



INTERNATIONAL HYDROGRAPHIC ORGANIZATION
MESO AMERICAN & CARIBBEAN SEA HYDROGRAPHIC COMMISSION



MINUTES
19th CONFERENCE OF THE MESO AMERICAN AND CARIBBEAN
SEA HYDROGRAPHIC COMMISSION (MACHC 19)
Cartagena, Colombia.
26 November – 01 December 2018

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MINUTES
19TH MACHC CONFERENCE
29 NOVEMBER- 02 DECEMBER 2018

The formal opening of the 19th Conference of the Meso American and the Caribbean Sea Hydrographic Commission (MACHC) took place on Wednesday 28th November 2018. The formal opening was preceded by two days of seminars on raising awareness of hydrography. On Monday 26th and Tuesday 27th November 2018, the Seminar focused on Hydrographic governance and dealing with maritime disasters.

An opening military ceremony took place where the Commander of the National Navy of Colombia Admiral Ernesto Duran Gonzalez welcomed all the attendees, emphasizing the importance of hydrography.



Rear Admiral Enrique Flores Morado (Deputy General Director of Oceanography, Hydrography and Meteorology from Mexican Navy; and Chairman of the MACHC) welcomed all the MACHC participants to the conference and to the city of Cartagena, Colombia, likewise expressed his gratitude to all the hosts for the warm welcome.

Rear Admiral Mustafa Iptes, Director of the International Hydrographic Organization, welcomed all participants to the conference and he thanked Colombia for its hospitality.

Photo Session



1. MACHC Administration/organizational issues

1.1 Introductions

On Wednesday, 28th November 2018, the plenary meeting started. The chair invited to all participants to introduce themselves.

1.2 Approval of Agenda and timetable

The Chair informed the participants that at the request of the hosts (Colombia) modifications were made to the agenda so that the plenary session ended on Friday and not on Saturday as originally scheduled, in order that the participants have the opportunity to enjoy the city on Saturday. The agenda and timetable were approved.

No.	Reference	Decision
1	19.1.2	The modified Agenda and Timetable of the 19th MACHC were approved.

Captain Marc Van der Donck pointed out that it would have been appropriate to inform the participants with more advance notice about the changes to the agenda, since many travel from far away and have pending issues in their corresponding jobs.

See related document, [MACHC 19-01.2 \(REV 2\) Agenda and Timetable](#).

1.3 List of documents/Administrative Arrangements

All documents and presentations of this meeting will be made available on the MACHC section of IHO website after this meeting at:

Minutes 19th MACHC Conference – Approved at MACHC20, December 2019

https://www.iho.int/mtg_docs/rhc/MACHC/MACHC19/MACHC19_Docs.htm

The Chair asked all to check their names and e-mail addresses on the attendants' list..
The Chair noted the quorum for a formal MACHC Conference was achieved, which means that the meeting has decision-making status.

The Chair reminded the participants that audio recordings of the conference were being made and asked if there were objections to this. There were none. The audio recordings will be deleted after the minutes of the MACHC 19 conference are finalized.

See related documents, MACHC19-01.3A List of Documents and [MACHC19-01.3B](#) List of Participants (Invited and present).

1.4 Matters arising from Minutes of MACHC 18 Meeting

The final draft version of the MACHC 18 meeting minutes was sent out on May 8th, 2017. The comments received were addressed ; therefore, the minutes of the MACHC 18 conference were approved.

No.	Reference	Decision
2	19.1.4	It was decided to approve the minutes of the 18 th MACHC Conference

1.5 MACHC 18 Action list review

The list of the actions items was shown on the screen. To save processing time at the Commission meeting, the Chair showed the status of the actions of MACHC 18 and asked the States to review it. Those issues were discussed.

The plenary discussion determined which actions were completed and should be removed from the list. They are highlighted in green in the attached Action List Annex.

No	Action
19.1.5	Review all the recent IHO, IRCC and HSSC actions in the context of the current MACHC list and determine how to consolidate, streamline, and take action on them.

See related documents, [MACHC19-01.5](#) Status of Action List from MACHC 18, which served as input to the discussions at the conference.

5.6 Update of Spain on its Regional Projects

Spain through its Navy Hydrographic Institute presented a report as an observer country, affirming its commitment to Navigation Safety and for Capacity Buildings in the MACHC region.[MACHC19-05.6](#)

2. MACHC Developments IHO bodies/Policy aspects

2.6 IHO Secretariat Report

Mr. Mustafa Iptes gave a summary report of matters of interest related to the work of the IHO Secretariat. He explained about operations of the Organization under the IHO Convention since the last MACHC Conference (MACHC 18), in 2017, when the secretariat proposed to discuss how reporting items of relevance shall be synchronized with the Council Chair report to the Assembly, which is largely based on the annual IRCC chair report put forward to the Council.

He also mentioned the Status of the Memberships of the IHO, highlighting that 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 approval of existing Member States of the IHO. In 2017 Malta, Vanuatu, Seychelles and in 2018 Bulgaria acceded to the IHO Convention and became the 86th, 87th, 88th and 89th Member States of the IHO, respectively. On 1 January 2018, the Dominican Republic, suspended since 1983, was re-instated as a Member State. Unfortunately, there are still three Member States remaining suspended: the Democratic Republic of the Congo, Serbia and, regrettably, Syria was recently suspended from Member States rights, being in arrears in its contributions now for two consecutive years.

Director Mustafa Iptes encouraged MACHC to engage with The 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.

He indicated the second IHO Assembly is scheduled to take place from 21 to 24 April 2020. The announcement and draft agenda of the Assembly-2 will be issued in April 2019. The IHO Work Programme and budget for the next 3 year (2021-2023) will be prepared for approval of the Assembly.

No	Action
19.2.1	Identify potential MACHC Member States Proposals to IHO Assembly 2 (must be completed four months before the Assembly; thus the MACHC due date is 21 December 2019; or last week of November)

Director Mustafa Iptes explained the INT Chart and ENC Production Coordination - Region L, recommending MACHC to consider the results of the WENDWG8 meeting held in March 2018, providing regional CATZOC practices to the DQWG; and the maintenance of ENC Schemes when the INTOGIS Phase II is commissioned.

He mentioned IHO Capacity Building Strategy lays particular emphasis on the fundamental capability for all coastal States to provide maritime safety information (MSI) service in support of their international obligations.

He said that the level of activity of the IHO Capacity Building (CB) Programme decreased in 2017. Expenditure in the IHO 2017 CB Work Programme (625 952 Euros) was 18% smaller than the budget for the previous year, the Secretariat is continuing its campaign to find additional donor States and funding organizations.

Director Mustafa mentioned that MACHC States benefited from the following activities under the IHO CB Work Programme (CBWP): Technical Visit to Guatemala, Seminar on Raising Awareness of Hydrography (Cartagena, Colombia) and MBES Processing (Cartagena, Colombia). Additionally, Colombia (Mr Harold ROJAS MACIAS) and Jamaica (Mr Omar O'Neil GREY) were selected to attend the Hydrographic Survey Program, Category "B" (Busan, Republic of Korea). Participants in the region also attended activities in the SEPRHC and SWAtHC as approved by the CBSC.

About Crowdsourced Bathymetry, he invited MACHC members to identify further potential sources of bathymetric measurements and survey data providers to facilitate further completion of the DCDB data holdings.

In relation to GEBCO support through Seabed 2030 the Secretariat invited MACHC Members to consider the future invitation of Seabed 2030 project representatives to MACHC meetings to discuss options for strengthening cooperation and support.

About IHO GIS and Databases, Director Mustafa Iptes highlighted that 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.

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. He also mentioned that the IHO Secretariat is developing an online form to allow Member States to input data to the Yearbook and to C-55. A CL will be issued to provide instructions on its use.

Finally, he provided information about ongoing activities in preparation for the World Hydrography Day, International Hydrographic Review and IHO Centenary Celebrations (IHO-100).

See related document, [MACHC19-02.1](#)

2.7 Council Report

Rear Admiral Shepard M. Smith presented a report of Council-2, which was held in London from 9 to 11, October with the participation of 28 Council Members and 10 MS Observers (MACHC participants: Brazil, Colombia, France, the Netherlands, UK and USA). He highlighted that the report of the SPRWG Chair and subsequent discussions were important elements of the Council 2 meeting. The Council needed to come out of the C-2 with sufficient guidance to the SPWRG so that it could progress its task on behalf of the Council, as requested by Assembly-1.

He reported that after a fruitful discussion, C-2 decided to aim at a more concise Strategic Plan, similar to the one recently approved by IALA, and adopted 3 SMART Goals to guide the drafting

effort. The ultimate plan is intended to be fairly short- on the order of 3 pages or so and very high level.

Admiral Smith mentioned that a Working Plan was adopted with an associated timeline. The SPRWG will meet in late January to begin drafting the plan. The IRCC and HSSC Chairs will be invited to weigh in on performance measures and targets, and the Secretary-General of the IHO was added to the membership of the SPRWG. The document will be reviewed again over the summer in connection with the IRCC and HSSC meetings. See C2-6.1.

He also reported that a proposed draft revised plan will be submitted to Council-3 in July/August. C-3 will deliberate and, if accepted, the plan will be finalized for consideration at Assembly-2. For that, the plan will need to be submitted in December 2019, in advance of A-2 in April 2020. States from the MACHC region on the SPRWG include: Brazil, the Netherlands, UK and USA .

About the Development and Future Provision of S-100 Products, Admiral Smith informed that the Council, HSSC, IRCC Chairs and Secretary-General will draft an implementation strategy aiming to the regular and harmonized production and dissemination of S-100 based products for further discussion at A-2 and for the preparation of the 2021-2023 IHO Work Programme. He mentioned that IRCC will instruct and provide guidance to the WENDWG in order to investigate the applicability of the WEND-like Principles to the production and dissemination of S-101 ENCs and the first generation of S-100 based products and to report back to C-3.

Regarding Crowdsourced Bathymetry (CSB), he informed that the Council endorsed the proposed Edition 1.0.0 of IHO Publication B-12 - *IHO Guidelines on Crowdsourced Bathymetry*, - with the inclusion of the caveat agreed at C-2 (*"This document provides technical guidelines only that in no way supersede or override national or international laws and regulations"*) - but acknowledged that further work was needed for depicting the data flow (sensor, coastal States information, DCDB) before these guidelines can come into force with full effect. IRCC will instruct and provide guidance to the CSBWG to further develop a more detailed paragraph on the data flow in preparation for Ed. 2.0.0. of B-12.

About SEABED 2030 he commented that this topic will be addressed later in more detail in the agenda, by Dr. Vicki Ferrini.

He also mentioned the major changes being implemented for IHO communications, a new logo, revamping of website, IHO Centenary, use of Social Media and World Hydrography Day 2019: "Hydrographic information driving marine Knowledge".

Admiral Smith indicated that MACHC Member States shall contribute to the drafting process of strategic plan, highlighting that a meeting of the SPRWG is scheduled for January 30-31 at the IHO Secretariat Office , and a draft revision shall be submitted to Council-3, in July. If approved at C-3, it will go to the Assembly for decision.

He also mentioned the importance of a better understanding of the Seabed 2030 project and how, as a RHC, MACHC can contribute to the project. He highlighted that this will be discussed in the context of the SB 2030 portion of the agenda in light of the presentation of Dr. Ferrini.

Finally he commented on the tight timeline in preparation to Assembly-2. Robust preparations, deliberations, and reports and recommendations from IRCC, HSSC, and Council will be the key to a timely preparation for Assembly 2.

See related document, [MACHC19-02.2](#)

IRCC10 Report

John Nyberg presented report on the IRCC10 meeting. The content of the IRCC report included General Information and MACHC representation, Working Groups and Sub Committee highlights, IHO Resolution 2/1997 as Amended and IRCC Recommendations and Request to RHCs.

John Lowell then provided a more in-depth presentation on the proposed changes to IHO Resolution 2/1997, which updates how RHCs operate. The discussion led to a new action 19.2.3a to provide MACHC input to the IRCC Chair on this resolution before the end of 2018.

No	Action
19.2.3a	Chair to circulate the amended Resolution 2/1997, including comments provided already by MACHC members states, for further input immediately after the meeting with a view to providing comments back to the IRCC by the end of the year

See related document, [MACHC19-02.3](#)

2.8 HSSC10 Report

John Nyberg presented a report on the HSSC10 meeting. The content of the HSSC report included: Revision Process of IHO Resolution 2/2007, Amendments to the HSSC ToRs and RoPs, HSSC key priorities of the IHO Work Programme 2 for 2019 – 2020, Requesting use of the IHO Fund for Special Projects, Top 3 work items of the HSSC WGs.

See related document, [MACHC19-02.4](#)

2.9 MSI/WWNWS9 Report

Peter Doherty and Chris Janus presented a report on the MSI/WWNWS9, explaining what the IMO/IHO World-Wide Navigational Warning Service (WWNWS) is and how it is integrated.

He also spoke about Inmarsat-C Coverage Shift, NAVAREA, NAVAREA COORDINATOR, NATIONAL COORDINATOR, IHO Capacity Buildings, Maritime Safety Information Training, Maritime Safety Information Capacity Building Course Outcomes, MSI Support 2018-MACHC, National Coordinators in NAVAREA IV and XII.

See related document, [MACHC19-02.5](#)

At the end of this part of the agenda, it was noted that there are many requests for action from RHCs from the IHO, the Council, and the IRCC. A new action 19.1.5 was created for the

Incoming Chair to review all of these in the context of the current MACHC list and determine how to consolidate, streamline, and take action on them.

4.1A The Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (CARIBE/EWS)

Ms. Christa Von Hillebrandt-Andrade gave a presentation about the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (CARIBE/EWS). She presented Tsunami history in our region, and how the system is integrated., She also mentioned that NOAA Pacific Tsunami Warning Center (Hawaii) is the CARIBE EWS (and PTWS) Tsunami Service Provider, CARIBE EWS needs sea level data, just like MACHC, Tsunami Evacuation Maps and UNESCO IOC Tsunami Ready Recognition. The CARIBE EWS is interested in partnering with the MACHC/CBC to do joint training on the use and maintenance of tide gauges and sea level data for charting and hazard warning improvements.

She also made a request to the plenary that resulted in a new action 19.4.1a:

No	Action
19.4.1a	Countries reach out to the National Tsunami Warning contacts provide bathymetric data to support improved land-sea inundation models.

See related document, [MACHC19-04.1A](#)

3 National Reports from Members and Associate Members

The following (Associate) Member States provided the Commission with a briefing on their national report: Antigua and Barbuda, Belize, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, France, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Netherlands, Panama (Maritime Authority), Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, United Kingdom, United States of America and Venezuela.

See related documents, [MACHC 18-03 A to AB](#).

4 Reports from Observing States and Organizations

4.1 B Update of COCATRAM on its Regional Projects

Mr. Otto G. Noack Sierra presented an update of COCATRAM on its Regional Projects; he explained what is COCATRAM, the Permanent Networks, its projects and strategy.

See related documents, [MACHC19-04.1B](#)

4.1 C National Report of Montserrat

Montserrat sent its National Report.

See related documents, [MACHC19-04.1C](#)

5 [Regional Capacity Building \(CB\)](#)

5.1 CBC Report

Ms. Lucy Fieldhouse presented the MACHC CBC Meeting Report which includes The Capacity Building activities that have (or will) be completed since the last MACHC meeting held in Cuba 2017. With reference to the 2019 CB Work programme, she presented opportunities that are available, and proposed priority activities for 2020 which were approved by the Plenary.

No.	Reference	Decision
3	19.5.1	The 2019 CB Work programme and proposed priority activities for 2020 were approved by the Plenary.

Mexico provided an update on their FOCAHIMECA Project and highlighted that they would like to receive information on the previous participants, and Reports on Technical visits conducted post MACHC. The meeting noted the continuing challenges of coordinating MACHC CB activity with multiple regional projects and programmes and determining priority CB requirements. Hydrography School of the Spanish Navy provided a brief overview of the courses that can be offered for the region. The resulting plenary discussion produced the following new actions:

No	Action
19.5	Members to send capacity building and other requirements officially to the Chair to channel to others/committees who might help;
19.5a	Develop a calendar of upcoming CBC training activities sponsored by other Member States, Committees, regional and other partners, such as FOCAHIMECA, COCATRAM, National training opportunities, IMAREST, etc.
19.5b	Belize to request a cost estimate from the companies that provided the survey equipment from the Gulf of Honduras Project to see if repairs are viable
19.5c	Create a working group for the "certification of hydrographers".
19.6.4	Facilitate an introduction for Vicki Ferrini/Seabed 2030 RDC Coordinator to the Mexican hosted IBCCA to coordinate analysis of regional data gaps and catalyse contributions.

See related documents, [MACHC19-05.1](#)

5.2 Update of FOCAHIMECA

Esther Montalvo Tavera from AMEXID (Agencia Mexicana de Cooperación Internacional para el Desarrollo) presented and update of FOCAHIMECA Project. She highlighted the excellent coordination between Mexican Navy and AMEXID, their achievements and future projects.

See related documents, [MACHC19-05.2](#)

5.3 Update of UK on its Regional Projects

The agenda item was not discussed.

5.4 Update of Brazil on its Regional Projects

Ricardo Ramos Freire gave a presentation about Brazil's Regional Projects, in which he provided information on the hydrography courses that Brazil has offered as capacity building in the Caribbean, South America and Africa.

See related documents, [MACHC19-05.4](#)

5.5 Update of France on its Regional Projects

The agenda item was not discussed.

5.7 Fugro Academy and their IHO Cat B Hydrographic Course

Mr. Don Ventura gave a presentation about Fugro Academy and their IHO Cat B Hydrographic Course. He spoke of Fugro's Hydrographic Surveyor Training Programme, Installations, Personnel, equipment, Entry requirements, Programming of basis subjects, Calendar of essential subjects and complete project of the final field.

See related documents, [MACHC19-05.7](#)

5.8 Update of IOCARIBE on its Regional Projects

TF. Alex F. Cáceres R. gave an update on IOCARIBE (Intergovernmental Oceanographic Commission- Sub-Commission for the Caribbean) on its Regional Projects, he explained what is the COI, how it works and what are its main projects. There is common interest between IOCARIBE and the MACHC in mapping the ocean floor in the region (through IBCCA), disaster response multi-hazard warning systems and capacity building.

See related documents, [MACHC19-05.8](#)

5.9 Latin America Chapter of the Hydrographic Society of the America: For the Growth of Hydrography in the Region.

The agenda item was not discussed in the Plenary, but a side meeting was organized and took place on Saturday (December, 1st) morning.

5.10 Competency Standards for Hydrographers and Nautical Cartographers.

Mr. Alberto Costa Neves presented the topic: "Competency Standards for Hydrographers and Nautical Cartographers".

The discussion resulted in a new action 19.5c for Mexico to: Create a working group for the certification of hydrographers, along with interested Members States and other partners

See related documents, [MACHC19-05.10](#)

5.11 Capacity Developments e-learning Training in Hydrographic Governance

Mr. Don Ventura presented IMarEST Support for Hydrography, explaining the following topics: what is IMarEST, how it supports capacity building, raising awareness of hydrography and new certification program launched.

See related documents, [MACHC19-05.11](#)

6 [Survey and Risk](#)

6.1 Risk assessment regional project

Ms. Shivani Dawn Seepersad from Department of Geomatics Engineering and Land Management -The University of the West Indies, gave a presentation about Economic Assessment of Risks in Maritime Navigation across the Greater Caribbean Region (GCR) , including a brief history of the Maritime Accidents across the GRC, Significance of the study, Aim and Objectives. She also explained strategies for risk assessment were developed by maritime departments like IALA (IWRAP), Land Information New Zealand (LINZ), Canadian Hydrographic Service, Arctic Region Hydrographic Commission, National Oceanic and Atmospheric Administration, likewise preliminary results, methodologies being formulated, conclusions and ongoing research.

In order to expand her research project region wide, it requires access to chart data layers (bathymetry, coastline, maritime boundaries and others) in a GIS format on a web-based MSDI. This makes it a good candidate for a MSDI regional pilot project or use case.

See related documents, [MACHC19-06.1](#)

6.2 Accident statistic and analysis of AIS data for the Caribbean

Ms. Amrika Maharaj, a PhD Candidate from the University of the West Indies, gave a presentation about Global Statistical Analysis of Historical Marine Incidents, focused on solutions to reduce the risk of maritime disasters by developing a strategy that considers the likelihood of an incident in relation to vessel traffic flow and navigation information available to the mariner.

She highlighted that this can be achieved by an examination and assessment of vessel accidents globally to identify the key contributing factors or the significant parameters that creates a maritime disaster.

See related documents, [MACHC19-06.2](#)

6.3 GEBCO/IBCCA

The agenda item was not discussed.

6.4 GEBCO/Seabed 2030

Dr. Vicki Ferrini Head of Seabed 2030 Atlantic/Indian Oceans Regional Data Center and Chair of GEBCO Sub-Committee on Regional Under Sea Mapping through video conference explained the global initiative to cooperatively work towards creating a high resolution complete map of the world's ocean floor by 2030. She is looking forward to engaging more with the MACHC Members and the IBCCA to increase contributions to both efforts.

Colombia stated its willingness to do additional surveys to help fill gaps for Seabed 2030. But this can't be done alone, a regional gap analysis is needed to help the MACHC prioritize what gaps need to be filled, what we can do together, what other partnerships are needed.

The discussion resulted in the following actions:

No	Action
19.6.4	Facilitate an introduction for Vicki Ferrini/Seabed 2030 RDC Coordinator to the Mexican hosted IBCCA to coordinate analysis of regional data gaps and catalyse contributions.
19.6.4a	Encourage IBCCA chart contribution completion

Colombia also stated its interest in re-invigorating IBCCA chart contributions and completion, reflected in action 19.6.4.

See related documents, [MACHC19-06.4](#)

6.5 Evolution of Hydroacoustic Hydrographic Surveys, from the vessel to the office

Msc Leonardo Figueroa from KONGSBERG gave a presentation about evolution of Kongsberg in Hydroacoustic Hydrographic Surveys, explaining how data collection has evolved throughout time, from the first echo sounder to the use of unmanned vehicles to survey the ocean floor.

See related documents, [MACHC19-06.5](#)

6.6 The New Fugro RAMMS Bathymetric Multibeam Lidar System

Mr. Don Ventura presented The New Fugro RAMMS (Rapid Airborne Multibeam Mapping System) Bathymetric Multibeam Lidar System; he explained that RAMMS improves upon conventional technology with enhanced depth penetration and at higher point density resulting in better quality maps at an equal or lower cost.

He mentioned that the RAMMS technology has been deployed by Fugro for over two years, including on commercial projects, demonstrating its capability and reliable performance.

It should be stressed at the outset that the operating paradigm of RAMMS is completely different to that for contemporary ALB systems – RAMMS functions much more like a multibeam echosounder than a rapid pulse ‘spot’ system. It is unique on the market.

He said RAMMS was born out of the need to improve upon current day methods. RAMMS provides the best aspects of both deep and topo-bathy systems in one system, which is designed to meet international hydrographic survey standards for both accuracy and resolution (target detection). i.e., IHO Order 1b and 1a in specific utilizations.

See related documents, [MACHC19-06.6](#)

6.7 Satellite Derived Bathymetry Work in the Caribbean: Applications for machine learning and process automation

Mr. Kyle Goodrich President and Founder of TCarta explained what is the Project Trident, its processes and advantages. He also presented some examples of the work they have done; he also mentioned that Project Trident provides ultra-low cost option to meet the specifications of the Seabed 2030 initiative.

See related documents, [MACHC19-06.7](#)

6.8 Remote Environmental Monitoring Systems

Mr. Julio Leal from AXYS Technology Inc. presented “Remote Environmental Monitoring Systems”, speaking about different systems such as buoys, anchors, Typical Environmental Monitoring Sensors, oceanographic sensors, terrestrial systems, telemetry, data management, AXYS- APS, monitoring and visualization system, applications and oceanographic AXYS buoys.

See related documents, [MACHC19-06.8](#)

7. [MACHC Response to Disasters \(IHO resolution 1/2005\)](#)

Report from the Workshop on Dealing with Maritime Disasters

Alberto Costa Neves presented the Draft Disaster Response Plan that was developed during the pre-Seminar for consideration by the MACHC Plenary.

No.	Reference	Decision
4	19.7	The Draft Disaster Response Plan Framework, developed during the pre-Seminar for consideration by the MACHC Plenary, was approved.

The Plenary approved this framework and asked the Chair to take the following action 19.7:

No	Action
19.7	Circulate the plenary-approved Disaster Response framework for further comment, elaboration and then finalize for implementation.

7.1 Caribbean Disaster Emergency Management Agency

The Caribbean Disaster Emergency Management Agency (CDEMA) was invited and strongly encouraged to attend, as established in Action 15.6.3.4 of MACHC-15 Action List, but could not attend MACHC 17th, 18th or 19th meetings.

8. [SDI/Marine Spatial Data Infrastructure](#)

8.1 GGIM (Global Marine Geospatial Information Management)

John Nyberg from GGIM (Global Marine Geospatial Information Management) explained that GGIM objective is to provide a high level forum to encourage enhanced global cooperation to address issues related to the availability and application of marine geospatial information – including inland water bodies and waterways, coastal zones, seas and oceans. He also spoke about Work Plan highlights which are: Recognize Capacity Development Initiatives which may Benefit from WG Activities, Liaise with Relevant Organizations including IHO and GGIM Regional Entities, Recognize and endorse established standards for geospatial information in marine and inland waters, Produce Communications Plan and Produce Use Case Report – due in 2020 (which could have a regional focus).

Mr. Nyberg made a request to the Plenary which is reflected in action 19.8.1:

No	Action
19.8.1	Countries not participating directly in the UN-GGIM Marine Geospatial WG are encouraged to contact their national representatives to the UN to make them aware of the importance of this initiative (contact John Nyberg for further information) and its benefits

See related documents, [MACHC19-08.1](#)

8.2 Tri-National initiative for Marine Science and Conservation in the Gulf of México and Western Caribbean

Mr. Fernando Bretos Trelles, CubaMar Director, spoke about the Tri-National initiative for Marine Science and Conservation in the Gulf of México and Western Caribbean and he explained how it is integrated. One of its highest priority activities is a Marine Protected Area Network being established between Cuba, Mexico and USA called REDGolfo. MPA networks are important for the regional marine tourism economy and protecting the resources it depends on. They would like to have a digital marine atlas to support the management of this network.

Such an atlas requires data layers from charts including bathymetry, seafloor bottom characteristics, maritime routes and others. He asked if the MACHC would consider making such data layers available via a MSDI, which could then be accessed to support development of such an atlas (perhaps building on the work of the Caribbean Marine Atlas). This request demonstrates another regional demand for non-navigation uses of the authoritative charting data from the MACHC and is another potential pilot MSDI project.

See related documents, [MACHC19-08.2](#)

8.3 Caribbean Marine Atlas

Ms. Carolina Garcia Valencia from Marine and Coastal Research Institute – INVEMAR explained that since 2013, Caribbean Marine Atlas Phase 2 (CMA2) has been working on the operationalization of spatial data information by creating an online digital platform to support Integrated Coastal Zone Management – ICZM and Ecosystem-based Management - EbM for the major Caribbean ecosystems – Caribbean Large Marine Ecosystems. There has been interaction between the CMA and the MICC in an effort to try and incorporate ENC On-line into their system. They are also interested in partnering with the MACHC MSDI efforts.

See related documents, [MACHC19-08.3](#)

8.4 Evolving into a Hydrospatial Agency

Mr. Rafael Ponce spoke about Evolving into a Hydrospatial Agency. He said that Transformation in this Digital Era is happening at a fast pace, exponentially, you have the opportunity to drive it, to integrate into it. In order to get better, we have to think about being better. Having a Vision of a better Organization will give you the course to follow to become a true Hydrospatial Agency. Allowing you to Innovate, work together and prepare to support new standards, new needs, new responsibilities and new challenges.

This vision is not only possible, it is essential, and in some ways, it's will also inevitable occur, and you are going to be participating in this and making it happen. You will be able to create your Digital Twin, and address all those challenges with the right technology.

He also mentioned that as a concept, it called “The Science of Where”, which provides with a framework and a process for creating and applying geographic knowledge, the foundation of your work. It allows to collect data and analyze it and understand it, work in collaborative ways, and then put it into action. This is the power of GIS and the power of geography driven to make better maritime products and decision aids. The ArcGIS platform enables organizations to drive a digital transformation and evolve into Web GIS, interconnecting systems, enabling collaboration, reducing production times and becoming more efficient.

See related documents, [MACHC19-08.4](#)

8.5 Data Management Training

John Pepper OceanWise Director, gave a presentation about Data Management Training, he explained what is the data and why it is important. He also mentioned the Wider Use of Hydrographic Data and the OceanWise Courses, Workshops and Assistance.

See related documents, [MACHC19-08.5](#)

8.6 Hydrographic Data as a Service

Mr. Juan Carballini from Teledyne Caris presented “Hydrographic Data as a Service”. He spoke about problems that they are trying to resolve with this (The survey to bridge turn-around time,

Efficiency and complexity of meeting, the needs of multiple stakeholders, Operational preparedness for e-Navigation and autonomous shipping, Data integrity and security). He also explained the approaches that are required for success in the marketplace (Service orientated, Cloud based, Bathymetry focused then charts, Latest open geospatial approaches, Latest computing techniques). He spoke about the High level concept, pilot project technical approach-Caris, project deliverables, timeline and S102 creation and upload process.

See related documents, [MACHC19-08.6](#)

8.7 MEIP Report

Mr. James Rogers- MACHC MEIP WG Coordinator gave the MEIP report. He thanked Alberto Costa Neves for presenting the MEIP Report in the absence of the Coordinator at MACHC18 Meeting. He mentioned that MACHC Member States were encouraged to contribute ENC data to the Open Viewer if they haven't already done so. Brazil, Colombia, Cuba, Mexico, the Netherlands, Suriname, United States, and Venezuela currently contribute data to the Open Viewer.

He spoke about MEIP future options, including the possibility of demonstrating the value of MSDI through regional use cases such as:

(Risk Assessment (Dawn Seepersad); Caribbean MPA Network (Gonzalo Cid/Fernando Bretos), Disaster Management (Rafael Ponce);

The intent would be to create a proof of concept with a smaller sub-regional project of the MACHC, exploring collaboration with the Caribbean Marine Atlas organization.

Other suggested actions were to invite additional Member States to contribute ENC data to the Open Viewer; Invite Members States to contribute other MSDI layers to the Open Viewer; Coordinate with other MSDI Regional Hydrographic Commission Groups to determine capabilities and best practices that may improve the MACHC MEIP efforts; Create a MEIP Rest Service to make Open Viewer data available for MSDI GIS Analysis; Potential for coordination with the NGA OGC Concept Development Study which kicked off in October of 2018; The MACHC website could provide a place for storing Disaster POC's and links to websites.

Mr. Rogers mentioned specific proposed changes for the MACHC 19 MEIP: Given the expanding interest in MSDI information within the MACHC region it was determined that the MEIP WG should shift to a MSDI WG to recognize this expanded role; During the MEIP WG meeting there was consensus by the group to make this change to support a MSDI focus; It was decided to change the MEIP name to be more reflective of the larger MSDI mission.

The creation of, and the name for a new MACHC MSDI WG was proposed and approved by the plenary.

No.	Reference	Decision
5	19.8.7	The MEIP Report was approved including the proposal to change the MEIP name to be more reflective of the larger MSDI.

6	19.8.7	The plenary agreed to the establishment of the new MMSDI WG.
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With the shift to a MACHC MSDI WG, the group will have a Chair and Vice Chair as opposed to a Coordinator and Deputy Coordinator; The UKHO has agreed to provide an individual to serve as the Vice Chair for the new MACHC MSDI WG; The US will continue to serve as the Chair for the MACHC MSDI WG. The other Members include: Colombia, Mexico, Netherlands, Brazil and the Caribbean Marine Atlas. During the MEIP WG Meeting it was proposed that a new MSDI WG TOR be composed by a drafting group this week at the MACHC; The group composed of France, the UK and the US created a draft document will be made available for review by the full MACHC.

Finally, he mentioned Recommendations after WG Meeting on 28 NOV 2018: The MEIP WG recommends that the MACHC approve the shift to a MACHC MSDI WG to better reflect the larger focus and respond to the regional demand for chart data layers to support non-navigation purposes. This brings the MACHC into line with the larger IHO MSDI efforts. The MEIP WG recommends that the MACHC:

- a) support the establishment of a new TOR to set in place the organizational structure and objectives of the new MACHC MSDI WG;
- b) MACHC MSDI WG liaise with the IHO MSDI WG to establish the proper governance, standards, and policy;
- c) doing an inventory of existing MSDI data from the MACHC region;
- d) establishing a list of layers that are of interest for a potential MSDI for those non-navigation users of the data, beginning with the Navigation Risk Assessment Project and Redgolfo Project;
- e) exploration of potential MSDI projects or partnerships in the MACHC region in the areas of Disaster Management, Marine Protected Areas, and Risk Assessment.

The Plenary endorsed this Report, agreed with its recommendations and created the following two actions:

No	Action
19.8.7	The new MSDI draft TORs will be circulated to Members for further input with a view to finalize them - by April 2019.
19.8.7a	A Workplan is to be produced in early 2019 and will include short term activities, such as response to “low-hanging fruit” use cases, i.e. Maritime Accident Risk Assessment Project, the Tri-National MPA network (RedGolfo) and Disaster Management

See related documents, [MACHC19-08.7](#)

9. [Nautical Charts and Publications](#)

9.1 MICC report

Mr. John Nyberg presented MICC Report. He explained new MICC Leadership, Membership and Work Schedule, MICC updates, ENC Progress, ENC Online, Work Plan and WEND Update.

The MICC also updated its terms of reference to reflect the new IHO structure and to bring it in line with S-11. The MICC report and proposal for Suriname to take over as the new Chair was approved by the Plenary, and it was noted that the 2019 workplan should address the need for a regional ENC scheme and this is reflected in action 19.9.

No	Action
19.9	The new MICC Work Plan should address the issue of a regional ENC scheme.

Christy Warmoen, representing the new Suriname Chair, recognized John Nyberg’s leadership of the MICC since 2012 and the accomplishments achieved, including:

- Acquisition and analysis of AIS data to plot ship traffic and identify ports that require large scale ENC coverage.
- Creation of the ENC on-line tool useful tool for numerous applications, including MSDI
- Introduced the efforts of MACHC to the UN-GGIM Marine Geospatial Data Working Group
- Progressed ENC coverage for major Ports as the MICC's efforts to eliminate gaps
 - In 2013 the MACHC had 583 ENCs ---
 - Today the MACHC is covered by 914 ENCs
- Eliminated numerous ENC "overlap" and resolved numerous gaps
- Established the position of INT Chart Coordinator

The Plenary agreed with this impressive assessment through their applause for Mr Nyberg.

No.	Reference	Decision
7	19.9	MICC Report was approved, including the change of Chair from the U.S. to Suriname

See related documents, [MACHC19-09.1](#)

9.2 Live Data Streaming and the Use of Mobile Technology for Navigation

Mr. Derick R. Peyton from IIC TECHNOLOGIES spoke about Streaming ENC (and other data) Data from a Cloud Based Open Sourced Database. He explained that Nautilus Cloud is a cloud based infrastructure for Marine Data Solutions and Services for Government Organizations, Commercial Industry and Consumers.

He also explained that NaAVIC is a free and downloadable mobile app and it represents a new approach to an ECS, in which the electronic chart data does not physically exist within the onboard computer.

The data for this particular form of ECS goes well beyond the traditional ENC content and consists of an output from a database consolidating many different data products currently available in the marine domain.

NaAVIC attempts to thrust the sailing experience several steps further by enabling all members of expeditions to engage in the voyage and share that voyage to fellow “marine friends”.

See related documents, [MACHC19-09.2](#)

10. Closing Activities

10.1 Election (vice) Chair MACHC

Chair of MACHC said that based on article 5 subparagraphs b and c of the MACHC statutes, having this presidency fulfilled the established management time and in order to give continuity to the affairs of the Commission, a vote is put to the United States represented by Mrs. Kathryn Ries, current Vice President, to assume the chair in the period 2019-2020. He asked all to raise their hand if they agree and the United States was unanimously elected Chair of MACHC.

Likewise, he said that Circular Letter 17 of the MACHC, dated October 31 of 2018, requested Member States to propose candidates to assume the Vice Chair of the Commission, having received the proposal of the United Kingdom, by letter 103-18 / NH of November 8 of 2018, indicating Admiral Garcez of Brazil to Vice Chair of the MACHC in the period 2019-2020. He asked all to raise their hand if they agree. Brazil was unanimously elected Vice Chair of MACHC.

10.2 AOB

The UK recommended that the MACHC begin to think about potential proposals for the IHO Assembly-2, both to highlight regional accomplishments and to bring attention to priority initiatives. These will need to be available for review and approval at the 20th MACHC in order to be submitted in accordance with IHO deadlines.

No	Action
19.2.1	Identify potential MACHC Member States Proposals to IHO Assembly 2 (must be completed four months before the Assembly; thus the MACHC due date is 21 December 2019; or last week of November)

10.3 Review actions and decisions

All of the actions agreed to in Plenary are reflected above in the relevant sections of the agenda above and in the attached Action List Annex.

10.4 Lessons identified

The Chair then welcomed feedback on the structure of the meeting and how it could be improved. There was a general consensus that the meeting has become too much like a conference, without sufficient time to interact (questions, answers, feedback) and better capitalize on all the information and experience represented by the delegates in the meeting.

More time could be given after National Reports for questions and answers. National reports could be also broken out in parallel subgroups and have industry or observer organization presentations interspersed in them to encourage more interaction.

No	Action
19.10.4	Chair to shorten the duration of the MACHC meeting and consider restructuring of the agenda based on plenary feedback

The pre-Seminar is useful, and there was one proposal for it to have a MSDI focus next year. However, the 2-day Seminar does constrain the MACHC time. One possibility is to start it on Sunday, allowing the MACHC to have three full days of plenary and half day for committee meetings and be finished by Friday without being compressed. Another suggestion is to not have a half day reserved for Committee/WG meetings under the assumption that they should be doing their work intersessionally and come to the MACHC prepared to report out.

Another suggestion was to better match the capacity building requests with those who might be able to help (countries or organizations who provide training for example)—a simple calendar of opportunities would be a good start. It could be used to focus the intersessional CBC work and help prioritize CB activities. The national reports have a wealth of information in them and could be mined for information related to CB requests and training opportunities.

It was also noted that these are not unusual challenges for any Commission and that this one is exceptionally energetic and well organized. These suggestions will be taken into consideration by the new Chair group as they work with the Dominican Republic to organize MACHC-20.

10.5 Next meeting

MACHC Chair said: I want to inform you that this chair received the kind proposals of Brazil and the Dominican Republic to host the 20th Meeting of the MACHC, which I deeply appreciate on behalf of all the states that make up this commission, however, having analyzed the two proposals with the Vice Chair we believe that it is most appropriate that the next venue is the Dominican Republic, since the tradition is fulfilled that the meeting will be held one year on the continent and the next one in an island territory of the Region. He asked all to raise their hand if they agree. Dominican Republic was unanimously elected to host the 20th Meeting of the MACHC.

10.6 Close of meeting

MACHC Chair Closing Remarks: Dear friends and colleagues, I want to tell you that I am very proud and satisfied of our region, I sincerely believe that we are legitimately committed to promoting hydrographic development to guarantee safety to navigation in all the states that make up this commission, I am also aware that much remains to be done. However, I believe that if we all make an effort to cooperate with each other, the objectives will be fulfilled. I express my sincere thanks to Mrs. Kathryn Ries and her team, because without your support the success of this meeting would not have been possible, and to Rear Admiral Mustafa Iptes and Alberto Costa Neves for their professionalism and commitment. I make a special recognition of professionalism, effort and warmth human of our host Colombia who did an excellent job to make us feel at home. To member states, associate members, observers and industry thanks for making the effort to be present and give greater prominence to this event.

Mexico ends its term as president of the MACHC, personally it was an honor to have presided over this commission made up of people really committed to hydrography, and although we left the presidency we will continue to see each other in meetings and events that have to do with what we are all passionate about, the sea.

Thank you so much!!