

11th Crowd-Sourced Bathymetry Working Group (CSBWG11) Meeting Report Part 2

Agenda Items 2-6 plenary sessions

14-16 September 2021,

Virtual Meeting

Reading Notes:

- The CSBWG11 was split into two distinct components. The first was the B-12 Drafting team review sessions, and associated plenary discussion sessions (Agenda item 1), and the rest of the Agenda (Items 2-6), all of which we heard during the plenary session. In order to provide a coherent record of the deliberations, the CSBWG11 report has been split into two parts which reflect these distinct components. This is **Part 2** of the report.
- Where possible, paragraph numbering is the same as the Agenda Item numbering and does not necessarily reflect the order in which matters were discussed;
- In some cases, subsections have been consolidated where the chair decided to take adjacent topics together, with numbering adjusted accordingly;

2. Welcome Plenary

2.1 Welcome and Opening Remarks

The Chair welcomed the members of the group and noted her disappointment that this was the third virtual meeting. She noted that whilst virtual meetings made much of the working groups business much harder, it did afford the opportunity to meet more regularly and to allow wider participation than ordinarily possible. This was reflected in the turnout at CSBWG11, with 40+ participants.

Given the large number of new participants, the Chair gave an introductory presentation on the background of the CSBWG and the IHO Data Centre for Digital Bathymetry (DCDB) <[Presentation](#)>. In doing so she introduced key components of the ToRs and acknowledged the close relationship with the DQWG and welcomed Edward Hands (EH) as its new chair. Finally, the chair explained the close relationship with the NIPPON Foundation GEBCO Seabed 2030 Project and the CSBWG and referenced the updates on data logger trials due later in the proceedings.

Director Luigi Sinapi welcomed the WG participants. He thanked the Chair for her continued enthusiasm and noted that it was the last meeting that David Wyatt (DW) would participate in as he handed his Secretary responsibilities over to Assistant Director Sam Harper (SH/IHO – Sec). He thanked DW for his contribution to the group since its inception and credited much of its success to his hard work and support. He noted that a significant component of this meeting would be the review of IHO Doc. B-12, and reminded the WG of the process and timescales that would have to be observed. He also emphasised the importance of continued outreach activity, especially through the network of Regional Hydrographic Commission CSB/SB2030 Ambassadors.

2.2 Domestic and administrative arrangements

IHO – Sec outlined the mechanics of the meeting and urged participants to be considerate of those for who English was not their first language. He explained that in agreement with the chair that when agreeing decisions, actions and endorsements, silence will be taken as positive and it is beholden on participants to make known any comments to the contrary.

2.3 Introduction of NEW participants, apologies and approval of agenda

The chair invited only new participants to offer introductions. Introductions were received from:

- Helen Snaith Head of Global Centre for Seabed2030
- Linden Brinks
- Tim Kearns
- Steven Keating NGA
- Edward Hands Norway DQWG Chair
- Uri Yoselevich
- Idris Salaudeen - 7Cs
- Joud Sayah – Lebanon Hydrographic Survey

No apologies were received in advance or presented on the day.

The agenda was approved without modification.

2.4 Approval CSBWG10 Report and Review of Actions

IHO – Sec reported that CSBWG10 Report had been circulated with all comments and additions incorporated and had been posted on the website for a number of weeks. No further feedback had been received so recommended it be approved. **DECISION** - Report was subsequently approved by the WG.

IHO – Sec went through actions. Updated action list to be found at Annex A.

2.5 Chair Report to IRCC13

The Chair recapped her report to IRCC13 as part of her opening presentation. She listed and elaborated on the following actions that were requested of IRCC13:

- a) Note the contents of this report;
- b) Consider submitting a proposal to HSSC for B-12 to be removed from the list in appendix 2 of resolution 2/2007, as amended.
- 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 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.

The Chair noted that all recommendations were accepted apart from the request for B-12 to be removed from removed from the list in appendix 2 of resolution 2/2007, as amended.

2.6 Review of ToRs and RoPs

The IHO Sec presented the ToRs to the group. No changes were offered or required. **DECISION** – ToRs adopted without change.

3. Update on Current CSB-related Efforts

3.1 IHO DCDB

Georgiana Zelenak presented on the DCDB CSB Pipeline

Presentation

- **Highlights:**
- Now receiving regular updates from 5 Trusted Nodes
- There are 185 contributing vessels providing 25gb of data
- Implemented a geographic filter for removing data in territorial waters where permission has not been provided
- Resulted in a further 25gb data that has been removed
- Complete rebuild of the pipeline and cloud base storage to be implemented
- New Trusted Nodes coming on line – James Cook University, Navico C-Map, Great Lakes Observing System, Seabed 2030 funded Projects

3.2 James Cook University

Rob Beaman presented on CSB on the Great Barrier Reef: Total Propagated Uncertainty

Presentation

- **Highlights:**
- Aim is to understand accuracy of CSB data through calculation of TPU
- Difficult to calculate with TVU of approx. 0.5m and THU of approx. 7+m
- Comparison made with a CSB dataset with high resolution LADS Lidar Data
- Should very good correlation with S-44 Order 1b in terms of measurement uncertainty
- General correlation with Order 2
- Can improve uncertainty by using SBAS, tidal corrections and measuring waterline offsets

3.3 SEAID

BC Presented summary on behalf Kenneth Himschoot

Presentation

- **Highlights:**
- Progress continues
- Aim to produce high quantity easily deployable CSB units that can be deployed in high density.
- Current prototype has been tested in the north west passage
- Work to produce a commercially available version is underway
- Current cost approximately \$18USD

3.4 M2Ocean

Julien Desroches Presented on Collaborative Bathymetry in Arviat, NU, Canada

Presentation

- **Highlights:**
- 14% of Canadian Arctic has been mapped to modern or adequate standards
- Local hunting community has noticed changes in tradition food stocks and wonder whether science and a better understanding of their seabed could help
- Training and equipment was provided to go on a vessel of opportunity
- Acknowledged that this is not CSB rather 'collaborative'
- Successfully built local capacity to measure the seafloor
- Provided data to CHS
- Made the point that for CSB, it's important to provide a useful product back to the contributing community.

3.5 Chartworld/SevenCs

Emma Wise presented on CIO+ StayAway Areas

Presentation

- **Highlights:**
- The concept of using Satellite Derived Bathymetry as an overlay to show areas that should be avoided, could be used with CSB, even though it is in addition to the official navigational products
- In the pilot area, with a depth range 10-30m, over 4000 shoals were found. Of these, 381 appeared to be significant for surface navigation and of these, only 90 odd were charted
- Now undergoing commercial feasibility studies
- SM asked whether the service was available on all ECDIS. Answer was no but most.
- GM asked how do you envision the integration of CSB with CIO+? Answer – don't know yet more work needs to be done
- JPH asked about liability in the case of an accident. Answer – this is a voyage planning tool and therefore down to the Master to decide to what extent they rely on it.

3.6 GLOS

Tim Kearns presented on CSB and Lakebed 2030

Presentation

- **Highlights:**
- Between 4-6% of Great lakes mapped with high resolution data
- Predicted to cost \$30-\$170million USD and 7-24 years
- Growing understanding amongst the Observing community that bathymetry is an absolutely foundational data set
- Recognized that given time and budget constraints, a collaborative approach was needed, of CSB would play a part
- GLOS commissioned the development of a CSB unit
- Utilises a cloud based processing system that serves up resultant data for general consumption.

4. Outreach to IHO RHCs

4.1 Update on replies to Member State Data Gathering Policy

The IHO Sec gave a report on MS Data Gathering Policy activity and he reported that no further MS had responded to the CL. It was suggested that during the next intersessionary period we explore what other mechanisms can be used to encourage more positive action as issuing more CLs asking the same questions are unlikely to generate greater support. Further, it may be the case that until the latest revision of B-12 is officially endorsed by IRCC, MS don't feel able to fully respond to the CL.

ACTION 1 – Investigate options for encouraging participation by MS (IHO/Chair)

4.2 Update and lessons learned from SAIHC Ambassador - [Presentation](#)

Cmdr Christoff Theunissen (CT) provided a summary of lessons learned from the SAIHC Seabed 2030 coordinator. CT introduced their trial and their partnership with the Institute of Maritime Technology (IMT). He explained that the trial has two pillars; data collection and data sharing.

Data Collection. The main component of data collection pillar included the supply of 50-100 data loggers. There have been initial delays due to COVID but good progress is now being made. IMT are leading the installation and set to work of the loggers, with SANHO leading the checking, data basing and onward promulgation of the data to the SB2030 community. CT reported that work is ongoing to identify suitable vessels and conduct a feasibility study with three loggers already installed and another one is soon to be commissioned. Of those vessels currently fitted with loggers, he made particular reference to the MV Endinburgh which has just left on a trip to Tristan da Cunha and they are now eagerly awaiting resultant data.

Data Sharing. The data sharing pillar involved approaching various sectors to identify and access data previously not held centrally. He reported that in executing the trial, significant engagement of various stakeholders has been undertaken. 23 out of 26 stakeholders approached have responded positively. The next step is to establish working relationships with each of these stakeholders and CT reported that this engagement had already resulted in a mixture of new data, planned activity and survey polygons being supplied.

In terms of lessons learnt so far, CT offered the following insights:

- Low/tentative responses from commercial fishing and offshore mining industries. This is driven by concerns over commercially sensitive information but they are trying to overcome this by continuing dialogue to show that data will be in safe custody, as well as developing a showcase model to help demonstrate the benefit;
- Lengthy decision making processes for participation approval makes it difficult to generate and maintain momentum;
- Limited off-the-shelf deployments. Most deployments are performing nearshore operations
- SAIHC MS not committed to CSB yet
- CT reported that they are actively engaging PCAs to facilitate collaboration.

The Chair thanked CT and SANHO for their leadership in this space. She recommended that RHC Chairs show consider inviting CT to present it at their next meeting. Evert Flier (EF) asked whether in light of this progress, SA would update their status on the MS Data Gathering Policy log? He further advocated the premise of the PCAs working to support the concept of CSB and encouraging the

release of data holdings. Jamie McMichael-Phillips (**JMP**) (Seabed20203 Director) praised **CT/SANHO's** efforts and reflected that this is a blueprint for further HO engagement with CSB and SB2030. Further, he clarified that Seabed2030 stands ready, through the leadership of the IHO CSBWG, to continue to supply support for trials such as this. Director Sinapi, thanked **CT** for his presentation and offered his reflections on the lessons and opportunities presented. He reported that 30 MS responded to the last CL, with only 17 MS giving a positive response, but only one of these saying yes without any restrictions. He cautioned against further CLs until feedback had been received from RHC chairs so that the challenges and positions are fully understood.

ACTION 2 – RHC Ambassadors and Chairs to consider inviting SANHO to present the same update to their RHCs (RHC Ambassadors)

4.3 Updates from CSB/Seabed 2030 RHC Ambassadors

The Chair invited the other RHC coordinators to provide updates and thoughts on CSB related activity:

USCHC - Andy Armstrong (**AA**) reported that during August & September 2021, the US Office of Coast Survey (OCS) and the Canadian Hydrographic Service (CHS) collaborated on cruise of opportunity Arctic corridor mapping during a USCGC Healy transit across US Arctic waters and through Canada's Northwest Passage to Greenland. OCS and CHS are coordinating preparation and maintenance of hydrographic "gap analysis" products for our respective waters. The agencies are using slightly different approaches to the analysis based on respective needs.

ARHC - **EF** reported that CSB, GEBCO and Seabed 2030 are important and much discussed topics at each ARHC conference with good external participation and support from the Seabed 2030 team. Local projects with indigenous people in both Canada and Greenland are underway, joint scientific arctic cruises take place annually by US and Canada and Norway's Mareano program continues to provide new datasets to Seabed 2030 via EMODNet. ARHC has good cooperation with the Arctic Council, especially with their Working Group on Protection of the Arctic Marine Environment (PAME), having agreed on a joint statement on the importance of having access to accurate and reliable bathymetry in the Arctic and how scientific vessels can contribute. All ARHC members, exempt Russia, have responded positively (with caveats) to IHO CL 11/2019.

SWPHC - Stuart Caie (**SC**) gave the following update from the Pacific region. Palau - Meeting to be scheduled in the next couple of weeks to check in on progress and discuss next steps. Meeting to include NOAA, NGA, US Navy and Seabed 2030 SaWPac Centre, CSB/Seabed 2030 RHC Coordinator. The understanding is that Palau should now have 50 x NMEA0183 and 50 x NMEA2000 loggers. Solomon Island - At SWPHC18 earlier 2021 the Solomon Islands expressed an interest in potential CSB opportunities. Awaiting further discussion with Solomon Islands to explore opportunity. New Zealand - A recent proposal is being led by the Auckland Museum and including the University of Auckland, National Institute of Water & Atmospheric Research Ltd (NIWA), the Institute of Geological and Nuclear Sciences (GNS Science) and Seabed 2030 SaWPac Centre. The focus is on the Kermadec Islands, located approx. 900km north of NZ.. The proposal is for the DSV Pressure Drop and two NZ super yachts to collect bathymetry and oceanographic data. 12 data loggers (6 x NMEA0183 and 6 x NMEA2000) are on their way from the UK and will be available for this and further future activities. Planned for October, the activity has been postponed as the vessels are either unable to enter NZ or unable to leave due to recent COVID restrictions.

NSHC - Patrick Westfield (**PW**) Reported the attended the last NSHC and was nominated as the new coordinator. At said meeting he reported on the last CSBWG10 and his next step is to engage those countries who have not positively responded to the CL.

MACHC – Cecilia Cortina (**CC**) reported that this year the MACHC is implementing the 2021 Work Plan, within which it is considered to provide follow-up and assistance to the Member and Associated States to respond to the CL referring to CSB, as well as promote participation in CSB. In addition, a webinar is scheduled for November 12 where, in addition to describing some Gap Mapping tools, what was seen in this important CSBWG will be retaken. In the 2022 Work Plan, the CSB will continue to be considered within its actions.

MBSHC – LT JG Joud Sayah (**JS**) reported that MBSHC will:

- Make contact with the countries in the MBSHC that have not replied to the Circular Letters concerning the CSB efforts, and encourage them to take part in the CSB.
- Achieve contact with international shipping companies in the region and encourage them to provide us with data collected during their ships' routine maritime operations.
- Study the possibility (personnel, equipment, etc.) if the LNHS may become a Trusted Node supplying the data collected to the DCDB.
- We are hoping to push forward and be able to convince the countries and companies to help us with CSB effort.

EF requested that reps of PCA MS could be tasked with engaging with their nations to understand status of CSB policy. He further suggested that **JMP** might facilitate coordination with the centre leads to provide a harmonized approach to engaging MS within the respective RHC areas.

5. Sector Specific Outreach

5.1 Update on 2 page flyers – [Draft Flyers](#)

The Chair presented the background to the work on the 2 page flyers. She expressed her thanks to those who led the development of the flyers, as well as the IHO Secretariat Staff for their assistance. She noted her intent to seek endorsement from the group for these completed flyers to enter into use. Steve Monk (**SM**) noted he had already started to distribute the Super Yacht flyer and had already had positive responses. He also noted his intention to circulate the flyer at the Monaco yacht Show. **JPH** asked whether there should be an acknowledgement or disclaimer on the flyers to make potential contributors aware that there may be national restrictions on CSB activity in waters of National Jurisdiction. **SM** indicated that if this was done it would likely discourage potential contributors. After a discussion it was agreed that given these are summary documents they do not need to have this level of detail and to do so would undermine their purpose. The compromise was that the link to B-12 should be added to the flyers before they are distributed.

The Chair sought approval of the flyers pagers sought – **DECISION** - approval received.

ACTION - Add link to B-12 to 2 page flyers that do not currently have them (IHO Comms Lead)

5.2 Next Sectors

The Chair asked whether there are any other sectors that should have dedicated flyers or other outreach material produced for. **EF** suggested that we should have a flyer dedicated to leisure craft. The group agreed with the proposal and Robert Beaman (**RB**) offered to help.

ACTION - Create a leisure craft flyer (IHO/Chair/RB)

Mathew Zimmerman (**MZ**) suggested a flyer for Hydrographic Offices to try and explain reasoning behind the CSB initiative and dispel any myths. A number of participants noted that it is likely to be the role of the RHC ambassadors to promote this message rather than a standalone flyer.

David Millar (**DM**) suggested that the commercial shipping sector could be a useful target. Further, he suggested that Paul Holthus of the World Ocean Council (WOC) could be a key contributor. The participants agreed.

ACTION – Investigate creating a commercial shipping flyer (IHO/Chair)

6. Closing activities

6.1 Any other business

a. CSBWG LinkedIn networking group

MZ introduced the group to the new CSBWG LinkedIn group that he had created at the request of the Chair. He explained that this may be a useful tool for networking whilst we are unable to meet in person.

ACTION – circulate link to group (MZ)

b. Proposal to adopt Chinese language version of B-12

Referencing CSBWG10 Action 16.4, China reported that the translation of B12 into Chinese has been completed. In doing so, CSBWG was requested to adopt the Chinese language version of B-12 and upload this to the IHO Website. David Wyatt (**DW**) requested that the English notation regarding primacy of the English language version of B-12 be added to the document, as is standard practice with translated IHO publications.

ACTION - Insert English language version statement regarding primacy (IHO)

c. Flash presentation “Adding the Use the TCSB Data for Port and Waterway Water Depth Monitoring in the CSB Summary Guide of Harbour/Workboat”

China introduced their trial with CSB in port environment to provide early warning to changing depths. Results show that the data meets S-44 order 2 but can also remove or reduce the need for routine resurveys. The IHO CSBWG were requested to refer to this paper in future outreach activity. The Chair thank China for their flash presentation and commended their innovative use of TCSB.

ACTION – China to be invited to present full paper to CSBWG12 (Chair)

6.2 Date and venue of next meeting and intersessional activities

The Chair canvassed opinion on the date and venue of CSBWG12. The IHO Sec suggested Monaco due to the enduring uncertainty caused by COVID and associated ease of cancelling in case of further changes to travel restrictions. It was agreed that the meeting would be planned in a hybrid format, but it was noted that this would include it being run in CET with a full working day. The weeks commencing the 7th and 14th of March were identified as target dates.

The Chair outlined intersessional activities that would be undertaken ahead of CSBWG12. These comprised:

- Section leads to firm up changes and solve problems by the end of Dec;
- Section teams meet in Jan to agree changes
- Full document compiled with editorial changes undertaken
- Full document circulated amongst full WG for review
- CSBWG12 focus on endorsing B-12
- Submit to IRCC

6.3 Review Action List for CSBWG11 and draft agenda for CSBWG12

Given the complexity of the meeting, it was agreed that this would be undertaken post meeting.

6.4 Discussion on outstanding issues and post-meeting expectations.

Chair proffered that the meeting objectives have been met and she thanked all participants for their forbearance and contributions.

6.5 Closing remarks by Chair

In closing the meeting, the Chair reflected on the challenge of revising a publication like B-12, and how hard this had been without the possibility of working face to face. She noted that there was still a lot of work to do before B-12 could be put to the full WG for endorsement, but that she was confident that this could be achieved. She thanked all of the drafting team leads for their hard work and thanked them in advance for their continued support.

Looking forward to CSBWG12 and other work items, the Chair reflected that as soon as B-12 was completed, we would need to focus our attentions to outreach activity, and specifically what could be done to increase MS involvement and participation in the CSB initiative.

Finally, the Chair wished to thank David Wyatt for his support and service over the past years. She noted that the CSBWG was only one of many IHO bodies that **DW** supports and that the success of the group was predicated on his diligent organisation and council. **DW** thanked the Chair for her kind words and noted that this would be the last IHO meeting that he would take part in. Many participants added their words of thanks to **DW** and wished him well in his future endeavours.

Meeting Closed