

BALTIC SEA HYDROGRAPHIC COMMISSION (BSHC)

26th Meeting, by VTC, 21 to 23 September 2021

Report of the IHO Secretariat

Submitted by:	Secretariat of the IHO
Executive Summary:	This paper reports on activities of the IHO Secretariat that may impact the work of the Baltic Sea Hydrographic Commission (BSHC).

Status of Membership of the IHO

1. One of the main changes resulting from the entry into force of the revised IHO Convention is that, for States wishing to join the IHO that are already Member States of the United Nations, there is no requirement to seek the approval of existing Member States of the IHO. Since the last BSHC Conference the Republic of Ghana, Samoa, Lebanon and Kenya acceded to the IHO Convention and the IHO membership now stands at 95. Unfortunately, Democratic Republic of the Congo, Serbia, Syria and Vanuatu remain suspended from Member States rights.

Regional Applications for Membership of the IHO

2. The only non-IHO Member State of the BSHC region is Lithuania. Countries who are Member States of the IMO are encouraged to become IHO members and the IHO respectfully repeats its invitation to Lithuania to accede to the IHO Convention. The IHO Secretariat, in cooperation with the Department of External Relations of the Government of Monaco, stands ready to assist Lithuania with the application process for membership of the IHO.

IHO Council Activities

3. Due to COVID-19 restrictions, the fourth meeting of the IHO Council (C-4) took place on 19 November 2020 via video conference, just after the 2nd Assembly (A-2). The Council had been tasked with making the Strategic Plan real, a task that must be accomplished quickly to ensure that the IHO reaches its goals. Besides, the A-2 had also tasked the Council with implementation of the S-100 Roadmap, which included S-100 standards and offered increasing safety of navigation by ensuring that the most up-to-date information is available with the vision of its delivery to mariners seamlessly integrated with other data such as navigational aid information and weather. The A-2 had tasked the Council to work through the technical, operation and regulatory challenges associated with the transition from paper-based products and S-57 ENC's to the S-100 suite of standards and services. Summary report of the 4th Meeting of the IHO Council is available at the IHO web site.

2nd IHO Assembly

4. The 2nd IHO Assembly initially scheduled to take place in April 2020, was postponed to November 2020 due to the pandemic situation. For the same reason it was necessary to propose an alternative scenario to conduct the forthcoming Assembly session and Council meeting as remote events. IHO ACL 19/2020 informed about the positive vote of the Member States in favour on the proposed scenario on the postponement of the 2nd Session of the IHO Assembly (A-2) and associated activities resulting from exceptional circumstances due to COVID-19 (IHO ACL 17/2020 refers). This scenario, approved by vote

by 21 September 2020, is explained in the Assembly Circular Letter ACL29Rev1/2020.

5. As a consequence, the Secretariat invited Member States to vote by correspondence on proposals submitted for consideration by the 2nd session of the Assembly (IHO ACL 21/2020 and IHO ACL 22/2020). Among other items, IHO ACL 26/2020 reported on the approval of the Revision of the IHO Resolution 2/1997 – Establishment of Regional Hydrographic Commissions (RHC) (Assembly Document A2_2020_PRO3-1_EN_Res_21997_cc_v1). All the documents related to the 2nd Assembly are available at the IHO website and the Proceedings, when ready, will be available there as well.

6. At the 2nd Assembly the IHO Member States approved the new IHO Strategic Plan which lays out the organization's priorities for the coming years. The inclusion of Goal 3 related to participation in international initiatives on the sustainable use of the oceans, confirms that the IHO is now, also, clearly committed to reconciling the use and the preservation of the marine environment, in line with the global initiatives, such as UN Decade for Ocean Science for Sustainable Development and Nippon Foundation-GEBCO Seabed2030 project. Traditionally, hydrographic data was used mostly for the safety of navigation, but each time its use by a wide variety of stakeholders is more important, such as to monitor changes and effectively protect the Oceans.

7. Assembly participants approved the roadmap for the implementation of the IHO Universal Data Model (S-100) which can be utilized by all users of ocean data including navigation, marine energy, oceanography etc. The IMO e-navigation Strategy Implementation Plan requires that all Maritime Services be S-100 conformant, as it specifies the method for data modelling and developing product specifications. Member States also approved the new project proposed by Canada on Empowering Women in Hydrography - EWH, which aims to increase gender equity and the number of women in leadership positions. The project will include training and communication on different hydrographic careers. Finally, as clear example of how the Hydrographic Community is evolving and dealing with extraordinary circumstances, the Assembly approved the establishment of a new IHO e-learning centre hosted by the Republic of Korea at the Korea Hydrographic and Oceanographic Agency (KHOA). The organization had been wanting to increase the offering in terms of distance training for some time and the current pandemic highlighted the need for this.

8. **Recommendation.** BSHC is invited to consider the need to adapt their respective instruments to comply with the recommendations of the IHO Resolution 2/1997 as amended by A-2 as appropriate.

INT Chart and ENC Production Coordination - Region E

9. Since the commissioning on 2 January 2020 of INTToGIS II to facilitate the maintenance of the regional databases of ENC Schemes (and INT Charts if needed), BSHC has been involved in the process.

10. Inputs and recommendations from the final report on the "Future of the Paper Nautical Chart", presented by the NCWG Chair (Mr Mikko Hovi, Finland) at HSSC12 VTC in October and then at the 2nd Assembly, deserve particular attention by the HOs and the RHCs. At HSSC13, the NCWG Chair announced the establishment of a Baseline Symbology Project Team (led by CA) under the NCWG aiming to support the automated production of paper charts from S-101 data and requested to provide a project plan asap.

11. The approval by IHO Member States of a new set of WEND100 Principles is in progress (IHO CL 25/2021, deadline 15 September 2021). The development of WEND100 Principles is an important and fundamental component of the S-100 Implementation Roadmap which will be addressed at C-5. Implementation Guidelines of the WEND100 Principles are in progress (Guidelines for the Implementation

S-1xx Products, Guidelines for the transition from S-57 ENC to S-101 ENC Schemes). Mr Jarmo Makinen (Finland) is the designated Member representing the BSHC in the WENDWG and this Region E is very active in the maintenance of INTToGIS II. Now, the extension of the role (and burden) of the Coordinator for S-100 Services in Region E may need to be addressed in the near future.

12. Recommendations

12.1 With the possible development of INTToGIS III to encompass S-100 services, BSHC members are invited to consider the future role of the Coordinator for Region E.

12.2 BSHC Members are invited to vote on the call for approval of WEND100 Principles.

Capacity Building Programme

13. The level of activity of the IHO Capacity Building (CB) Programme was clearly affected in 2020 by the COVID 19 Pandemic. Expenditure in the IHO 2020 CB Work Programme (CBWP) was 42,125.00 Euros, a value that cannot be compared with the previous years. In 2020 it was only possible to execute IHO funded CB projects and even from these, only 34% of the funded non-earmarked projects were executed.

14. The rest of the 2020 CBWP funded projects were moved to the 2021 CBWP and it is expected that the 2021 CBWP will require also an extensive review and that most of the projects will be moved to the 2022 CBWP.

15. Mr. Thomas Dehling (Germany) is the BSHC CB Coordinator for planning and implementing the regional CB activities, however, as the Members hydrographic capacity is high this Region has not submitted projects to be funded by the CB Work Programme.

16. **Recommendation.** BSHC members are invited to continue follow and evaluate the possibility to contribute to the CB Programme.

Maritime Safety Information Services

17. Work by the International Maritime Organization (IMO) on the modernization of the Communications and Global Maritime Distress and Safety System (GMDSS) continues with the on-going review and updating of the SOLAS chapters III and IV and on the related and consequential amendments to existing instruments. The consequential changes as a result of the recognition of the Iridium SafetyCast service as a recognised mobile satellite service (RMSS) provider in the GMDSS continue to be implemented. The Iridium SafetyCast service became SOLAS carriage compliant from 1 January 2020. However, a significant number of operational testing issues remain to be completed before the service can be declared fully operational. Member States are reminded of the resources required and the responsibilities for their national Coordinator to perform their functions as part of the GMDSS. The national Coordinator should have established sources of information relevant to the safety of navigation within national waters, effective communications with the NAVAREA Coordinator and adjacent national Coordinators, if needed, to pass relevant information to all authorities and organization that need to be made aware and access to broadcast systems for transmission to their area of national responsibility.

18. **MSI Capability and Supportability.** The IHO Capacity Building strategy lays particular emphasis on the fundamental capability for all coastal States to provide a maritime safety information (MSI) service

in support of their international obligations.

19. **Recommendations.** The Chair is requested to encourage all BSHC members to:
- a. encourage all information providers (NAV and MET Area Coordinators and RCCs) to complete agreements with all RMSS and commence the necessary testing of the SafetyCast system to progress towards declaring full operational status;
 - b. use and following the guidance provided in S-53 – Joint IMO/IHO/WMO Manual on Maritime Safety Information.

Crowd-Sourced Bathymetry, GEBCO and Seabed2030

20. In accordance with Decision 8 of the EIHC5, IRCC7 established the Crowdsourced Bathymetry Working Group (CSBWG) to develop guidelines on the collection and use of crowdsourced bathymetry (CSB). The CSBWG generated the draft IHO publication B-12 – *IHO Guideline on Crowdsourced Bathymetry*. Edition 2.0.0 was circulated under IHO CL 11/2019 and its approval as Edition 2.0.3 was announced in IHO CL 28/2019. Replies to Annex B of IHO CL11/2019 and to CL 21/2020 have been analysed and a table of coastal States indicating positive support for the activity and the provision of data into the public domain within all or parts of their waters of national jurisdiction has been generated and published on the IHO website for the guidance of the wider maritime community (IHO CL 47/2019 refers). Member States may advise the Secretary - General at any time of any change to their originally stated position.

21. The web-based interface portal to the IHO Data Centre for Digital Bathymetry (DCDB), hosted by the USA in Boulder, Colorado, as part of its commitment to the system of World Data Centres, is being upgraded to be compatible with the crowdsourced bathymetry initiative. This will enable an IHO-led CSB infrastructure to be established and promoted across the wider maritime community. The DCDB has developed a geographic filter application, which suppresses embargoed data from public availability and places this data in a separate data store until such time as approval is given for its release into the public domain. The DCDB has also commenced initial discussions with the International Seabed Authority (ISA) on suitable methods for making its data available, either into the DCDB or directly into the GEBCO grid. The DCDB is also in advanced discussion with a number of commercial shipping companies to extract bathymetric data from their voyage data recorder systems.

22. At the IRCC12 a submission has been made in coordination with GEBCO and Seabed 2030, for RHC to identify regional coordinators to act as a point of contact and to raise the profile of data gather and provision within their respective Region, all with the view of increasing awareness and highlighting the link between gaining a complete picture of the ocean floor with the UN Decade and the SDGs. The regional coordinators would have a key role in assisting the RHC in gathering the evidence and reporting annually on the percentage coverage achieved within their Region. They would also be in a position to assist individual coastal states.

23. BSHC members are invited to consider the impacts of the increasing global societal and United Nations (UN) driven need to complete the picture of the seafloor as well as the potential benefits to individual coastal States.

24. A series of meetings related to the GEBCO project were held online from 11 to 20 January 2021. The engagement with the IHO Crowdsourced Bathymetry Working Group (CSBWG) and the various Regional Hydrographic Commissions was noted and a number of regional projects and initiatives were highlighted, including AusSeabed and work with the Schmidt Ocean Institute vessel RV *Falkor* around the

Australian coast, various projects in Canada and an initiative to restart the South East Pacific Bathymetric Chart through collaboration between the South East Pacific Regional Hydrographic Commission (SEPRHC) member states. Activities in China, Ireland, USA and Europe under the European Marine Observation and Data Network (EMODnet) were presented.

25. For the thirteenth consecutive year, the GEBCO Project organized a symposium on the theme of 'Map the Gaps'. The symposium was held as a series of webinar sessions and opened by Dr Vladimir Ryabinin, Executive Secretary of the IOC, and Capitaine de vaisseau Pierre-Yves Dupuy, Deputy Director Service hydrographique et océanographique de la Marine (Shom) and Director Public Services and International Relations. The symposium, which included contributions from a broad spectrum of institutions involved in all aspects of ocean mapping, featured 34 presentations on a diverse range of topics and one panel session on Diversity, Equity and Inclusion in Ocean Mapping. The symposium was closed by Director Luigi Sinapi. The associated presentations and session recordings are available from the GEBCO web site at: (<https://www.mapthegaps.org/symposium/>).

GEBCO support through Seabed 2030 Project

26. The Nippon Foundation (NF)-GEBCO Seabed 2030 project builds on more than 100 years of GEBCO history; the project has established regional connections to all corners of the World and benefits from the human network of ocean mapping capacity built over 17 years through the Nippon Foundation - University of New Hampshire (UNH) ocean mapping training project. Through Seabed 2030, GEBCO's role is recognized and reinforced as the authoritative international initiative for mapping the World Ocean, from the coasts to the deepest trenches.

27. Seabed 2030 has established a network of four regional centres. Each centre focuses on discovering, gathering and assembling all available bathymetric data from their region to produce regional datasets and resulting products. The BSHC region is covered by the Atlantic and Indian Oceans Regional Center located at the Lamont-Doherty Earth Observatory, Columbia University, USA; the Arctic and North Pacific Oceans Regional Center co-located at Stockholm University, Sweden, and University of New Hampshire, Durham, USA and the South and West Pacific Ocean located at the National Institute of Water and Atmospheric Research (NIWA), New Zealand are the other Regional Centers. A global centre, established at the National Oceanographic Centre (NOC), UK, merges the regional datasets to generate the annual GEBCO grid as well as other products. Within this structure, the IHO-DCDB will remain the central GEBCO repository for all raw bathymetric data and all Seabed 2030 project data will be based there.

28. GEBCO plans to release the updated GEBCO on annual basis now. The 2021 grid was published in June 2021. Based on the variable resolution coverage, which was recently calculated and takes into account current technology capabilities, the cover has increased from 6% in the 2014 grid to 20.6% in the 2021 grid. Most of this increase has been achieved through the release of previous survey data, which had not been placed in the public domain and was not available to GEBCO. The 2019 grid included the data gathered by the two contracts in the search for MH370, which have been released by the Australian authorities. The 2020 included data from the five deeps project. There remains a considerable quantity of data still held by governments, academic institutes and industry embargoed for a variety of reasons. To avoid wasting scarce resources re-surveying these areas, authorities and organizations are invited to consider whether lower resolution (100m or 200m grid) datasets of these data can be made available rather than the simple 'Yes/No' approach.

29. **Recommendation.** Encourage Members, Associate Members and Observers to:

- a. make data freely available for inclusion in the DCDB and the widest possible use, in accordance with IHO Resolution 1/2017;
- b. reply to IHO CL 21/2020;
- c. review national legislation to remove barriers restricting CSB activities within their waters;
- d. actively support the collection of data within their waters;
- e. continue inviting Seabed 2030 project representatives to BSHC meetings to discuss options for deepened cooperation and support;
- f. encourage Members to make more detailed and comprehensive seabed data available – in particular deep ocean data from transit or commercial / scientific surveys;
- g. make more people aware of the importance of gaining a complete picture of the seabed.

IHO GIS and Databases

30. Work has continued on the IHO internal systems. Especially, two components are to be mentioned:
- IHO Country Information system, and
 - IHO Online Form system.

31. The IHO Country Information system has been progressively upgraded to include administrative information and facilitate the maintenance of the IHO publications such as Yearbook (P-5) and Status of Hydrographic Surveying and Charting Worldwide (C-55) posted on the IHO website. The IHO Online Form system has been used since March 2019 and has been widely accepted by the Member States for the Circular Letter responses and the updating of P-5 and C-55 (CL20/2019 and CL03/2020 refers). Countries in the BSHC Region are invited to review their entry in the publications on an annual basis and provide the IHO Secretariat with the appropriate updates through the IHO Online Form system. The status of the data in the IHO Country Information Database concerning the BSHC Member States, including those provided for C-55 is as follows:

Country	P-5 –Yearbook Last update received	C-55 Last update received
Denmark	May 2021	April 2021
Estonia	July 2021	August 2020
Finland	February 2020	August 2019
Germany	August 2020	August 2017
Latvia	March 2020	July 2014
Poland	January 2020	July 2021
Russian Federation	October 2020	September 2015
Sweden	February 2020	March 2021
Lithuania	September 2019	August 2021

32. An Esri-based GIS solution has been implemented for the efficient visualization of geospatial data stored in the Country Information System. This Cloud-based service has enabled access to various layers and functions through the IHO website such as the IHO ENC Catalogue. Currently, five WebGIS

applications have been available to the public in this new environment.

33. Work has continued on developing a GIS database application to support C-55 - Status of Hydrographic Surveying and Charting Worldwide and the work of the IHO. In response to the request to complement C-55 composite data (percentage of areas adequately surveyed / requiring re-survey / not surveyed) with CATZOC information. The CBSC established the C-55 Review Project Team (C-55RPT) to deal with this task.

34. **Recommendation.** Countries in the BSHC Region are invited to review their entry in the IHO Yearbook and C-55 and to provide the IHO Secretariat with the appropriate updates or to report no change (CL 20/2019 refers).

IHO Outreach

World Hydrography Day

35. As announced at the 2nd Assembly and endorsed by the fourth IHO Council meeting, the Secretary General proposed the following theme for WHD 2021: “*One hundred years of international cooperation in hydrography*”. The theme is designed to highlight progress in knowledge and technology over the past 100 years, while celebrating the ground-breaking work which was done during this period. The goal is to highlight the past, present, and future of hydrography. In CL 37/2020, the Secretariat also invited Member States to share historical pictures of their work, as well as pictures/footage using modern technologies such as autonomous vehicles and drones.

IHO Centenary Celebrations (IHO-100)

36. The years 2019 and 2021 are important in the history of the International Hydrographic Organization. 2019 marked the centenary of the 1st International Hydrographic Conference, which was held in London in 1919 and 2021 is the centenary of the establishment of the International Hydrographic Bureau (IHB) in 1921 in Monaco as precursor of the modern IHO.

37. The IHO Secretariat has already organized an exhibition on “Historical Nautical Charts and Mediterranean” which was displayed at the Monaco Yacht Club from 1 to 14 April 2019, an international Symposium on “A Historical Approach for Measurements and Protection of Oceans and World Waters” at the Oceanographic Museum of Monaco from 20 to 21 June 2019 (in conjunction with the World Hydrography Day), and has published an IHO Prestige Book on “100 Years of International Cooperation in Hydrography” (English and French versions have already been delivered to H.S.H. Prince Albert II of Monaco). The “Peak-of-the-peak” was World Hydrography Day (WHD) on 21 June 2021. There will also be an opportunity to present IHO’s achievements at the United Nations General Assembly in September 2021 and at the IMO Assembly in November 2021. The centenary events could also be linked with the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) which has been coordinated by the IOC of UNESCO.

International Hydrographic Review

38. Twice a year, the IHR provides an opportunity for Member States to publicize technical and other achievements in their region. An editorial board comprising a representative from each region has been established. Dr Patrick Westfeld is representing BSHC on the IHR Board.

39. Papers for consideration for publication in the IHR should be forwarded directly to the editor

(ihreview@iho.int, copy to _Brian.Connon@saildrone.com). The deadlines are:

- end of January for the May Edition
- end of July for the November Edition

40. The IHO Secretariat worked with the University of New Brunswick (UNB), Canada, in a project to develop a digital repository of the complete library of the IHR. As a result, volumes from the entire collections (1923 to 2018) are available online at: <https://journals.lib.unb.ca/index.php/ihr>.

41. To promote and modernize the distribution of the content of the IHR the IHO Secretariat established a new IHR website that is available in: <https://ihr.iho.int/>.

42. **Recommendation.** BSHC Members are invited to submit papers for publication in the IHR.

43. **Action Requested of BSHC:**

- a. **Note** this report.
- b. **Consider** the recommendations proposed in this report.
- c. **Review** entries related to IHO C-55 and P-5 (Yearbook) at least annually.
- d. **Consider** submitting papers for publication in the International Hydrographic Review.
- e. **Take any other actions** as considered appropriate.