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**INTERGOVERNMENTAL OCEANOGRAPHIC
COMMISSION**
(of UNESCO)

**Sixteenth Session of the UNESCO IOC Sub-
Commission for the Caribbean and Adjacent
Regions (IOCARIBE)**

(Online Meeting May 3-6, 2021)

Item 3.2 of the Revised Provisional Agenda

**IOCARIBE SECRETARY'S REPORT ON THE WORK ACCOMPLISHED SINCE THE
FIFTEENTH SESSION AND BUDGET IMPLEMENTATION**

SUMMARY

This report presents a summary of the programme progress and the implementation of decisions and recommendations during the period 2019 – 2021, particularly those made at the Fifteenth Session of the Sub-Commission held in Aruba, May 2019.

The Sub-commission is invited to take note of this report, and further provide strategic guidance on programme development and implementation and emerging projects and mechanisms.

INTRODUCTION

During the reporting period 2019-2021, IOCARIBE Member States (MS) were impacted by a series of hazards, including hurricanes, coastal inundation, and sargassum blooming. The 2019 Atlantic hurricane season was the fourth consecutive above-average and damaging season dating back to 2016. The 2020 Atlantic hurricane season was the most active and the fifth-costliest Atlantic hurricane season on record. The COVID-19 pandemic generated an unprecedented human and socio-economic crisis, and on top of all this La Soufriere volcano erupted impacting the eastern Caribbean countries.

The last two years IOCARIBE has been working and strengthening its approach to provide ocean sciences needed and demanded by MS to develop policy and new ways of managing their maritime space and ocean resources and ecosystems.

The UN Decade of Ocean Science for Sustainable Development (2021-2030) is a unique opportunity for IOC and IOCARIBE to establish Partnerships and Alliances able to co-design needed transformative actions and develop synergies between ocean and other communities to go beyond a silo approach through a truly trans-disciplinary and inter-disciplinary co-design.

IOCARIBE Member States, expert networks, and education and research institutions are focusing on their contribution to the UN Decade, and to the SDG 14 implementation progress and challenges. The UN Decade of Ocean Science Regional virtual Workshop for the Western Tropical Atlantic (WTA), 28–29 April 2020, provided a regional contribution to the UN Decade with a focus on IOCARIBE countries' and territories' needs and priorities in terms of transforming knowledge systems; accelerating transfer of technology; enabling training and education; fostering science-policy dialogues, and enabling scientific solutions to the Region's socio-economic challenges.

IOCARIBE, as the WTA Ocean Decade Coordination mechanism has the overall responsibility for formulation of principles and strategy, and for planning and coordination of the Ocean Decade in the Western Tropical Atlantic region in consultation with the many leading UN, NGO, science, private sector, indigenous and local communities and other stakeholders of the region. IOCARIBE established on October 2020 a Regional Planning Group (WTA RPG) for the WTA-Ocean Decade to advance and coordinate strategic partnerships and actions for Western Tropical Atlantic engagement in the UN Decade of Ocean Science for Sustainable Development (2021-2030). The WTA RPG established eight Working Groups to promote multi-disciplinary and inclusive co-design and implementation partnerships to achieve each societal outcome and Capacity Development, recognizing the importance of the work of the Working Groups as the core of its strategy for advancing the Decade in the Western Tropical Atlantic Region.

The IOC capacity development strategy has long been a major element of IOCARIBE's programmes and activities. IOCARIBE has a series of delivery mechanisms used for achieving its capacity development, among them IOCARIBE Strategic Sciences Plan (2017–2026), and a number of programmes, projects, group and networks of experts. Also, IOCARIBE works with a number of partner organizations such as WMO, UNEP, UN-DOALOS, IAEA, FAO, the European Commission, regional organizations and NGOs. Universities and research institutions have been important partners. Strong focus during this

reporting period continues to be on Disaster Risk Reduction, Ecosystem Based Management, and Marine Spatial Planning.

The *IOCARIBE Medium Term Strategic Science Plan (2017–2026)* (SSP) objectives are to: (i) support strategic planning of IOCARIBE Member States in relation to the development of marine sciences, oceanic observations and associated services; (ii) facilitate a coherent management of regional programmes related to the marine-coastal environment and its resources; and (iii) strengthen scientific basis supporting regional programmes. IOCARIBE SSP Lines of Action are: (i) oceans and climate; (ii) ocean science, technology and sustainable use of coastal and ocean resources with special emphasis on large marine ecosystems and integrated coastal area management; (iii) and extreme natural hazards. Considering the work carried out within the UN Decade framework, IOCARIBE is planning to review and update the SSP to align it with findings and WTA Working Groups recommendations for the UN Ocean Decade.

The pandemic has forced all of us to transform our work culture and it demanded significant additional efforts from the IOCARIBE staff., who is working from home since March 2020, increasing the workload, stress and very often demanding overtime. Nevertheless, the IOCARIBE Team – the Secretariat staff and the Board of Officers, and partners organised a large number of online webinars, conferences, consultation, technical, planning and strategic meetings.

I would like to thank all my colleagues at the IOCARIBE and IOC Secretariat, the Board of Officers, the WTA Regional Planning Group and all IOCARIBE Supporters who provided much needed support to develop and implement IOCARIBE programmes under these unprecedented circumstances.

When mobilizing actions and implementing activities within the UN Decade framework, IOCARIBE enhanced the network of the ocean community with the disaster management, social practitioners and experts, economists, urban planners, local and traditional communities, reaching more than thousand people.

Over this intersessional period several member states provided support to the Sub-commission. Particularly, the support provided by Colombia that is hosting the Secretariat and is seconding two professionals who are working at the Secretariat and contributions from the Government of Flanders (The Kingdom of Belgium), Barbados, Mexico, Panama, Korea, the EU, Sweden and USA. Co-operation and partnerships with other UN Agencies and Programmes such as WMO, UNEP, UN-ISDR, UNDP, UNOPS, IAEA. IHO MACHC, GeoBlue Planet, International, regional organizations (GOs and NGOs), and the work with national agencies facilitated programme and project implementation.

The next sections will summarise the main highlights of IOCARIBE Programmes, Projects and Activities.

OCEAN ACIDIFICATION

IOC and its networks, including the Global Ocean Acidification Observing Network (GOA-ON), directly contribute to the achievement of SDG Target 14.3. GOA-ON counts more than 800 members from 101 countries. IOC continued to provide the function of the technical secretariat of the GOA-ON, together with the International Atomic Energy Agency (IAEA)

and NOAA. IOC also supports the GOA-ON Pier-to-Peer mentoring program which pairs mentors and mentees in the ocean acidification community through the Global Ocean Acidification Observing Network (GOA-ON). As of April 2021, scientists from 14 IOCARIBE MS participate in the GOA-ON mentoring programme as mentors (7 MS) and mentees (11MS).

Three IOC expert activities organized in Santa Marta, Colombia, supported the development of ocean acidification observation and research capacity in the Caribbean and Latin America: the OAiRUG meeting, in partnership with INVEMAR and IAEA's Ocean Acidification International Coordination Centre (OA ICC) on 19–21 March 2018, which resulted in the publication of the Regional Ocean Acidification Action Plan for Latin America and the Caribbean. A training titled “Latin American and Caribbean Regional Symposium on Ocean Acidification” focusing on the newly established methodology for SDG indicator 14.3.1 and related data and metadata requirements was held in Santa Marta, Colombia, on 21–24 January 2019 at INVEMAR.

The Symposium was organized by IOC, the Ocean Foundation with the support of the US Department of State, the Swedish International Development Agency, and in coordination with GOA-ON and the Latin America Ocean Acidification Network (LAOCA). The Symposium highlighted strategies for building low-cost ocean acidification monitoring systems, techniques for building resilient seafood supply chains (including through technological interventions), and policy frameworks for building economic and social resilience at regional and national scales. It also focused both on existing practices and future options for researching the impacts of ocean acidification on, and the development of adaptation plans for, coral reef ecosystems.

Furthermore, IOC co-organized the 'Curso Sistemas de Carbonatos: Documentación de conjuntos de datos, su análisis y visualización geográfica, en el marco del Objetivo de Desarrollo Sostenible 14.3 para minimizar los impactos de acidificación de los océanos', at the Centro de Entrenamiento Regional en Ciencias del Mar, Ocean Teacher Global Academy - IODE-COI-UNESCO, 21-25 October 2019, Santa Marta, Colombia.

The overall objective of this course was to increase MS capacities to report towards the SDG indicator 14.3.1 focusing on ocean acidification. The course provided the necessary tools and guidance to identify the required metadata and data to meet the different quality levels identified in the SDG indicator 14.3.1. Participants were taught how to apply best practices to standardize and organize data according to the SDG 14.3.1 methodology. The course included lectures, computer and laboratory practicals.

Finally, participants learned how to visualize the results of the analyzes so that they are understandable to non-specialized audiences. In an effort to further increase capacity development efforts, the IOC Secretariat is developing an online course on ocean acidification for the Ocean Teacher Global Academy (OTGA) platform, which will include a module on the SDG 14.3.1 Indicator Methodology and how to apply it.

HARMFUL ALGA BLOOMS – IOCARIBE HAB ANCA

HAB-ANCA is leading an initiative in the IOCARIBE Region to implement the IOC Ciguatera Strategy and is developing a project focused on Ciguatera-causing organisms, toxins, contaminated seafood and epidemiology in the IOCARIBE Region. One of the major components of this initiative is the development of national standard models for harmful alga blooms risk management in coastal and marine waters for the IOCARIBE Region.

The work with health authorities enhanced the implementation of practical solutions and much needed reduction of the vulnerability existing in the IOCARIBE region in case of threat of toxic and harmful events.

COASTAL INUNDATION FORECASTING INITIATIVE (CIFI)

IOCARIBE MS recommended to develop and implement a Coastal Inundation Forecasting Initiative (CIFI) in the IOCARIBE Region. The key to successfully developing a comprehensive of Early Warning and Response for Tsunamis and Other Coastal Hazards in the Caribbean and warning system is the cooperation of different scientific disciplines and user communities. An integrated approach to tsunami river flow, storm surge, wave action and flood forecasting is the strategy for building improved operational forecasts and warnings capability for coastal inundation.

The initiative in the framework of the UN Decade for Ocean Science seeks for the expansion of the Coastal Inundation Forecasting Initiative (CIFI), in the wider Caribbean Region through a cooperative effort with WMO and other partners.

MARIN SPATIAL PLANNING AND INTEGRATED COASTAL MANAGEMENT

Main challenge for an effective implementation of ICAM and MSP activities is the lack of coordination amongst initiatives under implementation in the region. The diversity of projects and the amount of public funds invested make national authorities to put less interest in those initiatives with less funding. There is a need to capitalise on the wealth of IOC/MPR experience on MSP and ICAM and to strengthen the coordination and links with them for advancing in answering the MSP and ICAM questions that are critical because of their large environmental and socio-economic impact, particularly for SIDS. This is critically important now for the Post- Covid 19 recovery.

IOC-UNESCO and European Commission boost development of Marine Spatial Planning and Sustainable Blue Economy worldwide.

The Joint Roadmap to accelerate Maritime/Marine Spatial Planning processes worldwide (MSProadmap), which has two main objectives at regional level:

- Strengthen institutional capacities in relation to Marine Spatial Planning (MSP) and the Sustainable Blue Economy;
- Strengthen institutional coordination for the adoption of a roadmap.

With the support of Sweden, as well as national and regional authorities and partners, a series of online and face-to-face events took place throughout the months of October and November 2020 to build collective capacities to respond to emerging ocean issues, facilitate exchanges among public and private stakeholders, and formulate recommendations for the development of MSP and the Sustainable Blue Economy in each country/ region. The activities involved officials, technicians and experts, representatives of maritime sectors, local stakeholders and civil society:

Technical workshops on environmental pressures, cumulative impacts and tools to support decision-making in Africa: exchange good practices and lessons learned to tackle environmental challenges associated with the implementation of MSP in the region.

During 2020, under the coordination of IOC / MPR a series of workshops and training courses were held in the IOCARIBE Region. Among them:

- MSPglobal online seminar on “How to integrate coastal management (ICAM) and Marine Spatial Planning (MSP)?” (Spanish) 29 April 2020
- Marine Spatial Planning and Sustainable Blue Economy in the North-East Tropical Pacific and Wider Caribbean Regions 28 October 2020
- Estado actual y perspectivas de la Planificación Espacial Marina y la Economía Azul Sostenible en Guatemala 15 octubre 2020
- Fortaleciendo capacidades en Planificación Espacial Marina y Economía Azul Sostenible Panama 29 octubre 2020
- Formación para el desarrollo de capacidades institucionales sobre planificación espacial marina y economía azul en El Salvador 20 octubre 2020.
- Costa Rica en el umbral de la Planificación Espacial Marina y Economía Azul Sostenible 4 noviembre 2020

SARGASSUM AND OIL SPILLS MONITORING FOR THE CARIBBEAN AND ADJACENT REGIONS

IOCARIBE, GEO Blue Planet and other partners have been working to support the development monitoring capabilities for “other coastal hazards” to augment the Caribbean Early Warning System for Tsunamis and other Coastal Hazards. Hazards that have been focused on include Sargassum and oil spills which were identified by regional stakeholders as priorities and can both be detected with freely available satellite data.

The overall objectives of the project are to:

- Work with stakeholders at regional and local scales to identify data and information gaps;
- Provide networking and coordination support to connect the marine hazard community;
- Identify best practices related monitoring and management to inform policy recommendations and to measure the impact of mitigation strategies.

The project is focused on meeting these objectives for the topics of Sargassum and oil spills. To meet these objectives, IOCARIBE has developed partnerships with various groups who are supporting the development and implementation of the project.

SARGASSUM

During 2019, IOCARIBE and GEO Blue Planet were approached by AtlantOS about expanding the Sargassum activity to include the West Africa due to the trans-Atlantic nature of the Sargassum issue. As a result, the Sargassum project was expanded to include the entire Tropical Atlantic and additional partners were brought on board including AtlantOS, the Atlantic International Research (AIR) Centre and the Specially Protected Areas and Wildlife (SPAW) Sub-Programme of the United Nations Environment Programme (UNEP) Cartagena Convention Secretariat, and IOCAFRICA.

A summary of major partner activities between 2019 and 2021 is outlined below.

- Sargassum Information Hub: To meet the need for centralized access to information and tools for the monitoring and management of Sargassum, the

[Sargassum Information Hub](#) was created. The hub development was supported primarily with resources provided by the AIR Centre and the GEO Blue Planet Initiative.

- **Sargassum Webinar Series:** UNEP together with partners IOC-UNESCO and the two Regional Seas under the Cartagena and Abidjan Conventions started a webinar series to highlight key scientific, societal and ecological challenges, responses to prevent impacts and trans-disciplinary and trans-institution collaboration around Sargassum in the context of the Caribbean and West African seas.
 - 26 May 2020: [Sargassum in the Caribbean and West Africa – Key Challenges, Responses and Collaborations](#).
 - 21 July 2020: [Webinar – the Science of Sargassum](#)
 - 22 September 2020: [Sargassum challenges, responses and collaboration in West Africa](#)
 - 30 November 2020: [Sargassum challenges, responses and collaboration in the Caribbean](#)
 - 22 – 22 January 2021: [Data collecting tools by NOAA’s Sargassum Watch](#)
- **NOAA Sargassum Data:** NOAA’s CoastWatch program is working to transition Alternative Floating Algae Index (AFAI) fields currently generated by USF along with Maximum Chlorophyll Index (MCI) products in order to produce and distribute satellite-based Sargassum products on a regular basis. NOAA CoastWatch is also developing an in situ database for use in validation of Sargassum satellite monitoring products using a citizen science data collection tool (the [Pelagic Sargassum Report](#)). IOCARIBE is working along with IOCAFRICA to inform NOAA about user needs and increase submissions to the database.
- **NOAA Experimental Inundation Reports:** USF, AOML and the NOAA CoastWatch node for the Caribbean and Gulf of Mexico are currently collaborating to produce Experimental Weekly Sargassum Inundation Reports for the Gulf of Mexico, Central America, Greater Antilles, Lesser Antilles and South America. IOCARIBE worked with GEO Blue Planet to disseminate these and other inundation reports via the Sargassum Information Hub.
- **Best Practices:** Initiated a collaboration with the Ocean Best Practices Initiative to compile guidelines on [best practices related to sargassum management](#).

OIL SPILLS

During 2019, IOCARIBE and GEO Blue Planet were approached by the Regional Marine Pollution Emergency, Information and Training Centre – Caribe (UNEP CAR) about the need for a GIS-based information toolkit for the region that includes information such as the location of platforms, ports, past oil spills, potential current spills and environmentally sensitive areas. IOCARIBE and GEO Blue Planet worked to identify AmeriGEO as the host of such a service. IOCARIBE and GEO Blue Planet also worked to identify partners in the region that had the capabilities and software to implement analysis of oil spill imagery. A training partnership with Trinidad and Tobago’s Institute of Marine Affairs, Trinidad and Tobago’s Institute for Marine Affairs (IMA), Ministry of Energy and Energy Industries (MEEI) and Environmental Management Authority (EMA) was subsequently established in early 2021.

A summary of major partner activities between 2019 and 2021 is outlined below.

- **[Wider Caribbean Oil Spill Information System Workshop](#):** GEO Blue Planet hosted

the workshop in collaboration with AmeriGEO, IOCARIBE IOC UNESCO, NOAA Satellite Analysis Branch, and RAC-REIMPETC. The goal of the workshop was to discuss the development of an AmeriGEO oil spill information system for the Wider Caribbean.

- Oil Spill Analysis Training: Through the IOCARIBE & GEO Blue Planet partnership, a training was arranged for 20 trainees across IMA, MEEI and EMA on satellite oil spill monitoring. The training is currently underway and is being conducted by experts from NOAA's Satellite Analysis Branch.
- Oil Spill Information Toolkit: In collaboration with AmeriGEO, a GIS-based oil spill information toolkit is being developed. A pilot project for the toolkit is currently being discussed with IMA and GEO Blue Planet.

IOCARIBE & MACHC Seabed 2030 Strategy

IOCARIBE and IHO Meso-American and Caribbean Sea Hydrographic Commission – MACHC Member States developed a strategy (December 2020, January 2021) to complete baseline seabed map of the MACHC/ IOCARIBE Region by 2030 that informs the sustainable, multi-purpose use of this region of the Ocean, as a contribution to the Nippon Foundation GEBCO Seabed 2030 Project and the UN Decade. IOCARIBE and the MACHC are working together to galvanize regional contributions to this important initiative. This collaborative effort requires broad partnership and coordination across governments, industry, academia, regional scientific and non-governmental organizations and citizens.

Within this framework IOCARIBE and MACHC propose to complete baseline seabed map of the MACHC/ IOCARIBE Region by 2030 that informs the sustainable, multi-purpose use of our regional ocean.

A complete bathymetric map of the MACHC /IOCARIBE Region will be a significant contribution to the Nippon Foundation GEBCO Seabed 2030 Project and will inform and improve regional marine spatial planning, disaster response, environmental management and scientific investigation activities, as identified in the Societal Goals of the UN Decade of Ocean Science for Sustainable Development 2020-2030. Completion of this map was also identified as a priority during the UN Decade of Ocean Science Regional Workshop for the Western Tropical Atlantic hosted by the Autonomous National University of Mexico (UNAM) and co-organized by the Government of Mexico with the Intergovernmental Oceanographic Commission (IOC) in April 2020.

IOCARIBE and MACHC have identified respective capacity development training offerings for 2020 and 2021 and considered co-sponsoring those of common interest to avoid duplication of effort and maximize impact. In 2020 they agreed on a MACHC-IOCARIBE Seabed 2030 Work Plan for 2021; and as a part of their contribution to SEABED 2030, they will be sharing, delivery and management of marine spatial data holdings through pilot projects with partners such as the IOC/IODE and the IOCARIBE Caribbean Marine Atlas (CMA).

INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN AND THE GULF OF MEXICO (IBCCA)

The National hydrographic services from IOCARIBE MS who are working in the development and publishing the International Bathymetric Chart of the Caribbean and the

Gulf of Mexico (IBCCA) have established partnerships within the IHO Meso-American and Caribbean Sea Hydrographic Commission – MACHC. The International Hydrographic Organization (IHO) benefited from contributions of IBCCA, through the IHO Data Centre for Digital Bathymetry, and the IHO-IOC joint General Bathymetric Chart of the Oceans (GEBCO) project maintained liaison and cooperated with IBCCA. The Chart has been finalised and published. There are plans to extend the geographic coverage to include the South-America Eastern Tropical area by cooperating with Brazil and including their northern region.

OCEAN TEACHER GLOBAL ACADEMY. REGIONAL TRAINING CENTRE COLOMBIA

Between April 2019 and April 2020 OTGA delivered 6 courses (face to face) with 105 participants from 16 countries. The ISO Certification of the IOC Project Office for IODE, Oostende, Belgium as a learning services provider was renewed in April 2019 and April 2020, following the successful annual audits.

The OTGA-2 implementation started in March 2020, in the midst of the COVID-19 pandemic, while most countries were under a strict lockdown. Nevertheless, the Regional Training Centre (RTC-Colombia) successfully delivered virtually 5 courses during 2020 and 1 more in April 2021. Between April 2020 and April 2021, a total of 6 courses were organized (online) involving 212 participants from 12 countries. For year 2021 are planned 9 courses including Statistical Techniques, Marine GIS, OBIS, Data Science, ICZM-MSP, Ocean Acidification and MPA.

COVID-19 pandemic has been a challenging period during which RTC-Colombia increased number of courses, as well as number of applicants and participants. Great prospect to virtualise materials and learn about new methods for training on-line. LAC countries have now more opportunities to participate given that virtual media opened access to more students with almost equal technical requirements than before. In addition, the RTC since 2020 is working to increase the number of students from many countries as possible.

However, the fieldwork and laboratory activities decreased significantly, and the on-line courses demand huge effort and time for preparation, execution, evaluation, high investment on technology and training improving the lecturer's skills and abilities, who required creativity and innovation for virtual and online training.

During November 2020, RTC-Colombia participate in the Co-designing the Ocean Science we need for the Western Tropical Atlantic (WTA) supporting the construction and implementation of the CD Strategy for the Region. Nowadays RTC-Colombia is part of the Capacity Development Group at the WTA Regional Planning Group.

RTC-Colombia is part of the 16 Regional or Specialized Training Centres around the world (<https://classroom.oceanteacher.org/>). The LAC Region includes:

- Marine and Coastal Research Institute in Colombia (INVEMAR), Colombia
- University of Uruguay (UdelaR)/University of Santa Catarina (UFSC), Uruguay/Brazil
- Escuela Superior Politécnica del Litoral (ESPOL), Ecuador
- Escuela de Ciencias del Mar, Argentina

RTC-Colombia, as a part of the Remarco Network (“Red de Investigación de Estresores Marinos – Costeros en Latinoamérica y el Caribe”) is working with IAEA for new Ocean Acidification Courses.

CARIBBEAN MARINE ATLAS (CMA)

CMA is an online platform designed and developed from 2016 to 2020 coordinated by IODE-IOC-UNESCO throughout Marine and Coastal Research Institute (INVEMAR) in Colombia. Brings together at least 25 countries (including CLME+), 8 of which are actively providing national information and data (Trinidad & Tobago, Guatemala, Jamaica, Barbados, Belize, Dominican Republic, Mexico and Colombia). CMA is co-financed by Government Flanders (Kingdom of Belgium). The information management is driven through more than 50 GIS experts from different countries and entities, registered on platform and trained to manage national information from country pilots. The platform is available and updated (<https://www.caribbeanmarineatlas.net/>).

From 2016 to June 2019 marked phase 2 of the Caribbean Marine Atlas Project (CMA2), which again centred on the sustainable operationalization of the Atlas as an online digital technology platform in support of ICZM and EBM at the scale of the Caribbean large marine ecosystem (CLME), with special attention to coastal hazards, climate change, fisheries, land-based sources of pollution and biodiversity and habitats. CMA2 was developed based on the self-government of a variety of uploaded spatial data and information products by partners. The information management on CMA2 is based on the use of own protocols, standards, and IODE information policy, to guarantee good practices and endorses the good use of high quality information. Training, awareness building and dissemination activities were also conducted. In addition,

CMA2 published a set of 10 regional indicators using national information. The platform was piloted in eight countries and at the regional level. To improve uptake, sustainability, and up-scaling of results, the CMA2 Project works closely with relevant efforts linked to the implementation of the regionally endorsed 10-year Caribbean and North Brazil Shelf large marine ecosystems (CLME+) Strategic Action Programme (SAP). This CMA2 ‘community’ maintains communication and dissemination regarding concerns and use of the Atlas at regional technical/scientific events. CMA works addressing efforts to achieve an electronic repository of spatial information for the region with different tools and functionalities, including its capacity and flexibility to receive and support new content in support of initiatives and projects that manage marine and data information.

On 2020 activities were developed in response to recommendations from CMA2 partner countries related to updating and improve viewer usability. CMA platform is supported by last GeoNode version as technological platform and has a new map viewer interface. To date CMA platform offers 351 thematic layers, 31 maps, 285 documents and is managed through 53 users with extra permissions for data and information management, useful for countries, institutions, initiatives and projects.

As part of the effort to spread the use of the CMA platform, two new initiatives call for meetings to recognize opportunities to work together.

- Caribbean Geospatial Development Initiative – CARIGEO

- Marine Atlas of the Network of Marine Protected Areas of the Gulf of Mexico (RedGolfo).

The CMA project funding ended in 2020 and CMA partners confirmed their commitment to use and maintain the platform, and agreed on a sustainability strategy to ensure continuity in the information delivery and to increase the amount and updating of the marine and coastal spatial data in the Atlas.

As planned, the CMA project came to an end. The financial support provided by the Government of Flanders (Kingdom of Belgium) play an instrumental role in the development of the CMA. This support jointly with technical support of the CMA partner countries and their agencies and the technical support and coordination of INVEMAR (Colombia) is one of the best examples of cooperation for capacity development. The CMA project allowed increased training opportunities, sharing of knowledge, strengthening regional capacities that benefit IOCARIBE Countries. CMA project leaves a significant capacity installed in terms of regional marine atlas, data and information repository and a set of indicators, all of these under standards and information policy established. Also, CMA derived a set of best practices related to Marine Spatial Data infrastructure in support to decision-makers, available to replicate at the national level.

INVEMAR (Colombia) will continue hosting the Atlas, as well as providing technical support of the platform to all users. In the first 2021 semester, an updated GeoNode training will be developed for those new users from partners and new initiatives/projects partners. CMA will also support the newly developed IOC Ocean Info Hub Project (OIH-Project) as well as will contribute to UN Ocean Science Decade in the Caribbean region.

NEW INITIATIVES WITHIN IOCARIBE-GOOS TO IMPROVE MEMBER STATES OCEAN OBSERVING, MONITORING AND FORECASTING CAPACITY. New Pilot Proposal

In response to the IOCARIBE XV.8 Recommendation, IOCARIBE and Partners Rutgers University, University of the Virgin Islands, and Texas A&M University, are developing a new proposal Transformative Ocean Observing for Hurricane Forecasting, Readiness, and Response in the Caribbean Tropical Storm Corridor (a pilot project on Improvement of Hurricane Observing Forecasting Capacity).

Project Objectives: Build supporting physical and social infrastructure and conduct a long-term, critical-region sampling program using Autonomous Ocean Gliders, High Frequency Radars (HFRs), and other existing and developing technologies to provide real-time information resulting in hurricane forecast improvement. Improved forecasts will support new generations of local storm surge / precipitation / wave and coastal impact models and guidance used to directly enhance resilience. The effort will:

- Strive for appropriate observation density, diversity, and utilization for a sustained, meaningful regional impact;
- Create a regionally distributed supporting infrastructure including operations, education, training, and workforce development;
- Engage a diverse and influential group of partners to convert forecasts to products to local action;
- Lead to a sustained, expanded, regional Ocean Observing System based on GOOS principles.

IOC OCEAN INFO HUB (OIH) AND THE LAC OCEAN INFO HUB

The Ocean InfoHub (OIH) Project aims to improve access to global oceans information, data and knowledge products for management and sustainable development. The OIH will link and anchor a network of regional and thematic nodes that will improve online access to, and synthesis of existing global, regional and national data, information and knowledge resources, including existing clearinghouse mechanisms. The project will not be establishing a new database, but will be supporting discovery and interoperability of existing information systems. The OIH Project is a three-year project funded by the Government of Flanders, Kingdom of Belgium, and implemented by the IODE Project Office of the IOC/UNESCO.

The project will benefit marine and coastal stakeholders across the globe, but its initial focus will be on responding to requests for data products and services from three regions: Africa, Latin America and the Caribbean, and the Pacific Small Island Developing States, to meet their unique user community (thematic and language) requirements. The initial priorities for the Project will be to develop communities of practice for the three pilot regions, as well as to formalize partnerships with other UN agencies and key international partners.

IOCARIBE is developing jointly with MS national Agencies and Institutions, the LAC Regional Node for the IOC Ocean Information Hub (LAC OceanInfo Hub) with the technical support of IODE. Latin-American and Caribbean OIH LAC Regional partners held a planning meeting on 29 November 2020 with main objective of developing the Ocean Info Hub Action Plan for the LAC Region.

THE CLME+ TRAINING AND CAPACITY DEVELOPMENT (TCD) PORTAL

The Caribbean & North Brazil Shelf Large Marine Ecosystems project's (CLME+) objective is to catalyze implementation of Strategic Action Programme (SAP) for the sustainable management of shared living marine resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems.

The CLME+ Training and Capacity Development (TCD) Portal was implemented through a two-year agreement between the Intergovernmental Oceanographic Commission – IOC of UNESCO and the Ghent University, including a technical development and a sustainability and maintenance plan. The Portal was launched on 15th December 2020. The aim of the CLME+ TCD Portal is to bridge the information gap between "those (marine practitioners) in search of training opportunities" and "those providing training and capacity building initiatives."

This way, the platform will help to enhance institutional and stakeholder capacity for sustainable and climate-resilient marine resources management in the wider Caribbean /CLME+ Region at regional, sub-regional, national and local levels, and thus, ultimately contributing to the long-term CLME+ Vision of a "healthy marine environment that supports the livelihoods and well-being of the Peoples from the region."

Expected core beneficiaries of the platform include - but are not limited to - professionals at Governmental Departments/Ministries in all countries from the wider Caribbean, at Inter-Governmental Organizations and Non-Governmental Organizations / Civil Society Organizations working on the marine environment.

THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT 2021-2030 WESTERN TROPICAL ATLANTIC REGIONAL (WTA) WORKSHOP 27-28 April 2020.

Regional Consultation to facilitate the dialogue and the discussion for experts and stakeholders to define the Western Tropical Atlantic Region (WAT) Scientific Priorities and how they will be reflected in the Global Process of the UN Decade.

IOCARIBE- Structural Mechanism to manage the complexity in the region; overall responsibility for planning and coordination of the UN Decade of Ocean Science for Sustainable Development (2021-2030) in the Western Tropical Atlantic region; and to catalyse actions, projects and programmes.

Establishment of a Regional Planning Group and Working Groups by Societal Outcomes and Capacity Development July 2020.

The WTA UN Ocean Decade regional workshop Steering Committee members, together with regional networks, are setting up informal stakeholders' platforms to advance the regional coordination and planning for the Decade. These structures will play a key role in implementing regional activities and action plans to support the development of programmes, projects and activities labeled as "Decade Actions."

The Western Tropical Atlantic Regional Planning Group (WTA RPG) was established in July 2020 to advance and coordinate strategic partnerships and actions for the Western Tropical Atlantic region, benefitting from the support of IOCARIBE as the official Secretariat of this group. In 2020, WTA IPG developed a framework of Grand Challenges and Actions around each societal outcomes of the Decade that will support the elaboration of a regional action plan and will organize a series of virtual workshops. A Regional Session for the Western Tropical Atlantic Region was held in November 2020 to include needs and priorities at regional level in terms of transforming knowledge systems, developing capacity building training and education with the purpose of co-designing a solution oriented regional contribution to the Decade's objectives. In 2021 a series of WTA Working Groups webinars is planned to co-design those transformative actions needed to reach the "Ocean We Want."

COMMUNICATIONS. NEW WEBSITE AND NEWSLETTER

A call to develop and implement a **new website for IOCARIBE**, making it a modern, safe and user-friendly navigation and management platform tool was launched in February 2021. Twenty-seven companies submitted their proposals and in consultation with IOC IT colleagues a short list of three companies was agreed. Presently, we are running a series of consultations with those three companies to assess their capacity and select the one that will carry out the contract,

A new **IOCARIBE Newsletter** is being designed with the support of US NOAA. It is recommended to publish the Newsletter quarterly and to link its production directly with the new Website.

IOCARIBE Budget for 2019-2021						
IOCARIBE XV Proposal						
#	Programme / Activity	TOTAL	RP	EXB	Unfunded	Source
1	UN Decade	50,000			50,000	
2	Ocean Acidification	200,000			200,000	
3	IODE				0	
4	ODINCARSA	60,000			60,000	
5	CMA 2	70,000		70,000	0	
6	CMA 3	800,000			800,000	
7	IBCCA	60,000			60,000	
8	IOCARIBE-GOOS	500,000			500,000	
9	IOCARIBE-GOOS (Cuba & USA)				0	
10	IOCARIBE-GOOS (Gliders Initiative)				0	
11	SARGASSUM & OIL SPILLS	200,000		15,000	185,000	
12	CIFDP-C (Add Country)	80,000			80,000	
13	HAB-ANCA	45,000			45,000	
14	WORLD OCEAN ASSESSM	25,000			25,000	
15	ICAM / MSP LA	10,000,000			10,000,000	
16	ICAM	200,000			200,000	
17	MSP	150,000			150,000	
18	CLME+	130,000		130,000	0	
19	OCEAN LITERACY	150,000			150,000	
20	IOCARIBE INT CONFERENCE	100,000			100,000	
21	OTGA				0	
22	CHM / TMT	120,000			120,000	
23	OBIS	40,000			40,000	
	TOTAL	12,570,000	0	215,000	12,355,000	

*Programmes in RED received in-kind support

REGULAR PROGRAMME 2020-2021	
Governance & Coordination	40,000
IOCARIBE Capacity Development	75,000
TOTAL	115,000