Meso American & Caribbean Sea HYDROGRAPHIC COMMISSION

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 Meso-American & Caribbean Sea Hydrographic Commission.

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 MACHC Conference Lebanon and Kenya acceded to the IHO Convention and the IHO membership now stands at 95. With the IHO CL 36/2021, since September 2021 the Democratic Republic of Congo has been reinstated as a Member State of the IHO. Serbia, Syria and Vanuatu remain suspended from Member States rights.

Regional Applications for Membership of the IHO

2. The non-IHO Member States of the MACHC region are Antigua and Barbuda, Barbados, Belize, Costa Rica, El Salvador, Grenada, Haiti, Honduras, Nicaragua, Panama, Saint Lucia, St Kitts and Nevis, St. Vincent and the Grenadines and The Bahamas. Countries who are Member States of the IMO are encouraged to become IHO members and the IHO respectfully repeats its invitation to those non-IHO Member States 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 those non-IHO Member States with the application process for membership of the IHO, as recently done towards several non-IHO Member States in other hydrographic regions, and stands ready to pay High Level Visits to those States in the MACHC region not yet IHO Member States.

3. **Recommendations**:

3.1 MACHC is invited to encourage and propose to the IHO Secretariat High Level Visits to those States not yet IHO Member States.

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. 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.

5. 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 and Seabed2030. Traditionally, hydrographic data was used mostly for the safety of navigation, but its use is each time more important by a wide variety of

stakeholders, such as to monitor changes and effectively protect the Oceans.

6. 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.

IHO Council Activities

7. Due to COVID-19 restrictions, the fifth meeting of the IHO Council (C-5) took place on 19-21 October 2021 via hybrid in-person/video conference. MACHC was represented at C-5 by Brazil and Netherlands.

8. Among the items discussed at C-5, there were the proposals from HSSC, IRCC and the Secretariat for delivery of the Strategic Performance Indicators (SPIs) assigned to each of those bodies for the implementation of the IHO Strategic Plan, as well as the Roadmap for the S-100 Implementation Decade (2020-2030) for the development of digital products and services. Member States stressed the need for IHO to support basic Capacity Building while also supporting the migration to S-100. The role of the RENCs had been a subject of discussion, and RENC representatives had therefore been invited by the Chair to attend the session as observers.

9. The actions in progress within HSSC for the development of a governance document in support of the dual fuel concept and associated actions were noted and a consolidated draft governance document on the ‘dual fuel’ concept would be considered by HSSC-14 and subsequently submitted to C-6. To develop a guidance document on the dual fuel concept, the S-100 WG, under HSSC, was conducting a series of workshops that included discussions on the subject as well as on the future continuation of the system-ENC (SENC) delivery. The revision of the International Maritime Organization (IMO) ECDIS Guidance for Good Practice and ECDIS Performance Standards was due to be considered by the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR-9) in June 2022.

10. C-5 noted the report and commended the IRCC, the RHCs, and IRCC Sub-Committees for their achievements as well as the outcome of the IRCC October Workshop on the Strategic Plan. The Council, acknowledging the need for further recommendations on the realization of the Strategic Plan in RHCs by Member States, invited the IRCC to provide these recommendations to the RHCs as a matter of priority.

11. The Empowering Women in Hydrography project was launched with a kick-off meeting via virtual teleconference held on 28 September 2021. Funded by Canada until 2024 and with intensive support from the IHO Secretariat, the goals of the project include to give more exposure to women to the field of hydrography and to increase gender diversity in the hydrographic community. Lines of action include outreach, contact and learning, including internships, at-sea experiences and train-on-the-job activities. A specific webpage (https://iho.int/en/basic-cbsc-ewh) has been set up under the Capacity Building Sub-Committee (CBSC) for this project.

12. The Project Team has been established for the IHO e-Learning Center at KHOA, along with terms of reference and rules of procedure. Operational tests with IHO Member States were expected to begin in 2022. However, the success of the e-learning initiative was dependent on contributions of online learning

material from Member States and partners.

13. **Recommendations**:

13.1 MACHC is invited to continue on the implementation of the IHO Strategic Plan, elaborate on the gap analysis and support IRCC in identifying measures and values to measure those SPI of regional interest allocated to IRCC, in accordance with IRCC CL 01/2021.

13.2 MACHC members to note the appropriate HSSC's governance document on the 'dual fuel' concept.

13.3 MACHC members are invited to participate at the EWH project and provide proposals via the specific webpage (https://iho.int/en/basic-cbsc-ewh) has been set up under the Capacity Building Sub-Committee (CBSC) for this project.

13.4 MACHC members are invited to provide contributions of online learning material to the Project Team established for the IHO e-Learning Center at KHOA.

INT Chart and ENC Production Coordination - Region B

14. Since the commissioning of INToGIS II to facilitate the maintenance of the regional databases of ENC Schemes (and INT Charts if needed), MACHC has been involved in the process. 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 as soon as possible.

15. The approval by IHO Member States of a new set of WEND100 Principles was announced (IHO CL 37/2021). The development of WEND100 Principles is an important and fundamental component of the S-100 Implementation Roadmap as 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). Suriname (Ms Berenice MAHABIER) is the designated Member representing the MACHC in the WENDWG and this Region B is very active in the maintenance of INToGIS II. Now, the extension of the role (and burden) of the Coordinator for S-100 Services in Region B may need to be addressed in the near future.

16. **Recommendations**:

16.1 With the possible development of INToGIS III to encompass S-100 services, MACHC members are invited to consider the future role of the Coordinator for Region B.

16.2 MACHC is invited to actively participate at the finalization of the WEND100 implementation Guidelines for the transition from S-57 to S-100 Schemes.

Capacity Building Programme

17. The level of activity of the IHO Capacity Building (CB) Programme was clearly affected in 2020 by the COVID 19 Pandemic. In 2020 only 34% of the funded non-earmarked projects were executed. 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. MACHC has five funded CB projects in the 2021 CBWP:

- A/03 - Technical Visit to Honduras

- A/06 - High Level Technical Visit to Dominican Republic

- A/06 - High Level Technical Visit to Jamaica

- P17 - Seminar on Raising Awareness of Hydrography

- P/33 – Tides Workshop for Spanish Speakers (former 2020 P/11)

In the first version of the 2022 CBWP, the project A-05 - Technical Visit to Belize, it was also already funded.

18. For 2022, a proposal to increase the Capacity Building Fund from €85.000 to €100.000 was proposed by the IHO Secretary General at C-5, although a greater increase would likely be necessary in future years, in line with the CB Strategy.

19. 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.

20. UK (Ms Lucy Fieldhouse, UKHO) is the MACHC CB Coordinator for planning and implementing the regional CB activities.

21. **Recommendations**:

21.1 MACHC members are invited to continue follow and evaluate the possibility to contribute to the CB Programme through the MACHC CB Coordinator.

21.2 MACHC is invited to identify suitable individuals to undertake both the online e-learning modules and the physical MSI training course, and ensure their subsequent continued relevant employment within the national structures.

Maritime Safety Information Services

22. 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.

23. **Recommendations**:

The MACHC Chair is requested to encourage all MACHC members to:

23.1 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.

23.2 Establish and maintain effective communications with the relevant NAV and MET Area Coordinators to ensure the timely provision of MSI.

23.3 Use and follow the guidance provided in S-53 – Joint IMO/IHO/WMO Manual on Maritime Safety Information – to ensure the necessary facilities and capabilities are provided and maintained for the

gathering and communication of MSI within their area of national responsibility.

Crowdsourced Bathymetry

24. The Crowdsourced Bathymetry Working Group (CSBWG) has been tasked by IRCC to revise the IHO publication B-12 which provides guidance on the collection and use of Crowdsourced Bathymetry (CSB), and to investigate ways to increase participation in data gathering activities. CSBWG is progressing on the revision of IHO publication B-12, but the six review teams following the 10th CSBWG meeting have further intersessional work to complete before the full document will be presented to the next 12th CSBWG meeting.

25. The Circular Letters (IHO CL 21/2020 and IRCC CL 1/2020) to request MS to indicate their positions on the provision of CSB data received 30 replies, showing that the engagement with the RHC and HO can be improved. It was highlighted that many coastal States continue to misunderstand the objectives and focus of the CSB initiative, which are to collect data in poorly surveyed or unsurveyed areas.

26. The CSB-GEBCO-Seabed 2030 Regional Coordinators revealed both increasing levels of engagement on CSB, as well as some of the recurring barriers cited by potential contributors. The network of Regional Coordinators would be the principle means of engaging with IHO Member States to advocate for open data access and CSB activities. In fact, there continues to be concern over the apparent lack of dedicated resources available within national HOs to process data available via DCDB. The importance of liaison with other IHO bodies, as well as appropriate engagement with industry to progress the work items, continues to be a key enabler for the project.

27. The quality of data has grown considerably in the last years having now more than 60TB. The Centre has about 25 GB of CSB data from 185 contributing vessels. DCDB implemented a geographic filter considering MS positions on the collection of CSB data in the areas of jurisdiction. The result is that data from only 13 CSB-supporting countries are currently discoverable and accessible via the DCDB. DCDB now hosts the GEBCO Gazetteer, a web tool that allows the public to search for, view, and download information. IHO MS and stakeholders were invited to contribute and encourage the provision of bathymetric data regardless of its origin or reason for gathering.

28. The CSBWG has identified the importance of much closer cooperation and coordination with GEBCO and Seabed 2030 in communication and outreach to avoid duplication of effort, to ensure a harmonised message is maintained, and to leverage the momentum generated by the UN Decade and the SDGs. Following the 11th CSBWG Meeting, seven sector specific two page information briefs had been produced with the intention that they be used to support 'first contact' engagements with potential CSB contributors. These briefs (covering cruise shipping, super yacht owners/operators, fisheries, hydrographic offices, marine contractors, the marine science community and marine navigation equipment manufacturers) are now available at the following link: https://iho.int/en/communication-material.

29. **Recommendations**

29.1 MACHC members and associate members are encouraged to officialise and/or review their positions on the conduct of CSB in their waters of jurisdiction (iaw IHO CL 21/2020 and IRCC CL 1/2020) and to identify further potential sources of bathymetric measurements and survey data providers to facilitate the further completion of the DCDB data holdings, as well as to make data openly available for inclusion in the DCDB and the widest possible use, in accordance with IHO Resolution 1/2017.

29.2 MACHC is invited to continue with its active participation in the initiatives such as UN Decade for Ocean Science (Calls for Decade Actions) and Seabed2030.

GEBCO support through Seabed 2030

30. The Nippon Foundation (NF)-GEBCO Seabed 2030 (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 15 years through the Nippon Foundation – University of New Hampshire (UNH) ocean mapping training programme. 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. Seabed 2030 has established a South West Pacific Regional Center located at the New Zealand National Institute of Water and Atmospheric Research. The Antarctic and Southern Oceans are covered by the Southern Ocean Regional Center located at Alfred Wegener Institute, Bremerhaven, Germany. Each centre focuses on discovering, gathering and assembling all available bathymetric data from their region to produce regional datasets and resulting products. 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.

31. GEBCO Guiding Committee considers that the minimum acceptable data coverage developed from 6% to 21%, which is still not comparable with the 100% 10m DEM coverage of all landmass. UN Decade of Ocean Science for sustainable development clearly stated the need to complete a comprehensive map of the ocean floor. The importance to invest in future generations of ocean scientists and hydrographers and the GEBCO Training Program with the University of New Hampshire were enhanced. It was decided to establish a new Sub-Committee on Education and Training to liaise with this successful existing program and to identify and connect with other ocean mapping programs. The core of GEBCO activities is building partnerships, regionally and nationally and some examples were mentioned. GEBCO's two biggest challenges are: how to get governments, institutions, private industry and their contractors to share more existing bathymetric data; and, how to get the remaining ~80% of our planet's unmapped ocean seafloor mapped.

32. Nippon Foundation GEBCO-Seabed 2030 project was endorsed as an Action of UN Decade of Ocean Science for Sustainable Development. The complex network of this project was explained along with the data ingestion in the system and mapping coverage that now stands at 20.6% (June 2021). The project is focused on mapping the gaps with three different initiatives: the Ocean Frontier Mapping, Crowd Sourced Bathymetry and Technology Innovation. It is necessary to promote the need to map the entire seabed and to encourage organizations to make their data available.

33. From September to November 2021, Seabed 2030 announced new partnerships with Woods Hole Ocenographic Institution (WHOI), EOMAP, TCarta Marine and ARGANS, signing Memorandum of Understandings in recognition of the organisations' work to advance the understanding of ocean bathymetry, and to complement the goals of the United Nations Decade of Ocean Science for Sustainable Development. Besides, new global survey calls for greater coordination of seabed mapping activities were launched in London, 15 October 2021 to give a major boost to efforts to map the entire seafloor by the end of the decade. The survey aimed to develop a more consolidated global view of seabed mapping needs in order to move towards an agreed list of strategically important priority areas for further action. It also achieved its secondary aim of finding new data that could immediately feed into the emerging global map.

34. **Recommendations**:

34.1 MACHC members are encouraged to become actively involved in the GEBCO programme and its subordinate projects, to support the collection of data within their waters, and to make more detailed and comprehensive seabed data available, in particular deep ocean data from transit or commercial/scientific surveys.

34.2 MACHC members to continue inviting GEBCO programme and Seabed 2030 project representatives to MACHC meetings to discuss options for deepened cooperation and support, in order to make more people aware of the importance of gaining a complete picture of the seabed.

IHO GIS and Databases

35. Work has continued on the IHO internal systems. Especially, two components are to be mentioned:

- IHO Country Information system, and
- IHO Online Form system.

36. 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 MACHC 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 MACHC Countries, including those provided for C-55 is as follows:

Country	P-5 –Yearbook Last update received	C-55 Last update received
Brazil	February 2021	March 2021
Colombia	August 2021	August 2021
Cuba	August 2020	December 2016
Dominican Republic	September 2019	-
France	January 2021	April 2021
Guatemala	October 2021	December 2019
Guyana	November 2021	March 2021
Jamaica	February 2021	March 2021
Mexico	October 2021	November 2012
Netherlands	July 2020	October 2020
Suriname	September 2019	March 2021
Trinidad and Tobago	September 2019	March 2021
United Kingdom	October 2021	August 2021
United States of America	October 2021	December 2018
Venezuela	September 2019	October 2020
Antigua and Barbuda	-	March 2021
Barbados	November 2019	March 2021
Belize	-	March 2021
Costa Rica	March 2020	-
El Salvador	April 2017	December 2016
Grenada	-	March 2021
Haiti	June 2017	December 2016
Honduras	-	November 2005

Country	P-5 –Yearbook Last update received	C-55 Last update received
Nicaragua	April 2017	-
Panama	September 2017	December 2016
Saint Lucia	-	March 2021
St Kitts and Nevis	December 2020	March 2021
St. Vincent and the Grenadines	-	March 2021

37. 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.

38. 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, CBSC established the C-55 Review Project Team (C-55RPT) to deal with this task.

39. **Recommendations**:

39.1 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

40. As announced at the Council-5, with IHO CL 43/2021, the Secretary General proposed the following theme for WHD 2022: "*How hydrography can contribute to the United Nations Ocean Decade*". The theme is designed to highlight the relevant contribution of hydrography as a discipline of applied sciences to the United Nations Decade of Ocean Science for Sustainable Development (2021 – 2030). The deliberations at the 5th Council meeting confirmed that several hydrographic offices have already engaged nationally in supporting the United Nations Ocean Decade and in the efforts to reverse the cycle of decline in ocean health. The suggested theme offers the opportunity to emphasize the competencies of hydrographers in the gathering and management of marine data and their strengths in technical collaboration on a global scale.

41. **Recommendations**:

41.1 MACHC Members are invited to note the endorsement of the IHO Council, consider the proposed theme for WHD 2022 and provide their comments in response to the IHO CL 43/2021, if any, to the Secretariat no later than 31 December 2021.

IHO Centenary Celebrations (IHO-100)

42. 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 will be the centenary of the establishment of the International Hydrographic Bureau (IHB) in 1921 in Monaco as precursor of the modern IHO.

43. The IHO Secretariat has 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), 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 and distributed to the IHO Member States), the ”Peak-of-the-peak” was held in conjunction with the World Hydrography Day (WHD) on 21 June 2021, and a Conference on “The celebration of IHO centenary” was held at Yacht Club Monaco on 17 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

44. 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. Mr Nathanael KNAPP (UK) is representing MACHC on the IHR Board.

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

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

46. 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.

47. 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/ .

48. **Recommendations:**

48.1 MACHC members are invited to submit papers for publication in the IHR.

49. Action Requested of MACHC:

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.