Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies

IOC Committee on International Oceanographic Data and Information Exchange

Twenty-eighth Session

INVEMAR, Santa Marta, Colombia
12–14 March 2025

UNESCO

IOC/IODE-28/3
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Abstract

The IOC Committee on International Oceanographic Data and Information Exchange held its 28th session (IODE-28) at INVEMAR, Santa Marta, Colombia between 12 and 14 March 2025. The IODE session was attended on-site by 71 participants from 24 Member States and 2 organizations. In order to ensure wider participation, especially from global south member states, the meeting was also broadcast online with the option to send comments and questions by chat. The online broadcast was attended by 62 participants. During its 28th session, the Committee focused its attention mainly on the following key issues: (i) contribution of the IODE programme to the implementation of the IOC medium-term strategy (2022-2029); (ii) status of the IODE network and NODC health status; (iii) progress of the IODE programme components and programme activities; (iv) progress with joint activities with IOC programmes and other organizations; (v) outcome of the 3rd International Ocean Data Conference; (vi) progress of cooperation of IODE with the UN Ocean Decade; (vii) Advancing Ocean Data Sharing for Sustainable Development in areas within national jurisdiction; (viii) Development of the IOC Data Architecture; (ix) Renewal of the MOU between the Flanders Marine Institute and IOC regarding the IOC Project Office for IODE (2027-2031) and (x) work plan and budget for 2025–2026. The Committee adopted two decisions and four recommendations.

This report was prepared in English. The French, Spanish and Russian versions are available as machine translations

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** An executive Summary of this report is available in English, French, Russian and Spanish.*

Group photo IODE-28

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ANNEXES

1. OPENING

1. The Session was opened by the IODE Co-Chairs **Ms Lotta Fyrberg** and **Dr Paula Sierra Correa**. They welcomed the participants to the twenty-eighth Session of the IODE Committee. They apologized on behalf of Mr Peter Pissierssens who was unable to attend due to illness and informed the Committee that the role of IODE Technical Secretary for this session will be assumed by Mr Ward Appeltans.

2. In their opening address the Co-Chairs briefly summarized the outcome of the Third International Ocean Data Conference 2025 which was held just prior to the Committee session (10-11 March 2025) but referred to agenda item 3.7 for more detailed reporting.

3. In his opening words Mr Vidar Helgesen, IOC Executive Secretary said: “Dear friends and participants at IODE-28, thank you for taking part in this meeting and for your strong commitment and collaborative efforts. I would like to extend a special thanks to the IODE Co-Chairs for steering this important work. At the outset, I also want to express my gratitude to Peter Pissierssens for his lifelong dedication to the ocean and to the IOC. Unfortunately, Peter had to cancel his participation and is not present in Santa Marta. However, his imprint on IODE is profound and will remain long after his retirement in a few months. The ocean is facing an accelerating crisis. At the same time, ocean use is increasing, and much of this use has the potential to contribute to solutions. Since 1995, the world’s ocean economies have grown by 250%, far outpacing the global economy. This year alone, the marine biotech market will be 50% larger than it was just two years ago. Yet we face two major challenges: sustainability and knowledge. There is still so much we don’t know about the ocean, and much of what we do know is rapidly changing due to ocean warming. The fundamental mandate of the IOC is to generate and support the creation of knowledge—and, crucially, to ensure its application. Given the speed of change in both the ocean and how we use it, we must accelerate both knowledge generation and its application. We also need to strengthen the link between these two processes. During the UN Ocean Decade, we have embraced the motto: *The science we need for the ocean we want*, but science alone will not create the ocean we want. It depends on thousands of decisions—made by governments, industries, financial institutions, and even households—all of which should be informed by knowledge and data. The IOC, and IODE in particular, play a central role in enabling this process. The three core components of IODE: ODIS, OBIS, and the OTGA, are critical pillars of the IOC’s work. They must remain at the heart of efforts to bring data to decision-makers. The planned development of an integrated IOC data architecture, designed to streamline observations and data for user needs, is an essential step in this direction. As Peter retires, Joanna Post, who leads Ocean Observations, will serve as acting head in his place. This transition offers an opportunity to strengthen collaboration between observations and IODE, breaking down silos and ensuring smoother cooperation. This is crucial because we must consider the entire value chain—from data collection to decision-making. We must remain focused on end-user needs. This means supporting sustainable ocean planning and management, advancing the BBNJ process, and contributing to the Global Biodiversity Framework. IODE has a vital role to play at local, regional, and global levels. ODIS is key to making data accessible, OBIS serves as a foundation for biodiversity action, and the OTGA plays a critical role in capacity development—ensuring that knowledge is not just generated but effectively applied. I thank you once again for your dedication to these goals. Your commitment to IODE and its programmes is invaluable. I wish you great success in your work over the coming days”.

4. Ms Maria Claudia Velez Crismatt, Primera Secretaria GIT UNESCO, on behalf of the Executive Secretary of the Colombian National Commission for UNESCO, addressed the Committee: “Honourable representatives of the Member States of the Intergovernmental Oceanographic Commission of UNESCO, Distinguished Co-Chairs of the International Oceanographic Data and Information Exchange (IODE) Programme 2023-2025, Lotta Fyberg and Paula Sierra, Esteemed Representatives of the IODE Secretariat, National and local authorities of the city of Santa Marta, Captain Francisco Arias, Director of INVEMAR. On behalf of the

Executive Secretariat of the National Commission for Cooperation with UNESCO, I would like to extend the warmest welcome to you all to Colombia and to the city of Santa Marta, which is commemorating 500 years since its founding. For Colombia, as a bi-oceanic country, it is an honour to welcome you today to the Institute of Marine and Coastal Research, INVEMAR. Prior to this 28th session of the Committee on International Oceanographic Data and Information Exchange, the International Ocean Data Conference took place. With more than 40 presentations, we discussed topics such as biodiversity beyond national jurisdiction, data ecosystems, capacity building, and marine planning, among others. We had contributions from different parts of the world, including participants from Vietnam, France, Peru, Colombia, and regional organisations such as OSPAR and CMAR, who presented their programme advancements and research right here in this very room. The range of topics discussed was vast and as diverse as the ocean itself. However, a key takeaway from all of them was the importance of continuing to move forward and to build collectively. We all recognised the need to translate scientific language, findings, and knowledge into a form that reaches a broader audience, particularly decision-makers. Without science, there can be no sustainable development. We are at a crucial, irreversible moment where multiple challenges—climate change, pollution, and biodiversity loss—are interconnected. As scientists reminded us yesterday, science must guide political decisions to effectively tackle these challenges. Once again, welcome to Colombia and to INVEMAR, a source of national pride, to whom we extend our gratitude for opening its doors to us today. I wish you highly productive meetings that bring us closer to making the Ocean Decade vision a reality—one that you know better than I do: "The data we need for the ocean we want."

5. Mr Alejando Sanín Acevedo, Deputy Executive Secretary of the Colombian Ocean Commission, which acts as the national focal point to the IOC of UNESCO, addressed the Committee by saying: “It is an honour to be here. Vice-Chair for Latin America and the Caribbean, Juan Camilo Forero Hauzeur, who unfortunately could not attend this important meeting, and has entrusted me with conveying his warmest greetings and reaffirming his strong commitment to the mission we all share at IODE-28. Today, we stand at a critical juncture. The ocean, covering more than 70% of our planet, is vital to climate regulation, biodiversity, and global economies. Yet much of it remains unexplored and poorly understood. Now more than ever, the need for accurate, accessible, and up-to-date data is pressing. In this context, IODE plays a pivotal role in supporting decision-making for the protection and sustainable management of the ocean. Through collaboration among scientists, governments, and international organisations, we can strengthen the work of this Committee, ensuring more robust and accessible ocean data. These data are essential for forecasting future scenarios, reducing ocean-related risks, and enhancing the resilience of our coastal communities. I sincerely thank you for your participation in this event and encourage all of you to collaborate in implementing the decisions and recommendations that will emerge from our discussions. I hope that over the next three days, our deliberations will be productive, leading to tangible progress and bringing us closer to achieving our shared goals.”

2. ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

6. The Committee was invited by the Technical Secretary, **Mr Ward Appeltans**, to review and adopt the provisional agenda (Document IOC/IODE-28/1 prov.) available from the web site on https://oceanexpert.org/event/4258.

7. The Committee was requested to propose any new agenda items or issues for discussion either under the related Agenda Item or under Agenda Item 9 (Any other business).

8. It was requested to add agenda item:

- 6.2.5 “Advancing Ocean Data Sharing for Sustainable Development in areas within national jurisdiction”,
- 6.2.6 “IODE Rapid Response Mechanism for Emerging Issues”,

- Decision IODE-28/3.4.1.2 “Restructuring the ODIS Programme Activities”,
- 7.3.3 Succession of the head of the IODE Programme and IODE head of office.

9. **The Committee adopted** the agenda.

2.2 DESIGNATION OF A RAPPORTEUR

10. Mr Appeltans invited the Committee to elect a Rapporteur for the Session. It was recalled that for the past four sessions the Secretariat was tasked to report on the meeting and that no rapporteur was used.

11. Mr Appeltans explained that online participants can comment via chat, but someone in the room needs to verbally raise it.

12. **The Committee**, considering the limited size of most delegations, **decided not to designate a Rapporteur**, and **tasked** the Secretariat and Co-Chairs with the reporting of the Meeting.

2.3 SESSION TIMETABLE AND DOCUMENTATION

13. **Mr Appeltans** informed the Committee that plenary meetings would be held on Wednesday 12 March and Thursday 13 March, starting at 0930 until 1100 followed by a 30 min. break and then between 1130 and 1300. The afternoon session would start 1430 until 1600 followed by a 30 min. break and then continue until 1800. On Friday 14 March it was planned to complete the Session at 1300.

14. The IODE Technical Secretary requested the Committee to note that all working documents were made available only as on-line documents. He then reviewed the arrangements for the Session and presented the List of Documents available online through the IODE-28 web pages. He noted that the main working document for the Session would be the Action Paper, **Document IOC/IODE-28/2**.

15. He reminded the Committee that this Session had only 2 days to deal with the substance of the meeting while the morning of the third day would be used to formally adopt the decisions and recommendations. Accordingly, there would be no time for extensive introductions of agenda items and participants were urged to carefully read the Action Paper and working documents in preparation for the Session.

16. Most draft Recommendations and draft Decisions were included in the Action Paper and all of them would be briefly reviewed during the concerned agenda item for final adoption during the final day of the Session.

17. **Mr Appeltans** invited the Committee to review and adopt the Timetable (Document IOC/IODE-28/1 Add. Prov.)

18. **The Committee adopted** the timetable for the Session

2.4 ESTABLISHMENT OF SESSIONAL WORKING GROUPS

19. The Technical Secretary, **Mr Ward Appeltans**, informed the Committee that sessional working groups could be established to deal with specific issues that cannot be discussed at length during the plenary.

20. The Technical Secretary reminded the Committee that participants had been invited (by email) to identify the need for additional sessional working groups by email, prior to the Session.

21. He reminded the Committee that each Sessional Working Group should nominate a Chair who will report back to the Committee at the time the relevant agenda item is discussed in plenary. In exceptional circumstances the Committee may decide to re-arrange the timetable to accommodate a sessional working group.

22. Meetings of Sessional Working Groups were held on Wednesday and Thursday during lunch time.

23. The Committee established the following sessional working groups:

- Sessional working group on work plan and budget.
- Sessional working group on the IODE Contribution to the UN Ocean Decade: Roadmap for the Decade Digital Ocean Ecosystem.
- Sessional working group to draft the terms of reference for an IODE rapid response taskforce on emerging issues.

2.5 PRACTICAL ARRANGEMENTS FOR THE SESSION

24. The **Local representative** informed the Committee on rooms to be used for the sessional working groups as well as on practical arrangements for the Session.

3. REPORTING ON THE PAST INTER-SESSIONAL PERIOD (2023-2024)

3.1 PROGRESS REPORT ON THE IODE-27 WORK PLAN

25. This agenda item was introduced by **Mr Ward Appeltans**. He recalled that the IODE Management Group, during their meeting between 5-7 February 2024 (held at the IOC Project Office for IODE, Ostend, Belgium) had reviewed progress of the implementation of the IODE-27 work plan, decisions, and recommendations since IODE-27 (March 2023), but had also revised the work plan and budget for 2024. This was necessary due to the decision taken by UNESCO to substantially increase the IOC Regular Programme budget in general, and the IODE allocation in particular. The report of the 5-7 February 2024 IODE Management Group meeting was available as https://oceanexpert.org/document/33860

26. The updated action sheet was available from https://iode.org/about/workplan/

27. He listed the actions that were not implemented or not completed fully:

- *The Committee stressed the importance of hosting an AIU and urged marine libraries and information centres that have not yet established an AIU to do so to ensure their ocean information is shared globally and that their national ocean scientists have easy access to the global ocean information commons.*
- *37 The Committee invited accredited NODCs, ADUs and AIUs to provide assistance and mentoring services to other NODCs, ADUs and AIUs that wish to apply for accreditation.*
- *54 Invited Secretariats of RSBs to collaborate in ensuring continued communication and participation with IODE after staff changes at NODCs, ADUs or AIUs.*
- *82 The Committee instructed all IODE projects and invited Member States to contribute research and informational documents to AquaDocs*
- *124 The Committee urged the IODE community to further document their methodologies and best practices and share them in the Ocean Best Practices System*
- *151 The Committee encouraged that IODE activities should be included in the work plans of the IOC Regional Subsidiary Bodies (RSBs) through active participation of IODE national coordinators (data management and information management), NODCs,*

ADUs and AIUs in meetings of the RSBs, and requested the IODE Secretariat to contact the regional IOC offices to ensure inclusion of data/information in the agenda of RSB meetings

- *The Management Group called on RSBs to involve IODE through invitation to the RSB meetings as well as regular discussions on D&I needs and active involvement in RSBs and IODE activities.*
- *159 The Committee instructed the IODE Management Group to (i) further clarify and finetune the naming definitions; (ii) propose the designation of all other IODE activities; and (iii) propose procedures to guide applications for new components, activities and projects, and submit these to the 28th Session of the IODE Committee in 2025*
- *164 The Committee approved the "Rules of Procedure for IODE Programme Components, Programme Activities or Projects" and instructed all projects to adopt these in their management structure by the next meeting of the IODE Management Group (December 2023/January 2024)*
- *187 The Committee encouraged Member States, NODCs and ADUs to support the development of GO2DAT financially and in-kind*
- *208 The Committee noted the concerns expressed by the WESTPAC Secretariat and recommended that discussions should be held between the WESTPAC Member States, NODCs, ADUs and AIUs in that region, to identify needs and possible supporting measures*
- *216 The Committee invited IODE NODCs, ADUs and AIUs to report (as part of the reporting in preparation for IODE Committee meetings) on projects, programmes and other initiatives in which they are involved and relevant to IODE*
- *220 The Committee strongly recommended NODCs and ADUs in Europe to consider involving IOC/IODE as a partner in future EU project proposals*
- *238 The Committee instructed the IODE Management Group to prepare a proposal on the way forward to take the recommendations from IODC1 and IODC2 into consideration in the work plan of IODE during the next inter-sessional period (April 2023 – March 2025) as well as in the preparations for IODE-XXVIII*
- *267 The Committee encouraged NODCs/ADUs/AIUs to explore ways and opportunities to streamline their CD activities utilizing the Ocean CD-Hub*
- *The Management Group strongly encouraged NODCs, ADUs and AIUs to continue exploring the Ocean CD-Hub in streamlining their CD activities and contact the CD Secretariat for any inquiries*
- *295 The Committee urged IODE NODCs, ADUs and AIUs to also submit projects, preferably as IODE actions or including IODE as a "partner" in projects*
- *297 The Committee requested the DCU to keep the IODE Secretariat updated on any funding opportunities for the submitted Decade Actions and instructed the IODE Secretariat to update the IODE Management Group and IODE Committee on progress in this regard*
- *300 The Committee instructed the "IODE Intersessional Working Group (IWG) to identify the IODE contribution to the UN Decade of Ocean Science for Sustainable Development (2021-2030)" to focus its work on elements 2 and 3 of its terms of reference*
- *307 The Committee instructed the IODE Co-Chairs to contact the IOC Executive Secretary and DCU management to inform them about the potential benefits of OceanExpert to the Ocean Decade and extend the offer again*
- *338 The Committee called on Member States to participate in the Ocean Data and Information System (ODIS), the Ocean InfoHub Project (OIH) and OceanData-2030 to*

increase the visibility of their data and information holdings to the world, and to enable improved and more efficient access to global Ocean data and information

- *354 The Committee called on Member States, philanthropic organizations or private companies to consider seconding, either at the IOC Project Office for IODE, in Ostend, Belgium or in-kind (working from their usual place of work) in order to strengthen the IODE Secretariat*
- *360 The Committee strongly urged IOC Member States to follow the Government of Flanders (Kingdom of Belgium) example and establish structural funding agreements to support IODE.*
- *361 The Committee called on its members and parent institutions to involve IODE in any project proposal that includes data or information management elements*
- *367 The Committee invited IOC regional offices to inform the IODE Secretariat on relevant events in their region*
- *368 The Committee recommended to the Ocean Decade Strategic Communication Group, to promote the importance of data and information inviting IODE and to join with the Ocean Decade events, among others, in which the Ocean Science community participates*
- *372 The Committee adopted the work plan and budget for the next inter-sessional period and invited Member States to provide additional support to IODE*
- *376 The Committee instructed the Secretariat to send out a Circular Letter to invite additional members of the Inter-sessional working group on the review of IODE structure and working methods*

28. Mr Appeltans concluded that most IODE-27 Action Sheet items had been completed during the inter-sessional period and referred discussions on actions that had not been completed to the relevant agenda items.

29. **The Committee noted with satisfaction** the level of completion of the IODE-27 action sheet.

30. **The Committee instructed** the Management Group to review the list of uncompleted action items and decide on whether these should be included in the action sheet for the next inter-sessional period.

IODE-27 Decisions

Decision IODE-27/1	Underway Sea Surface Salinity Data Archiving Project (GOSUD): **see agenda item 3.4.2.3**
Decision IODE-27/9.1	Establishment of an Inter-Sessional Working Group on the Review of IODE Structure and Working Methods: **see agenda item 3.4.5**

IODE-27 Recommendations

Recommendation IODE-27.6.2	The IOC Strategic Plan for Ocean Data and Information Management (2023-2029): **endorsed by IOC-32** (Decision A-32/3.4.2) – Published as IOC Manuals and Guides No. 92
Recommendation IODE-27.6.4	IOC Data Policy and Terms of Use (2023): **adopted by IOC-32** (Decision A-32/4.4) – Available from the IODE web site on https://iode.org/resources/ioc-data-policy-and-terms-of-use-2023/
Recommendation IODE-27.8.4	IODE Work Plan and Budget 2023-2024: **endorsed by IOC-32** (Decision A-32/3.4.2)

31. **The Committee noted with satisfaction** the progress with implementation of the IODE-27 decisions and recommendations.

32. 3.1.1 Outcome of IOC-32

33. This Agenda was introduced by **Ms Lotta Fyrberg,** IODE Co-Chair. She informed the Committee that she and Dr Sierra Correa had reported about the 27th Session of the IODE Committee to the 32nd Session of the IOC Assembly in June 2023.

34. The Assembly adopted Decision A-32/3.4.2 (International Oceanographic Data and Information Exchange) and Decision A-32/4.4 (IOC Data Policy and Terms of Use (2023).

IOC Decision A-32/3.4.2

International Oceanographic Data and Information Exchange

The Assembly,

I – 27th Session of IODE, 22–23 March 2023

Having examined the Executive Summary Report of the 27th session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XXVII, 22–23 March 2023) (IOC/IODE-XXVII/3s),

Endorses the report of the 27th session of the IOC Committee on International Oceanographic Data and Information Exchange including the recommendations and workplan for 2023–2024 contained therein;

Strongly encourages Member States to establish IODE National Oceanographic Data Centres (NODCs), Associate Data Units (ADUs) or Associate Information Units (AIUs);

Notes that the regular budget for these activities will be identified as part of the overall Resolution on Governance, Programming and Budgeting matters of the Commission;

II – The IOC Strategic Plan for Ocean Data and Information Management (2023–2029)

Having examined the proposal contained in document IOC/A-32/3.4.2.Doc(1),

Recalling Decision IOC-XXIX/6.2.2 which adopted the IOC Strategic Plan for Oceanographic Data and Information Management (2017–2021) and also agreed that the Plan should be regularly reviewed and revised by the IODE Committee,

Recalling further Decision IODE-XXVI.6.3 (Establishment of an inter-sessional working group to revise the IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021)),

Recognizing that IODE has developed a global network of National Oceanographic Data Centres, Associate Data Units, Associate Information Units and related networks, representing a considerable pool of expertise in data and information management and sharing, and that many IOC Member States have developed distributed networks of data management facilities involving IODE, as well as other centres, to deal with a wide variety of ocean observations,

Considering that the vision of the IOC Strategic Plan for Ocean Data and Information Management (2023–2029) is to achieve a comprehensive and integrated ocean data and information system, serving the broad and diverse needs of IOC Member States, for management, policy-making and scientific use,

Considering further that the objectives of the IOC Strategic Plan for Ocean Data and Information Management for 2023-2029 are to deliver:

(i) interoperable, quality-controlled data on a diverse range of variables: (i) generated according to scientifically and operationally sound methods; and (ii) persistently archived in well-documented, globally applicable standards and formats;

(ii) timely dissemination of data on a diverse range of variables (generated from observations and model outputs) both in real-time and delayed modes depending on the needs of user groups and their technical capabilities ("on demand" as well as automatically scheduled); and

(iii) easy discovery and access to data and information about a diverse range of variables and derived products (including forecasts, alerts and warnings) in a way that is user friendly for a wide variety of users.

Endorses the IOC Strategic Plan for Ocean Data and Information Management (2023-2029) as given in document IOC/A-32/3.4.2.Doc(1),

Agrees that the Plan should be:

(i) published and distributed widely and used as a basic data strategy throughout the programmes and projects of the IOC, and

(ii) regularly reviewed and revised by the IODE Committee, in close consultation with all IOC programmes

IOC Decision A-32/4.4

IOC Data Policy and Terms of Use (2023)

The Assembly,

Recalling that the IOC Oceanographic Data Exchange Policy was published in 2003 (IOC Resolution XXII-6, 2003) and since then has only had one minor change: Clause 5 revised in 2019 by Decision IOC-XXX/7.2.1(II) of the Assembly at its 30th session, Paris, 26 June–4 July 2019,

Recognizing that:

(i) the timely and unrestricted international exchange of oceanographic data is essential for the efficient acquisition, integration and use of ocean observations gathered by the countries of the world for a wide variety of purposes including the prediction of weather and climate, the operational forecasting of the marine environment, the preservation of life, the mitigation of human-induced changes in the marine and coastal environment, as well as for the advancement of scientific understanding that makes this possible,

(ii) the global digital data, information, and knowledge ecosystem has radically changed since 2003,

(iii) rapidly advancing technologies have altered the Data Stewardship paradigm,

(iv) there is a need to improve interoperability and align the IOC data policy with those at national, regional, and international levels,

(v) more and more Public-Private Partnerships are being established. To allow the best use of the data in this context as well as in the context of using data in journals from private publishers, the IOC data policy should provide clear guidance for commercial use of data,

Noting that partner and sister organizations are changing their data policies, which can serve as a model for updating the IOC data policy,

Noting also that principles of data sharing and licensing are becoming globally recognized and adopted, e.g., FAIR Principles and Creative Commons licences,

Decides to close the IOC Intersessional Working Group on the Revision of the IOC Oceanographic Data Exchange Policy (2003, 2019) (IWG-DATAPOLICY);

Adopts the IOC Data Policy and Terms of Use (2023) as detailed in Annex to this decision;

Decides to develop guidelines for the development of detailed data and metadata sharing guidelines by all IOC programmes and projects.

Annex to Dec. A-32/4.4

IOC Data Policy and Terms of Use (2023)

Section 1. Preamble

The timely, open and unrestricted international sharing, in both real-time and delayed mode of ocean metadata, data and products is essential for a wide variety of purposes and benefits including scientific research, innovation and decision making, the prediction of weather and climate, the operational forecasting of the marine environment, the preservation of life, economic welfare, safety and security of society, the mitigation of human-induced changes in the marine and coastal environment, as well as for the advancement of scientific understanding that makes this possible. Innovation of specialised products can be stimulated and encouraged by timely, open and unrestricted access to metadata and data. Metadata, data and products should be accessible, interoperable and openly shared with minimum delay and minimum restrictions.

Section 2. Purpose

The purpose of this data policy is to outline the requirements with respect to sharing, access, preservation, and attribution to facilitate the broad use and reuse of metadata, data and products.

Section 3. FAIR & CARE principles

To support knowledge discovery and innovation both by humans and machines and to acknowledge indigenous data governance, data should meet the FAIR Guiding Principles (Findable, Accessible, Interoperable and Reusable)[1] and In the case of indigenous data and information, data should meet the CARE principles (Collective Benefit, Authority to Control, Responsibility, Ethics)[2] to the greatest extent practicable.

Section 4. Conditions of use

Data should be licensed (respecting Section 8) under a minimally restrictive and voluntary common-use licence[3] that grants permission, ensures proper attribution (for example, citable using a persistent identifier) and allows others to copy, distribute and make use of the data.

Section 5. Data Repositories and the IOC ocean data and information system (ODIS)

Data should be quality controlled (using community adopted and documented best practices or standards), accompanied by complete metadata and stored in an openly discoverable and accessible long-term data repository and made available through standards-based data services. Member States shall encourage convergence and interoperability and, where possible, use IODE data centres (National Oceanographic Data Centres or Associate Data Units) or other IOC programme related data centres that share metadata and data using the IOC Ocean Data and Information System (ODIS). ODIS is an interoperability layer and supporting technology, to allow existing and emerging ocean data and information systems to interoperate with one another.

Section 6: Secure long-term data archives

To support long-term and secure archival, data and associated metadata should be submitted, to the best practicable degree, to IODE's World Ocean Database (WOD), the Ocean Biodiversity Information System (OBIS), Global Sea Level Observing System (GLOSS), other IOC related global data archives, and data centres linked to the World Data System (WDS), their successors or other global data archives.

Section 7. Access restrictions

Data and associated metadata should be made available with minimal restrictions on use unless there are valid reasons to restrict access. Legitimate reasons to restrict access to, and reuse of, data include, inter *alia*, privacy and confidentiality, protection of species, populations or habitats of concern, and national security.

Section 8. Data sharing policies of Member States

This Policy acknowledges the right of Member States and data owners to determine the terms of metadata, data and products sharing in a manner consistent with national jurisdictions, international conventions, and treaties, where applicable.

Section 9. Data and metadata sharing guidelines

IOC programmes, projects as well as other communities of practice should develop and/or apply, where applicable, detailed metadata, data and products sharing guidelines that are consistent with this IOC Data Policy and Terms of Use.

Section 10. Definitions

'Data' is a set of values, symbols or signs (recorded on any type of medium) that represent one or more properties of an entity[4].
'Metadata' is 'data about data' describing the content, quality, condition, and other characteristics of data that allows their inventory, discovery, evaluation or use.
'Timely' in this context means the distribution of data and/or products, sufficiently rapidly to be of value for a given application.
'**Openly**' means data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike.
'**Product'** means a value-added enhancement of data applied to a particular use.

[1] Wilkinson, M., Dumontier, M., Aalbersberg, I. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* **3,** 160018 (2016). https://doi.org/10.1038/sdata.2016.18

[2] CARE Principles for Indigenous Data Governance. https://www.gida-global.org/care

[3] For example: the Creative Commons family of licences https://creativecommons.org/about/cclicenses/

[4] Ocean Decade Implementation Plan: link needs to be corrected

3.2 IODE CONTRIBUTION TO THE IMPLEMENTATION OF THE IOC MEDIUM-TERM STRATEGY 2022-2029

35. This agenda item was introduced by **Ms Lotta Fyrberg.** She recalled that the IOC Assembly had adopted the Medium-Term Strategy for 2022-2029 at its 21st Session in 2021 through IOC Resolution A-31/2 and published as IOC/INF-1412).

36. She recalled that the MTS has 5 objectives:

1. Healthy ocean and sustained ocean ecosystem services;
2. Effective warning systems and preparedness for tsunamis and other ocean-related hazards;
3. Resilience to climate change and contribution to its mitigation;
4. Scientifically-founded services for the sustainable ocean economy; and
5. Foresight on emerging ocean science issues.

37. The document states that "*The value chain of IOC: IOC generates value through interaction of all its functions. In order to maximize the value, the IOC should work as an end-to-end system, in which observations and research enable various services and assessments, leading to informed decisions and guidance to policy and culminating in multiple societal and*

economic uses. Feedback from various functions in the system should lead to evolving and, generally, increasingly more and more demanding requirements for observations, science and services. The capacity development will act as the catalyst of the whole system, working both at the cutting edge and leaving no one behind." and "*The IOC functions will be realised through the continuously developing programmes, acting globally, regionally, nationally and locally, through activities of regional subsidiary bodies, and by undertaking shorter-term project activities*.".

38. IODE should contribute to several of the objectives either directly or indirectly through collaboration with other IOC programmes. As such IODE can be the "owner" or "co-owner" of activities under the MTS objectives. Examples are:

39. **Achieving Objective 1 (Healthy Ocean Ecosystems):**

- coordinate and catalyse research on ocean acidification, de-oxygenation, biogeochemistry, and contaminants; identifying ecosystem indicators and tipping points and the impacts of multiple stressors on marine biodiversity and ecosystem functioning; [**as co-owner through OBIS**]
- improve and augment sustained global observations of essential biological, biogeochemical, and ecosystem variables of relevance and necessity to describing the ecosystem state, as part of GOOS; [**as co-owner through OBIS**]
- strengthen the IODE data and information centres and networks including OBIS, ensuring resources and best practices are available to advance standardized collection of species and ecosystem data and development of data products and services contributing to the continuous monitoring of identified indicators of ecosystem state, as well as the long-term preservation and availability of high-quality ocean data and information; [**IODE as owner**]
- support global and regional marine assessments through the United Nations World Ocean Assessment and other scientific assessments, e.g., of Large Marine Ecosystems and those under IPBES; [**as co-owner through OBIS**]
- assist Member States in developing the necessary capacity and ecosystem-based management tools, such as maritime spatial plans, coastal area management; marine protected areas, [**as co-owner through OTGA**]
- use the IOC convening authority for strengthening cooperation and coordination between key stakeholders in the domain of ecosystem management and for building an effective science-policy-society interface. [**as co-owner through OBIS**]
- contribute to the UN Decade of Ecosystem Restoration (2021-2030)

40. **Achieving Objective 2 (Early Warning for Ocean Hazards)**:

- strengthen the regional Tsunami Information Centres and augment their ability to provide a clearinghouse for the development of educational and preparedness materials; [**as co-owner through OTGA**]
- increase technical and scientific capacity of early detection and warning of marine invasive species (e.g., by applying novel observing technologies such as DNA metabarcoding); [**as co-owner through OBIS**]
- target CD and technical assistance to enhance Member States' abilities to develop preparedness, mitigation and awareness in a multi-hazard framework; [**as co-owner through OTGA**]

41. **Achieving Objective 3 (Resilience to Climate Change and Variability):**

- builds capacity through training, demonstration projects, and shared tools. [**as co-owner through OTGA**]

42. **Achieving Objective 4 (Scientific Services for a Sustainable Ocean Economy):**

- delivering ocean observations and data for operational services to marine industries and for biogeochemical and biological study/research and assessments of the sustainability of ecosystem services; **[as co-owner through ODIS and OBIS]**
- delivering fit-for-purpose data and information products and services through the Ocean Data and Information System and Ocean InfoHub including their regional nodes; **[IODE as owner]**
- assisting Member States in developing their capacity to responsibly manage and sustainably exploit ocean resources. [**as co-owner through OTGA**]

43. **Achieving Objective 5 (Foresight of Emerging Ocean Issues)**:

- an ocean observing system, with technologically advanced autonomous instruments and global data/information processing and management systems that are adaptable to new needs;

44. In September 2024 a retreat was organized for the IOC senior staff (heads of sections, heads of regional secretariats). One of the recommendations of the retreat was to improve the collaboration between the sections and their programmes towards joint implementation of the strategy. The above-mentioned (para 40-44) ownership and co-ownership was one of the proposed ways forward. For each of the objectives or their activity IOC working groups could be established.

45. Ms Fyrberg noted that IODE already established collaboration with e.g. GOOS and HAB and OTGA is providing training support for nearly all IOC programmes.

46. It was further noted that an IODE-GOOS workshop had been organized at the IOC Project Office for IODE, Ostend between 30 September and 2 October 2024 to which also the other IOC global programmes and Ocean decade were invited. More information on this meeting is reported on under Agenda Item 3.6.2 and 6.1.

47. She invited the Committee to recommend further actions to achieve the implementation of the IOC Medium-Term Strategy (2022-2029).

48. In this regard reference was made to agenda item 6.1.

49. **The Committee** welcomed progress with implementation of the IOC Medium-Term Strategy (2022-2029) at its halfway mark but **requested** the secretariat in consultation with the IODE Management Group to (i) identify relevant KPIs and (ii) to take into consideration the need for collaboration with other IOC programmes bearing in mind the cross-cutting nature of ocean data and information management and sharing.

3.3 STATUS OF THE IODE NETWORK

3.3.1 New NODCs, ADUs, AIUs, accredited NODCs, ADUs, and AIUs

50. This agenda item was introduced by **Mr Greg Reed.** He recalled the objectives of the IODE Quality Management Framework are to (i) provide the overall strategy, advice and guidance to NODCs and ADUs to establish organizational quality management systems for the delivery of oceanographic and related data, products and services, (ii) initiate and review existing standards and Manuals and Guides with respect to the inclusion of quality management procedures and practices, and (iii) apply the necessary capacity development activities to ensure accreditation of NODCs and ADUs according to agreed criteria in order to bring all NODCs and ADUs to a minimum agreed level.

51. He recalled that the contacts for all NODCs are available from https://oceanexpert.org/group/488. The list of NODCs is available from this link, a list of accredited NODCs from this link, a list of ADUs from this link, and a list of accredited ADUs from this link.

52. During the intersessional period three applications to join the IODE network as NODC were received:

1) MAURITIUS (November 2023): NODC re-established at Department for Continental Shelf, Maritime Zones Administration & Exploration, Prime Minister's Office with contact Dr. Hemanaden Runghen, Director - Ocean Mapping/Marine Information System Unit (OceanExpert link: https://oceanexpert.org/expert/36323)

2) PANAMA (August 2023): NODC established at Universidad de Panamá - Vicerrectoría de Investigación y Posgrado, with contact persons Ms. Hermelinda Peralta https://oceanexpert.org/expert/62254 and Dr. Jorge F. Rodríguez C. https://oceanexpert.org/expert/44383

3) EGYPT: NODC re-activated at National Institute of Oceanography and Fisheries (NIOF) with contact Dr. Hossam El-Sayed (OceanExpert link: https://oceanexpert.org/expert/48066)

53. In addition, two NODCs moved to other host institutions:

1) DR CONGO (February 2024): move of the NODC to Institut Supérieur de Pêche et de Navigation (ISPN), Muanda with contact Mr Bope Jean Marie Bope Lapwong (OceanExpert link: https://oceanexpert.org/expert/22630)

2) MOZAMBIQUE (March 2024): NODC moved to InOM (Mozambican Institute of Oceanography) with contact Ms. Clousa Sarmento MAUEUA (OceanExpert link: https://oceanexpert.org/expert/12099)

54. During the intersessional period, six applications to join the IODE network as ADU were received:

1) Kelp Blue Trading (Pty) Ltd “, Namibia (September 2023), with contact Mr Michael James FLEISCHMAN (OceanExpert link: https://oceanexpert.org/expert/61952)

2) National Marine Biodiversity Institute of Korea (MABIK) , Republic of Korea (August 2023) with contact Mr SangHo BAEK (OceanExpert link: https://oceanexpert.org/expert/61528)

3) OSPAR Commission, UK (September 2024) with contact Mr Christopher MOULTON (OceanExpert link: https://oceanexpert.org/expert/55098)

4) GBIF Ecuador (September 2024) with contact Mr Victor CHOCHO (OceanExpert link: https://oceanexpert.org/expert/59824)

5) GBIF Norway (October 2024) with contact Mr Dag ENDRESEN (OceanExpert link: https://oceanexpert.org/expert/64359)

6) Brazilian Biodiversity Information System (SiBBr) (13 December 2024) with contact Ms Clara Baringo Fonseca: clara.fonseca@consultores.rnp.br (OceanExpert link: https://oceanexpert.org/expert/74311)

55. During the intersessional period, five applications for (re)accreditation have been reviewed and recommended by the SG-QMF and the following NODCs / ADUs (Associate Data Units) have received accreditation:

1) ITALY NODC: OGS (December 2023) with contact Ms. Alessandra GIORGETTI (OceanExpert link: https://oceanexpert.org/expert/13248)

2) Ocean Tracking Network (OTN) ADU (April 2024) with contact Mr. Jonathan Derek PYE (OceanExpert link: https://oceanexpert.org/expert/31190)

3) Australian Ocean Data Network NODC: AODN (June 2024) with contact Mr Mark REHBEIN (OceanExpert link: https://oceanexpert.org/expert/16609)

4) British Oceanographic Data Centre NODC: BODC - re-accreditation - (September 2024) with contact Mr Mark HEBDEN (OceanExpert link https://oceanexpert.org/expert/50704)

5) Balearic Islands Coastal Ocean Observing and Forecasting System (SOCIB) – accreditation of existing ADU with contact Mr Joaquín Tintoré (OceanExpert link: https://oceanexpert.org/expert/39482)

56. Mr Reed noted that only 12 NODCs and 4 ADUs were now “accredited” by IODE.

57. The IODE Co-Chairs presented the accreditation certificates and congratulated OGS, OTN, AODN and SOCIB with obtaining accreditation, and BODC with re-accreditation.

58. Figure 1 shows the evolution of establishment of NODCs, accreditation of NODCs, applications (and establishment) of ADUs and accreditation of ADUs between 2010 and 2024. It is shown that the number of ADUs increases more rapidly than NODCs.

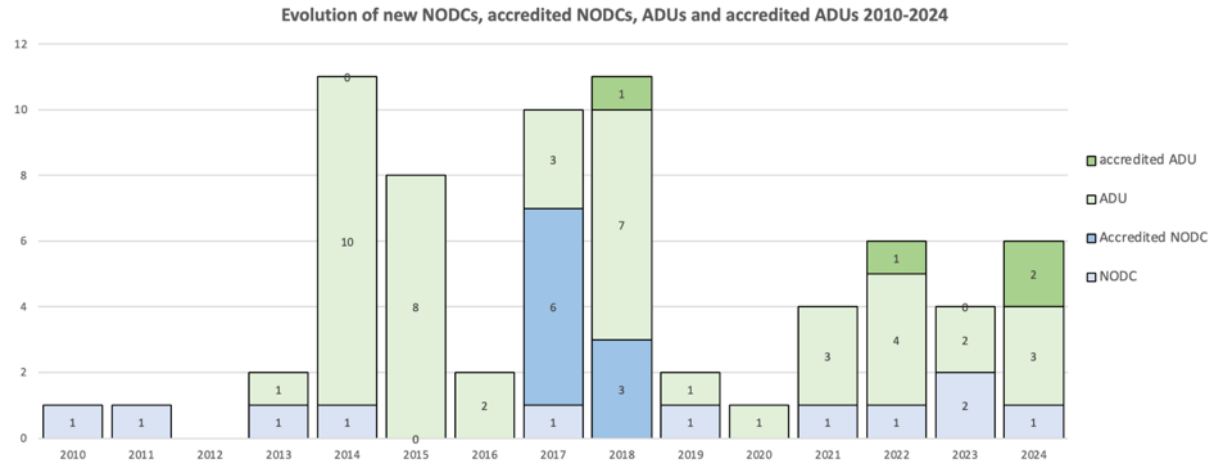

Figure 1: Evolution of new NODCs, accredited NODCs, ADUs and accredited ADUs 2010-2024 (status 3 January 2025)

59. **The Committee congratulated** the NODC Italy, NODC Australia, ADU OTN and ADU SOCIB for their accreditation and NODC UK for their re-accreditation, and **welcomed** Egypt, Mauritius and Panama as new NODCs and Kelp Blue (Namibia), MABIK (Republic of Korea), OSPAR Commission (UK), GBIF (Ecuador) and GBIF (Norway), SiBBr (Brazil) as new ADUs.

60. The representative of Colombia congratulated the delegations that have received their IODE accreditations and re-accreditations. She also celebrated the inclusion of more countries with Associate Data Units, reflecting the International Community’s commitment to data management. Considering this, Colombia is motivated and committed to accreditation as a "quality seal" promoted by the IODE. In recent years, significant progress has been made in implementing this quality framework to improve access to national data and the data and information services of the NODC, managed by the General Maritime Directorate (DIMAR), and the ADU, under the responsibility of the Institute of Marine and Coastal Research (INVEMAR), across various disciplines. In this context, meeting the accreditation requirements is a challenge that requires strengthening institutional strategies and cooperation. Therefore, Colombia has prioritised activities for the new intersessional period to complete preparations and apply for the accreditation of the NODC-DIMAR and the ADU-INVEMAR, aiming to ensure compliance with the highest quality standards in ocean data and information management.

61. **The Committee called** on NODCs and ADUs to apply for accreditation as a “quality seal” demonstrating that the data services provided are of the highest quality standards.

62. The representative of Kenya responded that they would work towards the application for accreditation of their NODC.

63. **The Committee stressed** the importance of hosting an NODC **and urged** IOC Member States that have not yet established an NODC to do so to ensure their ocean data are shared globally and that their national ocean scientists have easy access to the global ocean data commons.

3.3.2 Reporting summary of NODCs, ADUs and AIUs

64. This agenda item was introduced by **Mr Greg Reed**, referring to Document IOC/IODE-28/3.3.2. (Reporting Summary of IODE NODCs and ADUs). An online version of the report will be made available through https://surveys.iode.org. He noted that due to the small number of AIUs no report had been prepared for AIUs.

65. He reported that the online survey was opened on **6 August 2024** and closed on **8 October 2024**. A total of **59** valid **responses** were received. This is a lower number than for 2021-2022 (which received 74 valid responses). Nearly all respondents have a record in OceanExpert.

66. He then briefly summarized significant outcomes of the survey:

(i) There is a slow increase in the data centres/data units applying the “IOC Data Policy and Terms of Use" This has increased from 65.7% (2019-2020), 66.22% (2021-2022) to 67.8% (2023-2024).

(ii) There has been a sharp decline in the number of scientific staff working in the data centres/data units from average of 18 in 2019-2020, 16 in 2020-2021 to 9 in 2023-2024.

(iii) There is a significant increase in centres that have links with major science programmes with 54% responding they have links with and/or manage data from major science programmes (e.g., CLIVAR, IMBER, Argo, Future Earth, SOLAS, etc).

(iv) There is a significant increase in the availability of data discovery portals that are openly available online with 94% responding “yes”.

(v) The geographic origin of data users from national sources has declined sharply, however the number of international users has increased.

(vi) None of the respondents provided a positive response to the question if their country will be providing direct financial support to IODE in 2025-2026 through the IOC. The majority of respondents was unable to respond positively to the question if their country/data centre will be able to provide a visiting expert/secondment to the IOC Project Office for IODE in 2025-2026.

(vii) There is a decline in data centres/data units planning activities in the Ocean Decade from 78% in 2019-2020, to 68% in 2021-2022, to 63% in 2023-2024.

67. The Committee was invited to review the results of the 2023-2024 survey (and its comparison to the 2021-2022 and 2019-2020 surveys).

68. The representative of Colombia appreciated the summary presented. The survey results reflect the current situation in Colombia and possibly in other countries of the region. In the context of a reduction in full-time scientific personnel at the NODC and ADU, Colombia is facing a decline in resources allocated to science. Therefore, within national coordination efforts under the IODE, it has been essential to set priorities, optimise resources, and strengthen capacities through inter-institutional cooperation to ensure the management of the country’s oceanic data. Within this

framework, synergies have been strengthened with the academic and scientific sectors, as well as project managers, promoting the active participation of scientists in data management plans and in the activities of the NODC and its main ADU.

69. The representative of Brazil said that the use of new technologies tends to decrease the number of staff.

70. **The Committee welcomed** the availability of the detailed information provided by the 2023-2024 survey and considered this to be a useful information source for the IODE activities.

71. **The Committee**, while welcoming the increase in the availability of data discovery portals that are openly available online, **noted with** concern the decline in the number of scientific staff working in data centres/data units.

3.3.3 Review of NODC health status within the IODE network

72. This agenda item was introduced by **Dr Paula Sierra Correa,** IODE Co-Chair. She recalled that IODE-27 had extended the "*Inter-sessional working group on the review of NODC health status within the IODE network*" for another inter-sessional period and had instructed the working group to (i) provide a status report on the procedures to the IODE Management Group (2024); and (ii) finalize the procedures for submission to the 28th Session of the IODE Committee (2025). The group, under the leadership of Dr Lesley Rickards prepared a document (Document IOC/IODE-MG-2024/2.2.3) for discussion by the IODE Management Group at its February 2024 meeting. The Management Group had (i) instructed the Secretariat to undertake a first provisional health status check of all NODCs by IODE-28 and based on the criteria documented in Document IOC/IODE-MG-2024/2.2.3; (ii) Instructed the Secretariat, taking into account the experiences with the first provisional health status check preparations, to submit a revised version of Document IOC/IODE-MG-2024/2.2.3 to IODE-28 for approval; and (iii) invited Secretariats of RSBs to collaborate in ensuring continued communication and participation with IODE after staff changes at NODCs, ADUs or AIUs.

73. She recalled that IODE-27 had also decided that, once a year, the IODE Secretariat should send out an IOC Circular Letter to all IOC Member States, inviting them to designate or update information on IODE national coordinators (data management and information management) and update the list on the IODE web site. Dr Sierra Correa reported that IOC Circular Letter 2969 (https://oceanexpert.org/document/33362) was sent on 25 October 2023. Responses had been received from 27 Member States (Angola, Argentina, Australia, Belgium (Flanders), Bulgaria, Canada, Chile, Colombia, Côte d'Ivoire, Cyprus, Dominican Republic, Ecuador, Egypt, France, Georgia, Germany, Islamic Republic of Iran, Israel, Madagascar, Malaysia, Mauritius, Mozambique, Pakistan, Russian Federation, Sweden, United Kingdom and United States). Out of the 91 IODE National Coordinators for Data Management this represents a response rate of 30%. A second Circular Letter (IOC Circular Letter 3002) (https://oceanexpert.org/document/34645) was sent on 23 July 2024. To this Letter a total of 26 Member States responded.

74. The IWG met online on 29 September 2023 and discussed and carried out revisions of the preliminary health status checks. The brief document, referred to above by Dr Lesley Rickards, was updated by Dr Rickards in July 2023 and the IWG was invited to take this document into consideration during its discussions.

75. The IODE Management Group met in February 2024 and:

(i) Instructed the Secretariat to undertake a first provisional health status check of all NODCs by IODE-28 and based on the criteria documented in Document IOC/IODE-MG-2024/2.2.3;

(ii) Instructed the Secretariat, taking into account the experiences with the first provisional health status check preparations, to submit a revised version of Document IOC/IODE-MG-2024/2.2.3 to IODE-28 for approval.

(iii) Invited Secretariats of RSBs to collaborate in ensuring continued communication and participation with IODE after staff changes at NODCs, ADUs or AIUs.

76. Dr Sierra Correa then introduced the First Provisional Health Status Check of all NODCs (Document IOC/IODE-28/3.3.3)

77. She reported that 4 NODCs scored 0: Cameroon, Comoros, DR Congo and Senegal and 10 NODCs scored between 1-10: Benin, Côte d'Ivoire, Guinea, Indonesia, Kazakhstan, Madagascar, Mauritania, Nigeria, Togo, and Tunisia. 65.5% of the NODCs obtained a score of less than 40% and 34.5% obtained a score of more than 40%. This indicates that the majority of NODCs requires attention in terms of their involvement in international IODE activities.

78. When analyzing the results it was remarked that the current set of health checks does not consider whether NODCs share data internationally and does not report on data usage by users. It also does not include participation in groups other than Steering Groups, e.g. technical groups, task teams, regional groups, which can be included in future assessments.

79. It is important for the next iteration of the health check that NODC data sharing internationally is included, although it may not be straightforward to obtain this information for some projects where there may be multiple incoming data streams and data may also be harvested possibly leading to duplication of data and loss of association with the relevant NODC may occur. Steering Groups could assist in providing this information.

80. In Table 2 of the report several recommendations have been made to resolve issues that the NODCs may have. As a first action all NODCs with scores 0 or 1-10 were contacted by email on 24 September 2024. Responses were received from Kazakhstan, Madagascar and Benin (not included in the report)

81. The following actions are recommended to improve the situation:

- Overall: Consult with NODCs to assess their interest in participation in IODE and identify reasons if that interest is low;
- Criteria 1: Consult with NODCs why they are not responding to emails or Circular Letters. Consult with NODCs if they have a good relationship with their IOC focal point(s);
- Criteria 2: Consult with NODCs what are the reasons for low participation in sessions of the IODE Committee. In this regard it has been stated that the cost of participation in such 1-week events (including the IODC and IODE Session) is too high for most developing countries. Their lack in participation then excludes them in the co-design and decision process of the IODE programme;
- Criteria 3: Consult with NODCs what are the reasons for low participation in inter-sessional activities such as working groups or online surveys;
- Criteria 4: Consult with NODCs what are the reasons for the lack of an NODC web site and discuss ways to assist;
- Criteria 5: Consult with NODCs what are the reasons for the lack of mentioning of IODE in their NODC website;
- Criteria 6: Consult with NODCs what are the reasons for low participation in IODE programme components or programme activities;
- Criteria 7: Consult with NODCs what are the reasons for low participation in IODE training courses (OTGA);

- Criteria 8: Consult with NODCs what are the reasons for not applying for NODC accreditation.

82. The report further provides some recommendations to improve health check criteria. These are included in detail in Document IOC/IODE-28/3.3.3.

83. Dr Sierra Correa informed the Committee that it had not been possible to prepare a revised version of Document IOC/IODE-MG-2024/2.2.3 but noted that the version discussed by the February 2024 IODE management group had already been edited and improved prior to the First NODC Health Check as reflected in Table 1 of Document IOC/IODE-28/3.3.3.

84. The representative of Colombia expressed appreciation for the information presented and suggested that, in the criteria for assessing the health of the NODCs, consideration be given to the possibility that the country may have implemented a mixed ocean data management model (both centralised and distributed) to support and enhance national capacity. This could help improve the evaluation of the IODE's NODCs, which may currently be underestimated.

85. Dr Lesly Rickards expressed willingness to continue supporting this process.

86. The delegate from Kenya proposed to have joint discussions with the NODC network in Africa.

87. **The Committee noted** the results of the First NODC Health Check and expressed its concern over the NODCs that scored low.

88. **The Committee urged** all low-scoring NODCs and IOC focal points to contact the IODE Secretariat to discuss actions that may improve their performance.

89. **The Committee instructed** the Secretariat to undertake the remedial actions as listed in Table 2 of Document IOC/IODE-28/3.3.3.

90. **The Committee approved** the recommendations to improve health check criteria as detailed in Document IOC/IODE-28/3.3.3 and **instructed** the Secretariat and Co-Chairs to revise Document IOC/IODE-28/3.3.3 for discussion by the next meeting of the IODE Management Group.

91. **The Committee closed** the Inter-sessional working group on the review of NODC health status within the IODE network and thanked its members for their contributions.

3.4 PROGRESS REPORTS OF IODE PROGRAMME COMPONENTS, PROGRAMME ACTIVITIES AND PROJECTS

3.4.1 IODE Programme Components

92. This agenda item was introduced by **Mr Greg Reed**. He referred to Document IOC/IODE-28/3.4.1.1 (Ocean Biodiversity Information System (OBIS)), IOC/IODE-28/3.4.1.2 (Ocean Data and Information System (ODIS): a plan for the future) and IOC/IODE-28/3.4.1.3 (Progress Report Programme Component: OceanTeacher Global Academy (OTGA)) . He informed the Committee that, due to the very limited time available it would not be possible to provide extensive oral presentations on the progress reports of all programme components, project activities and projects. Instead, reporting has been requested from all and included in the mentioned document and Chairs of the Steering Groups of the three Programme Activities were invited to provide brief interventions under the following agenda items.

93. Mr Reed explained that all IODE Programme Components, Programme Activities and Projects must meet the specified evaluation criteria and are evaluated by the IODE-MG Executive annually, based on the reports provided by each project. The criteria for evaluation of ongoing

project performance are described in IOC Manuals and Guides No. 81rev3 (Procedures for Proposing and Evaluating IODE Programme Components, Programme Activities and Projects (3rd Revised edition)). Existing Programme Components, Programme Activities and Projects that do not receive a positive evaluation ("Not satisfactory or satisfactory with modifications requested") will be notified of what actions need to be taken to improve performance and given an appropriate time frame for improvement.

94. Reporting is included in the above-mentioned document on the following Programme Components. The proposed work plan and budget for 2025-2026 was discussed under Agenda Item 8.4.

Ocean Biodiversity Information System (OBIS)

95. This agenda item was introduced by **Ms Katherine Tattersall**, Co-Chair of the SG-OBIS. She referred to the document IOC/IODE-28/3.4.1.1 (Ocean Biodiversity Information System (OBIS) for a full activity progress report, the proposed OBIS 2025 work plan and requested budget.

96. During the intersessional period (May 2023 to November 2024) OBIS published 23.75 million new marine species occurrence records from 598 new datasets, adding 13,240 previously unreported marine species to OBIS. OBIS now holds 132 million records from 5,375 datasets on 194,000 marine species (18 Nov 2024).

97. The IODE Steering Group for OBIS (SG-OBIS) held its twelfth session in Gunsan, Republic of Korea, from 25-29 March 2024. This session brought together 23 participants representing 16 OBIS nodes and the secretariat. A key outcome of SG-OBIS-12 was the agreement on a new priority strategy and management structure to align with the Rules of Procedure for IODE Programme Components. The new strategy focuses on two thematic areas: Data Mobilization and Data Application. To implement the strategy, two OBIS coordination groups were established:

- **OBIS Data Coordination Group (DCG)**: This group is tasked with reviewing data standards, specifications and implementation models and ensuring the long-term archiving of data. Key performance indicators focus on the review and implementation of biodiversity Essential Ocean Variables (EOVs) specifications, engagement with external data-related groups, and integration with the IOC data architecture.
- **OBIS Products Coordination Group (PCG)**: This group focuses on enhancing access to FAIR OBIS Products. Activities include developing an OBIS Products Catalogue and a JupyterHub for testing.

98. Additionally, an **OBIS Nodes Coordination Group (NCG)** was formed to facilitate communication and coordination among OBIS Nodes regarding ongoing activities, priorities, and challenges.

99. To support the new coordination and community engagement activities, a part-time OBIS staff member (consultant) has been employed, funded by increased regular program funding from UNESCO to IODE. Another significant decision was to convene an OBIS All-Hands meeting, biennially. This meeting will serve as a platform to bring together the broader OBIS Community of Practice.

100. The SG-OBIS-12 also developed a communication plan and allocated a budget for creating and disseminating branding materials.

101. To align with the new IOC Data Policy and Terms of Use, the SG-OBIS-12 revised and adopted new guidelines for data sharing and use within OBIS.

102. An *ad-hoc* online meeting of the IODE Steering Group for OBIS (SG-OBIS-12+) occurred on 30 May 2024. The primary objective was to address the status of the work plan and budget and to elect a new SG-OBIS Co-Chair, following Martha Vides' completion of her two terms. Dan Lear (MBA/OBIS-UK) was appointed as the new incoming SG-OBIS Co-Chair. The SG-OBIS also decided that it would be a co-organizer of the Living Data 2025 conference, together with TDWG, GEO BON and GBIF.

103. The joint marine strategy and action plan with GBIF was formally announced on 28 May 2024, with webinars taking place on 13 June 2024, to inform the community. A joint OBIS-GBIF Implementation Committee has been established which meets monthly.

104. The 6th session of the OBIS Executive Committee (EC-OBIS-6) took place in Ostend from 14–16 October 2024, focusing on planning the activities of the three new coordination groups and drafting the 2025 OBIS work plan and budget, alongside a long-term vision for OBIS's future. Discussions also covered developing a new website and outreach materials to enhance OBIS's visibility and attract resources. The EC-OBIS-6 also planned OBIS's participation in the upcoming meetings: IODC-3, IODE-28 and decided to have the next SG-OBIS meeting (SG-OBIS-13) and OBIS coordination group meetings in Bogota, Colombia, 18-20 October 2025, back-to-back with the Living Data 2025 Conference, which will take place on 21-24 October 2025 (this will replace the All-Hands meeting in 2025).

105. In December 2022, COP15 of the Convention on Biological Diversity called upon OBIS to support the monitoring framework of the Kunming-Montreal Global Biodiversity Framework (GBF), which aims to halt biodiversity loss, reduce risks and restore natural ecosystems. Specifically, OBIS is mentioned in complementary indicators for countries to report on Goal D and target 21 (access to data and information). COP16 in October 2024 reconfirmed this and also added OBIS in target 20 (capacity to use data). Of importance is that COP16 recognized OBIS, with GOOS and ODIS as the marine component of a Global Biodiversity Observing System (GBIOS) to support the GBF monitoring framework. OBIS will need to provide robust indicators and guidance for state parties to use OBIS in their national reports. This work will be brought to the OBIS EC for endorsement as a work plan amendment.

106. The OBIS budget request for 2025 and 2026 includes three scenarios (base, medium, and preferred). The major difference between the scenarios is the inclusion of funds for in-person workshops, consultant support, and data training workshops.

107. In conclusion, OBIS has made significant progress in mobilising and sharing marine biodiversity data. The implementation of the new strategic framework, with its focus on data and product coordination and node engagement, is expected to support international frameworks such as the GBF, and further enhance the impact and sustainability of OBIS in the coming years. However, addressing potential risks, such as securing sufficient funding and filling key staff positions, is crucial to ensure continued success. Several new Horizon Europe projects involving the OBIS Secretariat were initiated in 2023-2024, enabling staff growth and retention. The secretariat now has 8 staff members of which 3 are project appointments and 4 are consultants. A second UNESCO regular programme (P3 level) post for OBIS has been created. The vacancy for the OBIS technical and scientific coordinator was posted on 25 January 2024, however the recruitment process for this position is currently on hold.

108. The **IODE Committee expressed its appreciation** to the OBIS community for the significant progress in mobilising and sharing biodiversity data and capacity development efforts.

109. The **IODE** Committee **welcomed** the OBIS report (IOC/IODE-28/3.4.1.1) and approved the OBIS 2025 work plan.

110. The **IODE Committee thanked** OBIS for setting a new priority strategy and management structure to align itself with the new Rules of Procedure for IODE Programme Components and

for revising its guidelines for data sharing and use within OBIS to align itself with the new IOC Data Policy and Terms of Use and its integration with ODIS and the proposed IOC Data Architecture.

111. The **IODE Committee welcomed** the closer collaboration with the Global Biodiversity Information Facility (GBIF) which will increase our network and capacity for high-quality data about marine and coastal biodiversity, necessary to support research and decision-making.

112. The **IODE Committee welcomed** the mention of OBIS in the CBD's Kunming-Montreal Global Biodiversity Framework (CBD/COP/DEC/15/5), specifically to provide complementary indicators related to joint scientific papers (capacity to use data) and growth in marine species occurrence records (capacity to deliver data) and **requested** that OBIS develops robust indicators and guidelines for State Parties on how to use OBIS in their national reporting to the CBD.

113. The **IODE Committee thanked** the IOC Executive Secretary for creating a P-3 regular programme post for the OBIS Technical and Scientific Coordinator, which is a critical position to ensure the continuation and success of OBIS beyond 2024. However, the **IODE Committee expressed concern** about the UNESCO Director-General's decision not to proceed with the appointment of the proposed candidate and **thanked** the IOC Executive Secretary for finding a temporary solution to cover the salary of the OBIS data manager until the end of 2025.

114. **The Committee welcomed** the long-standing and ongoing support from OBIS Nodes and their Member States to host and fund SG-OBIS meetings. **The Committee thanked** the MABIK of the Republic of Korea for supporting the SG-OBIS-12 (March 2024) and **appreciated** the offer from INVEMAR of Colombia to support SG-OBIS-13 (October 2025).

3.4.1.2 Ocean Data and Information System (ODIS)

115. This agenda item was introduced by **Dr Pier Luigi Buttigieg**, Chair of the SG-ODIS. He referred to Document IOC/IODE-28/3.4.1.2 (Ocean Data and Information System (ODIS): a plan for the future)**.**

116. He reported ODIS is a global initiative supported by the IOC/UNESCO to:

- Improve access to marine and coastal data and information
- Provide an openly accessible online platform to network stakeholders and facilitate the exchange of Ocean data and knowledge

117. The Ocean InfoHub Project (2020 – June 2024) successfully supported the initial development of the Ocean Data and Information System (ODIS), which provides the interoperability layer and supporting technology to allow existing and emerging ocean data and information systems, from any stakeholder, to interoperate with one another. Although we first worked with global IOC partners and three pilot regions (Africa, LAC, PSIDS), we gradually expanded over time so that now ODIS is engaging with over 120 organisations at some level, to enable them to expose their metadata and to join the growing network. ODIS is now a global federation of independent systems that uses common conventions to share and exchange their (meta)data over the Web. ODIS can help any organisation or individual to share their ocean (meta) data, as well as to access a growing ecosystem of Ocean data.

118. OIH/ODIS has supported the three pilot regions in the specific ways they wanted to link to ODIS.

- INVEMAR has a regional node, which links ODIS to datasets from 12 countries in the LAC region as well as regional partners that include CLME+ Training and Capacity Development Portal, The Sargassum Information Hub and the Caribbean Marine Atlas.
- IOCAfrica has developed three thematic portals that link to ODIS,

- The Pacific has linked its two existing regional portals to ODIS.

119. Globally, ODIS currently links 50 data sources from 42 partner organisations from around the world. A Global Search portal has been developed as a demonstration of ODIS (https://oceaninfohub.org). The portal currently (December 2023) contains over 130,000 content items in seven content categories: (i) Experts (27,000); (ii) Institutions (13,000; (iii) Documents (42,000); (iv) Training (1,500); (v) Vessels (113); (vi) Projects (3,600); and (vii) Datasets (48,000). The Ocean InfoHub Project and ODIS have succeeded in creating a self-sustaining network of partners, but there remains much work to do to widen the collaboration to other regions and nations, build capacity and digital equity in regions with low resourcing, and continually upgrade the capabilities of the network.

120. ODIS offers a long-term solution for any organisation, **including NODCs and ADUs** and new partners to keep ownership and complete control over their data holdings, while choosing which (meta)data to share with a growing global ocean digital ecosystem.

121. The delegate of Italy requested more information on the QC/QA in ODIS. Dr Buttigieg clarified that the technology that IODE uses to harvest and integrate data from ODIS Nodes does perform validation on the format and semantics of the (meta)data shared. These checks do not assess content: ODIS Nodes are able to share what they choose to. ODIS Nodes are curated by IODE to ensure they are operated by a credible organisation acting in good faith. The ODIS Operations Group proposed in Annex C to Recommendation IODE-28/3.4.1.2 will serve as an additional level of quality assurance: able to raise issues and propose solutions.

122. The delegate of Greece requested that communications about ODIS emphasise that ODIS provides data discovery services and not assurances of data access. Dr Buttigieg briefly clarified that ODIS does indeed focus on discoverability of digital assets, and access is controlled by the Nodes based on whether or not the metadata they share includes links to data downloads or provisioning services. He noted, however, that if Nodes do provide such metadata, ODIS can serve as an access support layer. This distinction will be made clearer in further communications.

123. The representative of China reported on the successful connection of their system with ODIS and are committed to remain engaged. The Chinese Delegation congratulated the Ocean Data and Information System (ODIS) on its substantive progress during the intersessional period. As the National Oceanographic Data Centre (NODC) of China, the NMDIS has actively contributed to the development and operationalization of ODIS. In 2023, under the guidance of the ODIS Expert Group, we successfully established an operational node within the ODIS framework. This node automatically harvests data from the CMOC/China ERDDAP server, converts it into JSON format, and achieves interoperability for the first batch of 32 datasets with the ODIS platform. To date, the node has maintained stable operations, with continuous updates in 2024 integrating observational data from Chinese coastal stations and volunteer observing ships.

124. The representative of China reaffirmed its commitment to deepen engagement in ODIS and complementary initiatives such as the OceanData-2030 Programme. We stand ready to leverage our technical capabilities to advance global ocean data interoperability, enhance the efficiency and quality of ocean information services, and contribute to the implementation of the UN Ocean Decade.

125. **The Committee invited** existing and new ODIS partner organizations to join the IODE network as IODE Associated Data Units (ADUs) to share their own expertise with, as well as benefit from the expertise within, the IODE network.

126. Dr Buttigieg presented the ODIS Strategic Planning Document: a plan for the future (2025-2030) and the proposed revision of the Terms of Reference of ODIS together with the work plan and budget (2025-2026) to be addressed under 8.3.

127. **The Committee urged** all Member States to participate in the Ocean Data and Information System via the creation of ODIS Nodes to increase the visibility of their data holdings to the world, and to enable improved and more efficient access to global Ocean data.

128. **The Committee adopted** Recommendation IODE-28/3.4.1.2 (Revision of the Terms of Reference of the Ocean Data and Information System - ODIS) and Decision IODE-28/3.4.1.2 (Restructuring the ODIS Programme Activities) and Decision IODE-28/3.4.1.2 (Restructuring the ODIS Programme Activities)

3.4.1.3 OceanTeacher Global Academy (OTGA)

129. This agenda item was introduced by **Ms Carolina Garcia**, Co-Chair of the SG-OTGA. She referred to Document IOC/IODE-28/3.4.1.3 (Progress Report Programme Component: OceanTeacher Global Academy (OTGA)).

130. Ms Garcia reported that, during the period 2023-2024, OTGA successfully delivered 106 training courses through its network of Regional and Specialized Training Centres (RTC/STC). More than 5,500 learners enrolled in courses which were delivered in English, Spanish, Portuguese and French. Starting in 2023, OTGA introduced self-paced instruction whereby learners progress through the material at their own speed and on their own schedule. The introduction of self-paced training has contributed to increased accessibility resulting in nearly 3,000 enrolments in self-paced courses during this period.

131. OTGA directly contributed to the implementation of the IOC Capacity Development Strategy, addressing key outputs identified in the strategy through increased support in the training activities of all IOC programmes, including the Tsunami Resilience, Ocean Literacy, Harmful Algal Bloom programme, IODE, MSP, Ocean Sciences and the Ocean Decade, amongst others. OTGA is an endorsed Ocean Decade Action and is hosting Ocean Decade courses on Co-design and Indigenous and local knowledge (ILK). In the context of the Ocean Decade, Ms. Garcia highlighted the collaborative action with: (i) the DCU to sponsor the development of course in Indigenous and Local Knowledge; (ii) the Decade Capacity Development Facility project (CDF) to develop a training in Co-design; and (iii) the DCC for Coastal Resilience to develop a course focused on business sustainability; and (iv) the ECOPs network courses that focused on the young community. Likewise, many other OTGA courses target challenges of the Decade, and in 2024, the OTGA secretariat built a Competency Framework to monitor this connection link to the e-Learning Platform.

132. OTGA has collaborated with UN Agencies, other intergovernmental organizations, and international programmes in the co-organization of various types of training and use of its e-learning platform.

133. Ms Garcia noted that the OTGA secretariat worked closely with IOC CD secretariat and RSB officers to provide information for the needs and priorities assessment and match-making exercise in support of the regions. For this biennium, OTGA and IOCAFRICA (and other partners) co-developed one blended training held in Kenya. IOCAFRICA also co-sponsored travel grants for ECOPs to attend training in Malta. Plans for a joint course in eDNA with IOCAFRICA and OBIS is under discussion for the next years. Increased involvement from the IOC RSBs ensures the capacity development needs of the regions are being met.

134. The host of OTGA, the UNESCO-IOC Project Office for IODE, is certified as an ISO Learning Services Provider for learning services outside formal education and was successfully audited in April 2024.

135. For 2025, OTGA has received requests for 80 trainings from RTCs, STCs, and partners, who have mobilized approximately US$500.000 of extra-budgetary funds for onsite courses and

other training activities, including staff. For some courses, training centres have requested OTGA approximately US$240.000 for additional support.

136. She further reported that Ms Ana Carolina Mazzuco joined the IODE Project Office as IODE Training Coordinator and OTGA Project Coordinator in June 2023.

137. The fourth session of the Steering Group for the OceanTeacher Global Academy took place in Ostend in a hybrid format between 11-13 June 2024. The Group reviewed the activities for 2023-24 and the OTGA work plan for 2024-25 and the future of the programme component was discussed. The Steering Group elected Ms Filomena Martins (RTC Portugal) and Ms Carolina Garcia (RTC Colombia) as SG Co-Chairs for the next intersessional period.

138. In 2024, OTGA was granted an extension of the ongoing extra-budgetary funds from UNESCO IOC FUST (Government of Flanders, Kingdom of Belgium) to support training activities until the end of 2024. OTGA has successfully mobilized additional extra-budgetary funds including GEF/UNDP Small Grants Program to support marine litter training and monitoring in Cape Verde, the European Union Horizon Europe Blue Cloud project to develop the online training component for the Blue Cloud Training Academy, and the UNESCO IOC NORAD FUND OceanTraining Internship Program to support on-site and online training courses on ocean best practices in the Caribbean. Other extra budgetary funds were mobilized by affiliated partners to develop courses jointly, which includes the OD DCC-Coastal Resilience to develop a trainings series for different stakeholders (first focused on business), the UNESCO MAB/MangRes project to develop Massive Open Online Courses (MOOC) trainings in mangrove restoration, and the UNESCO-IOC/European Commission DGMARE MSPglobal project to develop self-paced trainings in marine spatial planning.

139. She informed the Committee that in the past 10 years, OTGA has mainly relied on extra-budgetary funds from the Government of Flanders (FUST-2). The OTGA Secretariat budgeted the operation and further development of the training programme and associated network for the next 5 years, following the approved 2026-2030 vision, reaching an estimate of USD 5,000,000. For 2025 to 2027, OTGA has requested USD 150,000/year from the Regular Programme, to secure core services (management of training courses, e-learning platform, travel grants, and development of new learning materials). Programme component coordination and IT are guaranteed until 2026 from Flanders/VLIZ staff secondment. Throughout 2024, OTGA has participated in calls for project proposals, engaged with collaborators, and met with potential donors for resource mobilization. Although no core extra-budgetary funding has been secured to cover the full training programme, funding has been confirmed for specific training activities.

140. The delegate of Colombia appreciated the information presented and highlighted the fundamental role played by OTGA in capacity development at the regional level, a commitment reflected in the training of more than 1,400 researchers over the past ten years at the regional training centre hosted by INVEMAR for our region, with a special emphasis on young researchers and women in marine sciences. We extend our gratitude to the government of Flanders for its co-financing of this initiative. Therefore, we express our support for the recommendation directed to the steering group regarding the creation of a "resource mobilisation strategy." We believe that, in the post-pandemic context, it is crucial to resume in-person training sessions related to previously identified capacity-building needs. Additionally, Colombia suggests exploring actions arising from major regional projects and networks as viable alternatives for financing or co-financing, aligned with our capacities. Furthermore, we propose fostering closer collaboration among regional centres, particularly concerning joint training initiatives, provided that conditions and language requirements allow.

141. The Chinese Delegation congratulated OTGA on the proactive progress achieved during the last intersessional period. During 2023 and 2024, with the strong support of the OTGA Secretariat, the OTGA Tianjin Regional Training Center successfully organized two online training courses by using the e-learning platform. These activities provided learning opportunities to 94

participants from nearly 30 countries. We are delighted to share with you that the Tianjin Regional Training Center is planning to host an on-site training workshop on sea-level rise and its impact on Coastal Zones under Climate Change, targeting Southeast Asian countries in the coming month of May. Preparatory work for this event is progressing well with the assistance of the OTGA Secretariat. We cordially invite all the member states in the region to disseminate this information and nominate qualified candidates for participation.

142. The delegate of Kenya requested training on MSP.

143. OBIS expressed appreciation of the collaboration and support received from OTGA for OBIS training activities and calls on the continuation and support for this important IODE Programme Component.

144. **The Committee acknowledged** OTGA for the successful achievements with its training and capacity development activities.

145. T**he Committee thanked** the Government of Flanders (Kingdom of Belgium) for its continued support for OceanTeacher Global Academy through the provision of a full-time project coordinator as well as admin and IT support through the IODE Project Office

146. **The Committee recommended** that the OTGA Steering Group should develop a Resource Mobilization Strategy and take action on its implementation.

3.4.2 IODE Programme Activities

147. This agenda item was introduced by **Ms Lotta Fyrberg**, IODE Co-Chair. She recalled that AquaDocs, GODAR, GOSUD, GTSPP, ICAN, IQuOD, OBPS, OceanExpert, ODISCat, QMF and WOD had been designated as Programme Activities under the Programme Component ODIS. She informed the committee that all reports of programme activities were compiled by Mr Greg Reed into Document IOC/IODE-28/3.4.2 (IODE Programme Activities: Progress Reports 2023-2024).

148. **Ms Lotta Fyrberg,** IODE Co-Chair invited Chairs of Programme Activity steering groups to briefly address the Committee to address specific issues or concerns related to their programme activities that require consideration by the Committee, a decision or formal recommendation.

3.4.2.1. AquaDocs

149. **Ms Pauline Simpson** introduced this agenda item on behalf of Mrs Angela Clark, SG-AquaDocs Co-Chair who was unable to attend. She informed the Committee that AquaDocs is the joint open access repository of the UNESCO/IOC International Oceanographic Data and Information Exchange (IODE) and the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) with support from the FAO Aquatic Sciences and Fisheries Abstracts (ASFA).

150. AquaDocs contains almost 37,000 publications covering the natural marine, coastal, estuarine/brackish and freshwater environments, and was created by merging content from two repositories (OceanDocs and Aquatic Commons). AquaDocs serves as a repository for more than 130 organizations and projects to make aquatic and marine science information Findable, Accessible, Interoperable, Reusable (FAIR). Since its launch on August 17, 2021, the repository has grown by more than 1700 publications and added 14 new communities.

151. Of significance to IOC and IODE were the completion of the ASFA Trust Fund project to deposit 200 items of IOC historic grey literature, and the selection of AquaDocs as the repository for the UN Decade of Ocean Science for Sustainability - 10 Challenges. The focus in 2024 for the project managers and others on the Steering Group was to migrate AquaDocs to a new hosting

platform with DSquare Technologies resulting in significant cost savings for IODE. The first phase of the migration was completed in January 2025.

152. Ms Simpson outlined the benefits of partnership with AquaDocs:

- IAMSLIC members manage the AquaDocs project. Experienced information professionals volunteer hundreds of hours of their time to manage the project, operate the repository, onboard new depositors, provide training and promotion, curate records, and contribute content.
- IODE funds the hosting of the repository with an external DSpace-certified vendor. External hosting offers a robust, streamlined interface with *dedicated* technical support. In addition, the IODE Project Office offers technical advice to the AquaDocs Steering Group, and administrative support for contract renewal.
- ASFA supports AquaDocs in two key ways to increase the visibility of aquatic publications: 1) by harvesting records from AquaDocs to include in the OpenASFA search interface; 2) by supporting organizations to digitize grey literature and deposit into AquaDocs.

153. She identified the benefits to IODE are:

- AquaDocs offers persistent identifiers called Handles (similar to DOIs) which simplifies citing and linking to documents and ensures access if the IODE website or OceanExpert are re-developed.
- AquaDocs serves as a repository for other oceanographic projects and organizations. Examples include the Partnership for Observation of the Global Ocean (POGO) and Scientific Committee on Oceanic Research (SCOR). In addition, other emerging IOC programmes/products (e.g. Harmful Algal Information System) could link to specific documents already available in AquaDocs.
- AquaDocs is part of the ODIS/OIH ecosystem which increases discoverability of IOC and global marine and aquatic documents.

154. She identified the benefits of external hosting as:

- IT support needed from IODE project office is minimal
- Full solution with additional features not available in standard Dspace installation (e.g. user export of results, harvesting, statistics module, content management tools with WYSIWYG editors for static pages and FAQs)
- Support guaranteed within an agreed time
- No network security risks
- Consistent maintenance
- Contract can be terminated and content exported back to the self-hosting model.

155. Ms Simpson then introduced the proposed work plan and budget that will be discussed under Agenda Item 8.4.

156. **The Committee expressed its appreciation** for the progress made by AquaDocs and **decided** to continue this Programme Activity.

157. **The Committee instructed** all IODE PCs, PAs and Projects to contribute research and informational documents to AquaDocs.

158. **The Committee invited** institutions and organizations with limited capacity to host their own repository to use AquaDocs.

3.4.2.2. Global Oceanographic Data Archaeology and Rescue (GODAR)

159. **Dr Paula Sierra Correa** introduced this item on behalf of Dr Hernan Garcia, GODAR Project Leader who was unable to attend. She reported on the IODE Global Oceanographic Data Archaeology and Rescue (GODAR) Programme Activity. GODAR is an IODE Programme Activity first established in 1993. GODAR complements historical essential ocean variable data being integrated into the World Ocean Database (WOD) for long-term archival, open access, and use. GODAR works in collaboration with other IODE-led activities including ODIS as well as other international activities including the NOAA NCEI hosted World Data Service for Oceanography, a component of the World Data System (WDS). The historical data are necessary to support climate research and decision-making. In 2025, GODAR seeks to conduct a WOD/GODAR workshop in RTC-INVEMAR, Colombia and identify relevant data for digitization. In 2026, GODAR seeks to conduct a similar workshop in the Asia region.

160. Dr Sierra Correa then introduced the proposed work plan and budget that will be discussed under Agenda Item 8.4.

161. **The Committee thanked** the GODAR Programme Activity for their effort to help consolidate, digitize, long-term archival and make openly accessible historical oceanographic data in paper form against degradation or loss.

162. **The Committee noted** that GODAR did not submit a 2025-2026 work plan and **expressed** its concern about the future role of US-NODC/NCEI to lead the GODAR programme activity, but **expressed** support for the continuation of this important programme activity.

3.4.2.3. Underway Sea Surface Salinity Data Archiving Project (GOSUD)

163. **Ms Lotta Fyrberg** introduced this item on behalf of Mr Ludovic Drouineau, GOSUD Programme Activity Lead who was unable to attend. On his behalf, Ms Fyrberg reported that the main objective of GOSUD (Global Ocean Surface Underway Data Project) is to collect, process, archive and disseminate in real time and delayed mode, sea surface salinity and other variables collected underway, by research and opportunity ships. He recalled that IODE-27 had adopted Decision IODE-27/3.3.1.3 renaming GOSUD to the Underway Sea Surface Data Archiving Project but continuing the acronym GOSUD.

164. The GOSUD program will continue its core activities, ensuring the quality and accessibility of global ocean surface data. Moving forward, GOSUD aims to strengthen its collaboration with key European aggregators, including EMODnet and the Copernicus Marine Service, to enhance data sharing and integration. The program will maintain its partnership with the World Ocean Database to contribute to comprehensive global ocean datasets.

165. Efforts to align with the Ocean Data and Information System (ODIS) are also underway, with the setup process set to reinforce GOSUD's role in the global ocean data management and dissemination. These initiatives reflect GOSUD's commitment to encouraging collaboration, improving data accessibility, and supporting the international oceanographic community. In 2025, an ERDDAP server was established for GOSUD which is a key step in integrating GOSUD data with the ODIS data portal.

166. Ms Fyrberg then introduced the proposed work plan and budget that will be discussed under Agenda Item 8.4.

167. It was noted that the word “Project” in the title could cause confusion as GOSUD is no longer a Project but a Programme Activity.

168. GOOS recommended that GOSUD take advantage of the upcoming sixteenth meeting of the GOOS Observations Coordination Group (OCG-16) on 7-10 April 2025, Brest, to explore

opportunities for it to be recognised as an GOOS network and report back on the results of these discussions at the next IODE Management Group meeting and IODE-29.

169. **The Committee decided** to rename GOSUD to “Underway Sea Surface Salinity Data Archiving Programme Activity” (GOSUD).

170. **The Committee expressed its appreciation** for the progress made by GOSUD and **decided** to continue this Programme Activity.

3.4.2.4. Global Temperature-Salinity Profile Program (GTSPP)

171. **Mr Thierry Carval** introduced this item on behalf of Mr Christopher Paver, Chair of the SG-GTSPP who was unable to attend. He reported that the mission of GTSPP is to acquire, synthesize, and generate data products for near-real time and delayed mode (i.e. science quality) water temperature and salinity profiles. The main sources of the data are the Global Telecommunications System (GTS) mostly for near real time data and directly from contributing SOT SOOP regional Data Assembly Centers (DACs) for delayed mode data. US NOAA/NCEI continues to maintain the synthesized profile database and generate operational Real Time and Best Copy data products. Canada DFO continues to acquire data from the GTS and process for submission to US NOAA/NCEI. The regional DACs (i.e. US NOAA/AOML, University of California San Diego - SCRIPPS, Australia CSIRO and Bureau of Meteorology) continue to submit delayed mode data to US NOAA/NCEI. The Japan Meteorological Agency (JMA) manages the GTSPP Data Product Centre for the North Pacific Ocean.

172. The products and services provided as part of GTSPP are used by many downstream data products and research initiatives, to include those as part of IODE and beyond to support climate studies, physical processes modeling, and refinement of quality control techniques. Without this program, the scientific community and operational systems would face severe setbacks, both in terms of resource demands and the loss of reliable, synthesized ocean profile datasets. This underscores the critical importance of sustaining GTSPP to support global ocean monitoring and research efforts. Although GTSPP continues to operate under reduced staffing in some partner organizations, the program continues to address gaps in data as it relates to end user products by developing pathways to GTSPP for real time and delayed mode data. The program is looking into parallel data streams for real time GTS data from GOOS, and reestablishing pipelines with the French Institute for Ocean Science (IFREMER) and Canadian Department of Fisheries and Oceans (DFO) to acquire delayed mode data. GTSPP will also start to develop a new pipeline for delayed mode expendable bathythermograph (XBT) data with the Italian National Institute of Geophysics and Volcanology (INGV). As GTSPP moves database and product management into the cloud in the coming years as part of the US NOAA/NCEI initiative to be 100% cloud based, the program will solicit stakeholders for potential development projects to enable more cloud native and FAIR compliant data products. As part of these activities, GTSPP requests funding to participate in joint meetings with other IOC programs and stakeholders to coordinate data management activities and product development.

173. Mr Carval then introduced the proposed work plan and budget that would be discussed under Agenda Item 8.4.

174. It was noted that the word “Program” in the title could cause confusion as GTSPP is not a Programme but a Programme Activity.

175. Dr David Berry, representative of WMO secretariat, recalling the presentation on the WMO Information System 2.0 given at the 3rd International Ocean Data Conference, noted that the current WMO Global Telecommunication System (GTS) was scheduled to be terminated by 2033 and that both publishers and users of data currently exchanged on the GTS would need to migrate by this date. He also noted that the terms of reference for a new Joint WMO-IOC Collaborative

Board (JCB) subgroup on data management included an item on the migration from the GTS to WIS 2.0, and that these terms of reference would be presented under agenda item 3.6.12.

176. The representative of ODIS requested that the Programme Activity clarify its approach to ensure that any data stored in cloud solutions is portable/exportable to other cloud environments or alternative solutions without loss of interoperability. ODIS expressed that ensuring data is not bound to one cloud solution is key to rendering cloud-based solutions an asset rather than a new vulnerability.

177. **The Committee decided** to rename GTSPP to "Global Temperature-Salinity Profile Programme Activity" (GTSPP).

178. **The Committee expressed its appreciation** for the progress made by GTSPP and **decided** to continue this Programme Activity.

3.4.2.5. International Coastal Atlas Network (ICAN)

179. **Ms Tanya Haddad,** Co-Chair of the ICAN Steering Group, reported that during the intersessional period (May 2023 to November 2024) ICAN successfully hosted multiple summer scholars in continued partnership with Oregon Sea Grant. Scholars assisted the network in continued activities in support of members and priority projects. Accomplishments included the re-launch of the African Coastal and Marine Atlas project on a new and improved GeoNode platform, and the migration of ACMA data archives into the new system. Additionally, ICAN member presentations were migrated into a new YouTube channel and organised into language specific playlists. An additional scholar produced an updated and georeferenced inventory of projects, including several story maps and a collection of annotations highlighting project connections to the Ocean Decade Challenges. Further updates to the African Coastal and Marine Atlas included recruitment and enrolment of many new data contributors, and the preparation and delivery of an on-site training workshop titled "Training on the Implementation of FAIR Principles to African Marine and Coastal Data" in Mombasa Kenya. A final activity (online webinar) was delayed until 2025 and is still under development.

180. Ms Haddad then introduced the proposed work plan and budget (not included in Document IOC/IODE-28/3.4.2) that will be discussed under Agenda Item 8.4.

181. **The Committee expressed its appreciation** for the progress made by ICAN and **decided** to continue this Programme Activity.

3.4.2.6. *International Quality Controlled Ocean Database (IQuOD)*

182. **Dr Gael Forget,** IQuOD Co-Chair, reported that through the coordination of resources and expertise into a single best practice international community effort, the IQuOD project aims to produce, freely distribute and curate the highest quality, most complete and consistent global ocean subsurface temperature profile repository for Earth system, climate and ocean studies, with (intelligent) metadata and an uncertainty estimate for every observation.

183. IQuOD aims to produce, freely distribute and curate the highest quality, most complete and consistent global ocean subsurface temperature profile repository for Earth system, climate and ocean studies. IQuOD has published version 0.1 of the dataset which contains IQuOD uncertainty assignments for each individual measurement. The dataset is hosted through World Ocean Database. Recently, IQuOD developed a publicly available duplicate check algorithm and benchmark dataset to effectively identify duplicates in ocean databases (doi: 10.3389/fmars.2024.1403175), and a new bias correction algorithm for CTD data obtained from mammal mounted CTDs (https://doi.org/10.1175/JTECH-D-23-0081.1). Ongoing interactions and collaborations have been established between IQuOD, GTSPP, ODIS, XBT Science, reanalysis community members and the SOOPIP at a joint meeting hosted by INGV in Bologna, Italy in November 2024. The outcomes of the meeting will be published in the IQuOD repository on

Aquadocs. In the coming two years, IQuOD will continue to maintain collaborations with these groups and establish new collaborations. IQuOD will release the next version of the database with Automatic Quality Control flags attached (as described in https://doi.org/10.3389/fmars.2022.1075510), and any improvements in uncertainty estimates, metadata and bias corrections.

184. Dr Forget then introduced the proposed work plan and budget that will be discussed under Agenda Item 8.4.

185. **The Committee noted with appreciation** the progress made by IQuOD and **decided** to continue this Programme Activity.

3.4.2.7. OBPS (IODE/GOOS)

186. This agenda item was introduced by **Ms Patricia Cabrera**, OBPS project manager, on behalf of Ms Rebecca Zitoun (OBPS Co-Chair) who could not attend. Ms Cabrera reported that OBPS (IODE/GOOS Ocean Best Practices System) convened its sixth annual Steering Group meeting (SG-OBPS-VI), in Paris, France, from November 12–14, 2024. The meeting provided an opportunity to assess the progress of work packages, evaluate the implementation of the 2024 work plan, and discuss future developments for the OBPS repository. The meeting emphasized several technical priorities, including upgrading the DSpace software and reconfiguring analytics, to ensure the system remains operational and effective. Efforts to evaluate repository content were also a major focus. These included the implementation of a robust review process to ensure only relevant content is retained. A robust review process is being implemented to remove any materials that do not align with these updated criteria. The role of endorsing entities in managing best practices was also extensively discussed, and the need for a rigorous endorsing review process. This year, an Advisory Board was established, whose recommendations were reviewed and discussed. They emphasized the importance of stakeholder engagement with regional and funding organizations, and the need for trust-building mechanisms to strengthen OBPS.

187. A comprehensive roadmap and implementation plan were identified as top priorities, supported by the adoption of a biennial review cycle for strategic alignment. One of the most notable strategic discussions centred on expanding OBPS's role within IOC mandates to maximize impact across the ocean value chain. The group proposed adopting a "federation model," which would integrate IOC Programmes and Regional Sub-Commissions. This model aims to enhance global representation, establish a structured governance framework across the IOC. Additionally, as detailed in document IOC/IODE-28/3.4.2.7, a proposal was put forward to extend the funding for IOC-OBPS to all IOC Programmes and a revision to the IOC-OBPS Terms Of Reference, to ensure sustainable support and collaborative engagement.

188. Ms Cabrera further informed the Committee that Dr Cristian Munoz Mas had stepped down as SG Co-Chair and member of the Steering Group in February 2025 for personal and professional reasons.

189. Ms Cabrera then introduced the proposed work plan and budget that will be discussed under Agenda Item 8.4.

190. **The Committee expressed its appreciation** for the progress made by OBPS and **decided** to continue this Programme Activity.

191. **The Committee**, taking into consideration the relevance of OBPS to all IOC programmes **called on IOC Member States** to consider OBPS as an IOC-wide activity **and on IOC programmes** (global and regional) to co-fund OBPS with GOOS and IODE.

192. **The Committee** proposed that an agenda item be included in the IOC-33 agenda, including a draft decision that will re-establish OBPS as proposed above (para 192). A drafting

group for the draft decision should be established, composed of representatives of the IOC programmes and RSBs, as appropriate.

193. **The Committee urged** the IODE community to further document their methodologies and best practices and share them in the Ocean Best Practices System.

3.4.2.8. ODIS Catalogue of Sources (ODISCat)

194. **Ms Lucy Scott**, ODIS Manager, reported that the ODIS Catalogue of Sources (ODISCat) (https://catalogue.odis.org) is an annotated catalogue of online resources serving ocean-related data and information products, currently containing over 3100 records. She noted that Mr Arno Lambert has continued the maintenance of the ODISCat software application during the past inter-sessional period.

195. ODISCat and ODIS have always been closely linked, but now they are integrated. The ODISCat record is now the source for the institutional partners' links to ODIS, enabling an automated indexing of metadata records. Partners have ownership of their ODISCat record, which they keep updated. Their sitemap is included in this ODIScat record, which enables the automated discovery of their metadata.

196. The Committee was informed that no financial resources were required for this programme activity as ODISCat is maintained by the IODE Secretariat.

197. **The Committee instructed** NODCs and ADUs to create or update their ODISCat record(s) which firstly ensures the visibility of their institution's data sources to the world, and secondly, is the first step to joining ODIS.

198. **The Committee expressed its appreciation** for the progress made by ODISCat and **decided** to continue this Programme Activity as part of ODIS.

3.4.2.9. OceanExpert

199. **Ms Sofie de Baenst**, OceanExpert Programme Activity Lead, explained that OceanExpert continues to be used by many IOC programmes and partners and is continuously working to improve the database and user interface. Examples of improvements/changes to the functionalities of OceanExpert include:

- In 2024 the new registration process was successfully installed
- More IOC websites are using the Single sign-on system
- The OceanExpert reporting options also contribute to several IOC reports
- The data policy has been revised (considering the current GDPR and UN regulations on storing personal data)
- Documents stored in OceanExpert are now accessible from the menu
- Institutes stored in OceanExpert are now accessible from the menu – with improved search options
- Updates have been done to the event calendar with extra functionalities during the creation of a new event
- Creating of a planning wheel for IOC events - used by IOC staff for organizing their attendance
- Clean distinction for an expert profile between work location/ nationality and institute information.
- Continuous QC: update of groups, avoid duplicates of events, experts, solve mail failures, etc.

- Information of experts, institutes and events is published following the ODIS Arch rules for ODIS/OIH, Google, Bing, etc. to be harvested.
- The number of experts keeps on growing in the directory (https://oceanexpert.org/statistics)
- Outreach material has been created (videos, stickers)

200. Shortage of staff at the Project Office has resulted in less time to dedicate to the OE workplan. The objective is to hire a consultant to improve the functionality of the different privileges in OE, redesign the OE mailing system and upgrade the system to the latest Symfony framework. It is foreseen that the project lead will have more time to spend on the programme activity.

201. Ms De Baenst then introduced the proposed work plan and budget (not included in Document IOC/IODE-28/3.4.2) that will be discussed under Agenda Item 8.4.

202. **The Committee expressed its appreciation** for the progress made by OceanExpert and **decided** to continue this Programme Activity.

3.4.2.10. IODE Quality Management Framework (QMF)

203. **Mr Greg Reed**, SG-QMF Chair, reported the main objectives of the IODE-QMF Programme Activity are to (i) provide the overall strategy, advice and guidance to NODCs /ADUs to establish organizational quality management systems for the delivery of oceanographic and related data, products and services, (ii) initiate and review existing standards and Manuals and Guides with respect to the inclusion of quality management procedures and practices, and (iii) apply the necessary capacity development activities to ensure accreditation of NODCs/ADUs according to agreed criteria in order to bring all NODCs/ADUs to a minimum agreed level

204. During the intersessional period,

- Two applications seeking accreditation as an NODC were received. These were from the Italian National Oceanographic Data Centre (hosted at the National Institute of Oceanography and Applied Geophysics - OGS) and the Australian Ocean Data Network (AODN). These applications were reviewed by the SG-QMF which recommended the NODCs be awarded the status of Accredited IODE National Oceanographic Data Centre.
- Two applications were received seeking accreditation as an ADU. These were from the Ocean Tracking Network (OTN) and the Balearic Islands Coastal Observing and Forecasting System (SOCIB). These applications were reviewed by the SG-QMF which recommended ADUs be awarded the status of Accredited IODE Associate Data Unit.
- One application was received from the British Oceanographic Data Centre (BODC) seeking re-accreditation as an NODC. This was reviewed by the SG-QMF which recommended the BODC retaining accredited NODC status.

205. The IODE/OTGA Quality Management System Essentials for NODCs and ADUs training course was delivered onsite from 16-18 January 2024 and 16 participants representing 11 NODCs and ADUs successfully completed the course. Trainers from the UK, Norway, Ireland and Australia provided instruction for the course.

206. Mr Reed reported that there is a need for Quality Management training delivered in Spanish and requests for training have been received. Any Accredited NODC or ADU that would like to contribute to a QMF training course in Spanish should contact the IODE Training Coordinator, Ms Ana Carolina Mazzuco.

207. The Steering Group reviewed and revised the IODE Quality Management Framework for National Oceanographic Data Centres and Associate Data Units (IOC Manuals and Guides 67) and the revised edition was published October 2023.

208. IODE-XXVII approved changes to the IODE accreditation process to include certification by CTS (Core Trust Seal) as meeting the requirements for IODE accreditation. Any NODC or ADU which has been certified by CTS will be awarded the status of Accredited IODE National Oceanographic Data Centre or Accredited IODE Associate Data Unit provided they can show evidence of (i) providing national reports to the IODE Committee and (ii) adherence to IODE Standards and Best Practice. The SG-QMF has reviewed these requirements and **recommends an additional requirement for CTS certified data centres to be included (iii) adherence to the IOC Data Policy and Terms of Use (2023)**.

209. Mr Reed advised the Committee that he is stepping down from the Steering Group.

210. He invited members of the IODE Committee to nominate for membership of the SG-QMF.

211. **The** Committee **expressed** its gratitude to Mr Greg Reed for this long-term commitment and leadership in IODE QMF.

212. **The Committee expressed its appreciation** for the progress made by the IODE QMF and **decided** to continue this Programme Activity.

213. **The Committee instructed** the SG-QMF to elect a new Chair as soon as possible.

214. **The Committee instructed** the SG-QMF to revise the IOC Manuals and Guides 67, IODE Quality Management Framework for National Oceanographic Data Centres and Associate Data Units, to include the additional accreditation requirement for CTS certified centres.

3.4.2.11 World Ocean Database (WOD)

215. No reporting or work plan was received.

216. **The Committee reiterated** the importance of this activity, **regretted** the absence of reporting and work plan from WOD, however **decided** to continue this Programme Activity.

217. **The Committee referred** discussions on how IODE can facilitate the continuity of WOD data and services to the IODE Management Group.

218. The representative of ODIS explained that the revisions to the above paragraph, including "...facilitate continuity of WOD data and services…" were added in the frame of increasing the robustness of all IODE structural elements through, for example, planned redundancy. He noted that this discussion is closely tied to agenda item 6.2.6.

3.4.2.12 Re-organization of the ODIS Programme Activities

219. This agenda item was introduced by **Dr Pier Luigi Buttigieg**, Chair SG-ODIS who referred to agenda item 3.4.1.2.

3.4.3 IODE Projects

220. This agenda item was introduced by **Ms Lotta Fyrberg,** IODE Co-Chair. She noted that IODE Projects, as defined in their definition, are fully dependent on extra-budgetary funding and have their own work plan, budget and evaluation procedures. Reporting on these activities is therefore intended for information only. She invited Mr Ward Appeltans to briefly report on projects under his responsibility noting that the Ocean InfoHub project (FUST funded) ended in December 2024 and was now continued as ODIS, while the OTGA2 project (FUST funded) also ended in 2024 and was continued as OTGA.

221. **Mr Appeltans** reported on the Pacific Islands Marine Bioinvasion Alert Network (PacMAN) project (2020-2024), which was funded by the Flanders Government through the

UNESCO/Flanders Science Trust Fund (FUST). The project primarily focused on Fiji, aimed to build local capacity in science to detect marine invasive species using molecular technologies. The project developed an early-warning decision support tool, a custom bioinformatics pipeline, and an end-to-end system for monitoring, sampling, and analyzing marine invasive species. It also provided training for local researchers.

222. Key outcomes of the PacMAN project include:

- Development of a marine invasive species monitoring plan that was supported by local stakeholders. This plan was published as IOC Technical Series No. 168 and incorporated a watch list of high-risk species for Fiji.
- Establishment of a decision support tool that can analyze species detections, assess risks, and display information in a user-friendly format. This platform syncs with the Ocean Biodiversity Information System (OBIS) to retrieve data.
- Capacity building through training, including a scientific training course on molecular methods (eDNA, PCR) for 21 participants from key stakeholder organizations in Fiji, as well as training on the Decision Support Tool. This included the first ever practical course on environmental DNA held in Fiji.
- Detection of two high-risk invasive species, *Didemnum perlucidum* and *Perna viridis*, through DNA sequencing of collected samples. qPCR assays were developed and tested for these high-risk species. The presence of *Didemnum perlucidum* was also confirmed by qPCR outside of Suva Harbour.
- Active stakeholder engagement throughout the project, ensuring alignment with local needs and fostering a sense of ownership and increased awareness of invasive species monitoring approaches and scientific expertise at the national level. This was achieved through face-to-face meetings, national and regional conferences, and board meetings. An advisory board was established with 19 representatives of local and regional stakeholders.
- Contribution to national and international biodiversity targets through its contributions to the Convention on Biological Diversity (CBD)’s Target 6 under the Kunming-Montreal Global Biodiversity Framework and Fiji’s National Biodiversity Strategic Action Plan 2020-2025.
- Development of standard operating procedures which were officially handed over to stakeholders during the final PacMAN project meeting (20 November 2024), ensuring the continuation of the project's efforts beyond its conclusion.
- The project faced challenges, including delays due to the COVID-19 pandemic and procurement issues, but overall demonstrated satisfactory performance. The PacMAN project has been recognized as a pioneering example of stakeholder involvement and a model for co-design in project development. The project has positioned Fiji as a leader in marine invasive species monitoring in the region.

223. Mr Ward Appeltans also reported on the Flanders (FUST-FUT) funded project eDNA expeditions in marine World Heritage sites (2022-2024), which was jointly implemented by OBIS and the marine programme of the World Heritage Centre. The UNESCO eDNA Expeditions project has demonstrated the transformative potential of environmental DNA (eDNA) for ocean biodiversity monitoring and conservation. By coupling eDNA sampling with DNA metabarcoding, this initiative has provided a cost-effective and accessible method for tracking biodiversity trends, particularly in developing nations where traditional survey methods are not feasible. The project has engaged local communities, including students, in citizen science, fostering education and public involvement in ocean conservation. This work aligns with UNESCO-IOC’s broader mission to protect marine biodiversity and support evidence-based decision-making for sustainable ocean management.

224. Over three years, the project successfully organised sampling campaigns across 21 UNESCO World Heritage marine sites, spanning 19 nations. With over 250 participants, including schoolchildren, and 550 eDNA samples distributed, the initiative has enabled the identification of approximately 4,400 marine species, half of which are fish, 28 marine mammal species, 86 sharks and ray species, 3 turtle species and 120 species on the IUCN Red List of Threatened species. The resulting data has been made accessible through OBIS, via an interactive dashboard (https://dashboard.ednaexpeditions.org/) and a UNESCO publication.

225. The project has received significant international attention, with media coverage at major events such as COP15 and the UNESCO General Conference. The involvement of the UNESCO Director General in a sampling expedition underscored the initiative's high-profile impact. Photographic exhibitions at UNESCO HQ and press engagements further amplified awareness of eDNA's role in marine conservation.

226. **The Committee welcomed** the successful implementation of the PacMAN project and **recommended** that its results and developed practices should be used as examples for similar projects by Member States.

227. **The Committee commended** the successful implementation of the eDNA Expeditions project and **recommended** that IOC Member States and partners support its continuation and expansion, both geographically and over time. Furthermore, it **encouraged** future eDNA initiatives to collaborate with OBIS and share DNA-derived species occurrence data with OBIS to enhance global marine biodiversity monitoring.

3.4.4 Implementation report of revised Rules of procedure for IODE activities

228. This agenda item was introduced by **Dr Paula Sierra Correa,** IODE Co-Chair**.** She recalled that the new Rules of Procedure were published as IOC Manuals and Guides No. 91 (Rules of Procedure for IODE Programme Components, Programme Activities and Projects).

229. She recalled that the Management Group, at its February 2024 meeting had agreed that all Programme Components and Programme Activities should prepare documentation for IODE-28 detailing how the new Rules of Procedure have been adopted in their management structure. The IODE Secretariat had invited all Programme Components and Programme Activities to submit a brief report on this matter. She informed the Committee that only OBIS had reported on progress on this agenda item.

230. **Ms Katherine Tattersall** (SG-OBIS Co-Chair) reported that OBIS established an Intersessional Working Group (IWG-OBIS-Structure) to propose a new OBIS management structure aligned with the new IODE rules and procedures. The IWG-OBIS-Structure reviewed and updated the Terms of Reference (TORs) for several components of its management structure, including the IODE Steering Group for OBIS (SG-OBIS), the SG-OBIS Co-Chairs, OBIS nodes and the OBIS Executive Committee. In addition, ToRs were created for three new Coordination Groups (Nodes, Data and Products) to guide and support Priority Area 1: Data Mobilization and Priority Area 2: Data Application. The three OBIS coordination groups are replacing the various OBIS task teams and project teams. This new OBIS management structure was adopted by the 12th session of the IODE Steering Group for OBIS (March 2024).

231. ODIS and OBPS expressed the intention to consider the IODE rules of procedures in the restructuring of their programme activity.

232. **The Committee expressed its appreciation** to OBIS for the progress made to align its activities with the IODE rules and procedures but **expressed regret** that no other IODE programme component or programme activities had indicated any progress.

233. **The Committee instructed** all IODE programme components and programme activities to prepare documentation for the next meeting of the IODE Management Group detailing how the new Rules of Procedure have been adopted in their management structure.

3.4.5 Report of the inter-sessional working group on the review of IODE structure and working methods

234. This agenda item was introduced by **Dr Paula Sierra Correa**, IODE Co-Chair. Dr Sierra Correa recalled that IODE-27 had established the inter-sessional working group on the review of IODE structure and working methods through Decision IODE-27/9.1. Its objectives were to:

(i) Review IODE structure and working methods and evaluate for efficacy and efficiency;

(ii) Develop, if necessary, a proposal of required measures to adjust programme structure and working methods; and

(iii) Submit its final report including a draft proposal to IODE-28.

235. Its membership included Mr Ariel Troisi, Mr Sergey Belov, Mr Taco de Bruin, Mr Francisco Arias, Ms Lotta Fyrberg, Ms Paula Sierra, Mr Kimmo Tikka, Mr Lennert Tyberghein, Mr Michael Linthon, Mr Jonathan Pye, Ms Sun Miao, Ms Fangfang Wan, Mr Marc Taconet, Mr Jan-Bart Calewaert, Mr Joon-Soo Lee, Mr Sheldon Carter, Mr Patrick Gorringe, Mr Mortaza Tavakoli and Mr Hernan Garcia.

236. Dr Sierra Correa recalled that, regarding (i) above (**IODE structure**), IODE-27 had discussed the structural elements of the IODE programme under agenda item 3.3.3 and had approved the designation of IODE activities as Programme Components, Programme Activities and Projects, considering that this should make IODE activities more attractive to partners for cooperation. IODE-XXVII had decided to designate ODIS, OBIS and OTGA as Programme Components and to take this into consideration in the work plan and budget 2023-2025.

237. IODE-27 had further instructed the IODE Management Group to (i) further clarify and finetune the naming definitions; (ii) propose the designation of all other IODE activities; and (iii) propose procedures to guide applications for new components, activities and projects, and submit these to the 28th Session of the IODE Committee in 2025.

238. The IODE Management Group had an *ad hoc* meeting on 1 September 2023 and had completed the task “further clarify and finetune naming definitions” but had identified several issues that required further discussion. The Management Group decided to continue its work to “propose procedures to guide applications for new Components, Activities and Projects, and submit these to the 28th Session of the IODE Committee in 2025.” through ad hoc meetings and complete its work by December 2024

239. Regarding (i) above (**IODE working methods**) she noted that new Rules of Procedure for IODE Programme Components, Programme Activities had been published as IOC Manuals and Guides No. 91 (https://oceanexpert.org/document/32232). In addition a revision of the IODE Quality Management Framework for National Oceanographic Data Centres and Associate Data Units (2nd Revised edition) had been published as IOC Manuals and Guides 67 rev. 2 (https://oceanexpert.org/document/33321)

240. Dr Sierra Correa informed the Committee that the inter-sessional working group had met online in 2024 and discussed any follow up required on Decision IODE-27/9.1 taking into consideration the actions taken by the IODE Management Group including the publication of several relevant documents.

241. **The Committee noted** with satisfaction the actions taken by the inter-sessional working group on the review of IODE structure and working methods.

242. **The Committee tasked** the Management Group to monitor the implementation of the new structure and to identify any issues that need attention.

243. **The Committee closed** the inter-sessional working group on the review of IODE structure and working methods and thanked its members for their contributions.

3.4.5.1. *Future of the IODE Associate Information Units (AIUs)*

244. This agenda item was introduced by **Dr Paula Sierra Correa,** IODE Co-Chair. She recalled that the creation of AIUs as a structural element had been recommended by the former IODE Group of Experts on Marine Information Management (GE-MIM) and was adopted through Recommendation IODE-XXIV.5 in 2017. The intention was to create a global network of marine libraries. The IODE Committee repeatedly invited Member States to establish AIUs. In addition, the IAMSLIC (International Association of Aquatic and Marine Science Libraries and Information Centers) was also urged to promote membership on an AIU network among its members. Despite repeated invitations only 6 libraries registered (see https://oceanexpert.org/group/423). Few participated in IODE Sessions as AIU.

245. Dr Sierra Correa therefore invited the Committee to consider whether the AIU should remain as a structural element of IODE. Instead, IODE could consider promoting the development of a "marine librarian" community through AquaDocs. AquaDocs already has an extensive group of library experts that submit documents to the AquaDocs repository. They could be organized into a community mailing list.

246. The representative of Aquadocs expressed a strong desire to maintain and expand the representation of the Marine Information Management community in IODE and explained that unfortunately the minimal level of resources at MIM centres prevent them from participating in IODE Committee meetings. However, the Aquadocs project will continue offering MIM centres the possibility to archive documents in Aquadocs, which makes them part of the IODE Community, and those that connect their catalogues with ODIS become IODE/ODIS nodes and will be recognized for their involvement in IODE.

247. **The Committee thanked** the marine libraries who joined IODE as AIUs, however, considering the limited membership of marine libraries as AIUs, **decided** to abolish AIUs as structural elements of IODE and **invited** the established AIUs and other marine libraries to apply to become IODE Associate Data Units.

248. **The Committee instructed** the AquaDocs Programme Activity to engage with The International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) and marine libraries in sharing (meta)data with IODE through the establishment of an ODIS Node or through document submission to AquaDocs.

3.5 PROGRESS REPORT ON THE IODE QUALITY MANAGEMENT FRAMEWORK

249. See 3.4.2.10.

3.6 PROGRESS REPORTS OF JOINT ACTIVITIES WITH IOC PROGRAMMES AND OTHER PARTNERS

IOC Ocean Science

250. This agenda item was introduced by **Ms Lotta Fyrberg** on behalf of Ms Karen Evans, Head Ocean Sciences Section who was unable to attend. She referred to Document IOC/IODE-28/3.6.1 (Joint activities with Ocean Science Programme) where five primary areas of collaboration between IODE and the Ocean Science Section are detailed. These include:

- A Harmful Algal Information System (HAIS), a joint IOC-FAO Intergovernmental Panel on Harmful Algal Blooms (IPHAB) - IODE activity that supports the UN Global HAB Status

report and visualises data from the Harmful Algae Event Database (HAEDat) and HAB species occurrence records from OBIS.

- A Global Ocean Oxygen Database and Atlas (GO_2DAT), produced as part of the UN Decade Global Ocean Oxygen Decade (GOOD) programme, of which IODE is a primary partner and is a member of the steering group;
- Facilitation of the delivery of SDG 14.3.1 indicator data into a dedicated online portal as part of IOC responsibilities as custodian agency of this indicator in support of the 2030 Sustainable Development Agenda;
- The Global Ocean Science Report (GOSR) in support of IOC Assembly Decision IOC-XXIX/5.1, and the delivery of SDG 14.a indicator data portal as part of IOC responsibilities as custodian agency of this indicator in support of the 2030 Sustainable Development Agenda;
- The State of the Ocean Report (StOR), an IOC initiative that delivers information and developments focused on the seven outcomes of the UN Decade of Ocean Science.

251. She noted that the document outlined several areas of further collaboration and associated estimated budgets (largely in-kind) including:

- Rejuvenation of the HAIS and the HAEDat (extra-budgetary funds to be identified);
- Input into the GOOD steering group meetings and facilitation of GO_2DAT contributions to ODIS;
- Participation in indicator working group meetings and further development of the SDG 14.3 indicator online data portal to implement a federated system, to maintain existing functions of the portal and to develop visualization tools for the data user as well as improving the searchability of the existing data sets;
- Further development of the GOSR data portal to facilitate Member State data submission, retrieval of metadata, data and related literature, and visualization of data to meet the needs of multiple stakeholders;
- Continued input into delivery of information and storylines for the StoR focused on biodiversity, ocean observation and data management.

252. **The Committee decided** that the IODE Secretariat and the Ocean Science Section continue to work together to deliver commitments against Assembly decisions, IOC responsibilities associated with custodianship of SDG14 indicators and agreed joint activities.

253. **The Committee decided** that the IODE Secretariat and the Ocean Science Section work together on a joint resource mobilization effort to support activities requiring extra-budgetary funding for implementation.

3.6.2 Global Ocean Observing System (GOOS)

254. **Ms Joanna Post,** Head of IOC Ocean Observation and Services Section, reported on updates from GOOS and outcomes from the fourteenth meeting of the GOOS Steering Committee (GOOS SC-14), 19-21 February 2025, Paris.

255. At SC-14, the GOOS SC discussed its activities moving forward which will be outlined in its work plan 2025-2027 that will be presented to IOC Assembly 33. Activities will be conducted under the following broad areas: Observation system design and development; Strengthening data integration and delivery; System implementation at national and regional level and for relevant application areas; Outreach including projects, partners and communications; and GOOS Reform.

256. Ms Post updated on the GOOS reform process, as mandated by IOC Decision EC-57/4.1, and a key element of this work was identified by Member States that evolving GOOS must include consideration of the support for a functioning Digital Ecosystem to enable end user applications.

257. The GOOS SC welcomed the outcomes of the IODE-GOOS Data Workshop (30 September – 2 October 2024) and the proposal to develop an IOC data architecture (see Agenda item 6.2). The GOOS SC asked the IOC data architecture working group that will be set up under the auspices of the IOC to:

- Articulate what this architecture will enable the community to do that has not been able to do before
- Develop a more useful diagram to represent the architecture (what it actually is, how it connects together communities), and what the benefits are, which are not yet articulated clearly enough
- Define what the architecture will require of all.
- Maintain open connections to GOOS (including GRAs), as well as the Ocean Decade Data Group, WIS2, IODE data centres to provide feedback/consider functionality.
- Provide advice on resource needs.

258. And noted that demonstration 'products' will help make visible the benefits of ocean observation and related data management and sharing.

259. Ms Post updated colleagues on the ongoing engagement by GOOS with its 14 GOOS regional alliances and, currently, 76 National Focal Points. At SC-14, the GOOS SC recommended that GRA representatives upload their meetings onto OceanExpert, and request reports after GRA meetings. Discussions also examined how to encourage engagement between GOOS NFPs and GRA representatives with their counterpart NODCs and ADUs.

260. In regard to the IODE/GOOS Ocean Best Practices System, she informed colleagues of the changed approach to GOOS projects. She referred to agenda item 3.4.2.7 and the invitations to the IOC to consider that OBPS should be an IOC-wide endeavour, and to other IOC programmes to co-fund OBPS.

261. Ms Post also reported on continuing cooperation with IODE and OBIS on the BioEco Portal. With the evolvement of the work of the BioEco panel and OBIS, the GOOS SC have recognised how a biodiversity observation plan could help support a wider IOC biodiversity plan that responds to UN mandates, including those where OBIS, GOOS and IOC are specifically identified as contributors such as the Kunming-Montreal Global Biodiversity Framework (GBF) and the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement, as well as other relevant application spaces.

262. **The Committee welcomed** the outcome from the fourteenth meeting of the GOOS Steering Committee (GOOS SC-14), 19-21 February 2025, Paris, that strengthening data integration and delivery should be an important area of emphasis for GOOS.

263. **The Committee welcomed** the support by the GOOS SC for the IOC Data Architecture proposal (agenda item 6.1).

264. **The Committee encouraged** IODE NODCs and ADUs to reach out to their GOOS Regional Alliance (GRA) and National Focal Point (NFP) counterparts to coordinate on integrated data delivery to GOOS and ODIS, and vice versa, **welcomed** that GOOS will reach out to its NFPs and GRAs to encourage and enable their outreach to IODE NODCs and ADUs.

265. **The Committee recognised** the close collaboration between IODE and GOOS, particularly the BioEco panel and OBIS, to develop a GOOS biodiversity plan that contributes to

and aligns with greater coordination of biodiversity activities across the IOC that responds to the IOC Medium Term Strategy (2022-2029), UN mandates, including those where OBIS, GOOS and IOC are specifically identified as contributors such as the Kunming-Montreal Global Biodiversity Framework (GBF) and the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement, as well as other relevant application spaces.

266. **The Committee noted** the GOOS Reform process, as mandated by IOC Decision EC-57/4.1, and **expressed** its support to the process.

3.6.3 Tsunami Warning and Mitigation Systems and the IOC Tsunami Information Systems

267. **Dr Paula Sierra Correa** introduced this item on behalf of Mr Bernardo Aliaga, Head TSR who was unable to attend. She reported that the programme, through the International Tsunami Information Centre (STC ITIC), has worked in close collaboration with OTGA to develop online learning materials to support Tsunami awareness and preparedness globally. In 2024, one new online self-paced training course (UNESCO-IOC – Tsunami Awareness) was successfully released, engaging 205 participants from around the world. 99 certificates were awarded, from 44 countries, including several from SIDS. A second online self-paced training course (UNESCO-IOC Tsunami Ready) was developed with the assistance of two trainees sponsored by UNESCO-IOC and hosted by ITIC. This course was released in January 2025.

268. She also reported that OTGA Secretariat was invited by UNESCO-IOC Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) to participate in the development of the PTWS Minimum NTWC Competency Framework, which will be piloted through a training course in OTGA in 2025.

269. These initiatives were led by ITIC Director Dr Laura Kong with the support of ITIC Information Technology Specialist Mrs. Tammy Fukuji, Head of the Indian Ocean Tsunami Information Center (IOTIC) Mr Ardito Kodijat, former Senior Programme Specialist Tony Elliott, and OTGA project coordinator Mr. Greg Reed.

270. **The Committee acknowledged** the closer collaboration and capacity development actions accomplished by TSR and OTGA.

271. **The Committee welcomed** the new pilot initiative (PTWS Minimum NTWC Competency Framework) and **instructed** that these courses (and related tasks) should be included in OTGA training planned for 2025.

3.6.4 Marine Policy and Regions

272. **Ms Michele Quesada da Silva** introduced this item on behalf of Mr Julian Barbière**,** Head MPR, who was unable to attend. She informed the Committee about existing and potential joint activities between IODE and MPR and how this is beneficial for several IOC programmes and projects, as well as a prerequisite to deliver the IOC value chain from ocean observation and data to knowledge-based sustainable ocean planning and management.

273. Regarding the Marine Spatial Planning Global Programme (MSPglobal), Ms Michele Quesada da Silva reported four specific activities of MSPglobal 2.0 related to capacity development and data: (i) new self-paced and multilingual MSPglobal Online Training Course at OTGA available since September 2024; (ii) ongoing development of a global assessment of capacity needs based on the results of the IOC survey on MSP sent to Member States in November 2024, which will inform specific tailored activities by IOC and other interested institutions; (iii) co-development of a publication on ‘How to develop a Spatial Data Infrastructure for MSP’, which is expected to be launched during IODC-3; and (iv) co-development of a publication on ‘How to integrate Ocean Observation into MSP’, which is expected to be launched

during UNOC-3. The core tasks of developing content for the training as well as writing the publications were led by a member of the MSPglobal Team, while members of the IODE team collaborated providing in-kind technical support (participation in workshops, written inputs and reviews).

274. Ms Quesada da Silva informed that a third phase of MSPglobal is confirmed by the European Union (main donor), thus in-kind support from IODE team would be appreciated to contribute to the following activities: (i) new self-paced and multilingual trainings at OTGA about MSP-related topics such as biodiversity and climate, data and IPLCs engagement; and (ii) co-development of additional publications on MSP and data, such as cumulative impacts and scenarios. MSPglobal 3.0 is planned to be a 2-year project starting in July 2025. She noted that from these proposals, resources for the training regarding IPLCs engagement were not mobilised yet.

275. Building on the experience of its programmes and projects, Ms Quesada da Silva informed that an IOC Wide-Strategy on Sustainable Ocean Planning and Management, and a plan for implementing the Strategy, is under development. SOPM is a strategic, integrated planning and management framework designed to guide responsible, climate resilient stewardship of marine areas, balancing economic, social and environmental sustainability in ways that allow nations to align economic development with marine ecosystem health for long-term sustainability. SOPM builds on other work the IOC undertakes, including Marine Spatial Planning and Integrated Coastal Zone Management, but is not limited to it.

276. The draft SOPM strategy has two objectives directly related to IODE: (i) Improved observation, data, data frameworks and knowledge management to underpin decision-making toward integrated ecosystem-based planning and management of marine areas; and (ii) Expanded capacity development at national levels for the design and implementation of science-based sustainable ocean planning and management. Regarding data, the SOPM Strategy is expected to leverage IOC initiatives like OBIS and ODIS, enhancing data accessibility and modelling, thereby providing decision-makers and stakeholders with comprehensive and reliable information. She noted that Member States and IOC Officers nominated experts to serve on the IOC Working Group on Sustainable Ocean Planning and Management (IOC/WG-SOPM) to finalise the strategy and prepare an Implementation Plan by the IOC Assembly-33. The IODE Co-Chair and Programme manager of IODE, as well as the IOC Capacity Development Manager are members of the WG-SOPM.

277. **The Committee welcomed** the development of SOPM and the objective that includes improved observation, data, data frameworks and knowledge to support the design and implementation of science-based, sustainable ocean planning and management across nations and applications that specifically refer to OBIS and ODIS.

278. **The Committee requested** the IODE representatives on the WG-SOPM to report back to the IODE Community on relevant activities and requests from the SOPM Programme.

279. **The Committee urged** IODE data centres as well as its three Programme Components OBIS, ODIS and OTGA to actively participate in, and contribute to, the development and implementation of science-based, sustainable ocean planning and management activities and **invited** the IODE programme to collaborate with the IOC Secretariat's SOPM team for the development of a first pilot initiative that can inform and fine-tune the design of targeted, future IODE data and information knowledge products for SOPM.

3.6.5 IOC sub-commission for Africa and the Adjacent Island States (IOCAFRICA)

280. This agenda item was introduced by **Mr Ibukun Adewumi,** Head, UNESCO/IOC Sub Commission for Africa & the Adjacent Island States (IOCAFRICA) Secretariat. He recognized the importance of this session as an opportunity to present the progress and strategic direction of the

cooperation between IODE and IOCAFRICA. Our collaboration plays a critical role in strengthening Africa's ocean data management, enhancing regional capacity, and ensuring that Africa's oceanographic data is fully integrated into the global knowledge ecosystem. He highlighted key achievements and ongoing challenges and outlined strategic priorities for the 2025-2026 inter-sessional period and the broader vision for the region's ocean data future.

281. **Strategic Achievements and Impact:** IOCAfrica recognizes the importance of a robust ocean data and information ecosystem and has actively engaged with IODE to strengthen Africa's capabilities in this domain. Several key initiatives illustrate our progress. First, through OTGA, IOCAFRICA facilitated the participation of five Early Career Ocean Professionals (ECOPs) from Northern Africa in the 2024 blended training course on "Introduction to Oceanographic Survey Techniques and Data Management" in Malta. Second, IOCAFRICA partnered with OTGA, KEMFRI, and CODATA to deliver an advanced training course on the Implementation of FAIR Principles for African Marine and Coastal Data in Mombasa, further enhancing the skills of regional experts in data management and accessibility. Additionally, in collaboration with OTGA and OBIS, we are organizing an environmental DNA (eDNA) training workshop in Cape Verde in 2025. These initiatives not only contribute to capacity development but also play a crucial role in strengthening regional expertise and increasing Africa's representation in global ocean data initiatives. However, we recognize that short-term training alone is insufficient. To meet Africa's growing ocean science needs, we must transition towards a structured, long-term capacity development strategy that ensures sustained expertise, institutional resilience, and the ability to effectively manage ocean data for sustainable development.

282. **NODC Health Check: Strengthening Africa's Ocean Data Infrastructure and Long-Term Commitment:** IOCAFRICA is aware of the "NODC health check" initiative undertaken by the IODE Committee and fully recognizes its significance in assessing and strengthening the functionality of the 18 NODCs across the region. IOCAfrica acknowledged that the outcome of this assessment underscores a critical gap in Africa's ocean data ecosystem. While many NODCs were established under the ODINAFRICA project (2000-2024) with significant investments in training and equipment, sustainability remains a challenge. The stark reality is that many of these NODCs have become dormant after initial funding ended. IOCAFRICA appreciates the critical nature of this issue and firmly believes that rather than questioning the viability of these NODCs, our collective efforts should be focused on targeted investment and structured interventions to ensure their revitalization. Abandoning them would result in a significant setback for Africa's ocean data ecosystem. Therefore, we call for the most robust and continued collaboration between the IODE and IOCAFRICA Secretariat in developing a targeted engagement strategy that aligns with the needs and realities of African member states, ensuring that resources and tailored activities are effectively deployed to restore and enhance these centres.

283. **Advancing Ocean Data Management in Africa: Strengthening the Ocean InfoHub and Expanding Regional Data Capabilities:** Recognizing the need for strengthened data infrastructure, since 2024, IOCAFRICA's collaboration with the IODE Secretariat has focused on building additional capacity in African data centres, enabling them to share their existing data and information through the Ocean Data and Information System (ODIS). A dedicated IT consultant has been working to develop technical solutions that allow African data centers to integrate their information with global systems seamlessly. For example, we have supported the Ministry of Fisheries and Marine Resources (MFMR) in Namibia by providing detailed guidance for the installation of CKAN metadata catalogue software and its integration with ODIS. Similarly, we have worked with the Institut National des Sciences et Technologies de la Mer (INSTM) in Tunisia to facilitate the inclusion of their datasets into the ODIS Catalogue, enhancing regional data connectivity. Through this initiative, we seek to enhance technical capacity, facilitate knowledge exchange, and reinforce Africa's position as a key player in global ocean data management.

284. However, several systemic challenges limit the impact of our initiatives. For example, the absence of well-established national and regional data centres continues to impede progress:

- Insufficient financial resources constrain the expansion of critical programs and restrict regional experts from participating in global ocean data governance.
- Fragmented coordination among institutions, agencies, and countries slows down collective efforts.
- Limited institutional capacity to manage and sustain ocean observations and data infrastructures.
- Lack of national policy commitment in some countries undermines long-term investment in ocean data and knowledge management.
- Gaps in interoperability and access to ocean data, requiring further integration with global frameworks such as OIH and ODIS.
- Dormancy of several African NODCs, despite previous investments in their establishment and training programs.

285. To bridge this gap, our vision is the adoption of a systemic approach to strengthening NODCs, enhancing technical capacity, and ensuring long-term data stewardship. The revitalization of ODINAFRICA remains a key priority in this effort, as it continues to serve as a crucial mechanism for integrating and sustaining Africa's ocean data networks. In this regard, IOCAFRICA is advancing its leadership in ocean data governance by spearheading the establishment of a Working Group on Ocean Data and Information Network for Africa, as recommended during the IODE Management Group meeting in February 2024.

286. **Strategic Priorities for 2025-2026: Strengthening Africa's Leadership in Global Ocean Governance:** We are conscious of the fact that Africa's ocean data ecosystem must continue to evolve and expand, ensuring that our collective work results in long-term, measurable impacts for the region and beyond. To elevate our partnership with IODE in ocean data management, we propose the following high-level priorities for the next inter-sessional period:

1. Develop a structured, long-term capacity development framework to replace ad-hoc training with sustained knowledge-building programs, mentorship, and institutional strengthening.

2. Accelerate the integration of African oceanographic data into global systems by enhancing NODC infrastructure, strengthening links with OIDS, and adopting best practices in data governance.

3. Enhance interoperability and accessibility of ocean data by scaling up technical support, expanding digital infrastructure, and further aligning with ODIS to enable seamless data-sharing.

4. Secure sustainable financing for ocean data initiatives through innovative funding mechanisms and partnerships with development agencies.

5. Strengthen and sustain African NODCs through targeted investment and long-term support—ensuring that all African NODCs receive the necessary technical, financial, and institutional backing to operate effectively, with a strong emphasis on capacity-building and national commitment to ocean data management.

6. Increase visibility and utilization of ocean data by developing tailored outreach strategies to empower policymakers, coastal communities, and the private sector.

287. **Upcoming Events and Strengthening Regional Collaboration:** Before concluding, Mr Adewumi announced two key events that will further strengthen ocean science and governance in Africa. IOCAFRICA will convene the IOCAFRICA Ocean Science Conference and the 8th Session of IOCAFRICA in Mombasa, Kenya, in May 2025. These events will serve as critical platforms to advance regional cooperation, assess progress in ocean data management, and shape future priorities for Africa's engagement in global ocean science. He encouraged all

stakeholders and friends of Africa to actively participate and contribute to these important discussions.

288. **The Committee acknowledged** the ongoing collaboration between IOCAFRICA and IODE in strengthening ocean data management in Africa and **endorsed** the targeted revitalisation of National Oceanographic Data Centres (NODCs) in Africa through sustained investment (Joint resource mobilization), capacity-building, and policy integration.

289. **The Committee further requested** IOCAFRICA and IODE to develop a structured strategy for long-term engagement, ensuring that African ocean data systems are fully integrated into global frameworks and contribute effectively to regional and international decision-making.

3.6.6 IOC sub-commission for the Caribbean and Adjacent Regions (IOCARIBE)

290. This agenda item was introduced by Ms Lorna Inniss, Head IOCARIBE Secretariat. She reported that cooperation with IOCARIBE during the biennium has been in the areas of OTGA, OBIS and ODIS (Ocean Info HUB LAC). Thus, in concert with Invemar and other regional partners, IOCARIBE has been providing countries and the wider stakeholder community access to data, information, knowledge and technology.

291. Ms Inniss pointed out that the requests to the committee are found in the paragraph before the highlighted section.

292. She noted that several IOCARIBE programs were already discussed in the meeting and highlighted the strong relationship between IOCARIBE and INVEMAR on all IODE programs. During the last IOCARIBE Governing Body in 2023, there was a commitment to prioritize action on ocean data and information within Caribbean SIDS, focusing on the generation of information as well as its use for sustainable development.

293. Ms Inniss noted that France, the United Kingdom and The Kingdom of the Netherlands all have Caribbean Island territories, and IOCARIBE wants to engage with them on the IOCARIBE programs to bring regional coherence.

294. She also noted that several well-funded programs and projects occur at the national level, and the data generated needs to be incorporated into regional platforms. Even when there's legislation for open data, being able to access the data can be a challenge. The Sub-Commission wants to demonstrate the value of collaboration on data and information, to achieve national sustainable development objectives.

295. Ms Inniss mentioned the newly operational Ocean Governance Coordination Mechanism through the PROCARIBE + LME Project – three Regional Fisheries Bodies, three political bodies and three UN bodies, all working together with IOCARIBE's 29 Member States on ocean governance. She highlighted the opportunity for the expansion of IODE programs to encompass the ocean data and information from these organizations as well.

296. Ms Inniss noted that the Marine Data Infrastructure Working Group of the Mechanism will include Ms Lucy Scott (Ocean InfoHUB) as the Sub-commission's representative and IOCARIBE would welcome the participation of other IODE Committee Members.

297. Facilitating the identification and sharing of data and information among regional IGOs, countries, research institutions and other partners, and supporting the harmonization of monitoring approaches through the newly operational Ocean Governance Coordination Mechanism (OCM) for the Caribbean Large Marine Ecosystem is an important objective. This OCM reduces fragmentation of ocean data management within the region. Further cooperation is envisioned as IODE cooperates with the Marine Data Infrastructure Working Group of the Procaribe+ LME Project.

298. **The Committee noted the request to** support the IOCARIBE region in the development and implementation of a plan for Caribbean SIDS and island territories to maximize their benefits from, and contributions to, ocean data and information management, using a value chain approach.

299. **The Committee welcomed the request** to support the integration and use of data and information from national projects within IOCARIBE Member States, as well as from the Secretariat's projects and programs, focused on addressing the region's needs.

300. **The Committee agreed to the request** to explore options for further cooperation beyond OTGA and ODIS during the 2026-2027 biennium, including the development of a regional OBIS network.

3.6.7 IOC Sub-Commission for the Central Indian Ocean (IOCINDIO)

301. This agenda item was introduced by **Mr Nimit Kumar**, IOCINDIO/Regional Liaison. He informed the Committee that IOCINDIO has identified regional data requirements pertaining to the issues of ocean pollution and coastal vulnerability. The member states in this region have varying capacities regarding ocean observations and data management. In this context, it is important to bridge the capacities with the help of available and proven tools/frameworks. Supporting programs such as RAMA moorings and IIOE-2 of IOGOOS in terms of joint cruises, training that enables access to data repositories will cater to ocean observation objectives. Data utilization towards sustainable ocean planning can be enabled through training/workshops aimed at formulating best practices in data management which will be in synchronization with global practices (with special focus on NODC, OBIS nodes staff). These can be achieved by RSB led and funded training programs (funds need to be earmarked), which can be hosted by RTCs, C2Cs present in the region in close collaboration to OTGA.

302. **The Committee acknowledged** the importance of collaboration with IOCINDIO and **requested** IODE Programme Components to support data architecture efforts (similar to EMODNet / MEDIN) in the region, with the help of RSB funded CD programmes supported or hosted by OTGA RTCs, C2Cs and NODCs and ADUs (ODIS, OBIS nodes) already established in the region.

3.6.8 IOC Sub-Commission for the Western Pacific (WESTPAC)

303. This agenda item was introduced by **Ms Lotta Fyrberg**. She reported that no input was received from the IOC/WESTPAC office.

304. The delegate of Australia offered to approach IOC/WESTPAC as an NODC in the region, and to suggest regional conversation about engaging with IODE including developing a report to IODE.

305. **The Committee regretted** the absence of a report from IOC/WESTPAC and **urged** IOC/WESTPAC to submit a report on IODE related activities in their region.

3.6.9 ISC World Data System (WDS)

306. This agenda item was introduced by **Ms Reyna Jenkyns**, Associate Director of the World Data System International Technology Office**.** The World Data System (WDS), a member of the International Science Council, is a global consortium of trusted data repositories and related organizations. WDS builds on the legacy of over 50 years of the World Data Centers established by the International Council for Science (ICSU) to manage data generated initially by the International Geophysical Year (1957–1958). It became clear after the International Polar Year (2007–2008) that these bodies could not respond fully to modern data needs. Consequently, they were disbanded by the ICSU General Assembly in 2008 and replaced by the World Data System in 2009. Governed by a Scientific Committee, the WDS consists of an International Program Office

(WDS-IPO) based in Oak Ridge, Tennessee, USA, and an International Technology Office (WDS-ITO) based in Victoria, BC, Canada. Its membership includes the International Oceanographic Data and Information Exchange (IODE), as well as numerous oceanographic data repositories. In total, the WDS currently has over 150 members (5 membership categories) in 31 countries. The WDS mission is to enhance the capabilities, impact, and sustainability of our member data repositories and data services.

307. In February 2025, the WDS released its WDS 2025 to 2027 Action Plan which has four major objectives that were informed by consultations with members:

- Provide services and support to member repositories implementation
- Advance the value narratives of WDS members
- Demonstrate global leadership in data governance
- Advocate for quality, trustworthiness, equitability, and FAIRness of data and data repositories worldwide

308. Numerous activities are proposed to address these objectives. In particular, significant focus areas for the upcoming year will be on (i) FAIR & machine actionable data, (ii) AI data readiness, (iii) data spaces, federated systems, data repositories & their interconnections, (iv) preservation & sustainability, and (v) Indigenous data governance. The WDS continues to welcome feedback and inputs from its membership.

309. The International Data Week 13-16 October 2025, in Brisbane, Australia (https://idw2025.org/) will have four main themes: (i) CAREful Indigenous Data Governance, (ii) rigorous, responsible and reproducible science in the area of FAIR data and AI, (iii) open research and federated systems: disciplinary, regional and international perspectives, and (iv) empowering the global data community for impact, equity, and inclusion. We encourage the IODE community to submit proposals for sessions, presentations and posters. The WDS Members Forum will be held on October 12, and we ask IODE representatives to attend.

310. The annual WDS Data Stewardship Award celebrates early career individuals (within ten years of their most recent degree) who have significantly improved the quality, integrity, and accessibility of research data (https://worlddatasystem.org/news-events/data-stewardship-awards/). The next call for nominations will occur in fall 2025.

311. The WDS reminds any NODC or ADU that have been certified by CoreTrustSeal (CTS) that they are also eligible to be a regular WDS member. The WDS proposes that the oceanographic data repository community may benefit from a CTS certification cohort for training and capacity development, which could be established in coordination with the WDS Candidate member category.

312. The WDS is currently reviewing which oceanographic disciplinary members are not yet contributing to ODIS, so that we can encourage and support future integration. The WDS is undertaking efforts for more comprehensive and accurate metadata of data repositories and federated system relationships to build knowledge graphs for better representation of the data ecosystem.

313. The World Data System (WDS) and its Scientific Committee has launched a Delphi study to identify the top 10 value-added benefits of data repositories. The ultimate goal of this project is to demonstrate the value of repositories in serving the needs of researchers, funders, policy-makers and other stakeholders. The first phase of the survey is open until March 24. We strongly encourage responses from within the IODE community. For details, see https://wds-ito.org/delphi-study-on-data-repository-benefits/.

314. The representatives of the Netherlands, Australia and Italy expressed their intention to attend the International Data Week.

315. As a response to Italy, Mrs Reyna Jenkins explained that IODE is a network member of WDS, however IODE data centres are not automatically a member of WDS. CTS certified data centres are encouraged to seek WDS membership.

316. **The Committee encouraged** its NODC and ADU data repositories to join the WDS membership and **welcomed** cohort activities that assist additional ocean data repositories in its member states to achieve the CoreTrustSeal certification.

317. **The Committee recommended** that WDS and IODE collaborate to increase data repository contributions and to demonstrate value of its federated data systems, ODIS and OBIS.

318. **The Committee instructed** the IODE ODIS Programme Component to work with the WDS members and secure technical interfaces between WDS members and ODIS, ensuring all ocean-relevant content is discoverable and accessible in both systems.

319. **The Committee thanked** the WDS for its ongoing work to enhance the capabilities, impact, and sustainability of our data repositories worldwide, and **encouraged** IODE data centres and programme components to collaborate on objectives of mutual interest such as data preservation, sustainability, FAIR data and indigenous data governance.

320. **The Committee acknowledged** that participation in International Data Week and the WDS Members Forum on 13-16 October 2025 in Brisbane will be an important venue for IODE representation.

3.6.10 Aquatic Sciences and Fisheries Abstracts - ASFA (FAO)

321. This agenda item was covered under Agenda item 3.4.2.1 (AquaDocs).

3.6.11 International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC)

322. This agenda item was covered under Agenda item 3.4.2.1 (AquaDocs).

3.6.12 Joint WMO-IOC Collaborative Board (JCB)

323. This agenda item was introduced by **Ms Lotta Fyrberg**. She reported that the Joint WMO/IOC Collaborative Board had met in Paris between 4-6 September 2024. IODE was represented by Ms Lotta Fyrberg and Mr Peter Pissierssens. The meeting had identified the following priorities: (i) Global Basic Observing Network (GBON); (ii) Data Management and Interoperability; (iii) Coastal and Maritime Resilience; and (iv) Capacity Development. During breakout sessions these priorities had been further worked out. This resulted in the following 3 priorities: (i) Interoperability: Enhance interoperability between ODIS and WIS2; (ii) Policy Alignment: Map and align WMO and IOC data policies and terms of use to identify areas of concern, crucial for interoperability; and (iii) Joint Governance: Foster collaboration and joint governance of the Marine Climate Data System (MCDS) by WMO and IOC (IODE).It was agreed to establish a task team that would develop the terms of reference for a JCB subgroup on data management addressing the priorities. The task team was composed of Jeremy Tandy, Simon McLellan, Lotta Fyrberg, Paula Sierra, plus Secretariat.

324. It was further agreed to involve relevant experts in a session on WMO-IOC cooperation in data management at the International Ocean Data Conference 3 (March 10-11, 2025, in Santa Marta, Colombia).

325. It was further recommended to (i) Encourage cross-invitations between SG-ODIS and the WMO Steering Group on Future data Infrastructure Technology (SG-FIT) for future data

infrastructure technology discussions; and (ii) Extend invitations to IODE Committee sessions and WMO equivalents (e.g., SCIMT).

326. The JCB meeting highlighted the necessity for enhanced collaboration and strategic planning to address pressing oceanic and meteorological challenges. The agreed-upon priorities and structured approach will pave the way for significant advancements in the respective fields.

327. Following the September meeting the task team discussed the terms of reference of the "JCB subgroup on data management".

328. The task team recalled that the goals of the subgroup were to: (i) enhance interoperability for an integrated observing and data system, improving data sharing between the IOC/IODE Ocean Data and Information System (ODIS) and the WMO Information System (WIS2.0); (ii) review and reform the governance of the Marine Climate Data System (MCDS); and (iii) align data policies and licensing between the WMO and IOC systems to ensure seamless data integration and usability.

329. The task team proposed the following terms of reference for the JCB subgroup on data management:

(i) Propose actions for enhanced interoperability for an integrated observing and data system, improving data sharing between the WMO Information System (WIS) and the IOC/IODE Ocean Data and Information System (ODIS).
   a. Review and propose updates to the topic hierarchy for ocean data.
   b. Coordinate, with the relevant WMO and IOC groups, the migration of both publishers and users of ocean data currently distributed on the WMO Global Telecommunication System to the WIS 2.0 by 2033.
   c. Establish pilot project(s) from the ocean community to act as Data Collection or Production Centres (DCPCs) within the WIS2.0.
   d. Propose a mechanism for mirroring between ODIS and WIS catalogues and seamless integration of the respective systems.

(ii) Review and propose updates to the governance procedures for the Marine Climate Data System (MCDS), including:
   a. Nomination and recognition process for centres within the MCDS.
   b. Terms of reference and scope centre types within the MCDS.
   c. Evaluation and monitoring of MCDS centres.
   d. Coordinate scientific and data workshops as part of the Advances in Marine Climatology (CLIMAR) series.

(iii) Review and compare WMO and IOC/IODE data policies and the datasets in scope of those policies to identify areas of concern for interoperability. Propose opportunities to align terminology, categories and guidance on terms of use and licenses.

330. The task team proposed the following (initial) Membership for the JCB subgroup on data management:

331. Equal representation from IOC/IODE and WMO focused on 4 areas:

(i) Integrated observing, data and metadata systems

(ii) ODIS - WIS interoperability

(iii) MCDS Governance

(iv) Data policy convergence

332. The task team proposed the following **Modalities of work**:

333. Primarily via email and virtual / online meetings, with a face-to-face meeting in 2025 (resources pending)

(i) Additional experts to be invited as required

334. In addition, the task team proposed the following **deliverables** for 2025:

335. Develop a structured branch of the WIS topic hierarchy for ocean data.

(i) Develop a guide to publishing on the ODIS and WIS2.0, including interoperability between the data systems and the principle of publishing once.

(ii) Propose an updated joint governance process for the MCDS.

(iii) Propose consistent guidelines on licensing / terms of use for oceanographic and marine meteorological data.

336. The representative of GOOS expressed appreciation for the ongoing collaboration between the JCB and IODE.

337. **The Committee expressed its appreciation to the** Joint WMO/IOC Collaborative Board (JCB) for defining Data Management and Interoperability as key priorities for the JCB.

338. **The** Committee **welcomed** the establishment of the JCB subgroup on data management.

339. **The Committee noted** the following experts expressed interest in joining the JCB subgroup on data management: Pier Luigi Buttigieg (ODIS), Thierry Carval (GTSPP) and Gael Forget (IQUOD) and **welcomed** submissions of expressions to join within the next four weeks in order to start the organization of the first meeting.

3.6.13 European Commission

340. This agenda item was introduced by **Mr Ward Appeltans**. He reported that in addition to the four EU projects announced at IODE-27, the IODE secretariat (through OBIS) as well as the GOOS secretariat now also participates in a 5th EU project under the Mission Climate, Cluster 6 Biodiversity and ecosystem services: HORIZON-CL6-2023-CLIMATE-01-8: Closing the research gaps on Essential Ocean Variables (EOVs) in support of global assessments:

- Project: Co-Creating Transformative Pathways to Biological and Ecosystem Ocean Observations (BioEcoOcean) (grant number: 101136748)

341. **The Committee welcomed** the active participation in and collaboration between IODE and GOOS in Horizon Europe projects such as BioEcoOcean, which strengthen our global programmes to develop capacity and deliver on the Biological and Ecosystem Essential Ocean Variables, and connects Europe with the international community.

342. **The Committee strongly recommended** NODCs and ADUs in Europe to consider involving IOC/IODE as a partner in future EU project proposals and to encourage their scientific organizations to do the same and to contact the IODE secretariat for guidelines.

343. **The Committee recognized** that other (in-kind) sources can co-invest in IODE activities and **requested** the IODE Management Group to track and report on and acknowledge these in the next session.

3.6.14 Cooperation of IODE in the Ocean Decade

344. This topic is covered under Agenda item 6.2.

3.7 OUTCOME OF THE “3rd INTERNATIONAL OCEAN DATA CONFERENCE” (2025)

345. This agenda item was introduced by **Dr Paula Sierra Correa**. She reported that the Co-Chairs are very pleased with the results of the third edition of the International Ocean Data

Conference (IODC-3), held on March 10 and 11 this week. With 150 in-person participants and just over 250 online, we reached a total of approximately 400 participants. By the end of the final session on March 11, we had over 40 presentations and more than 25 posters, as well as four working groups. Representatives from different regions of the world participated.

346. The third edition of the International Ocean Data Conference (IODC-3) gathered leading experts in marine biodiversity data, oceanography, information technology, and data science, as well as experts in ecosystem management, marine spatial planning, and even emerging topics of geodata management and marine governance in the Antarctic continent. The conference underscored the importance of strengthening data infrastructure, improving accessibility, and fostering collaboration to ensure inclusive and equitable participation in the global digital ocean ecosystem.

347. A key focus of IODC-3 was enhancing data interoperability and standardization to support major global frameworks, such as the United Nations Agreement on the Conservation and Sustainable Use of Marine Biodiversity Beyond National Jurisdiction (BBNJ) and the Kunming-Montreal Global Biodiversity Framework (GBF). Discussions emphasized the need for FAIR (Findable, Accessible, Interoperable, and Reusable) data principles, robust infrastructures, and harmonized methodologies to streamline data-sharing and integration efforts.

348. Emerging technologies, including environmental DNA (eDNA), autonomous underwater vehicles, and AI-driven interfaces, were highlighted as game-changers for marine biodiversity monitoring and conservation. These innovations facilitate cost-effective data collection, enhance biodiversity assessments, and support decision-making for marine protection. However, integrating these new data streams into existing repositories remains a challenge that requires further coordination and technical solutions.

349. The conference stressed the need for inclusive data collection approaches, incorporating local knowledge and regionally driven initiatives. Community-driven projects and mobile-based tools demonstrated how grassroots engagement can contribute to marine data repositories, enhancing global datasets while addressing local environmental and socioeconomic needs. Strengthening policy frameworks, improving regional monitoring, and fostering collaboration between scientific and local communities were identified as key priorities.

350. Capacity-building efforts remain fundamental to ensuring equitable access to ocean data. Regional collaborations, such as those within Latin America and the Caribbean, aim to enhance data-sharing and accessibility across diverse stakeholder groups. Training programs, mentorship initiatives, and the development of best practices support long-term sustainability in marine data management.

351. Beyond technological advancements, IODC-3 recognized the indispensable role of people in ocean data collection, curation, and application. Volunteer networks, citizen science initiatives, and workforce training are crucial in sustaining high-quality marine biodiversity information. Ensuring sustainable funding and institutional support for these efforts is essential to maintaining the long-term integrity of ocean data systems.

352. The conference reaffirmed the urgency of building a unified and inclusive digital ocean ecosystem where scientific, cultural, historical, and local knowledge converge. Achieving this vision requires sustained efforts in data harmonization, policy alignment, and international cooperation. By strengthening these foundations, the ocean science community moves closer to a future where ocean knowledge is accessible, actionable, and impactful for all.

353. She requested if the moderators of the working groups held on 11 March 2025 would like to provide additional text for the report.

354. The organizers of the breakout session to the implementation of ODIS from a non-technical perspective reported on the following recommendations as a result from the breakout group:

- Communicate what ocean data are useful to share.
- When DCO-ODS are revising the Data Publication Cookbook later this year, make it clear that the recommendation is for open publication and open access.
- Strengthen the National Oceanographic Data Centres, initially through raising the profile of their existence and their purpose and the importance of data management activities.
- As the IOC Data Architecture develops, incorporating ODIS, collaboration and communication with other Intergovernmental Organisations is recommended, using the collaboration with the World Meteorological Organization as an example.
- DCO-ODS and ODIS to communicate closely on the issues that Decade Actions and other bodies are having with connecting to the ODIS federation to prioritise systems and process developments.
- DCO-ODS to prepare communications to raise the profile of the existence of and the purpose of the NODCs.
- IODE Management Group to encourage the IOC Regional Offices to communicate with and meet with the NODCs.
- IODE Management Group to encourage the new chair of the IODE Quality Management Framework to remind NODCs that the accreditation process is part of strengthening the NODCs.
- Develop a “lessons learned” page for the ODIS book to help people understand the challenges others have faced in joining the ODIS federation.

355. More information on IODC-3 can be found on the Conference and IODE websites.

356. The WMO representative expressed their gratitude for being invited to participate in IODC-3 and their congratulations to the organizers for the successful completion of the conference.

357. The delegate of Panama extended its sincerest congratulations to all the organisers and participants of the 3rd International Ocean Data Conference. This event is key to strengthening the management and access to marine data, driving sustainable development and science-based decision-making. Panama particularly highlighted the valuable support of the IODE Colombia Group, whose guidance has been instrumental in the recent establishment of the IODE Panama Group. Their collaboration reinforces networking efforts and the growth of the ocean data community in the region.

358. **The Committee welcomed** the outcomes of the third international ocean data conference, **thanked** the IODE secretariat, the host INVEMAR, the organizers, session panels and speakers, and participants for sharing their experiences, data, and information we need for the ocean we want.

359. **The Committee expressed** its desire to continue the series of IODC Conferences and **requested** the IODE Management Group to make a decision depending on available resources and practical feasibility.

3.8 REPORTING ON THE IMPLEMENTATION OF THE IOC STRATEGIC PLAN FOR OCEAN DATA AND INFORMATION MANAGEMENT (2023-2029)

360. This agenda item was introduced by **Dr Paula Sierra Correa**. She referred to IOC Manuals and Guides No. 92 (IOC Strategic Plan for Ocean Data and Information Management (2023–2029)). She recalled that the Strategic Plan had been adopted by the 32nd Session of the IOC

Assembly as element II of IOC Decision A-32/3.4.2 (International Oceanographic Data and Information Exchange).

361. The expected outcome of the IOC Strategic Plan for Data and Information Management is to achieve significant enhancement of infrastructure, common approaches in ocean data and information management that enable interoperable data sharing and stewardship, and enhanced collaboration between data providers and users. It will implement a “digital ocean ecosystem”. In close cooperation with the UN Decade of Ocean Science for Sustainable Development it will aim at representing the socio-ecological dimensions of the ocean through digital means. The IOC Ocean Data and Information System Project (ODIS) established as an e-environment where users can discover data, data products, data services, information, information products and services provided by Member States, projects and other partners associated with IOC.

362. During the intersessional period the implementation of the Strategic Plan includes important advances in develop the ODIS, starting its development using existing “ecosystem components” such as, inter alia, the ODIS Catalogue of Sources (ODISCat), the Ocean InfoHub Project with their regional nodes facilitates the implementation of the ODIS digital ocean ecosystem, as mentioned in Agenda item 3.4.1.2.

363. Close collaboration with WMO followed. As part of the WMO Reform and to better align the work of WMO and the IOC, the Joint WMO-IOC Collaborative Board (JCB) was formed (see item 3.6.12). JCB works to foster teamwork and engagement across various structural and organizational levels of the WMO and IOC to improve forecasting, understanding, and management of the Earth's weather, climate, and ocean systems.

364. During the JCB meeting September 4-6, 2024, a JCB subgroup on data management was approved and priority data topics with mutual interest were identified such as (i) WIS and ODIS interface**:** emphasis on enhanced interoperability and the needs to streamline data sharing and interface between WMO Information System (WIS) and Ocean Data Information System (ODIS) with a focus on federated data systems and seamless data sharing; (ii) Data Policy Convergence: Aligning data policies between WMO and IOC to ensure seamless data integration and usability, including the schedule or points for interaction. (iii) Joint Governance**:** Foster collaborations of Marine Climate Data System (MDCS).

365. It was further agreed to integrate cross-cutting issues: (i) look for opportunities to integrate different aspects (data, services, capacity building) into unified actions; (ii) leverage conferences for collaboration: use the International Ocean Data Conference 2025 organized by IOC/IODE to enhance collaboration between WMO and IOC and possibly include a session on this topic. Explore opportunities for IOC and WMO to organize or participate in similar conferences for broader community engagement; (iii) share regular updates on activities: create mechanisms for regular reporting and review of the progress of activities of both organizations through regular calls to present the work; (iv) resource constraints and prioritization: acknowledge limited resources and the need to prioritize work items effectively. Emphasize coordinating existing work rather than adding new tasks unless they are critically important. (see Agenda item 3.6.12).

366. In addition, an IOC IODE-GOOS Data Workshop was held 30 September - 2 October 2024. More information on the objectives, outcome and way forward is discussed under Agenda item 6.1 (DEVELOPMENT OF THE IOC DATA ARCHITECTURE).

367. **The Committee expressed its appreciation** for the progress made and decided to continue efforts with strategic partnerships (IOC and non-IOC) to achieve the goals of the Strategic Plan.

368. **The Committee invited** Member States and IOC programmes to provide input on the progress towards delivery of the strategic objectives of the Strategic Plan.

3.9 IMPLEMENTATION REPORT OF THE IOC DATA POLICY AND TERMS OF USE (2023)

369. This agenda item was introduced by **Mr Greg Reed**. He recalled that the IOC Data Policy and Terms of Use was adopted by the 32nd Session of the IOC Assembly (2023) and can be found on https://iode.org/resources/ioc-data-policy-and-terms-of-use-2023/

370. Mr Reed reported that the 2023-2024 survey revealed that implementation of the Policy had been part of the survey discussed under agenda item 3.3.2. The percentage that reported using the IOC data policy is increasing slowly over the 3 reporting periods, from 65.7% (2019-2020), 66.22% (2021-2022) to 67.8% (2023-2024). 76% of respondents reported that their organization has its own data policy.

371. **The Committee noted** the importance of the IOC Data Policy and Terms of Use (2023) and **called** on Member States to use the policy as a basis for national policies on oceanographic data exchange and to ensure maximum compliance with the policy.

372. **The Committee requested** the IOC Secretariat to promote the IOC Data Policy and Terms of Use (2023) via its communication channels including its website.

4. IODE CAPACITY DEVELOPMENT: CONTRIBUTIONS OF IODE TO THE IMPLEMENTATION OF THE IOC CAPACITY DEVELOPMENT STRATEGY (2023-2030)

4.1 OCEANTEACHER GLOBAL ACADEMY

373. This agenda item was introduced by **Ms Ana Carolina Mazzuco** (OTGA Programme Component Manager).

374. Ms Mazzuco highlighted that OTGA and its network of Regional and Specialized Training Centres (RTC/STCs) and affiliated partners have remained committed to supporting training needs and priorities of the IOC Programmes and regions. A full report is detailed in Agenda item 3.4.1.3 (OTGA Programme Component).

4.2 IODE MENTORING

375. This agenda item was introduced by **Ms Ana Carolina Mazzuco** (OTGA Programme Component Manager). She referred to Document IOC/IODE-28/4.2 (IODE Mentoring).

376. Ms Mazzuco highlighted that IODE mentoring aims to foster international collaboration among NODCs and ADUs to develop the capacity of IOC Member States to share ocean data globally complying with quality assurance procedures and standards (reference: IODE Quality Management Framework).

377. This mentoring responds to the needs identified by the Committee to increase the number of accredited NODCs and ADUs, and to provide guidance to national data centres being established or seeking accreditation. Such assistance can consist of: answering questions on "how to"; undertaking a visit to the (candidate) NODC to meet with staff and to provide advice; hosting staff of the new NODC so they can acquire the necessary hands-on experience in ocean data management; and participating as lecturer in relevant (OTGA) courses.

378. Ms Mazzuco reported that in 2024, IODE actively engaged with NODCs and ADUs to develop mentoring activities and referred to the working document for details and results. In summary, a call was sent to some NODCs as an invitation to help other member states with the establishment of an NODC or ADU, with positive responses from many of them. NODC Argentina hosted a staff member of a new NODC (Uruguay) for 3 months of personalized training on data

management, sponsored by OTGA. Several NODCs and ADUs participated as lecturers in OTGA training courses.

379. **The Committee** acknowledged the action accomplished and **invited** other NODCs and ADUs to express interest in collaborating as mentors or the need of mentoring in their own institution.

380. **The Committee recommended** that IODE open another call for invitation to all NODCs and ADUs to participate in the mentoring.

4.3 IOC OCEAN TRAINING INTERNSHIPS 2024-2025

381. This agenda item was introduced by **Ms Johanna Diwa** (IOC assistant CD coordinator) referring to Document IOC/IODE-28/4.3 (UNESCO-IOC Ocean Training Internships).

382. Ms Diwa reported that one of the capacity development proposals submitted to NORAD in 2024 was the UNESCO-IOC Ocean Training Internships. It was launched in April 2024 and was implemented from September to December 2024.

383. The UNESCO-IOC Ocean Training Internships aims to provide opportunities for hands-on learning and upskilling through a temporary assignment at host institutions with expertise on subject areas relevant to the IOC mandate. The internships were open to young professionals from IOC Member States who are employed by government institutions and are working on activities contributing to the implementation of regional work plans in line with the capacity development regional priorities.

384. Ms Diwa referred to Document IOC/IODE-28/4.3 (UNESCO-IOC Ocean Training Internships) for the complete details of the host institutions and interns who participated in the 2024 cohort. For the 2024 cohort, the IOC Ocean Training Internships received and approved applications from 6 host institutions, including two OBIS nodes (Australia and Germany), two OTGA Regional Training Centres (RTC India and RTC Colombia), one OTGA Specialized Training Centre and International Tsunami Information Center (ITIC), and one NODC (Argentina). The working plans submitted were on ocean data management/OBIS and tsunami resilience. Seven interns from seven Member States were selected in the 2024 cohort for placements in each of the six 2024 host institutions. One deferred the internship into 2025. The Tsunami global programme supported the additional intern placed at ITIC Hawaii. In total 5 people were trained in 2024 and 1 started in January 2025.

385. Ms Diwa shared with the Group that the preparations for the 2025 cycle of the Internships are currently on-going. The call for 2025 host institutions was launched in February 2025 and runs until 31 March. Intern applications will be open by April 2025. She asked the support of the Committee to promote the UNESCO-IOC Ocean Training Internships and encouraged them to help circulate the call to reach more intern applicants.

386. **The Committee welcomed** the updates on the 2024 cohort of the UNESCO-IOC Training Internships and **expressed** its support in promoting the call for the 2025 cohort of the internships.

4.4 IODE COOPERATION WITH IOC REGIONAL SUB-COMMISSIONS

387. This agenda item was introduced by **Ms Ana Carolina Mazzuco** (OTGA Programme Component Manager).

388. Ms Mazzuco reported that IODE has been actively engaging with IOC RSBs through the IOC Capacity Development unit to explore opportunities for collaboration, including inviting RSB officers to IODE meetings and project proposals.

389. She reported that in 2024, collaboration was successfully achieved with IOCAFRICA and IOCARIBE, in the following formats: participation of Regional Subsidiary Bodies (RSB) officers in IODE project component and activity meetings, including (Ocean OIH project meetings, OTGA Steering Group meeting; co-development and co-funding of training courses already mentioned in this report; a joint proposal submitted to FUST call (BIOES).

390. Ms Mazzuco invited RSBs and IODE PCs and PAs to report on ongoing and future new collaborations at the next session.

391. **The Committee** endorsed the continuation of the collaborative action between IODE and IOC RSBs, and **requested** yearly collaborative meetings inviting all IODE PCs and PAs to participate.

392. **The Committee encouraged** the community to keep their OceanExpert account up to date to allow IOC programmes including IOC CD to inform the experts in the region on planned CD activities registered in OceanExpert and the IOC CD Hub (https://oceancd.org/) and platforms across the ODIS federation.

4.4.1 Future of the Ocean Data and Information Networks (ODINs)

393. This agenda item was introduced by **Ms Ana Carolina Mazzuco** (OTGA Programme Component Manager).

394. Ms Mazzuco highlighted that IODE-27 agreed to revive ODINs as regional communities of practice in ocean data and information management, led by the IOC Regional Subsidiary Bodies (RSBs) in collaboration with the global IODE programme and its programme elements.

395. She reported that IODE has actively approached RSBs to call for leads of the reactivation of the ODINs, including offering support on discussion and joint implementation. Action was taken by: IOC/WESTPAC, which proposed a meeting to discuss an action plan with IODE secretariat; and IOCAFRICA, which organized a data management training in Kenya (September 2024), focused on African NODCs, and included in the agenda a topic on reactivation of the network.

396. The delegate of China reported that since its implementation, the ODINs have played a pivotal role in promoting regional marine data & information sharing, knowledge dissemination, and capacity-building. The Chinese Delegation welcomed the Committee's decision (at IODE-XXVII) to revive the ODINs, recognizing its strategic value in fostering oceanographic collaboration. As the designated coordinating agency for ODINWESTPAC, since last August, NMDIS has undertaken proactive consultations with both the IODE Secretariat and the IOC/WESTPAC to facilitate project reactivation. A comprehensive needs assessment questionnaire on marine observation and data management was developed through multilateral coordination, which will soon be distributed to member states in the WESTPAC region to gather their requirements in marine observation, data and information management and sharing services, as well as capacity building. We believe this will contribute to the objective of compiling regionally harmonized requirements. Subsequently, a time-bound action plan will be co-designed under the joint guidance of the IODE Secretariat, the IOC/WESTPAC, and GOOS. The Chinese Delegation reaffirms its commitment to collaborate with all stakeholders to operationalize the revitalized ODINWESTPAC architecture. We look forward to fostering enhanced regional cooperation in marine scientific research and data & information products provision, in full alignment with the IODE work plan.

397. The delegate of Australia offered to help IOC/WESTPAC as an NODC in the region and welcomed regional conversation about engaging with IODE including developing a report to IODE.

398. **The Committee recommended** that IOC RSBs and ODINs jointly develop an action plan and report on the reactivation of the ODINs in relation to IODE activities within their regions through the RSBs and requested the IODE programme components and activities to orient their activities accordingly.

399. **The Committee requested** the OceanExpert programme activity to provide a document tag for RSB documents to facilitate their discovery and use.

4.5 REPORTING ON ASSISTANCE TO NODCs AND ADUs TO ESTABLISH ODIS NODES

400. This agenda item was introduced by **Ms Lucy Scott** (ODIS Programme Component Manager).

401. Ms Scott highlighted that IODE-27 had invited IOC Programmes and member states to participate in the OIH Project and join ODIS.

402. OIH/ODIS has and continues to work actively with a number of NODCs and ADUs to enable them to link to the ODIS federation. These include, among others: the Indian National Centre for Ocean Information Services (INCOIS), Marine Information Management System (MIMS) South Africa, Indonesia National Oceanic Data Center.

403. Under development: Kenya Marine and Fisheries Institute, Ministry of Fisheries and Marine Resources (Namibia), National Institute of Marine Science and Technology (Tunisia)

404. ODIS has developed a “Getting Started Guide” to introduce the process of joining: https://book.odis.org/gettingStarted.html

405. OIH/ODIS together with OceanTeacher, supports a self-paced learning course on an ongoing basis (2023-2024 and still open).

406. The representative of OSPAR thanked the organizers of the in-person ODIS led workshop on 11 March 2025 and recommended more similar workshops in the future.

407. **The Committee urged** IODE Structural Elements to join the growing ODIS network.

4.6 CAPACITY DEVELOPMENT ACTIVITIES OF OBIS

408. **Ms Katherine Tattersall** (SG-OBIS Co-Chair) reported on the OBIS (Ocean Biodiversity Information System) Capacity Development (CD) activities, which align with several IOC CD objectives, including:

- **Continuous Professional Development (1.2):**
    - OBIS continuously maintains and updates the OBIS Manual (https://manual.obis.org) as biodiversity data standards evolve. The Manual received a considerably major update in 2023 by the OBIS CD Officer, supported by funding from NORAD and LifeWatch ERIC.
    - OBIS released 26 YouTube video tutorials on data formatting and controlled vocabulary. These resources, along with the OBIS/OTGA online course (https://oceanexpert.org/event/3983), also supported by NORAD and LifeWatch ERIC, promote the development of marine biodiversity data management skills. With over 250 participants from 63 countries and 48 individuals currently certified, OBIS contributes to the global professional development of marine biodiversity experts.
    - Through the 2024 IOC Ocean Training Internships (https://obis.org/2024/06/13/internships-2024/), OBIS deep-sea hosted an intern to

support their OBIS related data management activities which allowed the intern to further develop the acquired biodiversity data skills within their home institution.

- Through the PacMAN project, OBIS led two iterations of the eDNA OTGA course, “Marine Invasive Species Early Detection: Utilising Molecular Tools” (2022, blended: https://oceanexpert.org/event/3631; 2023, self-paced: https://oceanexpert.org/event/3911). Together, the courses enrolled nearly 200 participants from 40 countries, certifying 85 individuals. By providing hands-on training (blended) and technical knowledge (self-paced) in molecular tools for invasive species detection, these courses develop local capacity for early detection and response of invasive species.
- At the OBIS-SG-12 (https://oceanexpert.org/event/3965), the OBIS Secretariat, led by the OBIS CD Officer, conducted a training session on data standardization for OBIS Nodes. Participants reported improved understanding of fundamental data standardization practices that will facilitate their work within the network, and allow them to share this knowledge within their respective regions.

- **Integration of Ocean Science in Basic Education (1.4):**
  - As part of the Horizon Europe project MPA Europe (https://mpa-europe.eu), (Grant Agreement 101059988) OBIS developed a marine biology curriculum for elementary school students in Ostend. This initiative integrated ocean science into basic education, helping foster early interest in marine biology and environmental stewardship among young generations.
- **Facilitating access to technology and infrastructure (2.1)**
  - The OBIS CD Officer is leading a work package focusing on capacity development in the Horizon Europe project BioEcoOcean (https://bioecoocean.org) (Grant Agreement No. 101136748). The project is developing a question-based Blueprint for Integrated Ocean Sciences, with the aim to guide ocean observing programs through each step of the ocean observation value chain. OBIS will develop CD resources to support the uptake of the Blueprint, which will have specific modules targeting each step in the BioEco ocean observing value chain: from early planning stages, data collection and management, data synthesis, to product development, and application in policy and decision making. Work from this project also touches on other IOC CD activities (e.g. 2.2, 3.2, 4.1).
  - OBIS led the UNESCO eDNA Expeditions in World Heritage Marine Sites project, a citizen science initiative which engaged >200 school children across 17 countries to collect samples from local World Heritage sites using cutting edge eDNA methods.
- **Facilitating Equitable Access to Ocean Data (2.2):**
  - OBIS is committed to enhancing accessibility and data sharing. This is reflected in the creation of Spanish-language resources, including translations of YouTube tutorials and a Spanish version of the OBIS/OTGA online course, released October 2024 (https://oceanexpert.org/event/4571). These efforts, spearheaded by OBIS Colombia, OBIS Caribbean, and ESP OBIS nodes, promote inclusivity and ensure broader access to training materials.
  - The OBIS Secretariat co-organized the marine biodiversity data mobilization workshop along with OBIS-USA, IOOS, Hakai, CIOOS, MBON, OTN, Caribbean-OBIS, and OBIS-Chile (https://ioos.github.io/bio_mobilization_workshop/). The third annual workshop attracted over 400 applicants and included dedicated sessions for Spanish speaking participants, which further supports equitable data sharing practices.

- Collaborating with GOOS through the BioEcoOcean project, OBIS is co-developing EOV Specification Sheet guidelines to enhance the sharing and accessibility of ocean data and information.

- **Enhancing Communication between Global and Regional Programmes (3.2):**
  - The SG-OBIS-12 (https://oceanexpert.org/event/3965) agreed upon a new structure (see agenda item 3.4.1.1). The OBIS Data and Products Coordination Groups will liaise with global and regional communities within e.g. IODE, GOOS, Ocean Science, GBIF, GEO BON, TDWG, and other relevant groups and communities.
- **Encouraging Regional Leadership in Capacity Development (3.4):**
  - Regional and sub-regional OBIS nodes have been empowered to lead capacity-building efforts, as seen in the collaborative development of the Spanish OBIS/OTGA course and training initiatives across Latin America as well as the OTGA biodiversity data management training course for Europe, organized by EurOBIS/EMODNet.
  - The newly established OBIS Nodes Coordination group is also working to strengthen and encourage regional data management capacity development in the OBIS community.
- **Enhancing in-kind support (6.1)**
  - OBIS fosters partnerships with organizations such as EurOBIS-EMODNet, GOOS, GBIF (via the Joint Strategy for Marine Biodiversity Data), BODC, TDWG, and ODIS to expand in-kind support for capacity development opportunities.
- **Promoting sustained bilateral and multilateral support (6.2)**
  - Through active participation in European Union and Horizon Europe projects (e.g., BioEcoOcean, DTO-BioFlow, eDNA Aquaplan, MARCO-BOLO, MPA Europe) and collaborations with organizations like NORAD, LifeWatch ERIC, FUST/OTGA, OBIS encourages resource mobilization to support impactful capacity development outcomes and thanked Flanders for spearheading this work.
  - The Caribbean OBIS NODE manager reported that the 6 active OBIS nodes from Latin America and the Caribbean held a meeting during the past IODC-3 and agreed, in a more formal way, on working together. During this meeting they took the opportunity to express our strengths and challenges and decided to work towards common goals. They agreed on having frequent meetings to define a strategic plan for resource mobilization and capacity development activities as a joint effort.
  - GOOS recognized the support from OBIS to implement the GOOS biological and ecosystem EOVs with guidelines and tools on data management, and support for the uptake and sharing of the knowledge generated through the EOV observing programmes.

409. **The IODE Committee expressed** great appreciation to OBIS for all its capacity development activities.

5. IODE COMMUNICATION AND OUTREACH

5.1 NEW IODE WEBSITE

410. This agenda item was introduced by **Ms Sofie de Baenst,** IODE Secretariat. She explained that in collaboration with a company, the IODE secretariat developed a new website,

which was officially launched in May 2024. Not all content from the previous site was migrated to the new site, but new content has been added on a regular basis.

411. The new website is intended to reach a wider audience than only the IODE community, focusing on the 3 programme components and the many programme activities, and less on the legacy of IODE. It is planned to make the website available in multiple languages through automated translation.

412. Greece and Italy indicated that will provide details on information that is currently missing from the website, such as details on the date of the establishment of the NODC or ADU.

413. **The Committee** congratulated the IODE secretariat on the new website and **recommended** regular content reviews to keep the site dynamic.

5.2 IODE OUTREACH AND COMMUNICATION ACTIVITIES DURING THE PAST INTER-SESSIONAL PERIOD (2023-2025)

414. This agenda item was introduced by **Ms Sofie de Baenst,** IODE Secretariat. She explained that for outreach, the IODE website was used to post news items and job vacancies.

415. Several times a year, content was provided to the IOC newsletter, and it was requested the IOC communication team to share this content on their social media platform. Communication was also maintained with the Ocean Decade team regarding various initiatives, such as the call for abstracts for the Ocean Data conference.

416. IODE also used social media to inform the public about new accreditations, job openings, achievements from programmes components, activities, the launch of new training courses, events organised by the programmes, and much more.

417. IODE is active on Facebook, X (formerly Twitter) and LinkedIn. We also created a profile on Bluesky in January 2025.

418. IODE utilized the OceanExpert directory to send emails to our contacts and associated groups, including, AIU, ADU, NODC, National focal points for ODM, National Focal points for MIM

419. The three Programme components also contributed to IODE's outreach by promoting their events on social media, adding articles to the IOC website and featuring content in the newsletter with a reference to IODE.

420. Additionally, other IOC programmes collaborating with our programme components and programme activities have supported IODE's outreach as well.

421. In the past inter-sessional period IODE was presented at:

- the IOC Assembly with a demo booth on ODIS – Paris, June 2023
- the MSPGlobal 2.0- Online Kick-off Conference-online, September 2023
- the EMODnet Open Conference- Brussel, November 2023
- the Climate Change COP28 - United Arab Emirates, December 2023
- the Flanders Marine Science Day organized by VLIZ)- Ostend, 2023,2024
- the Ocean Day organized by INVEMAR, Santa Marta, 2023,2024
- the International Expert Meeting on Marine Plastic Litter Monitoring and Data Sharing Project -online, March 2024
- the Ocean Decade Conference – Barcelona, April 2024

- the IMDIS conference- Norway, June 2024
- the Data workshop organized by IODE and GOOS- Ostend, September 2024
- the Biodiversity Convention COP16, Colombia, October 2024
- the international workshop “AOMI Database workshop: Enhancing Ocean Microplastics Monitoring”- Online, October 2024
- Presentations by the Programme Components and Activities on several occasions

422. **The Committee instructed** the IODE Secretariat to focus on IODE and the various programme components and activities in its communication actions, while also **instructing** IODE programme components and activities to appropriately acknowledge IODE, when participating in network events.

423. **The Committee requested** the IODE community to contact the relevant programme component, activity and project managers to share news with the IODE Secretariat.

424. **The Committee invited** IOC regional sub-commissions to actively disseminate data and information activities in their own languages by recognizing IODE as a partner in their communication efforts, and also as an outreach strategy, to encourage ocean scientists to join the IODE community through OceanExpert.

5.3 PROPOSED OUTREACH AND COMMUNICATION ACTIVITIES 2025-2026

425. This agenda item was introduced by **Ms Sofie de Baenst,** IODE Secretariat. She explained that in 2025-2026, the IODE Secretariat will continue to enhance the website and will implement automated web page translation features. The amount of content in the IOC newsletter will be increased and greater use will be made of IODE’s social media platforms. The Secretariat will also reach out to the various IODE programme components and activities to gather news that should be shared.

426. OceanExpert will be further used to publish events and to send out emails. IODE data centres will be engaged to share information.

427. New stickers for IODE will be created, incorporating the UNESCO/IOC logo. Continued collaboration with various IOC programmes will ensure the visibility of IODE in their activities.

428. Ms de Baenst invited IODE Programme managers to spotlight IODE in their presentations and outreach efforts (e.g. Third UN Ocean Conference, Expert meeting on Marine Plastic Litter data sharing, IOC EC and Assembly, etc).

429. The representative of IQUOD suggested promoting the GitHub repositories of IODE Activities.

430. The representative of IOCINDIO requested that OceanExpert actively explore solutions to enable automated content synchronisation with platforms like ORCID, LinkedIn etc.

431. **The Committee instructed** IODE programme components and IODE programme activities to actively promote IODE in events and communications and **invited** other IOC programmes to recognize IODE as a partner in their communication efforts.

6. THE FUTURE OF IODE

6.1 DEVELOPMENT OF THE IOC DATA ARCHITECTURE

432. This agenda was introduced by **Ms Lotta Fyrberg**. She informed the Committee that the IOC IODE-GOOS Data Workshop was held at the IOC Project Office for IODE between 30 September and 2 October 2024. It focused on enhancing collaboration between the International Oceanographic Data and Information Exchange (IODE) and the Global Ocean Observing System (GOOS). The goal was to enhance coordination and discuss an integrated and scalable IOC digital architecture that would improve data sharing, management, and accessibility, across ocean systems, and enhance the IOC's support to key United Nations mandates. The report of the meeting is available as IOC Workshop Report No. 311.

433. While the event was initially intended to be a meeting between GOOS and IODE only, it was later decided to invite other IOC programmes (Ocean Sciences, Tsunami Resilience, as well as representatives from the Decade Coordinating Offices for observation and data and Decade Coordinating Centre for Prediction), highlighting the cross-cutting nature of ocean data management and services.

434. Key objectives of the Workshop:

- Identify roles and synergies: Clarifying the mandates, responsibilities, and connections between GOOS and IODE, for all Essential Ocean Variables (EOVs).
- Develop a joint vision for an IOC Data Architecture: Establishing a co-evolved, integrated, FAIR and CARE aligned, IOC data architecture to support the ocean digital ecosystem.
- Technical foundation: Developing the technical architecture for a unified IOC Data space to be presented at the IOC Assembly in 2025.
- Coordination: Define coordination between GOOS and IODE to evolve and mature the IOC Data Architecture.
- Future planning: Outlining next steps (short and long term) for meeting future user needs.

435. The Workshop participants agreed on a draft **basic schema for the IOC Data Architecture**, linking key IOC components into a holistic ecosystem. Figure 1 illustrates this schema, which is further described in Box 1 below.

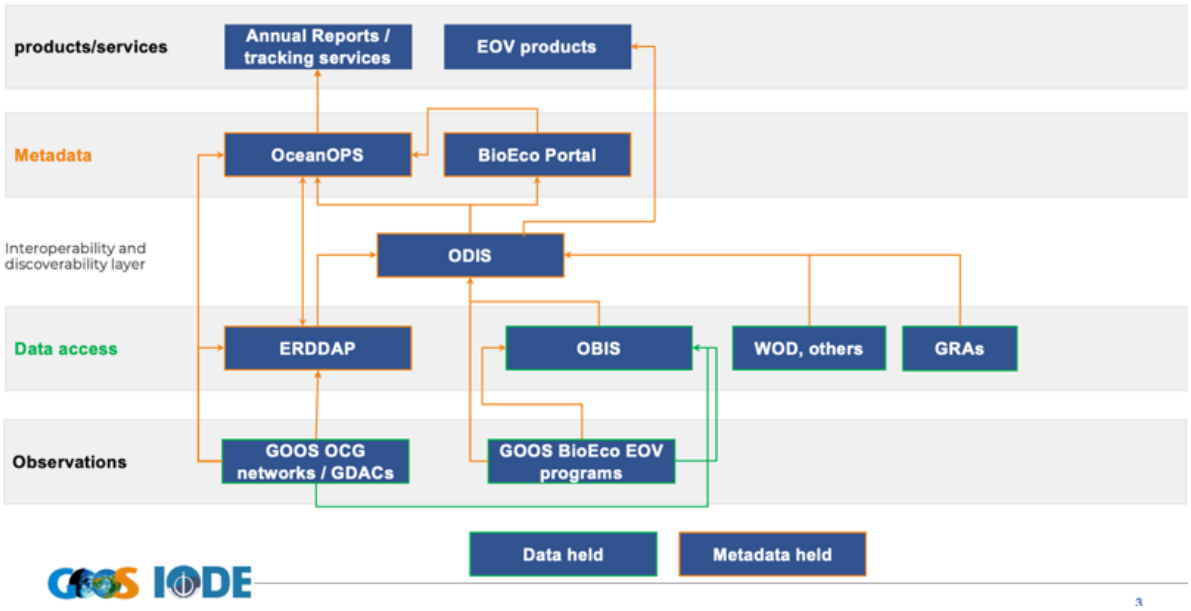

Figure 1: Draft IOC Data Architecture schema

436. Figure 1: Schematic of the proposed IOC Data Architecture that will be developed further through the proposal. This schematic is based on the workshop discussions to show the key IOC components. Key to acronyms: IODE Ocean Data Information System (ODIS), IODE Ocean Biodiversity Information System (OBIS), GOOS OceanOPS (WMO-IOC Joint Operational Centre Ocean Observing), ERDDAP™, World Ocean Database (WOD), GOOS Regional Alliances (GRAs), GOOS Observation Coordination Group (OCG), GOOS Ocean Observing Networks/Global Data Assembly Centres (networks/GDACs), GOOS Biological and Ecological EOV Observing Communities (BioEco EOV programmes)

437. Many elements of the proposed IOC Data Architecture already exist. However, the workshop outlined an approach that would strengthen delivery of ocean data for operational services that optimises connections between existing elements and can clarify the support needed. As a first step, the Workshop participants agreed to set up a working group to develop a proposal for the IOC Data Architecture for the IOC Assembly in June 2025. Key steps in the short and longer term are outlined in the Workshop Report and summarised below.

438. For the short term, the workshop participants agreed to:

- Develop a proposal for the IOC Data Architecture that can be presented in draft form to the 14th GOOS Steering Committee in February 2025; the 28th IODE Committee Meeting Data Management in March 2025; and in final form to the 33rd IOC Assembly in Paris in June 2025
- Establish and start the work of the IOC Data Architecture Working Group to write a proposal for a cross IOC data architecture/space. This would include several aspects such as vision, structure, governance and resource needs. The Working Group will be supported by a jointly funded (IODE-GOOS) consultant, and initial activities include to:
    - Map the data flows - what to govern and what to implement - look at optimisation/eliminating redundancy
    - Create ‘rules’ of coordination, responsibilities - ODIS broker, services, data flows
    - Select showcase pilots that demonstrate data flows and the broker services, and test that assumptions regarding the architecture are robust
    - Set minimum metadata requirements, including provenance, licensing, EOV data precision, and a semantic identifier for ‘GOOS’ EOV data.
    - Develop a joint resource strategy and solicit feedback from key stakeholders to shape the IOC Data Architecture.

439. For the longer term, the workshop participants highlighted key aspects to consider in the planning for, and the implementation of, an IOC Data Architecture, including a phased plan and regular input from stakeholders, including to:

- Create a phased implementation plan that identifies goals and roles of different IOC groups, with clear regional support, including for SIDS.
- Establish a pathway to mature the IOC Data Architecture and its associated digital ecosystem into an IOC Data Space to support advanced data handling.
- Establish regular consultation and need/opportunity assessments with:
    - IOC Member States
    - IOC regional sub-commissions
    - Ministries for digital transformation and/or ocean-related affairs
    - Ad hoc groups, as required
    - IOC programmes (and their governing bodies)
- Create Minimal Viable Product(s) to support value demonstration and to test robustness and utility of the architecture.
- Implement a quality assessment framework to support certification of data quality and reporting of GOOS EOVs and SDG Indicators or related data.
- Support the maturation of digital culture for all those using or contributing to the IOC Data Architecture.
- Include, in the implementation plan, key metrics to address the digital divide and monitor and enable digital equity.
- Provide a phased plan that includes resource requirements for each phase, and related success markers.
- Undertake a review (2030), and check that IOC is:
    - Responding to operational needs for global initiatives
    - recognised as the trusted source for ocean data
    - enhancing NODC capacity where needed, and successfully entraining new ocean data (e.g. from private sector)

440. The Workshop Report contains a detailed description of the existing infrastructure elements, the ideas and planning suggested towards an IOC Data Architecture, and a list of actions.The workshop thus provided the basis for the planning and development of the ***IOC Data Architecture.***

Box 1: IOC Data Architecture - technical concept and function

Core ideas:

- Based upon concepts which have shown great utility in both GOOS and IODE: open and modular technology, distributed-yet-federated system designs, metadata-driven exchange and orchestration, and an interoperability-first approach to data management and system engineering
- Based on, and extending, the IODE Ocean Data Information System (ODIS) Architecture, which federates digital asset catalogues from over 50 data sources (including continental-scale data hubs)
- Providing consistent implementation of the FAIR and CARE Principles, with alignment to the UN Ocean Decade Data and Information Strategy and its Implementation Plan
- Assess and preserve data provenance and lineage metadata, allowing derivative data products to be traced back to the point of truth (e.g. observations or models)
- Recognising that the GOOS EOVs are an essential element within this architecture

Function and attributes:

- Serve as the foundation of global ocean data sharing, powering global solutions and the IOC mission

- Support global services and data products - available to all - to detect, consolidate, and deliver GOOS-certified EOV data of documented quality
- Coordinate data and information across the IOC value chain to support operational services
- Deliver data about or supporting EOVs, SDG indicators, and other artefacts into global assessment and multilateral processes
- Provide IOC with a clearly defined, unique niche in the ocean digital ecosystem for more efficient investment
- Interface - at scale - IOC's core digital capacities with other existing architectures and infrastructures (e.g. WMO's WIS 2.0, UNEP's WESR)
- Bridge digital divides and help mature digital ecosystems globally through digital capacity transfer

Technical building blocks:

- Central ERDDAP™ servers operated by GOOS OCG will consolidate ocean observing data, including EOV data, from across global or thematic ocean observing networks. The GOOS ERDDAP™ server will then become an ODIS "Hypernode" (a node which, itself, contains a network of other nodes, in this case observing network ERDDAPs - OCG Data Implementation Strategy).
- OceanOPS, the IOC-WMO Operational Centre, will link its operational metadata - describing the state of the global ocean observing system - to ODIS and/or the GOOS Hypernode, while also enriching its services
- The IODE Ocean Biodiversity Information System (OBIS) - already an ODIS Node - will establish mechanisms to detect, identify, validate, and relay (meta)data relevant to GOOS BioEco EOVs, becoming a GDAC for BioEco EOVs
- Leveraging the capacity of the envisioned IOC architecture, the GOOS BioEco Portal will enhance its current mapping of biological and ecological observing networks with EOV (meta)data streams gathered from the GOOS Hypernode and all other ODIS Nodes.
- GOOS and/or other IOC activities focused on delivering curated EOV based services (such as the biogeochemical EOV focused Global Ocean Data Analysis Project; GLODAP) will explore how to build and maintain services and portals (similar in nature to the BioEco Portal) using the new capabilities provided through the IOC Data Architecture.

Enabling connectivity, inclusivity and supporting delivery:

- Using GOOS EOVs (and ECVs, where relevant), ensuring semantic identifiers and provenance, and connecting key elements across GOOS and IODE (as seen in Figure 1: OBIS, OCG ERDDAP™, OceanOPS, BioEco Portal, EOV Portals and services) through the ODIS Architecture, (meta)data can more easily flow across disciplines, such that they can become globally FAIR
- Secure and preserve provenance, conformance, and quality metadata, to ensure downstream products can be traced back to their raw components for validation and auditing, and be (re)used with confidence
- Expand the discoverability of EOV (meta)data across all ODIS Nodes, to support GOOS in extending its coverage
- Support IOC programmes in efficiently harvesting data from all sources to create products with known provenance, and in the establishment of ODIS nodes
- Co-implement CARE-aligned technologies and practices to recognize, respect and engage local and Indigenous knowledge holders

441. **The Committee and GOOS welcomed** the development of the IOC Data Architecture which is an important collaboration within IOC to position the IOC in its leadership role to support Member States in achieving the high-level objectives under the IOC Medium Term Strategy

442. **The Committee welcomed** the proposal to further improve the draft IOC data architecture based on feedback received from the IOC community and to present a concept note at IOC-33 which will include plans for further consultation.

443. **The Committee agreed** on the important role of ODIS and OBIS as systems, and **requested** that the role of NODCs and ADUs are recognized in the emerging IOC data architecture.

444. **The Committee welcomed** the alignment of the proposed IOC Data Architecture with the core digital architecture of the UN Ocean Decade.

6.2 IODE CONTRIBUTIONS TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

6.2.1 REPORT ON THE ACTIVITIES OF THE DCO FOR DATA SHARING

445. This agenda was introduced by **Mr Adam Leadbetter**, Lead Manager of the DCO for Data Sharing. He explained that the Decade Coordination Office (DCO) for Ocean Data Sharing (DCO-ODS), was established in June 2023 by Jan-Bart Calewaert, as Lead Manager, in the context of the UN Decade of Ocean Science for Sustainable Development. Hosted by the IOC Project Office for IODE, the DCO-ODS acts as sub-unit of the central IOC Decade Coordination Unit to catalyse and coordinate Decade Actions falling under its scope, assist Decade actors with data and information challenges and opportunities, promote cooperation amongst UN and Member State partners, monitor progress, communicate on achievements and mobilise resources. One of the main objectives of the DCO is to implement the Decade's Data and Information Strategy and to ensure a successful outcome for Ocean Decade Challenge 8: Creating a Digital Representation of the Ocean, which includes a dynamic map of the ocean, and the tools services needed to allow the discover, access and retrieval of data and information on the past, current and future state of the Ocean.

Highlights of the DCO-ODS First Phase

446. Throughout the first-year initial assignment (June 2023-June 2024), the DCO-ODS played a central role in building and cementing community relations in the Decade Digital Ocean ecosystem, within and among Decade entities and with wider experts in the field. Through interactions with Decade Actions and a dedicated stakeholder survey, the DCU, IODE and the DCO-ODS gained a deeper understanding of the activities and needs of Decade Actions regarding data collection, managing and sharing, to inform future activities and actions. Below are some of the main achievements for the first phase of the DCO-ODS:

- Development and launch of the dedicated DCO Ocean Data Sharing website https://oceandatasharing-dco.org/. The website hosts resources and support on data-sharing and data management made available to Actions via the Interactive Data Resources Toolkit and the Data Helpdesk. The Data Helpdesk also had a successful physical presence at the UN Ocean Conference in Barcelona during April 2024.
- Launch of Ocean Data Sharing Community of Practice as an interactive platform to facilitate exchange of knowledge and resources among members.
- Hosting a joint webinar with IODE on data and information management and sharing in the Decade. The DCO-ODS also participated in more than twenty events (including external events and meetings with Decade stakeholders) to promote the Decade Data and Information Strategy and data management and data sharing activities within the Decade.
- In collaboration with the DCO-Ocean Observing and DCC-Ocean Prediction, release of a concept note describing a proposed Decade Digital Ocean ecosystem and a declaration of intent to work together to achieve this vision.

- Compiling a survey of Decade Actions' needs relating to data sharing and data management, with over 90 responses. This was combined with a detailed data intensity mapping and review assessing the relevance and importance of the data life cycle to over 380 endorsed Decade Actions to plan Phase Two activity.
- Contribution to the publication of the Vision 2030 White Paper 8 (Creating a digital representation of the Ocean).

Plans for the DCO-ODS Second Phase (2025-2026)

447. Mr Leadbetter then explained the plans of the DCO for 2025-2026. During its second phase (2025-2026), the DCO-ODS staff desire a close collaboration with the IODE Project Office and the wider IODE community as the goals of both the DCO-ODS and IODE are common and complementary. The DCO-ODS will also work closely with other Decade Collaborative Centres and Coordination Offices, with reference to the DCO-Ocean Observing and DCC-Ocean Prediction, to further the shared vision of a Decade Digital Ocean ecosystem.

448. In particular, the DCO-ODS will closely collaborate with IODE and the OceanData2030 programmes as key components of fully realising the Decade Digital Ocean ecosystem. The DCO-ODS will also work alongside the International Coastal Atlas Network to ensure that dynamic map layers to achieve the Decade's Vision targets for Challenge 8 are published in a consistent and coherent manner. The DCO-ODS calls on relevant IODE projects to include data sharing in the context of the UN Ocean Decade as an item in their work planning, and to liaise with DCO-ODS to ensure this occurs in a coordinated manner.

449. The DCO-ODS will specifically seek IODE and related mechanisms, such as IODE Manuals and Guides and OceanTeacher Global Academy, to provide and promote best practices for data management and data sharing within the Decade. DCO-ODS calls on the IODE community to support this activity, for example as the DCO-ODS seeks to update the IODE Manual and Guide on Data Management Planning.

450. The Ocean Decade allows for a holistic approach to address community issues, such as identifying user requirements and for the marine data management community to influence discussions on data standards in other communities. The DCO-ODS calls on the IODE community to respond positively to invitations to contribute to these cross-community engagements in the Decade.

451. Mr Leadbetter also reported that an Action Plan for implementing the Decade Data Strategy is currently under development by a Data Strategy Implementation Group (DSIG) under the UN Ocean Decade to ensure the development of a distributed, robust, and collaborative 'digital ecosystem' of interoperating parts, that leverages open, scalable, easily implementable, and responsive digital management. This interoperable data sharing framework must be enabled to allow the realisation of Challenge 8.

452. Three key components are recognised as critical for any fit for purpose digital ocean ecosystem: observations and data collection, data management and sharing, and processing: analytics, modelling and predictions. These components must be well coordinated, interconnected and based on a common interoperable sharing framework. For that reason, three coordinating structures have been established to facilitate the development of the Decade's Digital Ecosystem, namely, the Decade Coordination Offices for Ocean Data Sharing (DCO-ODS) and Ocean Observing (DCO-OO), and the Decade Coordination Centre for Ocean Prediction (DCC-OP).

453. Upon request from GOOS, Mr Leadbetter confirmed that the collaboration between DCO-ODS, DCO-Ocean Observing and DCC Ocean Prediction will continue, and that the DCO-ODS report on phase 1 of this work will be shared and will include recommendations for phase 2, as well as including recommendations for IODE and GOOS.

454. **The Committee welcomed** the achievements of the DCO for Ocean Data Sharing during 2023-2024 and **looked forward** to continued and intensified collaboration between IODE and the DCO for Ocean Data Sharing in 2025-2026.

455. In response to the survey conducted by the DCO-ODS **the Committee urged** NODCs and ADUs to work with Decade Actions and DCO-ODS to archive data and make metadata available to ODIS.

456. In further response to the survey conducted by DCO-ODS **the Committee called** for volunteers to assist DCO-ODS in finalising an update to the IOC Manuals and Guides No. 73 : Guidelines for a Data Management Plan. The following members responded: Dan Lear (OBIS), Sissy Iona (Greece), Mark Hebden (UK), Chris Moulton (OSPAR), Lennert Tyberghein (Belgium), Pier-Luigi Buttiegieg (ODIS), Francisco Arias (Colombia), Laura Hanley (CEFAS-ADU), Alessandra Giorgetti (Italy), Patricia Cabrera (OBPS).

6.2.2 IMPLEMENTATION REPORT ON DECADE ACTIONS SUBMITTED BY IODE

457. This agenda item was introduced by **Dr Paula Sierra Correa**. She recalled that 6 decade actions had been submitted:

- e-DNA expeditions in marine World Heritage sites (Ward Appeltans)
- Ocean Practices for the Decade (Patricia Cabrera)
- OceanTeacher Global Academy: Building Capacity and Accelerated Technology Transfer for the Ocean Decade (Ana Carolina Mazzuco, Greg Reed, Sofie de Baenst)
- Pacific Islands Marine Bioinvasions Alert Network (PacMAN) (Ward Appeltans, Pieter Provoost)
- OceanData 2030 (Lucy Scott)
- OBIS 2030 (Ward Appeltans)

458. Dr Sierra Correa informed the Committee that the Decade Actions provide yearly progress reports to the Decade Coordination Unit of which a summary is included in the Ocean Decade progress report. She also reported that two actions E-DNA expeditions and PacMAN were completed in December 2024 with success.

459. **The Committee thanked** eDNA expeditions and PacMAN projects for their achievements and **encouraged** the other IODE led Decade Actions to continue and **invited** the Committee to join new calls for Decade Actions.

460. **The Committee invited** the Decade Coordination Unit to also publish the progress reports in AquaDocs for greater discoverability, accessibility, and use by the IODE Community.

6.2.3 Implementation Report on Decade Actions Submitted in Cooperation with IODE

461. This agenda item was introduced by **Mr Adam Leadbetter**, Lead Manager of the DCO for Data Sharing. He recalled that four decade actions had been submitted in cooperation with IODE:

- Marine Life 2030
- CoastPredict - Observing and Predicting the Global Coastal Ocean (Nadia Pinardi, Italy)
- Database Programme (WODP): Openly discoverable, accessible, adaptable, and comprehensive digital global profile oceanographic data of known quality (submitted by Hernan Garcia, NCEI/NOAA, United States as a Decade contribution)
- Ocean Observing Co-Design: evolving ocean observing for a sustainable future

Marine Life 2030: Global Integrated Marine Biodiversity Information Management Forecasting System for Sustainable Development Conservation

462. The “Marine Life 2030” programme reported progress for 2022-2023. Throughout the year, knowledge generation, uptake data and engagement for Ocean Decade Challenges 2, 7, 9 and 10 were reported, however there were no citations for any of the products. For Challenge 2 (Protect and restore ecosystems and biodiversity), they produced 7 peer reviewed publications, 20 media articles, and 4 other products such as video, website and logo. Indigenous Local Knowledge (ILK) was included in the development of this, with involvement of Claudia Baron Aguilar (from the Wayuú tribe in Colombia). For Challenge 7 (Sustainably expand the Global Ocean Observing System), a total of 5 peer reviewed publications and 1 media article were produced, this time, with no ILK involvement. Also, no implementation of new infrastructure elements for the Global Ocean Observing System, and 96% of funding missing to support it. For Challenge 9 (Skills, knowledge, technology and participation for all), 7 peer reviewed publications and videos, website, twitter and other social media were produced, including ILK in an IMPAC5 session. Various capacity development activities were carried out including 10 education opportunities, 3 skills training workshops, 10 focused on community building, 10 for stakeholder network development, 5 for supporting development and 10 communication activities, beneficiaries of these were from Latin America, North America, Africa and Asia.

CoastPredict

463. The “CoastPredict” programme, reported progress for 2023-2024, its primary focus is addressing Ocean Decade Challenge 6 (Increase community resilience to ocean and coastal risks), but it also has generated knowledge products for Ocean Decade Challenge 7 (Sustainably expand the Global Ocean Observing System) and Challenge 9 (Skills, knowledge, technology and participation for all). For Challenge 6, the products included 1 peer-reviewed publication, 1 grey literature, 1 white paper, 2 media articles, and 18 other types, besides, one citation of a peer-reviewed publication was reported. For Challenge 7 , 1 peer-reviewed publication, 1 grey literature, 2 media articles, and 18 other types. For Challenge 9 , the products included 1 grey literature and 18 other types. The "other" category included presentations of GlobalCoast survey results at conferences, workshops, and seminars.

464. The GlobalCoast survey was used to gather information about local knowledge for proposed Pilot Sites to understand community resilience to ocean hazards, expand the Global Ocean Observing System, and identify capacity development needs. Indigenous and local knowledge were integral in understanding environmental, socio-economic, and technological challenges. Capacity building activities increased stakeholder understanding of the importance of coastal ocean observing and prediction networks, leading to broader support for expansion. Stakeholders also recognised the value of shared data and collaboration, and interest in the cloud-based platform grew. The initiatives fostered new partnerships to address coastal issues and establish sustainable collaborative networks.

465. The endorsement of CoastPredict as an Ocean Decade programme has allowed them to negotiate funding opportunities with the private sector. And it will also strengthen the current application for funding from the Adaptation Fund.

World Ocean Data Base Programme (WODP): “Openly discoverable, accessible, adaptable, and comprehensive digital global profile oceanographic data of known quality”

466. The World Ocean Data Base Programme, is a Decade Contribution that mainly focuses on Ocean Decade Challenge 8 (Create a digital representation of the ocean), they have generated different knowledge products such as 5 reports on grey literature and 1 participation in the AGU Ocean Sciences 2024 meeting. They do not report either citations or inclusion of ILK on their publications. This contribution reports the World Ocean Database and World Ocean Atlas 2024

as a newly implemented infrastructure element of the interoperable digital ecosystem of the Ocean Decade. During the reporting period, they have produced five datasets that are consistent with the IOC Oceanographic Data Exchange Policy. In terms of collaboration with other countries in the following year, the WODP plans to collaborate with Colombia. There is no further feedback or specific needs included in their report.

467. The IODE Committee, through OceanTeacher Global Academy, is encouraged to further support capacity building to facilitate information technologies and management (accessibility of marine biodiversity data and information and integration with other types of data), data interoperability, best practices, and applications for data access and use. In this regard, close collaboration with the DCO-ODS in capacity building and resource mobilisation for Decade Actions will be required.

468. The IODE community is invited, through Ocean Data 2030 and other initiatives such as adoption of the proposed IOC Data Architecture to develop and deploy applications for data access and use, that facilitate integration, visualisation, and analysis of observations.

469. The IODE community is invited to address the lack of standardisation in terminology across global coastal ocean observing and prediction activities through the development and promotion of new data standards and vocabularies., which could be addressed through a unified framework that establishes common standards and guidelines, and socialization of the framework to increase community awareness. The DCO-ODS has in its workplan supporting standards developments for various communities to further the Decade Challenge 8 vision of a digital ocean ecosystem but will require the wider support of the IODE community to achieve this.

470. The IODE community is encouraged to develop a realistic and effective funding strategy to support these programme's actions and coordination efforts.

471. **The Committee** welcomed the progress made by the UN Ocean Decade programmes and actions.

6.2.4 Proposals for New IODE Activities in the UN Ocean Decade 2025-2026

472. This agenda item was introduced by **Dr Paula Sierra Correa**. She invited the Committee to identify new proposals for submission as Decade actions.

473. No concrete proposals were received.

474. The representative of IOCAFRICA acknowledged IODE's participation in the UN Ocean Decade Conference and emphasised the need for IODE activities to align with existing endorsed Decade programmes. In particular, the IOCAFRICA underscored the importance of strengthening synergies with the SEAWARD Africa programme to ensure that IODE contributes effectively to addressing the 10 challenges of the Decade while advancing data and information management in support of sustainable ocean governance in Africa.

475. The representative of IOCAFRICA recognized the need to expand IODE's role within the Ocean Decade. It encourages the development of new activities that enhance ocean data interoperability, accessibility, and capacity-building, particularly in underrepresented regions. IOCAFRICA recommended that IODE work closely with regional stakeholders, including IOCAFRICA, to propose targeted Decade actions that support data-driven decision-making, the establishment of regional ocean data hubs, and the integration of African oceanographic data into global frameworks.

476. **The Committee recommended** the eDNA expeditions Decade project to continue in a second phase if funding sources come available recognizing the enormous value of these expeditions to the global biodiversity community in establishing pipelines and processes from eDNA collection to product development.

6.2.5 Advancing Ocean Data Sharing For Sustainable Development In Areas Within National Jurisdiction

477. This agenda item was introduced by **Mr Adam Leadbetter**, Lead of the DCO for Data Sharing. He explained that the DCO-ODS is working closely with the UN Ocean Decade's Corporate Data Group to promote ocean data sharing from private industry where data has traditionally been siloed and inaccessible. He then introduced the proposed Recommendation IODE-28/6.2.6 that was developed with the Corporate Data Group to further the use of the IOC Data Policy and Terms of Use (2023) particularly in the licensing and permitting of commercial activity which generates data within national jurisdiction.

478. Mr. Leadbetter noted that Recommendation IODE-28/6.2.5 includes the establishment of an Intersessional Working Group to support and promote the implementation of Recommendation IODE-28/6.2.5 and called on the committee for volunteers to be members of this working group.

479. The delegate of Colombia appreciated the information provided. Colombia supported the recommendation of this agenda item, as collaboration with the private industry would help advance the Committee's initiatives and bring us closer to our shared goal of making ocean data more accessible—our greatest challenge. Additionally, this industry generates data within national jurisdiction that has traditionally been isolated and inaccessible yet could be of great value. We are also pleased to join the Intersessional Working Group to support and promote the implementation of Recommendation IODE-28/6.2.5. However, Colombia wishes to safeguard this statement within the meeting report regarding the following consideration, given the reference to UNCLOS in this decision: Colombia reaffirms that the United Nations Convention on the Law of the Sea (UNCLOS) is not the only legal instrument governing activities in the oceans and seas. Colombia's participation in adopting this agenda item during IODE-28 does not affect its status or rights, nor should it be interpreted as tacit or explicit acceptance of UNCLOS provisions, as Colombia is not a party to this instrument.

480. **The Committee adopted Recommendation IODE-28/6.2.5**

6.2.6 IODE Rapid Response Mechanism for Emerging Issues

481. This agenda item was introduced by **Pier Luigi Buttigieg**, ODIS Chair. Dr. Buttigieg noted that IODE currently lacks a standard procedure to assess and recommend responses to sudden developments impacting ocean data availability, persistence, and exchange. Thus, he informed the Committee that a sessional working group to draft a decision to form an intersessional working group to support rapid, coordinated responses to emerging issues met on 13 March.

482. The proposed Intersessional Working Group to Enact a Rapid Response Mechanism for Emerging Issues (IWG-RRM) will develop and document a set of "triggering conditions" and a standard operating procedure for the group that will generate coordinated guidance for IODE's structural elements to develop and implement targeted actions.

483. The IWG will only meet as required in response to a triggering event and will coordinate a set of IODE-wide proposed actions in response to an event. It will ensure that IODE is able to respond rapidly to a changing global digital and data landscape, mitigate threats quickly and respond to opportunities in a timely way.

484. **Ms Katherine Tattersall**, Co-Chair of SG-OBIS, welcomed the establishment of the IWG-RRM as a cross-cutting activity across all IODE structural elements, and looked forward to close collaboration in the IWG-RRM to ensure the whole of IODE is well placed to engage and respond to emerging issues in a timely and appropriate manner. OBIS Nodes operate across an international community of marine data centres, information management organisations, research institutes and government organisations and the activity of OBIS is built on a stable and open exchange of biodiversity data across these nodes. The IWG-RRM will support our nodes and the

wider OBIS network in quickly and appropriately responding to disruptive events and evolving opportunities.

485. **Ms Carolina Garcia**, Co-Chair of SG-OTGA expressed support for the proposal to establish the IWG-RRM and highlighted the strategic relevance of ensuring rapid and coordinated responses that could imply specific capacity development of IODE challenges and emerging opportunities.

486. **The representative of GOOS** welcomed the creation of this mechanism. GOOS requested IODE to include representatives from GOOS in the intersessional working group and noted that this mechanism could be incorporated into the IOC Data Architecture (agenda item 6.1) and other relevant cross IOC mechanisms as relevant.

487. **The Committee adopted Decision IODE-28/6.2.6**

488. **The Committee requested** the IWG-RRM addresses with high priority the fact that some WOD services have recently ceased and that IODE programme components and activities and many other programmes worldwide depend on data and services from WOD.

6.3 RENEWAL OF THE MOU BETWEEN THE FLANDERS MARINE INSTITUTE AND IOC REGARDING THE IOC PROJECT OFFICE FOR IODE (2027-2031)

489. This agenda item was introduced by **Ms Lotta Fyrberg**. She explained that an “internal review” is a requirement included in the Memorandum of Understanding between the Flanders Marine Institute (VLIZ) and IOC. As the current agreement will expire on 31 December 2026 and taking into consideration that a renewal needs to be requested by the IOC Assembly it was decided to implement the review of the current agreement prior to IODE-28 for consideration by IOC-33 (June 2025). Dr Lesley Rickards and Mr Taco De Bruin had kindly accepted to undertake the review.

490. Ms Fyrberg then invited Mr Taco de Bruin (also representing Dr Lesley Rickards) to report on the results of the performance review. They referred to Document IOC/IODE-28/6.3 (Performance review of the IOC Project Office for IODE).

491. **Mr De Bruin** recalled that during the IODE Management meeting held in February 2024 it was decided to review the IODE Project Office activities. This review was requested by IOC/IODE, recalling that the MoU signed in 2022 between IOC and VLIZ is due to expire on 31 December 2026, and recalling that Article IV of that MoU states:

> *“A review of the performance of the UNESCO/IOC Project Office for IODE shall be organized once, and prior to the expiry of this Memorandum of Understanding. The evaluation report shall be submitted for approval to the IODE Committee that oversees the Project Office activities. The IODE Committee may, as it deems necessary, recommend the renewal or extension of this agreement and will submit this Recommendation to the next available Session of the IOC Assembly or Executive Council.”*

492. However, because the only IODE Committee meeting between now and the expiration date will be in March 2025, it was decided to organize the Project Office review in 2024.

493. The objectives of the review were to

(i) evaluate the IODE Project Office activities and
(ii) to propose or not the renewal of the current MoU between IOC and the Flanders Marine Institute (VLIZ).

It was required to evaluate the following areas:

(i) Organisational performance:

(a) How effective is the organisation in moving towards the fulfilment of its mission?
(b) How efficient;
(c) If it has kept its relevance; and
(d) Financial viability;

(ii) Enabling environment;

(iii) Organisational motivation:

(a) Organisation's history;
(b) Mission;

(iv) Organisational capacity: Strengths and weaknesses.

494. To carry out the review, 20 people were interviewed, some in person during a visit to the Project Office, the remainder through virtual meetings. This included representatives from the Project Office, present and past IODE co-chairs, IODE Programme Components, IOC (including GOOS) and the Ocean Decade. In addition, a survey of NODCs and ADUs was carried out which elicited over 50 responses.

495. The Project Office plays an essential role in and beyond the IOC data ecosystem through OBIS, ODIS and OTGA, and operates with great efficiency. Based on the results outlined in the report of the review of the Project Office, the reviewers identified a number of areas which the IODE Project Office should consider in the future. These are detailed below (full text of the conclusions and recommendations is available in the review report: https://oceanexpert.org/document/35719):

(i) Importance of flagship components of IODE (OBIS, OTGA, ODIS). Restructuring the IODE work into programme components, programme activities and projects is a wise move and ensures that promoting IODE is easier to understand. This should be further developed to allow all IODE activities to link to these.

(ii) The PO staff are excellent, competent and flexible, but they are overstretched, not only leading to stress or sick leave, but often have no time to look beyond the day-to-day work. For example, the goal of more sustainable funding and improved ability to respond to project calls needs to be facilitated by the expansion of the IODE Project Office staff, in particular on the IT side where currently staffing is very limited. Two specific issues are (i) the replacement of the Head of the Project Office which needs to be done with the minimum of delay and (ii) ensuring that the position of ODIS Programme Manager is made more stable.

(iii) The Government of Flanders must be commended for its outstanding effort in providing funding to the IODE PO for the last 20 years, during which time the PO has grown in responsibilities and activities. But now there is an urgent need to diversify the income stream to enable the PO to meet increasing demands. In addition to requesting funding from IOC Member States, others including industry and philanthropic organisations should be approached.

(iv) It is encouraging to note that there is increasing cooperation with other parts of IOC, for example, with GOOS, HAB and ocean acidification. This should be further encouraged to allow closer working, ensuring no 're-invention of the wheel'. More could be made of co-location with VLIZ; there are some good examples, e.g. with OBIS. Better co-working could be beneficial to both.

(v) The BBNJ Secretariat, when established, may require the data and expertise available at the IODE Project Office in general, and IODE/OBIS in particular. This could therefore be an opportunity for the Project Office (as well as VLIZ as it has considerable complementary expertise). OBIS has been closely involved in the BBNJ process leading to the agreement and is well-recognized within the UN system.

(vi) Location of the Project Office: there are benefits to being co-located with a marine institute and location alongside VLIZ raises the profile of Flanders. A disadvantage is that it is not so straightforward to be part of the day-to-day interactions of IOC and can be forgotten by IOC HQ in Paris. This has been partly addressed by having a member of staff located in Paris to act as liaison.

(vii) The visibility of the Project Office is not good outside of the IODE community, and the same may be true of IODE itself. Although user demand is increasing in some areas, it is suggested that there is a broad range of users in the wider society to whom IODE and its data, products and services are very relevant. Improvements need to be made through enhanced communication and engagement with a broad range of organizations. The addition of an OBIS Community Engagement Officer is a good start in this direction. A communications plan would be beneficial for potential funders and to promote IODE data, products, and services.

(viii) IODE is contributing to the Ocean Decade through several endorsed activities relating to OBIS, ODIS, OTGA and Best Practices (with GOOS). In addition, the Project Office hosts the Decade Coordination Office (DCO) for Ocean Data Sharing (ODS) and is hosting a series of International Ocean Data Conferences. However, there is a view that IODE could be more proactive and engage more with the Decade, in particular, through the DCO-ODS. However, this is difficult with already stretched resources.

496. The overall recommendation of the reviewers is to renew the MoU between IOC and the Flanders Marine Institute on the hosting of the IOC Project Office for IODE, Ostend, Belgium.

497. The delegate of Flanders (Kingdom of Belgium) reported that it has been hosting the IODE Project Office in a sustained way since 2005, in acknowledgment of the important role of the global IODE network for IOC, supported by the IODE Project Office team, in Ostend. Flanders expressed its appreciation for the great work by the team and the coordinators of the programme components, under the guidance of the Head of Office.

498. The delegate of Flanders (Kingdom of Belgium) also expressed gratitude and great appreciation to Mr Peter Pissierssens for coordinating the IODE and the IODE project office in Ostend since 2007. Flanders took note of the outcomes of the review process, including the recommendation on the need for replacement of the Head of the Project Office with the minimum of delay.

499. The delegate of Flanders (Kingdom of Belgium) thanked the reviewers for their efforts, and welcomed the review report as an integral part of the process of renewal of the MoU between VLIZ-Flanders and IOC regarding the IOC Project Office for IODE.

500. The representatives of OBIS, ODIS and OTGA expressed appreciation and welcomed the report and recommendations and further emphasised the deep appreciation of their networks for the long-standing support of the Government of Flanders (Kingdom of Belgium).

501. **The Committee thanked** the reviewers for their excellent work which they performed pro bono. **The** Committee **thanked** the Royal Netherlands Institute for Sea Research (NIOZ), employer of one of the reviewers, for its support.

502. **The Committee expressed its great appreciation** to the Government of Flanders (Kingdom of Belgium) and the Flanders Marine Institute (VLIZ) for the long-term support provided to the IOC Project Office for IODE, **stressing** that the Office has been crucial for the continuing growth and success of the IODE Programme and IOC in general.

503. **The Committee requested** the IOC Assembly to invite the Government of Flanders (Kingdom of Belgium) to continue its support of the IOC Project Office for IODE and **invited** other

Member States to complement the support to allow further development of the IODE, its activities, products and services.

504. **The Committee adopted** Recommendation IODE-XXVIII.6.3.

6.4 IODE AT IOC-33

505. This agenda item was introduced by **Ms Lotta Fyrberg**. She informed the Committee that, as usual the IODE Co-Chairs will report to the Assembly on the outcome of the most recent IODE Committee meeting and present the recommendations submitted by the IODE Committee to the IOC Assembly for approval. She noted that this time there is also the important issue on the 'IOC data architecture' as discussed under agenda item 6.1

506. **The Committee requested** the IODE Co-Chairs to prepare a brief statement for the IOC-33 (June-July 2025) on the outcomes of IODC-3.

507. **The Committee requested** the IODE Co-Chairs to present the executive summary and recommendations of IODE-28 and coordinate with GOOS on the presentation of the work on the IOC Data Architecture to the IOC-33.

7. INTRODUCTION TO WORK PLAN AND BUDGET (FINANCIAL RESOURCES 2025-2027)

7.1 UNESCO REGULAR PROGRAMME FINANCIAL RESOURCES REMAINING FOR THE BIENNIUM 2024-2025

508. This agenda item was introduced by **Mr Ward Appeltans,** IODE Technical Secretary. He informed the Committee that the IODE-27 work plan and budget had been drafted based on the expected continued low level of funding of approx. US$ 77,500/year. Thanks to the return of the United States to UNESCO in July 2023 and strong requests by a number of UNESCO Member States to the UNESCO Executive Board and UNESCO General Conference the overall UNESCO regular programme as well as IOC budget has been increased considerably for the 2024-2025 biennium. The allocations are shown below.

	BIENNIUM	2024	2025
Africa InfoHub	150,000	75,000.00	75,000.00
IODE & OBIS core systems	432,155	216,077.50	216,077.50
IODE & OBIS products & services	432,155	216,077.50	216,077.50
IODE & OBIS training & education	282,771	141,385.50	141,385.50
subtotal	**1,297,081.00**	**648,540.50**	**648,540.50**

Fig 2: Revised UNESCO RP allocations 2024-2025

509. Accordingly, the IODE Management Group, at its February 2024, had revised the work plan and budget for 2024, taking into consideration the substantial increase in RP funding. Mr Appeltans noted that the funds for "Africa InfoHub" had been decentralized to the IOC office in Nairobi to support ODIS/OIH development in Africa. Figure 3 (below) shows the contributions to

the IODE budget from the UNESCO Regular Programme between 2004 and 2025 (and unconfirmed estimates for 2026-2027).

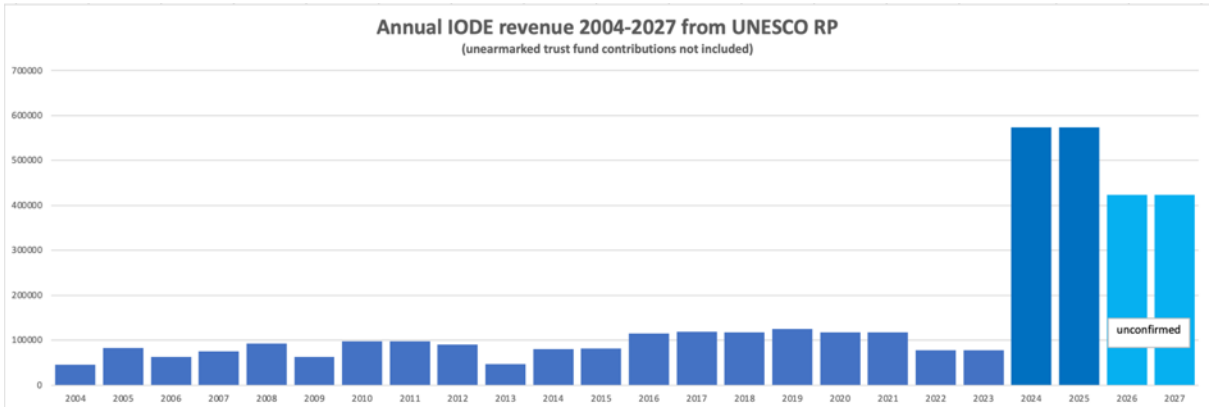

Fig 3: contributions to the IODE budget from the UNESCO Regular Programme between 2004 and 2027.

510. **The Committee welcomed** the substantial allocation for IODE in the IOC/UNESCO Regular Programme budget and **thanked** Member States for their strong support expressed during the UNESCO Executive Board and UNESCO General Conference in 2023.

7.2 UNESCO REGULAR PROGRAMME FINANCIAL RESOURCES EXPECTED FOR THE BIENNIUM 2026-2027

511. This agenda item was introduced by **Mr Ward Appeltans**, IODE Technical Secretary.

512. Mr Appeltans reported that the estimate for 2026-2027 is based on UNESCO expected budget cuts due to increased costs, as well as IOC staff increase costs. Further adjustments may happen depending on the overall financial situation of UNESCO and revisions by the IOC Assembly, UNESCO Executive Board or General Conference in 2025. See also agenda item 8.1.

7.3 IODE HUMAN RESOURCES (CURRENT AND REQUIRED)

7.3.1 UNESCO Regular Programme, Government of Flanders staff contribution and extra-budgetary project staff

513. This agenda item was introduced by **Mr Ward Appeltans,** IODE Technical Secretary. He reported that IODE Project Office staff was now at a level of 19 (9 posted in Ostend, Belgium), 9 in their home countries and 1 at IOC Headquarters. An additional admin staff (Ms Mithona Prak was recruited in November 2024 as administrative assistant). Figure 4 shows the current IODE staff.

#	Name	Unit	Type of contract	Comment
1	Appeltans, Ward	OBIS	UNESCO Regular position P-3	
2	Benedetti, Lisa	OBIS	Consultant (EU funds)	
3	Chmiel, Laurent	OBIS	Consultant (IODE RP funds)	
4	Fils, Douglas	ODIS	Consultant	
5	Lambert, Arno	IT	VLIZ secondment	

#	Name	Unit	Type of contract	Comment
6	Lawrence, Elizabeth	OBIS	Consultant (EU funds)	
7	Mazzucco, Ana Carolina	OTGA	VLIZ secondment	
(8)	McKenna, Jeff	ODIS	Consultant (IODE RP funds)	Ended 3/2025
(9)	Pissierssens, Peter	IODE Management	UNESCO Regular Position P-5	retiring 30/5/2025
10	Prak, Mithona	Admin	Service contract (IODE RP funds)	
11	Principe de Souza, Silas	OBIS	Project Appointment (EU funds)	
12	Provoost, Pieter	OBIS	Project Appointment (Flanders, EU and US funds)	
13	Scott, Lucy	ODIS	Consultant (IODE RP funds)	
14	Suominen, Saara	OBIS	Project Appointment (Flanders and EU funds)	
15	de Baenst, Sofie	Admin	UNESCO project appointment G-3	
16	de Lichtervelde, Kristin	Admin	VLIZ secondment	
17	Boulanger, Emilie	OBIS	Consultant (EU funds)	
(18)	Reed, Greg	OTGA	Consultant	retired 31/12/2024
19	Cabrera, Patricia	OBPS	Consultant (IODE & GOOS RP funds)	
(20)	Peter Balkányi	OTGA	Consultant (IODE RP)	Ended 3/2025

Figure 4: IODE staff table 2025

514. He noted that Dr Claudia Delgado, OTGA project manager, had left the IOC Project Office for IODE on 15 January 2023 and had taken up a new appointment. She was replaced by Ms Ana Carolina Mazzuco (Brazil) on 13 June 2023. Mr Greg Reed continued to serve IODE/OTGA as consultant but retired on 31/12/2024.

515. He further informed that, while the OBIS P-3 position had been approved and administratively created, the UNESCO Director-General had rejected the proposed candidate. A new recruitment call will therefore be started during the second semester of 2025.

516. He reported that IODE responded to UNESCO HR call 2025 with two requests of Junior Professional Officers (JPO), one by OBIS and GOOS (Junior Technical Officer – Ocean Biodiversity) and one by OTGA (e-Learning and Training Officer).

517. **The Committee thanked the Government of Flanders (Kingdom of Belgium)** for continuing to provide three full-time staff members to the IOC Project Office for IODE and **invited** the Government of Flanders (Kingdom of Belgium) to continue this support.

518. **The Committee** welcomed the recruitment of an additional administrative support staff but **noted with concern** that this position is temporary and funded from IODE Regular Programme, thereby reducing funding available for programme implementation.

519. **The Committee requested** that the new administrative support position should be funded from staff cost as from the next biennium.

520. **The Committee regretted** the delay in recruiting the OBIS data manager position and **called on** the IOC Executive Secretary to start the new call before the end of 2025.

521. **The Committee expressed its great** appreciation to Mr Greg Reed for his considerable contribution to IODE's training programme for over 25 years. **The Committee noted** that without Mr Reed's continued support the OTGA programme component would not be where it had reached today.

522. **The Committee requested** the IOC Executive Secretary to create an administrative support position for IODE.

7.3.2 Internships and Secondments

523. This agenda item was introduced by **Mr Ward Appeltans**. He noted with regret that no internships or secondments had been offered during the past inter-sessional period. He also referred to the results of the NODC/ADU survey which indicated that, even if secondments could be provided, they would likely be of short duration.

524. The representative of OBIS Australia, expressing concern about the reduced staffing at the IODE Secretariat, requested further information about the process for providing the IODE Secretariat with in-kind support by way of internships or secondments from NODCs and ADUs. This could be a pathway to offer some reinforcement of staffing for the Secretariat, noting however that a short term secondment or internship is not necessarily an efficient mechanism for providing expert and informed Secretarial support.

525. **The Committee called on Member States** to consider seconding, either at the IOC Project Office for IODE, in Ostend, Belgium or in-kind (working from their usual place of work) in order to strengthen the IODE Secretariat.

7.3.3 Succession of the head of the IODE Programme and head of IODE office

526. Mr Taco de Bruin introduced this agenda item. He recalled the announcement by the IOC Executive Secretary of the appointment of the Head of OOS as the Acting Head of the IODE Project Office after the retirement of Mr. Peter Pissierssens per June 1, 2025. He welcomed that appointment, but noted that no timeframe to come to a permanent solution was provided. Though understanding and appreciating the circumstances and interests the IOC Executive Secretary has to take into account, Mr. De Bruin expressed his concern that in the longer term this would lead to an untenable situation, with the Head of OOS having to do the tasks of two full time jobs at two different locations, gravely risking her personal wellbeing as well as the functioning of the IODE Project Office. He proposed to ask the IOC Executive Secretary how temporary this situation is expected to be and which mitigating measures the IOC Executive Secretary is going to take to avoid the risks mentioned.

527. The delegate of Italy echoed these concerns and reinforced the request on the urgent set up of the recruitment procedure for a full-time position for this role.

528. The delegates of Colombia, Sweden made reference to the commitments from the countries for IODE and the Decade and requested an urgent response.

529. The delegate of the Netherlands noted that a long duration of the current situation may reflect adversely on IODE and IOC in the relationship with the hosting entity VLIZ and the Government of Flanders, while also affecting the process of the renewal of the MoU between VLIZ and IOC.

530. **The Committee noted** with satisfaction the appointment of the Head of OOS as Acting Head of the IODE Project Office and appreciates that all appointments (new or renewals) are subject to the current UNESCO policy.

531. The **Committee expressed** its grave concerns about the sustainability of that situation in the longer term, both from a human point of view as well as the repercussions it may have on the functioning of the Project Office and by extension of IODE as an IOC Programme. The current solution requires the Head of OOS to fulfill the tasks of 2 FTEs at two locations in different countries.

532. **The Committee urged** the IOC Executive Secretary to elaborate on the temporariness of the current situation and to ensure that a permanent solution is realized as soon as possible, since a long duration of the current situation may reflect adversely on IODE and IOC in the relationship with the hosting entity VLIZ and the Government of Flanders, while it may also affect the process of the renewal of the MoU between VLIZ and IOC.

7.4 CONFIRMED EXTRA-BUDGETARY REVENUE FOR 2025-2027

533. This agenda item was introduced by **Mr Ward Appeltans,** IODE Secretariat. Figure 5 (below) shows the different sources of revenue administered by UNESCO between 2016 and 2027. An increase in revenue from participation in European Commission funded projects is observed as from 2023.

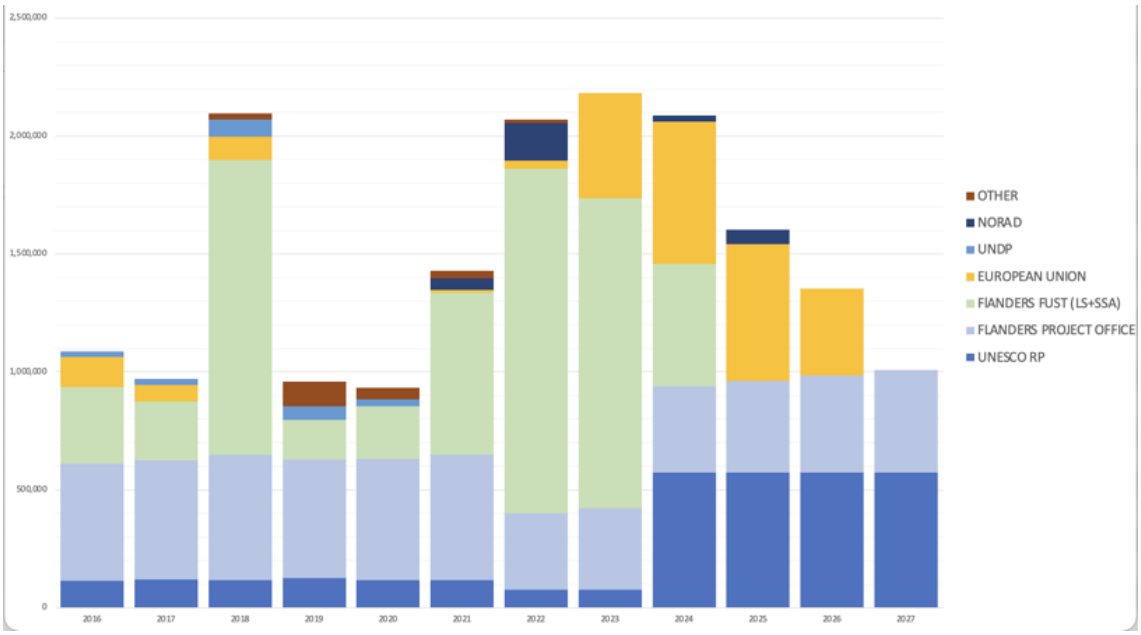

Figure 5: IODE Revenue 2016-2027 by source. Note these totals only include UNESCO-

administered funds and not those administered by organisations that contribute to IODE activities.

534. **The Committee strongly urged** IOC Member States to follow Flanders' example and establish long-term funds-in-trust agreements to support UNESCO Science Activities.

535. **The Committee called on** its members and parent institutions to involve IODE in project proposals that include data or information management elements as appropriate.

536. **The committee recognized** the support through other funding instruments through national or regional mechanisms and **requested** to include these contributions in the annual reports of the NODCs, ADUs and IODE programme components, activities and projects.

7.5 OTHER RESOURCE OPPORTUNITIES FOR 2025-2026

537. This agenda item was introduced by **Mr Ward Appeltans**. IODE Secretariat. He recalled that in 2023 funding had been received from the government of Norway through NORAD (US$ 500,000/year for capacity development related activities). This provided support for the project "Biodiversity Data Hub for the High Seas" (US$ 85,000) and "OceanTraining internships to enhance global human capacity related ($ 85,000), in cooperation with IOC CD. The IOC Executive Secretary Vidar Helgesen recently asked IOC section heads to work together to develop a joint project concept that is IOC cross-cutting, supports capacity development, is aligned with the IOC Medium-Term Strategy 2022-2029 and fills current gaps. It is premature to share any further information, as the process is still ongoing and nothing is decided yet.

538. **The Committee recognized** the funding from Norway (NORAD) and **expressed appreciation** for the projects that were enabled through this funding. The Committee is hopeful that funding from NORAD will continue to support critical Capacity Development activities in IODE.

8. PROPOSED WORK PLAN FOR THE NEXT INTER-SESSIONAL PERIOD (2025-2026)

8.1 IODE IN THE UNESCO 43 C/5 (2026-2027)

539. This agenda item was introduced by **Ms Lotta Fyrberg**. The process of defining the IODE contribution to UNESCO 43 C/5 (2026–2027) is still underway, and it is premature to report to the Committee at this stage.

8.2 IODE PROGRAMME COMPONENTS AND PROGRAMME ACTIVITIES

540. This agenda item was introduced by **Mr Greg Reed**. He recalled that the 27th session of the IOC Committee on International Oceanographic Data and Information Exchange approved the designation of IODE activities as Programme Components, Programme Activities and Projects. All IODE Programme Components and Programme Activities were requested to report on programme implementation in 2023-2024 and to submit a draft work plan and budget for 2025-2026.

8.3 PROPOSALS FOR NEW IODE PROGRAMME COMPONENTS, PROGRAMME ACTIVITIES OR PROJECTS

541. This agenda item was introduced by **Mr Greg Reed**. He reported that no new programme components, programme activities or projects have been submitted.

8.4 IODE WORK PLAN AND BUDGET 2025-2026

542. This agenda item was introduced by **Mr Ward Appeltans**. He noted that, as has been the case in the past, the Committee was invited to submit a work plan and budget for the remaining

months of 2025 (April – December 2025) and 2026 (January-December 2026). As the next Session will take place in February or March 2027 no work plan should be submitted for 2027.

543. The Sessional Working Group for work plan and budget met to review the proposed work plan and budget for 2025 and 2026 which has been prepared based on the work plans submitted by all Programme Components and Programme Activities and has been revised based on available resources. Two budget scenarios were considered for 2026 (one with UNESCO RP contribution identical to 2025, and one with an estimated 25% budget cut). The UNESCO General Conference in November 2025 will decide the budget for the next biennium. The budget table shows the two scenarios for 2026. It should be noted that the budget figures are subject to change.

544. **The Committee noted with appreciation t**he in-kind support provided by all IODE NODCs and ADUs**,** OTGA RTC/STCs through their individual and joint activities, to the sharing and exchange of data and information and **requested** the IODE Management Group in consultation with the IFAG to track and report on and acknowledge these in the next session.

545. **The Committee adopted** Recommendation IODE-28/8.4

9. ANY OTHER BUSINESS

546. This agenda item was introduced by **Dr Paula Sierra Correa** based upon input from the Committee under agenda item 2.1. No additional agenda items were requested.

10. DATE AND PLACE OF THE NEXT SESSION (IODE-29, 2027)

547. This agenda item was introduced by **Ms Lotta Fyrberg**, IODE Co-Chair. The Committee was invited to consider holding the meeting during the month of February or March 2027, taking into consideration the need to report to the IOC Assembly in June 2027.

548. Countries that would be prepared to host the next Session were kindly requested to inform the IODE Secretariat of their intention to host, not later than 12 months before the next Session dates, (i.e., before March 2026). Full information on the in-kind contributions expected from a Host are available upon request from the IODE Secretariat.

549. **The Committee invited** member states to consider hosting the next IODE Committee session in 2027.

550. The delegate of Poland offered hosting the next session.

551. **The IODE** Committee **requested** the IODE Management Group to discuss the next IODC including the format and allocation of resources.

11. ELECTION OF THE CO-CHAIRS

552. The IODE Technical Secretary, **Mr Ward Appeltans**, introduced this item by referring to the IOC Rules of Procedure (Document IOC/INF-1166), and more particularly to Rule 25, para 2. The Technical Secretary informed the Committee that, in accordance with the above Rules, the current two Co-Chairs (Ms Lotta Fyrberg and Dr Paula Sierra Correa) had completed one term and could therefore be re-elected for a second term if they so desired.

553. The IODE Technical Secretary then informed the Committee that Ms Fyrberg and Dr Sierra Correa had informed the Secretariat that they were willing to continue as IODE Co-Chairs for a second term.

554. **The Committee unanimously re-elected** Ms Lotta Fyrberg and Dr Paula Sierra Correa as IODE Co-Chairs for the next inter-sessional period.

555. The Co-Chairs briefly addressed the Committee. They thanked the Committee for their re-election and expressed their strong commitment to the further success of IODE in the next biennium.

12. IODE ACHIEVEMENT AWARDS 2025

556. This agenda item was introduced by **Ms Lotta Fyrberg and Dr Paula Sierra Correa**. They recalled that IODE Sessions have been bestowing "IODE Achievement Awards" since the twentieth Session of the IODE Committee in 2009 in order to express special appreciation to some of these experts who contributed time and effort to the IODE programme. Between 2009 and 2023 a total of 45 awards have been given. The award ceremony was traditionally held during the Session Dinner or Reception. A full list of awards issued during previous sessions is found on http://www.iode.org/awards .

557. IODE Achievement Awards (2025) were bestowed to the following experts, who contributed exceptional time and effort to the IODE programme:

- **Lucy Scott**: In recognition of her leadership of the Ocean InfoHub Project and for her contribution to the IOC Ocean Data and Information System
- **Martha Vides Casado**: In recognition of her leadership as IODE/OBIS Co-chair during the period of 2020-2024
- **Pier Luigi Buttigieg**: In recognition of his leadership and role of chief architect in the Ocean InfoHub Project and the IOC Ocean Data and Information System
- **Ann-Katrien Lescrauwaet**: In recognition of her contribution to the cooperation between the IODE Project Office and VLIZ/Flanders
- **TVS Udaya Bhaskar**: In recognition of his leadership as IODE OTGA Chair during the period of 2022-2024

558. **The Committee expressed its great gratitude** to Lucy Scott, Martha Vides Casado, Pier Luigi Buttigieg, Ann-Katrien Lescrauwaet and TVS Udaya Bhaskar, thanking them for their exceptional contributions to continue building “our” IODE.

13. ADOPTION OF DECISIONS AND RECOMMENDATIONS

559. This Agenda Item was introduced by both Co-Chairs. The Committee was invited to adopt the Decisions and Recommendations which had been reviewed during the Session and included in the action paper. They are attached as Annex II.

14. ADOPTION OF THE SUMMARY REPORT

560. This agenda item was introduced by **Mr Ward Appeltans**. He invited the Committee to review and adopt all action items (marked in yellow in the action paper) during the Session. Introductions and other text would not be reviewed. He informed the Committee that the Secretariat would review and finalize the report. The report would then be posted on the IODE web site and circulated to all participants by the end of April 2025. An executive Summary containing the adopted Decisions and Recommendations would be prepared for the IOC Assembly in June 2025.

561. **The Committee requested** its Co-Chairs and the IODE Secretariat to make editorial corrections as necessary, taking into account the discussions held during the session.

15. CLOSURE

562. **The IODE Committee thanked** the local host INVEMAR as well as the Government of Colombia for the excellent arrangements for this Session and the preceding IODC-3.

563. The Co-Chairs closed the Session on Friday 14 March 2025 at 12:45.

ANNEX I

AGENDA

1. OPENING

2. ADMINISTRATIVE ARRANGEMENTS
- 2.1 ADOPTION OF THE AGENDA
- 2.2 DESIGNATION OF A RAPPORTEUR
- 2.3 SESSION TIMETABLE AND DOCUMENTATION
- 2.4 ESTABLISHMENT OF SESSIONAL WORKING GROUPS
- 2.5 PRACTICAL ARRANGEMENTS FOR THE SESSION

3. REPORTING ON THE PAST INTER-SESSIONAL PERIOD (2023-2024)
- 3.1 PROGRESS REPORT ON THE IODE-27 WORK PLAN
  - 3.1.1 Outcome of IOC-32
- 3.2 IODE CONTRIBUTION TO THE IMPLEMENTATION OF THE IOC MEDIUM-TERM STRATEGY 2022-2029
- 3.3 STATUS OF THE IODE NETWORK
  - 3.3.1 New NODCs, ADUs, AIUs, accredited NODCs, ADUs, and AIUs
  - 3.3.2 Reporting summary of NODCs, ADUs and AIUs
  - 3.3.3 Review of NODC health status within the IODE network
- 3.4 PROGRESS REPORTS OF IODE PROGRAMME COMPONENTS, PROGRAMME ACTIVITIES AND PROJECTS
  - 3.4.1 IODE Programme Components
    - 3.4.1.1 Ocean Biodiversity Information System (OBIS)
    - 3.4.1.2 Ocean Data and Information System (ODIS)
    - 3.4.1.3 OceanTeacher Global Academy (OTGA)
  - 3.4.2 IODE Programme Activities
    - 3.4.2.1. AquaDocs
    - 3.4.2.2. Global Oceanographic Data Archaeology and Rescue (GODAR)
    - 3.4.2.3. Underway Sea Surface Salinity Data Archiving Project (GOSUD)
    - 3.4.2.4. Global Temperature-Salinity Profile Program (GTSPP)
    - 3.4.2.5. International Coastal Atlas Network (ICAN)
    - 3.4.2.6. International Quality Controlled Ocean Database (IQuOD)
    - 3.4.2.7 OBPS (IODE/GOOS)
    - 3.4.2.8 ODIS Catalogue of Sources (ODISCat)
    - 3.4.2.9 OceanExpert
    - 3.4.2.10. IODE Quality Management Framework (QMF)
    - 3.4.2.11 World Ocean Database (WOD)
    - 3.4.2.12 Re-organization of the ODIS Programme Activities
  - 3.4.3 IODE Projects
  - 3.4.4 Implementation report of revised Rules of procedure for IODE activities
  - 3.4.5 Report of the inter-sessional working group on the review of IODE structure and working methods
    - 3.4.5.1. Future of the IODE Associate Information Units (AIUs)
- 3.5 PROGRESS REPORT ON THE IODE QUALITY MANAGEMENT FRAMEWORK
- 3.6 PROGRESS REPORTS OF JOINT ACTIVITIES WITH IOC PROGRAMMES AND OTHER PARTNERS

Annex II

IODE-28 DECISIONS AND RECOMMENDATIONS

Decisions

Recommendations

DECISIONS

Decision IODE-28/3.4.1.2

Restructuring the ODIS Programme Activities

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing the call for global, harmonized data layers and products from the Vision 2030 Process of the United Nations Decade of Ocean Science for Sustainable Development (https://oceandecade.org/vision-2030/, esp. White Paper 8),

Recognizing the call for greater, data-centric collaboration and collective action across existing ODIS Programme Activities, expressed at the first joint meeting of IQuOD/SOOPIP/GTSPP/XBT (Bologna, November 2024),

Recognizing further the emerging framework for improved digital coordination between IOC components via a proposed IOC Digital Architecture which, inter alia, enhances data flow across ODIS to GOOS EOV data products and services,

Recognizing that disciplinary expertise is currently scattered across existing ODIS Programme Activities and a new structure should focus on shared data themes (e.g. physics, biodiversity, socio-economics) and delivery to stakeholders,

Decides to convene an intersessional working group (IWG) to propose a restructuring of ODIS Programme Activities: The IWG for Ocean Data and Information System Activities (IWG ODIS-Act). The initial members of this IWG will include representatives of the ODIS

Steering Group and the ODIS Programme Activity Steering Groups. The ODIS Steering Group will draft the terms of reference for the IWG ODIS-Act,

Invites nominations for the IWG ODIS-Act from IODE Committee Members.

Decision IODE-28/6.2.6

Establishment of an IODE Inter-sessional Working Group to Enact a Rapid Response Mechanism for Emerging Issues

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing the global digital arena is under constant and rapid change, presenting time-sensitive opportunities and threats to ocean data that the IODE must respond to,

Noting the need for IODE to respond in a coordinated, structured, timely, and appropriate manner to emerging issues including, *inter alia*, new Artificial Intelligence capacities, cybersecurity challenges, regulatory frameworks and data persistence/rescue,

Recalling that IODE is developing deeper socio-technical coordination within and between its Programme Components and Programme Activities, and with other IOC-led programmes, including:

- Co-development of an IOC Data Architecture,
- Improved observability of IODE and external digital assets via the Ocean Data and Information System (ODIS),
- The development of a Biology and Ecosystems Portal for the coordination of GOOS Essential Ocean Variable data,
- The creation of targeted training resources to inform and educate about ocean data in response to global and regional demands, and
- Coordinated mechanisms to access and actionate data experts and institutions worldwide.

Further recalling the IODE Programme Components and Programme Activities are identifying, rapidly developing, and at times implementing internal solutions to emerging issues, rather than as a coordinated whole,

Decides to establish an inter-sessional Working Group to Enact a Rapid Response Mechanism for Emerging Issues (IWG-RRM) with the Objectives attached as Annex A of this Decision and Terms of Reference attached as Annex B of this Decision. The group will produce recommendations on short time scales which can then inform the IODE Management Group,

Invites all IODE Structural Elements and partner organisations to nominate experts and propose topics with which the Rapid Response Mechanism should engage.

Annex A to Decision IODE-28/6.2.6

Objective of the IODE IWG-RRM

The objective of the IWG to Enact a Rapid Response Mechanism for Emerging Issues (IWG-RRM) is to react to urgent, time-critical issues and produce coordinated guidance for responses from IODE's structural elements.

Triggering conditions for the IWG-RRM are met by any urgent, time-critical issue which has consequences for IODE as a whole that comes to the attention of the IWG-RRM and is within the scope of the IWG-RRM (Annex C).

The **Standard Operating Procedure** of the IWG-RRM will broadly conform to the following:

When the triggering condition is met, the following standard operating procedure (SOP) will be activated and concluded within a suggested period of two weeks:

1. The IODE representative, or point(s) of contact, that has been informed of the issue will forward the information to a mailing list including all members of the IWG-RRM, providing a complete description and any proposals to resolve it;
2. The IWG-RRM Chair/Co-Chair will inform the Chairs of all IODE Programme Components and Activities that they have been activated.
3. The IWG-RRM will convene and deliberate on whether a response is justified.
4. Based on the outcome of the previous step, the IWG-RRM will either:
    a. Document why no response will be made, publishing the documentation in OceanExpert and informing the individual or organisation which triggered the mechanism accordingly, or
    b. Proceed to the next step in this SOP
5. The IWG-RRM will assemble a response team, including the most appropriate personnel from IODE and external experts as required;
    a. In extremely urgent cases, the team will produce immediate action recommendations to relevant IODE Structural Elements, before proceeding.
6. The response team will deliberate on the issue and, based on the urgency and time horizon of the issue, design actions, set a date for their deliverables as described below, and indicate the resources to be allocated or mobilized (if applicable);
7. The response team will compose a briefing and set of recommendations to the IODE Secretariat, detailing specific steps IODE should take to address the issue;
8. The IODE Secretariat will convene an ad hoc session of the IODE Management Group to agree on what recommendations it can fulfil;
9. The decisions of the IODE Management Group will be recorded and a deadline for Programme Components and Programme Activities to report on their responses set.
10. The IWG-RRM will reconvene to assess the reports of the IODE Programme Components and Activities, and document their assessment on whether the issue which triggered the mechanism has been addressed. The final report of the IWG-RRM will be archived in OceanExpert.

Annex B to Decision IODE-28/6.2.6

Terms of Reference for the IODE IWG-RRM

Objectives: The working group will:

1. Provide IODE with a standard operating procedure and coordinated organisational capacity to convene experts on emerging digital challenges, trends and opportunities,
2. Test the proposed mechanism by convening two task forces on:
    a. The role of IODE in instances of cross-national data security, persistence and rescue
    b. Instances of the use of Artificial Intelligence technologies across IODE Programme Components
3. Establish recommended reporting routes to IODE for review and action

Modalities: The IWG-RRM will meet when the Rapid Response Mechanism is triggered as outlined in Annex A. Additional meetings may be called at the discretion of the Chair / Co-chairs. The group may meet online, face-to-face or mixed as appropriate. For face-to-face meetings participation will be self-funded.

Membership**:** The IWG-RRM will be composed, *inter alia*, of:

- One primary and one secondary representative of the IODE Secretariat,
- One primary and one secondary representative from each IODE Programme Component,
- One primary and one secondary representative where available from each IODE Programme Activity,
- Members of other IOC Programmes, where applicable or requested.
- Invited experts as required.

The working group will elect a Chair and/or Co-Chairs, to be decided by the Working Group members. The IWG will pre-identify relevant experts in areas such as cybersecurity, law, data protection, and ethics and invite them to be at the disposal of the IWG should the need arise.

Annex C to Decision IODE-28/6.2.6

Definition of Scope

Examples of triggering events within the scope of the IWG-RRM include events that pose a risk to the ocean data exchange and security and the IODE network, including.

- Cyberattack
- Natural disaster
- Act of war
- Political disruptions
- Sudden or disruptive technological innovation
- Compromised data streams
- Threats to IODE reputation and operations

Examples of issues that are out of scope of the IWG-RRM include:

- Loss of funding
- A sudden opportunity to acquire funding
- Issues being deliberated upon by the IODE Management Group
- Personal intimidation

RECOMMENDATIONS

Recommendation IODE-28/3.4.1.2

Revision of the Terms of Reference of the Ocean Data and Information System (ODIS)

The IODE Committee,

Recalling the establishment, by the 31st Session of the IOC Assembly through Annex II to Decision A-31/3.4.2, of the IOC Ocean Data and Information System Project (ODIS),

Recognizing that a major component of the ocean data and information system landscape is not linked to the IOC and the need to collaborate with those communities/systems in order to achieve improved accessibility, unrestricted use and interoperability of data and information,

Recognizing the key role that distributed and interoperable data, information, and digitized knowledge resources will have during the UN Decade of Ocean Science for Sustainable Development,

Recalling that the IOC decided that IODE will work with existing stakeholders, linked and not linked to the IOC, to improve the accessibility and interoperability of existing data and information, and to contribute to the development of a global ocean data and information system, to be referred to as the IOC Ocean Data and Information System, leveraging established solutions where possible, including existing IODE systems and others,

Recalling further that the IODE Committee, at its 27th Session, approved the designation of IODE activities as Programme Components, Programme Activities and Projects, considering that this should make IODE activities more attractive to partners for cooperation, and decided to designate ODIS, OBIS and OTGA as Programme Components and to take this into consideration in the work plan and budget 2023-2025,

Noting with appreciation that IODE has:

1. Established the IOC Ocean Data and Information System Catalogue of Sources Project (ODISCat) in 2019;
2. Implemented the Ocean InfoHub project as a three-year project (2020-2023) funded by the Government of Flanders (Kingdom of Belgium) successfully;
3. Successfully interlinked 55 ODIS nodes from 45 partners around the world, with more in progress.
4. Established a Global Search Hub for ODIS content.
5. Supported community co-development of data exchange standards and norms to increase digital inclusion and equity
6. Contributed to the data section of the UN Ocean Decade Implementation Plan (2021), its Data and Information Strategy (2023), the Data and Information Strategy's Implementation Plan (upcoming), and Vision 2030 Whitepaper 8 (2024)

Considering that the rapid growth of the ODIS network as a federation of data systems requires an efficient and agile governance mechanism, focused on co-design, user requirements and community feedback,

Recommends the revision of the ODIS terms of reference as attached in Annex A, the terms of reference of the ODIS Steering Group as attached in Annex B, and establishment of the ODIS Operations Group as attached in Annex C,

Invites all IOC programmes, IOC regional subsidiary bodies and partner organizations to collaborate in ODIS by sharing their ocean data and information with ODIS,

Annex A to Recommendation IODE-28/3.4.1.2

Terms of Reference of the IOC Ocean Data and Information System (ODIS)

Objectives: The objectives of this Programme Component are to:

1. develop in collaboration with programmes across the IOC, the IOC Ocean Data and Information System (ODIS) as a foundational digital ecosystem where users can discover and access data and information products, services, and other assets provided by Member States, projects and other partners associated with IOC;
2. work with partners, linked and not linked to the IOC, to improve the accessibility and interoperability of existing data and information and digital service orchestration across data systems.;
3. promote the collective maturation of the ODIS digital ecosystem towards greater interoperability and seamless, trusted, and secure data and information flows across partner systems (e.g. towards data fabric and data space models).

Annex B to Recommendation IODE-28/3.4.1.2

Terms of Reference of the IODE Steering Group for the IOC Ocean Data and Information System (ODIS-SG)

The ODIS-SG will have the following Terms of Reference:

1. In coordination with the ODIS Secretariat, propose a set of strategic priorities for one-, five-, and ten-year time horizons for the ODIS Programme Component, revised each year;
2. Review high-level work plans for the ODIS Programme Component, proposed by the ODIS Operations Group (ODIS-Ops), proposing changes where needed;
3. Advise the ODIS Secretariat and ODIS-Ops on relevant developments in national, regional, global, or sectoral data and information policy, national and international data law and practice which may impact ODIS operations;
4. Propose and, where feasible, facilitate coordination between ODIS Secretariat and new stakeholder or other interest groups;
5. Identify funding sources to further develop ODIS.

Membership: The Steering Group will be composed, *inter alia*, of:

- A Chair or co-Chairs of the Steering Group (*);
- Representatives from IOC Programmes;
- Invited Experts, prioritising the coverage of regions, digital capacity levels[1], socio-economic sectors, UN Ocean Decade Actions, and key groups pursuing, consolidating, or maintaining digital sovereignty;
- Representatives of major interest groups and selected ODIS partners (based on priorities following an open call) including regional/international organisations developing multi-year / decadal data strategies or with unique insight into strategically relevant issues;
- ODIS programme manager;
- IODE Secretariat;
- Representatives from relevant UN Ocean Decade Decade Coordination Offices and Collaborative Centres, and the Decade Coordination Unit

Membership will be for a period of one year (renewable).

(*) A Chair and Co-Chair of SG-ODIS will be elected at the end of the first meeting (and thereafter annually) by the members of the Group in accordance with the Rules of Procedure for IODE Programme Components, Programme Activities and Projects (IOC Manuals and Guides No. 91).

Annex C to Recommendation IODE-28/3.4.1.2

Terms of reference of the Operations Group for the IOC Ocean Data and Information System (ODIS-Ops)

Tasks

The main tasks of ODIS-Ops will be:

1. To ensure the uninterrupted operation of ODIS Nodes[2], by remedying issues identified by the ODIS-SG, ODIS Secretariat or by other ODIS Partners.
2. To promote broader and deeper interoperability between all ODIS Nodes, beginning at metadata / asset catalogues, and progressing to subject data, services, and other capacities as identified;
3. To guide the ODIS Nodes, and ODIS as a whole, in fulfilling the UN Decade of Ocean Science for Sustainable Development's Data and Information Strategy and its Implementation Plan, and - more broadly - addressing its Challenges;
4. To hold monthly meetings (online) not exceeding 60 minutes, distributed across time zones of the Group's members;[3]
5. To contribute to, or produce status briefings on, the state of the ODIS Federation (i.e. the collection of ODIS partner organisations) as a whole, and of individual

ODIS Nodes, detailing any issues limiting data and information exchange, as well as any opportunities to enhance it;

6. To identify and work to resolve any issues relating to data and information exchange and cross-Federation interoperability, by posting and pursuing issues on the ODIS-Arch GitHub repository[4] or another appropriate repository;
7. To make all members of ODIS-Ops aware of regionally, nationally, or locally specific requirements, regulations, or legal frameworks regarding data access and/or exchange which may affect the operations of the ODIS Federation;
8. To identify and describe opportunities for ODIS to provide utility to (potential) user groups and other;
9. To review and regulate the addition, suspension, or removal[5] of ODIS Nodes to/from the Federation;
10. To report operational affairs to the ODIS Chair, SG-ODIS and ODIS Secretariat, and consult these for strategic and programmatic guidance.

Membership

Membership of ODIS-Ops shall initially include:

- ODIS Chair or Co-Chairs (*)
- ODIS Programme Manager (ODIS Secretariat)
- One technical expert which has been selected by each ODIS Partner operating at least one ODIS Node;
- External experts - in advisory roles - in areas relevant to the activities of the Group;
- Representatives of other IODE programme components and/or IODE programme activities or IODE Projects
- Other, ad hoc members, as agreed by the regular membership

Membership will be for a period of one year (renewable).

(*) A Chair and Co-Chair of ODIS-Ops will be elected at the end of the first meeting (and thereafter annually) by the members of the Group in accordance with the Rules of Procedure for IODE Programme Components, Programme Activities and Projects (IOC Manuals and Guides No. 91).

[1] The standing capacity of an entity to participate in digital activities

[2] An “ODIS Node” is a data system which provides a machine-to-machine interface to the digital assets each ODIS Partner wishes to share. An ODIS Node 1) has a current and valid registration in the ODIS Catalogue of Sources (ODISCat), 2) provides sufficient metadata in ODISCat for its asset catalogues to be discovered and processed, 3) maintains its asset catalogues in a form which is interoperable across the ODIS Federation, and in compliance to the ODIS Architecture

[3] Where resources allow, ad hoc, in-person meetings may be organised, particularly to more effectively resolve or pursue regional or thematic issues or opportunities.

[4] https://github.com/iodepo/odis-arch

[5] ODIS Nodes may be suspended or removed if they begin producing erroneous, invalid, or poor quality (meta)data, or if their products are incompatible with the ODIS Architecture and interoperability conventions. Nodes may be reinstated as soon as any outstanding issues are resolved and interoperability is verified.

Recommendation IODE-28/6.2.5

Advancing Ocean Data Sharing for Sustainable Development in areas within national jurisdiction

The IODE Committee:

Recalling

(i) that the IOC Data Policy and Terms of Use was published in 2023 and recommends the findable, accessible, interoperable and reusable sharing of ocean metadata, data and products with minimally restrictive and voluntary common use licenses,

(ii) that the WMO unified Data Policy (Resolution 1,CG-EXT (2021)) WMO-No. 1281 mandates the WMO members to share ocean data as follows: Members shall share observations of the GOOS physical essential ocean variables (EOVs) and GCOS physical ocean domain essential climate variables (ECVs) made as part of a GOOS observation network, programme or project and should share all other EOVs and Ocean based ECVs further notes that this is a national commitment that is supported of the IODE Action,

(iii) the importance of sustainable ocean management as emphasized in the Implementation Plan of the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) endorsed at the 75th United Nations General Assembly in 2020,

Recognising that:

(i) there is a critical role for data in supporting and allowing science-based decision making, including effective marine spatial planning,

(ii) the need for sharing ocean-data is also recognised within the United Nations Convention on the Law of the Sea (Part XIII) and Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (Part II, V, VI),

(iii) the private sector holds and is actively collecting a vast reservoir of valuable ocean data, acquired through commercial activities in support of marine resource management, offshore energy exploration and development, marine infrastructure development and monitoring, and scientific research in every ocean basin,

(iv) the sharing of data collected by private sector bodies offers the possibility of immense benefits to science, policy makers, and the private corporations themselves,

(v) only a fraction of ocean-related data from private sector industries is shared publicly,

Noting that the sharing of these data collected by private industry using the IOC Data Policy and Terms of use would dramatically increase the volumes of data available for monitoring, understanding and modelling the ocean advancing scientific research and improving data-driven decision making in sustainable ocean management,

Encourages Member States to support the implementation of the IOC Data Policy and Terms of Use for the sharing of data for all-ocean related data collection, both publicly and privately funded, in their territorial waters and exclusive economic zones;

Calls upon Member States to recognise that data sharing practices will strengthen the collective ability of all to meet the goals of the UN Ocean Decade and to address UN Sustainable Development Goal 14;

Urges Member States to collaborate with industry, research and data infrastructure stakeholders to standardise ocean data sharing practices through the establishment of national data-sharing policies, regulations and permissions for all ocean-related activities conducted within their territorial waters and Exclusive Economic Zones, including through the inclusion of the provisions of the IOC Data Policy and Terms of Use in licensing and permitting within their jurisdictions;

Affirms that sustainable ocean management requires unlocking the large volume of ocean data collected and held by private industry for collective benefit to scientific research, policy making and industry operations;

Instructs the co-chairs of IODE, in close cooperation with the Decade Coordination Office for Ocean Data Sharing and the UN Ocean Decade's Corporate Data Group, to present

this recommendation for adoption by the 33rd session of the IOC Assembly as part of the IODE-28 recommendation.

Decides to establish an inter-sessional working group to facilitate and promote implementation of this recommendation, with terms of reference as attached in Annex to this Recommendation.

Annex to IODE Recommendation IODE-28/6.2.5

Terms of Reference of the IODE Inter-sessional Working Group on Advancing Ocean Data Sharing for Sustainable Development in areas within national jurisdiction (IWG-DSNJ)

Objectives:

1. Engage with and encourage the implementation by Member States of IODE Recommendation IODE-28/6.2.5 through providing practical advice and developing case studies,
2. Document the implementation of the IOC Data Policy and Terms of Use as outlined in the recommendation,
3. Disseminate successful examples of national policies which include effective ocean data sharing, regulations and permissions for all ocean-related activities conducted within their territorial waters and Exclusive Economic Zones,
4. Report progress on the adoption by member states of the recommendation to the 29th session of the IODE Committee.

Modalities: The IWG will normally conduct its business through entirely electronic means. Should any face-to-face meetings be deemed necessary, participation will be optional with alternative arrangements for electronic participation and in-person participation will be entirely self-funded.

Expected meeting frequency will be at least once per month or as required by ongoing actions.

The IWG will operate its own secretarial tasks.

Membership**:** Initial membership will be composed of

- One of the IODE co-chairs, and/or a representative of the IODE secretariat
- Data & Knowledge Management Officer, representing the Decade Coordination Unit, the Data Coordination Group and the Corporate Data Group
- Lead of the the Decade Coordination Office for Ocean Data Sharing
- Heads of Decade Regional Coordination Offices and Collaborative Centres
- Other membership to be called for at IODE-28 to represent the IOC Committee on IODE. The following member states expressed interest: Flanders (Kingdom of Belgium), UK, Australia, Colombia.

Recommendation IODE-28/6.3

The UNESCO/IOC Project Office for IODE in Ostend, Belgium

The IODE Committee,

Recalling:

(i) Resolution XXII-7 which accepted with appreciation the offer of the Government of Flanders (Kingdom of Belgium) and the city of Ostend to host the IODE Project Office,
(ii) Resolution XXII-1 which adopted the Guidelines for the Establishment of IOC Decentralized Offices, subsequently published in Document IOC/INF-1193,

Noting with appreciation:

(i) the positive results of the review the IOC Project Office for IODE (2025),
(ii) that the IOC Project Office for IODE has successfully continued the implementation of its objectives:
    a) the successful development and hosting of data/information products/services in particular OBIS, ODIS and OTGA, which all form key elements of the global digital ecosystem now under development for the UN Decade of Ocean Science for Sustainable Development,
    b) the successful development and hosting of the training system OceanTeacher Global Academy,
    c) the continued management of an excellent international meeting and conference centre.
(iii) the considerable financial support provided by the Government of Flanders (Kingdom of Belgium) to the IOC in general and to the IOC Project Office for IODE and the excellent in-kind support provided by the Flanders Marine Institute (VLIZ),
(iv) the complementary nature of the activities carried out at the Project Office and the financial support provided by the Government of Flanders (Kingdom of Belgium) through the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST),
(v) the contribution by the IOC Project Office for IODE (as the IODE secretariat and Meeting & Training Facility) to the further development of Ocean Data and Information Networks in developing regions,
(vi) the efficient and effective management of the Project Office and the professionalism of its Staff,

Expressing its profound gratitude to the Government of Flanders (Kingdom of Belgium) and the Flanders Marine Institute (VLIZ) for the considerable support provided, both financially and by hosting of the Project Office, as from April 2005,

Requests the IOC Assembly to invite the Government of Flanders to continue hosting the IOC Project Office for IODE as well as its considerable financial and in-kind contributions and support,

Recommends that:

(i) the IOC Project Office for IODE in Ostend, Belgium be continued,
(ii) the Memorandum of Understanding between UNESCO/IOC and the Government of Flanders (Kingdom of Belgium) through the Flanders Marine Institute (VLIZ) be renewed.

Recommendation IODE-28/8.4

IODE Workplan and Budget 2025-2026

The IODE Committee,

Having reviewed its programme implementation requirements for the period 2025-2026,

Welcoming the substantial increase in UNESCO regular programme funds allocated to IODE,

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

Welcoming the growing collaboration with, and contribution to other IOC Programmes and activities, demonstrated by joint development of products and services as well as capacity development activities,

Recognizing IODE's active and pro-active response to the call on IODE to contribute to the United Nations Decade of Ocean Science for Sustainable Development through several decade actions and the hosting, by the IOC Project Office for IODE, of the Decade Coordination Office for Ocean Data Sharing,

Expressing great appreciation to (i) the Government of Flanders (Kingdom of Belgium) for hosting and supporting the IOC Project Office for IODE; and (ii) other donors and Member States who are providing financial and in-kind support for IODE,

Appreciating and calling on Member States to continue (i) the in-kind support for the IODE Programme through establishing and maintaining IODE National Oceanographic Data Centres, Associate Data Units (including OBIS nodes), provision of experts; (ii) the provision of valuable ocean data and information products and services, and (iii) the provision of financial and other in-kind contributions to IODE,

Requests the IODE Co-Chairs to bring to the attention of the 33rd Session of the IOC Assembly, the IODE Programme and Budget for the period 2025-2026, as attached in the Annex to this Recommendation.

Annex to Recommendation IODE-28/8.4

	2025 Proposed				2026 Scenario: Zero Nominal Growth (ZNG)				2026 Scenario: Zero Real Growth (ZRG)			
	RP IODE	RP IODE available	Exb mobilized or RP partner	Exb to be mobilized	RP IODE	RP IODE sub-totals	EXB mobilized or RP partner	Exb to be mobilized	RP IODE	RP IODE sub-totals	EXB mobilized or RP partner	Exb to be mobilized
	2025	2025	2025	2025	2026	2026	2026	2026	2026	2026	2026	2026
PROGRAMME COMPONENTS												
ODIS												
OD1 project manager consultant	80,000.00				72,000.00				80,000.00			
OD2 Graph Operations / Digital engineer / Backend developer	26,000.00				23,400.00				26,000.00			
OD3 Technical support and capacity development	26,000.00				23,400.00				26,000.00			
OD4 admin support	18,000.00				16,200.00				18,000.00			
Total ODIS		**150,000.00**				**135,000.00**				**150,000.00**		
OBIS												
OB1 OBIS secretariat travel (IOC Assembly, UNOC etc)	10,000.00				9,000.00				10,000.00			
OB2 OBIS secretariat travel (SG-OBIS)	17,000.00				15,300.00				17,000.00			
OB3 Infrastructure costs: long term storage and associated operational costs	10,000.00				9,000.00				10,000.00			
OB4 Infrastructure costs: Communication platform subscriptions (e.g. Slack, Miro, other preferred tools?) Licence fee for <100 users.	3,500.00				3,150.00				3,500.00			
OB5 Infrastructure costs: (JupyterHub Instance for 5 active users at a time with 16GB RAM or for 100 active users with 64GB RAM)	5,000.00				4,500.00				5,000.00			
OB6 All-Hands meeting: Funding for member attendance at biannual All Hands meetings (including Living Data & SG-OBIS 2025)	45,000.00				40,500.00				45,000.00			
OB7 OBIS Secretariat staff support: OBIS Community Engagement Officer (consultant)	50,000.00				45,000.00				50,000.00			
OB8 Branding, Communication & outreach	9,500.00				8,550.00				9,500.00			
- OBIS secretariat staff costs (Horizon Europe projects)			412,000.00									
Total OBIS		**150,000.00**				**135,000.00**				**150,000.00**		

OTGA												
OT1 Organize and host training courses relevant to the Regions	5,000.00				4,500.00				5,000.00			
OT2 Provide travel grants to facilitate attendance at training courses	35,000.00				31,500.00				35,000.00			
OT3 Provide technical support eLearning platform	17,000.00				15,300.00				17,000.00			
OT4 Confirm certification of the Project Office as LSP (April)	3,500.00				3,150.00				3,500.00			
OT5 Design and develop new or existing course content to address the capacity needs of IOC Programmes	20,000.00				18,000.00				20,000.00			
OT6 Update existing OTGA content to ensure it meets current OTGA course management guidelines	10,000.00				9,000.00				10,000.00			
OT7 Upload training resources on the OTGA e-Learning Platform	10,000.00				9,000.00				10,000.00			
OT8 Liaise with content providers on course design and presentation	5,000.00				4,500.00				5,000.00			
OT9 Publish regular CD communication through social media, newsletters and other communication	2,500.00				2,250.00				2,500.00			
OT10 Provide project governance framework through a steering group (November)	25,000.00				22,500.00				25,000.00			
OT11 Create and deliver online training for RTC/STC personnel	5,000.00				4,500.00				5,000.00			
OT12 Update and publish OTGA Guidelines and Best Practices documentation	5,000.00				4,500.00				5,000.00			
OT13 Participate in conferences, meetings to promote OTGA	7,000.00				6,300.00				7,000.00			
- Webbased produts needed for OTGA (paid via P-Card)												
- Contract												
- Co-sponsor of on-site training and related activities - projects			571,000.00									
Total OTGA		**150,000.00**				**135,000.00**				**150,000.00**		
PROGRAMME ACTIVITIES												
AquaDocs												
- hosting cost AquaDocs DSpace	9,000.00				9,000.00				9,000.00			
- participation IODE-MG 2025 and 2026	2,000.00				1,000.00				2,000.00			
Total AquaDocs		**11,000.00**				**10,000.00**				**11,000.00**		
GODAR	0.00				0.00				0.00			
Total GODAR		**0.00**				**0.00**				**0.00**		
GOSUD												
- Contract 4500517806 (2071)												
- Participation for a common GOSUD-GTSPP-IQuOD-WOD meeting					0.00				15,000.00			
Total GOSUD		**0.00**				**0.00**				**15,000.00**		

GTSPP												
- IODE-28; Joint IOC/IODE program meetings	12,500.00				0.00				0.00			
Total GTSPP		**12,500.00**				**0.00**				**0.00**		
ICAN												
- ICAN Workshops 2025 / 2026	13,000.00				5,000.00				12,500.00			
- ICAN Summer Scholars 2025 /2026 (EB)			7,500.00				7,500.00				7,500.00	
Total ICAN		**13,000.00**				**5,000.00**				**12,500.00**		
IQuOD												
- Update and expansion of manual QC web application (AWS)	0.00											
- Joint meeting with GTSPP/SOOPIP/XBT Science	6,000.00				0.00				0.00			
- IODE-MG participation 2025 and 2026	3,000.00				0.00				3,000.00			
Total IQuOD		**9,000.00**				**0.00**				**3,000.00**		
OBPS												
- Project manager	12,690.00				5,000.00			11,632.50	11,632.50			11,632.50
- travel IOC meetings	4,500.00				1,000.00			2,500.00	2,500.00			2,500.00
- SG-OBPS annual meeting	12,500.00				2,000.00			2,500.00	2,500.00			2,500.00
- Promotional materials (video/flyers)	2,500.00							6,500.00	6,500.00			6,500.00
- Repository technology	7,000.00				0.00			1,250.00	1,250.00			1,250.00
- AWS subscription (was budgeted 2025)	4,000.00				5,000.00			2,500.00	5,000.00			2,500.00
Total OBPS		**43,190.00**	36,440.00			**13,000.00**				**29,382.50**		
OceanExpert												
- redesignOE mailing system and testing (contractor)	0.00				5,000.00				5,000.00			
- redesign of privileges (users rights) (hire a contractor)	9,000.00				0.00				0.00			
- upgrade to latest Symfony framework (contractor)	9,000.00				0.00				0.00			
- outreach					1,000.00				1,000.00			
- clean up database	8,000.00											
Total Ocean Expert		**26,000.00**				**6,000.00**				**6,000.00**		
QMF	0.00											
Total QMF		**0.00**				**0.00**				**0.00**		
WOD	0.00				0.00				0.00			
Total WOD		**0.00**				**0.00**				**0.00**		

Cooperation with ocean science												
- HAIS: IODE IT staff time (in-kind)	0.00				0.00				0.00			
- GO2DAT: IODE staff/expert travel for meeting	3,000.00			0.00	3,000.00			7,000.00	3,000.00			7,000.00
- SDG14.3.1 portal	0.00				0.00			0.00	0.00			0.00
- GOSR: IODE IT staff time (in-kind)	0.00				0.00				0.00			
- StOR: IODE content submission (in-kind)	0.00				0.00				0.00			
Total Cooperation with ocean science		**3,000.00**				**3,000.00**				**3,000.00**		
PROGRAMME MANAGEMENT												
- IODE 28												
PM1 Online service costs - IT purchases and software	20,000.00				15,000.00				20,000.00			
PM2 IODE project office operational costs												
PM3 IODE officers/staff travel	20,000.00											
PM4 admin support (at HQ) (May-December 2025)				16,000.00	0.00			48,000.00	0.00			48,000.00
PM5 comm/admin officer cost (at PO) (2025:9m; 2026:12m)	52,500.00		15,000.00		0.00				0.00			
PM6 Management Group meeting (dec25; dec 26)	20,000.00				0.00				10,000.00			
PM7 IODE communication costs	2,500.00				2,500.00				2,500.00			
- travel other than staff	2,000.00											
PM9 admin staff cost (essential)					15,000.00				15,000.00			
Total programme management		**117,000.00**				**32,500.00**				**47,500.00**		
TOTALS		**684,690.00**	1,041,940.00	16,000.00		**474,500.00**	**7,500.00**	**81,882.50**		**577,382.50**	**7,500.00**	**81,882.50**
Budget 2025 (inc C/F 2024)	**684,876.33**				**473,808.00**	(est. cut 25%)			**573,386.00**	(2025 allocation)		
BALANCE	186.33				-692.00	balance ZNG			-3,996.50	balance ZRG		

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Annex IV

Summary Report of IODC-III

IODC-3 Highlights

The third edition of the International Ocean Data Conference (IODC-3), hosted by INVEMAR in Santa Marta, Colombia, from 10-11 March 2025, gathered 400 participants worldwide—150 in-person and 250 online. Over the two days, the conference featured 40 presentations, more than 25 posters, and four topical working groups. IODC-3 brought together leading experts in marine biodiversity data, oceanography, information technology, and data science, as well as experts in ecosystem management, marine spatial planning, and even emerging topics of geodata management and marine governance in the Antarctic continent. The conference underscored the importance of strengthening data infrastructure, improving accessibility, and fostering collaboration to ensure inclusive and equitable participation in the global digital ocean ecosystem.

A key focus of IODC-3 was enhancing data interoperability and standardization to support major global frameworks, such as the United Nations Agreement on the Conservation and Sustainable Use of Marine Biodiversity Beyond National Jurisdiction (BBNJ) and the Kunming-Montreal Global Biodiversity Framework (GBF). Discussions emphasized the need for FAIR (Findable, Accessible, Interoperable, and Reusable) data principles, robust infrastructures, and harmonized methodologies to streamline data-sharing and integration efforts.

Emerging technologies, including environmental DNA (eDNA), autonomous underwater vehicles, and AI-driven interfaces, were highlighted as game-changers for marine biodiversity monitoring and conservation. These innovations facilitate cost-effective data collection, enhance biodiversity assessments, and support decision-making for marine protection. However, integrating these new data streams into existing repositories remains a challenge that requires further coordination and technical solutions.

The conference stressed the need for inclusive data collection approaches that incorporate local knowledge and regionally driven initiatives. Community-driven projects and mobile-based tools demonstrated how grassroots engagement can contribute to marine data repositories, enhancing global datasets while addressing local environmental and socioeconomic needs. Strengthening policy frameworks, improving regional monitoring, and fostering collaboration between scientific and local communities were identified as key priorities.

Capacity-building efforts remain fundamental to ensuring equitable access to ocean data. Regional collaborations, such as those within Latin America and the Caribbean, aim to enhance data-sharing and accessibility across diverse stakeholder groups. Training programs, mentorship initiatives, and the development of best practices support long-term sustainability in marine data management.

Beyond technological advancements, IODC-3 recognized the indispensable role of people in ocean data collection, curation, and application. Volunteer networks, citizen science initiatives, and workforce training are crucial in sustaining high-quality marine biodiversity information. Ensuring sustainable funding and institutional support for these efforts is essential to maintaining the long-term integrity of ocean data systems. The conference reaffirmed the urgency of building a unified and inclusive digital ocean ecosystem where scientific, cultural, historical, and local knowledge converge. Achieving this vision requires sustained efforts in data harmonization, policy alignment, and international cooperation. By strengthening these foundations, the Ocean Science community moves closer to a future where ocean knowledge is accessible, actionable, and impactful for all—a future where the Ocean Science community limitlessly shares the data we need for the Ocean we want.

Day 1

The third edition of the International Ocean Data Conference (IODC-3) kicked off today at the Institute for Marine and Coastal Research (INVEMAR) in Santa Marta, Colombia. Spanning over two days, the event is a crucial meeting point for world-renowned marine biodiversity data experts to discuss pressing issues, celebrate achievements and bring hope to a world where the Ocean is under threat.

“In a planet under the pressure of climate change, where the ocean is the great stabilizer of the world’s climate, never before has it been so important to have oceanographic data and information to make the best decisions to respond to the urgencies towards mitigation and adaptation to the challenges of climate change,” said Francisco Arias, INVEMAR Director General, in his opening speech, setting the tone of the day.

Echoing this call to action, the first day of IODC-3 was loaded with ways and means to improve data mobilization and actionability–especially in support of the needs of the United Nations Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) and the Kunming-Montreal Global Biodiversity Framework (GBF)–and addressed how to leverage capacity development to facilitate data, information, and knowledge exchange.

This first day of the IODC-3 conference stressed one fundamental insight: ocean data is as powerful as the capacity to trust, access, share, and use it effectively and equitably. Robust data infrastructures and harmonized processes, new technologies, better visualization tools, and capacity development are among the drivers for a streamlined and actionable marine biodiversity data value chain. Without forgetting the people behind the data and sustainable funding. “Despite the ocean covering 70% of the Earth, governments allocate only 0.1% to 5% of their science budgets to marine science, a stark contrast to the importance of the Ocean,” said Ms Daniela Castillo Bernal, Colombian Ocean Commission, during her opening remarks.

Robust data infrastructures, harmonized processes and best practices

Data pipelines, repositories, and databases from local to global levels are all converging towards shared strategies, integrating the FAIR (Findable, Accessible, Interoperable, and Reusable) and Open Science principles to increase the transparency, quality, and reliability of the collected data. Chris Moulton (OSPAR Commission) discussed how structured FAIR data pipelines revolutionize marine biodiversity monitoring across the North-East Atlantic, noting the “strong correlation between data pipelines and streams’ FAIRness and their usability.” Similarly, Gwenaëlle Moncoiffé (British Oceanographic Data Centre) emphasized the need for harmonizing legacy datasets with consistent, modern biodiversity standards and controlled vocabularies, highlighting the importance of structured workflows to ensure marine data’s long-term relevancy and usability.

A similar effort was showcased by Catalina Reyes (OGS, Italy), who presented Blue-Cloud 2026, a European initiative developing a FAIR and open-access research ecosystem for ocean science. “We are building a thematic marine extension to EOSC (European Open Science Cloud) for open web-based science, serving the needs of the EU Blue Economy, Marine Environment and Marine Knowledge agendas,” she explained. Ana Carolina Peralta (College of Marine Science at the University of South Florida) expanded on the theme, highlighting the importance of integrating deep-sea biodiversity data into global repositories, ensuring that robust, openly accessible datasets support scientific exploration and conservation efforts in this critical marine region. Abiding by these FAIR and Open Science strategies reinforces the data pipelines, making it possible for local, historical and complex datasets that include multiple essential variables to be integrated into global repositories such as the Ocean Biodiversity Information System (OBIS), potentially contributing to the needs of BBNJ and GBF.

Wenwen Lyu (University of Vienna) provided a broader governance perspective, mapping data use practices in the High Seas to identify data needs under the BBNJ Agreement and work toward a more equitable data governance structure. She highlighted political disparities in how nations approach marine biodiversity data. While the Global North tends to focus on Marine

Protected Areas (MPAs) and Environmental Impact Assessments (EIAs), the Global South prioritizes Marine Genetic Resources (MGRs) as economic assets. She also raised the risk of low-quality, unreliable data leading to wrong decisions from policymakers.

Breaking silos to unlock data access is another shared strategy towards improving the delivery of fit-for-purpose marine data. Edward Salazar Ortiz (Servicio Geológico Colombiano) introduced the Caribbean component of the EU-funded EMODnet-Geology Project, aiming to standardize geological data across the Caribbean Sea. “We worked across borders to unify methodologies and vocabularies to produce harmonized, regional-scale datasets that are publicly available and accessible to all,” he stated, including harmonizing geological terminology between Spanish-speaking countries, a historical achievement.

Thierry Carval (Ifremer, France) explained that a robust and operational data policy can also be a powerful driver for harmonization and integration. “EuroGOOS data policy aligns with global frameworks (WMO, IOC, GOOS, ICES, SOOS) and the Ocean Decade’s vision to promote cohesive global ocean data accessibility,” he said, “resulting in numerous benefits, from maritime safety and climate modelling to sustaining the blue economy.”

Finally, Patricia Martin Cabrera (OBPS) reminded us that developing and, most importantly, implementing best practices is crucial to enabling data integration into platforms like OBIS, EMODnet Biology, and the Digital Twin of the Ocean. “Linking datasets to best practices optimizes interoperability, and encouraging broader adoption of best practices enriches data repositories,” she explained.

New technologies, new challenges

eDNA is a powerful drive to increase our Ocean knowledge. Vanessa Yepes Narváez (INVEMAR, Colombia) highlighted that this observation technology allows for successfully surveying remote areas at a fraction of the cost of traditional methods. She explained how genetic data directly contributed to the designation of two new MPAs in Colombia. “By analyzing DNA traces left by marine organisms, we can detect species without needing physical specimens, allowing for more efficient biodiversity assessments in remote areas,” Vanessa Yepes Narváez explained.

However, eDNA comes with its own challenges, one of them being the data integration into existing global repositories. To address this issue, Pier Luigi Buttigieg (AWI) presented the OBON (Ocean Biomolecular Observing Network) efforts to federate biomolecular data into existing ocean data infrastructures, such as OBIS and INSDC while expanding to new biomolecular data themes to reach new hubs and contribute to close data gaps.

New technology in devices and instruments can also play a vital role in closing some of the marine biodiversity data gaps. Vanessa Yepes Narváez explained in her presentation how eDNA contributed to the development of new fit-for-purpose Underwater Autonomous Vehicles (UAVs). Olivia Pampaloni (BODC, UK) emphasized how newly developed, dedicated autonomous marine gliders combined with remote sensing devices can feed the Digital Twin Ocean (DTO).

New technologies can also help make ocean science accessible to non-specialized audiences. Marcos Zárate (CONICET, Argentina) presented OBISBot, an AI-driven interface that allows natural language to search the OBIS database. “Through large language models and machine learning, we can make data truly accessible to all,” he explained.

Serving the users’ needs

Interface tools, such as indicators, dashboards, or maps, are crucial to improving the decision-makers’ uptake of marine data. Silas Principe (UNESCO/IOC-IODE/OBIS) presented the still-ongoing developments from the EU-funded MPA Europe project, which aims to provide marine planners and decision-makers with a tool supporting them in designing future marine protected areas. The easy-to-use, user-oriented interface hides a complex model-based engine that combines multiple variables with climate change scenarios, species and habitat distribution maps, as well as assessments for potential blue carbon stocks. On a different topic but sharing a similar aim to support decision-making, Paola Sofía Obando Madera (INVEMAR, Colombia)

showcased Colombia's marine and coastal water quality monitoring network, which has gathered over 600,000 records and is a cornerstone for national pollution monitoring efforts.

Fit-for-purpose data can drastically increase user uptake. Laura Marcela Vásquez López (INVEMAR, Colombia) emphasized how improving accessibility to the right oceanographic data for the relevant users could enhance maritime operations and decision-making in Colombia. Similarly, Gesica Canivete (Maputo Port Development Company, Mozambique) showed how hydrographic and oceanographic data served a targeted audience and can support better decision-making in vulnerable coastal areas, improving coastal resilience, sustainable port operations, and urban planning. On different topic, Daniel Alejandro Carrasco Palma (Laboratorio de Toxinas Marinas, Facultad de Medicina, Universidad de Chile) demonstrated how using harmonized methodologies, a system designed to monitor and track microplastic contamination across Latin America and the Caribbean can ensure that data remains valid and comparable across different regions, covering 47 study sites and over 106 monitoring efforts conducted between 2019 and 2024.

Serving the users' needs also means finding simple tools to achieve capacity. Katrina Exter (VLIZ, Belgium) detailed how the EMO BON Genomics Observation Network used an array of existing, tested, and available resources to achieve a robust and reliable data management flow that provides fair, open, and good-quality data to OBIS. The developed flexible and open-ended system has no financial cost but heavily relies on volunteers.

Improving regional capacity

Encouraging regional collaborations to address similar challenges, such as improving translations or technological capacity, is a strong driver for capacity development. For Erika Montoya Cadavid (INVEMAR, Colombia), Ana Carolina Peralta (College of Marine Science at the University of South Florida) and Carolina Garciá Valencia (INVEMAR, Colombia), regional capacity development will enhance data-sharing and accessibility across the Latin America Caribbean (LAC) region. The six OBIS LAC Nodes (Caribbean OBIS, OBIS Colombia, OBIS Brazil, OBIS Argentina, OBIS Ecuador, and the Tropical and Subtropical Eastern South Pacific OBIS Node) will hold a first informal meeting during the second day of the IODC-3 to initiate a reinforced regional collaboration.

The people behind the data: training, engagement and recognition

Several presenters reminded the audience of a resounding message: people are behind the data. Carlos Francisco Yaipen-Llanos (ORCA, Peru) illustrated how youth engagement in marine conservation radically transformed marine observations in Peru. With over 13,200 young participants, 4,400 trained volunteers in marine animal handling, and close to 122,000 contributors, including adults, spread into seven national marine observation and conservation programmes, Peru has turned the tide on citizen engagement in marine science during the last 25 years.

Training the people behind the data is a steady pillar of capacity development. But, as Adel Heenan (Global Fishing Watch, USA) reminded us, there is more than just doing workshops to build capacity. The training arsenal extends to experimental learning, mentoring, and more. She also reminded us that capacity development can be applied to individuals and institutions with different training strategies, ultimately aiming to enhance data-sharing networks. Greg Reed (UNESCO/IOC-IODE) stressed how the Ocean Training Global Academy (OTGA) self-paced online courses in ocean data management are an essential, cost-effective solution for building a global workforce capable of handling marine biodiversity information. The courses also contribute to implementing the Ocean Decade Data and Information Strategy and the UNESCO-IOC Capacity Development Strategy 2023-2030.

Beyond engagement and training, the involvement of volunteers can be a massive driving force. These unsung heroes of marine science contribute to advancing marine science. Ocean biodiversity initiatives rely on an armada of highly skilled volunteers who passionately contribute to crucial initiatives. Leen Vandepitte (VLIZ, Belgium) explained how 300 volunteers worldwide made possible the development and maintenance of the World Register of Marine Species (WoRMS), a global standardized taxonomic backbone used by OBIS, ensuring that

all data is integrated at an optimum level, WoRMS manually removes taxonomic mistakes. It guides data providers in matching species names to an authoritative register like WoRMS.

"The last consumer of data is humanity," said Carlos Francisco Yaipen-Llanos during the Q&A session. As the world faces accelerating climate change and biodiversity loss, ensuring FAIR access to robust ocean knowledge may be one of the greatest priorities of our time. The role of IODE is crucial and has never been more important.

Day 2

How can we effectively tackle the challenges of data fragmentation, interoperability across disciplines, and system interconnections to support marine policy, conservation, and sustainable development? Building on the momentum of Day 1, the second day of the third International Ocean Data Conference (IODC-3) explored how to bring cohesion and inclusivity to global ocean data systems and sustainable ocean planning and management. Articulated around two sessions and a workshop, this second day of the IODC-3 addressed complex ocean governance issues.

The speakers painted a pixel-clear picture across disciplines and topics: the future of ocean governance depends on our capacity to integrate and use diverse datasets, from remote sensing observations to local fisheries records and historical shipwreck archives.

Building digital ocean ecosystems: the integrated vision

Unifying digital ecosystems across disciplines requires seamless interconnectivity while respecting the diversity of formats, methodologies, processes and legal standards. Large global repositories lead the way to data harmonization, explained Adam Leadbetter (Decade Coordination Office for Ocean Data Sharing). Through unifying initiatives such as the Ocean Decade Digital Ocean Ecosystem, global marine observation systems such as GOOS, IODE, OBIS, and ODIS strengthen their interoperability to ensure global accessibility and usability of ocean data to support improving ocean knowledge, conservation efforts and the sustainable exploitation of the marine resources, crucial for human welfare.

Interconnection across domains and disciplines is another essential step towards improving ocean knowledge. The closer integration between the World Meteorological Organization's WIS 2.0 and ODIS will allow, among other benefits, for better, high-resolution ocean forecasts. WIS 2.0, a next-generation cloud-ready infrastructure that enables real-time data exchange between oceanographic and meteorological networks, David Berry (World Meteorological Organisation) explained in his talk. Such a federated, scalable digital ecosystem allowing for real-time data exchange across disciplines would produce invaluable marine insights for humanity and would contribute to addressing some of the pressing ocean knowledge gaps, said explained Pier Luigi Buttigieg (Alfred Wegener Institute, Germany) during his presentation But to achieve unification, efforts need to be made. "Without a properly linked digital ecosystem, we risk duplicating efforts and missing opportunities to enhance ocean data accessibility," he reminded. Silos need to be taken down; metadata standardization should become a rule, as well as the adoption of open-access infrastructure to maximize interoperability. Echoing this cross-domain, cross-discipline approach, Colm Walsh (Marine Environmental Data and Information Network) highlighted the need to integrate non-spatial marine data into global ocean information systems, noting that most ocean data initiatives prioritize geospatial datasets while neglecting critical biological, socio-economic, and even environmental datasets. "Our ethos is to measure once, use many times," he noted, describing how the Marine Environmental Data and Information Network (MEDIN) expanded metadata standards beyond biodiversity to allow a broader range of marine information to be integrated and shared globally.

Efficiency strategies and best practices, highlighted during the first day of the conference, will contribute to improving interconnectivity between digital ocean ecosystems. According to James Ayliffe (British Oceanographic Data Centre, National Oceanography Centre, UK), the global marine scientific community could develop a more streamlined and efficient data submission and integration approach to avoid multiple submissions of the same dataset to different repositories. He proposed a coordinated system where data is submitted once and

then distributed to specialized centres. James Ayliffe stressed that harmonized data management practices are essential for data reliability and robustness, two crucial components in increasing decision-makers' uptake.

As digital ecosystems progressively take shape and rise, numerous ocean governance challenges remain, especially in regions where stakeholder landscapes are complex and multilayered. The geopolitics of data are a potential risk for the stability and integrity of information flows. In Antarctica, where the political situation is complex, researchers need to deploy a two-layered set of interconnected nodes that can function even if part of the network is negatively affected by an external factor, such as a political decision.

From data to decisions: mapping and managing ocean spaces

These data integration efforts bear the maximum impact on decision-making, particularly in Marine Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM). Across presentations, experts demonstrated how cutting-edge, marine data-based tools radically improve ocean planning, influence the balance between conservation and economic activities, and even contribute to ensuring equitable access to marine resources. Natalia Solís-Miranda (UNESCO-IOC) highlighted MSPglobal's progress in developing two Data Toolboxes for MSP practitioners, which has been done in collaboration with IODE and GOOS teams. One toolbox focuses on Spatial Data Infrastructure, nearing completion, and the other on integrating ocean observations in MSP, both improving data accessibility for ocean governance. Milena Hernández Ortiz (INVEMAR, Colombia) showcased how highly operational MSP and (CZM are implemented in Colombia through platforms like the Marine Environmental Information System (SIAM), OBIS, and ODIS. These digital systems help define coastal zones to protect and monitor, support offshore energy projects, and strengthen national marine governance. Andrej Abramic (CETMAR, Canary Islands) explained that the ReMAP Data Tools—a set of fit-for-purpose digital tools—simplify MSP through modular analytics in Europe. The NavySafe tool, for example, assesses maritime safety risks linked to offshore wind farms, while other tools evaluate the compatibility of Marine Protected Areas (MPAs) with economic activities. Tested in the Baltic Sea, the Western Mediterranean, and Galicia, these tools are helping policymakers make data-driven, evidence-based planning decisions at local, transboundary, and regional levels.

Expanding on the digitalization of MSP-related observing systems, Yannick Leroy (French Hydrographic and Oceanographic Service, France) reminded us that "geoportals are no longer just a support for governance: they have become the mode of governance itself." He used the North Sea Basin project, which works to harmonize national MSP plans with EMODnet to ensure a standardized approach to maritime safety and renewable energy development, as an example. He called for closer collaboration between national authorities, data providers, and regional initiatives to ensure maritime spatial plans are effectively integrated into global ocean governance frameworks.

Local knowledge, global impact: empowering communities with data

Ensuring that data is equally shared and no one is left outside of the growing and developing digital ocean ecosystems remains crucial. Bridging the data access and contribution gaps is needed to include communities most exposed to the ongoing triple crisis and ensure their contribution. The use of locally available observation resources and the integration of local knowledge into marine databases are a step towards improved inclusivity. Better monitoring and assessing local environmental and biodiversity losses can also contribute to better equity.

Maximizing an available local resource—a smartphone—Peter Teye Busumprah (Ocean Rock Base and Ghana Ocean Climate Innovations Hub, Ghana) introduced the Multifunctional Ocean Application, an app-based fisheries data-sharing platform designed for local fishermen in Ghana. This platform aids in creating a comprehensive Fisheries Atlas for West Africa and answers local fishermen's needs, such as mapping fishing locations and catch-logging. It also allows users to document the species they encounter in their native languages and upload their observations to marine observation initiatives.

In Cabo Verde, Katelene da Cruz Delgado (Universidade Técnica do Atlântico, Cabo Verde), assessed the effectiveness of fisheries management policies, focusing on mackerel stock restoration. She found that if landing sizes have increased, overall catches have declined due to climate and ecosystem changes. These disruptions directly impact fishing communities in the country, threatening livelihoods. According to da Cruz Delgado, stronger monitoring, policy updates, and environmental impact assessments are needed to ensure long-term sustainable fisheries management. In Southeast Asia, Ngo Thuy Hao (Xiamen University, China) used cumulative human impact assessments to reveal that human activities impact over 81.4% of the region's mangrove areas. The main stressors are aquaculture, nutrient pollution, cropland expansion, and urbanization. Her study provided critical insights to support decision-makers in implementing evidence-based mangrove management strategies. Similarly, Muhammad Sajid Anam Hoque (National Oceanographic And Maritime Institute, Bangladesh) presented a study on shoreline and coastal dynamics in the Bangladesh Delta, highlighting significant changes in river channels, wetlands, and mangrove expansion due to climate change, cyclones, and human activities. Like Ngo Thuy Hao, he called for collaborative climate adaptation policies to protect vulnerable coastal ecosystems.

Beyond marine science, it is crucial to acknowledge that ocean research, such as historical knowledge and data, can allow researchers to better understand biodiversity shifts. Arturo Rey da Silva (Ocean Decade Heritage Network (ODHN) / University of Edinburgh, UK) demonstrated how shipwrecks, submerged landscapes, and historical maritime sites provide valuable environmental and historical data, making a compelling case for better integrating underwater cultural heritage (UCH) data that will allow shaping and strengthening ocean governance and sustainability efforts.

This second day of IODC-3 underscored the urgent need for a unified future for ocean data. No single institution, country, company, or community can manage ocean data alone. Achieving this unification requires greater interoperability, stronger interconnections, and seamless data integration, extending it beyond marine sciences into broader ocean research. The ocean community is diverse, and our digital ocean ecosystems, whatever their scale, must reflect and embrace that diversity. The ongoing unification, harmonization, and alignment efforts are strong drivers that move the ocean science community closer to a future where all ocean knowledge—scientific, cultural, historical and local—is integrated and accessible to all, especially those who need it most.

Annex V

IODE-28 Action Sheet

Para number	Adopted Action	Responsible/ deadline	Comments
30	**The Committee instructed** the Management Group to review the list of uncompleted action items and decide on whether these should be included in the action sheet for the next inter-sessional period.	IODE MG 2025 (DL: tbd)	
50	**The Committee** welcomed progress with implementation of the IOC Medium-Term Strategy (2022-2029) at its halfway mark but **requested** the secretariat in consultation with the IODE Management Group to (i) identify relevant KPIs and (ii) to take into consideration the need for collaboration with other IOC programmes bearing in mind the cross-cutting nature of ocean data and information management and sharing.	IODE Secretariat/IODE MG (DL: next IODE MG)	
62	**The Committee called** on NODCs and ADUs to apply for accreditation as a "quality seal" demonstrating that the data services provided are of the highest quality standards.	IODE Secretariat (DL:asap)	IODE Secretariat to send out email to NODCs and ADUs
64	**The Committee stressed** the importance of hosting an NODC **and urged** IOC Member States that have not yet established an NODC to do so to ensure their ocean data are shared globally and that their national ocean scientists have easy access to the global ocean data commons.	IODE Secretariat (DL: asap)	IODE Secretariat to send CL to Member States
89	**The Committee urged** all low-scoring NODCs and IOC focal points to contact the IODE Secretariat to discuss actions that may improve their performance.	IODE Secretariat (DL: asap) Low-scoring countries (DL: IODE MG)	IODE Secretariat to contact low-scoring countries to start discussions

Para number	Adopted Action	Responsible/ deadline	Comments
90	**The Committee instructed** the Secretariat to undertake the remedial actions as listed in Table 2 of Document IOC/IODE-28/3.3.3.	IODE Secretariat (DL: asap)	
91	**The Committee approved** the recommendations to improve health check criteria as detailed in Document IOC/IODE-28/3.3.3 and **instructed** the Secretariat and Co-Chairs to revise Document IOC/IODE-28/3.3.3 for discussion by the next meeting of the IODE Management Group.	IODE Secretariat/IODE Co-Chairs (DL: IODE MG)	
113	The **IODE Committee welcomed** the mention of OBIS in the CBD's Kunming-Montreal Global Biodiversity Framework (CBD/COP/DEC/15/5), specifically to provide complementary indicators related to joint scientific papers (capacity to use data) and growth in marine species occurrence records (capacity to deliver data) and **requested** that OBIS develops robust indicators and guidelines for State Parties on how to use OBIS in their national reporting to the CBD.	IODE/OBIS Secretariat (DL: asap)	
126	**The Committee invited** existing and new ODIS partner organizations to join the IODE network as IODE Associated Data Units (ADUs) to share their own expertise with, as well as benefit from the expertise within the IODE network.	ODIS partners (DL: asap)	ODIS manager to contact ODIS partners
128	**The Committee urged** all Member States to participate in the Ocean Data and Information System via the creation of ODIS Nodes to increase the visibility of their data holdings to the world, and to enable improved and more efficient access to global Ocean data.	IODE Secretariat (ODIS manager): send CL to IOC MS (DL: asap) IOC Member States (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
129	Recommendation IODE-28/3.4.1.2: Revision of the Terms of Reference of the Ocean Data and Information System (ODIS)	IOC programmes, IOC regional subsidiary bodies and partner organizations (DL: asap)	
129	Decision IODE-28/3.4.1.2: Restructuring the ODIS Programme Activities	Decides to convene IWG for Ocean Data and Information System Activities (IWG ODIS-Act). .. initial members of this IWG will include representatives of the ODIS Steering Group and the ODIS Programme Activity Steering Groups. The ODIS Steering Group will draft the terms of reference for the IWG ODIS-Act, Invites nominations for the IWG ODIS-Act from IODE Committee Members. (DL: asap)	
147	**The Committee recommended** that the OTGA Steering Group should develop a Resource Mobilization Strategy and take action on its implementation.	SG-OTGA (DL: asap)	
158	**The Committee instructed** all IODE activities to contribute research and informational documents to AquaDocs.	IODE activities (DL: asap)	
159	**The Committee invited** institutions and organizations with limited capacity to host their own repository to use AquaDocs.	IODE Secretariat to send out email (DL: asap) IODE NODCs, ADUs, IODE national coordinators (DL : asap)	
170	**The Committee decided** to rename GOSUD to “Underway Sea Surface Salinity Data	IODE Secretariat: correct naming on IODE web site (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
	Archiving Programme Activity" (GOSUD).		
178	**The Committee decided** to rename GTSPP to "Global Temperature-Salinity Profile Programme Activity" (GTSPP).	IODE Secretariat: correct naming on IODE web site (DL: asap)	
193	**The Committee** proposed that an agenda item be included in the IOC-33 agenda, including a draft decision that will re-establish OBPS as proposed above (para 192). A drafting group for the draft decision should be established, composed of representatives of the IOC programmes and RSBs, as appropriate.	IODE and GOOS Secretariat (DL: 31/3/2025)	
194	**The Committee urged** the IODE community to further document their methodologies and best practices and share them in the Ocean Best Practices System.	IODE NCs for data management, information management, NODCs, ADUs, IODE programme components, IODE programme activities (DL: asap)	
198	**The Committee instructed** NODCs and ADUs to create or update their ODISCat record(s) which firstly ensures the visibility of their institution's data sources to the world, and secondly, is the first step to joining ODIS.	NODCs, ADUs (DL: asap)	
214	**The Committee instructed** the SG-QMF to elect a new Chair as soon as possible	SG-QMF (DL: next meeting SG-QMF)	
215	**The Committee instructed** the SG-QMF to revise the IOC Manuals and Guides 67, IODE Quality Management Framework for National Oceanographic Data Centres and Associate Data Units, to include the additional accreditation requirement for CTS certified centres	SG-QMF (DL: IODE MG)	
218	**The Committee referred** discussions on how IODE can	IODE MG	

Para number	Adopted Action	Responsible/ deadline	Comments
	facilitate the continuity of WOD data and services to the IODE Management Group.	(DL: during next IODE MG)	
227	**The Committee welcomed** the successful implementation of the PacMAN project and **recommended** that its results and developed practices should be used as examples for similar projects by Member States.	IOC Member States and IODE/OBIS Secretariat (DL: asap)	
228	**The Committee commended** the successful implementation of the eDNA Expeditions project and **recommended** that IOC Member States and partners support its continuation and expansion, both geographically and over time. Furthermore, it **encouraged** future eDNA initiatives to collaborate with OBIS and share DNA-derived species occurrence data with OBIS to enhance global marine biodiversity monitoring.	IOC Member States and IODE/OBIS Secretariat (DL: asap)	
234	**The Committee instructed** all IODE programme components and programme activities to prepare documentation for the next meeting of the IODE Management Group detailing how the new Rules of Procedure have been adopted in their management structure.	IODE programme components/IODE programme activities (DL : next IODE MG)	
243	**The Committee tasked** the Management Group to monitor the implementation of the new structure and to identify any issues that need attention.	IODE MG (DL: at next IODE MG)	
249	**The Committee instructed** the AquaDocs Programme Activity to engage with The International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) and marine libraries in sharing (meta)data with IODE through the establishment of an ODIS	SG-AquaDocs/IAMSLIC (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
	Node or through document submission to AquaDocs		
253	**The Committee decided** that the IODE Secretariat and the Ocean Science Section continue to work together to deliver commitments against Assembly decisions, IOC responsibilities associated with custodianship of SDG14 indicators and agreed joint activities.	IODE Secretariat/ Ocean Science Head of Section (DL: continuous)	
254	**The Committee decided** that the IODE Secretariat and the Ocean Science Section work together on a joint resource mobilization effort to support activities requiring extra-budgetary funding for implementation	IODE Secretariat/ Ocean Science Head of Section (DL: continuous)	
265	**The Committee encouraged** IODE NODCs and ADUs to reach out to their GOOS Regional Alliance (GRA) and National Focal Point (NFP) counterparts to coordinate on integrated data delivery to GOOS and ODIS, and vice versa, **welcomed** that GOOS will reach out to its NFPs and GRAs to encourage and enable their outreach to IODE NODCs and ADUs	IODE NODCs, ADUs, GOOS Secretariat (DL : asap)	
272	**The Committee welcomed** the new pilot initiative (PTWS Minimum NTWC Competency Framework), and **instructed** that these courses (and related tasks) should be included in OTGA training planned for 2025.	IOC TSR Secretariat, IODE/OTGA Secretariat (DL: asap)	
279	**The Committee requested** the IODE representatives on the WG-SOPM to report back to the IODE Community on relevant activities and requests from the SOPM Programme.	IODE representatives on the WG-SOPM (DL: continuous)	
280	**The Committee urged** IODE data centres as well as its three Programme Components	IODE data centres, OBIS, ODIS, OTGA	

Para number	Adopted Action	Responsible/ deadline	Comments
	OBIS, ODIS and OTGA to actively participate in, and contribute to, the development and implementation of science-based, sustainable ocean planning and management activities and **invited** the IODE programme to collaborate with the IOC Secretariat's SOPM team for the development of a first pilot initiative that can inform and fine-tune the design of targeted, future IODE data and information knowledge products for SOPM	Secretariats, IODE Secretariat (DL : asap)	
290	**The Committee further requested** IOCAFRICA and IODE to develop a structured strategy for long-term engagement, ensuring that African ocean data systems are fully integrated into global frameworks and contribute effectively to regional and international decision-making.	IOCAFRICA Secretariat/ IODE Secretariat (DL: asap)	
301	**The Committee agreed to the request** [*from IOCARIBE*] to explore options for further cooperation beyond OTGA and ODIS during the 2026-2027 biennium, including the development of a regional OBIS network.	IOCARIBE Secretariat/ IODE Secretariat	
303	**The Committee acknowledged** the importance of collaboration with IOCINDIO and **requested** IODE Programme Components to support data architecture efforts (similar to EMODNet / MEDIN) in the region, with the help of RSB funded CD programmes supported or hosted by OTGA RTCs, C2Cs and NODCs and ADUs (ODIS, OBIS nodes) already established in the region.	IODE ODIS, OBIS, OTGA/ IOCINDIO Secretariat (DL: asap)	
306	**The Committee regretted** the absence of a report from IOC/WESTPAC and **urged** IOC/WESTPAC to submit a	IOC/WESTPAC Secretariat (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
	report on IODE related activities in their region.		
317	**The Committee encouraged** its NODC and ADU data repositories to join the WDS membership and **welcomed** cohort activities that assist additional ocean data repositories in its member states to achieve the CoreTrustSeal certification	NODCs, ADUs (DL: asap)	
318	**The Committee recommended** that WDS and IODE collaborate to increase data repository contributions and to demonstrate value of its federated data systems, ODIS and OBIS.	IODE Secretariat, WDS Secretariat (DL: asap)	
319	**The Committee instructed** the IODE ODIS Programme Component to work with the WDS members and secure technical interfaces between WDS members and ODIS, ensuring all ocean-relevant content is discoverable and accessible in both systems.	IODE/ODIS manager and SG-ODIS Chair; WDS Secretariat (DL: asap)	
320	**The Committee thanked** the WDS for its ongoing work to enhance the capabilities, impact, and sustainability of our data repositories worldwide, and **encouraged** IODE data centres and programme components to collaborate on objectives of mutual interest such as data preservation, sustainability, FAIR data and indigenous data governance.	IODE NODCs, ADUs and WDS Secretariat (DL: asap)	
321	**The Committee acknowledged** that participation in International Data Week and the WDS Members Forum on 13-16 October 2025 in Brisbane will be an important venue for IODE representation.	IODE Secretariat and IOFDE Co-Chairs considering participation (DL: October 2025)	

Para number	Adopted Action	Responsible/ deadline	Comments
337	**The Committee noted** the following experts expressed interest in joining the JCB subgroup on data management: Pier Luigi Buttigieg (ODIS), Thierry Carval (GTSPP) and Gael Forget (IQUOD) and **welcomed** submissions of expressions to join within the next four weeks in order to start the organization of the first meeting.	IODE Secretariat to contact all IODE NCs DM, NODC contacts, ADU contacts (DL: 21 March 2025) IODE experts to contact IODE Secretariat (DL: 14 April 2025)	
340	**The Committee strongly recommended** NODCs and ADUs in Europe to consider involving IOC/IODE as a partner in future EU project proposals and to encourage their scientific organizations to do the same and to contact the IODE secretariat for guidelines.	IODE NODCs, ADUs (DL: continuous)	
341	**The Committee recognized** that other (in-kind) sources can co-invest in IODE activities and **requested** the IODE Management Group to track and report on and acknowledge these in the next session.	IODE MG (DL: continuous)	
342	**The Committee expressed** its desire to continue the series of IODC Conferences and **requested** the IODE Management Group to make a decision depending on available resources and practical feasibility.	IODE MG (DL: during next IODE MG)	
366	**The Committee invited** Member States and IOC programmes to provide input on the progress towards delivery of the strategic objectives of the Strategic Plan(*). (*)IOC Manuals and Guides No. 92 (IOC Strategic Plan for Ocean Data and Information Management (2023–2029)).	IOC Member States, IOC programmes (DL: continuous) IODE Secretariat: send out CL to Member States asking for input. (DL: continuous)	

Para number	Adopted Action	Responsible/ deadline	Comments
369	**The Committee noted** the importance of the IOC Data Policy and Terms of Use (2023) and **called** on Member States to use the policy as a basis for national policies on oceanographic data exchange and to ensure maximum compliance with the policy.	Member States (DL: continuous)	
370	**The Committee requested** the IOC Secretariat to promote the IOC Data Policy and Terms of Use (2023) via its communication channels including its website	IOC Secretariat (communication unit) (DL: asap)	
377	**The Committee** acknowledged the action accomplished and **invited** other NODCs and ADUs to express interest in collaborating as mentors or the need of mentoring in their own institution.	See 377	
378	**The Committee recommended** that IODE open another call for invitation to all NODCs and ADUs to participate in the mentoring.	IODE Secretariat (IODE/OTGA manager): to contact NODCs, ADUs (DL: asap)	
384	**The Committee welcomed** the updates on the 2024 cohort of the UNESCO-IOC Training Internships and **expressed** its support in promoting the call for the 2025 cohort of the internships.	OTGA	
389	**The Committee** endorsed the continuation of the collaborative action between IODE and IOC RSBs, and **requested** yearly collaborative meetings inviting all IODE PCs and PAs to participate	IODE Secretariat and RSB Secretariats to organize annual meetings (DL: continuous)	
390	**The Committee encouraged** the community to keep their OceanExpert account up to date to allow IOC programmes including IOC CD to inform the experts in the region on planned CD activities registered in OceanExpert and the IOC CD	IODE community (DL: continuous)	

Para number	Adopted Action	Responsible/ deadline	Comments
	Hub (https://oceancd.org/) and platforms across the ODIS federation.		
396	**The Committee recommended** that IOC RSBs and ODINs jointly develop an action plan and report on the reactivation of the ODINs in relation to IODE activities within their regions through the RSBs, and **requested** the IODE programme components and activities to orient their activities accordingly.	IOC RSBs, ODINs	
397	**The Committee requested** the OceanExpert programme activity to provide a document tag for RSB documents to facilitate their discovery and use.	OceanExpert manager (DL: asap)	
405	**The Committee urged** IODE Structural Elements to join the growing ODIS network	NODCs, ADUs (DL: asap)	
411	**The Committee** congratulated the IODE secretariat on the new website and **recommended** regular content reviews to keep the site dynamic.	IODE Secretariat (DL: asap)	
420	**The Committee instructed** the IODE Secretariat to focus on IODE and the various programme components and activities in its communication actions, while also **instructing** IODE programme components and activities to appropriately acknowledge IODE, when participating in network events.	IODE Secretariat/ IODE PCs (DL: continuous)	
421	**The Committee requested** the IODE community to contact the relevant programme component, activity and project managers to share news with the IODE Secretariat.	IODE community (DL: continuous)	
422	**The Committee invited** IOC regional sub-commissions to actively disseminate data and information activities in their	IOC RSB Secretariats (DL: continuous)	

Para number	Adopted Action	Responsible/ deadline	Comments
	own languages by recognizing IODE as a partner in their communication efforts, and also as an outreach strategy, to encourage ocean scientists to join the IODE community through OceanExpert.		
429	**The Committee instructed** IODE programme components and IODE programme activities to actively promote IODE in events and communications and **invited** other IOC programmes to recognize IODE as a partner in their communication efforts.	IODE programme components, IODE programme activities ; IOC programmes (DL : continuous)	
441	**The Committee agreed** on the important role of ODIS and OBIS as systems, and **requested** that the role of NODCs and ADUs are recognized in the emerging IOC data architecture.	IODE and GOOS Secretariat (DL: asap)	
452	**The Committee welcomed** the achievements of the DCO for Ocean Data Sharing during 2023-2024 and **looked forward** to continued and intensified collaboration between IODE and the DCO for Ocean Data Sharing in 2025-2026.	IODE Secretariat; DCO for data sharing (DL: continuous)	
453	In response to the survey conducted by the DCO-ODS the **Committee urged** NODCs and ADUs to work with Decade Actions and DCO-ODS to archive data and make metadata available to ODIS.	NODCs, ADUs (DL: continuous)	
454	In further response to the survey conducted by DCO-ODS **the Committee called** for volunteers to assist DCO-ODS in finalising an update to the IOC Manuals and Guides No. 73 : Guidelines for a Data Management Plan. The following members responded: Dan Lear (OBIS), Sissy Iona	Named volunteers to assist DCO-ODS in updating IOC M&G 73 (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
	(Greece), Mark Hebden (UK), Chris Moulton (OSPAR), Lennert Tyberghein (Belgium), Pier-Luigi Buttiegieg (ODIS), Francisco Arias (Colombia), Laura Hanley (CEFAS-ADU), Alessandra Giorgetti (Italy), Patricia Cabrera (OBPS).		
457	**The Committee thanked** eDNA expeditions and PacMAN projects for their achievements and **encouraged** the other IODE led Decade Actions to continue and **invited** the Committee to join new calls for Decade Actions.	IODE led decade actions; IODE community (DL: asap)	
474	**The Committee recommended** the eDNA expeditions Decade project to continue in a second phase if funding sources come available recognizing the enormous value of these expeditions to the global biodiversity community in establishing pipelines and processes from eDNA collection to product development.	OBIS Secretariat (DL: IODE-29 for 2nd phase)	
478	Recommendation IODE-28/6.2.5: Advancing Ocean Data Sharing for Sustainable Development in areas within national jurisdiction	establish an inter-sessional working group to facilitate and promote implementation of this recommendation, with terms of reference as attached in Annex to this Recommendation (IODE Secretariat to start arrangements) (DL: asap)	
485	Decision IODE-28/6.2.6: Establishment of an IODE Inter-sessional Working Group to Enact a Rapid Response Mechanism for Emerging Issues	establish an inter-sessional Working Group to Enact a Rapid Response Mechanism for Emerging Issues (IWG-RRM) (IODE Secretariat to start arrangements) (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
486	**The Committee requested** the IWG-RRM addresses with high priority the fact that some WOD services have recently ceased and that IODE programme components and activities and many other programmes worldwide depend on data and services from WOD	IWG-RRM	
509	**The Committee requested** the IOC Assembly to invite the Government of Flanders (Kingdom of Belgium) to continue its support of the IOC Project Office for IODE and **invited** other Member States to complement the support to allow further development of the IODE, its activities, products and services.	IOC-33 (DL: June/July 2025)	
510	Recommendation IODE-XXVIII.6.3: THE UNESCO/IOC PROJECT OFFICE FOR IODE IN OSTEND, BELGIUM	See 507	
512	**The Committee requested** the IODE Co-Chairs to prepare a brief statement for the IOC-33 (June-July 2025) on the outcomes of IODC-3.	IODE Co-Chairs (DL: IOC-33)	
513	**The Committee requested** the IODE Co-Chairs to present the executive summary and recommendations of IODE-28 and coordinate with GOOS on the presentation of the work on the IOC Data Architecture to the IOC-33.	IODE Co-Chairs (DL: IOC-33)	
523	**The Committee thanked** the Government of Flanders (Kingdom of Belgium) for continuing to provide three full-time staff members to the IOC Project Office for IODE and **invited** the Government of Flanders (Kingdom of Belgium) to continue this support.	PO Head/ IOC Executive Secretary (DL: early 2026)	
525	**The Committee requested** that the new administrative support position should be funded from	IOC Executive Secretary (DL: asap)	

Para number	Adopted Action	Responsible/ deadline	Comments
	staff cost as from the next biennium.		
526	**The Committee regretted** the delay in recruiting the OBIS data manager position and **called on** the IOC Executive Secretary to start the new call before the end of 2025.	IOC Executive Secretary (DL: asap)	
528	**The Committee requested** the IOC Executive Secretary to create an administrative support position for IODE.	See 524	
531	**The Committee called on Member States** to consider seconding, either at the IOC Project Office for IODE, in Ostend, Belgium or in-kind (working from their usual place of work) in order to strengthen the IODE Secretariat.	IOC Member States (DL: asap)	
538	**The Committee urged** the IOC Executive Secretary to elaborate on the temporariness of the current situation and to ensure that a permanent solution is realized as soon as possible, since a long duration of the current situation may reflect adversely on IODE and IOC in the relationship with the hosting entity VLIZ and the Government of Flanders, while it may also affect the process of the renewal of the MoU between VLIZ and IOC	IOC Executive Secretary (DL: asap)	
540	**The Committee strongly urged** IOC Member States to follow Flanders' example and establish long-term funds-in-trust agreements to support UNESCO Science Activities.	IOC Member States (DL: asap)	
541	**The Committee called on** its members and parent institutions to involve IODE in project proposals that include data or information management elements as appropriate.	IOC Member States (DL: continuous)	

Para number	Adopted Action	Responsible/ deadline	Comments
542	**The committee recognized** the support through other funding instruments through national or regional mechanisms and **requested** to include these contributions in the annual reports of the NODCs, ADUs and IODE programme components, activities and projects.	NODC contacts, ADU contacts (DL: annually)	
550	**The Committee noted with appreciation t**he in-kind support provided by all IODE NODCs and ADUs**,** OTGA RTC/STCs through their individual and joint activities, to the sharing and exchange of data and information and **requested** the IODE Management Group in consultation with the IFAG to track and report on and acknowledge these in the next session.	IODE MG, IFAG (DL: as needed)	
551	Recommendation IODE-28/8.4: IODE Workplan and Budget 2025-2026	IODE community (DL: IODE-29)	
555	**The Committee invited** member states to consider hosting the next IODE Committee session in 2027.	IOC Member States (DL: March 2026)	
557	**The IODE Committee requested** the IODE Management Group to discuss the next IODC including the format and allocation of resources	IODE MG (DL: during next IODE MG)	
567	**The Committee requested** its Co-Chairs and the IODE Secretariat to make editorial corrections as necessary, taking into account the discussions held during the session.	IODE Secretariat, IODE Co-Chairs (DL: 31/3/2025)	

In this Series *Languages*

Reports of Governing and Major Subsidiary Bodies, which was initiated at the beginning of 1984, the reports of the following meetings have already been issued:

1.	Eleventh Session of the Working Committee on international Oceanographic Data Exchange	E, F, S, R
2.	Seventeenth Session of the Executive Council	E , F, S, R,Ar
3.	Fourth Session of the Working Committee for Training, Education and Mutual Assistance	E, F, S, R
4.	Fifth Session of the Working Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S, R
5.	First Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions	E, F, S
6.	Third Session of the *ad hoc* Task team to Study the Implications, for the Commission, of the UN Convention on the Law of the Sea and the New Ocean Regime	E, F, S, R
7.	First Session of the Programme Group on Ocean Processes and Climate	E, F, S, R
8.	Eighteenth Session of the Executive Council	E, F, S, R, Ar
9.	Thirteenth Session of the Assembly	E, F, S, R, Ar
10.	Tenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific	
11.	Nineteenth Session of the Executive Council, Paris, 1986	E, F, S, R, Ar
12.	Sixth Session of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S
13.	Twelfth Session of the IOC Working Committee on International Oceanographic Data Exchange	E, F, S, R
14.	Second Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Havana, 1986	E, F, S
15.	First Session of the IOC Regional Committee for the Central Eastern Atlantic, Praia, 1987	E, F, S
16.	Second Session of the IOC Programme Group on Ocean Processes and Climate	E, F, S
17.	Twentieth Session of the Executive Council, Paris, 1987	E, F, S, R, Ar
18.	Fourteenth Session of the Assembly, Paris, 1987	E, F, S, R, Ar
19.	Fifth Session of the IOC Regional Committee for the Southern Ocean	E, F, S, R
20.	Eleventh Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Beijing, 1987	E, F, S, R
21.	Second Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Arusha, 1987	E, F
22.	Fourth Session of the IOC Regional Committee for the Western Pacific, Bangkok, 1987	E only
23.	Twenty-first Session of the Executive Council, Paris, 1988	E, F, S, R
24.	Twenty-second Session of the Executive Council, Paris, 1989	E, F, S, R
25.	Fifteenth Session of the Assembly, Paris, 1989	E, F, S, R
26.	Third Session of the IOC Committee on Ocean Processes and Climate, Paris, 1989	E, F, S, R
27.	Twelfth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Novosibirski, 1989	E, F, S, R
28.	Third Session of the Sub-Commission for the Caribbean and Adjacent Regions, Caracas, 1989	E, S
29.	First Session of the IOC Sub-Commission for the Western Pacific, Hangzhou, 1990	E only
30.	Fifth Session of the IOC Regional Committee for the Western Pacific, Hangzhou, 1990	E only
31.	Twenty-third Session of the Executive Council, Paris, 1990	E, F, S, R
32.	Thirteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, New York, 1990	E only
33.	Seventh Session of the IOC Committee for the Global Investigation of Pollution in the Marine Environment, Paris, 1991	E, F, S, R
34.	Fifth Session of the IOC Committee for Training, Education and Mutual Assistance in Marine Sciences, Paris, 1991	E, F, S, R
35.	Fourth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1991	E, F, S, R
36.	Twenty-fourth Session of the Executive Council, Paris, 1991	E, F, S, R
37.	Sixteenth Session of the Assembly, Paris, 1991	E, F, S, R, Ar
38.	Thirteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Baja California, 1991	E, F, S, R
39.	Second Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1992	E only
40.	Twenty-fifth Session of the Executive Council, Paris, 1992	E, F, S, R
41.	Fifth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1992	E, F, S, R
42.	Second Session of the IOC Regional Committee for the Central Eastern Atlantic, Lagos, 1990	E, F
43.	First Session of the Joint IOC-UNEP Intergovernmental Panel for the Global Investigation of Pollution in the Marine Environment, Paris, 1992	E, F, S, R
44.	First Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1992	E, F, S
45.	Fourteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Paris, 1992	E, F, S, R
46.	Third Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Vascoas, 1992	E, F
47.	Second Session of the IOC Sub-Commission for the Western Pacific, Bangkok, 1993	E only
48.	Fourth Session of the IOC Sub-Cornmission for the Caribbean and Adjacent Regions, Veracruz, 1992	E, S
49.	Third Session of the IOC Regional Committee for the Central Eastern Atlantic, Dakar, 1993	E, F
50.	First Session of the IOC Committee for the Global Ocean Observing System, Paris, 1993	E, F, S, R
51.	Twenty-sixth Session of the Executive Council, Paris, 1993	E, F, S, R
52.	Seventeenth Session of the Assembly, Paris, 1993	E, F, S, R
53.	Fourteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Tokyo, 1993	E, F, S, R
54.	Second Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1993	E, F, S
55.	Twenty-seventh Session of the Executive Council, Paris, 1994	E, F, S, R
56.	First Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Melbourne, 1994	E, F, S, R
57.	Eighth Session of the IOC-UNEP-IMO Committee for the Global Investigation of Pollution in the Marine Environment, San José, Costa Rica, 1994	E, F, S
58.	Twenty-eighth Session of the Executive Council, Paris, 1995	E, F, S, R
59.	Eighteenth Session of the Assembly, Paris, 1995	E, F, S, R
60.	Second Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	E, F, S, R

61.	Third Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1995	E only
62.	Fifteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Papetee, 1995	E, F, S, R
63.	Third Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1995	E, F, S
64.	Fifteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange	E, F, S, R
65.	Second Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	E only
66.	Third Session of the IOC Sub-Commission for the Western Pacific, Tokyo, 1996	E only
67.	Fifth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Christ Church, 1995	E, S
68.	Intergovernmental Meeting on the IOC Black Sea Regional Programme in Marine Sciences and Services	E, R
69.	Fourth Session of the IOC Regional Committee for the Central Eastern Atlantic, Las Palmas, 1995	E, F, S
70.	Twenty-ninth Session of the Executive Council, Paris, 1996	E, F, S, R
71.	Sixth Session for the IOC Regional Committee for the Southern Ocean and the First Southern Ocean Forum, Bremerhaven, 1996	E, F, S,
72.	IOC Black Sea Regional Committee, First Session, Varna, 1996	E, R
73.	IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Fourth Session, Mombasa, 1997	E, F
74.	Nineteenth Session of the Assembly, Paris, 1997	E, F, S, R
75.	Third Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1997	E, F, S, R
76.	Thirtieth Session of the Executive Council, Paris, 1997	E, F, S, R
77.	Second Session of the IOC Regional Committee for the Central Indian Ocean, Goa, 1996	E only
78.	Sixteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Lima, 1997	E, F, S, R
79.	Thirty-first Session of the Executive Council, Paris, 1998	E, F, S, R
80.	Thirty-second Session of the Executive Council, Paris, 1999	E, F, S, R
81.	Second Session of the IOC Black Sea Regional Committee, Istanbul, 1999	E only
82.	Twentieth Session of the Assembly, Paris, 1999	E, F, S, R
83.	Fourth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1999	E, F, S, R
84.	Seventeenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Seoul, 1999	E, F, S, R
85.	Fourth Session of the IOC Sub-Commission for the Western Pacific, Seoul, 1999	E only
86.	Thirty-third Session of the Executive Council, Paris, 2000	E, F, S, R
87.	Thirty-fourth Session of the Executive Council, Paris, 2001	E, F, S, R
88.	Extraordinary Session of the Executive Council, Paris, 2001	E, F, S, R
89.	Sixth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, San José, 1999	E only
90.	Twenty-first Session of the Assembly, Paris, 2001	E, F, S, R
91.	Thirty-fifth Session of the Executive Council, Paris, 2002	E, F, S, R
92.	Sixteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Lisbon, 2000	E, F, S, R
93.	Eighteenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Cartagena, 2001	E, F, S, R
94.	Fifth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 2001	E, F, S, R
95.	Seventh Session of the IOC Sub-commission for the Caribbean and Adjacent Regions (IOCARIBE), Mexico, 2002	E, S
96.	Fifth Session of the IOC Sub-Commission for the Western Pacific, Australia, 2002	E only
97.	Thirty-sixth Session of the Executive Council, Paris, 2003	E, F, S, R
98.	Twenty-second Session of the Assembly, Paris, 2003	E, F, S, R
99.	Fifth Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Kenya, 2002 (* Executive Summary available separately in E, F, S & R)	E*
100.	Sixth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, St. Petersburg (USA), 2002 (* Executive Summary available separately in E, F, S & R)	E*
101.	Seventeenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Paris, 2003 (* Executive Summary available separately in E, F, S & R)	E*
102.	Sixth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 2003 (* Executive Summary available separately in E, F, S & R)	E*
103.	Nineteenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Wellington, New Zealand, 2003 (* Executive Summary available separately in E, F, S & R)	E*
104.	Third Session of the IOC Regional Committee for the Central Indian Ocean, Tehran, Islamic Republic of Iran, 21-23 February 2000	E only
105.	Thirty-seventh Session of the Executive Council, Paris, 2004	E, F, S, R
106.	Seventh Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 2005 (* Executive Summary available separately in E, F, S & R); and Extraordinary Session, Paris, 20 June 2005	E*
107.	First Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Perth, Australia, 3–5 August 2005	E only
108.	Twentieth Session of the Intergovernmental Coordination Group for the Tsunami Warning System in the Pacific, Viña del Mar, Chile, 3–7 October 2005 (* Executive Summary available separately in E, F, S & R)	E*
109.	Twenty-Third Session of the Assembly, Paris, 21–30 June 2005	E, F, S, R
110.	First Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Rome, Italy, 21–22 November 2005	E only
111.	Eighth Session of the IOC Sub-commission for the Caribbean and Adjacent Regions (IOCARIBE), Recife, Brazil, 14–17 April 2004 (* Executive Summary available separately in E, F, S & R)	E*
112.	First Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions (ICG/CARIBE-EWS), Bridgetown, Barbados, 10–12 January 2006	E only
113.	Ninth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Cartagena de Indias, Colombia, 19–22 April 2006 (* Executive Summary available separately in E, F, S & R)	E S*

114.	Second Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Hyderabad, India, 14–16 December 2005	E only
115.	Second Session of the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology, Halifax, Canada, 19–27 September 2005 (Abridged final report with resolutions and recommendations)	E, F, R, S
116.	Sixth Session of the IOC Regional Committee for the Western Indian Ocean (IOCWIO), Maputo, Mozambique, 2–4 November 2005 (* Executive Summary available separately in E, F, S & R)	E*
117.	Fourth Session of the IOC Regional Committee for the Central Indian Ocean, Colombo, Sri Lanka 8–10 December 2005 (* Executive Summary available separately in E, F, S & R)	E*
118.	Thirty-eighth Session of the Executive Council, Paris, 20 June 2005 (Electronic copy only)	E, F, R, S
119.	Thirty-ninth Session of the Executive Council, Paris, 21–28 June 2006	E, F, R, S
120.	Third Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Bali, Indonesia, 31 July–2 August 2006 (*Executive Summary available separately in E,F,S & R)	E*
121.	Second Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Nice, France, 22–24 May 2006	E only
122.	Seventh Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 16–18 March 2005 (* Executive Summary available separately in E, F, S & R)	E*
123.	Fourth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-IV), Mombasa, Kenya, 30 February-2 March 2007 (* Executive Summary available separately in E, F, S & R)	E*
124.	Nineteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Trieste, Italy, 12–16 March 2007 (* Executive Summary available separately in E, F, S & R)	E*
125.	Third Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Bonn, Germany, 7–9 February 2007 (* Executive Summary available separately in E, F, S & R)	E*
126.	Second Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Cumaná, Venezuela, 15–19 January 2007 (* Executive Summary available separately in E, F, S & R)	E*
127.	Twenty-first Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Melbourne, Australia, 3–5 May 2006 (* Executive Summary available separately in E, F, S & R)	E*
128.	Twenty-fourth Session of the Assembly, Paris, 19–28 June 2007	E, F, S, R
129.	Fourth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Lisbon, Portugal, 21–23 November 2007 (* Executive Summary available separately in E, F, S & R)	E*
130.	Twenty-second Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Guayaquil, Ecuador, 17–21 September 2007 (* Executive Summary available in E, F, S & R included)	E*
131.	Forty-first Session of the Executive Council, Paris, 24 June–1 July 2008	E, F, R, S
132.	Third Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Panama City, Panama, 12–14 March 2008 (* Executive Summary available separately in E, F, S & R)	E*
133.	Eighth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 17–20 April 2007 (* Executive Summary available separately in E, F, S & R)	E*
134.	Twenty-third Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Apia, Samoa, 16–18 February 2009 (*Executive Summary available separately in E, F, S & R)	E*
135.	Twentieth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Beijing, China, 4–8 May 2009 (*Executive Summary available separately in E, F, S & R)	E*
136.	Tenth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Puerto La Cruz, Bolivarian Republic of Venezuela, 22–25 October 2008 (*Executive Summary available separately in E, F, S & R)	E, S*
137.	Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII), Sabah, Malaysia, 26–29 May 2008 (*Executive Summary available separately in E, F, S & R)	E*
138.	Ninth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, France, 10–12 June 2009 (* Executive Summary available separately in E, F, S & R);	E*
139.	Fifth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Athens, Greece, 3–5 November 2008 (* Executive Summary available separately in E, F, S & R)	E*
140.	Fourth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Fort-de-France, Martinique, France, 2–4 June 2009 (* Executive Summary available separately in E, F, S & R)	E*
141.	Twenty-fifth Session of the Assembly, Paris, 16–25 June 2009	E, F, R, S
142.	Third Session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology, Marrakesh, Morocco, 4–11 November 2009	E, F, R, S
143.	Ninth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 22–24 April 2009 (* Executive Summary available separately in E, F, S & R)	E*
144.	Fifth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Managua, Nicaragua, 15–17 March 2010 (* Executive Summary available in E, F, S & R)	E*
145.	Sixth Session of the IOC Regional Committee for the Central and Eastern Atlantic Ocean, Accra, Ghana, 28–30 March 2010 (* Executive Summary available in E, F, S & R)	E*
146.	Forty-second Session of the Executive Council; Paris, 15, 19 & 20 June 2009	E, F, R, S
147.	Forty-third Session of the Executive Council; Paris, 8–16 June 2010	E, F, R, S
148.	Sixth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Istanbul, Turkey, 11–13 November 2009 (* Executive Summary available separately in Ar, E, F, S & R)	E*
149.	Seventh Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Paris, France, 23–25 November 2010 (* Executive Summary available separately in Ar, E, F, S & R)	E*
150.	Sixth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Santo Domingo, Dominican Republic, 26–29 April 2011 (* Executive Summary available in E, F, S & R)	E*

151.	Twenty-fourth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Beijing, China, 24–27 May 2011 (*Executive Summary in E, F, S & R included)	E*
152.	Twenty-first Session of the IOC Committee on International Oceanographic Data and Information Exchange, Liège, Belgium, 23–26 March 2011 (*Executive Summary available separately in E, F, S & R)	E*
153.	Eighth Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VIII), Bali, Indonesia, 10–13 May 2010 (*Executive Summary available separately in E, F, S & R)	E*
154.	Tenth IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 12–14 April 2011 (* Executive Summary available separately in E, F, S & R)	E*
155.	Forty-fifth Session of the Executive Council, Paris, 26–28 June 2012 (* Decisions available in E, F, S & R)	E*
156.	Seventh Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Willemstad, Curacao, 2–4 April 2012 (*Executive Summary available in E, F, S & R)	E*
157.	Eleventh Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Miami, USA, 17–20 May 2011 (*Executive Summary available separately in E & S)	E, S*
158.	Eight Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-VIII), Trinidad & Tobago, 29 April–1 May 2013 (*Executive Summary available in E, F, S & R)	E*
159.	Twenty-seventh Session of the Assembly, Paris, 26 June–5 July 2013 and Forty-sixth Session of the Executive Council, Paris, 25 June 2013	E, F, R, S
160.	Twenty-fifth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), Vladivostok, Russian Federation, 9–11 September 2013 (*Executive Summary in E, F & R)	E*
161.	Ninth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions, US Virgin Islands, 13-15 May 2014 (*Executive Summary available in E, F, S & R)	E*
162.	Forty-seventh Session of the Executive Council, Paris, 1–4 July 2014 (* Decisions available in E, F, S & R)	E*
163.	Ninth Session of the IOC Sub-Commission of the Western Pacific (WESTPAC-IX), Busan, Republic of Korea, 9–12 May 2012	E
164.	Eleventh Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, 12–14 November 2014, Nicosia, Cyprus (*Executive Summary available in E, F, S & R)	E*
165.	Twenty-sixth Session of the Intergovernmental Coordination Group for the for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVI), Hawaii, USA, 22–24 April 2015 (*Executive Summary available in E, F, S & R)	E*
166.	Tenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), Philipsburg, Sint Maarten, Kingdom of the Netherlands, 19–21 May 2015 (*Executive Summary available in E, F, S & R)	E*
167.	Tenth Session of the IOC Sub-Commission of the Western Pacific (WESTPAC-X), Phuket, Thailand, 12–15 May 2015	E
168.	Twenty-eighth Session of the Assembly, Paris, 18–25 June 2015	
169.	Twelfth 12th Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS-XII), Dublin, Ireland, 16-18 November 2015 (*Executive Summary available in E, F, S & R)	E*
170.	Eleventh Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-XI), Cartagena, Colombia, 5-7 April 2016 (*Executive Summary available in E, F, S & R)	E*
171.	Tenth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Muscat, Oman, 24–26 March 2015	E*
172.	Forty-ninth Session of the Executive Council, Paris, 7–10 June 2016 (* Decisions available in E, F, S & R)	E*
173.	Thirteenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions, Bucharest, Romania, 26–28 September 2016 (*Executive Summary available in E, F, S & R)	E*
174.	Twenty-seventh Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVII), Tahiti, France, 28-31 March 2017 (*Executive Summary available in E, F, S & R)	E*
175.	Twelfth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), Puntarenas, Costa Rica, 10–12 May 2017 (*Executive Summary available in E, F, S & R)	E*
176.	Eleventh Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), Putrajaya, Malaysia, 18–20 April 2017 (*Executive Summary available in E, F, S & R)	E*
177.	Fourteenth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and connected seas (ICG/NEAMTWS), Lisbon, Portugal, 21–23 November 2017 (*Executive Summary available in E, F, S & R)	E*
178.	Twenty-ninth Session of the Assembly, Paris, 21–29 June 2017 and Fiftieth Session of the Executive Council, Paris, 20 June 2017 (*Executive Summary available in E, F, S & R)	E*
179.	Thirteenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-XIII), Curaçao, 23–27 April 2018 (*Executive Summary available in E, F, S & R)	E*
180.	Twenty-fifth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Tokyo, 2019 (* Executive Summary available separately in E, F, S & R)	E*
181.	Fifteenth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Paris, France, 26–28 November 2018 (*Executive Summary available in E, F, S & R)	E*
182.	Twelfth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), Kish, Islamic Republic of Iran, 9–12 March 2019 (*Executive Summary available in E, F, S, R)	E*
183.	Twenty-eighth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVIII), Montelimar, Nicaragua, 2–5 April 2019 (*Executive Summary available in E, F, S & R)	E*
184.	Fourteenth session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-XIV/3), Punta Leona, Costa Rica, 8–11 April 2019 (*Executive Summary available in E, F, S & R)	E*
185.	Fifth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-V/3), Putrajaya, Malaysia, 8–10 April 2008	E

186.	Sixth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-VI/3), Hyderabad, India, 7–9 April 2009	E
187.	Eighth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-VIII/3), Melbourne, Australia, 3–6 May 2011	E
188.	Fifty-first Session of the Executive Council, Paris, 3–6 July 2018 (* Decisions available in E, F, S & R)	E*
189.	Sixteenth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Cannes, France, 2-4 December 2019 (* Executive Summary available in E, F, S & R)	E*
190.	Fifteenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-XV), 27–29 April 2021 (online) (* Executive Summary available in E, F, S & R)	E*
191.	Twenty-ninth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXIX), Online,1–2 and 7–8 December 2021 (*Executive Summary available in E, F, S & R)	E*
192.	Thirtieth Session of the IOC Assembly, Paris, 26 June–4 July 2019 and Fifty-second session of the IOC Executive Council, Paris, 25 June 2019 (*Summary report available in E, F, S & R)	E*
193.	Fifty-third Session of the Executive Council, Online, 3–9 February 2021 (* Decisions available in E, F, S & R)	E*
194.	Thirty-first Session of the IOC Assembly, Online, 14–25 June-2021	E F S R
195.	Tenth Session of the International Co-ordinating Group for the Tsunami Warning System in the Pacific, Sidney, Canada, 1–3 August 1985	E
196.	Inter-Sessional Meeting of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), online, 23–24 November 2021	E
197.	Twenty-ninth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), 1–2 & 7–8 December 2021 (online)	E*
198.	Sixteenth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), San José, Costa Rica, 25–28 April 2023	E (summary in F & S)
199.	Summary Report of the Eighteenth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS-XVIII), 6–8 February 2024, UNESCO Headquarters, Paris	E (summary in F & S)
200.	Summary Report of the Thirteenth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), 28 November–1 December 2022, Bali, Indonesia	E (summary in F & S)
201.	Summary Report of the Nineteenth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS-XIX), 27–29 November 2024, UNESCO Headquarters, Paris	E (summary in F & S)
202.	Summary Report of the 28th session of the International Oceanographic Data and Information Exchange Committee, Santa Marta, Colombia, 12–14 March 2025	E (summary in F, S & R)