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2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

2021-2030

WESTERN TROPICAL ATLANTIC

TROPICAL AMERICAS A TRANSPARENT AND ACCESSIBLE OCEAN CO-DESIGN WORKSHOP

“A TRANSPARENT OCEAN WITH OPEN INFORMATION AND
TECHNOLOGIES ACCESS”

WTA - TECHNICAL WORKSHOPS SERIES

Report 2021 – 02



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WTA TECHNICAL WORKSHOPS SERIES

REPORT 2021 - 02

English only

This document presents the summary results of the technical workshop series convened in accordance with the Western Tropical Atlantic Action Plan for the UN Decade of Ocean Science for Sustainable Development 2021-2030 (The Ocean Decade), for the seven societal outcomes, held during the period of July-October 2021, in accordance with the Regional Western Tropical Atlantic Planning Group Action Plan. The results of this regional session will be consolidated as a discussion paper by the co-conveners of the regional session, which can contribute to the Western Tropical Atlantic Action Plan including the Eastern Tropical Pacific.

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Western Tropical Atlantic Technical Workshop Series Report 2021 – 02 as a contribution to the UN Decade of Ocean Science for Sustainable Development, Online meeting, 29 July 2021

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THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT 2021-2030 WESTERN TROPICAL ATLANTIC

Tropical Americas Transparent and Accessible Ocean Co-Design Workshop “A transparent Ocean with open information and technologies access”

WTA - TECHNICAL WORKSHOPS SERIES Report 2021 – 02

Hosted by IOC of UNESCO Sub commission for the Caribbean and Adjacent Regions- IOCARIBE as regional coordinating body for The Ocean Decade. Co-Organized with the World Meteorological Organization.

Virtual Meeting, July 29, 2021.

1. BACKGROUND

This document presents the summary results of the technical workshop series convened in accordance with the Western Tropical Atlantic Action Plan for the UN Decade of Ocean Science for Sustainable Development 2021-2030 (The Ocean Decade), for the seven societal outcomes, to be held during the period of July-September 2021, in accordance with the Regional Western Tropical Atlantic Planning Group Action Plan.

Workshop repository with presentations and documents:

<http://iocaribe.ioc-unesco.org/webinarseries/ataao>

A list of programs and initiatives that are relevant as per Annex 4. The full list of UN Endorsed Programmes (28) and Contributions (33) can be accessed at <https://oceandecade.com/resource/166/Results-of-the-first-Call-for-Decade-Actions-No-012020>.

2. INTRODUCTION AND CONTEXT

(EDGARD CABRERA, CO - CHAIR OF THE TRANSPARENT AND ACCESSIBLE OCEAN WORKING GROUP)

The UN Ocean Decade is to harness and stimulate innovative ocean research, from co- design to co- delivery, to achieve a safe ocean, as well as to contribute to the achievement of the 2030 Agenda for Sustainable Development. A regional workshop on the Western Tropical Atlantic, was held virtually on April 2021. A regional planning group was established, and seven working groups, associated to the Ocean Decade societal outcomes, are actively contributing to define a Regional Action Plan.

For the Working Group VI: A transparent and accessible ocean whereby all nations, stakeholders and citizens have access to ocean data and information, technologies and have the capacities to inform their decisions, the main challenge is to sustain the ocean observations through the Global Ocean Observing System, within the Earth System Approach, and build capacity for an information access system for data sharing and interoperability. Also, proper consideration to Operational Oceanography, and Oceanographic products provided to users, private companies, public users and stakeholders and citizens through adding-value chains (down streaming) that consider development of specific solutions, advanced visualization, usage of multi-channel technological platforms, specific models, and algorithms.

This virtual session of the UN Decade Ocean Tropical Americas Workshops series, will result in a short regional discussion paper that will include recommendation on the availability of open access to data, information, and new affordable open-source technologies, to integrate earth system/social sciences, and cross sectoral participation to share resources, mobilize constituencies for national policy and community decision-making processes, and reduce the asymmetry between the countries in the region, including the island states.

This could include the identification of priority issues and recommendations for the development of regional actions to develop and build capacity for an information access system for data sharing and interoperability, available to the public for specific products and services tailored to different stakeholder needs, and understandable for the general community.

These short regional discussions papers (in English and Spanish) will be prepared in close collaboration with the co-conveners of the regional session and contribute to the Western Tropical Atlantic Action Plan.

3. PARTICIPANTS

The workshop recorded attendance of 167 registered participants, coming from local, national, regional, and global Meteo-Ocean specialists, ocean scientists, transdisciplinary researchers, producers of ocean data, products and services, policy makers, UN partners, business and industry, government representatives, NGOs and other key stakeholders from the regions involved in national and regional ocean and marine related matters. Annex 1.

4. OUTCOMES AND FINDINGS

The aim of the workshop was to facilitate and contribute to identify opportunities, challenges, barriers and favourable conditions to support co-design, co-production and co-delivery, building-up a transparent ocean providing Marine data and information for All.

Main expected outcomes and findings are:

- Better understanding of the users of the observations and provide evidence for the impacts of ocean observation and the need to sustain the observation system.
- Better education as to why the ocean observing is useful to The Decade outcomes and SDGs and promote strong regional alliances.
- Open access to data, information, and technologies.
- Information access system for data sharing and interoperability and available to the public in 12- 24 months and some in real-time for specific products and services tailored to different stakeholder needs.
- Enhance Members States capacity on data and information management.
- Standardization and best practices for coordinated data collection, management, and
- Multidisciplinary partnerships to integrate earth system/social sciences, and cross-sectoral participation to mobilize constituencies for national policy and community decision-making processes.

As a result of the Tropical Americas workshops series a short regional discussion paper, with the recommendations and guidance for the enhancement and sustain a regional ocean observation system with an accessible Open access to data, information, and technologies, will be produced for adoption and endorsement through the Ocean Decade Governance bodies and mechanisms. The short regional discussion papers will be prepared in close collaboration with the co-conveners of the session and with the support of an IOC of UNESCO regional consultant. These short regional papers will be posted on The Decade website and will be used in the preparation of regional actions.

This report highlights priority issues and recommendations identified in the meeting for the development of regional actions as well multi-stakeholder participation.

The workshop was structured to:

- Explore a truly integrated global ocean observing system that delivers the essential information needed for our sustainable development, based on GOOS and associated UN Decade Programmes to lead the ocean observing community and create the partnerships to grow an integrated, responsive, and sustained and accelerate and ocean observation and data systems at the regional and national scales

- Explore a truly integrated information and data exchange system, seeking for *to better improve / enhance / sustain, the existing ocean observations, and information system in place for the region and globally.*
- Identify the main benefits, challenges and opportunities for the existing data management and information system arrangements for the relevant organizations (e.g. WMO, IOC of UNESCO – IODE)
- Discuss capacity development and resource needs, both in terms of academic outputs and in terms of formal and informal training activities for non-academic partners, including best practices and co-design.
- Complement the work being done by informal stakeholders' platforms, including those involved in developing decade actions.
- Inform ongoing reflections among stakeholders involved in existing regional partnerships.

5. PROGRAMME HIGHLIGHTS AND WAY FORWARD

The agenda for the meeting as per Annex 2. Three question polls were submitted to the consideration of the participants. The results of the answers as per Annex 3.

□ **Part 1. Welcome/Overview** by IOCARIBE to brief the participants on the technical administrative matters for the workshop, objectives, and **UN Ocean Decade Overview**

Dr. Elva Escobar (Mexico) acknowledged the organizers for the opportunity to deliver the talk and celebrated the regional initiative to hold the series of workshops. She gave an overview of the Ocean Decade. She reminded the audience how ocean health has deteriorated and transformative actions from all are required to revert the cycle of diversity loss to achieve the sustainable development goals. She described the steps in the preparatory phase that led to implement the Ocean Decade, she emphasized its mission and vision with transformative actions, equity, inclusion to strengthen knowledge and accelerate and ocean observation and data systems the delivery of outputs to needed at the regional and national scales. She referred to reports of the planning workshops that recognized the regional needs. She highlighted the main decisive actions of the last 12 months including the Decade Implementation Plan, the Call for Ocean Decade Programs and Contributions, the series of workshops for the co-design, co-delivery, the first set of sixty-plus officially endorsed Ocean Decade Action, the first International Ocean Decade Conference marks the Ocean Decade kick-off. She enforced the need of National Committees and exemplified with 3 of these in the region, explained the financing mechanisms options to explore by nations in the region. She mentioned that the Covid-19 pandemic is far from over, but oceans can be a way to unite the regional efforts to find solutions and concluded by inviting all to actively engage in the thematic Ocean Decade Laboratories participating in the core events and satellite activities.

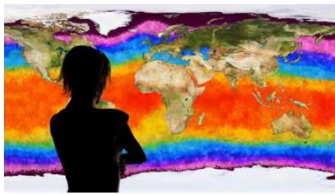
□ **Part 2 -Key Note on Ocean Observations and Information Systems.** Alvaro Scardilli (Argentina), directed a key talk about the Global Ocean Observing System – 2030 Strategy: GOOS today and GOOS at the heart of the Ocean Decade.

The [Global Ocean Observing System 2030 Strategy](#) identifies a vision for a truly integrated global ocean observing system that delivers the essential information needed for our sustainable development, safety, wellbeing and prosperity. We cannot achieve this vision alone. GOOS will lead the ocean observing community and create the partnerships to grow an integrated, responsive and sustained observing system. The Strategy identifies 11 objectives to deepen engagement and impact, improve system integration and delivery, and build for the future.

The Global Ocean Observing System (GOOS) took up the transformational challenge of the Decade and identified 3 key areas for action, where bridging gaps will have a significant impact on the Ocean Decade outcomes: connecting the open ocean to the coast, integrated system design, and connection from observing through to communities. With strong partnership three linked GOOS Ocean Decade programmes, all with a focus on transforming the observing system through integration, have been developed (Figure 1.):

- **Ocean Observing Co-Design (ObsCoDe)** – to integrate ocean observations and modelling, creating the process, infrastructure and tools for the co-design of a fit-for-purpose GOOS.
- **CoastPredict** - will transform the science of observing and predicting the Global Coastal Ocean, from river catchments, including urban scales, to the oceanic slope waters, and;
- **Observing Together** - supporting communities to bring needed observations and forecasts

GOOS Ocean Decade Programmes



Ocean Observing Co-Design

Creating the partnerships, process, and infrastructure to evolve ocean observing, co-designed with key stakeholders, and delivering the data we need for the future we want.



CoastPredict

Revolutionising Global Coastal Ocean observing and forecasting, co-designing the needed infrastructure and offering open and free access to coastal information.



Observing Together

Transforming ocean data access and availability by connecting ocean observers and the communities they serve, going further to make every observation count.

Picture 1. GOOS Ocean Decade Programmes. Source: GOOS web page <http://goosocean.org>

□ Part 3 – Panel on Information and Data Exchange.

The dialogue allowed the identification of needs and potential contributions of the diverse governance sectors.

Question to be considered in the Panel:

What transformative solutions does your stakeholder group require to help overcome to better improve / enhance / sustain, the existing ocean observations system in place for the region and globally, and how could they be implemented throughout the Ocean Decade (2021-2030)?

□ KEY TALK: -

Challenges of getting science into policy in the Wider Caribbean Region

Professor Robin Mahon, Professor Emeritus, Centre for Resource Management and Environmental Studies (CERMES)-University of the West Indies.

Some suggestions for addressing these problems are:

- Actors need to understand the networks of interactions (science-policy arenas) and actively develop them;
- Innovative regional mechanisms should focus more on processes for accessing science than on assembling inventories of information
- The potential value of boundary spanning activities in getting science into policy should be explicitly recognized by science producers and consumers such that their capacity is built and their roles are formalized and mainstreamed.

Further elaboration of this topic for the Wider Caribbean can be found in the open access article [‘Scoping Science-Policy Arenas for Regional Ocean Governance in the Wider Caribbean Region’](#)

□ INFORMATION EXCHANGE

WMO Data Policy – Principles and scope of the international exchange of Earth system data.
Evan Thompson, President WMO Region IV – Jamaica – **Rodney Martinez** – WMO Representative for Region IV

The unified data policy update will help the WMO community strengthen and better sustain monitoring and prediction of all Earth-system components, with massive socioeconomic benefits as a result. It will lead to additional exchange of all types of environmental data, which in turn will enable all WMO Members to deliver better, more accurate and timely weather- and climate-related services to their constituencies.

Following the decisions of the RA-IV 18 session (February 2021), the region highlights the weather-water-climate linkage in the Earth System Approach, fully coupled modelling, forecasts and services.

It is critical to strengthen integrated ocean observation and open data exchange to meet the greater need for quality early warnings, forecasts and services, for regional stakeholders. WMO is currently working in a Road Map to design a pilot on Coastal and Marine services for the Caribbean region and expect to have a Concept Document that serves as the basis to mobilize financial resources. This is expected to be finalized in the second-half of 2021.

International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission of UNESCO - **Data Access Policy Dr. Sergey Belov**. IODE Co-Chair, Russian Federation

Dr Belov, reviewed the situation of the "International Oceanographic Data and Information Exchange", its purpose is to enhance marine research, exploitation and development, by facilitating the exchange of oceanographic data and information between participating Member States, and by meeting the needs of users for data and information products.

The IODE system forms a worldwide service oriented network consisting of DNAs (Designated National Agencies), NODCs (National Oceanographic Data Centres), RNODCs (Responsible National Oceanographic Data Centres) and WDCs (World Data Centres – Oceanography). During the past 50 years, IOC Member States have established over 80 oceanographic data centres in as many countries. This network has been able to collect, control the quality of, and archive millions of ocean observations, and makes these available to Member States.

Key challenge in the region is:

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.

A request for consideration to the IODE is to consider the need of Training opportunities that go beyond response, but also including mitigation alternatives, were esteemed necessary to focus also on disaster prevention.

OceanOPS. Ocean Observations Integrated Metadata and Monitoring Tools. Victor Turpin. Technical Coordinator OceanOPS. Brest (France).

OceanOPS is the international hub and centre of excellence that provides vital services in monitoring, coordinating, and integrating data and metadata, across an expanding network of global oceanographic and marine meteorological observing communities. OceanOPS monitor and report on the status of the global ocean observing system and networks, use its central role to support efficient observing system operations, ensure the transmission and timely exchange of high-quality metadata, and to assist free and unrestricted data delivery to users across, operational services, climate, and ocean health.

OceanOPS is deeply engaged in the UN priority for a transparent and accessible ocean, promoting the free access to the met-ocean data, following the FAIR principles, as well, any existing tools and future developments of the OceanOPS system is open to users all over the world.

In this unique international context OceanOPS wants to build stronger collaboration between IOCARIBE-GOOS to enhance its role in the operational implementation of the GOOS, reduce the observational gaps identified in the region and engage in a long-term regional partnership.

Several pathways have been suggested during the conference to reinforce cooperation. The very first proposition is to establish dedicated contact points from IOCARIBE-GOOS to work with OceanOPS team to identify strength, gaps, and development opportunities in the region. This will facilitate continuing communication and encourage new initiatives.

The second proposal aimed to reduce the chronic observational gaps that have been identified in the Caribbean region. Reviewing the existing observing systems operated by IOCARIBE members that could be registered in the OceanOPS monitoring tool presented during the workshop is probably the first action to engage together. In addition, OceanOPS is regularly offering deployment opportunities to maintain the global array of floats and drifter. IOCARIBE-GOOS could easily benefit from these opportunities helping to fill the gaps in the Western tropical Atlantic region and beyond.

With a third of the global Ocean covered by EEZ, it is becoming critical to facilitate access to Exclusive Economic Zones for sub-surface measurements for operational applications like weather forecasting and safety of life at sea. IOCARIBE and OceanOPS could work together to address this issue, promoting the idea of a regional agreement between Members to ease deployment in their EEZ. Such agreement would strongly contribute to the implementation of the GOOS in the Caribbean and benefit to all members willing to use regional oceanographic data in the region.

❑ Part 4 Session on Regional and National Scenarios. Private Partnerships–

❑ Key Talk

Increasing Ocean Information in the Caribbean to Enhance Marine Governance – David A. Farrell, Principal Caribbean Institute for Meteorology & Hydrology Husbands, St. James, Barbados

Dr. Farrell highlighted that there is a strong regional need to improve marine ocean observation and prediction systems (meteorological, oceanography and quality/chemistry) in the Caribbean to improve management, decision-making and governance by:

- Significantly increasing in the number of *in-situ* observation and monitoring platforms required [deep sea and coastal buoys, coastal sea level stations, measurement of physical and chemical parameters].
- Capacity building activities in national and regional institutions.
- Cooperation, coordination and coherence of strategies and activities among partners.
- Enhancing prediction and forecasting platforms across weather and climate time scales.

A consultancy to explore the establishment of “A Regional Marine Forecast Support Centre” to serve the needs of the Member States of the Caribbean Meteorological Organisation was completed in 2020. The consultancy supported establishing such a regional Centre at the CIMH given the mandate of the organization, the existing resources within the organization and the marine products either existing or being developed within the organization.

❑ Lightning Talks –

The dialogue allowed the identification of needs and potential contributions of the diverse governance sectors, and discussion.

Question to be considered in the Panel:

What transformative ocean science solutions and actions have been proposed to improve the arrangements on data exchange (Met-Ocean-Other variables) and to facilitate an open access to the data and information for a Transparent and Accessible Ocean by 2030?

The presentations were arranged to flow from the regional to national scale programmes and projects, and consider a showcase on two examples of the private partnerships engagement.

REGIONAL ASPECTS

The Ocean Info Hub Project In The Latin America And Caribbean (LAC) Region: Progress And Future Perspectives. **Lucy Scott.** UNESCO/IOC Project Office for IODE (Belgium).

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 OIH will support the development of the Ocean Data and Information System (ODIS) architecture, which will provide an interoperability layer and supporting technology to allow existing and emerging ocean data and information systems, from any stakeholder, to interoperate with one another. This will enable and accelerate more effective development and dissemination of digital technology and sharing of ocean data, information, and knowledge. As such, ODIS will not be a new portal or centralised system, but will provide a collaborative solution to interlink distributed systems for common goals. Together with global project partners and partners in the three regions, a process of co-design will enable a number of global and regional nodes to test the proof of concept for the ODIS.

The OIH will first work with IOC-associated online resources - including OceanExpert, Aquadocs, the Ocean Best Practices System, the Ocean Biodiversity Information System (OBIS), EurOcean, Marinetraining.eu, EMODNET, and other sources in the IOC ODIS Catalogue of Sources (ODIScat). Based on feedback from the three pilot regions, the initial thematic focus of OIH will be on (i) Experts and institutions/organizations, (ii) Documents, (iii) Spatial data and maps, (iv) Research vessels, (v) Education and training opportunities, (vi) Projects.

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. Through these actions, the OIH will enable a digital ecosystem where users, from any entry point, can discover content and services that they require, while also having opportunities to become content creators themselves.

The CHM Portal Leonardo Arias. ADU-OBIS Marine and Coastal Research Institute (INVEMAR).

The Ocean InfoHub Project is working in three pilot regions, of which the Latin America and the Caribbean Region is one. Based on this, INVEMAR (Colombia) developed a pilot CHM for the Latin America and Caribbean region, in the context of the Caribbean Marine Atlas (CMA-II) project.

The pilot “Clearing-House Mechanism LAC” is a hybrid model, with a centralized portal that provides access to information sources identified by the users as most relevant (Databases on Training and Education resources, List of experts, Research vessels,..) and integrated from a number of existing web sources developed and maintained under IOC (OceanExpert, Ocean Teacher Global Academy, ODISCat and others). [LAC Demonstration Portal](#)

NATIONAL ASPECTS

NODC - USA –NOAA. Tim Boyer. NCEI (National Centers for Environmental Information) – Manager of the IODE World Ocean Database project

The World Ocean Database (WOD) is the largest publicly available, uniformly formatted and quality controlled oceanographic profile database. The WOD contains historic and recent ocean profile data, from Captain Cook's second voyage (1772) through recent autonomous profiling Argo floats. Variables include physical (temperature, salinity), chemical (oxygen, nutrients, carbon) and biological (chlorophyll, plankton) measured vs. depth from the surface to the ocean bottom. These data are of value for a historic perspective on ocean conditions, both globally and regionally, as well as for monitoring recent ocean conditions. The World Ocean Database Cloud (WODc) is a United Nations Decade of the Ocean contribution which aims to increase international participation in aggregating all possible historic and recent data into the WOD and to provide cloud access in a cloud optimized format enabling analysis and visualization tools to be utilized by research, decision making, modeling input, and environmental monitoring and information dissemination. Aggregating Caribbean regional data, historic and recent, with globally and especially open western Atlantic data can facilitate research and monitoring of ocean conditions in a timely manner through the WODc.

NODC – COLOMBIA. Ruby Ortiz. Manager of the Oceanographic Data Colombian Center – CECOLDO-DIMAR.)

As a contribution to the UN Decade of Ocean Sciences - A transparent and Accessible Ocean - with open information and technologies access, the NODC - Colombian Center for Oceanographic Data (CECOLDO), has been developing an investment project that seeks the implementation of a new software platform that will integrate the capabilities of the NODC, the Maritime, River and Coastal Spatial Data Infrastructure (IDE), and the Network for the Monitoring of Oceanographic Parameters and Marine Meteorology (RedMpomm), as well as the adaptation of good practices to guarantee its interoperability with other information systems in the region.

The “CECOLDO 2021-2021 data opening plan”, formulated based on a monitoring carried out on the type of users of the Data Center, a diagnosis of the status and quality of the available data, the

recurrence of variables more present in the data requests received by CECOLDO, as well as the institutional resources available through the Maritime Authority, to implement this plan, and thereby progressively make an open access to all the data. It is expected this new service will be available soon, to the national and international community and therefore will facilitate access to available data for academic and scientific purposes.

NODC - BRAZIL. Vladimir Costa Maluf. Superintendente de Informações Ambientais. CHM. IODE NC for data management – IODE NC for information management.

Banco Nacional de Dados Oceanográficos (BNDO), as the Brazilian NODC and as the national marine data and information manager for IODE, presented their current activity, especially in support of the national Marine Spatial Planning programme, as well as the next step which they are already working on, the implementation of Brazilian Marine Spatial Data Infrastructure (who's responsible is the Directorate of Hydrography and Navigation of the Brazilian Navy). They also presented their data request's statistics, and two recent scientific discoveries based on BNDO data, regarding the Potiguar Eddy (published in the Journal of Geophysical Research) and the Barreirinhas Eddies (published in Frontiers), both located in western tropical South Atlantic.

PRIVATE PARTNERSHIPS

The One Earth Mission: Partnership Approach to Making the Ocean in the Caribbean Healthier. Attila Tottosi. Founder/CEO at On Earth Mission Sarasota, Florida, USA.

OnEarth MissionX is a US-based NGO, based on fiscal sponsorship with the unique capability of delivering ocean protection, remediation, and sustainable projects through its affiliations and collaborations with product-based technology entities. The applied solution and technology is an organic and evidence-based, bridging science with industry.

OEMX is one of the founding members of the MesoAM SDG17 Coalition Program, which includes 25 NGOs, 100+ SDG14 Solution project proposals, benefiting 1 Billion people in 75 countries or island communities. The Coalition is a comprehensive collection of solutions that reinforce or accelerate desired outcome achievements. There is a comprehensive UNESCO Roadmap Action Plan created by subject matter experts, which includes a diverse set of overlapping Solution deployments for Decade of Ocean Action 30x30 achievements in the Caribbean.

The innovative technologies and solutions deployed in the Poseidon-Projects are proven. It is relatively easy to apply in any environment. We are seeking multiple SDG17 regional government connections, collaborations, and conditions to scale up comprehensive ecosystem pilot projects. Safe testing in controlled environment locations can be scaled up easily to solve a wide range of environmental problems simultaneously under scientific control.

Use of Met Ocean Data and Contribution to Marine Hazards and Weather Risk Assessment in the Gulf of Mexico and Wider Caribbean. Fabián Vázquez. PEMEX México.

PEMEX is a State (Government) Company created on 1938 to produce, transport, refine and sale the natural gas and oil from Mexico. More than 60% of the oil production in Mexico comes from offshore operations in the Gulf of Mexico. Offshore operations are extremely dependent not only on extreme weather but “weather”. Usage of Metocean data has been crucial to develop different emergency response plans, strategies and correct Risk Assesments on every operation.

The lack of metocean data in the Gulf of Mexico triggered the need for monitoring, then forecasting and validating forecast to improve PEMEX operational safety windows and beeing more productive. All information is required to get Federal approvals to drill and operate in the Gulf of Mexico, including, oil spills simulations and submarine structure designs.

There is a permanent need to develop tools for helping us understanding, forecasting and monitoring the atmosphere and ocean. PEMEX work in partnerships with Academic entities (i.e. UNAM), the Mexican Navy and the public sector (i.e. CONAGUA – MetService). “We can’t do it alone”.

Panel Discussion

Following the UN decade vision on the future for the ocean that we want, and the poll questions addressed to the participants all the items about data exchange (poll#2) are important, as well as those about services, products, and information (poll#3).

Countries in the region WTA has a different development, so to face / solve regional problems, we should rather consider the wider Caribbean region as a Large Marine Ecosystem level. It was highlighted as a priority action to increase the development of capacities, technology, and scientific knowledge transfer, on ocean related matters in the region. This, in consideration that developed countries have already developed technological tools for the subject of data management and information, best practices, etc., and there is a need to downscaling at the regional level to understand and apply all those existing tools. Therefore, an enhancement of the regional cooperation is needed.

There is a strong regional need to improve marine ocean observation and prediction systems (meteorological, oceanography and quality/chemistry) to improve management, decision-making and governance.

Capacity building activities in national and regional institutions and enhancement of the cooperation, coordination and coherence of strategies and activities among partners is required.

It is recommended to increase the number of courses offered by the Ocean Teacher Global Academy through the Regional centers at INVEMAR and ESPOL, as an important contribution. In exchange, it would be desirable for the countries in the region to feed the world databases i.e. NOAA – WODC and ODINCARSA. Also, to formalize a Regional Data Information Programme for the Tropical Americas within the Ocean Decade or strengthen the Caribbean Marine Atlas Group - *Caribbean Marine Atlas 2*, adding a monitoring component.

It was noted that NODCs with active participation in the region are the USA, Brazil, Colombia, and Mexico, therefore a need to reinforce the work of the other established NODCs and the establishment of new ones (i.e. Panama).

A review of the IOCARIBE regional inventory – Country data base - on the assessment of the capabilities, is important to identify the gaps and problems of the region related to the themes of the Decade of the Oceans and propose possible solutions aimed to achieve the ocean we want.

From the private sector, there is a permanent need on Met Ocean Data (i.e., offshore operations in the Gulf of Mexico – Pollution response Earth System). All efforts must be united and coordinated to understand the Ocean-Atmosphere system.

All the ocean community in the region to note developments on ocean related matters and to work together and foster coordination and cooperation with relevant international organizations, at a regional scale.

There is a need of national-scale collaboration among relevant research institutions, universities, industries, Oil and Gas producers etc.

❑ Part 5. Showcase UN Decade Programme -

Ocean Best Practices – OBPS. Jay Pearlman. IEEE – France

OceanPractices, an endorsed UN Ocean Decade Programme

The most effective way to have a transparent and accessible ocean is to have observations and then processing done with known methods. This allows scientists to understand what has been done to create information that we will act upon. Ideally, the same methods (best practices) will be used globally and this is a long-term goal. Near term, we should have regional agreements in the Western Tropical Atlantic to use common methods for our work. This would improve interoperability and trust in our data across the region. Best practices are also an important tool for training and capacity development.

The OceanPractices Decade Programme focuses on the use of best practices for ocean science and sustainable development. Its key objective is to foster the use of best practices in the Ocean Decade. This is done through:

- Supporting stakeholders in sharing & advancing methods
- Engaging and link diverse communities
- Focusing on interoperability
- Fostering Trust in information
- Transforming stakeholder alignment (converge methods)
- Facilitating training.

❑ Part 6. Summary and Call to Action

The Co-Chair (E. Cabrera) summarized the main ideas presented by panellists and digested the suggested next steps for the regional work on A Transparent and Accessible Ocean matters.

The technical workshop laid the foundation for the preparation of the next actions for a transparent and accessible ocean within the framework of the UN Decade.

There is a strong regional need to improve marine ocean observation and prediction systems (meteorological, oceanography and quality/chemistry) to improve management, decision-making and governance).

Capacity building activities in national and regional institutions and enhancement of the cooperation, coordination and coherence of strategies and activities among partners is required. Availability of ocean data is playing an increasingly key role in the improvement of critical weather and marine related services.

The UN decade of ocean science for sustainable development is a great chance to lift cooperation between the key agencies, programmes, and projects (i.e., WMO, IOC of UNESCO, IODE, OceanOPS, IOCARIBE- GOOS, OceanInfoHub, WOD, Caribbean Marine Atlas) to improve ocean data delivery in the Wider Caribbean region and beyond (Tropical Americas).

The Co-leads acknowledged the Secretariat of IOC UNESCO IOCARIBE recognizing the great work and support, and the appreciation for the interpretation support that was instrumental in maintaining the communication with the audience, moderators, and panelists.

Way Forward

The ATAOWG will be to prepare a proposal for a regional decade action focusing on with the enhancement and sustain a regional ocean observation system with an accessible Open access to data, information, and technologies, will be produced for adoption and endorsement through the Ocean Decade Governance bodies and mechanisms.

The proposal will be prepared in close collaboration with the ATAOWG and the other WTA working groups, and relevant stakeholders, form private, public, and academic sectors. This task will have the support of a regional consultant.

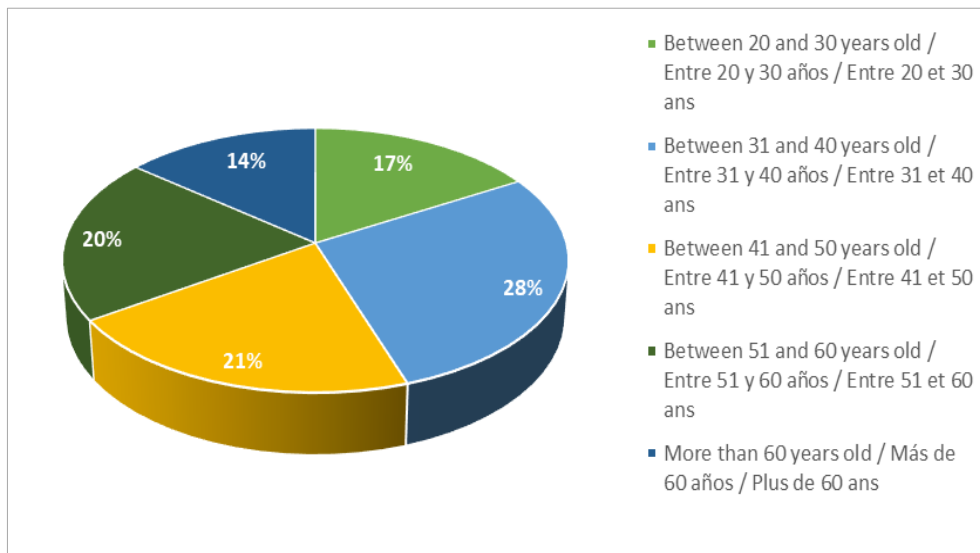
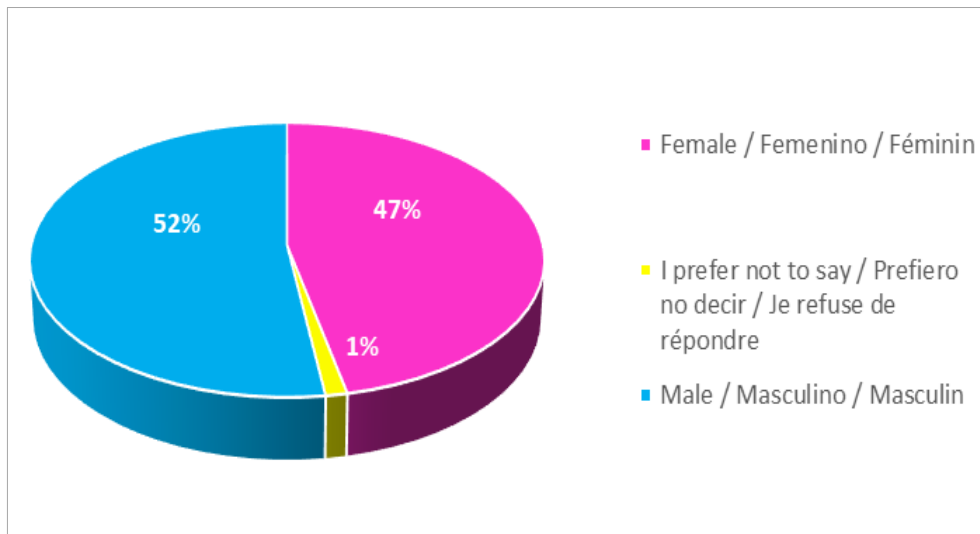
□ WTA ATAOWG Webinar Series Update (Annex 4)

The IOCARIBE Representative thanked the co-chairs for their summary of meeting highlights and next steps. He announced IOCARIBE's remaining Decade Workshops, as per Annex 4.

6. ANNEX 1

WORKSHOP PARTICIPANTS

The workshop recorded attendance of 167 registered participants, mostly from the Academia, with an equal gender, generation distribution and geographically diverse



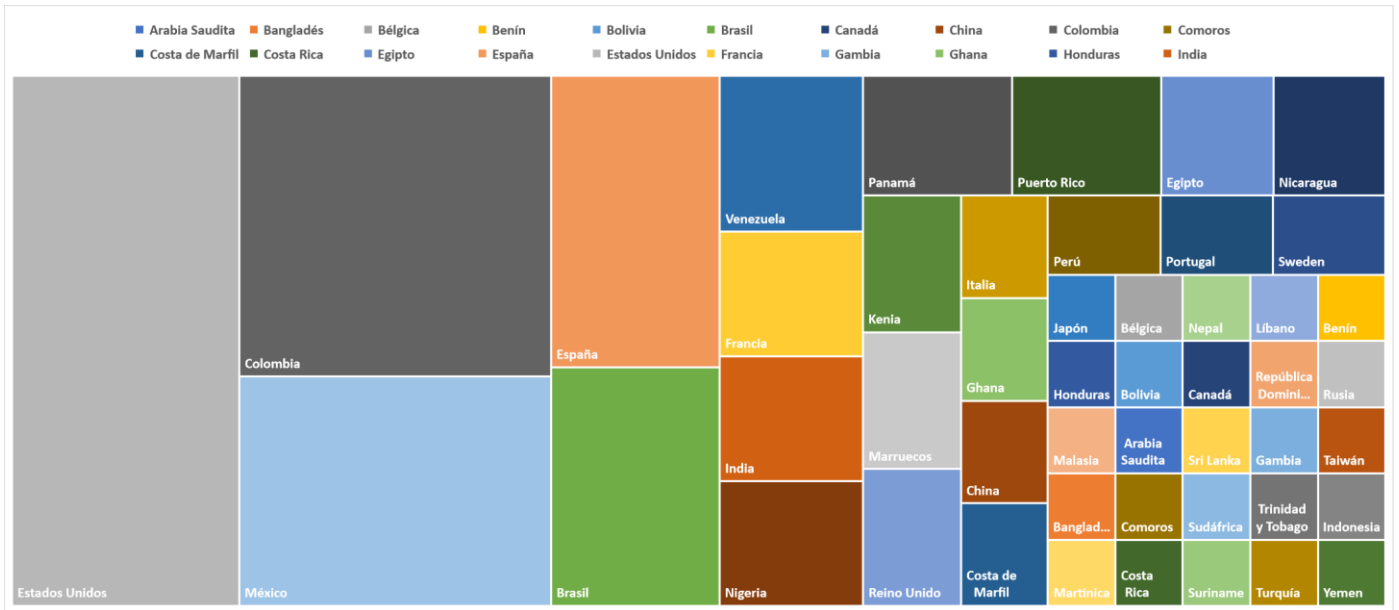


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2021
2030 United Nations Decade
of Ocean Science
for Sustainable Development



7. ANNEX 2

AGENDA

The UN Decade of Ocean Science for Sustainable Development 2021-2030:
Tropical Americas A Transparent and Accessible Ocean Co-Design Workshop

A Transparent Ocean with open information and technologies access

Building-up a transparent ocean providing Marine data and information for All

Thursday, July 29th at 9h00 Colombia Time (10h00 AST, 14h00 UTC).

Hosted by IOC of UNESCO Sub commission for the Caribbean and Adjacent Regions- IOCARIBE

Web: <http://iocaribe.ioc-unesco.org/webinarseries/ataao>

Register at: <http://iocaribe.ioc-unesco.org/webinarseries/ataao/regataao>

Simultaneous interpretation will be provided: English, French, and Spanish.

Programme

Cartagena Time	ITEM
9:00 – 9:20	Part 1 Welcome / Overview
09:00 – 09:03	Technical Briefing <u>Cesar Toro</u> . Head of IOC of UNESCO Sub commission for the Caribbean and Adjacent Regions- IOCARIBE
09:03 – 09:05	Poll #1 on Familiarity with the Ocean Decade
09:05 – 09:08	Welcome <u>Albert Martis</u> Co-Chair WTA ATAAOWG
09:08 – 09:10	Objectives of the Meeting Moderator: <u>Frederico Saraiva Nogueira</u> . IOC Officer.

09:10 – 09:18	<p>Overview of Ocean Decade <u>Elva Escobar</u>. Professor, University of Mexico, Member UN Decade Advisory Board</p> <p>Video UN Decade of Ocean Science for Sustainable Development</p>
09:18 – 09:40	<p style="text-align: center;">Part 2 Key Note on Ocean Observations and Information Systems</p>
09:18 – 09:33	<p>GOOS – 2030 Strategy: GOOS today and GOOS at the heart of the Ocean Decade <u>Alvaro Scardilli</u>. Head of Department. Servicio de Hidrografía Naval. Regional Expert Group III Argentina.</p>
09:33– 09:40	<p>Poll #2 and Q/A Moderator</p>
09:40 – 10:10	<p style="text-align: center;">Part 3 Panel on Information and Data Exchange</p> <p>Moderator: Edgard Cabrera. Co-Chair WTA ATAAOWG</p> <p>09:40- 09:42 Introduction to the Session.</p> <p><i>Question to be considered:</i></p> <p><i>What transformative solutions</i> does your stakeholder group require to help overcome to better improve / enhance / sustain, the existing ocean observations system in place for the region and globally; and how could they be implemented throughout the Ocean Decade (2021-2030)? Consider observation gaps, monitoring, warning dissemination and communication, resources and/or partnerships.</p> <p style="text-align: center;">KEY TALK</p> <p>09:42 – 09:47 Challenges of getting science into policy in the Wider Caribbean Region</p> <p><u>Professor Robin Mahon</u>. Professor Emeritus. Centre for Resource Management and Environmental Studies (CERMES)-University of the West Indies.</p> <p style="text-align: center;">INFORMATION EXCHANGE</p> <p>09:47 – 09:52 WMO Data Policy – Principles and scope of the international exchange of Earth system data.</p>

	<p><u>Evan Thompson.</u> President WMO Region IV - Jamaica</p>
09:52 – 09:57	<p>International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission of UNESCO - Data Access Policy</p> <p><u>Sergey Belov.</u> IODE Co-Chair, Russian Federation</p>
09:57 – 10:02	<p>OceanOPS. Ocean Observations Integrated Metadata And Monitoring Tools</p> <p><u>Victor Turpin.</u> Technical Coordinator OceanOPS. Brest (France).</p>
10:02 -10:10	<p>Discussion on Session – Round Table</p> <p>Moderator: Edgard Cabrera. Co-Chair WTA ATAAOWG</p>

10:10 – 11:00	<p style="text-align: center;">Part 4</p> <p style="text-align: center;">Session on Regional and National Scenarios. Private Partnerships</p> <p>Moderator: Carlos Rodolfo Torres Navarrete. UABC. Mexico. Rapporteur: Zuilma Mijangos. DGECyTM. Mexico.</p>
10:10 – 10:12	<p>Introduction to the Session.</p>
10:12 – 10:17	<p style="text-align: center;">KEY TALK</p> <p>Promoting Benefits of Meteorological and Hydrological Services for the Economic Well-Being of the CMO Countries.</p> <p><u>David A. Farrell.</u> Caribbean Institute for Meteorology and Hydrology –CIMH- Barbados. WMO Regional Climate Center– METOCEAN</p>
10:17 – 10:23	<p style="text-align: center;">LIGHTNING TALKS</p> <p><i>For each talk, the presenters will be asked (3 minutes each) to address, presentation or video recorded.</i></p> <p><i>What transformative ocean science solutions and actions have been proposed to improve the arrangements on data exchange (Met-Ocean-Other variables) and to facilitate an open access to the data and information for a Transparent and Accessible Ocean by 2030?</i></p>
10:17 – 10:23	<p style="text-align: center;">REGIONAL ORGANIZATIONS/AGENCIES/INSTITUTIONS/PROJECTS</p>

10:17 - 10:20	<p>The Ocean InfoHub Project In The Latin America And Caribbean (LAC) Region: Progress And Future Perspectives. <u>Lucy Scott</u>. IODE.</p>
10:20 – 10:23	<p>The CHM Portal <u>Leonardo Arias</u>. ADU-OBIS Marine and Coastal Research Institute (INVEMAR)</p>
10:23 – 10:25	Continuing session. Moderator
10:25 – 10:34	NATIONAL ORGANIZATIONS/AGENCIES AND INSTITUTIONS
10:25 – 10:28	<p>NODC - USA –NOAA <u>Tim Boyer</u>– World Data Service for Oceanography</p>
10:28 – 10:31	<p>NODC - COLOMBIA <u>Ruby Ortiz</u>. Manager of the Oceanographic Data Colombian Center – CECOLDO-. DIMAR.</p>
10:31 – 10:34	<p>NODC - BRAZIL <u>Vladimir Costa Maluf</u>. Superintendente de Informações Ambientais. CHM. IODE NC for data management – IODE NC for information management.</p>
10:34 – 10:35	Continuing session. Moderator
10:35 – 10:41	PRIVATE PARTNERSHIPS
10:35 – 10:38	<p>The One Earth Mission: Partnership Approach to Making the Ocean in the Caribbean Healthier <u>Attila Tottosi</u>. Founder/CEO at OnEarth MissionX Sarasota, Florida, USA.</p>
10:38 – 10:41	<p>PEMEX Offshore Operations. Use of Met Ocean Data and Contribution to Marine Hazards and Weather Risk Assessment in the Gulf of Mexico and Wider Caribbean. <u>Fabián Vázquez</u>. PEMEX México.</p>
10:41 -10:55	<p style="text-align: center;">Discussion on Session – Round Table Moderator: Carlos Rodolfo Torres Navarrete. UABC. Mexico.</p>

<p>10:55 – 11:00</p>	<p>Ocean Best Practices - OBPS Jay Pearlman. IEEE - France.</p> <p>Moderator: Frederico Saraiva Nogueira</p>
<p>11:00 – 11:15</p>	<p style="text-align: center;">Part 6</p>
<p>11:00 – 11:03</p>	<p style="text-align: center;">Closing Session</p> <p style="text-align: center;">Summary and Call to Action</p>
<p>11:00 – 11:03</p>	<p>Poll #3 – Moderator: Frederico Saraiva Nogueira</p>
<p>11:03 – 11:08</p>	<p>Summary and Call for Action. Edgard Cabrera. Co-Chair WTA ATAAOWG</p>
<p>11:08 – 11:11</p>	<p>ATAAOWG-Next Steps. Albert Martis Co-Chair WTA ATAAOWG</p>
<p>11:11 – 11:15</p>	<p>WTA WG Webinar Series Update. Cesar Toro Head of IOC of UNESCO Sub commission for the Caribbean and Adjacent Regions- IOCARIBE</p>

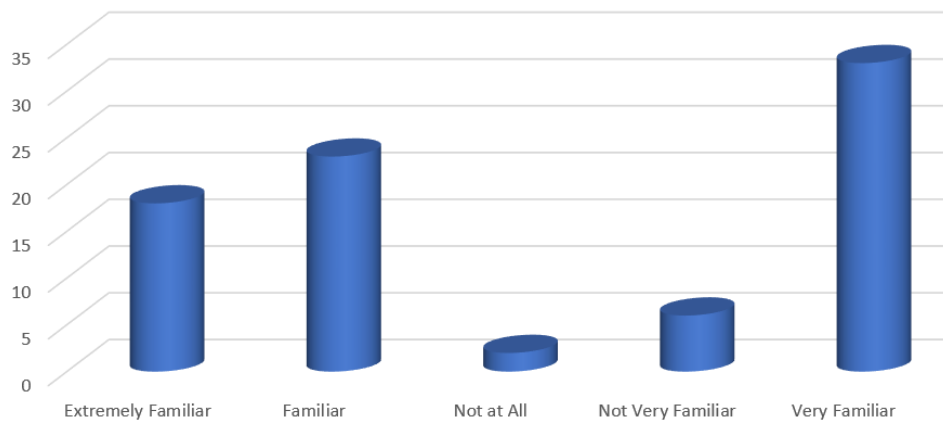
8. ANNEX 3

POLL QUESTIONS

POLL #1

How familiar are you with the UN Decade of Ocean Science for Sustainable Development?

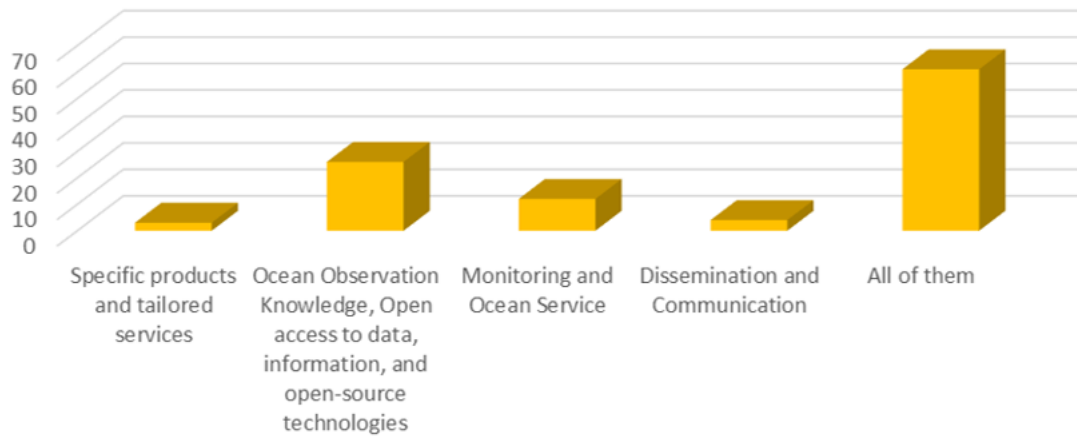
- a) Extremely Familiar
- b) Very Familiar
- c) Familiar
- d) Not Very Familiar
- e) Not at All



POLL #2

In your opinion, on which of the core elements of ocean observation and data exchange, the UN Decade of Ocean Science for Sustainable Development should focus its efforts in order to reduce the asymmetries between countries in the region and SIDS to obtain ocean information? [Select one]

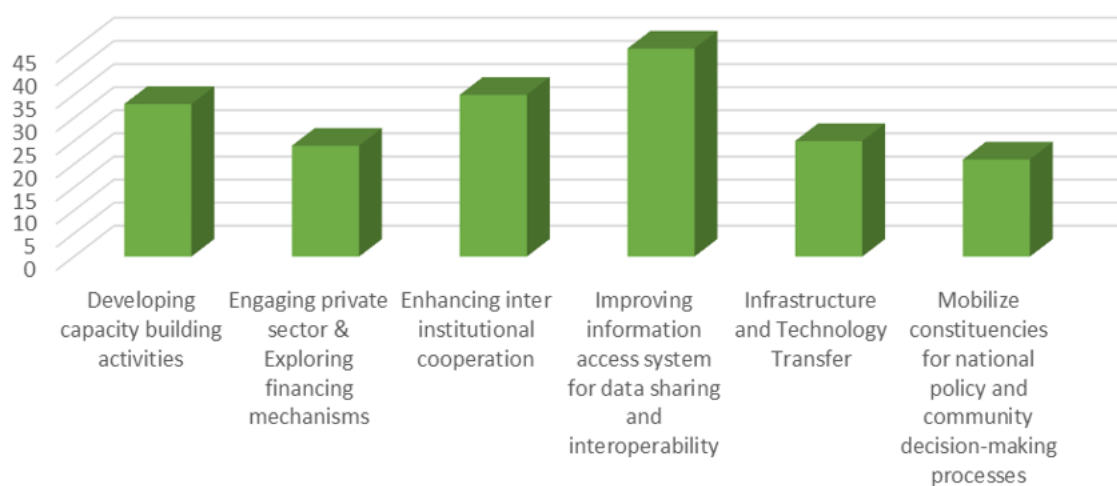
- a) Ocean Observation Knowledge, Open access to data, information, and open-source technologies
- b) Monitoring and Ocean Service
- c) Specific products and tailored services
- d) Dissemination and Communication
- e) All of them



POLL #3

In your opinion, to secure the feasibility of ocean information and services which are the three more important aspects that should be treated in a potential regional programme for the Western Tropical Atlantic Region? [Select Three]

- Improving information access system for data sharing and interoperability
- Developing capacity building activities
- Enhancing inter institutional cooperation
- Infrastructure and Technology Transfer
- Engaging private sector & Exploring financing mechanisms
- Mobilize constituencies for national policy and community decision-making processes



9. ANNEX 4

UN Endorsed Programmes and other Programmes of Interest to The Transparent and Accessible Ocean Working Group – For Cooperation And Interaction

The list of programs and initiatives that are relevant (the full list of UN Endorsed Programmes (28) and Contributions (33) can be accessed at <https://oceandecade.com/resource/166/Results-of-the-first-Call-for-Decade-Actions-No-012020>).

The following are a list of programs and initiatives that are relevant:

- UN Decade Programme Ocean Best Practices
- UN Decade Endorsed Program – Coast Predict - Observing and Predicting the Global Coastal Ocean
- UN Decade Endorsed Program, The Nippon Foundation-GEBCO Seabed 2030 Project, a component is MACHC, Meso-America and Caribbean Hydrographic Commission/IOCARIBE
- USA Decade Contribution - Committee on Earth Observation Satellite - Coastal Observation, Practices
- UNESCO/IOC Decade Tsunami Programme, more quickly detect, measure, forecast and warn for tsunamis, even from the near-instant they form, and to enhance the preparedness of coastal though the communities for tsunamis UNESCO/IOC Tsunami Ready Programme;'
- Coastal Flooding - Inundation Forecast Initiative in the Caribbean – RAIV, WMO WTA WG Accessible and Transparent
- Ocean Observing Co-Design: evolving ocean observing for a sustainable future
- Observing Together: Meeting Stakeholder Needs and Making Every Observation Count
- Ocean Practices for the Decade

The OIH will first work with IOC-associated online resources – including OceanExpert, OceanDocs/Aquadocs, the Ocean Best Practices System, the Ocean Biodiversity Information System (OBIS), the World Ocean Database (WOD) and Ocean Data Portal (ODP) – extended by partnerships with EurOcean, Marinetraining.eu, EMODNET, and other sources in the IOC ODIS Catalogue of Sources (ODIScat).

Based on feedback from the three pilot regions, the initial thematic focus of OIH will be on

- i. experts and institutions/organizations,
- ii. documents,
- iii. Spatial data and maps,
- iv. research vessels,
- v. education and training opportunities,
- vi. Projects.

10. ANNEX 5

WTA WG Webinar Series Update

WORKING GROUP	LEADER (S)	DATE/TIME (COT)	TITLE OF WEBINAR	UN PARTNER AGENCY
A safe ocean	Christa von Hillebrandt	8 th July, 2021; 14:00 – 16:00	“Breaking down the Silos for More Effective Early Hazard Warning Services”	United Nations Office for Disaster Risk Reduction UNDRR
A transparent and accessible ocean	Albert Martis Edgar Cabrera	29 th July, 2021 9:00 - 11:30	“A transparent Ocean with open information and technologies access”	World Meteorological Organization WMO
Capacity Development	Elva Escobar Ariel Troisi	19 th August 2021 10:00-12:00	“Deep sea Capacity Development needs in the WTA and the ETP for the Ocean we want”	International Seabed Authority ISA
A Clean Ocean	Lorna Inniss	31 de August 2021 9:00-11:00	"The Year 2031, A Clean Ocean - Steps to Success"	UN Environment Programme UNEP Cartagena Convention
A healthy and resilient ocean	Francisco Arias	9 th September, 2021 9:00-11:00	“Co-designing the path to sail the Decade of Ocean Science to reach the knowledge we need for the ocean we want in the WTA”	
A predicted ocean	Marck Oduber	23 rd September 2021 9:00-11:30	“Changing the vibe to predict smooth sailing in the WTA and ETP: A Theory of Change approach”	World Meteorological Organization WMO
A sustainably harvested and productive ocean	Alejandro Acosta	7 th October 2021 9:00 - 11:30	“Co-existing Opportunities and Synergies: Exploring Opportunities for a sustainably harvested and productive ocean in the WTA”	Food and Agricultural Organization FAO