



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**FIFTEENTH SESSION OF THE IOC SUB-COMMISSION
FOR THE CARIBBEAN AND ADJACENT REGIONS (IOCARIBE-XV)**

Oranjestad, Aruba,
6–10 May 2019

EXECUTIVE SUMMARY

In accordance with Rule of Procedure 48.3 ([IOC/INF/1166](#)), IOCARIBE, as a primary Subsidiary Body of IOC, is required to report to an IOC Governing Body on its sessions.

The IOC Assembly at its 30th Session (26 June–4 July 2019) will be invited to consider the Executive Summary as presented in the Action Paper (IOC-XXX/2 Prov.) and by the Chairman of the Sub-commission in plenary as well as the recommendations contained in this document.

1. The Fifteenth session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (SC-IOCARIBE-XV) was held in Oranjestad, Aruba, from 6 to 10 May 2019. The session was attended by 45 participants from 13 countries of the Caribbean Region, 2 countries from outside the region (Argentina and the Republic of Korea) and 8 UN, International and regional organizations. At this session, IOCARIBE reviewed progress made during the Intersessional period 2017–2019 and adopted twelve recommendations.

Main outcomes of the session

2. The Sub-Commission instructed the IOCARIBE Secretary to include capacity development needs and workplans in the programme of the IOCARIBE regional workshop for the UN Decade.
3. The Sub-Commission acknowledged the steadily support received by the Government of Colombia that is hosting the Secretariat and is seconding two professionals who are working at the Secretariat for the reinforcement of the scientific programmes of the Sub-Commission.

¹ The Executive Summary is available in Spanish.

4. The Sub-Commission requested the IOCARIBE Secretary to work with Member States in order to proactively engage the scientific, academic communities and civil society as collaborators and beneficiaries of IOCARIBE programme development. This approach to support research, education, and dissemination of ocean science capacity will facilitate the transference of technologies to achieve sustainable use of marine and coastal resources, save lives, and foster coastal community resilience to natural disasters.
5. The Sub-Commission recognized the importance of and the need to support UN Decade of Ocean Science for Sustainable Development (2021–2030), referred to below as the Decade, which will provide a partnership framework for advancing scientific understanding of the oceans that will result in new products and services that will assist Member States' implementation of Sustainable Development Goal 14.
6. The Sub-Commission urged IOCARIBE Member States to: (i) designate an "IOC Capacity Development (CD) national focal point" who will be responsible for the coordination of their country's participation in IOC's CD activities; (ii) identify national capacity gaps that need to be addressed in order to enable effective participation in the activities of IOCARIBE and the Decade workplans; (iii) share and discuss IOCARIBE workplans with appropriate national authorities and stakeholders to ensure the widest possible participation and impact, including proper identification of CD needs and requirements to implement the actions contained in such plans; and (iv) actively participate in the further development and management of the IOC Clearing-House Mechanism for the Transfer of Marine Technology (CHM/TMT). ([Recommendation SC-IOCARIBE-XV.1](#))
7. The Sub-Commission instructed the IOCARIBE Secretary to establish an open-ended intersessional working group including Member States and regional stakeholders as appropriate to develop a strategic approach to incorporate the Decade in the next biennial work plan. ([Recommendation SC-IOCARIBE-XV.2](#))
8. The Sub-Commission recognized the importance of marine and coastal science and ocean literacy in developing a science-based IOCARIBE programme to support critical capacity development in the region.
9. The Sub-Commission urged IOCARIBE Member States to: (i) incorporate ocean literacy curricula in formal education; (ii) develop a national and regional strategy for ocean literacy; (iii) identify ways to disseminate and test the *Ocean Literacy for All Toolkit* ([IOC/2017/MG/80 Rev.](#)) to help develop ocean literacy strategies relevant for the region; (iv) increase collaboration with stakeholders including policy-makers, the private sector, civil society, the media, and artists; (v) further integrate social science research, especially behavioural change research; and (vi) conduct capacity building activities to increase Member States' capability to participate in ocean literacy discussions and activities; IOCARIBE further requested IOC to develop a communications plan to enhance region-wide ocean literacy. ([Recommendation SC-IOCARIBE-XV.3](#))
10. The Sub-Commission recommended IOCARIBE Member States to support HACA (Working Group on Harmful Algae in the Caribbean and Adjacent Regions) to: (i) continue to assess the gaps, requirements, restrictions and bottlenecks of a regional system to address Harmful Algal Blooms (HAB), including the risk of ciguatera; (ii) develop capacity building opportunities including a theoretical and practical course on IOCARIBE–HAB with emphasis on public health; (iii) enhance regional participation in and the implementation of the IOC Ciguatera Strategy; (iv) foster regional collaboration by financial or in-kind contributions to HACA to carry out its Action Plan, 2019–2021, including preparation of a project focused on Ciguatera-causing organisms, toxins, contaminated seafood and the epidemiology that will include guidance to reduce the risks associated with benthic HABs in the IOCARIBE region; and (v) designate focal points to expand their participation in HACA. ([Recommendation SC-IOCARIBE-XV.4](#))

11. The Sub-Commission recommended: (i) coordinating with UN Environment, the Caribbean Environment Programme (CEP), the Ocean Foundation and other partners as appropriate to implement ocean acidification monitoring and mitigation projects as part of the Latin American Ocean Acidification Network (LAOCA) in member countries, and to seek collaboration to expand funding opportunities to create an operational ocean acidification observing system; (ii) strengthening partnership with the CEP, and Non-Governmental Organizations such as the Ocean Foundation to enhance ocean acidification integrated ocean observations, science, mitigation, and adaptation for the region; and (iii) continuing to pursue capacity development workshops to bring together scientists, policy-makers, and industry professionals from around the region to collaborate and develop strategies for building resilience to ocean acidification. [[Recommendation SC-IOCARIBE-XV.5](#)]
12. The Sub-Commission urged IOCARIBE Member States to: (i) designate long-term IODE national coordinators for data management and IODE national coordinators for marine information management, as first points of contacts for matters related to IODE; (ii) actively participate in the biannual IODE session and scientific conference, to ensure the IOCARIBE needs and priorities related to ocean data and information management are considered in the IODE workplans; (iii) establish National Oceanographic Data Centres (NODCs), Associate Data Units (ADUs) and/or Associate Information Units (AIUs), in order to enable the active participation in IODE global and regional activities; (iv) ensure the development of data and information management plans in existing and new national ocean science, observation and related programmes and activities, and involve national and regional experts, NODCs, ADUs and AIUs in the development and implementation of these plans; (v) participate in the development of the ODIS Catalogue of Sources (ODISCat), by entering information on online sources in the catalogue, and by actively promoting the catalogue at the national and regional levels and; (vi) implement national needs assessments related to ocean data and information management capacity. [[Recommendation SC-IOCARIBE-XV.6](#)]
13. The Sub-Commission expressed appreciation to the Government of Flanders (Kingdom of Belgium) for the financial support provided for the development of the Caribbean Marine Atlas, and OceanTeacher Global Academy projects.
14. The Sub-Commission decided to include data and information management plans in IOCARIBE projects and activities, and to involve national and regional experts, NODCs, ADUs, and AIUs in the development and implementation of these plans and invited other organizations and programmes active in the region to collaborate with IOC in the area of data and information management, exchange and services.
15. During the intersessional period 2017–2019, the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA) organized four virtual work meetings during 2017–2019 to establish an activity plan for completing the bathymetric chart for the region. The IBCCA editorial board requested financial resources to fund travel to the National Institute of Statistics and Geography (INEGI) in Mexico in order to accelerate the technical review and subsequent approval of the final products, maintenance and upgrade of the webpage, and thereby completing the first part of the programme by the first quarter of 2020.
16. The Sub-Commission approved to continue with the second phase of the IBCCA project, which should be aligned with the Seabed 2030 initiative and the Meso American - Caribbean Sea Hydrographic Commission (MACHC) programmes, encouraged participation of Member States therein and the sharing of available information. Member States are also encouraged to identify any gaps that may exist and develop strategies to acquire missing data.
17. The Sub-Commission recommended the enhancement of the cooperation with the MACHC and other regional partners in joint priority areas such as to: (i) share and use a gap analysis tool to increase and monitor existing and future regional data contributions to Seabed 2030 in partnership with the Seabed 2030 Regional Data Center for the Atlantic and the

International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA); (ii) identify respective capacity building training offerings and consider co-sponsoring those of common interest to avoid duplication of effort and maximize impact; (iii) explore sharing, delivery and management of marine spatial data holdings through pilot projects with partners such as IODE and the Caribbean Marine Atlas. [[Recommendation SC-IOCARIBE-XV.7](#)].

18. The Sub-Commission welcomed the establishment of a IOCARIBE-GOOS pilot project on improvement of Hurricane Observing Forecasting Capacity jointly with national institutions and universities, including the National Oceanic and Atmospheric Administration (NOAA) and its Atlantic Oceanographic and Meteorological Laboratory (AOML), the Meteorological Institute, the Marine Sciences Institute of Cuba, the Texas A&M University, Rutgers, the State University of New Jersey, the Dominican Republic National Office for Meteorology (ONAMET) and the National Authority of Marine Affairs (ANAMAR); and urged Member States to: (i) contribute to this pilot project by deploying instruments to improve hurricane forecasting; (ii) report deployment opportunities and facilities to JCOMMOPS in order to maintain a sustained observing system for improved weather forecasting and ocean state estimation; and (iii) encourage the facilitation of domestic marine scientific research clearances to facilitate instrument deployments. [[Recommendation SC-IOCARIBE-XV.8](#)]
19. The Sub-Commission further welcomed IOCARIBE-GOOS partnerships with existing ocean observing initiatives and GOOS Regional Alliances (GRAs) in the Atlantic Ocean, especially with the AtlantOS Programme, an All-Atlantic Ocean Observing System, and the Marine Biodiversity Observation Network (MBON) of the Group on Earth Observations.
20. The Sub-Commission recognized the collaboration between IOCARIBE, IOCARIBE-GOOS, GEO Blue Planet and other partners to develop an integrated sargassum and oil spill information and forecasting system for the Wider Caribbean.
21. The Sub-Commission requested, IOCARIBE-GOOS, GEO Blue Planet and other partners to continue efforts to: (i) develop an operational region-wide information and forecasting system for sargassum and oil spills; and (ii) develop a guide on best management practices for sargassum events in the coastal environment, and urged Member States to contribute to the development of the system by supporting coordination between existing and developing efforts and collecting and sharing relevant data. [[Recommendation SC-IOCARIBE-XV.9](#)]
22. The Sub-Commission welcomed the successful conclusion of the Coastal Inundation Forecasting Demonstration Project (CIFDP-C) and encouraged further pilots to test the new tools and broaden replication throughout the region.
23. Member States underscored the importance of sharing bathymetry data, which is a foundation of accurate operational models. In this context, it was noted that CIFDP-C will be integrated with CARIBE-EWS. It was further noted that while the Sea, Lake and Overland Surges for Hurricanes (SLOSH) model is useful for predicting storm surge related to hurricanes, models related to tsunami inundation and other types of storms are needed for predictions of other causes of inundation.
24. The Sub-Commission encouraged Member States to participate in a process to complete the proposal "Demonstration and Scaling up of Integrated Coastal Management to support the implementation of the Strategic Action Programmes (SAPs) for the LMEs of the Central and South American region" and submission to the GEF as appropriate, and supported Member States application to obtain funding for this proposal and submission of the project proposal.
25. The Sub-Commission recognized Exercise Caribe Wave as the largest in the world participation and welcomed the progress in establishing and certifying the Central American

Tsunami Advisory Center (CATAC) in Nicaragua, which will begin experimental operation in August 2019. [[Recommendation SC-IOCARIBE-XV.10](#)]

26. The Sub-Commission recommended Member States to nominate experts to the Pool of Experts for the Regular Process of the World Ocean Assessment (WOA).
27. The Sub-Commission acknowledged that the Global Ocean Science Report (GOSR) is a key capacity development tool to assess and report the level of human capacity, technology, investments and country needs and encouraged Member States to complete the IOC 'GOSR survey' to prepare the second edition of GOSR.
28. The Sub-Commission recommended that Member States continue to work with IOC' Marine Spatial Planning (MSP) programme to develop marine spatial planning activities leading to marine spatial management plans, and encouraged Member States with MSP experience to help support other members as appropriate.
29. The Sub-commission acknowledged the successful implementation to date of the UNDP/GEF Project entitled "CLME+: Catalyzing implementation of the Strategic Action Programme (SAP) for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems" by the Member States and organizations participating in the project.
30. The Sub-Commission urged Member States to continue to support, inter alia, by mobilizing renewed funding, the efforts to establish the Caribbean Marine Atlas as a geospatial platform of reference supporting regional integrated ocean governance, and recommended Member States to take appropriate actions to mobilize their government's support for the proposed efforts to secure renewed funding from the GEF to ensure the continuity and sustainability of the outputs and achievements of the CLME+ Project. [[Recommendation SC-IOCARIBE-XV.11](#)].
31. The Sub-Commission adopted its biennial budget for 2020–2021, noting that the budget will be revised to incorporate funding available from the IOC Regular Budget for 2020–2021, following its adoption by the UNESCO General Conference later in 2019. [[Recommendation SC-IOCARIBE-XV.12](#)].
32. The Sub-Commission encouraged Member States to provide in-kind support, i.e. secondments and meeting sponsorship, and financial support to enhance programme implementation.
33. The Sub-Commission requested the IOCARIBE Secretary to seek extra-budgetary funding to implement the adopted programme initiatives for the biennium.
34. The Sub-Commission elected the new Board of Officers for the next intersessional period 2019–2021: Mr Arnulfo Sanchez (Panama), Chairperson, Mr Francisco Brizuela (Mexico), Vice-Chairperson; Mr Marck Oduber (Aruba), Vice-Chairperson; and Mr Arthur Paterson (United States), Vice-Chairperson.
35. The Sub-Commission decided to hold its Sixteenth Intergovernmental session during the first quarter of 2021 and recommended to accept the offer from Panama. Costa Rica offered to host the session as a second option. The Sub-Commission expressed its appreciation to the Governments of Panama and Costa Rica for their offer.
36. The Sub-Commission expressed its highest appreciation to the Government of Aruba (Kingdom of the Netherlands) for hosting IOCARIBE-XV in Oranjestad, Aruba, in 2019.
37. The Sub-Commission adopted twelve Recommendations as follows:

No.	Agenda Item	Title
<u>1</u>	4.2	IOC New Capacity Development Strategy: Implementation Plan
<u>2</u>	4.3	United Nations Decade of Ocean Science for Sustainable Development
<u>3</u>	4.6	Ocean Literacy
<u>4</u>	5.1.1	Harmful Algae Blooms in the Caribbean and Adjacent regions (HAB-ANCA)
<u>5</u>	5.1.2	Ocean Acidification
<u>6</u>	5.2.1	International Oceanographic Data and Information Exchange (IODE) in the IOCARIBE Region
<u>7</u>	5.2.2.1 5.2.2.2	SEABED 2030 and Meso American and Caribbean Sea Hydrographic Commission
<u>8</u>	5.2.4.1	Initiatives within IOCARIBE-GOOS to improve Member States Ocean Observing, Monitoring and Forecasting Capacity
<u>9</u>	5.2.5	Sargassum and Oil Spills Forecasting System
<u>10</u>	5.3.1	ICG/CARIBE-EWS IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions
<u>11</u>	5.5.3	Caribbean Large Marine Ecosystem (CLME+)
<u>12</u>	7.1	Programme and Budget for 2019–2021

ANNEX

RECOMMENDATIONS

Recommendation SC-IOCARIBE-XV.1

IOC New Capacity Development Strategy: Implementation Plan

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Recalling the adoption, at its 28th Session, of the IOC Capacity Development Strategy (2015-2021),

Recognizing the importance of Capacity Development as one of the six functions of the IOC Medium-Term Strategy (2014-2021), enabling all Member States to participate in, and benefit from, ocean research and services that are vital to sustainable development and human welfare on the planet,

Noting the importance of national capacities to address national priorities in research, observation and sustainable management of coastal areas and the ocean, as well as to effectively participate in IOCARIBE programme activities,

Noting further the need for national capacities to participate actively in the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) (hereafter referred to as the UN Decade),

Welcoming the results of the Capacity Development Needs Assessment Online Survey and CHM /TMT Needs Survey jointly developed by the Task Team to identify CD requirements of SIDS and LDC Member States in relation to the IOC Capacity Development Strategy and Intersessional Task Team on implementation of a CHM/TMT portal of the Group of Experts on Capacity Development (GE-CD),

Welcoming further the implementation, through IOCARIBE (and its CMA2 project), of a regional prototype for the IOC Clearing-House Mechanism for the Transfer of Marine Technology (CHM/TMT),

Invites other organizations and programmes active in the region to collaborate with IOC in the area of capacity development;

Instructs the IOCARIBE Secretary to include capacity development needs and work plans in the programme of the UN Decade IOCARIBE regional workshop;

Urges IOCARIBE Member States to:

- (i) Designate an "IOC CD national focal point" who will be responsible for the coordination of their country's participation in IOC's CD activities;
- (ii) Identify national capacity gaps that need to be addressed in order to enable effective participation in the activities of IOCARIBE and United Nations Decade of Ocean Science for Sustainable Development work plans;
- (iii) Share and discuss IOCARIBE work plans with appropriate national authorities and stakeholders to ensure the widest possible participation and impact, including proper identification of CD needs and requirements to implement the actions contained in such plans; and

- (iv) Actively participate in the further development and management of the IOC Clearing-House Mechanism for the Transfer of Marine Technology (CHM/TMT).

Recommendation SC-IOCARIBE-XV.2

United Nations Decade of Ocean of Ocean Science for Sustainable Development

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Aware of the UN General Assembly proclamation of a UN Decade of Ocean Science for Sustainable Development (hereafter – the Decade);

Welcomes UNESCO's Intergovernmental Oceanographic Commission initiative to organize a 1st Global Planning Meeting for the Decade to engage stakeholders, determine actions, develop research strategies, and identify priorities and new partnerships to meet the sustainable development objectives and welcomes the additional calendar of regional meetings to engage regional expertise and capacity requirements;

Expresses appreciation to Mexico and Brazil for planning to host Regional Stakeholder meetings for the Decade;

Requests the IOCARIBE Secretary to facilitate participation of IOCARIBE Member States and their scientific and stakeholder community in the Regional Stakeholder Meetings; and

Instructs the IOCARIBE Secretary to establish an open-ended intersessional working group including member states and regional stakeholders as appropriate to develop a strategic approach to incorporate the Decade in the next biennial work plan.

Recommendation SC-IOCARIBE-XV.3

Ocean Literacy

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Recognizing the urgency to increase the awareness of society of how the status of the ocean and its resources affect human welfare,

Further recognizing the need to increase the awareness of societal benefits of ocean science research,

Noting the value of Ocean Literacy in primary education to bring ocean science to the next generation and in educating the general public of our collective impact on the ocean,

Acknowledging the cultural and sub-regional differences in approaches to and applications of ocean literacy,

Recalling the need for meaningful creation of and engagement with ocean information, and communications about their use to society,

Urges IOCARIBE Member States to:

- (i) Incorporate ocean literacy curricula in formal education,

- (ii) Develop a national and regional strategy for ocean literacy,
- (iii) Identify ways to disseminate and test the Ocean Literacy for All Toolkit to help develop ocean literacy strategies relevant for the region,
- (iv) Increase collaboration with stakeholders including policy-makers, the private sector, civil society, the media, and artists,
- (v) Further integrate social science research, especially behavioural change research, and
- (vi) Conduct capacity building activities to increase member states' capability to participate in ocean literacy discussions and activities.

Request the IOC Secretariat to develop a communications plan to enhance region wide ocean literacy.

Recommendation SC-IOCARIBE-XV.4

Harmful Algae Blooms in the Caribbean and Adjacent Regions (HACA)

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Expressing concern for the potential global increase in Ciguatera and other seafood poisoning for the Caribbean region, due to eutrophication, climate change, coastal developments, and globalized seafood trade,

Considering the threat that HABs present to Caribbean nations, due to the existing risks to public health, and to activities such as fishing, aquaculture and tourism,

Highlighting the global importance of strengthening and deepening knowledge about ciguatera,

Valuing the progress made by the Harmful Algae in the Caribbean and Adjacent Regions (HACA) group during the last biennium,

Recognizing that it is strategic to continue developing the national risk management protocols and models for HAB,

Further recognizing the need to strengthen the existing research and monitoring programmes and establish them in the countries that still require them:

- (i) **Requests** Member States to proactively submit data and information to HAEDAT;
- (ii) **Requests** HACA to continue strengthening its capability to serve as a coordination mechanism in the Caribbean region;

Recommends IOCARIBE Member States to support the HACA working group to:

- (i) Continue to assess the gaps, requirements, restrictions and bottlenecks of a regional system to address HAB, including the risk of ciguatera,
- (ii) Develop capacity-building opportunities including a theoretical and practical course on IOCARIBE – HAB with an emphasis on public health,
- (iii) Enhance regional participation in and the implementation of the IOC Ciguatera Strategy,

- (iv) Foster regional collaboration by financial or in-kind contributions to HACA to carry out its Action Plan, 2019-2021, including preparation of a project focused on Ciguatera-causing organisms, toxins, contaminated seafood and the epidemiology that will include guidance to reduce the risks associated with benthic HABs in the IOCARIBE region, and
- (v) Designate focal points to expand their participation in HACA.

Recommendation SC-IOCARIBE-XV.5

Ocean Acidification

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Aware of the significant threat ocean acidification poses to marine resources and ecosystem services, and the potential socio-economic impacts of ocean acidification on the Caribbean economy including food security, jobs, and tourism;

Acknowledging that ocean acidification monitoring and mitigation would contribute, at a regional and global level, to the Sustainable Development Goal (SDG) target for ocean acidification (SDG 14.3) and help safeguard community livelihoods in the region,

Recalling the success of the Pier-to-Peer mentoring program which pairs mentors and mentees in the ocean acidification community through the Global Ocean Acidification Observing Network (GOA-ON) and the success of capacity development workshops such as the Regional Symposium on Ocean Acidification for Latin America and the Caribbean,

Noting the Ocean Foundation's International Ocean Acidification Initiative to address ocean acidification as a regional topic of common concern,

Further noting there are many different approaches to coral reef monitoring being used throughout the wider Caribbean, encourages Member States to consider a common protocol for coral reef monitoring,

Recommends the IOCARIBE Secretary to:

- (i) Coordinate with the UN Environment, Caribbean Environment Programme (CEP), the Ocean Foundation and other partners as appropriate to implement ocean acidification monitoring and mitigation projects as part of the Latin American Ocean Acidification Network (LAOCA) in member countries, and to seek collaboration to expand funding opportunities to create an operational ocean acidification observing system,
- ii) Strengthen partnership with the CEP, and Non-Governmental Organizations such as the Ocean Foundation to enhance ocean acidification integrated ocean observations, science, mitigation, and adaptation for the region, and
- iii) Continue to pursue capacity development workshops to bring together scientists, policy-makers, and industry professionals from around the region to collaborate and develop strategies for building resilience to ocean acidification.

Recommendation SC-IOCARIBE-XV.6

**International Oceanographic Data and Information Exchange (IODE)
in the IOCARIBE Region**

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Emphasizing the importance of high-quality oceanographic data and information, products and services for scientific, observation and ocean-based disaster warning and mitigation programmes of the Commission, for Member States, the private sector and other users,

Welcoming the important role of IODE in the international sharing and exchange of oceanographic data and information, and the growing IODE collaboration with, and contribution to other IOC Programmes and activities, demonstrated by joint development of products and services as well as capacity development activities, responding to the IOC Strategic Plan for Oceanographic Data and Information Management,

Expressing appreciation to the Government of Flanders (Kingdom of Belgium) for the financial support provided for the development of the Caribbean Marine Atlas and OceanTeacher Global Academy projects,

Recognizing the experience of the IODE programme in Capacity Development through its Ocean Teacher Global Academy (OTGA),

Urges IOCARIBE Member States to:

- (i) Designate long-term IODE national coordinators for data management and IODE national coordinators for marine information management, as first points of contacts for matters related to IODE;
- (ii) Actively participate in the biannual IODE Session and Scientific Conference, to ensure the IOCARIBE needs and priorities related to ocean data and information management are considered in the IODE work plans;
- (iii) Establish National Oceanographic Data Centres (NODCs), Associate Data Units (ADUs) and/or Associate Information Units (AIUs), in order to enable the active participation in IODE global and regional activities;
- (iv) Ensure the development of data and information management plans in existing and new national ocean science, observation and related programmes and activities, and involve national and regional experts, NODCs, ADUs and AIUs in the development and implementation of these plans;
- (v) Participate in the development of the ODIS Catalogue of Sources (ODISCat) entering information on online sources in the catalogue, and by actively promoting the catalogue at the national and regional level; and
- (vi) Implement national needs assessments related to ocean data and information management capacity;

Decides to include data and information management plans in IOCARIBE projects and activities, and to involve national and regional experts, NODCs, ADUs and AIUs, in the development and implementation of these plans;

Invites IODE to give special attention to the capacity development needs of SIDS;

Requests IODE to implement training activities based on the national needs assessment referred to above;

Requests IODE to establish close working relationships with global and regional organizations active in the IOCARIBE region and dealing with ocean data and information management and product/service development;

Calls on the Government of Flanders (Kingdom of Belgium) to consider the funding of a second phase of the Ocean Teacher Global Academy Project (2020–2023); and

Invites other organizations and programmes active in the region to collaborate with IOC in the area of data and information management, exchange and services.

Recommendation SC-IOCARIBE-XV.7

SEABED 2030 and Meso-American-Caribbean Sea Hydrographic Commission

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Acknowledges the progress achieved by the International Hydrographic Commission's Meso-American-Caribbean Sea Hydrographic Commission (MACHC) regional organization during the last biennium;

Noting the importance of the Seabed 2030 initiative,

Recognizing that:

- (i) Hydrography provides the fundamental backdrop for almost everything that happens in, on or under the sea and the MACHC is the authoritative source for navigation products and related data in the region;
- (ii) Only a small portion of the ocean has been mapped with direct measurement;
- (iii) Less than 50% of the world's coastal waters remain unsurveyed--and that the MACHC and IOCARIBE have a role in increasing regional data contributions to the Seabed 2030 initiative;
- (iv) Data collected for Nautical Charts (bathymetry, shoreline, navigation routes and much more) is important for numerous non-navigation uses, such as protection of marine environment; coastal zone management, marine exploration, disaster response and many others; and
- (v) Resources are scarce for capacity building and the MACHC, IOCARIBE and other global and regional partners could benefit by leveraging training opportunities of common interest,

Recommends the enhancement of the cooperation with the MACHC and other regional partners in joint priority areas such as:

- (i) Share and use a gap analysis tool to increase and monitor existing and future regional data contributions to Seabed 2030 in partnership with the Seabed 2030 Regional Data Center for the Atlantic and the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA);

- (ii) Identify respective capacity building training offerings and consider co-sponsoring those of common interest to avoid duplication of effort and maximize impact; and
- (iii) Explore sharing, delivery and management of marine spatial data holdings through pilot projects with partners such as the IODE and the Caribbean Marine Atlas.

Recommendation SC-IOCARIBE-XV.8

Initiatives to Improve Member States Hurricane Observing Forecasting Capacity

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Aware of the urgency to mobilize a regional effort to enhance hurricane forecasting in the Caribbean region to save lives and protect property;

Recognizing that upper ocean measurements of temperature and salinity are needed to improve hurricane intensity forecasts, particularly in cases of rapid intensification,

Recalling that NOAA AOML's Physical Oceanography Division and the US Integrated Ocean Observing System (IOOS) are leading a multi-institutional effort that brings together the research and operational components within NOAA and the university community to implement and carry out sustained and targeted ocean observations from underwater gliders in the Caribbean Sea and south-western tropical North Atlantic Ocean,

Recalling that gaps in the ocean observing system in the IOCARIBE region can be addressed by partnerships between nation states such as the high frequency radar network and the hurricane glider picket fence program between the US (NOAA/Atlantic Oceanographic and Meteorological Laboratory, the University of Miami, and the University of Puerto Rico Mayaguez); the Dominican Republic (Dominican Republic National Meteorological Office (ONAMET)) and the National Authority of Marine Affairs (ANAMAR)); the Bahamas (Cape Eleuthera Island School); the Meteorological Institute, the Marine Sciences Institute of Cuba, Texas A&M University, and Rutgers, the State University of New Jersey; and many other partners,

Welcomes the IOCARIBE-GOOS establishment of a pilot project on Improvement of Hurricane Observing Forecasting Capacity;

Urges IOCARIBE Member States to:

- (i) Contribute to this pilot project by deploying instruments to improve hurricane forecasting;
- (ii) Report deployment opportunities and facilities to JCOMMOPS in order to maintain a sustained observing system for improved weather forecasting and ocean state estimation; and

Encourage the facilitation of domestic marine scientific research clearances to facilitate instrument deployments.

Recommendation SC-IOCARIBE-XV.9

Sargassum and Oil Spill Monitoring

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Aware of the significant impacts of elevated levels of sargassum seaweed, and oil spills on the environment and economies of the Wider Caribbean and the lack of a coordinated region-wide monitoring and forecasting system;

Recalling SC-IOCARIBE XIV.4 Recommendation to establish a working group to develop a strategy and action plan to improve the understanding of the occurrence of sargassum events and contribute to a guide on best management practices for sargassum events,

Recognizing the collaboration between IOCARIBE of IOC, IOCARIBE-GOOS, GEO Blue Planet and other partners to develop an integrated sargassum and oil spill information and forecasting system for the Wider Caribbean,

Acknowledging the financial support of IODE, the Government of Flanders (Kingdom of Belgium) and the Government of Mexico for the 2018 planning meeting,

Requests IOCARIBE-GOOS, GEO Blue Planet and other partners to continue efforts to:

- (i) develop an operational region-wide information and forecasting system for sargassum and oil spills; and
- (ii) develop of a guide on best management practices for sargassum events in the coastal environment;

Urges Member States to contribute to the development of the system by supporting coordination between existing and developing efforts and collecting and sharing relevant data;

Invites other organizations and programmes active in the region to contribute to the development and maintenance of the forecasting system; and

Encourages Member States to explore approaches to research and test regional solutions for the mitigation of oil spills and sargassum events, including harvesting of sargassum at sea.

Recommendation SC-IOCARIBE-XV.10

IOC Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS)

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Recognizes the annual Caribe Wave Exercise as the largest in the world by participation;

Expresses concern that Hurricanes Irma and Maria reduced the capability to detect tsunamis due to a 20% loss of tide gauges and loss of communication capability from the Pacific Tsunami Warning Center to the Tsunami Warning Focal Points / National Tsunami Warning Centres in the eastern Caribbean;

Welcomes the St Kitts and Nevis announcement of certification of a Tsunami Ready community, which provides mitigation, preparedness and response benefits before, during and after events

and notes that Member States have targeted some 200 communities to seek Tsunami Ready certification;

Encourages Caribe EWS and IHO/MACHC to continue to explore joint platforms for capacity building, such as a proposed workshop on sea level;

Welcomes the progress in establishing and certifying the Central American Tsunami Advisory Center in Nicaragua, which will begin experimental operation in August 2019;

Recognizing the initiation of trial operations planned for August 2019, of the Central American Tsunami Advisory Center (CATAC) as decided by ICG/PTWS at its Twenty-eighth session and by ICG/CARIBE-EWS at its Fourteenth XIV in April 2019,

Thanks the Nicaraguan government, Instituto Nicaragüense de Estudios Territoriales (INETER), the Coordination Centre for the Prevention of Natural Disasters in Central America (CEPREDENAC) and the Central American countries for their efforts to establish CATAC; and

Thanks also the Japanese government, the Japan International Cooperation Agency (JICA), the Japan Meteorological Agency (JMA), and the University of Hokkaido for their support for the reinforcement of CATAC.

Recommendation SC-IOCARIBE-XV.11

Caribbean Large Marine Ecosystem (CLME+)

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Acknowledging the successful implementation to date of the UNDP/GEF Project entitled “CLME+: Catalyzing implementation of the Strategic Action Programme (SAP) for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems” by the Member States and organizations participating in the project,

Urges Member States to take appropriate actions within their governments to continue supporting the implementation of the CLME+ Project;

Recommends Member States to take appropriate actions within their governments to participate in the process towards the establishment of the Coordination Mechanism as well as the development of a Sustainable Financing Plan for Ocean Governance, particularly through:

- (i) undertaking national consultations in preparation for the Regional Consultation scheduled for 30 July to 1 August 2019 in Panama;
- (ii) further country-level consultations on the form and functions of the Coordination Mechanism, and a Sustainable Financing Plan for Ocean Governance, will enhance the decision making process at the CLME+ Project Steering Committee Meeting planned for the first semester of 2020; and by
- (iii) subsequently leveraging the political support for such Mechanism and Financing Plan;

Invites Member States to continue investigations with the CLME+ Project Coordination Unit, regarding the possibility of hosting the Secretariat of the Coordination Mechanism;

Instructs the IOCARIBE Secretary to continue coordinating with the CLME+ Project Coordination Unit, the CLME+ Project Co-Executing Partners, and the CLME+ Interim Coordination Mechanism, IOCARIBE's contribution to key CLME+ Project Outputs including the:

- (i) development of the first SOMEE (State of the Marine Environment and Associated Economies) report;
- (ii) institutionalization of SOMEE as a long-term reporting mechanism for the region;
- (iii) development of the CLME+ Training Portal;
- (iv) development of the CLME+ Research Agenda; and
- (v) consolidation of the CLME+ Partnership;

Urges Member States to continue to support the efforts to establish the Caribbean Marine Atlas as a geospatial platform of reference supporting regional integrated ocean governance, inter alia by mobilizing renewed funding; and

Recommends Member States to take appropriate actions to mobilize their government's support for the proposed efforts to secure renewed funding from the GEF to ensure the continuity and sustainability of the outputs and achievements of the CLME+ Project.

Recommendation SC-IOCARIBE-XV.12

Budget

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

Appreciates the continuing support of Colombia to hosting the IOCARIBE Secretariat and for its support to individual programme initiatives;

Adopts its biennial budget 2020–2021, noting that the budget will be revised to incorporate funding available from the IOC Regular Budget 2020–2021, following its adoption by the UNESCO General Conference;

Encourages Member States to provide in-kind support, i.e. secondments and meeting sponsorship, and financial support to enhance programme implementation;

Requests the IOCARIBE Secretary to work with IOCARIBE Board of Officers three months in advance of the Sixteenth session of IOCARIBE preparing the biennial budget 2022–2023;

Further requests the IOCARIBE Secretary to seek extra-budgetary funding to fully fund the adopted programme, including its new initiatives.

