

**20TH MEETING OF THE MESO AMERICAN – CARIBBEAN SEA HYDROGRAPHIC
COMMISSION (MACHC20)**

Santo Domingo, Dominican Republic, 3-6 December 2019

Paper for Consideration by the MACHC20 Conference

IHO Secretariat Report

Submitted by:	Secretariat of the IHO
Executive Summary:	This paper reports on activities of the IHO Secretariat that may impact the work of the Meso American - Caribbean Sea Hydrographic Commission.

Status of Membership of the IHO

1. The IHO membership stands at 93. After the last MACHC19 meeting held in December 2018, Guyana, Solomon Islands, Ghana and Samoa acceded to the IHO Convention. 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 following Associate Members of the MACHC have yet to apply to become members of the IHO: Antigua and Barbuda, Barbados, Belize, Costa Rica, El Salvador, Grenada, Haiti, Honduras, Nicaragua, Panama, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines. All are Member States of the United Nations. The MACHC is encouraged to engage with Bahamas and Dominica (coastal States in the Region that are not Associate Members) and Bermuda (Region A) to raise awareness on the importance and value of hydrography.

IHO Council Activities

3. The third meeting of the IHO Council (C-3) took place from 15 to 17 October 2019 at the IHO Secretariat in Monaco. Summary report of the 3rd Meeting of the IHO Council is available at the IHO web site. Additional details are available in document MACHC20-02.2 *Council Report*.

Preparation of the Second IHO Assembly

4. The 2nd Assembly of the IHO is scheduled to take place from 21 to 24 April 2020. The announcement and draft agenda of the A-2 (See Assembly Circular Letter-01) and some additional ACLs have already been circulated. The IHO Work Programme and budget for the next 3 years (2021-2023) will be reviewed and approved by the Assembly. The Assembly will also consider proposals from Member States, the Council and the Secretariat.

INT Chart and ENC Production Coordination - Region B

5. Mrs Bernice Mahabier (Suriname) is the designated INT Chart / ENC Coordinator for Region-B.

6. The status of the INT chart scheme for Region B is contained in Edition 3.0.3 of S-11 Part B which was made available in October 2019. According to the S-11 Part B Web Catalogue, there are 82 INT charts in the scheme, from which 50 have been produced and published. All MACHC members and associates are requested to check their individual entries and provide updated information as appropriate. Adoption of Ed. 3.1.0 of IHO Publication S-11 Part A requires new arrangements for the monitoring of INT charts ([CL 11/2018](#) refers).

7. In January 2018, the IHO Secretariat informed the Chart Coordinators that the project INTToGIS Phase II was underway, thanks to the outstanding support provided by KHOA (Republic of Korea). INTToGIS Phase II aims to provide a very useful scheming tool, putting together ENC and INT charts, new base maps and also includes some useful tools that enable more efficient and consistent INT chart and ENC scheming (AIS data base, overlap checker, etc.). As agreed at the recent WENDWG meeting, some Chart Coordinators are now experimenting with INTToGIS II before it is commissioned and made available to all.

8. At its 14th meeting in Monaco (February 2019), the Data Quality Working Group discussed best practices on how CATZOC values should be populated for S-57 ENCs by Hydrographic Offices. In order to facilitate the harmonization and prepare the future transition to S-101 ENCs, it is recommended that MACHC ENC Producers provide their guidelines to the DQWG.

9. **Recommendation.** MACHC to consider providing regional CATZOC practices to the DQWG.

Maritime Safety Information Services

10. Work by the International Maritime Organization (IMO) on the modernization of the Communications and Global Maritime Distress and Safety System (GMDSS) continues with the ongoing 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 mobile satellite service provider in the GMDSS continue to be implemented. The Iridium SafetyCast service will become SOLAS carriage compliant from 1 January 2020 when the necessary amendments to SOLAS come into force. A significant number of operational testing issues remain to be completed before the service can be declared fully operational.

11. 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, and access to broadcast systems for transmission to their area of national responsibility.

12. **Recommendation.** Engage with National Coordinators to ensure they fulfill the responsibilities detailed under item 3.6 of the IHO Publication S-53 *Joint IMO/IHO/WMO Manual on Maritime Safety Information*.

Capacity Building Programme

13. The level of activity of the IHO Capacity Building (CB) Programme increased in 2018. Expenditure in the IHO 2018 CB Work Programme (861 000 Euros) was 37% bigger than the budget for the previous year. Ongoing financial support is provided by the Nippon Foundation of Japan, the Republic of Korea and by a contribution from the IHO budget with in-kind support from Member States and from industry stakeholders. The Secretariat is continuing its campaign to find additional donor States and funding organizations. In 2018, 81% of the budgeted work program was executed and paid for.

14. The MACHC States benefited from activities under the IHO CB Work Programme (CBWP): Technical Visit to Guatemala was held during the reporting period. Additionally, Suriname (Mrs Christy WARMOEN) and Venezuela (Mr Yamfran CHANG) were selected to attend the Category "B" Marine Geospatial Information, Capacity Building Programme Sponsored by the Republic of Korea (29 July - 13 December 2019). Also, Trinidad and Tobago (Mr Suruj Rakesh BABWAH) was selected to attend the 11th Course IHO-NIPPON Foundation Chart Project Category B Cartography course (2 September - 13 December 2019). A Raising Awareness Seminar is funded and will take place in the two days preceding the MACHC20. A MSI Course for the MACHC will happen in the week following the MACHC20, also hosted by the Dominican Republic and funded by the IHO CBWP.

15. Recommendations. MACHC members are invited to identify opportunities in national or regional funding agencies to incorporate hydrographic development in the broader projects supporting developing countries.

Crowdsourced Bathymetry

16. The IRCC established the Crowdsourced Bathymetry Working Group (CSBWG) to provide guidelines on the collection and use of crowdsourced bathymetry. Member States and other interested parties were invited to nominate representatives to participate in the CSBWG (see IHO CL 42/2015). The CSBWG has developed the IHO publication B-12 – IHO Guideline on Crowdsourced Bathymetry. Edition 2.0.0 was circulated under IHO CL 11/19 and its approval was announced in IHO CL 28/2019. Replies to Annex B of IHO CL 11/2019 have been analyzed and a table of coastal States indicating positive support for the activity 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 and it is proposed to make a second request for support in the second half of 2020 after the 2nd session of the IHO Assembly.

17. The web-based interface portal to the IHO Data Center 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. MACHC is 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.

18. Recommendation. Encourage Members, Associate Members and Observers to:

- .1 make data freely available for inclusion in the DCDB and the widest possible use, in accordance with IHO Resolution 1/2017;
- .2 reply to Annex B of IHO CL 11/2019 and consider IHO CL 47/2019;
- .3 review national legislation to remove barriers restricting CSB activities within their waters;
- .4 actively support the collection of data within their waters;
- .5 identify further potential sources of bathymetric measurements and survey data providers.

GEBCO support through Seabed 2030 Project

19. 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 14 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.

20. Seabed 2030 has established a network of 4 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 MACHC region is covered by the Atlantic and Indian Oceans Regional Center located at the Lamont-Doherty Earth Observatory, Columbia University, USA, and the North Pacific - Arctic Oceans Regional Center co-located at Stockholm University, Sweden, and University of New Hampshire, Durham, USA. A global centre will merge the regional datasets to generate the production of 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 data based there.

21. GEBCO released the GEBCO 2019 grid in March. 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 15% in the current 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 does also include the data gathered by the two contracts in the search for MH370, which have been released by the Australian authorities. The 2020 grid is anticipated to be published in April next year.

22. Recommendations. MACHC is encouraged to:

- .1 continue inviting Seabed 2030 project representatives to MACHC meetings to discuss options for deepened cooperation and support.
- .2 encourage Members to make more detailed and comprehensive seabed data available;
- .3 invite Members to allow more stakeholders have access to authoritative information and knowledge about the seabed;
- .4 invite Members to encourage local surveyors and mariners to collect more data and share it; and
- .5 make more people aware of the importance of gaining a complete picture of the seabed.

IHO GIS and Databases

23. Work has continued on the development of the IHO GIS which is composed of two main parts:

- a country information database, and
- a regional information database.

24. The country information database has been progressively upgraded to include additional administrative information and facilitate the maintenance of the *IHO Yearbook* (IHO Publication P-5) and related lists posted on the IHO website. Countries in the MACHC Region are invited to review their entry in the Yearbook on an annual basis and provide the IHO Secretariat with the appropriate updates or report no change. The status of updates in the IHO Country Information Database concerning the MACHC Countries, including those provided for the IHO Publication C-55 *Status of Hydrographic Surveying and Nautical Charting Worldwide*, is as follows:

Country	P-5 –Yearbook Last update received	C-55 Last update received
Antigua and Barbuda	Nov 2012	Nov 2017
Bahamas	Oct 2016	Nov 2017
Barbados	Jun 2015	Nov 2017
Belize	Oct 2018	Nov 2017
Bermuda (INT Region A)	Oct 2018	Nov 2017
Brazil	Oct 2019	Oct 2019
Colombia	Mar 2019	Sep 2019
Costa Rica	Nov 2019	No update date
Cuba	Aug 2018	Dec 2016
Dominica	No update date	May 2007
Dominican Republic	Mar 2018	No update date
El Salvador	Apr 2017	Dec 2016
France - Clipperton Island	Feb 2018	Jun 2017
France - French Antilles	Feb 2018	Jun 2017

Country	P-5 –Yearbook Last update received	C-55 Last update received
France - Guyana	Feb 2018	Jun 2017
Grenada	Nov 2012	May 2007
Guatemala	Oct 2017	Dec 2015
Guyana	May 2019	May 2007
Haiti	Jun 2017	Dec 2016
Honduras	Feb 2014	Nov 2005
Jamaica	Mar 2017	Nov 2017
Mexico	Oct 2017	Nov 2012
Netherlands - Leeward Islands	Nov 2018	Dec 2017
Netherlands - Windward Islands	Nov 2018	Dec 2017
Nicaragua	Apr 2017	No update date
Panama	Sep 2017	Dec 2016
Saint Kitts and Nevis	No update date	May 2007
Saint Lucia	No update date	May 2004
Saint Vincent and the Grenadines	Oct 2014	Nov 2017
Suriname	Mar 2017	May 2019
Trinidad and Tobago	Jan 2018	Sep 2017
UK - Anguilla	Aug 2019	Nov 2018
UK - British Virgin Is	Jan 2019	Nov 2018
UK - Cayman Islands	Jan 2019	Nov 2018
UK - Montserrat	Jan 2019	Nov 2018
UK - Turks & Caicos Is	Oct 2016	Nov 2018
USA - INT Region B	May 2018	Dec 2018
USA - Puerto Rico, US Virgin Is. & Navassa Is.	May 2018	Dec 2018
Venezuela (Bolivarian Republic of)	Jul 2019	Dec 2018

25. An Esri-based GIS solution is being continuously developed to include further regional information. This enables access to various layers of information through the IHO website and through cloud-based online GIS options. The IHO ENC Catalogue and the IHO GIS for Antarctica have been transferred to this new environment. Several other layers are already available from the IHO website.

26. Work has continued on developing a GIS database application to support C-55 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 (see IHO CL 52/2015), CATZOC data was provided by PRIMAR - on behalf of IC-ENC, PRIMAR and Canada, Singapore, Sweden and Thailand. Useful options for visualizing the data in the IHO C-55 GIS are being investigated.

27. The IHO Secretariat has developed an online form to allow Member States to input data to the Yearbook and to C-55. The online forms also allow Member States to vote in response to CLs (CL 20/2019 refers).

28. Recommendations. Countries in the MACHC 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

29. The theme for 2019 is “*Hydrographic information driving marine knowledge*”. This theme was intended to stress the eminent role of hydrographic data in combination with information provided by adjacent maritime domains and advertises the benefits of making hydrographic data accessible to the widest possible audience for use that goes well beyond safety of navigation.

30. At the third IHO Council meeting in October 2019, the Secretary-General proposed the theme for WHD 2020 as follows: “*Hydrography - enabling autonomous technologies*”. The theme highlights the role of hydrography in various dimensions: For the conduct of hydrographic survey itself by means of autonomously acting sensor carriers such as autonomous surface vehicles (ASV), autonomous underwater vehicles (AUV) and flying drones to carry Lidar equipment. The second important field is to pave the way for the expected development of safe, secure and environmentally sound Maritime Autonomous Surface Ships (MASS) operations under the auspices of the IMO which will definitely rely on qualified hydrographic information.

31. Following comprehensive redesign, the IHO website, including GIS-services will be renewed on 1 January 2020. The new website, which would have versions in both English and French, would have a functional but creative design that paid respect to tradition and was fit for modern technology. The IHO emblem had also been slightly modified and in effect as of 21 June 2019.

IHO Centenary Celebrations (IHO-100)

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

33. The IHO Secretariat has already undertaken the preparations and execution for the centenary celebrations of the International Hydrographic Organization ranging from 2019 to 2021 as important milestones of the IHO. A symposium, an exhibition, outreach events and similar activities were executed in 2019 and others are planned in 2020 and 2021, either independently or jointly with sister institutions and agencies. *The “peak-of-the-peak” will be 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.

34. The main activities were held and other are scheduled for the IHO centenary celebrations, coordinated by the IHO Secretariat are/were as follows (CL 32/2017 refers):

- An exhibition on "Historical Nautical Charts and Mediterranean". This event was held at the Monaco Yacht Club from 1 to 13 April 2019, with a resounding success.

- An international Symposium on “A Historical Approach for Measurements and Protection of Oceans and World Waters”. This event was held at the Oceanographic Museum of Monaco from 20 to 21 June 2019 (in conjunction with the World Hydrography Day).

- To highlight the centenary celebrations as part of the media and press-campaign associated the Council meetings in 2020 and 2021.

- To organize a half day special session on IHO-100 at the 2nd Session of the IHO Assembly (A-2) in April 2020.
- To prepare, publish and distribute an IHO Prestige Book on “100 Years of International Cooperation in Hydrography”.
- To hold the 2021 World Hydrography Day in Monaco in conjunction with IRCC13, CBSC19 and a CB/IBSC Seminar.
- 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

35. 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. MACHC is represented by Mr. Chris Thorne (UK).

36. The IHO Secretariat is sad to announce that Mr. Ian Halls (Australia), the IHR Editor, passed away in May 2019. He had been the Editor from 2011 to 2019, until his disappearance. Assistant Director Alberto Costa Neves is the acting Editor for the November Edition of the IHR. Mr. Brian Cannon (USA) has been assigned the IHR Editor from 1 January 2020.

37. Papers for consideration for publication in the IHR should be forwarded directly to the editor (ihreview@iho.int, copy to *Brian.Cannon@usm.edu*). The deadlines are:

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

38. 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>. The repository will be kept update with past editions, while the current year's editions are available in the IHR website at: <http://review.iho.int>.

39. **Recommendations.** MACHC Members are invited to submit papers for publication in the IHR.

Action Requested of MACHC:

- a) **Note** this report
- b) **Consider** the recommendations on Charting as presented in **Paragraph 9**
- c) **Consider** the recommendations on MSI as presented in **Paragraph 12**
- d) **Consider** the recommendations on Capacity Building in **Paragraph 15**
- e) **Consider** the recommendations on Crowd Sourced Bathymetry in **Paragraph 18**
- f) **Consider** the recommendations on GEBCO Seabed 2030 collaboration in **Paragraph 22**
- g) **Review** entries related to IHO C-55 and P-5 (Yearbook) at least annually (**Paragraph 28**)
- h) **Consider** submitting papers for publication in the International Hydrographic (**Paragraph 39**)
- i) **Take any other actions** as considered appropriate