

10TH MEETING OF THE IHO-INTER REGIONAL COORDINATION COMMITTEE
IHO IRCC10A
GOA, INDIA, 4-6 JUNE 2018

Update on Data Gathering and Management, Maximizing the use of Hydrographic Data

Submitted by:	IHO Secretariat
Executive Summary:	The document provides an update on progress towards improving access to hydrographic data, data gathering and management, maximizing the use of hydrographic data.
Related Documents:	MSDIWG Report, CSBWG Report, GEBCO Report.
Related Projects:	Seabed 2030

Introduction / Background

1. The IHO Secretariat introduced the document *IRCC7-11B* at the 7th IRRC meeting in Mexico on guidance on access to bathymetric data collected for commercial or scientific purposes and proposed a way forward to help the broad hydrographic community to access available data.
2. The IRCC established a Crowdsourced Bathymetry Working Group (CSBWG)). Details of the activities of CSBWG are contained in document IRCC10-07G, report of the CSBWG to IRCC10.
3. The IHO Resolution was endorsed at the First Session of the IHO Assembly: *Improving the Availability of Bathymetric Data Worldwide* (see *Doc IRCC9-08A*). In accordance with this IHO Resolution, Member States resolve that, in addition to fulfilling their international obligations to provide hydrographic information in support of safety of navigation, they should also consider implementing mechanisms that encourage the widest possible availability of all hydrographic and particularly bathymetric data, so as to support the sustainable development, management and governance of the marine environment.
4. The IRCC agreed that the development of the GEBCO Data Store should be coordinated with the current upgrade of the IHO DCDB that is intended to improve support for CSB and ocean mapping data discovery. The IRCC also agreed mechanisms should be developed to promote the collection of bathymetric data from scientific and crowdsourced cruises and to ensure that the data is made available to GEBCO, accompanied by appropriate metadata, through the IHO DCDB. Details of these activities are contained in document IRCC10-07I, report of the GEBCO Project to IRCC10.

Analysis/Discussion

5. The IHO is committed to the collection and management of global reference bathymetry data sets. It has established the IHO Data Center for Digital Bathymetry (DCDB) and operates together with the Intergovernmental Oceanographic Commission of UNESCO, the GEBCO project, the General Bathymetric Chart of the Oceans. GEBCO's aim is to provide the most authoritative publicly-available bathymetry of the world's oceans. The GEBCO products include global gridded bathymetric data sets, a global set of digital bathymetric contours and a reference manual on how to build bathymetric grids. The continuing improvement of these products relies on close collaboration with regional mapping programmes *such as EMODnet*.
6. Bathymetry, knowing the depth of the ocean, is important because every human activity conducted in, on or under the sea depends on knowing the depth and the shape of the seafloor. Safe navigation is the primary objective but shipping is far from being the only activity concerned. Port operations, fishing and aquaculture, the development

of marine renewable energies, coastal zone management, the delineation of maritime boundaries, the mitigation of marine disaster risks and the response to marine disasters, defence and security, understanding ocean circulation, they all rely on hydrography. In short, hydrography underpins the Blue Economy. There is no conservation and sustainable use of the oceans, seas and marine resources without hydrography.

7. Yet the current status of the knowledge of the depth of the sea is quite limited. No more than 15% of ocean depths have been directly measured. The ship tracks along which depth measurements are available may be hundreds of miles apart and this means that in many instances the shape of the seafloor is inferred, relying on educated guess and indirect measurement such as satellite altimetry. The situation in coastal waters is less dramatic but nothing to be proud of with about half of the world's coastal waters, from the 200 m contour line to the shore, remaining unsurveyed.

8. This situation where 85% of the surface of our planet are virtually unmapped, unobserved, and unexplored has led the IHO-IOC GEBCO Project to develop a new initiative, called "Seabed 2030" with the focused goal of compiling a high-resolution openly available global digital bathymetric model portraying the seabed at the highest resolution possible by the year 2030. This initiative should efficiently provide bathymetric information to end users and leave no features of the World Ocean floor larger than 100 m unmapped by 2030.

9. Throughout 2017 the Seabed 2030 Establishment Team, created by the GEBCO Guiding Committee (GGC), has been liaising with the Nippon Foundation, who are providing initial funding of \$18 million over ten years, on the administration, oversight, reporting and interaction with the IHO and IOC. The Establishment Team completed its task with the appointment of Mr Satinder Bindra as Seabed 2030 Project Director on 1 February 2018. The structure for the project has been established with four Regional Data Assembly Coordination Centres (RDACCs), covering the North Pacific and Arctic Ocean, Atlantic and Indian Oceans, Southern Ocean, and South and West Pacific, and one Global Data Assembly Coordination Centre (GDACC). Four pillars of the Seabed 2030 have been identified as Data Assembly and Coordination, Global Community Engagement, Consolidate Technical and Human Capacity, and Cross-cutting area of Corporate Governance. The culture for the project has been identified as Co-operation and Community Building, Coordination, Crowdsourcing, and Credit and Attribution.

10. The RDACCs and the GDACC have been established in academic and research institutes which were previously engaged in ocean mapping activities, so as to leverage their experience and structures. Objectives for the initial phase of the project are to determine what data already exists, where it is held and how it can be made publicly available, thereafter assessments will be made on where the major gaps are and to look for partner institutes, governments and industry to discuss ways to gather data in these areas. Currently it is not the intention of the project to undertake data gathering activities, for which resources are not available within the project at present. It is intended that the IHO DCDB will be the main data repository from which the RDACCs and GDACC will draw to create the future versions of the GEBCO grid. The Establishment Team and the leaders of the RDACCs and GDACC have identified a number of related programmes, project and initiatives (such as AORA, EMODNet, IOC Indian Ocean Expedition, IOC Decade of the Oceans and the Belém Statement on Atlantic Research and Innovation Cooperation signed in July 2017 between the EU, Brazil and South Africa) with which a close relationship should be established to avoid duplication of efforts.

11. Another important initiative of the IHO on data gathering and maximizing is the Crowdsourced Bathymetry Working Group which was established by the IRCC (see IHO CL 42/2015) in 2015 to develop guidelines on the collection and use of crowdsourced bathymetry. Meanwhile, the web-based interface portal to the IHO Data Center for Digital Bathymetry is being upgraded to offer an ingestion capability compatible with the crowdsourced bathymetry concept. The main concept of crowdsourced data is to transfer from the collector of data to the different categories of end-users via the IHO DCDB. The current model supports contribution of CSB data via a network of "trusted nodes", individuals or organizations that serve as liaisons between a like group of mariners and the data centre. The trusted node model ensures clarity of requirements and data consistency, while minimizing the effort on individual mariners to contribute data. In the future, the DCDB plans to expand its capability to support other models, including individual mariner contributions if appropriate.

12. The CSBWG developed a draft guidance document on Crowdsourced Bathymetry in 2017 that set out the key issues to be taken into account by those considering CSB – both from a collector's and a user's perspective. The draft guidance document was intended to provide general advice and information for those that may be

considering collecting or using crowdsourced bathymetry. Taking into account the feedback received from Member States, expert contributors from the industry, academia and all stakeholders in response to IHO Circular Letter 49/2017, the final draft version of the B-12 Guidelines is now available on the IHO website prior to the presentation to the IRCC at its 10th meeting in Goa, India. Subject to the endorsement of the IRCC, this will be followed by consideration by the IHO Council at its 2nd meeting and submitted for adoption by the IHO Member States towards the end of 2018.

Additional Engagements and Activities on data gathering and maximizing:

13. The Secretary-General represented the IHO at the seventh Session of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) took place at the UN Headquarters in New York, USA from 31 July to 4 August 2017. The Committee reviewed the progress being made by its working group (WG) on global fundamental geospatial data themes. Several items on the agenda of UN-GGIM7 were of direct relevance to IHO Member States, particularly in relation to the contribution of hydrographic data and services to national and regional spatial data infrastructures.

14. Marine Geospatial Information was included in the Committee's agenda for the first time at its 7th meeting. Under this agenda item the Committee agreed to establish a UN-GGIM Marine Geospatial Information Working Group (UN-GGIM: MGIWG). The WG will provide input to the Committee to support its Member States in developing national policy, strategic priorities, decision-making and the monitoring of global developments in relation to their spatial data infrastructures and marine geospatial information management. In addition to encouraging the Member States to involve the relevant subject matter experts in their national delegations, the terms of reference for the UN-GGIM: MGIWG specifically and uniquely allocate an Observer position to the IHO. The IHO Marine Spatial Data Infrastructure Working Group (MSDIWG) has an obvious and direct relevance to this very important development in the structure and the agenda of the UN-GGIM. It reinforces the role of the MSDIWG and the priority that is placed on MSDI in the IHO Work Programme.

15. IHO Director Mustafa Iptes represented the IHO at the 4th Edition of Our Ocean Conference hosted by the European Union (EU) and took place in Malta on 5 and 6 October 2017. The theme of the Conference was "An ocean for life". The conference was combined with an exhibition illustrating contributions to ocean related activities from coastal States, International Organizations, non-governmental organizations and industry. High level representatives including Royalty, Presidents, Prime Ministers and Ministers from more than 100 states attended the conference. The "Our Ocean Conference" series with a focus on all maritime aspects regularly invites world leaders to look forward and respond, delivering high-level commitments and transforming the challenges ahead into an opportunity for cooperation, innovation and entrepreneurship.

16. In 2017, the IHO and GEBCO representatives actively participated in and contributed to the meetings of the Atlantic Seabed Mapping International Working Group (ASMIWG) which was established to address seabed mapping issues related to the implementation of the Galway Statement of 2013 through which the European Union (EU), the United States of America (USA) and Canada agreed to join forces on Atlantic Ocean Research. The ASMIWG held two meetings in 2017, the 7th meeting was held at the University of New Hampshire in Durham, New Hampshire, USA, on 15-16 February and the 8th meeting was held at the Bedford Institute of Oceanography (BIO), Halifax, Nova Scotia, Canada, 10-11 October.

17. At the 7th meeting the WG received information on the recent appointment of a Research Vessel Coordinator, who will liaise with the various research ship managers to identify data gathering opportunities outside their dedicated operational commitments as well as coordinating places in ships for students to gain sea going experience managing survey systems during the transits. A brief update was given by the NOAA/National Centers for Environmental Information (NCEI) on progress with developments to the IHO Data Centre for Digital Bathymetry (DCDB) and the North Atlantic Data Viewer. The briefing also detailed work undertaken to identify suitable 400 square mile project areas in the North Atlantic and the categories used in their selection. This discussion highlighted new datasets from Portugal covering its Continental Shelf extension submissions and which will be made available in due course. The meeting also received updates on a number of related programmes and initiatives.

18. At the 8th meeting of the WG received further progress reports on related programmes and initiatives, the outcomes of the Our Oceans conference in Malta were highlighted, which included a significant commitment from

Marine Institute of Ireland and Integrated Mapping for the Sustainable Development of Irelands Marine Resource (INFOMAR) project. Details of the Canadian Ocean Mapping Research and Education Network (COMREN), which is a network on ocean mapping in Canada. COMREN highlighted the decision to release a new 100m gridded bathymetry of all Canadian waters, to replace the current 500m grid.

Conclusion

19. It is considered that global efforts to improve the collection, quality and availability of hydrographic data worldwide should be pursued by the IHO community as a constant objective. The IHO Secretariat, the relevant IRCC Subordinate Bodies and RHCs should continue engaging and encouraging all relevant stakeholders in order to receive more data and maximizing data.

20. It is deemed that coordination of data gathering, management and maximizing the use of hydrographic data should be one of the focus areas by the IRCC.

21. RHCs should continue encouraging the Member States to improve their capabilities for enhancing and achieving the MSDI.

Action Required of IRCC

22. The IRCC is invited to:

- a. note the contents of this document; and
- b. take any other action appropriate.