on the background to the generation of Edition 2.0.0 within such a short timeframe. The WG decided to start considering ways of obtaining user community feedback and comments at its next meeting, which will allow some operational experience to be gained with the current version.

The participants also considered the outreach and recognition strategies, which should be developed. The group decided to focus on Geophysical, the Research vessel, Cruise Liner, Submarine Cable, and Recreational Leisure sectors, including the Super Yacht community. It was agreed that representation at a number of events and meetings was essential to raise awareness and to progress the five headline topics (need, how, what, incentives and benefits) to increase contributions and participation. It was agreed that leading organizations and companies within each sector could be identified and approached to act as CSB ambassadors. It was proposed that the first three CSB ambassadors should be Carnival and MacGregor on behalf of the cruise industry, Fugro on behalf of the marine survey industry and PGS on behalf of the seismic survey industry. Additionally, it was agreed that closer liaison needed to be established with other IHO bodies as well as the Seabed 2030 project, in particular the Chairs of the Data Quality Working Group (DQWG) and Marine Spatial Data Infrastructure Working Group (MSDIWG) should be invited to future meetings. It was suggested that the Director and Deputy Director of the Seabed 2030 project should be invited to participate and that close harmonization of the outreach activities of both groups should be a priority.

3. Progress on IRCC Action Items

Decision 20: to endorse the CSB Guidance Document.

Action 16: Chair to submit the CSB Guidance Document to the Council for endorsement and subsequent approval by Member States (deadline: C-2).

B-12 Edition 1.0.0 submitted to C-2 and 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. A follow-up IHO CL is being prepared with the full details, including responses to the comments provided.

4. Problems Encountered

There continues to be a need to overcome a degree of scepticism on the concept within parts of the IHO community and some sections of the marine domain where an overly cautious focus on potential, although untested, legal issues and concerns on commercial exploitation of data is observed. Increased awareness and information as well as stakeholder engagement/involvement should all help to overcome these reservations.

There is a growing concern over the apparent lack of dedicated resources available within national HOs to process data available via the DCDB. This is an issue that will need to be addressed for the full benefits of CSB to be realized and will require for HO's to consider engaging efforts and resources, including the development of automated processing, to integrate CSB data into their routines.

5. Any 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, was identified as a key enabler for the project. It was also noted the significant progress achieved.

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

6. Justification and Impacts

N/A

7. Actions Required of IRCC

The IRCC is invited to:

- a. Note the contents of this report;
- b. Encourage IHO Member States to release datasets or subsets into the public domain via the IHO DCDB;
- c. Request IHO Member States state their policy on data gathering restrictions within their maritime areas of jurisdiction, as requested in IHO CL 11/2019, to enable CSB activities to be undertaken;
- d. Request IHO Member States to support the CSB initiative with positive actions, such as requiring all research vessels collect bathymetric data for late uploading, when on passage or when it does not interfere with other research activities;
- e. Request the IHO to support a scaled trial of CSB data collection as a follow on to earlier pilot programmes.

- f. Reappoint the WG to continue its work under the proposed revised ToRs; and
- g. Take what other action is deemed necessary.

Annexes:

- A. List of members.

**IHO Crowd-Sourced Bathymetry Working Group (CSBWG)
List of Members**

Member State	Organization	Name	E-mail (correspondence)
Argentina*	Servicio de Hidrografia Naval	Lucas Caballero	mcaballero@hidro.gov.ar
Canada	Canadian Hydrographic Service	Serge Gosselin	serge.gosselin@dfo-mpo.gc.ca
Canada	Canadian Hydrographic Service	Peter Wills	Peter.Wills@dfo-mpo.gc.ca
Denmark	Danish Geodata Agency	Jens Peter Weiss Hartmann	jepha@gst.dk
Finland	Finish Transport Authority	Seppo Mäkinen	seppo.h.makinen@traficom.fi
France	Service hydrographique et océanographique de la Marine (SHOM)	Thierry Schmitt	thierry.schmitt@shom.fr
Germany	GEOMAR	Anne-Cathrin Wölfl	awoelfl@geomar.de
Germany	GEOMAR	Colin Devey	cdevey@geomar.de
India	Indian Navy Hydrographic Office	Renny Thomas	inho@navy.gov.in
Italy	Istituto Idrografico della Marina	Marta Pratellesi	marta.pratellesi@marina.difesa.it
Italy	Istituto Idrografico della Marina	Erik Biscotti	erikd.biscotti@marina.difesa.it
New Zealand	National Institute of Water & Atmospheric Research Ltd (NIWA)/Seabed 2030 - South and West Pacific	Kevin Mackay	Kevin.Mackay@niwa.co.nz
Nigeria	Nigerian Navy Hydrographic Office	Chukwuma Azuike	info@nnho.org.ng
Norway	Norwegian Hydrographic Service	Evert Flier	evert.flier@kartverket.no
Philippines	NAMRIA	Jaya Roperez	jayaroperez@gmail.com
Portugal	Portuguese Hydrographic Institute	Leonor Veiga	Leonor.Veiga@hidrografico.pt
UK	United Kingdom Hydrographic Office (UKHO)	Andrew Talbot	Andrew.talbot@ukho.gov.uk
USA	NOAA National Centers for Environmental Information (NCEI)	Jennifer Jencks (Chair)	jennifer.jencks@noaa.gov
USA	NOAA Office of Coast Survey (OCS)	Anthony Klemm	anthony.r.klemm@noaa.gov
USA	NavOceano	Raymond Sawyer	raymond.sawyer@navy.mil
USA	National Geospatial Agency (NGA)	John Lowell	John.E.Lowell@nga.mil
USA	National Geospatial Agency (NGA)	James Ford	James.D.Ford@nga.mil
USA	National Oceanographic and Atmospheric Administration -	Adam Reed	adam.reed@noaa.gov

	Office of Coast Survey (NOAA-OCS)		
USA	Centre for Coastal and Ocean Mapping - Joint Hydrographic Center, University of New Hampshire (CCOM-JHC/UNH)	Brian Calder	brc@ccom.unh.edu
IHO	IHO	David Wyatt (Secretary)	adso@iho.int
Observers			
Expert Contributor	Caris, Pan American Institute of Geography and History	Paul Cooper	prcooper10@gmail.com
Expert Contributor	Sea-ID	Kenneth Himschoot	Kenneth.himschoot@sea-id.org
Expert Contributor	PYA/Sea-ID	Andrew Schofield	Andrew.schofield@sea-id.org
Expert Contributor	TeamSurv	Tim Thornton	Tim.Thornton@teamsurv.com
Expert Contributor	Ground Maritime Aerospace Technologies (GMATEK), Inc.	Glenn Wright	glenn@gmatek.com
Expert Contributor	Dongseo University	Suhyun Park	subak@dongseo.ac.kr
Expert Contributor	ONE Data Technology Co., Ltd.	Daewon Park	mr.daewonpark@gmail.com
Expert Contributor	Da Gama Maritime Limited	Steve Monk	steve@dgmaritime.com
Expert Contributor	FarSounder INC	Heath Henley	heath.henley@farsounder.com
Expert Contributor*	SevenCs/Chartworld	Emma Fowler	emma.fowler@chartworld.com
Expert Contributor*	SevenCs/Chartworld	Bryan Kommerowski	bryan.kommerowski@sevencs.com
Expert Contributor*	SevenCs/Chartworld	Friedhelm Moggert-Kaegeler	mo@sevencs.com
Expert Contributor*	SevenCs/Chartworld	Hendrik Göhmann	hendrik.goehmann@chartworld.com
Expert Contributor	Fugro	David Millar	dmillar@fugro.com

* denotes correspondence member