IOC Committee on International Oceanographic Data and Information Exchange

Twenty-sixth Session
Online, 20-23 April 2021
Abstract
The IOC Committee on International Oceanographic Data and Information Exchange held its 26th session (IODE-XXV) online between 20 and 23 April 2021. The IODE session was attended by 155 participants from 65 IOC Member States and 9 organizations. To accommodate participants from the wide range of time zones two plenary sessions of two hours were held on each day of the session (07:00-09:00 UTC and 15:00-17:00 UTC). During its 26th session, the Committee focused its attention mainly on the following key issues: (i) review of NODC health status within the IODE network; (ii) IODE project and activity performance evaluation methodology; (iii) future of the IODE Ocean Data and Information Networks (ODINs); (iv) establishment of the ODIS project and associated partnership centre; (v) contribution of IODE to the UN Decade of Ocean Science for Sustainable Development; (vi) revision of the IOC strategic plan for data and information management (2022-2025); (vii) revision of the IOC oceanographic data exchange policy; (viii) performance review of the IOC Project Office for IODE; (ix) (first) international ocean data conference (November 2021); and (x) work plan and budget for 2021-2022. The Committee adopted five decisions and four recommendations.

* An executive Summary of this report is available in English, French, Russian and Spanish.
Group photo IODE-XXVI
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Annexes

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1 OPENING

The Session was opened by the IODE Co-Chairs Dr Sergey Belov and Mr Taco de Bruin at 07:00 UTC. They welcomed the participants to this first totally online Session of the IODE Committee.

The Session was then addressed by Dr Vladimir Ryabinin, Executive Secretary IOC. Dr Ryabinin welcomed all participants to the Session. Dr Ryabinin stressed the many challenges faced by the Ocean today including the decline of ocean health. He noted that there are 3 major domains in which the ocean is critical: climate change, biodiversity and ocean economy. Climate change is discussed by in the arena of NFCCC, biodiversity by CBD and IUCN, while ocean economy is a broad area with many players including governments acting as regulators and where the private sector is most involved. It is possible to start managing the ocean through plans based on science with approaches we already know: coastal zone management, maritime spatial planning, establishment of marine protected areas, management of fisheries, aquaculture, adaptation and mitigation of climate change, and data will be of crucial importance for effective implementation of these approaches. An important development happened through the high-level panel for sustainable ocean economy, established by the prime minister of Norway that included 14 heads of state. They published over 20 papers on what can be done in the ocean, what are the approaches, and they believe it is possible to turn the tide and they agreed that by 2025 they will manage 100% of their EEZ. This is only 10% of the ocean area but it is a good start. He then referred to the Ocean Decade: if it is implemented successfully then it may open the door to co-design of the science needed to manage the ocean. IODE’s contribution through ocean data exchange, data management, best practices. ODIS, OIH, OBIS, OTGA and OBPS can be really central. He said that the Ocean Decade also opens a competition for IODE: we recently reviewed proposals for different ocean science programmes. Not only hard ocean science but also projects that focus on women in ocean science, youth, cultural heritage but also on ocean data. He referred to the project “digital twin” that will be approved. The moment for IODE is very serious. This is a competition, but we are happy because we are exposing you to the requirements of the world. IODE is a community, and you can lead this. The IODE community needs to offer expertise, technology and guidance to the decade and the world that is now discovering the critical value of ocean data. Many groups will work on data, re-analysis, ocean prediction, etc. Science is now becoming driving force for sustainable development. IODE is considering conference in Poland. It is important that we now co-design the science of the future and data is part of this science, so I urge IODE to make big step forward. Co-design through conferences involving many communities. With all this we can save the ocean. Data is a critical part of this.

The IODE Co-Chairs then addressed the meeting. Dr Belov welcomed all participants to the Twenty-sixth Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XXVI). He explained that due to the COVID-19 pandemic, this session would be held fully online for the first time in the history of the IODE. He reminded participants that the session would not provide interpretation to save cost and that the working language would be English only. However, he noted that Action Paper had been made available in French and Spanish in addition to English. He noted that the latest version of the action paper had been sent on Friday 16 which had some suggested amendments based on comments received from Member States.
Mr Taco De Bruin then briefly addressed the meeting echoing Dr Belov’s opening words.

2 ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

The Committee was invited by the Technical Secretary, Mr Peter Pissierssens, to review and adopt the provisional agenda (Document IOC/IODE-XXVI/1 prov.) available from the web site on http://www.iode.org/iode26. The Committee was requested to note that all working documents were made available only as online 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.

The Committee adopted the agenda

2.2 DESIGNATION OF A RAPPORTEUR

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.

The Committee, taking into account 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

The Committee was invited to review and adopt the Timetable (Document IOC/IODE-XXVI/1 Add. Prov.)

The IODE Technical Secretary (Mr Peter Pissierssens) then reviewed the arrangements for the Session and presented the List of Documents available online through https://www.iode.org/iode26. He noted that the main working document for the Session would be the Action Paper, Document IOC/IODE-XXVI/2.

He then informed the Committee about the working hours for the Session (07:00-09:00 UTC and 15:00-17:00 UTC) that would comprise two repeat sessions of two hours daily to accommodate all time zones and other details relevant to the conduct of the Session. He reminded the Committee that this Session had only 2 hours/day x 4 days to deal with the substance of the meeting. 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.

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.

The Committee adopted the timetable for the Session
2.4 ESTABLISHMENT OF SESSIONAL WORKING GROUPS

The Technical Secretary, Mr Peter Pissierssens, informed the Committee that no sessional working groups would be possible. Instead, a number of Pre-Committee working groups had been created, as recommended by the IODE Management Group during its January 2021 meeting. These included:

1. Review of NODC health status within the IODE network (agenda item 3.2.2)
2. IODE Project and activity performance evaluation: status and way forward (agenda item 3.4.2)
3. Further development of ODIS (agenda item 6.1)
4. IODE contribution to the UN Decade of Ocean Science for Sustainable Development (agenda item 6.2)
5. IOC Strategic Plan for Data and Information Management 2022-2026 (agenda item 6.3)
6. Revision of the IOC Oceanographic Data Exchange Policy (agenda item 6.4)
7. Draft Work Plan and Budget 2021-2022 (agenda item 8.3)
8. Future of the ODINs (added 21/1/2021) (agenda item 3.5.2)

The Technical Secretary reminded the Committee that all IODE-XXVI registered participants had been invited (by email) to participate in these pre-committee working groups. Details on the composition of the working groups are available on the IODE-XXVI web page [https://www.iode.org/iode26](https://www.iode.org/iode26).

Each of the pre-committee working groups discussed the subject assigned to it, prepared text for the action paper, and contributed to drafting a decision or draft recommendation, as appropriate. These were included in the action paper under the relevant agenda item. It was noted that the pre-committee working groups had an informal character and decisions on the related subjects would be taken by IODE-XXVI.

2.5 TECHNICAL ARRANGEMENTS

The Technical Secretary, Mr Peter Pissierssens, informed the Committee that, as mentioned by the Co-Chairs, due to the Covid-19 pandemic, it was not possible to organize the Session in Sopot, Poland as planned. Technically implementing the event as an online event was not really challenging but a few issues needed to be considered: (i) due to the wide range of time zones between all member states it was not possible to identify a timing for the Session that would make it possible for all member states to participate together so it was decided to have two sessions every day, one accommodating zone UTC+5 to UTC+12 and the other zones UTC-8 to UTC +4; (ii) the duration of online meetings should preferably not exceed two hours; (iii) due to the limited time available for the entire Session (2 hrs x 4 = 8 hrs) as compared to the normal 6 hrs x 4 = 24 hrs it would not be possible to have substantive plenary discussions.

Instead, it was decided to set up pre-Committee working groups for all agenda items that required substantive discussions and where a consensus needed to be reached on draft recommendations or decisions. The list of pre-Committee working groups was introduced under agenda item 2.4.

The Technical Secretariat informed the Committee further that, while no simultaneous interpretation services would be available for the Session, the Action Paper had been translated into French and Spanish (Document IOC/IODE-XXVI/2).
The Technical Secretary informed the Committee that the Zoom platform would be used for the plenary Sessions. Registered Participants had been requested in advance to test the platform.

3 REPORT ON THE PAST INTER-SESSIONAL PERIOD (2019-2021)

3.1 PROGRESS REPORT ON THE IODE-XXV WORK PLAN AND IODE-XXV RECOMMENDATIONS AND DECISIONS

This agenda item was introduced by Mr Greg Reed and Dr Sergey Belov. Mr Reed recalled that the IODE Management Group, during their online meeting between 12-14 January 2021 had reviewed progress of the implementation of the IODE-XXV work plan, decisions and recommendation, and had composed a first draft proposed work plan and budget to be discussed by IODE-XXVI. The report of the January 2021 IODE Management meeting was available as Document IOC/IODE-MG-2021/3.

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. 81 (Procedures for Proposing and Evaluating IODE Projects and Activities (Revised edition)). Ongoing projects that do not receive a positive evaluation (<60% of maximum score) will be notified of what actions need to be taken to improve performance and given an appropriate time frame for improvement. The Management Group discussed the IODE project reports. Mr Reed informed the Committee that, due to the limited time available, it would not be possible for project managers to provide oral presentations during the IODE-XXVI plenary.

Mr Reed informed the Committee that all IODE-XXV Action Sheet items had been completed during the inter-sessional period. He noted that the IODE Management Group, during its January 2021 had reviewed the Action Sheet and specific recommendations had been made to complete the actions. Those were subsequently addressed.

The Committee noted with satisfaction the completion of the IODE-XXV action sheet.

24 IODE-XXV Decisions:

- ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP ON THE REVIEW OF NODC HEALTH STATUS WITHIN THE IODE NETWORK: At the time of the January 2020 Management Group meeting no progress was reported. In preparation for the January 2021 Management Group meeting reminders were sent to the membership of the group: Canada (Mr. M. Ouellet), India (Mr Patthabi Rama Rao), IODE Co-Chairs, SeaDataNet (Ms Michèle Fichaut). This group had not appointed a Chair and did not meet. The 2021 Management Group requested the two IODE Co-Chairs to take the lead and contact experts (including OBIS (Anton Van De Putte), Herman Garcia, Ward Appeltsans, Greg Reed) to collaborate on this subject in order to report to IODE-XXVI. It had been decided to assign discussions on this item to a pre-committee working group (Review of NODC health status within the IODE network
(agenda item 3.2.2)). For further information on this item, we refer to agenda item 3.2.2.

- **IODE MANAGEMENT STRUCTURE**: COMPLETED
- **ESTABLISHMENT OF THE INTER-SESSIONAL WORKING GROUP TO DEVELOP THE IMPLEMENTATION PLAN AND COST-BENEFIT ANALYSIS FOR THE IOC OCEAN DATA AND INFORMATION SYSTEM**: PARTIALLY COMPLETED

This inter-sessional working group completed its work through Document IOC-XXX/2 Annex 6 (IOC Ocean Data and Information System (ODIS): Concept, Implementation Plan and Cost Benefit Analysis). The IOC Assembly commented as follows:

“The Assembly expressed its strong support for the proposed development of the IOC Ocean Data and Information System (ODIS) and welcomed the prototype ODIS Catalogue of Sources (ODISCat).

The Assembly stressed the need to develop ODIS with involvement from the widest possible range of stakeholders, ensuring active participation from IOC Member States but also from other UN agencies, NGOs, national and regional programmes and projects, as well as the private sector. The Assembly noted that the IOC ODIS would form a solid and scalable basis for a UN Decade data system.

The Executive Secretary, while thanking Member States for the wide support of the proposed development of ODIS, called on Member States to assist IOC through providing staff, financial and in-kind support to enable the development of ODIS.

The representative of the WMO welcomed the development of ODIS and expressed his Organization’s desire to actively collaborate and participate.”

However, the IOC Assembly at its 30th Session, through Decision IOC-XXX/7.2.2 (Ocean Data and Information System (ODIS)):

> “Endorses the ODIS Concept, Implementation Plan and Cost Benefit Analysis;

> Invites the IODE Committee to prepare a fully detailed and costed project proposal for the IOC Ocean Data and Information System (ODIS) for submission to the IOC Executive Council at its 53rd session in 2020.”

The 2021 Management Group was requested to consider the necessary actions to provide the “fully detailed and costed project proposal for the IOC Ocean Data and Information System (ODIS)”.

In order to discuss further actions and to contribute to the drafting of a “fully detailed and costed project proposal for the IOC Ocean Data and Information System (ODIS)” a pre-committee working group (Further development of ODIS (agenda item 6.1) was established. This agenda item is further discussed under agenda item 6.1.

- **ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP TO REVISE THE IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT**: At the time of the January 2021 Management Group meeting no progress was reported. Dr Hernan Garcia, Ms Pauline Simpson and the IODE Co-Chairs (as initial members of the working group) were invited to report on the proposed way forward. This subject was further discussed under agenda item 6.3.
Draft Decisions for IOC Assembly (IOC-XXX)

• REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY (Assembly agenda item 7.2.1): COMPLETED
  - The Policy has been updated online on http://www.iode.org/policy. Reference is made also to agenda item 6.4

• ESTABLISHMENT OF THE IOC OCEAN BEST PRACTICES SYSTEM PROJECT (OBPS) (Assembly agenda item 7.2.1): COMPLETED
  - The IOC Assembly, at its 30th Session, established the Ocean Best Practices System Project (OBPS) as element III of Decision IOC-XXX/7.2.1 (International Oceanographic Data and Information Exchange). The project started implementation immediately after the Assembly.

IODE-XXV Recommendations:

• JCOMM/IODE GLOBAL DATA ASSEMBLY CENTRES (GDACs): at the time of the January 2020 Management Group meeting Dr Sergey Belov, IODE Co-Chair was invited to report on the proposed way forward with this Recommendation. WMO has had subsidiary body reform. WMO INFCOM created a Study Group on Ocean Observations and Infrastructure Systems (SG-OOIS). The SG-OOIS will propose and help establish efficient functional connections between the GOOS and the Global Climate Observing System (GCOS), the Global Cryosphere Watch (GCW), the Global Atmosphere Watch (GAW), the WMO Integrated Global Observing System (WIGOS), the WMO Information System (WIS), the IOC International Oceanographic Data and Information Exchange (IODE) and the Global Data Processing and Forecasting System (GDPFS). IODE has a membership in SG-OOIS and will discuss the future of the MCDS and IOC GDACs. As for now, MCDS has no communication structure, it’s unclear who is now responsible for the accreditation of new centres, for monitoring / reviewing the activities of existing centres for approving changes in structures / technical issues (i.e., data formats) that are part of WMO / IOC regulations. This discussion will have to take place through the JCB.

The Committee, noting the restructuring of WMO, recommended that further discussions on this topic would be needed with the Joint WMO-IOC Collaborative Board (JCB) and requested Dr Sergey Belov, IODE Co-Chair, to start those discussions.

• REVISION OF THE TERMS OF REFERENCES OF THE JCOMM/IODE EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ETDMP): As JCOMM has ceased to exist, also the Joint JCOMM/IODE ETDMP ceased to exist. It was noted that the ETDMP had taken on a responsibility to provide an Expert Panel for Endorsement and Convergence of Data Management best practices and inquired about who would take this on. In addition, the WMO has an Expert Team on Information Management (ET-IM) looking at the activities on data & information management, including MCDS.

The Committee, noting the abolishment of JCOMM, decided to abolish the ETDMP and invited IOC to discuss with WMO through the Joint WMO-IOC Collaborative Board (JCB) the form of future collaborations on data and formation management and ocean best practices aspects via the joint projects, ETs, other forms. (action by Dr Sergey Belov, IODE Co-Chair).
• **ESTABLISHMENT OF THE IOC OCEAN DATA AND INFORMATION SYSTEM CATALOGUE OF SOURCES PROJECT (ODISCat):** While the ODIScat project has been established and a prototype of the system is available on [https://catalogue.odis.org](https://catalogue.odis.org) the Steering Group has not been formally composed and has not had any meetings.

**UPDATED STATUS:** Mr Lambert reported that the steering group is expected to be established in May 2021. He invited candidates to join the group.

The Committee invited **IODE experts to join the IODE Steering Group for the ODISCat project by contacting the IODE Secretariat.**

• **ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP TO PROPOSE A STRATEGY ON OCEAN DATA AND INFORMATION STEWARDSHIP FOR THE UN OCEAN DECADE (IWG-SODIS):** This is discussed under agenda item 6.2.

### 3.2 STATUS OF THE IODE NETWORK

#### 3.2.1 Reporting summary of NODCs, ADUs and AIUs

This agenda item was introduced by Mr Peter Pissierssens, referring to Document IOC/IODE-XXVI/3.2.1.a (Reporting Summary of IODE NODCs and ADUs ), also available through the web site [https://surveys.iode.org/2019-2020-nodc-and-adu/](https://surveys.iode.org/2019-2020-nodc-and-adu/). He noted that due to the small number of AIUs (5) of which only 4 responded no report had been prepared at this time.

He recalled that nine NODCs were now accredited by IODE, namely, Belgium-(BMDC), China (NMDIS), France (SISMER), Islamic Republic of Iran (INCOD), United Kingdom (BODC), Republic of Korea (KODC), Japan (JODC), Ireland (Marine Institute), Belgium (VMDC) and one ADU has been accredited, Malaysia (INOS).

It was noted with regret that no additional NODCs, ADUs or AIUs had applied for accreditation in 2019-2020.

Mr Pissierssens informed the Committee that it had been decided by the IODE Officers to use an online survey to obtain reports from NODCs, ADUs and marine librarians, as had been done for 2007-2008, 2009-2010, 2011-2012, 2015-2016 and 2017-2018. The surveys for 2019-2020 were opened on 29 January 2021 and closed on 26 February 2021.

A total of 70 responses were received from NODCs and ADUs, and 4 from AIUs. He recalled that for the previous reporting 2015-2016 we had received 66 responses and for 2017-2018 we received 67 responses from NODCs and ADUs. He noted that responses were received also from (i) Estonia (Tallinn University of Technology) (IODE national coordinator for data management); (ii) Finland (Finnish Meteorological Institute): hosted DNA until 2008 and IODE national coordinator for data management; (iii) Portugal (Instituto Hidrografico): former NODC + IODE national coordinator for data management. ADU; (iv)Trinidad and Tobago (Institute of Marine Affairs): IODE national coordinator for data management. He noted that these institutions had not yet been officially designated as NODC or registered as ADUs.

The Committee invited (i) Estonia (Tallinn University of Technology); (ii) Finland (Finnish Meteorological Institute); (iii) Portugal (Instituto Hidrografico); and (iv)Trinidad and Tobago (Institute of Marine Affairs) to join the IODE network as NODC or ADU.
In terms of the number of questions we evolved from 44 questions in 2015-2016, 48 questions in 2017-2018 and 48 questions in 2019-2020.

Whereas the reporting on the survey in previous years included only summary tables, the Secretariat had decided to provide detailed reporting by data centres for the 2019-2020 survey. In addition, it was decided to make the report available not only as a document, but also through a dedicated web site on https://surveys.iode.org/2019-2020-nodc-and-adu/. He noted that the results of the survey provide detailed information on:

(i) National arrangements structures for data management (centralized vs distributed)
(ii) Availability of data national data management strategy
(iii) Application of the IODE Oceanographic Data Exchange Policy and availability of institutional data policy
(iv) Availability of documented Quality Management System (QMS) and/or ISO 9001 certification
(v) Intention to implement IODE QMF accreditation in 2021-2022
(vi) Staff numbers within the data centre and their changes since 2017-2018
(vii) Annual budget of the data centre and its changes since 2017-2018
(viii) Global IODE activities in which data centres participated in 2019-2020
(ix) Most important data activities/projects in which data centres participate
(x) Data types managed for (i) measurements from vessels; (ii) fixed stations/platforms; (iii) moving platforms; (iv) other and delayed mode or real-time
(xi) Involvement in major international science programmes
(xii) Management of GOOS essential ocean variables (EOV)
(xiii) Availability of discovery meta database at the data centre (and online availability)
(xiv) Description of quality control procedures used at the data centre
(xv) Data services and Data products provided by the data centre, their methods of delivery, usage statistics, types of users, geographic origin of users
(xvi) Provision of data to international data networks (including WDS)
(xvii) Participation in IODE training courses and their benefits
(xviii) In-kind contribution (staff time) provided to IODE
(xix) Possibility of providing visiting expert/secondment to the IOC project office for IODE
(xx) Involvement of the data centres in activities related to the Sustainable Development Goals
(xxi) Planned activities contributing to the UN decade of ocean science for sustainable development

The Committee welcomed the availability of the detailed information provided by the 2019-2020 survey and considered that these would be most useful as an information source for various IODE activities.

3.2.2 Review of NODC health status within the IODE network

This agenda item was introduced by Dr Sergey Belov. He recalled that the IODE Committee through the Decision IODE-XXV.3.2.4 established an Inter-sessional working group (further, IWG) on the review of NODC health status within the IODE network. According to the Annex A of the Decision IODE-XXV.3.2.4 the objectives of the WG were:

(i) propose metrics and processes for determining the health status of NODCs in the IODE network
(ii) propose a process to assist NODCs in improving their health status
(iii) recommend updates to the IOC Manuals and Guides No. 5 as appropriate
(iv) submit an intermediate report to the 2020 meeting of the IODE Management Group
(v) implement a provisional health status check of all NODCs
(vi) submit its final report including the provisional health check report to IODE-XXVI.

38 During the January 2020 meeting of the IODE Management Group it was recommended that IWG will propose the changes to IOC M&G 5 taking into account the following circumstances:

(i) disbandment of JCOMM
(ii) NODC and ADU relations
(iii) WDC system superseded by WDS
(iv) ODISCat and other data & information related IODE activities and projects

39 It was also proposed the following sample categories for the NODC metrics:

(i) amount of data received/processed/archived
(ii) data available online
(iii) metadata availability
(iv) QA/QC implemented
(v) long term preservation
(vi) interlinkages established with ADUs (if any)
(vii) IODE QMF
(viii) contribution of data to OBIS/ODP
(ix) contribution of information to ODISCat
(x) publications to OBPS
(xi) capacity development plans and activities
(xii) funding
(xiii) participation in the international projects
(xiv) sustainable operations strategy (if any)

40 As no action had taken place on this issue since IODE-XXV, the IODE management group, at its January 2021 had decided to establish a pre-committee working group (group 1) on this subject. The membership of the group can be found on http://www.iode.org/iode26. The group met on 18 February 2021. It discussed necessary changes to IOC Manuals and Guides No. 5 and 67 and also recommended the drafting of IODE data centre health check procedures. Taking into account information and the checklist used by the OBIS Steering Group to check the health of OBIS nodes, the pre-committee working group suggested that it is valuable to be able to check the status independently and consider the full range of data management tasks of an NODC (see IOC M&G 5, page 5). Dr Lesley Rickards offered to prepare a short document with a preliminary checklist for the health status of NODCs for use by the inter-sectional working group. Some of the items require input from the NODC, but other items can be checked by IODE. Further work is needed to determine the NODC health check process, how frequently it should be carried out, precisely which checks need to be met for an NODC to be considered active and how inactive NODCs can be assisted to become active.

41 The Committee, noting with regret the lack of progress, decided to extend the Inter-sectional working group on the review of NODC health status within the IODE network and instructed it to provide:

(i) a revision of IOC Manuals and Guides No. 5 (Guide for Establishing a National Oceanographic Data Centre);
a revision of IOC Manuals and Guides No. 67 (IODE Quality Management Framework for National Oceanographic Data Centres and Associate Data Units (Revised edition)); and

finalise IODE data centre health check procedures, for submission to the IODE Management Group for its January 2022 meeting.

The Committee instructed the Secretariat to publish and circulate the documents subsequent to their approval by the IODE Management Group.

Dr Lesley Rickards (UK) informed the Committee that the brief document referred to above is now available to the Intersessional Working Group.

Initial membership of the group includes:
- United Kingdom of Great Britain and Northern Ireland - NODC-Ms Lesley Rickards
- Mozambique- Ms Clousa Maueua
- France - NODC – Ms Michèle Fichaut
- Germany - NODC – Ms Susanne Tamm

The Secretariat will start up the process for the group to meet as soon as possible.

Dr Belov invited Member States to join the inter-sessional working group by contacting the IODE Secretariat.

3.2.3 Possible actions to expand the network

This agenda was introduced by Dr Sergey Belov. He noted that the IODE network currently includes 67 NODCs and 31 ADUs (in 64 Member States) and 5 AIUs. Therefore, compared to the IOC’s 150 Member States only 43% of Member States have established a data management facility (NODC or ADU). Taking into account the importance of data as a foundation for the UN Ocean Decade of Ocean Science for Sustainable Development as well as the proposed Ocean Data and Information System (ODIS) he stressed the need to increase the engagement of IOC Member States in the IODE programme. He recalled that a full list of IOC Member States and data centres is available from http://www.iode.org/datacentres.

The Committee instructed the Secretariat to contact the IOC focal points of IOC Member States that have not established NODC or ADU and invite them to consider establishing such as facility, and to offer to meet with the contact to discuss in more detail. Expanding the network requires an understanding the challenges interested member states are facing in terms of resourcing, national buy-in, etc. If the representative is interested but not in a position to participate through full NODCs/ADUs, IODE should work with the member state in an outreach capacity, working with the member state to seek opportunities to participate in a sustainable way, possibly through partnership with other regions, etc. It is strongly recommended that the NODC and ADU Community Surveys be used as a supporting resource in this work.

Mr Taco De Bruin referred to Estonia (Tallinn University of Technology); (ii) Finland (Finnish Meteorological Institute); (iii) Portugal (Instituto Hidrografico); and (iv) Trinidad and Tobago (Institute of Marine Affairs) to join the IODE network as NODC or ADU who had filled the survey and may be interested in joining the IODE network.

It was noted that the OceanTeacher Global Academy (OTGA) now has training centres in most regions and can assist with necessary training. A full list of the regional training centres can be found at https://classroom.oceanteacher.org/.
3.3 PROGRESS REPORTS OF GLOBAL IODE PROJECTS

This agenda item was introduced by Mr Taco De Bruin, Co-Chair. He referred to Document IOC/IODE-XXVI/3.3 (IODE Project Reporting Review). He informed the Committee that, due to the very limited time available it would not be possible to provide oral presentations on the progress reports of all projects. Instead, reporting provided for the IODE Management Group for activities carried out in 2019 and 2020 (for the IODE MG meetings in January 2020 and January 2021) has been included in the action paper.

Reporting is included in the above-mentioned document on the following projects:

1. Ocean Biodiversity Information System (OBIS)
2. Global Oceanographic Data Archaeology and Rescue Project (GODAR)
3. World Ocean Database (WOD)
4. Global Temperature and Salinity Profile Programme (GTSPPP)
5. Global Ocean Surface Underway Data Project (GOSUD)
6. International Coastal Atlas Network project (ICAN)
7. International Quality Controlled Database project (IQuOD)
8. ODIS Catalogue of Sources (ODISCat)
9. IOC Ocean Data Portal (ODP)
10. Partnership Centre for the IODE Ocean Data Portal
11. IOC Ocean Best Practices System (OBPS)
12. IODE OceanDocs (AquaDocs)
13. IODE OceanExpert
14. IODE Quality Management Framework project (QMF)

He further informed the Committee that the IOC Ocean Best Practices System (OBPS) project (a joint GOOS-IODE project) had developed its Strategic Plan as well as Implementation Plan for 2021-2023. These are available from the IODE-XXVI list of documents.

The Committee noted with appreciation the progress made by the 14 global projects.

3.4 IODE QUALITY MANAGEMENT FRAMEWORK IMPLEMENTATION

3.4.1 Data Centre/ Information Centre accreditation: status and way forward

This agenda item was introduced by Mr Greg Reed and Dr Sergey Belov. Mr Reed informed the Committee that no additional NODCs had applied for accreditation during the inter-sessional period. One Accredited NODC (NMDIS, China) was re-accredited by the SG-QMF having met the compliance requirements.

The Committee called on the IODE NODCs, ADUs and AIUs to apply for accreditation.

The Committee called on the Secretariat to contact NODCs, ADUs and AIUs through a simple survey to determine the root causes for lack of submissions for accreditation.

The Committee called on the NODCs, ADUs and AIUs to respond to the survey from the Secretariat and to also consider applying for accreditation.

The Committee requested the Secretariat to contact each of the 21 NODCs/ADUs who state in the NODC survey that they will implement the IODE
QMF accreditation process during the next inter-sessional period and ask how they are progressing and do they require any assistance. It would be good to use the information from NODCs/ADUs that we already have. This could be extended to asking those who attended the training course last October. It was proposed that the QMF Steering Group undertakes this follow-up task.

The Committee invited NODCs/ADUs that require training in QMF to contact Ms Claudia Delgado (OceanTeacher Global Academy) to plan such courses as soon as possible.

3.4.2 IODE Project and activity performance evaluation: status and way forward

This agenda item was introduced by Mr Greg Reed. He explained that the 2021 meeting of the IODE Management Group recommended the establishment of a pre-committee working group (group 2) on the IODE Project and activity performance evaluation: status and way forward. The membership of the group can be found on http://www.iode.org/iode26. The working group met online on 25 February 2021.

At the 25th Session of the IODE Committee, it was decided to evaluate new and existing projects and activities, and report on the outcome of the evaluation to the IODE Management Group and the IODE Committee. The detailed process has been published in IOC Manuals and Guides No. 81 rev. (2018) (Procedures for Proposing and Evaluating IODE Projects and Activities (Revised Edition)). The pre-committee working group agreed that it is very important to continue assessing the status of projects and activities on a regular basis but felt that there is a mismatch between the report template and the evaluation questions and that it is currently not possible to make a meaningful assessment. Therefore, the working group made a number of suggestions for improvement in the annexes of IOC Manuals and Guides No. 81 with respect to the reporting template, and evaluation process. More particularly the pre-committee working group suggested that project reports should include a work plan with clearly measurable performance indicators linked to activities which should be marked as either completed, pending, postponed or cancelled. This would replace the current questions 6, 8 and 9 of annex 2 (annual report), which refers to deliverables, results, and milestones, and which often led to confusion and duplication. Obviously, the elements of the work plan in the activity report should correspond to those proposed in the previously submitted and adopted work plan. With regards to the evaluation scores, the group advised against using a percentage score, but instead preferred a qualitative rather than a quantitative assessment.

The group did not discuss if the outcome of the evaluation should have consequences for funding of projects and activities, or for the selection of core activities to receive funding if financial resources are not sufficient.

The IODE Committee welcomed the proposed revision of IOC Manual and Guides No. 81, rev2, available from http://www.iode.org/mg81 and requested all project leaders/managers to use the new reporting form, included in the revised MG81 as Annex 2.

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

This agenda item was introduced by Dr Sergey Belov. He noted that this agenda was included for information only as there would be insufficient time to report on all cooperation activities. He mentioned the following:
IOC Global Programmes: Ocean Science (HAB, Ocean Acidification portal, GOOS (OBPS, OCG))
OTGA regularly hosts training courses for HAB and is currently working towards a course on Ocean Acidification together with the relevant colleagues from OSS.

IOC Regional Programmes: IOCARIBE (Ocean InfoHub, CMA2, OceanTeacher Global Academy); IOCAF RICA (Ocean InfoHub, OceanTeacher Global Academy); IOC/WESTPAC (ODINWESTPAC); P-SIDS (PacMan, Ocean InfoHub); IOCINDIO (IIOE2)
OTGA, through its training centres, hosts up to 20 courses/year in the Regions.

European Commission projects: JERICO S3, EMODnet, SeaDataCloud, ECOPOTENTIAL, EuroSea, AtlantECO
The OTGA hosted the 2nd SeaDataCloud Training Course in Oostende, Belgium, between 19 - 26 June 2019.
The OTGA hosted the (online) training course Contributing datasets to EMODnet Biology for EMODnet Biology in close collaboration with VLIZ between 8-19 June 2020.

Other: ICSU World Data System (WDS), Aquatic Sciences and Fisheries Abstracts (ASFA); IAMSLIC
The OTGA contributed to the syllabus of the NF - POGO/AWI Centre of Excellence with de Ocean Data Management Module (14 - 25 Oct 2019). Furthermore, OTGA is now hosting the full 10-month modules for the cohort 2020/21.
OTGA is also actively collaborating with EUMETSAT and Mercator International in a joint course for trainers ([ONLINE] EUMETSAT/CMEMS/OTGA Train the Trainers: tools & techniques for teaching about Sentinel-3 marine data). A new edition will take place in September 2021.

Private Sector: C4IR/Ocean Data Foundation

66 The Committee welcomed the continued and expanding cooperation of IODE with other IOC programmes and other partners and invited these programmes and partners to invite IODE and its projects as partners in their activities.

3.5.1 The Harmful Algal Information System (HAIS) and the Global HAB Status Report (GHSR)


68 IPHAB noted with satisfaction the completion of the first Global HAB Status Report (GHSR) and its relevance for current and developing global assessments, such as the United Nations World Ocean Assessment, the UNEP Global Environmental Outlook, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) global assessment on biodiversity and ecosystem services, the International Panel on Climate Change (IPCC) reporting, as well as for the United Nations Decade of Ocean Science for Sustainable Development (2021–2030).
69 IPHAB also noted with satisfaction the establishment of the ‘Harmful Algal Information System’ (HAIS, http://hais.ioc-unesco.org) as an element of the GHSR and as a data portal integrating the data in IOC/IODE’s Ocean Biodiversity Information System (OBIS) and Harmful Algal Event Database (HAEDAT), and expressed its appreciation for the support provided by the IODE programme in general, and by the technical OBIS staff in particular, for the development, hosting and technical maintenance of the HAIS and HAEDAT data systems.

70 IPHAB further noted that OBIS continues to provide the world’s largest open access database on the diversity, distribution and abundance of marine species, including harmful algae, and that OBIS will contribute to HAIS through OBIS/HABMAP, and that it provides a main component of future editions of the GHSR.

71 IPHAB decided to continue the series of Task Teams on HAIS and GHSR as an editorial advisory group for HAIS/GHSR and invites the IODE Programme and OBIS technical staff to continue its active role in HAIS incl. HAEDAT through its Ocean Biodiversity Information System (OBIS). The Task Team will work by correspondence and/or meet upon request by the IOC Secretariat, and provide a progress report for the intersessional period to the Chairs of IPHAB and IODE prior to IPHAB-XVI and IODE-XXVI and XXVII.

72 IODE is invited to respond to the invitation by IPHAB to be represented on a joint Task Team to function as the editorial advisory group for HAIS/GHSR.

73 The Committee welcomed the continued and expanding cooperation of IODE with the HAB programme and urged IODE experts to actively participate in the work of the Task Teams on HAIS and GHSR.

74 The Committee expressed concern about the limited human and financial resources available to IODE and its OBIS which will limit the support IODE can provide.

75 The Co-Chair of the SG-OBPS, Mr Jay Pearlman, recommended that the IPHAB should address best practices and invited them to collaborate with the OBPS project.

3.5.2 Cooperation with IOC Ocean Science Section in SDG 14.3.1 data portal

76 The SDG 14.3.1 Data Portal (https://oa.iode.org/), hosted and technically maintained at IODE, is a tool for the submission, collection, validation, storage and sharing of ocean acidification data and metadata submitted towards the Sustainable Development Goal 14.3.1 Indicator: Average marine acidity (pH) measured at agreed suite of representative sampling stations. In 2015, the United Nations adopted the 2030 Agenda and a set of Sustainable Development Goals (SDG), including a goal dedicated to the ocean, SDG 14, which calls to "conserve and sustainably use the oceans, seas and marine resources for sustainable development". The IOC of UNESCO was identified as the custodian agency for the SDG Target 14.3: "Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels", and the associated SDG Indicator 14.3.1 ("Average marine acidity (pH) measured at agreed suite of representative sampling stations").

77 Thanks to the cooperation and support received by the Commission in the past years from IODE, international ocean acidification experts (including data managers) and the Global Ocean Acidification Observing Network (GOA-ON) the indicator methodology was developed, is now freely available and regular reporting by IOC MS was established (IOC/INF-1385). Besides guidance on how to conduct ocean acidification observation, what to measure and how, the
methodology provides best practice and methods approved by the scientific ocean acidification community. It offers support on how to and what kind of data sets to submit to IOC, to ensure the production of quality controlled global and possibly regional products. IOC, experts of GOA-ON and representatives of relevant ocean acidification data portals (e.g. EMODNET, NCEI) and products (e.g. GLODAP, SOCAT), continue to revise the methodology and all of its parts, including the SDG 14.3.1 Data portal.

As mentioned, a number of national and international projects and databases also collect and host data relevant for the SDG 14.3.1 reporting. To avoid duplication of efforts, and to increase the amount of data sets collected towards the SDG Indicator, it is envisaged to develop a federated system to automatically harvest data from these other relevant databases on a regular basis. With the development of the federated system the 14.3.1 portal would become one of the platforms to be harvested on a regular basis and could act as a mirror to support visualization/exchange and ensure long term availability of the data. Currently, such a federated system collating information required to report towards the SDG 14.3.1 indicator, including all relevant existing data, does not exist. Currently the portal fulfils basic functions related to the collection of data towards the SDG 14.3.1 Indicator. Users can: (i) upload data and metadata files in excel format directly to the portal; (ii) fill in the metadata information online; (iii) include several data sets per metadata file (e.g. for repeated measurements); (iv) check data automatically to ensure the files were uploaded/prepared correctly; (v) verify the localization data on a map; (vi) search for data sets submitted and download; (vii) see available data sets on the map; and (viii) find more information on a dedicated FAQ webpage.

In order to increase the number of SDG 14.3.1 data submissions and to reduce duplication of work and data sets submitted to different data bases a few steps facilitating data collection need to be taken: (i) allow upload of data sets to the in other formats than excel; (ii) identification of relevant data bases and agree on similar metadata templates; (iii) establishment of a federated system to harvest 14.3.1 relevant data on a regular basis (adoption of ERDDAP technology), (iv) improve the visualization available on the 14.3.1 SDG indicator portal.

The Committee welcomed the continued and expanding cooperation of IODE with the ocean acidification activities of the IOC Ocean Sciences Section programme and urged IODE experts and IODE data centres to actively participate in the programme.

Ms Paula Sierra (Colombia) reported that recently OTGA-Invemar, as a part of the Remarco Network is working with IAEA for new Ocean Acidification Courses and she suggested that this may be an opportunity to link IODE and IAEA for this topic.

4 IODE CAPACITY DEVELOPMENT

4.1 CONTRIBUTIONS OF IODE TOWARDS THE IMPLEMENTATION OF THE IOC CAPACITY DEVELOPMENT STRATEGY
4.1.1 IODE OceanTeacher Global Academy project: Phase 2

This agenda item was introduced by Dr Claudia Delgado (OTGA Project Manager and IODE training coordinator). She explained that between April 2019 and April 2020 OTGA Phase 1 delivered 21 courses with 665 participants. The ISO Certification of the IOC Project Office for IODE, Oostende, Belgium as a learning services provider was renewed in April 2019 and April 2020, following the successful annual audits. The OTGA Phase 1 Project officially closed 31st December 2020.

The OTGA-2 project implementation started in March 2020, in the midst of the COVID-19 pandemic, while most countries were under a strict lockdown. Nevertheless, the OTGA Project implementation proceeded, with some delay given the necessary adaptations.

Despite the limitations brought about by the COVID-19 pandemic, the main activities performed in this reporting period included:

(i) Call for proposals to host a OceanTeacher Global Academy Regional or Specialized Training Centre (IOC Circular Letter 2795, initial deadline on 3rd April and then extended to 1st June 2020 given the pandemic)
(ii) Review of proposals to host a OceanTeacher Global Academy Regional or Specialized Training Centre by relevant IOC Programmes, Regions and experts
(iii) Selection process results announced in September 2020
(iv) First meeting of the SG-OTGA held online between 5 – 7 October 2020
(v) 8 online courses organized
(vi) Redesigned and upgraded the OceanTeacher e-Learning Platform
(vii) Cleaning of duplicates in the OceanTeacher database

A total of 16 Regional or Specialized Training Centres were selected, as follows:

1. Department of Marine and Fisheries Sciences (DMFS), University of Ghana
2. Institute of Oceanography and Environment (INOS) - Universiti Malaysia Terengganu, Malaysia
3. Indonesia Agency for Meteorology, Climatology and Geophysics (BMKG), Indonesia
4. Centre for Marine Research and Technology (UEM), Mozambique
5. UNESCO/IoC Project Office for IODE, Belgium
6. Marine and Coastal Research Institute in Colombia (INVEMAR), Colombia
7. International Training Centre for Operational Oceanography (ITCOOcean), India
8. University of Uruguay (UdelaR)/University of Santa Catarina (UFSC), Uruguay/Brazil
9. Escuela Superior Politécnica del Litoral (ESPOL), Ecuador
10. Universidade de Aveiro, Portugal
11. Kenya Marine and Fisheries Research Institute (KMFRI), Kenya
12. National Marine Data and Information Service (NMDIS)/National Center of Ocean Standards and Metrology (NCOSM), China
13. Escuela de Ciencias del Mar, Argentina
14. International Tsunami Information Center (ITIC), USA
15. University of Bergen, Norway
16. Pacific Community (SPC), Fiji

The first OTGA Phase 2 Steering Group meeting was held 5-7 October 2020 as an online event. The Steering Group confirmed the project Work Package leaders, which are WP1 (Project Coordination) RTC-Belgium; WP2 (Project
Technical Support) RTC-Colombia; WP3 (Training course content creation) STC-ITIC; WP4 (Training course activities) RTC-India; WP5 (Outreach, communication and project evaluation) STC-Argentina. The Steering Group approved a provisional workplan for 2021 with sixty courses proposed. The final work plan for the first half of 2021 will be confirmed after consultation with IOC programmes and regional bodies to establish their priorities. The SG-OTGA elected Mr Udaya Bhaskar (RTC-India) as the Chair of the Steering Group.

Between April 2020 and January 2021, a total of nine courses were organized (online) involving 230 participants from 44 countries.

Additionally, the OceanTeacher e-Learning Platform was fully redesigned and now runs on Moodle version 3.9. Several additional plugins were installed in order to make it more user-friendly and improve the learning experience. The user database was cleaned from duplicate accounts and has currently over 7500 global users.

The Committee thanked the Government of Flanders (Kingdom of Belgium) for its continued support of IODE and its OceanTeacher Global Academy.

The Committee further thanked the institutions that have agreed to host an IODE OTGA Regional or Specialized training centre.

4.1.2 Future of the ODINs

This agenda item was introduced by Mr Mika Odido. They recalled that IODE has over the years established regional Ocean Data and Information Networks to support the strengthening of capacities for ocean data and information management and encourage the development of data and information products as well as collaboration within the regions. The networks established included:

(i) ODINAfrica: Ocean Data and Information Network for Africa
(ii) ODINBlackSea: Ocean Data and Information Network for the Black Sea
(iii) ODINCARSA: Ocean Data and Information Network for the Caribbean and South America
(iv) ODINECET: Ocean Data and Information Network for European Countries in Economic Transition
(v) ODINWestPac: Ocean Data and Information Network for the Western Pacific
(vi) ODIN-PI: Ocean Data and Information Network for the Pacific Islands

They noted the limited and declining financial resources available from UNESCO RP to fund each ODIN. The question, therefore, becomes whether a few thousands of USD can make a difference. On the other hand, IODE has been successful in mobilizing extra budgetary funds that benefit various regions (LAC, Africa, P-SIDS through OIH, P-SIDS through PACMan and all developing country member states through OTGA2). Additional funds had been received recently that could benefit Africa.

The 2021 IODE Management Group meeting (12-14 January 2021) had expressed concern about the level of performance of the ODINs and recommended that the future of the ODINs should be discussed in-depth at IODE-XXVI. The Management Group had further requested the Co-Chairs to discuss this matter with the IOC regional secretariats and Co-Chairs of the IOC regional subsidiary bodies, and to report back to the Management Group as soon as possible, with the view of strengthening links between IODE as a global programme and the needs and requirements as well as equitable participation of the regional programmes in the area of ocean data and information management.
The Management Group had also recommended the establishment of a pre-committee working group (group 8) to deliberate and recommend ways of strengthening links between IODE as a global programme and the needs and requirements as well as equitable participation of the regional programmes in the area of ocean data and information management.

The membership of the group can be found on [http://www.iode.org/iode26](http://www.iode.org/iode26). The working group met on 22 February. It discussed the need of continuing IODE Ocean Data and Information Networks (ODIN) as an IODE activity.

The Committee adopted Decision IODE-XXVI.4.1.2

5 COMMUNICATION AND OUTREACH

This agenda item was introduced by Mr Taco De Bruin. He noted that, under agenda Item 6.5 (Performance review of the IOC Project Office for IODE) the reviewers had made the following recommendation:

“The strong brand of the IODE Project Office should be more prominently displayed on the various portals operated by the IODE Project Office. Each of these portals should have a clear and distinctive purpose which is well described. The IODE brand could also be strengthened by clarifying IODE’s relationships with the Global Ocean Observing System (GOOS) and the World Meteorological Organisation (WMO) (amongst others) on the IODE website, and perhaps through a full website refresh. This should also help to focus which projects are most clearly in IODE’s domain, and which are most clearly in the domain of, for example, GOOS or WMO. Similarly, the IODE Project Office is encouraged to promote its brand and its activity including through Ocean Info Hub and Ocean Teacher Global Academy activities more prominently in communications for the UN Decade of the Ocean for Sustainable Development. The reviewers note the strong capacity of the IODE project office to conduct cross-cutting activities such as capacity building, training, marine information and data management projects, and operating various web portals.”

He noted that the current IODE web site had not been substantially changed for a decade. While its main target audience was and would remain the IODE community of data and information centres, the review identified the need for clarifying the IODE relationship with other IOC programmes as well as with other organizations. He noted that the Decade, which started in 2021, would add a new user community interested in data which IODE would need to address.

The Committee recommended to allocate funds in the 2021 budget for the redesign of the IODE web site, taking into account the recommendations of the review.

The Committee instructed the IODE Secretariat and Co-Chairs to establish a small working group of volunteers to draft the new structure of the IODE web site, prior to contracting the redesign and other technical tasks.

Initial membership of the working group will include:
- Expert- Mr Pier Luigi Buttigieg
- Turkey-NODC-Mr Murat Elge
- ICAN-Ms Tanya Haddad
- IODESec – Ms Pauline Simpson
- OBIS COTT – Mr John Nicholls
• IOCAFRICA – Mr Mika Odido
• IODESec – Mr Arno Lambert
• IODESec – Ms Lucy Scott
• EMODnetSec – Mr Jan-Bart Calewaert
• INVEMAR-Colombia as an ADU name to be confirmed by Ms Paula Sierra-Correa

102 The Secretariat will start up the process for the group to meet as soon as possible.

6 THE FUTURE OF IODE

6.1 FURTHER DEVELOPMENT OF ODIS

6.1.1 Establishment of the IODE ODIS Project

103 This agenda item was introduced by Mr Tobias Spears. He referred to Document IOC/IODE-XXVI/6.1.1 (Proposal for the Establishment of the IOC Ocean Data and Information System (ODIS)).

104 Mr Spears recalled that at IODE-XXV the Committee established the “INTERSESSIONAL WORKING GROUP TO DEVELOP THE IMPLEMENTATION PLAN AND COST-BENEFIT ANALYSIS FOR THE IOC OCEAN DATA AND INFORMATION SYSTEM”. This group completed its work through Document IOC-XXX/2 Annex 6 (IOC Ocean Data and Information System (ODIS): Concept, Implementation Plan and Cost Benefit Analysis).

105 The IOC Assembly, at its 29th Session (June 2017) expressed its support for the proposed development of an Ocean Data and Information System (ODIS) concept paper and stressed that ODIS should focus on leveraging existing efforts. The concept paper states “The IOC Ocean Data and Information System (ODIS) will be an e-environment where users can discover coastal and ocean data, information and associated products or services provided by IOC Member States, projects and other partners of IOC. The system will aim to align itself with accepted community data management principles, such as the FAIR (Findable, Accessible, Interoperable and Reusable) principles (Wilkinson et al.1) and, where feasible, interoperate with existing data solutions”.

106 The IOC Assembly at its 30th Session, through Decision IOC-XXX/7.2.2 (Ocean Data and Information System (ODIS)):

   “Endorses the ODIS Concept, Implementation Plan and Cost Benefit Analysis;

   Invites the IODE Committee to prepare a fully detailed and costed project proposal for the IOC Ocean Data and Information System (ODIS) for submission to the IOC Executive Council at its 53rd session in 2020.”

107 As a first step towards the development of ODIS the Ocean InfoHub (OIH) project was proposed: a new initiative to streamline access to ocean science data and information for management and sustainable development.

“The OIH will establish and anchor a network of regional and thematic nodes that will improve online access to and synthesis of existing global, regional and national data, information and knowledge resources. The project will centre on an openly accessible web platform designed to support interlinkages and interoperability between distributed resources including existing clearinghouse mechanisms. OIH will develop a 2-way data and information stream: within each region the partners and users will contribute data and information to the “data/information ecosystem”, while they will in return get access to the full data and information collective of the global data and information ecosystem (facilitated by the ODIS architecture)”.

An outstanding action that has persisted since the inception of the original ODIS concept, was the development of a fully costed proposal to carry the concept through to demonstrated value for the IODE community. In essence, the discoverability of resources across the IODE community. Through the Ocean InfoHub project, we have a clearer picture of what demonstrated value means:

(i) Improved discoverability of resources published to the web which can be achieved using metadata that is recognized by web search engines/harvesters – ODISArch
(ii) Embracing a distributed architecture where resource providers are not asked to ‘feed another system’;
(iii) Implementing a lightweight established catalogue of resources with value added reporting, etc. by leveraging metadata published in alignment with ODISArch – essentially an Ocean InfoHub portal having a broader scope (across IODE member states) and populated through harvesting (pull) as opposed to resource owners registering resources manually (push)

The key point is that publishing metadata aligned with ODISArch makes 2) and 3) easier with no undue hardship on resource providers. IODE established the ODISCat catalogue of sources as a project and this resource is valuable for identifying resources, resource themes, metadata attribution requirements, and stakeholders. However, this has always been seen as an interim step for use in planning the full ODIS implementation.

To complete the implementation of ODIS, a full ODIS project was still required:

(i) Continue development on ODISArch in collaboration with the Ocean InfoHub team
(ii) Plan and support (technical, training, etc) the implementation of ODISArch by IODE member states
(iii) Implement lightweight catalogue built upon ODISArch

In addition, ODIS needed to be created as an IODE Project. For this a fully detailed and costed project proposal was required. In order to discuss this topic a Pre-Committee working group was established (group 3: Further development of ODIS). It was requested to:

(i) review the draft costed project proposal
(ii) prepare the draft recommendation for the establishment of the “ODIS project” as a “persistent” IODE project
(iii) discuss the proposal to establish the “IODE Partnership Centre for ODIS”
(iv) prepare the draft recommendation for the establishment of the “IODE Partnership Centre for ODIS”

The membership of the group can be found on http://www.iode.org/iode26. The working group met on 3 March 2021.
In preparation for the meeting of the working group Document IOC/IODE-XXVI/6.1.1 (Proposal for the Establishment of the IOC Ocean Data and Information System (ODIS)) was prepared (authors: Tobias Spears, Pier-Luigi Buttigieg, Lucy Scott, Peter Pissierssens). It provides the “fully detailed and costed project proposal for the IOC Ocean Data and Information System (ODIS)” as requested by IOC Assembly at its 30th Session, through Decision IOC-XXX/7.2.2 (Ocean Data and Information System (ODIS)). The Pre-Committee working group reviewed the document and made a few editing suggestions.

The representative of GEBCO offered closer collaboration with IOC/IODE for which ODIS will create opportunities. In this regard GEBCO welcomed the invitation to join ODIS as a partner.

The representative of the GOOS OCG expressed interest in joining the SG-ODIS and was added as a member of the group.

The Chair of the IWG-SODIS expressed interest in joining the SG-ODIS and was added as a member of the group.

The representative of the EMODNET Secretariat reiterated EMODNET’s strong commitment to collaborate in ODIS noting that EMODNET was already identified as partner through the Ocean InfoHub project.

The Committee expressed its appreciation to EMODNET for joining ODIS, noting that IODE appreciates the challenges of regional systems and the need to ensure ODIS works for all partners.

The Committee approved Document IOC/IODE-XXVI/6.1.1 and instructed the Secretariat to submit the document as a working document for the 31st Session of the IOC Assembly (June 2021).

The IODE Committee adopted Recommendation IODE-XXVI.6.1.1

Establishment of the IODE Partnership Centre for ODIS

This agenda item was introduced by Dr Sergey Belov. Dr Belov referred to Document IOC/IODE-MG-2021/2.2 (Concept Note – IODE Partnership Centre for ODIS). He recalled the history of the IODE Ocean Data Portal project that was adopted by IODE-XIX in 2007. In addition, IODE-XIX adopted terms of reference for the Partnership Centre for the IODE Ocean Data Portal which was established at RIMI-WDC of Roshydromet (Obninsk, Russian Federation) in 2013. In 2018 a review of the Centre was carried out and submitted to IODE-XXV in 2019. The 2019 review document noted that the ODP network had only a few operational nodes outside Europe. In addition, the reviewers recommended that IOC/IODE clarify the respective roles of ODP and ODIS and be clear on the roadmap of the two systems. They also advised that close contacts should be established with the ODIS task team to address the following items: “agree on following meta-data structure and on vocabularies”, this was to be done also in close cooperation with the international bodies working on this subject (e.g., SeaDataNet standards should be taken into account).

IODE-XXV recommended to renew the MoU of the Partnership Centre for IODE Ocean Data Portal and requested the IOC Secretariat to inform Roshydromet about this decision.

However, it has been noted that technology has evolved considerably since 2007. While central portals were considered as the best way to improve regional or global data access and management, today’s data sharing aims at interoperability technology making use of existing data systems, leveraging the web as the platform. A result of these technological and standards related
advances is that the current minimum investment is hosting resources in a web accessible location, along with discovery metadata conforming to some published standard, such as that to be developed as ODISArch.

A second result/impact is that central portals are no longer desired and even discouraged. It is for this reason as well as further considerations discussed below that the renewal of the MoU of the Partnership Centre for IODE Ocean Data Portal was postponed and its remit reconsidered.

The IOC Assembly, at its 29th Session (June 2017) expressed its support for the proposed development of an Ocean Data and Information System (ODIS) concept paper and stressed that ODIS should focus on leveraging existing efforts. The concept paper states “The IOC Ocean Data and Information System (ODIS) will be an e-environment where users can discover coastal and ocean data, information and associated products or services provided by IOC Member States, projects and other partners of IOC. The system will aim to align itself with accepted community data management principles, such as the FAIR (Findable, Accessible, Interoperable and Reusable) principles (Wilkinson et al2) and, where feasible, interoperate with existing data solutions”.

As a first step towards the development of ODIS, the Ocean InfoHub (OIH) project was proposed: a new initiative to streamline access to ocean science data and information for management and sustainable development. The OIH will establish and anchor a network of regional and thematic nodes that will improve online access to and synthesis of existing global, regional and national data, information and knowledge resources. The project will centre on an openly accessible web platform designed to support interlinkages and interoperability between distributed resources including existing clearinghouse mechanisms. OIH will develop a 2-way data and information stream: within each region the partners and users will contribute data and information to the “data/information ecosystem”, while they will in return get access to the full data and information collective of the global data and information ecosystem (facilitated by the ODIS architecture).

Within IODE it has been widely recognized that many of the 150 Member States currently do not have the required human and technical capacity to host online data and information services even when an NODC or ADU is present. As the stakeholder focus of OIH goes beyond the “traditional” IODE community it is fair to assume that the number of potential data and information sources that cannot host their own online services will be substantially higher than those we are aware of today. As such we risk missing out on a huge amount of “hidden” data and information available from potential stakeholders. It looks obvious that the efforts of Partnership Centre for IODE Ocean Data Portal should be concentrated now on OIH/ODIS rather than standalone tools only as it was before.

It is proposed that the IOC Partnership Centre for ODIS will assist this large group of stakeholders/providers as follows:

(i) Provide an ODIS software tool that enables ingestion, description (metadata), quality control and transmission (to the Partnership Centre) of data/information held by the stakeholder/provider

(ii) Provide training support as well as documentation for the use of the ODIS software tool

(iii) Provide secondary quality control of data/information received from stakeholders/providers through the ODIS software tool

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(iv) Archive and make available online of the data sets received from the stakeholders/providers
(v) Provide a secure archival/mirror of all stakeholders/providers who cannot ensure/assure the long-term and secure archival of their data/information
(vi) Make all data and information available globally through the ODIS interoperability network
(vii) Coordinate, with their respective secretariats/host, the submission of data held by the Partnership to the World Ocean Database (WOD) and Ocean Biodiversity Information System (OBIS)
(viii) Make all data and information available through a mirror site at the IOC Project Office for IODE, Oostende, Belgium
(ix) Report on activities to the IODE Management Group, including list of member state contacts, status of work (data hosting, data sharing, ODIS integration, data use, etc.)
In addition, the (First) International Ocean Data Conference is planned to take place November 2021 (Sopot, Poland).

In order to discuss this item in more detail the 2021 meeting of the IODE Management Group had recommended the establishment of a pre-committee working group (IODE contribution to the UN Decade of Ocean Science for Sustainable Development). The membership of the group is available from http://www.iode.org/iode26.

The Committee adopted Decision IODE-XXVI.6.2

6.2.1 Cooperation of IODE in Ocean Decade actions

This agenda item was introduced by Dr Sergey Belov. He informed the Committee about Decade action proposals related to ocean data and information management that were submitted to the First Call for Decade Actions No. 01/2020 as part of the UN Decade of Ocean Science for Sustainable Development:

He recalled that IODE had been active, through its Co-Chairs, IODE project leaders as well as individual experts, in the review and revision of the Decade implementation plan, especially the data and information chapter.

Reference was made to the following Decade Actions:

Ocean Best Practices: Humanity's connection to the ocean is based on how we act and react to its multifaceted wonder. Our "ocean practices" are an essential bridge between humanity's cultural and natural heritage. The Ocean Practices for the Decade Programme ("OceanPractices") will support all ocean stakeholders in securing, equitably sharing, and collectively advancing this methodological heritage. By engaging diverse communities of practice and interlinking them through FAIR digital technologies, OceanPractices will transform how science and other stakeholders align their interests/capacities, creating ever-better practices, promoting sustainable human and ocean well-being. These practices improve interoperability and facilitate training so broader global participation naturally evolves. IODE is lead partner in this action. It was submitted as a UN action.

Ocean Observing Co-Design - Evolving ocean observing for a sustainable future: This Programme will transform the ocean observing system through increased integration and innovation, creating a system co-designed with observing, modelling, and user stakeholders. This fit-for-purpose system will more effectively serve the expanding range of multidisciplinary societal needs and build essential infrastructure to demonstrate the ongoing societal value of the system. The lead partner will be the Global Ocean Observing System (GOOS) through lead sponsor IOC/UNESCO. IODE's role has not yet been defined. It was submitted as a UN action.

CoastPredict - Observing and Predicting the Global Coastal Ocean: CoastPredict will transform the science of observing and predicting the Global Coastal Ocean, from river catchments, including urban scales, to the oceanic slope waters. It will integrate observations with numerical models to produce predictions with uncertainties from extreme events to climate, for the coastal marine ecosystems (their services), biodiversity, co-designing transformative response to science and societal needs. CoastPredict will re-define the concept of the Global Coastal Ocean, focusing on the many common worldwide features, to produce observations and predictions of natural variability and human-induced changes in the coastal areas and upgrade the infrastructure for exchange of data with standard protocols. IODE’s contribution will be through ODIS and OBPS. The lead partner is Alma Mater Studiorum University of Bologna.
Marine Life 2030: A Global Integrated Marine Biodiversity Information Management and Forecasting System for Sustainable Development and Conservation: Marine Life 2030 will establish the globally coordinated system to deliver actionable, transdisciplinary knowledge of ocean life to those who need it, promoting human well-being, sustainable development, and ocean conservation. Within a decade, Marine Life 2030 will unite existing and frontier technologies and partners into a global, interoperable network and community of practice advancing observation and forecasting of marine life. This network of networks will link technical, management and policy stakeholders to build and exchange capacity for advancing society’s grand challenges of managing activities for a healthy and resilient ocean and the vibrant and healthy society that depends on it. Lead Institution: Smithsonian Institution. IODE’s contribution will be through OBIS, OBPS and OTGA.

Biomolecular Ocean Observing Network Ocean life - from viruses to whales - is built from “biomolecules.” Biomolecules such as DNA infuse each drop of ocean water, grain of sediment, and breath of ocean air. The Biomolecular Ocean Observing Network (BOON) will develop a global system that will allow science and society to understand ocean life like never before. The programme will transform how we sense, harvest, protect, and manage ocean life, which faces multiple stresses including pollution, habitat loss, and climate change. It will also help communities detect biological hazards like harmful algal blooms and pathogens, and be a key component of next-generation ocean observing systems. Lead Institution: The Partnership for Observation of the Global Ocean (POGO). IODE’s contribution will be through OBIS.

The Southern Ocean Regional Decade Programme: The Southern Ocean community of stakeholders is globally unique in its operation within an international framework (the Antarctic Treaty System) within which international collaboration, sharing of data, scientific understanding and environmental protection are fundamental. Through this framework, stakeholders have obligations relating to recording activities and monitoring impact. Utilising this strong spirit of cooperation, which is in keeping with the decade objectives, the Southern Ocean Programme will develop a collaborative framework where the full range of Southern Ocean stakeholders can engage to identify and address the major research challenges The Southern Ocean face. The scope and details of this Regional Programme are yet to be fully defined; however, it is envisioned that the community will be encouraged to identify collaborative Decade Projects and Actions that can be coordinated through the Regional Programme.

In addition, the action “Digital Twins of the Ocean – DITTO” was submitted by GEOMAR Helmholtz Center for Ocean Research Kiel and Kiel University. DITTO will establish and advance a digital framework on which all marine data, modelling and simulation along with AI algorithms and specialized tools including best practice will enable shared capacity to access, manipulate, analyse and visualize marine information. It will enable users and partners to create ocean related development scenarios addressing issues such as energy, mining, fisheries, tourism and nature-based solutions. Digital-Twins can quantify benefits and environmental change and provide powerful visualizations. DITTO will empower ocean professionals including scientific users to create their own local or topical digital twins of their ocean issue’ by using standard workflows. IODE has not been included as key partner in this action.

The Committee welcomed the invitation extended to IODE to collaborate in "Ocean Observing Co-Design - Evolving ocean observing for a sustainable future" and "CoastPredict - Observing and Predicting the Global Coastal Ocean," "Marine Life 2030" - A Global Integrated Marine Biodiversity Information Management and Forecasting System for Sustainable Development and
Conservation and “BOON“ - Biomolecular Ocean Observing Network, but regretted that the lead of the DITTO action had not involved IODE, taking into account the action's objectives that are close to those of ODIS.

149 The Committee invited the leads of Decade Actions to discuss cooperation with IODE and requested the IODE Co-Chairs to establish contact with the Decade Action leads.

150 The Committee requested that in addition to the Decade Action proposals where IODE is already engaged the IODE Co-Chairs seek IODE involvement in other relevant Decade Actions, both current and future, and to regularly report back to the IODE Management Group.

6.3 IOC STRATEGIC PLAN FOR DATA AND INFORMATION MANAGEMENT (2022-2026)

This agenda item was introduced by Dr Sergey Belov. He referred to the Document “IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021)” (IOC Manuals and Guides No. 77).

152 He recalled that the IODE Committee through Decision IODE-XXV.5.4 had established an inter-sessional working group to update the Strategic Plan, with the following Terms of Reference: “This working group will review and update the IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021). The revised version of the Strategic Plan (2022-2026) will be presented to IODE-XXVI for endorsement and the IODE Co-chairs will formally submit the 2022-2026 Strategic Plan, on behalf of the IODE Committee, to the 31st Session of the IOC Assembly. The working group will carry out its work electronically”.

153 Dr Belov recalled that during the January 2021 meeting of the IODE Management Group it was proposed that the inter-sessional working group to update the Strategic Plan should take into account the progress of the Inter-sessional working group to propose a strategy on ocean data and information stewardship for the UN Decade (IWG-SODIS), particularly, Document IOC/IODE-MG-2021/5.1 (Proposed Data and Information Strategy for the Ocean Decade).

154 The IODE Management Group stated that “the proposed Ocean Decade data and information strategy is comprehensive and covers ocean data and information from all sources, at all spatial and temporal scales, and for all purposes. The vision is to achieve timely and openly discoverable, accessible, and adaptable digital data and information of known quality about the ocean. This would enable the rapid and equitable development of solution-oriented value-added products and services by and for the Ocean Decade community for relevant decision-making. Central to this strategy is to achieve the greatest public good”.

155 The IODE Management Group had further recommended that a pre-committee working group (group 5) on the IOC Strategic Plan for Data and Information Management (2022-2026) should be established to: (i) identify the main areas for the update of the Strategic Plan; (ii) discuss the cross-link channels with the IWG-SODIS; and (iii) discuss the revision of the ToR of the inter-sessional working group to update the Strategic Plan (Objectives and Membership).

156 The Group met on 26 February. The membership can be found on http://www.iode.org/iode26
The Committee, expressing its regret over the lack of progress, decided to close the inter-sessional working group to update the Strategic Plan established at IODE-XXV through Decision IODE-XXV.5.4.

The Committee adopted Decision IODE-XXVI/6.3.

6.4 REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY

This agenda item was introduced by Dr Hernan Garcia. He recalled that the current IOC Oceanographic Data Exchange Policy (http://www.iode.org/policy) dated from 2003 (IOC Assembly adopted Resolution IOC-XXII-6), slightly updated in 2019. The 2021 IODE Management Group meeting recommended the following:

(i) The Management Group requested for IODE-XXVI to recommend to the IOC Assembly that a working group on the IOC data policy is established, composed of Member States and partner organizations to discuss the revision of the policy.

(ii) The Management Group decided that a pre-Committee working group needs to be established to draft the terms of reference of the data policy working group (and draft decision) and to add the policy as an agenda item for IODE-XXVI.

The 2021 meeting of the IODE Management Group recommended the establishment of a pre-committee working group. The membership of the group can be found on http://www.iode.org/iode26. The group met on 17 February 2021. Its main objective was to discuss the need for a revision of the IOC Oceanographic Data Exchange Policy and, if the group agreed, to draft a recommendation, including objectives and terms of reference, to establish a new IOC intersessional working group on the revision of the IOC Oceanographic data exchange policy, to be submitted to IODE-XXVI.

The working group agreed that there are enough elements that warrant a revision of the IOC data policy. The result should be an ambitious new data policy that further promotes and supports free and open exchange of data. However, concerns were raised to carefully consider what needed to change, taking into account the amount of effort that went into building consensus on the current policy, especially with respect to acknowledging the rights of countries and the non-binding nature of the policy. Suggestions were made to build on other models such as the data policy of WMO that has a main policy with core principles, and modular extensions pertaining to specific data types or applications and products. This way the scope of the policy could be further expanded more easily if needed without opening a debate on the core elements.

The Representative of WMO invited IODE members invited to support the WMO unified data policy in making the ocean data available on free and unrestricted basis. Further it is suggested that IODE consider aligning its data policy as appropriate.

The group also felt that a longer-term cross-agency group should be established to periodically meet to ensure alignment of policies and scope collective changes. The ultimate goal is to increase global cooperation, improved sharing and uptake of data. It is therefore important that data policies should not hamper, but streamline this within commonly agreed terms (e.g., use of a Creative Commons licence). The IOC data policy, which was developed 20 years ago, will therefore be reviewed to ensure alignment with data policies at national, regional and international level as well as those from other sectors, and should reflect current international principles, which did not yet exist in 2003.
The IWG could also share experiences and provide advice to the UN Ocean Decade, but it was not felt within the group’s remit to propose a data policy for the Decade, because of the broader scope of data types (e.g. socio-economic data) and the involvement of many other partners beyond IOC. The WG6 group agreed that the membership of this IWG should include representatives from other agencies such as WMO, UNEP and UNSD.

The representative of the World Meteorological Organization (WMO), Ms Champika Gallage briefly informed the Committee about WMO's actions related to data policy. WMO has promoted free and open exchange of weather, climate and water data since 1873, and has created a global standardized network, which is the cornerstone of weather, climate and hydrological services. Lack of data from several regions has a negative impact on accuracy of early warning services globally, but especially in data sparse regions on land and ocean. The international data exchange practice and policy, which defines the free flow of observations around the globe, has evolved significantly over this period. WMO is working on a Unified Data Policy which will replace the decades old and sectoral data policies on meteorological, hydrological and climate data. New unified data policy will be submitted for approval at the next WMO Congress in October 2021 and will be enforced thereafter. The new WMO Unified data policy covers Earth system data exchanged among Members, including ocean domain and defines the discipline and domain-specific practice for mandatory data that are necessary for the provision of services in support of the protection of life and property and for the well-being of all nations, and recommended data that are required to support Earth system monitoring and prediction activities at the global, regional and national levels. IODE Members are invited to support the WMO unified data policy in making the ocean data available on free and unrestricted basis. Further it is suggested that IODE consider aligning its data policy as appropriate. Link to WMO Unified data policy brochure ([https://meetings.wmo.int/INFCOM-1-III/SitePages/Update%20on%20WMO%20Data%20Policy.aspx](https://meetings.wmo.int/INFCOM-1-III/SitePages/Update%20on%20WMO%20Data%20Policy.aspx))

The Committee noted that the current data exchange policy does not refer to information as used by IODE. The Committee referred to (iv) of the objectives of the inter-sessional working group.

The Committee noted that this policy would also pertain to information and information products.

The Committee adopted Recommendation IODE-XXVI.6.4

PERFORMANCE REVIEW OF THE IOC PROJECT OFFICE FOR IODE (agreement expiring 31/12/2021)

This Agenda Item was introduced by Mr Adam Leadbetter (also representing Mr Loic Petit de la Villéon) who carried out the performance review. They referred to Document IOC/IODE-XXVI/6.5 (Performance review of the IOC Project Office for IODE).

It was recalled that during the Twenty-fifth Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XXV) and Scientific Conference, Tokyo, Japan, 18-22 February 2019 it was decided to review the IODE Project Office activities. This review was requested by IOC/IODE, recalling that the MoU signed in 2017 between IOC and VLIZ is due to expire on 31 December 2021, 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 shall be submitted for approval to the IODE Committee that oversees the*
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) Organizational performance: (a) How effective is the organization 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) Organizational motivation: (i) Organization’s history; (ii) Mission;

(iv) Organizational capacity: Strengths and weaknesses.

Based on the results outlined above, 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 recommendations is available in the review report):

(i) The IODE Project should develop and agree on a clear set of KPIs with its key stakeholders (UNESCO/IOC and VLIZ);

(ii) The IODE Project Office should improve its annual reporting to both VLIZ and to the IODE community as a whole. These reports should include summary achievements from all IODE projects and highlight the impact of the IODE Project Office and the overall IODE programme;

(iii) Methods to better assess and report the impact of the training facilitated through the OceanTeacher Global Academy should be investigated and adopted;

(iv) The strong brand of the IODE Project Office should be more prominently displayed on the various portals operated by the IODE Project Office. The IODE brand could also be strengthened by clarifying IODE’s relationships with the Global Ocean Observing System (GOOS) and the World Meteorological Organisation (WMO) (amongst others) on the IODE website, and perhaps through a full website refresh. The IODE Project Office is encouraged to promote its brand and its activity including through Ocean InfoHub and OceanTeacher Global Academy activities more prominently in communications for the UN Decade of the Ocean for Sustainable Development;

(v) The reviewers noted that those interviewed universally praised the strong efficiency of the IODE Project Office secretariat under the strong leadership of Mr Peter Pissierssens for IODE. The reviewers identified the necessity for succession planning for the retirement of Mr. Pissierssens and if possible, to have some overlap in tenure between Mr. Pissierssens and his successor;

(vi) The reviewers recommend that structures which allow more responsiveness to the Project Office's involvement in European Union funded projects are examined, such as a subsidiary entity or an international association without lucrative purpose (AISBL). This may also require reaching out to sectors that are not traditionally involved in IODE Project Office activities, in particular private sector industry;

(vii) Sustainability plans for the key and/or highest-priority IODE projects should be developed in order to maximise the potential reach and impact of the projects. These sustainability plans should consider the continued and furthered use of blended teaching platforms for OceanTeacher Global Academy courses as was successfully trialled in 2020. It was also suggested to the reviewers that more autonomy for the Regional Training
Centres should be considered as an element of the sustainability of Ocean Teacher Global Academy;

(viii) The goal of more sustainable funding and improved ability to respond to project calls should be facilitated by the expansion of the IODE Project Office staff, in particular on the IT side. Currently, IT staffing is limited to one member, but this puts limitations on the technical support and leadership that the Project Office can provide, especially when considering projects such as Ocean InfoHub. The hiring and retention of extra full-time staff with skills in digital and information technologies would also help the IODE Project Office maintain its relevance in the rapidly and ever-changing data management landscape, and to cement IODE’s role in the FAIR-ification of ocean data;

(ix) The staffing level could be further mitigated in the short-term by encouraging secondments and internships to the IODE Project Office from a wider range of UNESCO/IOC Member States, particularly in the IODE Project Office’s role with respect to UNESCO/IOC’s capacity development strategy.

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

The Committee thanked the reviewers for their excellent work which they performed pro bono.

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.

The Committee requested the Government of Flanders (Kingdom of Belgium) to continue its support and invited other Member States to complement the support to allow further development of the IODE, its activities, products and services.

The Committee adopted Recommendation IODE-XXVI.6.5.

7 INTRODUCTION TO WORK PLAN AND BUDGET (FINANCIAL RESOURCES 2019-2021)

7.1 UNESCO REGULAR PROGRAMME FINANCIAL RESOURCES REMAINING FOR 2020-2021

This agenda item was introduced by Peter Pissierssens. He explained that the UNESCO General Conference had adopted the $534.6M budget for the biennium 2020-2021 (40 C/5). For the funding provided to IODE from the UNESCO regular programme:

**FUNCTION B: Observing systems & data**
- IODE & OBIS core systems: $82,000

**FUNCTION D: Assessments & info for Policy**
- IODE & OBIS products & services: $67,000

**FUNCTION F: Capacity development**
- IODE & OBIS training & education: $85,000
TOTAL FOR 2020-2021 $ 234,000

This was split into $117,000 for 2020 and $117,000 for 2021. Due to the Covid19 pandemic none of the planned face-to-face meetings could be held, resulting in a balance of approx. $68,000 from the 2020 budget which was carried forward to 2021. Accordingly, for 2021 a total amount of $185,000 was available from the UNESCO regular programme for programme implementation in 2021.

7.2 UNESCO REGULAR PROGRAMME FINANCIAL RESOURCES EXPECTED FOR THE BIENNium 2022-2023

This agenda item was introduced by Peter Pissierssens. He explained that while no final information was available at the time of writing of the Action Paper (the UNESCO’s Executive Board would meet 7-21 April 2021) it was expected that the funding from UNESCO’s regular programme available to IODE would suffer a 35% cut to approx. US$152,000 for the 2022-2023 biennium or US$76,000/year.

He noted that the 2021 IODE management group meeting had established a Pre-Committee working group on “Draft Work Plan and Budget 2021-2022” that used the amount of US$76,000 as guidance in its work plan and budget discussions. This is further discussed under Agenda item 8.

7.3 IODE HUMAN RESOURCES (CURRENT AND REQUIRED)

This agenda item was introduced by Mr Taco De Bruin. He noted that staff assigned to IODE has increased to 12 as shown in the table below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type/level/%</th>
<th>Funding source</th>
<th>Funding assured until</th>
</tr>
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<tbody>
<tr>
<td>1. Mr Peter Pissierssens</td>
<td>RP/P-5/0.80</td>
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<td>permanent (ret. 2022-2024)</td>
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<td>2. Mr Ward Appeltans</td>
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<td>UNESCO RP</td>
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<td>3. Ms Claudia Delgado</td>
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<td>VLIZ</td>
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<td>4. Ms Kristin de Lichtervelde</td>
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<td>VLIZ</td>
<td>permanent (Admin coordination)</td>
</tr>
<tr>
<td>5. Mr Arno Lambert</td>
<td>loan/-1.00</td>
<td>VLIZ</td>
<td>permanent (IT)</td>
</tr>
<tr>
<td>6. Ms Saara Suominen</td>
<td>loan/-1.00</td>
<td>VLIZ/EXB</td>
<td>14/09/2021 (OBIS)</td>
</tr>
<tr>
<td>7. Ms Sofie De Baenst</td>
<td>PA/G-3/1.00</td>
<td>EXB</td>
<td>12/2022 (PacMAN, OIH, OTGA)</td>
</tr>
<tr>
<td>8. Mr Pieter Provoost</td>
<td>PA/P-3/1.00</td>
<td>EXB multi</td>
<td>12/2021 (PacMAN project)</td>
</tr>
<tr>
<td>9. Mr Greg Reed</td>
<td>cons/-1.00</td>
<td>EXB OTGA</td>
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<td>10. Ms Pauline Simpson</td>
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<td>EXB IODE/GOOS</td>
<td>12/2021 (OBPS project)</td>
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<tr>
<td>11. Mr Cristian Munoz</td>
<td>cons/-0.50</td>
<td>EXB 191</td>
<td>06/2021 (ODISCat project)</td>
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<tr>
<td>12. Ms Lucy Scott</td>
<td>cons/-1.00</td>
<td>EXB OIH</td>
<td>12/2022 (OIH project)</td>
</tr>
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</table>

However, most of the staff is paid through projects. General management of IODE including the IODE global projects not funded from extra-budgetary projects is carried out by Peter Pissierssens on an 80% FTE basis (the remaining 20% FTE is allocated to IOC capacity development coordination). In addition, it is expected that Mr Pissierssens will retire sometime between June 2022 and December 2023. Mr De Bruin noted that these staffing levels are insufficient to ensure efficient and effective management of all IODE activities.

In order to provide a long-term stable staffing level for IODE at least four additional and full-time staff will be needed. Full details and justification are provided in Document IOC/IODE-XXVI/7.3.

The Committee expressed its concern over the considerable dependency on extra-budgetary funding for IODE staffing.
The Committee, while noting the difficulty to establish new regular positions within IOC and the similar needs of other programmes within IOC, both old and new, called on the Executive Secretary to consider the long-term sustainability of the IODE programme when preparing the IOC staffing plan for the next biennia.

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.

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 (see also Agenda Item 6.5).

7.4 CONFIRMED EXTRA-BUDGETARY FINANCIAL RESOURCES

This agenda item was introduced by Mr Peter Pissierssens. He informed the Committee that a balance of US$ 38,000 was available for IODE general and US$39,500 for IODE/OBIS from unearmarked contributions received. He explained that these were financial contributions provided by donors without specific usage conditions.

In addition, IODE had successfully submitted three project proposal to the Flanders-UNESCO Trust Fund for Science (2020-2022):

**Ocean Infohub: 2020-2022 (31/12/2022)**

<table>
<thead>
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<tr>
<td>2021</td>
<td>$328,500</td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>$305,000</td>
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</tr>
<tr>
<td>Total budget</td>
<td>$1,093,000</td>
<td></td>
</tr>
</tbody>
</table>

(excl. UNESCO management costs)

**Ocean Teacher Global Academy - Phase 2- 2020-2022 (31/12/2022)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Allocated</th>
<th>Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>$291,000</td>
<td>$82,147</td>
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<tr>
<td>2021</td>
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<td></td>
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<tr>
<td>2022</td>
<td>$294,000</td>
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<tr>
<td>Total budget</td>
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(excl. UNESCO management costs)

**PacMAN: 2020-2022 (31/12/2022)**

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<thead>
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<th>Year</th>
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<th>Used</th>
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</thead>
<tbody>
<tr>
<td>2020</td>
<td>$129,060</td>
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<td>2022</td>
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<tr>
<td>Total budget</td>
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</table>

(excl. UNESCO management costs)

**Total confirmed extra-budgetary contributions**

<table>
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<th>Year</th>
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<tr>
<td>2020</td>
<td>$880,060</td>
<td>$260,162</td>
</tr>
<tr>
<td>2021</td>
<td>$919,560</td>
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</table>

191 The Committee was informed that additional funding was obtained recently from NORAD (Norway) for two projects:
(i) OIH Africa: Database of training opportunities (US$ 50,000)
(ii) Science for management in Africa; (i) building capacity for expanding ocean acidification research and observation; and (ii) detection and early warning systems for harmful algae (US$441,000)

192 It was noted that the real expenditure in 2020 was only 29.5% of planned. This was caused by the Covid-19 pandemic which prevented us from organizing project related face-to-face meetings, workshops and training courses.

193 The Committee welcomed the approval of proposals by the Flanders-UNESCO Trust Fund for Science (2020-2022) and thanked the Government of Flanders (Kingdom of Belgium) and Norway for the support.

194 The Committee noted with appreciation the in-kind support provided by all IODE NODCs, ADUs and AIUs, through their individual and joint activities, to the sharing and exchange of data and information, and suggested that these should also be taken into account when calculating IODE revenue.

195 The Committee recommended that the value of IODE’s activities through its NODCs, ADUs, AIUs, experts and projects be recognized and possibly expressed in monetary and societal value and requested the IODE Management Group to study this issue.

8 PROPOSED WORK PLAN FOR THE NEXT INTER-SESSIONAL PERIOD (2021-2022)

8.1 FIRST INTERNATIONAL OCEAN DATA CONFERENCE (November 2021)

196 This agenda item was introduced by Mr Taco De Bruin. He recalled that as a result of the Covid-19 pandemic that started in February/March 2020 it was decided to organize the “First International Ocean Data Conference” in Sopot, Poland between either 15-19 November 2021 or 22-26 November 2021 (dates are provisional).

197 This event was initially considered as a postponed IODE Scientific Conference (as was organized prior to the past few IODE Sessions) but it was realized that this event could be the first of a series of biannual major conferences on ocean data and information, contributing also to the UN Decade.

198 As it was yet unclear whether it would be possible to organize the event as fully face-to-face or mixed with online options were left open. The target would be to reach a few hundred participants (mixed face-to-face/online).

199 Mr De Bruin introduced the list of topics as agreed upon by the 2021 meeting of the IODE Management Group:
1. The Global Ocean Data Ecosystem: status and way forward
2. Data system networking and interoperability technology and methodology: status report
3. Identifying data and information user needs at the national level
4. Joining multi-sectoral data: experiences and required action
5. Best practices in data and information management
6. Global data sharing: changes in data sharing policies
7. The IOC Ocean InfoHub: experiences and next steps
8. The future of global databases: what's next for WOD, OBIS,…
9. Data products and services: new developments
10. The small island dilemma: collecting, managing, sharing and using data with minimum resources
11. Including indigenous and citizen science data into the global data ecosystem
12. IODE 60th anniversary

For the conference planning, programme and implementation the following arrangements were made:
- Planning Committee
- Scientific Committee
- Local Organizing Committee

Planning Committee: The Planning Committee will:
(i) Agree on the topics (sessions) of the conference
(ii) Agree on the format(s) of the conference (presentations, flash presentations, posters, side events,…)
(iii) Identify target audiences of the sessions
(iv) Provide scope descriptions for each of the sessions
(v) Agree on the report/publication of conference outcomes

The following experts volunteered:
1. Marcin Wichorowski
2. Sergey Belov
3. Taco De Bruin
4. Pauline Simpson
5. Jay Pearlman
6. Yutaka Michida
7. Lucy Scott
8. Pier Luigi Buttigieg
9. Kateryna Kulakova
10. Maxime Sweetlove
11. Ariel Troisi
12. IOC Decade Coordination Unit (Julian Barbière)
13. IODE Secretariat (Sofie De Baenst,…)

It was proposed that the Planning Committee should start its work as soon as possible (January 2021).

Scientific Committee: The scientific committee will:
(i) Publish the calls for abstracts
(ii) Publish the calls for papers
(iii) Review submitted abstracts and decide on accepted abstracts as papers, posters, etc.

The following experts volunteered:
1. Marcin Wichorowski
2. Sergey Belov
3. Taco De Bruin
4. Adam Leadbetter
5. Johannes Karstensen
The Committee invited its Members to join the Planning Committee or Scientific Committee or, as appropriate, recommend additional members, and to inform the Secretariat.

Local Organizing Committee: The local organizing committee will:

(i) Make the necessary arrangements for the rental of conference room(s), catering, accommodation options
(ii) Liaise with the IODE Secretariat, planning committee and scientific committee on practical matters
(iii) Arrange for local and international press coverage of the event
(iv) Arrange for production of conference publicity including logo, posters, banners etc.

The local organizing committee will comprise:

1. Mr Marcin Wichorowski (IOPAN, Sopot, Poland): head of the local organizing committee
2. Other members to be designated by Marcin Wichorowski
3. IODE Secretariat (liaison)
4. Taco De Bruin

Mr De Bruin further noted that the IODE Secretariat would need to verify whether a Host Agreement between UNESCO/IOC and Poland would be needed for the Conference (which was the case for hosting IODE-XXVI). This would depend on whether UNESCO/IOC was the main host or whether Poland would be the main host.

The representative of the local host, Mr Marcin Wichorowski, prepared a presentation on the venue and on the conference for presentation at IODE-XXVI. This presentation is available from the Conference web page on the IODE26 website.

The Committee noted that the audience of the Conference will not be limited to the IODE community but wishes to welcome other communities taking into account the ambitions of the Ocean Decade.

The Committee noted that the Conference will not focus on technical aspects of data and information exchange (as is the case for e.g., IMDIS) but on a wider range of topics as listed above.

The Committee considered the need to change the name of the Conference as “First” does not apply very well. The Committee recommended to consider “First International Ocean Decade Data Conference” or a title that relates to the
Ocean Decade statement “The Data We Need for the Ocean We Want”. The Committee requested the Co-Chairs to discuss the revised title with the Decade Coordination Unit.

Concern was expressed over potential overlaps with topics presented at IMDIS. The Committee instructed the Planning Committee to take this into account as well as the Scientific Committee when reviewing submitted papers.

The Committee requested the IODE Management Group and the IMDIS organizing committee to discuss timing of future events to avoid having the IMDIS conference and Conference organized by IODE during the same year.

The Committee thanked the Government of Poland for its kind offer to host the First International Ocean Data Conference” in Sopot, Poland.

The Committee instructed the Secretariat to start all necessary practical arrangements with the local host.

The Committee urged all Member States, IODE NODCs, ADUs, AIUs and other interested experts to actively participate in the Conference by coming to Sopot or by participating online.

The Committee instructed the Secretariat to undertake a poll to obtain an estimate of the expected number of participants who will participate in the conference in person.

The representative of Poland requested that a decision should be made very soon on the dates and on the duration of the event (number of days). The Co-Chairs informed the Committee that this matter will be discussed with the IODE Management Group within the next 2 weeks.

8.2 NEW INITIATIVES

This agenda item was introduced by Mr Peter Pissierssens. He noted that two new proposals had been submitted:

(i) Ocean Data and Information System (ODIS): The ODIS project proposal is discussed under agenda item 6.1.1.

(ii) AquaDocs - to replace OceanDocs

The AquaDocs proposal was briefly introduced by Ms Jaime Goldman, IAMSLIC President, referring to Document IOC/IODE-XXVI/8.2 (New Project Proposals: AquaDocs). She explained that AquaDocs will be a new repository of merged content from the existing OceanDocs and Aquatic Commons repositories. Both repositories have been in existence for more than 12 years with continuing deposit and search activities from global stakeholders. Although both repositories have been successful in providing access to ocean and aquatic publications and other research outputs, maintaining two repositories with many of the same constituents and similar foci is not a sustainable solution and in September 2019 it was proposed to merge the repositories.

AquaDocs will be a comprehensive and subject domain-specific e-repository providing high visibility to content and authors, covering ocean, freshwater, brackish and what is now starting to be called Urban water within the coastal zone. It will be curated (including advanced quality control) by skilled marine and freshwater information professionals and will complement commercial journals and bibliographic databases/ repositories by focusing on grey literature. It is anticipated that AquaDocs will have approximately 33,000 records after merging the two repositories and removing duplicates. The repository will grow with
content from the existing and expanding community of contributors and future FAO-ASFA Trust Fund projects.

224 Acknowledging the available limited IODE IT support a new outsourced hosted solution has been contracted. Ms Goldman, on behalf of IAMSLIC, expressed gratitude to IODE whilst IAMSLIC provides in-kind repository management.

225 From the perspective of both ODIS and the OBPS, the Committee welcomed and looked forward to aligning our technologies, strategies, and (meta)data with those of AquaDocs, as another key part of the ocean digital ecosystem.

226 The Committee adopted Decision IODE-XXVI.8.2

8.3 WORK PLAN AND BUDGET 2021-2022

227 Mr Greg Reed, IODE Secretariat, introduced the proposed work plan and budget which was based on the expected financial resources (UNESCO RP, Flanders financial contribution to the IOC project office for IODE).

228 The working group also took into account funding from other extra-budgetary projects to the extent that these projects can be linked to other IODE projects.

229 He explained that the funding provided to IODE from the UNESCO regular programme was split into USD117,000 for 2021 and USD117,000 for 2022. A balance of approx. USD68,000 from the 2020 budget was carried forward to 2021 giving USD185,000. It is expected the IOC Assembly will reduce the IODE budget for 2022 by 35% leaving around USD76,000.

230 Mr Reed recalled that the funding for IODE comes mainly from two sources, (i) the UNESCO regular programme (RP) and (ii) extra budgetary (EB) sources. The majority of extra-budgetary funds come from the Government of Flanders (Kingdom of Belgium) which funds the Flanders-UNESCO Trust Fund for Science (FUST) and the UNESCO/IOC Project Office for IODE in Oostende.

231 He recalled that the 2021 meeting of the IODE Management Group had decided to establish a pre-committee working group on work plan and budget. The working group met on 19 February 2021. It reviewed the proposed budget taking into account two budget scenarios (one with UNESCO RP contribution identical to 2021, and one with a 35% budget cut).

232 The representative of ODINECET noted that no funding was requested as they will contribute directly to AquADocs.

233 The Committee expressed its deep concern about the continued decline in UNESCO Regular Programme funds made available to IODE.

234 The Committee stated that the current amount available will bring IODE at a critical level unable to implement its work plan and maintain the global network of data and information centres built over the past 6 decades.

235 The Committee noted with great concern that the budget has now reached a level that no longer allows capacity development at the regional level through the regional Ocean Data and Information Networks (ODINs) which will seriously impact on the equitable participation of the concerned Member States in IODE as well as in data and information management activities contributing to the Ocean Decade.
The Committee invited participants representing an NODC or ADU to contact their national representatives to the 2021 IOC Assembly to brief them on the critical status of IODE’s budget which is leading to the inability of IODE to actively implement its activities, especially taking into account the expected contribution to global initiatives (such as Agenda 2030, Ocean Decade, etc.) as well as capacity development.

The Committee adopted Recommendation IODE-XXVI. 8.3.

9 ANY OTHER BUSINESS

There were no points added to the agenda.

10 DATE AND PLACE OF THE NEXT SESSION (IODE-XXVII, 2023)

Dr Sergey Belov, IODE Co-Chair invited the Committee to discuss the date and venue of the twenty-seventh Session. The Committee was invited to consider holding the meeting during the month of March 2023, taking into consideration the need to report to the IOC Assembly in June 2023.

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., March 2022. 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

The IODE Technical Secretary introduced this item by referring to the IOC Rules of Procedure (Document IOC/INF-1166), and more particularly to Rule 25, para 3. The Technical Secretary informed the Committee that, in accordance with the above Rules, the current two Co-Chairs (Dr Sergey Belov and Mr Taco De Bruin) had completed one term and had offered to continue for a second term.

The Committee, thanking them for their considerable contribution to IODE during the past inter-sessional period, re-elected Dr Sergey Belov and Mr Taco De Bruin as IODE Co-Chairs for a second term (2021-2023).

12 IODE ACHIEVEMENT AWARDS 2021 (virtual ceremony)

This agenda item was introduced by Mr Taco De Bruin. He 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 2019 a total of 32 awards have been given. The award ceremony was traditionally held during the Session Dinner. A full list of awards issued during previous sessions is found on http://www.iode.org/awards.

244 Mr Taco De Bruin informed the Committee that the IODE Management Group had decided to give the awards “virtually” (naming the recipients) at IODE-XXVI and hand them over “physically” at IODE-XXVII in 2023.

245 The Management Group had also decided to issue a separate award for early career experts in data and information management. Criteria would need to be agreed upon.

246 The Management Group noted that 2021 was the 60th anniversary of IODE and decided to discuss this further as a possible topic (with associated event) for the Conference.

247 IODE Achievement Awards (2021) were bestowed to the following experts, who contributed exceptional time and effort to the IODE programme:

248 **Eduardo Klein (Venezuela)** (past Co-Chair OBIS Steering Group)

Eduardo served four years in his role as SG-OBIS co-chair and as a true bridge-maker successfully helped expand the OBIS network with many new partners, OBIS nodes and collaborators including the Marine Biodiversity Observation Network and the Convention of Biological Diversity. He was also an active OBIS trainer. Mr Klein expressed his thanks for the award: “This is very unexpected and I am very honoured that you have considered me for the IODE Achievement Award.

But all the OBIS achievements were possible not because of the chairs, but because of the OBIS network, all those colleagues that work silently all around the world in the more than 30 regional OBIS nodes. Most of them with very little or no resources. These people deal with scientists, work on their datasets and do very detailed quality control of the data, format all the records into the Darwin Core standard and push the datasets to the central OBIS system. That is why we have thousands of new records coming in every week. Also, all this is possible thanks to the OBIS secretariat in the IODE Project Office in Ostend and all the supporting personnel of the IODE office, VLIZ, OceanTeacher, etc... Those guys are the real magicians behind the curtain. They keep the systems up and running, support all the activities and they are a kind of invisible force that keeps all of us together. Many thanks to all of them! This award may serve to remind us that marine biodiversity data, with all its complexities, is OCEAN DATA as well. We now have more than 75 million records and 160 million measurements or facts and counting! Long live to OBIS! Thank you very much.”

249 **Francisco A. Arias-Isaza (Colombia)** (Director INVEMAR)

Francisco has been a strong and active supporter of the Caribbean Marine Atlas since its conception in 2007. Over the next 14 years Francisco’s institution INVEMAR developed CMA into a widely appreciated regional atlas. In addition, Francisco recognized the potential of developing a regional data and information system that led to the Ocean InfoHub for which his team developed a prototype presented to the IOC Executive Council. Last but not least INVEMAR established
one of the first OTGA regional training centres. Throughout these many years Francisco’s leadership has contributed substantially to IODE’s regional activities in Latin America and served as an example for other regions.

Mr Arias expressed his thanks for the award: “I would like to present my thanks to IODE for this distinction and of course express how honored I feel to have been considered and elected for the award. IODE ACHIEVEMENTS AWARDS is an institution. Its moto aimed to express special appreciation to those experts contributing “time and effort” to the programme lists a group of prominent names in ocean sciences, joining such a group is a great privilege.

I would like to share with you a personal story: I was about eight years when a family trip took us for the first time to the shores of the Caribbean, my imagination was full of the pictures raised from my readings of Jules Verne’s seagoing adventures mixed with the images from TV series such as Sea Hunt or the Seaview sub. Feeling the waves, tasting the salty flavor from the spray on the beach and watching the colors of the corals in the bottom in the transparent waters from the boat, was the epiphany of what I wanted to be in my life. It has been now a while since that day and I still feel the wonder of the ocean in my life and being recognized for the “time and effort” of something that is so pleasant to do seems to me a little unfair, I love to use my time and effort for the sake of the oceans.

The contribution from Colombia’s Marine and Coastal Research Institute INVEMAR to IODE and other IOC actions has been inspired in the principles of partnership, transparency, inclusiveness, the recognition that all contributions however humble are important to progress and to move towards the better understanding of the ocean that will lead to a safer and sustainable world to all. I must also recognize the great team at INVEMAR supporting the work, finding the means and giving their best to accomplish the tasks. This award goes to them too. To share with Paula Sierra this year’s award is a clear recognition to her fantastic work and her role within the rising, but still small group, of women in science in Colombia. The demands imposed by times to respond and to reverse the trends of a declining ocean are reason to contribute to the Decade of Ocean Science for Sustainable Development, we must commit to bring as much partners as we can to be part of the Decade and to have a better future from the world that we want.

My special thanks to IODE chairs and the support team at IOC, leaded by Peter Pissierssens. I heard somebody once said that data is power, I argued that power really was the capacity of converting data into information to transform positively the world. This is what IODE is doing for the oceans, that is your award. Thank-you very much”.

250 Sky Bristol (United States of America) (past co-chair SG-OBIS)

Sky served four years in his role as SG-OBIS co-chair and was instrumental in advising OBIS in the development of a new infrastructure and technology stack (OBIS2.0). Mr Bristol expressed his thanks for the award:

“Thank you, from the bottom of my heart, for the incredible honor of recognizing the Ocean Biodiversity Information System (OBIS) and the small part I’ve been privileged to play in its development over the last number of years. OBIS is really an incredible network of dedicated data managers and scientists all over
the world from our many participating scientific and government institutions who
are bringing this capability to the world. The high-quality data that dedicated
individuals in the OBIS network are constantly working to standardize and bring
online are enabling all manner of scientific and decision analysis, assessments
of the world’s ocean biodiversity resources that were not possible before OBIS
existed. The trustworthy, actionable information we can develop from knowing
what species are where and when through a long time series history in marine
ecosystems is a vital tool in our ability to develop projections on how ecosystems
may shift in future and to understand and address the rapid changes occurring
on our planet.

I was honored to be a part of the community helping to grow OBIS from a
research data product to a fully operational global data capability. That growth
in capability maturity, in the technology but more importantly the human
support infrastructure, allowed some of our US institutions to shift from running
our own data infrastructure to contributing to and directly leveraging the global
infrastructure supported by UNESCO-IODE. This was a huge accelerant for our
efforts to use the data in analysis and decision making. Thank you, again, for
the privilege of being a part of these efforts and for welcoming me and my
perspectives into the IODE community.

251 Paula Sierra (Colombia) (Caribbean Marine Atlas).

Paula and her team at INVEMAR have provided the technical expertise and know-how that was essential for
the development of the Caribbean Marine Atlas. With her technical expertise and diplomatic skills Paula has been
able to develop an outstanding and sustained Atlas product that has, as mentioned, served as a foundation
for the Ocean InfoHub. Ms Sierra expressed her thanks
for the award:

"Thank you very much. I am very honored to have been considered and selected
for the IODE Award. I am pleasantly surprised and very happy not only for me
but of course for our Caribbean Region. IODE award recognizes, encourages
and acknowledges all those member states (at least 25 countries) that support
the Caribbean Marine Atlas, and their generous and hard-working ocean
community. Many thanks to 8 pilot countries: Barbados, Jamaica, Trinidad &
Tobago, Dominican Republic, Belize, Mexico, Venezuela and Colombia.
Invemar team (Caro, Leo, Julian) this Award is yours. The Caribbean Marine
Atlas (CMA) would not have been possible without the confidence of IODE, and
IOC-Unesco/IOCaribe in both the Caribbean Region and in the Invemar Institute
in Colombia. Support of the Government of Flanders (Kingdom of Belgium) was
invaluable (Thanks Dr. Rudy Herman and Dr. Gert Verreet). Let me express my
profound gratitude all of you for believing in the fascinating Caribbean with small
and youth scientist community; specially, for believing in a woman like me,
sharing your knowledge and the importance of the data and information
exchange, helping me grow as a scientist, as a leading woman but above all as
a person. Human-kind quality to make science worthwhile, thanks Peter you are
the heart of IODE.

Ocean data and information is now part of our DNA. This award is also a great
responsibility with the Latin American node at Ocean Info Hub. Count on me,
count on the Invemar’s team in front of the UN Ocean Science Decade."
It’s not just about the Ocean Data and Information Exchange, it is about scientists in love with the ocean, exchanging experiences, skills and emotions, that help us grow together striving in countless ways to protect the ocean which we share.

Last but not least, thanks to my family for their support, and understanding my devotion to science, I keep you near and dear to my heart. You know that Ocean Science is my life!”

Mr Taco De Bruin expressed his disappointment that the awards could not be handed over in person but looked forward to doing so at the planned Conference or another opportunity in the near future.

The Committee expressed its great gratitude to the four members of the IODE community thanking them for their exceptional contributions to continue building “our” IODE.

13 ADOPTION OF DECISIONS, RECOMMENDATIONS AND SUMMARY REPORT

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

The Committee then reviewed and adopted the summary report of the Session.

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

The Committee requested the IODE Co-Chairs to present the Executive Summary to the Thirty First Session of the IOC Assembly that would take place in June 2021 as an online event.

14 CLOSURE

The Co-Chairs addressed the Committee.

Dr Belov in his closing remarks stated that the online format of the IODE Committee meeting in 2021 was a consequence of the COVID-19 pandemic and he believed that this would remain an exception, rather than a rule. He acknowledged the IODE community for their hard work despite a lot of challenges and limitations during the previous intersessional period, also thanked IODE Committee for the re-election and the trust. Special thanks were expressed to the IODE Secretariat for their work during the IODE-XXVI meeting.

Mr De Bruin thanked the Delegates for their hard work in IODE projects, activities and pre-committee meetings in the intersessional period and for their involvement and input during the IODE-26 Committee meeting. He thanked the IODE Committee for the re-election of and the trust put into the two co-chairs.
He extended special thanks go to Peter Pissierssens and his staff at the IODE Project Office for their invaluable support during the intersessional period and during the IODE-26 Committee meeting. Mr De Bruin looked forward to a successful and fruitful continuation of the cooperation with all involved in the IODE community during the upcoming intersessional period.

The Co-Chairs and closed the Session on Friday 23 April 2021.
ANNEX I

AGENDA

1. OPENING

2. ADMINISTRATIVE ARRANGEMENTS

2.1. adoption of the agenda
2.2. designation of a rapporteur
2.3. session timetable and documentation
2.4. Establishment of sessional working groups
2.5. Technical arrangements

3. REPORT ON THE PAST INTER-SESSIONAL PERIOD (2019-2021)

3.1. Progress report on the IODE-XXV work plan and IODE-XXV recommendations and decisions
3.2. Status of the IODE network
3.3. Progress reports of global IODE Projects
3.4. IODE quality management framework implementation
3.5. Progress reports of joint activities with other IOC programmes and other partners

4. IODE CAPACITY DEVELOPMENT

4.1. Contributions of IODE towards the implementation of the IOC capacity development strategy

5. COMMUNICATION AND OUTREACH

6. THE FUTURE OF IODE

6.1. Further development of ODIS
6.2. IODE contribution to the UN Decade of Ocean Science for sustainable development
6.3. IOC strategic plan for Data and Information Management (2022-2026)
6.4. Revision of the IOC Oceanographic data exchange policy
6.5. Performance review of the IOC project office for IODE (agreement expiring 31/12/2021)

7. INTRODUCTION TO WORK PLAN AND BUDGET (financial resources 2019-2021)

7.1. UNESCO regular programme financial resources remaining for 2020-2021
7.2. UNESCO regular programme financial resources expected for the biennium 2022-2023
7.3. IODE Human Resources (current and required)
7.4. Confirmed extra-budgetary financial resources

8. PROPOSED WORK PLAN FOR THE NEXT INTERSESSIONAL PERIOD (2021-2022)
8.1. First international ocean data conference (November 2021)
8.2. New initiatives
8.3. Workplan and budget 2021-2022

9. ANY OTHER BUSINESS

10. DATE AND PLACE FOR THE NEXT SESSION (IODE-XXVII,2023)

11. ELECTION OF THE CO-CHAIRS

12. IODE ACHIEVEMENT AWARDS 2021 (virtual ceremony)

13. ADOPTION OF DECISIONS, RECOMMENDATIONS AND SUMMARY REPORT

14. CLOSURE
ANNEX II

DECISIONS AND RECOMMENDATIONS

**IODE-XXVI Decisions**

Decision IODE-XXVI.4.1.2: IODE OCEAN DATA AND INFORMATION NETWORKS (ODINs)

Decision IODE-XXVI.6.1.2: REVISION OF THE TERMS OF REFERENCE OF THE PARTNERSHIP CENTRE FOR THE IODE OCEAN DATA PORTAL

Decision IODE-XXVI.6.2: IODE CONTRIBUTIONS TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT (2021-2030) AND ESTABLISHMENT OF AN IODE INTER-SESSIONAL WORKING GROUP

Decision IODE-XXVI.6.3: ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP TO REVISE THE IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT

Decision IODE-XXVI.8.2: ESTABLISHMENT OF THE AQUADOCS PROJECT

**IODE-XXVI Recommendations**

Recommendation IODE-XXVI/6.1.1: ESTABLISHMENT OF THE IOC OCEAN DATA AND INFORMATION SYSTEM PROJECT (ODIS)


Recommendation IODE-XXVI.6.5: THE UNESCO/IOC PROJECT OFFICE FOR IODE IN OOSTENDE, BELGIUM

Recommendation IODE-XXVI. 8.3: IODE WORK PLAN AND BUDGET FOR 2021-2022
Decision IODE-XXVI.4.1.2
IODExCEAN DATA AND INFORMATION NETWORKS (ODINs)

The IODE Committee,

Recalling the Ocean Data and Information Networks (ODINs) established for Africa (ODINAFCRA, 2004), Latin America and the Caribbean (ODINCARSA, 2004), Central Indian Ocean (ODINCINDIO, 2005), European Countries in Economic Transition (ODINECET, 2007), WESTPAC region (ODINWESTPAC, 2007) and Black Sea region (ODINBlackSea, 2007),

Noting the development of IODE projects covering one or more regions such as OceanTeacher Global Academy (all regions), Ocean Biodiversity Information System (all regions), Ocean InfoHub (Latin America and the Caribbean, Africa, Pacific SIDS), PacMAN (Pacific SIDS),

Noting further the limited level of activities in some of the ODINs,

Recognizing the importance of developing ocean data and information management capacity in IOC Member States across all regions,

Recognizing further the importance of addressing data and information as an important element in the value chain from observations to policymaking,

Decides:

(i) to continue ODINs as IODE projects,
(ii) to link ODINs more closely to IOC regional subsidiary bodies (IOCARIBE, IOCAFRIA, IOCINDIO, WESTPAC),
(iii) to continue the governance of ODINs fully as IODE projects in cases where no IOC subsidiary body exists,
(iv) that ODINs are encouraged to collaborate with and strengthen the regional implementation of IODE projects (e.g., OBIS, OTGA, OIH),
(v) to establish an inter-ODIN forum to provide closer connections between the ODINs and with other IOC global programmes and facilitate the sharing of best practices,

Invites IOC regional subsidiary bodies to include representatives of ODIN projects (through their Steering Group Chair(s)) in their respective “board of officers”,

Instructs the IODE Co-Chairs to discuss this IODE decision with the respective regional subsidiary body Chairs,

Instructs each ODIN to submit a detailed project proposal including a work plan and budget to IODE-XXVII, following the instructions for projects provided in IOC Manual and Guides Nr 81 and to take into account opportunities offered by the UN Decade of Ocean Science for Sustainable Development,

Establishes an inter-sessional working group to revise the terms of reference of IODE Ocean Data and Information Networks (ODINs) and develop a strategy for sustainability of the ODINs and to submit its report to the next meeting of the IODE Management Group (2022).
Initial membership will include:
- Chairs of ODIN steering groups
- Representatives of the IOC Regional Subsidiary Bodies
- IODE Co-Chairs
- IODE Secretariat
- Turkey (Mr Murat Elge)
- Malaysia – ADU (Mr Aidy M Muslim)
- Tunisia – AIU (Ms Saida Messaoudi)

The Secretariat will start up the process for the group to meet as soon as possible.

**Decision IODE-XXVI.6.1.2**

**REVISION OF THE TERMS OF REFERENCE OF THE PARTNERSHIP CENTRE FOR THE IODE OCEAN DATA PORTAL**

The IODE Committee,

Recalling the establishment of the IODE Ocean Data Portal project through Recommendation IODE-XIX.4 (THE IODE OCEAN DATA PORTAL PROJECT) (2007),

Recalling further the adoption of Terms of Reference of the Partnership Centre for the IODE Ocean Data Portal through Recommendation IODE-XXII.9. (2013),

Recalling further the recommendation at IODE-XXV (2019) to renew the MoU of the Partnership Centre for the IODE Ocean Data Portal,

Recognizing that while central portals were considered as the best way to improve regional or global data access and management, today’s data sharing aims at interoperability technology making use of existing data systems, leveraging the web as the platform,

Recognizing further that within the IODE network many of the 150 Member States currently do not have the required human and technical capacity to host online data and information services,

Acknowledging the need to develop the Ocean Data and Information System (ODIS) as an inclusive system that ensures equitable participation of all IOC Member States,

Recognizing the expertise available at the RIHMI-WDC of Roshydromet in Obninsk, Russian Federation and its experience gained through its hosting of the Partnership Centre for the IODE Ocean Data Portal since 2013,

Decides to rename the “Partnership Centre for the IODE Ocean Data Portal” to “IODE Partnership Centre for ODIS”,

Decides to revise the terms of reference of the Partnership Centre for the IODE Ocean Data Portal as follows:
The IODE Partnership Centre for ODIS shall:

(i) Provide an ODIS software tool that enables ingestion, description (metadata), quality control and transmission (to the Partnership Centre) of data/information held by the stakeholder/provider;

(ii) Provide training support as well as documentation for the use of the ODIS software tool;

(iii) Provide secondary quality control of data/information received from stakeholders/providers through the ODIS software tool;

(iv) Archive and make available online of the data sets received from the stakeholders/providers;

(v) Provide a secure archival/mirror of all stakeholders/providers who cannot ensure/assure the long-term and secure archival of their data/information;

(vi) Make all data and information available globally through the ODIS interoperability network;

(vii) Coordinate, with their respective secretariats/hosts, the submission of data held by the Partnership to the World Ocean Database (WOD) and Ocean Biodiversity Information System (OBIS);

(viii) Make all data and information available through a mirror site at the IOC Project Office for IODE, Oostende, Belgium;

(ix) Report on activities to the IODE Management Group, including backlog of member state contacts, status of work (data hosting, data sharing, ODIS integration, data use, etc.).

a. The IODE Partnership Centre for ODIS will furthermore contribute to the data as well as CD chapters of the UN Decade of Ocean Science for Sustainable Development. The Partnership Centre for ODIS will report to the IODE Steering Group for the Ocean ‘Data and Information System (SG-ODIS).

Invites the Secretariat to establish a new partnership agreement between IOC and Roshydromet, Russian Federation.

**Decision IODE-XXVI.6.2**

**IODE CONTRIBUTIONS TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT (2021-2030) AND ESTABLISHMENT OF AN IODE INTER-SESSIONAL WORKING GROUP**

The IODE Committee,

Recalling the proclamation, by the United Nations General Assembly (UNGA) at its 72nd session regarding the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), through Resolution A/RES/72/73, therein the Ocean Decade, and stating that the Ocean Decade could benefit from making scientific data and information freely and openly available in accordance with the applicable legal framework,

Recognizing the important role that IODE has, and continues to play in timely and unrestricted international exchange of oceanographic data 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,

**Noting** the establishment of the inter-sessional working group to propose a strategy on ocean data and information stewardship for the Ocean Decade (IWG-SODIS) through Recommendation IODE-XXV.5.3,

**Decides** to register OTGA, OBIS, OIH/ODIS and PacMAN as UN Ocean Decade Action following the procedure established for UN entities in the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) Implementation Plan,

**Instructs** the IODE Secretariat, in close coordination with the IODE MG, to prepare the necessary documentation to register future IODE Decade Actions during the intersessional period,

**Decides to** establish the IODE Intersessional Working Group (IWG) to identify the IODE contribution to the UN Decade of Ocean Science for Sustainable Development (2021-2030) with the following terms of reference:

(i) develop an inventory of IODE data and information management assets and tools that could help serve the needs of the Ocean Decade data and information access needs;
(ii) collaborate and coordinate with the Decade Coordination Unit (DCU) to identify gaps and scope;
(iii) submit its report with recommendations for further action to the IODE XXVII Session.

**Membership**: The membership of the group will be composed, *inter alia*, of:

(i) IWG Lead (to be designated by the IWG),
(ii) members of the IODE community
(iii) invited Experts from the global ocean data and information communities
(iv) members of the IODE Secretariat
(v) representative(s) of the Decade Coordination Unit.

Initial membership will include:

1. OBIS - Anton Van de Putte
2. United States of America - Hernan Garcia
3. Mexico – Mr Carlos Torres
4. Expert- Pier Luigi Buttigieg
5. GOOS OCG (Kevin O'Brien) 2021 – (tentative: will confirm name of participant after next OCG executive meeting)
6. United Kingdom ADU (OBIS-UK) – Mr Dan Lear
7. OBPS - Jay Pearlman

The Secretariat will start up the process for the group to meet as soon as possible.
Decision IODE-XXVI.6.3

ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP TO REVISE THE IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT

The IODE Committee,

Recalling that the “IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021)” was adopted by the IOC Assembly at its 29th Session (2017) through Decision IOC-XXIX/Dec. 6.2.2,

Noting that the systems following the IOC Data and Information Management strategic plan will deliver:

(i) interoperable, quality-controlled data on a diverse range of variables, 1) generated according to scientifically and operationally sound methods and 2) 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) by users who have a broad range of capabilities.

Decides to establish an inter-sessional working group to revise the IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021), with the Terms of Reference as attached in Annex A to this Decision.

Annex A to Decision IODE-XXVI.6.3

Terms of Reference of the Inter-sessional working group to revise the IOC strategic plan for oceanographic data and information exchange

Objectives:
This working group will review and update the IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021). The first draft will be available to the IODE MG meeting (January 2022) with the revised version of the Strategic Plan (2023-2027) to be presented to IODE-XXVII (February/March 2023) for endorsement and the IODE Co-chairs will formally submit the 2023-2027 Strategic Plan, on behalf of the IODE Committee, to the 32nd Session of the IOC Assembly (2023). The working group will carry out its work remotely, over the internet.

In revising the Strategic Plan, the following should be taken into consideration:

(i) Changes/updates to the IOC Vision, High-Level Objectives and Medium-Term Strategy and the IOC Capacity Development Strategy

(ii) Recent WMO developments, in particular the dissolution of JCOMM and the establishment of the Joint WMO-IOC Collaborative Board
(iii) Ensure alignment with, and contribution to, the UN Decade of Ocean Science for Sustainable Development (2021–2030)

(iv) Results of the Inter-sessional working group to propose a strategy on ocean data and information stewardship for the UN Decade (IWG-SODIS), particularly, Document IOC/IODE-MG-2021/5.1 (Proposed Data and Information Strategy for the Ocean Decade)

(v) Support of community data principles such as FAIR (Findable, Accessible, Interoperable and Reusable), CARE (Collective benefit, Authority to control, Responsibility, Ethics), and TRUST (Transparency, Responsibility, User Focus, Sustainability, Technology)

(vi) A stronger focus on how sustainable interfaces between the various global, national and regional efforts will be built and maintained

(vii) How we can move to a more compatible machine-2-machine architecture

(viii) Acknowledge that the strategy can pertain to a changing set of partners and participants - we should consider how to add robustness and resilience into each component

(ix) Acknowledge the involvement of developing communities which may not have large amounts of data (yet), but can share digitised knowledge to ensure their interests are visible to the systems emerging

(x) Inclusion and coordination of regional-scale data, information, and digital knowledge activities in a global partnership to support this IOC Strategic Plan

(xi) Acknowledge the progress made and build on experiences from bi- and multilateral marine data exchange collaborations between major marine data initiatives and organisations across global regions

(xii) The trends and best practices in data science that are of relevance for diplomacy and international affairs and ocean governance.

(xiii) The evolving landscape of data ethics

(xiv) Developments in Ocean Literacy (i.e. understanding the ocean’s influence on you and your influence on the ocean) at global and regional levels

(xv) Developments within OBPS, noting that currently we may not have methods and best practices relevant to IODE/IOC’s digital strategy; a call for such practices will be needed

(xvi) Developments within ODIS and ODIScat as an interoperability framework to interlink regional and national digital resources

**Membership:** The initial membership will include:

1. GOOS OCG (Kevin O’Brien)
2. Expert- Pier Luigi Buttigieg
3. OBPS - Pauline Simpson
4. Mexico - Leon Alvarez
5. Canada ADU (OBIS) – Ms Lenore Bajona
6. United Kingdom - NODC– Ms Lesley Rickards

The Secretariat will start up the process for the group to meet as soon as possible.

The Group will designate its (Co-)Chair(s) and may invite additional members as necessary.
Decision IODE-XXVI.8.2

ESTABLISHMENT OF THE AQUADOC Project

The IODE Committee,

Recognizing that:
(i) free and open access to ocean information addresses the needs of both scientific users and society at large;
(ii) IODE has successfully established a permanent open access repository offering the scientific community a platform to publish their ocean-related research;
(iii) IODE and IAMSLIC have established close, efficient and effective collaboration in marine science information.

Noting that AquaDocs will support all IOC programmes including the new Ocean InfoHub and ODIS and contribute to the UN Decade of Ocean Science for Sustainable Development and UN Sustainable Development Goals by providing a permanent curated archive of research publications and multimedia in ocean sciences;

Decides to:
(i) close the IODE OceanDocs project;
(ii) establish the AquaDocs repository as a joint IODE-IAMSLIC-FAO/ASFA project with the terms of reference as attached in Annex 1 to this decision;
(iii) establish the IODE Steering Group for the AquaDocs project with the terms of reference as attached in Annex 2 to this decision;

Urges Member States to actively participate in the AquaDocs project by submitting relevant ocean publications and multimedia, and promote the use of AquaDocs at the national, regional and global level;

Invites relevant stakeholders to contribute ocean publications and collaborate with AquaDocs.

Annex 1
Terms of Reference of the AquaDocs Project

Objectives: The objectives of this project are to:
(i) make aquatic and marine science information FAIR (Findable, Accessible, Interoperable, Reusable) and address the needs of both the scientific users and society at large.
(ii) offer a repository platform to those organizations and individuals without the infrastructure to support their own.
(iii) provide a capacity development opportunity for IODE and IAMSLIC Community.

Annex 2
Terms of Reference of the IODE Steering Group for the AquaDocs project

The SG-AquaDocs will:
(i) propose the vision, strategy, work plan, and timetable for AquaDocs Project.
(ii) advise on technical aspects such as user interface, back office, etc. to the technical service provider;
(iii) report to the IODE and IAMSLIC (and to any future partners/sponsors) on the progress of the AquaDocs Project;
(iv) advise on the creation of task teams as needed, for example, copyright/permissions, promotion, recruitment, and training.

Membership: The IODE Steering Group for the AquaDocs project will be composed, inter alia, of:

(i) project manager/s
(ii) IODE IT Advisor
(iii) invited Experts from the IODE, IAMSLIC and global information communities
(iv) representatives of the IODE Secretariat and IAMSLIC Executive Board

The Chair (or co-Chairs) will be appointed by the Steering Group from its membership, with a term limit of two sessions. The frequency of meetings will be proposed by the Steering Group in their proposed work plan and budget and can be once every year or every two years.

Recommendation IODE-XXVI/6.1.1

ESTABLISHMENT OF THE IOC OCEAN DATA AND INFORMATION SYSTEM PROJECT (ODIS)

The IODE Committee,

Recalling Decision IODE-XXIV.4 on the Ocean Data and Information System,

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,

Noting with appreciation that IODE has:

(i) established the IOC Ocean Data and Information System Catalogue of Sources Project (ODISCat) in 2019;
(ii) started the implementation of the Ocean InfoHub project as a three-year project (2020-2023) funded by the Government of Flanders (Kingdom of Belgium).
Having examined Document IOC/IODE-XXVI/6.1.1 (Proposal for the Establishment of the IOC Ocean Data and Information System (ODIS)),

Recommends the establishment of the "IOC Ocean Data and Information System (ODIS)" as an IODE project, with the terms of reference as attached in Annex A, and terms of reference of the Steering Group as attached in Annex B to this recommendation,

Invites all IOC programmes, IOC regional subsidiary bodies and partner organizations to collaborate by mobilizing their stakeholder communities to enter information into the ODIS-Cat system, and to participate in the OIH and ODIS Projects.

Annex A to Recommendation IOC/IODE-XXVI/6.1.1
Terms of Reference of the IOC Ocean Data and Information System (ODIS)

Objectives: The objectives of this project are to:

(i) develop the IOC Ocean Data and Information System (ODIS) 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;

(ii) work with partners, linked and not linked to the IOC, to improve the accessibility and interoperability of existing data and information. It will 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;

(iii) start its development using already existing “ecosystem component” such as, inter alia, the ODIS Catalogue of Sources (ODISCat), the Ocean InfoHub project, and all IODE data and information products and services, and to add components within and outside the IODE programme as these become available to and interoperable with the ODIS ecosystem.

Annex B to Recommendation IOC/IODE-XXVI/6.1.1
Terms of Reference of the IODE Steering Group for the IOC Ocean Data and Information System (ODIS)

Objectives: The SG-ODIS will have the following Terms of Reference:

(i) Propose the vision, strategy, work plan and timetable for the ODIS Project;

(ii) Advise on technical aspects;

(iii) Establish a stakeholder forum to ensure active participation of representatives from ODIS nodes and other contributors;

(iv) Report to the IOC and to other partners on the progress of the ODIS Project;

(v) Provide guidance to the project manager and project technical manager;

(vi) Identify funding sources to further develop the ODIS.

Membership: The Steering Group will be composed, inter alia, of:

(i) Representatives from IOC Programmes;

(ii) Project Manager;
(iii) Project Technical Manager;
(iv) Invited Experts;
(v) Representatives of major stakeholder (user) groups including regional/international organizations;
(vi) Representative of the IODE Secretariat;
(vii) Representative of the Decade Coordination Unit.

The initial membership will include:

1. GEBCO
2. Poland – Mr Marcin Wichorowski
3. United States of America – Mr Hernan Garcia
4. GOOS OCG – Mr Kevin O’Brien
5. Expert - Mr Pier Luigi Buttigieg
6. EMODnet Secretariat – Mr Jan-Bart Calewaert
7. OBPS - Pauline Simpson
8. OBIS - Mr Anton Van de Putte
9. Ireland - NODC - Adam Leadbetter
10. Malaysia - ADU – Mr Aidy M Muslim
11. United Kingdom – NODC – Ms Lesley Rickards

The Secretariat will start up the process for the group to meet as soon as possible.

Notes: The Steering Group will designate the Project manager/editor during its first Session

**Recommendation IODE-XXVI.6.4**

**REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY (2003, 2019)**

The IODE Committee,

**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 (IWG-SODIS Report),

(iv) a large amount of effort went into building consensus on the current IOC data policy, so deciding what needs to change should be considered carefully, especially with respect to acknowledging the rights of countries and the non-binding nature of the policy,
there is a need to improve interoperability and align the IOC data policy with those at national, regional, and international levels,

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

Recommends establishing the IOC inter-sessional working group on the Revision of the IOC Oceanographic Data Exchange Policy 2003 (2019) with terms of reference as included in Annex A to this recommendation.

Annex A to Recommendation IODE-XXVI.6.4

Terms of Reference of the IOC inter-sessional working group on the revision of the IOC Oceanographic Data Exchange Policy 2003 (2019) (IWG-DATAPOLICY)

Objectives: This working group will:

(i) Create an inventory of existing international, national and organizational data policies,
(ii) Review and compare existing international, national and organizational data policies
(iii) Develop a glossary with clear definitions (e.g., open vs free and unrestricted; data vs metadata vs information, licence options),
(iv) Investigate the expansion of scope and name of the IOC Oceanographic Data Exchange Policy,
(v) Gather advice from partner/sister organizations and recognized data provider/manager organizations,
(vi) Organize a broad consultation on the proposed revised IOC Ocean Data Policy with Member States, IOC global and regional programmes,
(vii) Submit a revised IOC Oceanographic Data Exchange Policy to the 32nd Session of the IOC Assembly (2023).

Modalities: The IWG-DATAPOLICY aims to have at least 3 meetings (second half 2021, first half 2022). The group may meet online, face-to-face or mixed as appropriate. For face-to-face meetings participation will be self-funded.

Membership: The IOC intersessional working group on the revision of the IOC Oceanographic Data Exchange Policy 2003 (2019) will be composed, inter alia, of:

(i) Chair of the working group (to be designated by the group)
(ii) Invited experts from the global data and information communities including UN agencies
(iii) Representatives of IOC programmes and projects
(iv) IOC (including IODE) Secretariat
The initial membership will include:

1. WMO
2. United States of America – Mr Hernan Garcia
3. Expert - Pier Luigi Buttigieg
4. GOOS OCG (Kevin O’Brien) – (tentatively volunteered: will confirm name of participant after next OCG executive meeting)
5. OBPS – Pauline Simpson
6. Canada ADU (OBIS) – Ms Lenore Bajona
7. IOC/Tsunami Unit – Mr Bernardo Aliaga
8. Frederico Antonio Saralva Nogueira

The Secretariat will start up the process for the group to meet as soon as possible.

Recommendation IODE-XXVI.6.5

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 (2020),
(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 such as web sites and databases,
   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,

Invites 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.

Recommendation IODE-XXVI. 8.3

IODE WORK PLAN AND BUDGET FOR 2021-2022

The IODE Committee,

Having reviewed its programme implementation requirements for the period 2021-2022,

Being aware of the continuing financial crisis faced by UNESCO and its IOC,

Noting with concern the continued and substantial decline in UNESCO Regular Programme funds available to IODE which will bring IODE at a critical level unable to (i) implement its work plan and maintain the global network of data and information centres built over the past 6 decades, and (ii) provide capacity development at the regional level through the regional Ocean Data and Information Networks (ODINs) which will seriously impact on the equitable participation of the concerned Member States in IODE as well as in data and information management activities contributing to the Ocean Decade.

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,

Noting 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 the call on IODE to contribute to the United Nations Decade of Ocean Science for Sustainable Development,

Expressing great appreciation to the Government of Flanders (Kingdom of Belgium) for hosting and supporting the IOC Project Office for IODE and for its continuing and increasing financial support to IODE as well as to 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 31st Session of the IOC Assembly, the IODE Programme and Budget for the period 2021-2022, as attached in the Annex to this Recommendation.

**Annex to Recommendation IODE-XXVI.8.3**

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<td>IQuOD workshop, online</td>
<td>0</td>
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<td>AWS cloud computing to host the expert quality control tool</td>
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<tr>
<td>Ocean Best Practices System (OBPS) (shared with GOOS 50/50)</td>
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<tr>
<td>Description</td>
<td>2021</td>
<td>2022</td>
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<tr>
<td>----------------------------------------------------------------------------</td>
<td>------</td>
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<tr>
<td>SG Annual Meeting (virtual 2021,F2F 2022) (was 6000)</td>
<td>0</td>
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<tr>
<td>OBPS Operating Expenses (repository hosting and IT support, Development of interface and functionality, Integration of new developments)</td>
<td>20,000</td>
<td>14,000</td>
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<tr>
<td>Advocacy Material</td>
<td>0</td>
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<td>Repository Certification (IODE cost)</td>
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<tr>
<td>AWS expenses</td>
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<tr>
<td>Ocean Biodiversity Information System (OBIS)</td>
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<tr>
<td>1st int. data conference, Poland (November 2021) (In addition use 191 line: $17000)</td>
<td>15,000</td>
<td>0</td>
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<tr>
<td>Genetic data task team workshop, Oostende</td>
<td></td>
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<tr>
<td>OBIS meetings, TBA</td>
<td>0</td>
<td>21,000</td>
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<tr>
<td>additional (191 exb) 17000</td>
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<tr>
<td>OceanDataPortal (no request)</td>
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<td>OceanExpert</td>
<td></td>
<td></td>
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<tr>
<td>Development for OIH (contract)</td>
<td>20,000</td>
<td>0</td>
</tr>
<tr>
<td>SG meeting, Oostende</td>
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<tr>
<td>Quality Management Framework project (QMF) (no request)</td>
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<td>World Ocean Database (WOD)</td>
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<tr>
<td>setting up World Ocean Database Cloud (WODc) data provider upload system</td>
<td>30,000</td>
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<td>Consultant: Further QC and improvements</td>
<td>0</td>
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<tr>
<td>Improvements for OIH</td>
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<tr>
<td>Steering Group meeting (timing: late 2021)</td>
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<td><strong>Proposed new projects</strong></td>
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<td>IODE/IAMSLIC AquaDocs</td>
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<tr>
<td>Activity</td>
<td>2021</td>
<td>2022</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
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<tr>
<td>Outsourced Hosting and Maintenance (Atmire) (as from 9/2022)</td>
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<tr>
<td>Participation in meetings (includes travel support for IAMSLIC Annual Conference)</td>
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<td>2,100</td>
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<tr>
<td>Advocacy material design (logo, poster, brochure, etc)</td>
<td>0</td>
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<tr>
<td>Development of online guides for depositors and editors</td>
<td>0</td>
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<tr>
<td>Ocean Data and Information System (ODIS)</td>
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<tr>
<td>Development cost</td>
<td>40,000</td>
<td>0</td>
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<tr>
<td>SG-ODIS meeting (2021 online. 2022 live, tickets bought in 2021)</td>
<td>0</td>
<td>14,000</td>
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<tr>
<td><strong>Regional Activities</strong></td>
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<tr>
<td><strong>ODINAFRICA</strong></td>
<td></td>
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<tr>
<td>African Coastal and Marine Atlases - Contract for further development of Atlas</td>
<td>0</td>
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<tr>
<td>African Coastal and Marine Atlases - Review meeting for Atlas Editorial board, Mombassa, Cape Town or Dakar</td>
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<tr>
<td>Development of African node of the Ocean Data portal - meeting of ODP team with KMFRI team, Mombasa</td>
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<tr>
<td>Development of ODINAFRICA follow-up project - 3 virtual meetings (simultaneous interpretation), face-to-face meeting for SG</td>
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<tr>
<td>Consultant costs (cost to be confirmed)</td>
<td>5,000</td>
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<tr>
<td><strong>ODINBLACKSEA</strong></td>
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<tr>
<td>SG meeting, in region (late 2021)</td>
<td>10,000</td>
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<tr>
<td>OBIS training and data mobilization event ODINBS/OBIS/OTGA, Oostende</td>
<td>0</td>
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<tr>
<td><strong>ODINCARSA-LA</strong></td>
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<tr>
<td>Training (ref to OTGA RTCs plans)</td>
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<tr>
<th>OIH Regional activities. Meetings/workshops/to strengthen OIH &amp; NODCs work and improve coordination with IODE and regional/Nat. Projects</th>
<th>10,000</th>
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<td>ODINECET (no request)</td>
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<td>ODINWESTPAC</td>
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<tr>
<td>Second ODINWESTPAC Advisory Group Meeting, Tianjin</td>
<td>10,000</td>
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<tr>
<td>2021 China-Southeast Asian Countries Training Course on Marine Information Technologies, Tianjin</td>
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<tr>
<td>ODINWESTPAC/OTGA RTC, Tianjin Training Course on ODIS (ODP topic maybe included), Tianjin</td>
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<tr>
<td>Marine data &amp; information collection, WESTPAC regional oceanographic &amp; climatic statistical products, regional ocean reanalysis products R&amp;D</td>
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<tr>
<td>China-Malaysia Cooperative Research on Marine Big Data Management and Analysis</td>
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<tr>
<td>Encourage member states to establish NODCs, ADUs, and AIUs</td>
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<tr>
<td>FUST activities (ExB)</td>
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<td>OTGA</td>
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<td>PacMAN</td>
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<td>DIPS-4-Ocean Assessments</td>
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<tr>
<td>Other expenses</td>
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<tr>
<td>Secretariat travel and other costs</td>
<td>10,000</td>
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<td>Courses held at PO (or in 2021: course development for online courses) - RTC Europe</td>
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<td>47,500</td>
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<td>Staff and consultant travel (was $10,000)</td>
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<tr>
<td>Description</td>
<td>Amount 1</td>
<td>Amount 2</td>
<td>Amount 3</td>
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<tr>
<td>---------------------------------------------------------------</td>
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<td>----------</td>
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<tr>
<td>Travel support expenses ($15,000)</td>
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<td>IOC GE-CD III (was $30,000)</td>
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<tr>
<td>ISO certification cost (project office training centre)</td>
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<td>3,000</td>
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<tr>
<td><strong>TOTAL (USD)</strong></td>
<td><strong>216,500</strong></td>
<td><strong>87,350</strong></td>
<td><strong>152,200</strong></td>
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<tr>
<td>Revenue UNESCO RP</td>
<td>185,000</td>
<td>76,000³</td>
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<tr>
<td>Additional revenue</td>
<td></td>
<td>168,000</td>
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<tr>
<td>Additional EB revenue</td>
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<td></td>
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<tr>
<td>191 residual 2020 IODE</td>
<td>36,992</td>
<td></td>
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<tr>
<td><strong>DEFICIT/SURPLUS</strong></td>
<td><strong>5,492</strong></td>
<td><strong>-11,350</strong></td>
<td><strong>15,800</strong></td>
</tr>
</tbody>
</table>

³ provisional: dependent on decision of UNESCO
ANNEX III

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**Annex I**

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