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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

(of UNESCO)

Twenty-eighth Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-28)

12-14 March 2025

Action Paper

Version 2 (final)

This document was prepared in English and machine-translated into French, Spanish and Russian. We apologize for any errors in the translation

This document will be the main working document for the 28th Session of the IOC Committee on IODE. It includes (i) the draft introductory text that will be used for the summary report of the Meeting; (ii) (in yellow) the proposed actions requested from the Committee.

Participants in the Session are requested to carefully read this document as well as other working documents.

Draft recommendations and draft resolutions are also included in this document.

Full information and working documents are available from

https://oceanexpert.org/event/4258

For easy reference paragraphs have been numbered. Participants are invited to refer to paragraph numbers when submitting comments, suggestions or questions prior or during the IODE-28 Session.

Table of Contents

Draft recommendations

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.

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 ….[to be added after presentation]

2. ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

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

5. The Committee was requested to note that all working documents were made available only as on-line documents. Any new items or issues proposed by the Meeting were noted here and discussed either under the related Agenda Item or under Agenda Item 9 (Any other business).

6. Proposed: **The Committee adopted** the agenda.

2.2 DESIGNATION OF A RAPPORTEUR

7. **Mr Pissierssens** 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.

8. Proposed**: 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

9. **Mr Pissierssens** invited to review and adopt the Timetable (Document IOC/IODE-28/1 Add. Prov.) available from the web site. He 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.

10. The IODE Technical Secretary 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** (this document).

11. 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.

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

13. Proposed**: The Committee adopted** the timetable for the Session

2.4 ESTABLISHMENT OF SESSIONAL WORKING GROUPS

14. The Technical Secretary, **Mr Peter Pissierssens**, informed the Committee that sessional working groups could be established to deal with specific issues that cannot be discussed at length during the plenary. Suggested groups included:

a. Sessional working group on work plan and budget

b. Sessional working group on the future of IODE

15. 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. He informed the Committee of received suggestions.

16. 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.

17. Meetings of Sessional Working Groups could be held on Wednesday and Thursday during lunch time.

2.5 PRACTICAL ARRANGEMENTS FOR THE SESSION

18. 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

19. This agenda item was introduced by **Mr Peter Pissierssens**. He recalled that the IODE Management Group, during their meeting between 5-7 February 2024 (held at the IOC Project Office for IODE, Oostende, 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

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

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

36 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 Oostende, 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*

22. Mr Pissierssens 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.

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

24. Proposal: **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.

25. 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**

26. 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)

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

3.1.1 Outcome of IOC-32

28. 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.

29. 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

30. 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).

31. 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.

32. 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*.".

33. 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:

34. **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)

35. **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**]

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

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

37. **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**]

38. **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;

39. 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 32) 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.

40. 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.

41. It was further noted that an IODE-GOOS workshop had been organized at the IOC Project Office for IODE, Oostende 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.

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

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

44. Proposed: **The Committee** welcomed progress with implementation of the IOC Medium-Term Strategy (2022-2029) at its halfway mark but **decided** 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

45. 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 (National Oceanographic Data Centres) 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 according to agreed criteria in order to bring all NODCs to a minimum agreed level

46. 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.

47. 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 Panama - Instituto de Geociencias with contact Ms Yolanda Irene Lopez (OceanExpert link: https://oceanexpert.org/expert/19820)
3) EGYPT (20 March 2024): NODC re-established at Marine Risk Management Center (MRMC) with contact Dr Mohamed A. NASSAR (OceanExpert link: https://oceanexpert.org/expert/58289)

48. 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)

49. 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 Clara Baringo Fonseca:clara.fonseca@consultores.rnp.br (OceanExpert link: …)

50. 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 Joaquín Tintoré (OceanExpert link: https://oceanexpert.org/expert/39482)

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

52. 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.

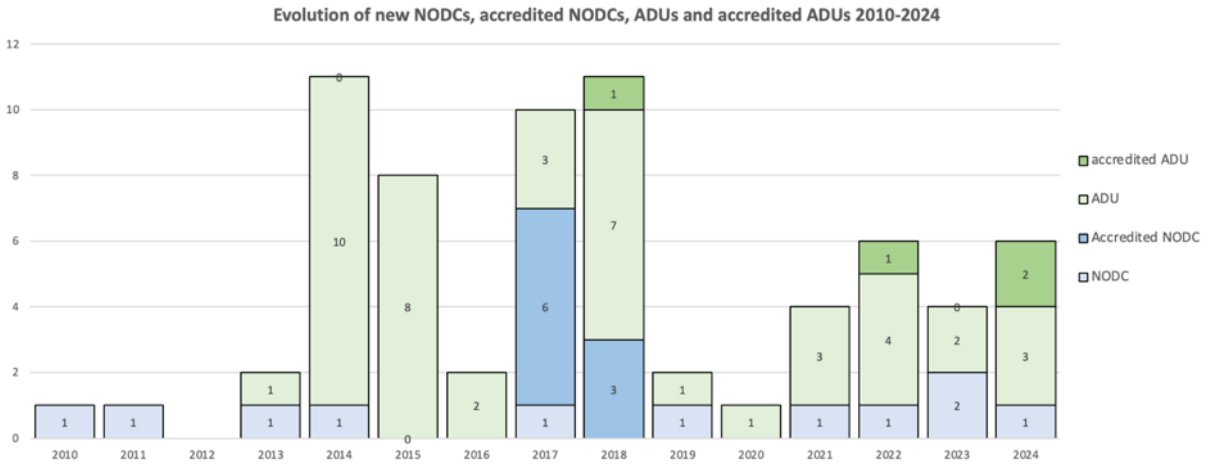

Figure 1: Evolution of new NODCs, accredited NODCs, ADUs and accredited ADUs 2010-2024 (status 3 January 2025)

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

54. Proposed: **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.

55. Proposed: **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

56. 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.

57. 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.

58. 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.

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

60. Proposed: **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.

61. Proposed: **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

62. 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.

63. 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 (VLIZ), 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.

64. 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.

65. 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.

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

67. She reported that 4 NODCs scored 0: Cameroon, Comoros, Dr Congo and Senegal and 10 NODCs scored between 1-10: Benin, Côte d'Ivoire, Guinée, 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.

68. 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.

69. 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 of with the relevant NODC may occur. Steering Groups could assist in providing this information.

70. 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. Responses were received from Kazakhstan, Madagascar and Benin (not included in the report)

71. 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 web site;
- 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.

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

73. 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.

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

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

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

77. Proposed: **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.

78. Proposed: **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

79. 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 presentations.

80. Mr Reed explained that all IODE 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.

81. 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.

3.4.1.1 Ocean Biodiversity Information System (OBIS)

82. 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.

83. 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).

84. 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.

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

86. 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.

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

88. 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.

89. 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.

90. 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.

91. The 6th session of the OBIS Executive Committee (EC-OBIS-6) took place in Oostende 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).

92. 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 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.

93. 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.

94. 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 still ongoing (Nov 2024).

95. Proposed: The **IODE Committee expressed its appreciation** to the OBIS community for the significant progress in mobilising and sharing biodiversity data.

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

97. Proposed: 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.

98. Proposed: 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.

99. Proposed: 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.

100. Proposed: 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 and **urged** the UNESCO Director General to appoint the selected candidate without further delay.

3.4.1.2 Ocean Data and Information System (ODIS)

101. 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)**.**

102. 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

103. 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.

104. 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.

105. 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.

106. 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

107. Mr Buttigieg presented the ODIS Strategic Planning Document (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.

108. Proposed: **The Committee urged** all Member States to participate in the Ocean Data and Information System to increase the visibility of their data holdings to the world, and to enable improved and more efficient access to global Ocean data

109. Proposed: **The Committee adopted Recommendation IODE-28/3.4.1.2**

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,

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 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 Programmes, and key groups pursuing, consolidating, or maintaining digital sovereignty;
- Representatives of major interest groups and selected ODIS partners including regional/international organisations developing multi-year / decadal data strategies or with unique insight into strategically relevant issues;
- ODIS programme manager;
- IODE Secretariat;
- A representative from each of the UN Ocean Decade Decade Coordination Offices and Centres

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)

The ODIS Operations Group (ODIS-Ops), will comprise a representative from each ODIS Partner maintaining one or more ODIS Nodes[2],.

Tasks

The main tasks of ODIS-Ops will be:

1. To ensure the uninterrupted operation of ODIS Nodes 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 specifications, and 4) provides valid (meta)data and services described by its asset catalogue to other Nodes across the Federation.

[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.

3.4.1.3 OceanTeacher Global Academy (OTGA)

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

111. Ms Garcia reported that, during the period 2023-24, 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.

112. 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.

113. 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.

114. 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.

115. 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.

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

117. The fourth session of the Steering Group for the OceanTeacher Global Academy took place in Oostende 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.

118. 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.

119. 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.

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

121. Proposed: **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

122. 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).

123. **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

124. **Ms Pauline Simpson** introduced this agenda item on behalf of Ms Jennifer Walton, 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).

125. 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.

126. 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.

127. 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.

128. 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.

129. 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.

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

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

132. Proposed: **The Committee instructed** all IODE projects and **invited** Member States to contribute research and informational documents to AquaDocs.

133. Proposed: **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)

134. **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 digitation. In 2026, GODAR seeks to conduct a similar workshop in the Asia region.

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

136. Proposed: **The Committee thanked** the GODAR Programme Activity for their effort to help consolidate, digitize, long-term archival and make openly accessible available historical oceanographic data in paper form against degradation or loss, and **decided** that this Programme Activity should be continue.

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

137. **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.

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

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

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

141. Proposed: **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)

142. **Dr Paula Sierra-Correa** introduced this item on behalf of Mr Christopher Paver, Chair of the SG-GTSPP who was unable to attend. She 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.

143. 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.

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

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

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

147. Proposed: **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)

148. **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.

149. 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.

150. Proposed: **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)

151. **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.

152. 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.

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

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

3.4.2.7. OBPS (IODE/GOOS)

155. **Dr Cristian Muñoz Mas** (OBPS Co-Chair) reported that OBPS (IODE/GOOS Ocean Best Practices System) recently 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.

156. 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.

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

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

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

160. Proposed: **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)

161. **Ms Lucy Scott**, ODIS Programme Activity 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.

162. 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.

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

164. Proposed**: The Committee instructed** NODCs and ADUs create or update their ODIScat record/s which firstly ensures the visibility of their institution to the world, and secondly, is the first step to joining ODIS.

165. Proposed: **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

166. **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,…
- Information of experts, institutes and events is published following the ODIS Arch rules for ODIS/OIH, Google, Bing,… to be harvested.
- The number of experts keeps on growing in the directory (https://oceanexpert.org/statistics)
- Outreach material has been created (videos, stickers)

167. 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, the redesign the OE mailing system and upgrade the system to the latest

Symfony framework were affected. It is foreseen that the project lead will have more time to spend on the programme activity.

168. 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.

169. Proposed: **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)

170. **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

171. During the intersessional period,

- Three applications seeking accreditation as an NODC were received. These were from the Norwegian Marine Data Centre (NMD), the Italian National Oceanographic Data Centre (hosted at the National Institute of Oceanography and Applied Geophysics - OGS) and the Australian Ocean Data Network (AODN). All 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.

172. 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.

173. 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.

174. 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.

175. IODE-XXVII approved changes to the IODE accreditation process to include certification by CTS 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)**.

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

177. He invited a member of the IODE Committee to take over from him.

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

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

180. Proposed: **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)

181. No reporting or work plan was received.

182. Proposed: **The Committee regretted** the absence of reporting and work plan for this activity. **The Committee referred** discussions on the future of WOD to the Management Group.

3.4.3 IODE Projects

183. 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.

184. Mr Appeltans reported on the Pacific Islands 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.

185. 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 (20November 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.

186. Proposed: **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.

3.4.4 Implementation report of revised Rules of procedure for IODE activities

187. 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).

188. 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 had been invited to submit a brief report on this matter. She informed the Committee that only OBIS had reported on progress on this agenda item.

189. **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).

190. Proposed: **The Committee expressed its appreciation** to OBIS for the progress made but **expressed regret** that no other IODE programme component or programme activities had indicated any progress.

191. Proposed: **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

192. 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-XXVIII.

193. 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.

194. 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.

195. 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.

196. 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

197. Regarding (i) above (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)

198. 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.

199. Proposed: **The Committee noted** with satisfaction the actions taken related to IODE structure and working methods.

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

201. Proposed: **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)

202. 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.

203. 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

204. Proposed: **The Committee**, considering the limited membership of marine libraries as AIUs, **decided** to abolish AIUs as structural elements of IODE.

205. Proposed: **The Committee instructed** the AquaDocs Programme Activity to create a community of practice mailing list composed of all AquaDocs document submitters.

3.5 PROGRESS REPORT ON THE IODE QUALITY MANAGEMENT FRAMEWORK

206. See 3.4.2.10.

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

3.6.1 IOC Ocean Science

207. This agenda item was introduced by **Ms Lotta Fyrberg** on behalf of Dr 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).
- 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), a joint OSS-IODE initiative that delivers information and developments focused on the seven outcomes of the UN Decade of Ocean Science.

208. 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.

209. Proposed: **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.

210. Proposed: **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)

211. **Ms Joanna Post**, Head OOS, reported on updates from GOOS and outcomes from the GOOS Steering Committee meeting relevant to IODE.

212. In regards 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.

213. Ms Post further referred to the First IODE/GOOS Data Workshop held at the IOC Project Office for IODE (30 September – 2 October 2024) which was the first step towards an IOC Data Architecture and welcomed Agenda item 6.1 in this regard.

214. 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.

215. Proposed: **The Committee expressed its appreciation** to GOOS for the continued collaboration and progress made and **decided** that the collaboration and synergies should be continued and strengthened.

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

216. **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 training course (UNESCO IOC – Tsunami Ready) was developed with the assistance of two trainees sponsored by UNESCO IOC and hosted by ITIC. This course is currently under review and expected to be released in early 2025.

217. 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.

218. These initiatives were led by ITIC Director Mrs. 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.

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

220. Proposed: **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

221. **Ms Lotta Fyrberg** 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 marine policies.

222. Regarding the Marine Spatial Planning Global Programme (MSPglobal), Ms Fyrberg 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).

223. Ms Fyrberg 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.

224. Building on the experience of its programmes and projects, Ms Fyrberg informed that an IOC Wide-Strategy on Sustainable Ocean Planning and Management is under development. SOPM is an overarching framework that covers various marine policies that IOC has worked on, such as Integrated Coastal Zone Management (ICZM), Marine Spatial Planning (MSP), Sustainable Ocean Planning (SOP), Marine Protected Areas (MPAs), etc. The draft SOPM strategy has two objectives directly related to IODE: (i) Improved observation, data, data frameworks and knowledge management for ecosystem-based management and sectoral applications; and (ii) Expanded capacity development. 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 Co-Chair and Head of IODE, as well as its CD Assistant are members of the WG-SOPM.

225. Proposed: **The Committee welcomed** the development of SOPM and the objective that includes improved observation, data, data frameworks and knowledge management for ecosystem-based management and sectoral applications and that specifically refers to OBIS and ODIS.

226. Proposed: **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, to support ecosystem-based management and sectoral applications

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

227. This agenda item was introduced by **Mr Ibukun Adewumi,** Head, UNESCO/IOC Sub Commission for Africa & the Adjacent Island States (IOCAFRICA) Secretariat. He reported on the cooperation between IODE and the IOC Sub-Commission for Africa and the Adjacent Island States (IOCAFRICA). He highlighted the key achievements of the collaboration and outlined expectations for the 2025-2026 inter-sessional period.

228. Mr Adewumi noted that cooperation between IODE and IOCAFRICA has focused on two major initiatives. IOCAFRICA facilitated the participation of five Early Career Ocean Professionals (ECOPs) from Northern Africa in the blended training course on "Introduction to Oceanographic Survey Techniques and Data Management" held in Malta in 2024. Furthermore, IOCAFRICA, in partnership with OTGA, is organizing an environmental DNA (eDNA) training workshop in Cape Verde, scheduled for the second quarter of 2025. These initiatives have contributed to capacity building efforts, although it was noted that conducting a few three-day training sessions in selected countries cannot be considered as having provided numerous training opportunities in Africa. A more comprehensive and sustained approach to capacity development is required to meet the continent's needs.

229. Regarding the implementation of the Ocean Data and Information System (ODIS), Mr Adewumi reported that IOCAFRICA has been instrumental in supporting data management capabilities across the region. Specific efforts include assisting the Ministry of Fisheries and Marine Resources (MFMR) in Namibia by providing comprehensive guidance for the installation of CKAN metadata catalogue software and essential extensions to facilitate ODIS integration. Additionally, IOCAFRICA has supported the Institut National des Sciences et Technologies de la Mer (INSTM) in Tunisia by aiding in the creation of entries in the ODIS Catalogue for upcoming datasets and projects, thereby improving connectivity and accessibility. However, it was acknowledged that data management in Africa requires having centers within the region that are capable of undertaking these tasks, and currently, only a few countries are adequately equipped to do so.

230. Despite these achievements, Mr Adewumi acknowledged several challenges, including financial constraints that limit the scale of initiatives, technical capacity gaps within National Oceanographic Data Centres (NODCs), complexities associated with coordinating efforts among multiple stakeholders, and the limited capacity of regional experts to attend critical IODE meetings due to funding constraints. Additionally, it was noted that while ocean observations (data collection) are conducted in some countries, the lack of financial support for organizations dedicated to coordinating these observations across Africa remains a significant challenge.

231. Furthermore, Mr Adewumi emphasized that the lack of strong national commitments in several countries is a key barrier to progress. Ensuring sustained commitment from national governments is crucial to preventing the loss of institutional memory and ensuring continuity in ocean data management efforts.

232. For the 2025-2026 inter-sessional period, Mr Adewumi emphasized the following priorities for continued collaboration with IODE:

- Strengthening capacity-building initiatives through the development of tailored training programs, particularly in data management and ocean forecasting, to address technical gaps and enhance regional expertise;
- Expanding the integration of African oceanographic data into global systems by enhancing support for NODCs and implementing best practices in data collection, processing, and dissemination;
- Fostering closer engagement with national and regional policymakers to ensure that ocean data informs decision-making processes and policy frameworks effectively.
- Enhancing interoperability and accessibility of African ocean data through increased technical support and the establishment of additional regional data hubs to facilitate data sharing;
- Developing sustainable funding mechanisms in collaboration with IODE and other partners to ensure financial sustainability and continuity of joint initiatives;
- Promoting greater awareness and utilization of ocean data by coastal communities and stakeholders through targeted outreach and knowledge-sharing initiatives.

233. In conclusion, Mr Adewumi reaffirmed IOCAFRICA's dedication to furthering its collaboration with IODE to advance regional ocean data management and achieve shared objectives. He expressed confidence that the proposed areas of cooperation for the 2025-2026 period will address existing challenges and unlock new opportunities for sustainable impact.

234. Proposed: **The Committee** …

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

235. 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 InfoHUB 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.

236. 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.

237. She invited the IODE Committee to:

- Support the IOCARIBE region in the development and implementation of a plan for the Caribbean SIDS to maximise their benefits from, and contributions to, ocean data and information management, using a value chain approach.
- 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.
- Explore options for further cooperation beyond OTGA and ODIS during the 2026-2027 biennium, including the development of a regional strategy for OBI, focused on national and regional data and information needs.

238. Proposed: **The Committee** …

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

239. 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 with regard to 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, trainings that enable access to data repositories will cater to ocean observation objectives. Data utilization towards sustainable ocean planning and can be enabled through trainings/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.

240. Proposed: **The Committee** …

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

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

242. Proposed: **The Committee** …

3.6.9 ISC World Data System (WDS)

243. This agenda item was introduced by **Ms Reyna Jenkyns**, Data Stewardship Manager, World Data System**.**

244. Proposed: **The Committee** …

3.6.10 Aquatic Sciences and Fisheries Abstracts - ASFA (FAO)

245. 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)

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

3.6.12 Joint WMO-IOC Collaborative Board (JCB)

247. 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 joint WMO/IOC working group on data management addressing the priorities. The task team was composed of Jeremy Tandy, Simon McLellan, Lotta Fyrberg, Paula Sierra, plus Secretariat.

248. 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 Martha, Colombia).

249. It was further recommended to (i) Encourage cross-invitations between SG-ODIS and SG-FIT for future data infrastructure technology discussions; and (ii) Extend invitations to IODE Committee sessions and WMO equivalents (e.g., SCIMT).

250. 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.

251. Following the September meeting the task team discussed the terms of reference of the "**Joint WMO/IOC technical working group for data management**".

252. The task team recalled that the goals of the working group 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.

253. The task team proposed the following **terms of reference**:

(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. Establish pilot project(s) from the ocean community to act as DCPCs within the WIS2.0.
   c. 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.

254. The task team proposed the following (initial) **Membership**:

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

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

(i) Primarily via email and virtual / online meetings, with a face-to-face meeting in 2025 (resources pending)
(ii) Additional experts to be invited as required

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

(i) Develop a structured branch of the WIS topic hierarchy for ocean data.
(ii) Develop a guide to publishing on the ODIS and WIS2.0, including interoperability between the data systems and the principle of publishing once.
(iii) Propose an updated joint governance process for the MCDS.
(iv) Propose consistent guidelines on licensing / terms of use for oceanographic and marine meteorological data.

257. Proposed: **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.

258. Proposed: **The Committee welcomed** the establishment of the Joint WMO/IOC technical working group for data management.

259. Proposed: **The Committee recommended** the following experts as members of the working group: …

3.6.13 European Commission

260. 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)

261. Proposed: **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.

262. Proposed: **The Committee strongly recommended** NODCs and ADUs in Europe to consider involving IOC/IODE as a partner in future EU project proposals.

3.6.14 Cooperation of IODE in the Ocean Decade

263. This topic is covered under Agenda item 6.2.

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

264. This agenda item was introduced by **Dr Paula Sierra-Correa**. [to be added after the Session]

265. Proposed: The Committee …

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

266. 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).

267. 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.

268. During the intersectional 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.

269. Close collaboration with WMO were 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.

270. During the JCB meeting September 4-6, 2024, a WMO-IOC technical working group on data management was set up 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).

271. 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).

272. 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).

273. Proposed: **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.

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

275. An Action Plan for implementing the Data Strategy is currently under development by a Data Strategy Implementation Group (DSIG) 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.

276. 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).

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

277. 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/

278. 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 % 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.

279. Proposed: **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.

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

4.1 OCEANTEACHER GLOBAL ACADEMY

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

281. Dr 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

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

283. Dr Mazzuco highlighted that IODE mentoring aims to foster international collaboration among NODCs, ADUs, and AIUs 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).

284. This mentoring responds to the needs identified by the Committee to increase the number of accredited NODCs, ADUs, and AIUs, 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.

285. Dr 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.

286. Proposed: **The Committee** acknowledged the action accomplished and invite other NODCs, ADUs, and AIUs to express interest in collaborating as mentors or the need of mentoring in their own institution.

287. Proposed: **The Committee recommended** that IODE open another call for invitation to all NODCs, ADUs, and AIUs to participate in the mentoring.

4.3 IOC OCEANTRAINING INTERNSHIPS 2023-2024

288. 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).

289. 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.

290. 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.

291. 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 Deep-sea nodes), 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 and tsunami resilience. Seven interns from seven Member States were selected in the 2024 cohort for placements in one of the six 2024 host institutions. Two deferred the internship into 2025. The Tsunami global programme supported the additional intern placed at ITIC Hawaii.

292. Ms Diwa shared with the Group that the preparations for the 2025 cycle of the Internships are currently on-going. Host institutions will be identified by March and 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.

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

4.4 IODE COOPERATION WITH IOC REGIONAL SUB-COMMISSIONS

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

295. Dr 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.

296. 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).

297. Dr Mazzuco invited RSBs and IODE PCs and PAs to report on ongoing and future collaborations.

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

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

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

300. Dr 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.

301. 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.

302. Dr Mazzuco invite the above mentioned and other RSBs to report on the achievement of the ODINs within their regions.

303. Proposed: **The Committee recommended** that IOC RSBs and ODINs jointly develop an action plan.

4.5 REPORTING ON ASSISTANCE TO NODCs, ADUs, AIUs TO ESTABLISH ODIS NODES

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

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

306. OIH/ODIS has and continues to work actively with a number of NODCs, ADUs and AIUs, 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.

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

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

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

310. Proposed: **The Committee urged** NODCs, ADUs and AIUs to join the growing ODIS network.

4.6 CAPACITY DEVELOPMENT ACTIVITIES OF OBIS

311. **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 will host an intern to support their OBIS related data management activities which will allow interns to further develop the acquired biodiversity data skills within their home institutions.
    - 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), 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). 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 X). 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, etc.
- **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, and Flanders, OBIS encourages resource mobilization to support impactful capacity development outcomes.

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

5. IODE COMMUNICATION AND OUTREACH

5.1 NEW IODE WEB SITE

313. 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.

314. 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.

315. Proposed: **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)

316. 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.

317. Several times a year, content was provided for to the IOC newsletter and it was requested to 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.

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

319. Previously IODE was active on Facebook, X (formely Twitter) and LinkedIn. In 2025, it was decided to continue using Facebook and LinkedIN, while discontinuing our presence on X. We created a profile on Bluesky in January 2025.

320. 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

321. 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.

322. Additionaly, other IOC programms collaborating with our programme components and programme activitites have supported IODE's outreach as well.

323. 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 Flanders Marine Science Day organized by VLIZ)- Oostende, 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- Oostende, September 2024
- the international workshop "AOMI Database workshop: Enhancing Ocean Microplastics Monitoring"- Online, October 2024
- Presentations by the Programme Componements and activitites on several occassions

324. Proposed: **The Committee instructed** the IODE Secretariat to focus on IODE and the various program components and activities in its communication actions, while also **instructing** IODE programme components and activities to consistently refer to IODE, when participating in network events.

325. Proposed: **The Committee instructed** IODE programme managers to contact the IODE Secretariat whenever they have news to share.

5.3 PROPOSED OUTREACH AND COMMUNICATION ACTIVITIES 2025-2026

326. 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.

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

328. 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.

329. 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,…)

330. Proposed: **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 partner in their communication efforts.

6. THE FUTURE OF IODE

6.1 DEVELOPMENT OF THE IOC DATA ARCHITECTURE

331. 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.

332. 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 crosscutting nature of ocean data management and services.

333. 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.

334. The Workshop participants agreed on a **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.

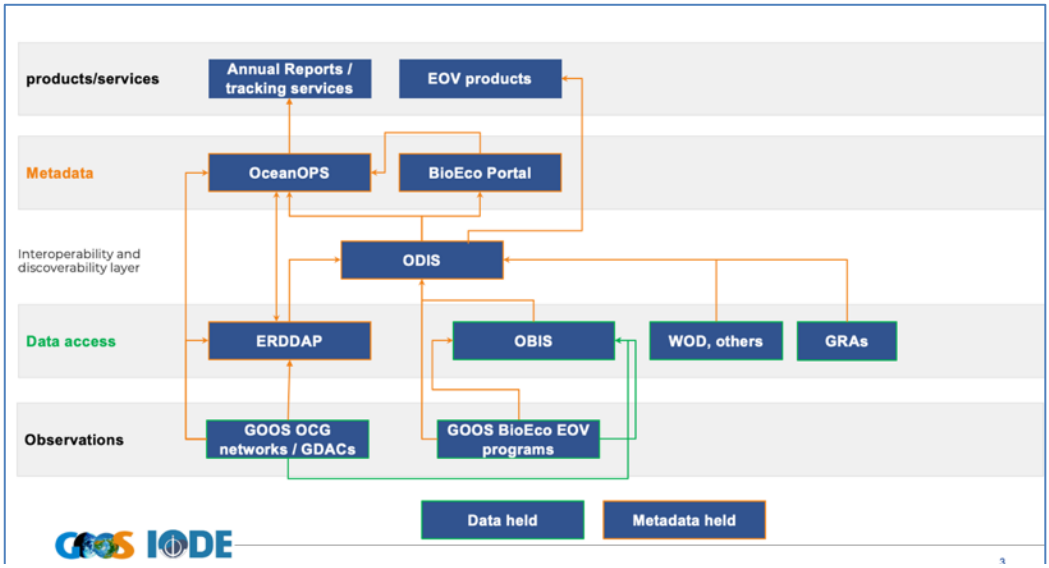

Figure 1: IOC Data Architecture schema

335. 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)

336. 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.

337. 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 a number of 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.

338. 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)

339. 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

340. Proposed: **The Committee welcomed** the results of the IODE-GOOS Data Workshop that represented a first step towards a holistic approach to data sharing across the entire IOC value chain. **The Committee** also **confirmed** the important role of ODIS and OBIS in the emerging IOC data architecture.

341. Proposed: **The Committee** …

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

342. 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

343. 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)

344. 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.

345. In particular, the DCO-ODS will closely collaborate with IODE and the OceanData2030 programmeas a key component 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.

346. The DCO-ODS will specifically seek to 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.

347. 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 standard 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.

348. Proposed: **The Committee welcomed** the achievements of the DCO for Data Sharing during 2023-2014 and looked forward to continued and intensified collaboration between IODE and the DCO for Data Sharing in 2025-2026.

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

350. Proposed: 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.

6.2.2 IMPLEMENTATION REPORT ON DECADE ACTIONS SUBMITTED BY IODE

351. 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)

352. Dr Sierra-Correa invited the leads for each of the decade actions to provide a brief report on the status of implementation.

353. Proposed: **The Committee…**

6.2.3 IMPLEMENTATION REPORT ON DECADE ACTIONS SUBMITTED IN COOPERATION WITH IODE

354. 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

355. 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

356. 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.

357. 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.

358. 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"

359. 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.

360. 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.

361. 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.

362. 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.

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

364. Proposed: **The Committee ..**

6.2.4 PROPOSALS FOR NEW IODE ACTIVITIES IN THE UN OCEAN DECADE 2025-2026

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

366. Proposed: **The Committee…**

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

367. 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 request 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.

368. 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).

369. **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."*

370. 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.

371. 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.

372. 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.

373. 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):

374. (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.

375. (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.

376. (iii) The Government of Flanders must be commended for its outstanding effort in providing funding 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.

377. (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.

378. (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

379. (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.

380. (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.

381. (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

382. 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, Oostende, Belgium.

383. **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.

384. **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.

385. **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.

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

Recommendation IODE-XXVIII.6.3

THE UNESCO/IOC PROJECT OFFICE FOR IODE IN OOSTENDE, 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 Oostende 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 Oostende, 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.

6.4 IODE AT IOC-33

387. 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

388. Proposed: **The Committee…**

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

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

389. This agenda item was introduced by **Mr Peter Pissierssens,** 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 new 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

390. 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 Pissierssens 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).

391.

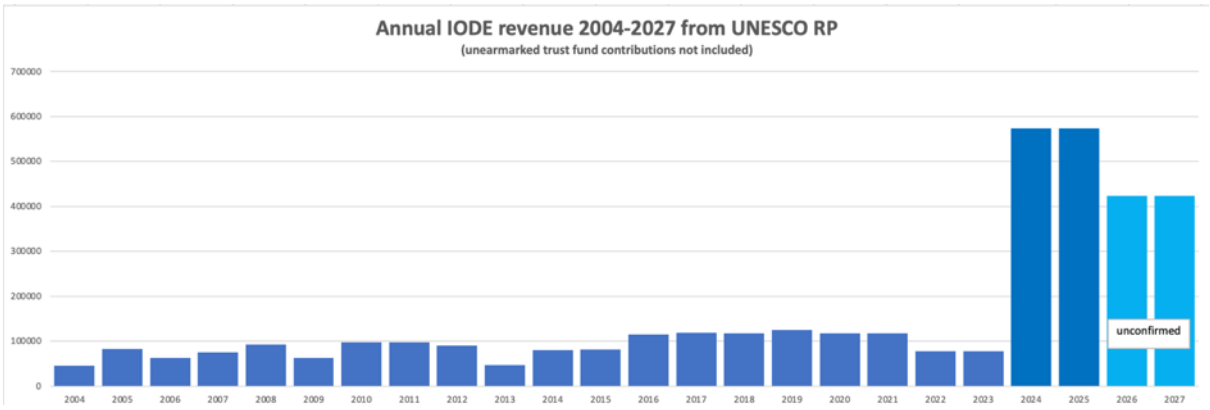

Fig 3: contributions to the IODE budget from the UNESCO Regular Programme between 2004 and 2027.

392. Proposed: **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

393. This agenda item was introduced by **Mr Peter Pissierssens**, IODE Technical Secretary.

394. Mr Pissierssens reported that 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

395. This agenda item was introduced by **Mr Peter Pissierssens,** IODE Technical Secretary. He reported that IODE Project Office staff was now at a level of 17 (9 posted in Oostende, Belgium), 7 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	n/a
6	Lawrence, Elizabeth	OBIS	Consultant, EU	
7	Mazzucco, Ana Carolina	OTGA	VLIZ secondment	n/a
8	McKenna, Jeff	ODIS	Consultant	ending
9	Pissierssens, Peter	IODE management	UNESCO Regular Position P-5	retiring 30/5/2025
10	Prak, Mithona	Admin	Service contract (IODE RP funds)	ending 4/2025
11	Principe de Souza, Silas	OBIS	Project Appointment (EU funds)	
12	Provoost, Pieter	OBIS	Project Appointment (Flanders, EU and US funds)	Extended until 31/12/2025
13	Scott, Lucy	ODIS	Consultant	
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	n/a
17	Boulanger, Emilie	OBIS	Consultant (EU funds)	
18	Reed, Greg	OTGA	Consultant	retired 31/12/2024

Figure 4: IODE staff table 2025

396. 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 Dr Ana Carolina Mazzuco (Brazil) on 13 June 2023. Mr Greg Reed continued to serve IODE/OTGA as consultant but retired on 31/12/2024.

397. 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.

398. Proposed: **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.

399. Proposed: **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.

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

401. Proposed: **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.

402. Proposed: **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.

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

7.3.2 Internships and Secondments

404. This agenda item was introduced by **Mr Peter Pissierssens**. 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.

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

7.4 CONFIRMED EXTRA-BUDGETARY REVENUE FOR 2025-2027

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

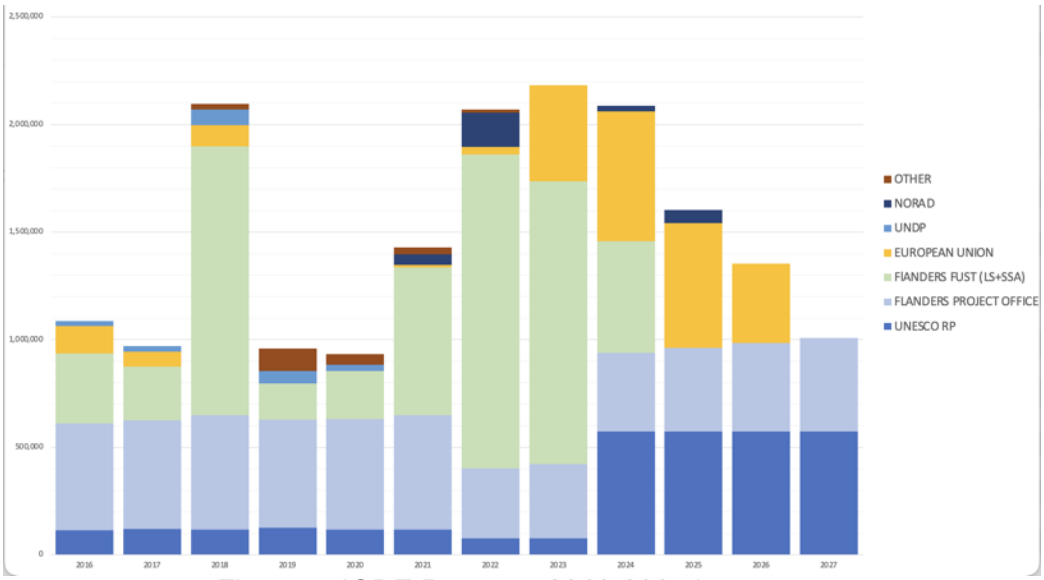

Figure 5: IODE Revenue 2016-2027 by source

407. Proposed: **The Committee strongly urged** IOC Member States to follow Flanders' example and establish long-term funds-in-trust agreements to support IODE.

408. Proposed: **The Committee called on** its members and parent institutions to involve IODE in any project proposal that includes data or information management elements.

7.5 OTHER RESOURCE OPPORTUNITIES FOR 2023-2025

409. 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. It was unclear if NORAD support would be continued and at what level.

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

8.1 IODE IN THE UNESCO 33 C/5 (2026-2027)

410. This agenda item was introduced by **Ms Lotta Fyrberg**.

411. [to be added after IODE-28 as information may be available only late February 2025]

8.2 IODE PROGRAMME COMPONENTS AND PROGRAMME ACTIVITIES

412. This agenda item was introduced by **Mr Greg Reed**. He recalled that all IODE programme components and programme activities were requested to report on programme implementation in 2023-2024 but also to submit a draft work plan and budget for 2025-2026. These would be discussed by the Sessional Working Group on work plan and budget that would meet on 12 and/or 13 March.

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

413. 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 PROPOSED IODE WORK PLAN AND BUDGET 2025-2026

414. This agenda item was introduced by **Mr Peter Pissierssens**. 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.

415. **The Committee adopted** Recommendation IODE-28/8.4 , added in Annex II (to be added after the Session).

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), Associate Information Units, 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

[budget table, to be added after the Session]

9. ANY OTHER BUSINESS

416. This agenda item was introduced by **Dr Paula Sierra-Correa** based upon input from the Committee under agenda item 2.1.

(this will be completed during the Session)

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

417. 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.

418. 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.

11. ELECTION OF THE CO-CHAIRS

419. The IODE Technical Secretary, **Mr Peter Pissierssens**, 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.

420. 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.

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

422. The Co-Chairs briefly addressed the Committee….. this will be completed during the Session.

12. IODE ACHIEVEMENT AWARDS 2025

[note: the IODE achievement awards 2025 will be handed over during a ceremony to be held during the Ocean Data Conference 2023 and IODE-28 Reception]

423. 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 .

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

-... this will be completed during the Session

- ...

425. **The Committee expressed its great gratitude** to (this will be completed during the Session) members of the IODE community thanking them for their exceptional contributions to continue building “our” IODE.

13. ADOPTION OF DECISIONS AND RECOMMENDATIONS

426. 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.

[Note: Adopted Decisions and Recommendations will be attached as an Annex to the Summary Report of the Session].

14. ADOPTION OF THE SUMMARY REPORT

427. This agenda item was introduced by Mr Peter Pissierssens. 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.

428. Proposed: **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.

429. Proposed: **The Committee requested** the IODE Co-Chairs to present the Executive Summary to the Thirty Second Session of the IOC Assembly that would take place in June 2025.

15. CLOSURE

[Note: text to be added after the Session]

430. The Co-Chairs addressed the Committee.

431. The Co-Chairs closed the Session on Friday 14 March 2025 at XXXX

Annex I

AGENDA

To be added after the session

Annex II

IODE-28 DECISIONS AND RECOMMENDATIONS

Draft Decisions and Recommendations have been included under the relevant agenda item above. They will be included in Annex II of the summary report after adoption by the IODE Committee.

Annex III

LIST OF PARTICIPANTS

To be added after the session

Annex IV

SUMMARY REPORT OF IODC-III

To be added after the session

Annex V

IODE-28 ACTION SHEET

To be added after the session

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[end of document]