IOC Committee on International Oceanographic Data and Information Exchange

Twenty-fifth Session
20–22 February 2019, Tokyo, Japan

UNESCO 2019
Abstract

The IOC Committee on International Oceanographic Data and Information Exchange held its Twenty-fifth Session (IODE-XXV) at the Iino Hall, Tokyo, Japan between 20 and 22 February 2019. The Session was preceded by a 2-day scientific conference 18-19 February 2019, attended by 150 participants. The IODE Session was attended by 100 participants from 39 IOC Member States and 7 Organizations. The Session adopted 4 decisions (+ 2 draft decisions for the IOC Assembly) and 5 recommendations. The decisions concerned (i) the establishment of an inter-sessional working group on the review of NODC health status; (ii) the revision of the IODE management structure; (iii) the establishment of the inter-sessional working group to develop the implementation plan and cost-benefit analysis for the IOC Ocean Data and Information System (ODIS). The Recommendations concerned (i) the JCOMM/IODE Global Data Assembly Centres; (ii) the revision of the terms of reference of the JCOMM/IODE ETDMP; (iii) the establishment of the IOC Ocean Data and Information System Catalogue of Sources (ODISCat); (iv) the establishment of an inter-sessional working group to propose a strategy on ocean data and information stewardship for the UN Ocean Decade; and (v) the IODE work plan and budget for 2019-2020. In addition a draft decision was prepared for the IOC Assembly on the revision of the IOC Oceanographic Data Exchange Policy as well as a draft decision on the establishment of the IOC Ocean Best Practices System project. The Committee elected Dr Sergey Belov (Russian Federation) and Mr Taco de Bruin (The Netherlands) as IODE Co-Chairs.

* The Executive Summary of this report is available in English, French, Russian and Spanish (IOC/IODE-XXV/3s)
Group photo IODE-XXV, Tokyo, Japan
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1. **OPENING**

Ms Cyndy Chandler and Prof Yutaka Michida, Co-Chairs of the IOC Committee on International Oceanographic Data and Information Exchange (IODE) welcomed the participants to the Twenty-fifth Session of the IODE Committee at 09:00 on Wednesday 20 February 2019. Ms Chandler also thanked the members of the Committee for their agreement to use English as the only working language for the Session, taking into account the cost of interpretation and translation.

Prof Michida recalled briefly the scientific conference that was held on the previous two days. Prof Michida recalled briefly the IODE-XXV Scientific Conference (18-19 Feb 2019) that was held on the previous two days. The scientific conference was attended by 150 participants from 40 countries. The objective of the conference was to provide an overview of recent and new initiatives in ocean research, observation and services to which IODE can and should contribute, and to stimulate discussions on how IODE can contribute, especially, to the UN Decade of Ocean Science for Sustainable Development (2021-2030). The 35 presentations (which were recorded and available online at http://www.iode.org/iode25_sciconf) focused on the (i) UN Decade, (ii) how IODE is collaborating in ongoing major initiatives and activities that may contribute to the UN Decade, as well as (iii) regional developments, (iv) capacity development, (v) emerging opportunities for the future of IODE, including (vi) cooperation with partners. The conference concluded with the recommendation that it is critical for IODE to be further strengthened and expanded for it is to play an essential role in supporting the flow from data to information to knowledge. The oceanographic community needs to build a global ocean forecasting system delivering society relevant services, by focusing on managing the data streams of essential ocean variables, both in the climate, operational services and ocean health space. To realize this, IODE and GOOS will need to continue their strong partnership and engage with regional bodies and stakeholders including the private sector. Important steps have been taken by the development of a prototype global Ocean Data and Information System. Future efforts will be in further improving the harmonization of data and metadata standards, developing common vocabularies and promoting and providing training in best practices. The international community is looking to IODE to facilitate and coordinate this process under its intergovernmental mandate. Two special highlights of the conference were (1) the keynote talk by Professor Toshio Yamagata, professor emeritus of the University of Tokyo on the exceptional history of contributions to the field of oceanography by Japan, and (2) the very first lecture in the Fred Grassle Memorial Lecture Series presented by Dr Yoshihisa Shirayama of JAMSTEC.

Ms Chandler informed the Committee that the IODE Achievement Awards ceremony would be held during the Session reception on Wednesday evening. Ms Chandler also announced the group photo that would be taken at the end of the Session on Wednesday.

The meeting was then addressed by the representative of the local host Dr Tetsuichiro Yabuki, the Director of Japan Oceanographic Data Centre, and by the IOC Executive Secretary, Dr Vladimir Ryabinin. Their addresses are attached as Annex IV to this Report.

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-XXV/1 prov.) available from the web site on http://www.iode.org/iode25. The Committee was requested to note that all working documents were made available only as on-line documents. Any new items or issues proposed by the Meeting were noted here and discussed either under the related Agenda Item or under Agenda Item 8.

The Committee adopted the agenda.
2.2 DESIGNATION OF A RAPPORTEUR

Mr Pissierssens invited the Committee to consider the election of 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 TIME TABLE AND DOCUMENTATION

The Committee was invited to review and adopt the Timetable (Document IOC/IODE-XXV/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 http://www.iode.org/iode25

He then informed the Committee about the working hours for the Session and other details relevant to the conduct of the Session. He reminded the Committee that this Session had only 2.5 working days (the objective was to close the Session on Friday before lunch time) 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. He also invited the participants to visit the posters and demonstration that would continue to be available until Thursday evening.

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, invited the Committee to establish sessional working groups.

The Committee established the Sessional working group on work plan and budget. Mr Pissierssens reminded the Committee that the Sessional Working Group should nominate a Chair who will report back to the Committee at the time the relevant agenda item is discussed in plenary. The Sessional working group on work plan and budget elected Mr Taco de Bruin as Chair.

The following information sessions were held alongside the Session:

(i) Information session on IODE contribution to JCOMM to JCOM process: will be information session (Thursday 21 February, 18h00-19h00)

(ii) Information session on ODINWESTPAC (Thursday 21 February, 12h30-13h30)

2.5 LOCAL ARRANGEMENTS

Information and guidelines for participants were made available through the IODE-XX IV web pages through http://www.iode.org/iode25
The local host representative, Mr Norio Baba, informed the Committee on local arrangements including lunch and social events. Mr Baba invited all participants to the IODE-XXV Official reception.

3. REPORT ON THE PAST INTER-SESSIONAL PERIOD (2017–2018)

This agenda item was introduced by Ms Cyndy Chandler, Co-Chair.

3.1 PROGRESS REPORT ON THE IODE-XXIV WORK PLAN

This agenda item was introduced by Ms Cyndy Chandler, Co-Chair. She referred to the IODE-XXIV work plan as shown in the web page https://www.iode.org/index.php?option=com_content&view=article&id=455&Itemid=100198 (IODE-XXIV Work Plan 2017-2019). She recalled that IODE-XXIV had adopted 4 decisions and 6 recommendations as well as 2 Draft Decisions for IOC-XIX. She noted that the work plan included 84 action items of which 51 (60%) were fully implemented, 11 (13%) had reported no action, 21 (25%) were pending and 2 required no action. Implementation performance is therefore considerably better than during the previous biennium (72 action items of which 31 (43%) were implemented, 7 (10%) were partially completed and 24 (33%) reported no action). Ms Chandler requested those responsible for the action items to report further under the relevant agenda item.

Ms Chandler also recalled that the Officers, during their meeting in Oostende, Belgium between 29 January to 1 February 2018 had reviewed progress and had adjusted the work plan and budget to optimize implementation. The report of the January 2018 IODE Officers meeting was available as Document IOC/IODE-Off-2018/3.

The Committee noted with appreciation that the rate of implementation of the work plan was higher than for the previous biennium.

3.2 STATUS OF THE IODE NETWORK

3.2.1 Reporting summary of NODCs, ADUs and AIUs

This agenda item was introduced by Ms Cyndy Chandler, Co-Chair referring to Document IOC/IODE-XXV/3.2.1.a (Status of the IODE Network: Part 1: Data Management) and Document IOC/IODE-XXV/3.2.1.b. (Status of the IODE Network: Part 2: Marine Information Management).

She recalled that IODE-XXII had adopted, through Recommendation IODE-XXII.17 three structural elements of IODE: (i) National Oceanographic Data Centre (NODC; (ii) IODE Associate Data Unit (ADU); and IODE Global Data Assembly Centre (IODE GDAC).

She 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).

The delegate from The Netherlands inquired about criteria for distributed data centres. Mr Reed (IODE Secretariat) replied that there are no specific guidelines but that distributed data centres are mentioned in the existing guidelines.

Ms Chandler 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 and 2015-2016. The surveys were opened on 27 August 2018 and closed on 30 November 2018. The aforementioned working documents summarized the results of the two Surveys.

She then invited Mr Greg Reed (IODE Consultant) to provide a brief report on the outcome of the survey, with special focus on changes over the past decade.
He reported that 66 responses were received for the Data Management survey and 21 responses were received for the Marine Information survey. Responses from the data management community has remained relatively constant over the last 10 years at around 60%. The responses from the Marine Information community has shown a decrease over the last 10 years from 95% response rate to 50% response rate for the latest survey.

3.2.2 New functional elements of IODE

This agenda item was introduced by Ms Chandler. She recalled that no IODE GDACs had been established during the inter-sessional period. She noted that there still appeared to be some confusion regarding the terms of reference of the IODE GDACs (as documented in Recommendation IODE-XXII.13 and those of the JCOMM GDACs. Several experts had requested that IODE and JCOMM should harmonize the terms of reference in order to avoid further confusion which had hampered formal applications to become a GDAC.

She informed the Committee that this matter had been discussed during the 6th Session of the JCOMM/IODE ETDMP. The ETDMP established a joint ETDMP/ETMC working group to revise the Terms of Reference (ToR) of structural elements of the MCDS for both IODE and WMO, in cooperation with the ETMC. This should also include mapping of data streams of projects (GTSP, GOSUD, IQuOD,...). The Task Team was requested to prepare a working document for IODE-XXV.

Ms Chandler then invited Ms Alessandra Giorgetti to briefly introduce the Document. Ms Giorgetti explained that the document highlighted the differences between the JCOMM and IODE GDAC definitions.

The Committee noted that the Terms of Reference of the IODE GDAC with the MCDS GDAC (written in WMO-471) are now converging and suggested to amend the IODE ToR. The IODE GDAC ToR includes all functions and tasks of MCDS GDAC for the benefit of JCOMM/IODE GDACs.

The Committee adopted Recommendation IODE-XXV.3.2.2.

The IODE Committee invited JCOMM ETMC to work together with JCOMM/IODE ETDMP on functions and requirements to become a GDAC and requested the JCOMM/IODE ETDMP to report to the IODE Management Group.

3.2.3 The JCOMM Marine Climate Data System (MCDS)

This agenda was introduced by Dr Sergey Belov. He recalled that IODE-XXIV did not have the opportunity to consider the MCDS. He then referred to Document IOC/IODE-XXV/3.2.3 which provides a full description of the MCDS, terms of reference of its components and map of current established elements.

He then invited the ETDMP Chair, Ms Alessandra Giorgetti, to report on the work of the ETDMP/ETMC Task Team on the MCDS.

Ms Giorgetti explained that a joint ETDMP/ETMC working group was established in September 2018, during the 6th Session of the JCOMM/IODE ETDMP, with the aim to revise the ToRs of structural elements of the MCDS for both IODE and WMO. The ETDMP agreed on the following membership for the working group: David Berry, Eric Freeman, Alessandra Giorgetti, Tobias Spears. The joint working group was requested to prepare a working document for IODE-XXV, also including mapping of data streams of projects (GTSP, GOSUD, IQuOD,...). Document IOC/IODE-XXV/3.2.3 is a first elaboration from the ETMC side. Ms Giorgetti urged IODE to contribute to the implementation of MCDS.
Ms Giorgetti explained that the benefits to NODCs of participation in the MCDS are manifold. Since the MCDS is structured jointly with WMO, NODCs which participate in the MCDS will have the tools to supply high quality marine meteorology and other related data streams and data products from the MCDS to their users. Further, the national data handled by the NODCs will find the largest audience both nationally and internationally as it is funnelled up the MCDS structure and exposed to a wider user community. The data which is pushed up through the MCDS will also be subject to more and possibly different quality control than that which is applied at the NODC level. This additional quality information is passed back to the NODC to inform data decisions and improve procedures. Finally, as the data from the NODC is merged with data from other sources, the NODC and their users are privy to a larger pool of data for their region of interest enhancing the data coverage and creating more opportunities for products and data-based decision making.

The IODE Committee invited JCOMM to jointly elaborate on MCDS structural elements, such as DACs, noting that they could be functional elements of IODE.

The IODE Committee urged the Joint WMO-IOC Consultation Group on the Reform of JCOMM to take into consideration the MCDS when discussing the future of JCOMM.

3.2.4 Possible actions to expand or review the existing network

This agenda item was introduced by Ms Chandler. She noted that while the IOC has 149 Member States, less than half have established IODE data centres (NODC or ADU). In addition, many NODCs had been established a long time ago but it was unclear if they were still active. In this regard the list of online services detailed in http://www.iode.org/data-national (and reference was also made to the IOC ODIS Catalogue, agenda item 5.2.2) also showed lack of activity of a substantial number of NODCs.

Ms Chandler noted the continuing growth in the number of ADUs, while the number of the new AIUs remains very small. In this regard she invited marine libraries to join IODE as AIUs.

Ms Chandler suggested that a review exercise should be carried out to identify NODCs that are no longer active and to investigate why they have become inactive. If there is still an interest in developing data management services then these centres should be provided with the necessary guidance to restart their activities. Ms Chandler further called on all IODE NODCs to obtain accreditation if they have not done so already.

The Committee adopted Decision IODE-XXV.3.2.4.

3.3 IODE COOPERATION WITH JCOMM: REFORM OF WMO AND FUTURE OF JCOMM

This agenda item was introduced by Dr Sergey Belov, who informed the meeting about the WMO Constituent Bodies Reform (CBR). He noted that the goal of the reform, as indicated by WMO, is "to remain fit-for-purpose and to become more and more nimble and cost-effective". The objectives of the reform are: strategic alignment, effectiveness and efficiency, integration (Earth system approach, WMO acting as one), engagement of Members experts, agility to uptake new challenges and tasks, and improved collaboration with partners. A new integration process of strategic priority setting has been approved by EC-70. This process includes three strategic goals: Services, Systems, Science. As a result of the reform two new technical commissions will be established: the Commission for Observation, Infrastructure and Information Systems (Infrastructure Commission); and the Commission for Weather, Climate, Water and Related Environmental Services and Applications (Services Commission), along with a Research Board (a new entity to promote integration of research programmes and coordinate science for services and applications), and a Scientific Advisory Panel (a new entity that will engage the world's top scientists to provide independent forward-looking strategic advice on emerging challenges and opportunities). The recommendation to Congress (Cg-18) is that the two new technical
commissions commence their work as early as possible and that existing technical commissions active during the current financial period (2015-2019) be disbanded at the end of a transition period (2020). Dr Belov noted that the WMO CBR will also affect the current JCOMM role and structure. The elimination of the joint intergovernmental technical commission and creation of the joint IOC-WMO Advisory Board, and the anchoring of long-term ongoing activities in the new proposed WMO structures and existing IOC-led activities including GOOS (already joint with WMO) and the IODE, provide opportunities that should be maximized. It was outlined that the future structure of JCOMM (as identified by 15th Session of the JCOMM Management Committee in the advice to the Joint WMO-IOC Consultation Group on the Reform of JCOMM) should have three distinct purposes:

(i) To develop and provide joint strategic advice directly derived from the overall strategic plans of IOC and WMO, to achieve joint objectives, with the mandate to propose decisions directly to IOC and WMO governing bodies.

(ii) To provide a forum for WMO and IOC bodies, as well as external partners, to negotiate and fast-track projects and joint work plans that seek objectives that cut across oceanography and meteorology, WMO and IOC regional structures, the value chain connecting observations, data management, forecasting systems, services, and research.

(iii) To provide the external community with a visible and single point of connection into matters that are cross-cutting in all the spaces described in 2 above.

It was highlighted that the future structure of JCOMM should work in a transparent way to engage more stakeholders of the joint communities; this could include facilitating the nomination of experts in technical bodies through an improved process.

Activities generated through the future structure of JCOMM in WMO and IOC data management practices and systems could lead to improved interoperability and to enhanced global sharing of, and access to, a global data space relevant to the joint mandates of WMO and IOC. Activities will essentially be conducted through the Infrastructure Commission (WIS part) on the WMO side, and through the IODE on the IOC side.

Dr Belov summarized that the future structure of JCOMM will establish strategic connections between IOC, WMO and joint bodies. The working level will be presented by fast-tracking of pilot projects. It is expected the Future JCOM will provide one place to go to for connections at the interface of oceanography and meteorology.

Dr Belov urged IODE to absorb the activities of the ETDMP as well as those of the DMCG as relevant to IODE while the transition to the future structure of JCOMM is ongoing, and to express the importance of close collaboration between WMO and IOC in the area of ocean data management. In this regard he also referred to the report of the 15th Session of the JCOMM Management Committee. He also made reference to the necessary collaboration between WMO and IODE under the MCDS (agenda item 3.2.3).

Prof Michida briefed the Committee on the work of the Joint WMO-IOC Consultation Group on the Reform of JCOMM. The Group consists of equal number of experts both from WMO and IOC, and conducts its work electronically, having 2 virtual meetings on 6 December 2018 and 22 January 2019 so far. The Group aims at finding ways to enhance collaboration between the two organizations and is tasked to examine the proposal from WMO for the transition to a joint WMO-IOC advisory body and to develop a revised proposal and a recommendation for the way forward, to be submitted to both the 18th WMO Congress and the 30th Session of IOC Assembly for decision. Though the discussion in the Group is ongoing, the current draft proposal calls the new WMO-IOC joint structure as ‘Joint WMO-IOC Advisory Board’ to provide guidance on the
coordinated or collaborative development, integration and implementation of the activities related to oceanographic and meteorological observation, data and information management, services and forecasting systems as well as research and capacity development carried out by WMO and IOC, with an advisory nature. He also informed that the 3rd virtual meeting is scheduled on 22 February 2019.

The Committee, referring to the ongoing development of WMO WIS 2.0 and IOC ODIS, remarked that many changes are taking place which makes long-term strategic planning regarding collaboration between WMO and IOC/IODE challenging.

The Committee entrusted the IODE Management Group to reflect the comments by the Committee in the discussions of the Joint WMO-IOC Consultation Group on the reform of JCOMM.

The Committee recommended:

(i) continued collaboration between IOC and WMO regarding data management and capacity development activities;

(ii) to assure that activities related to interoperability of IOC ODIS and WMO WIS 2.0, both under development, will be maintained in the proposed future structure of JCOMM;

(iii) that IOC Member States promote the IODE OceanExpert database as a joint pool of experts within IOC and invite WMO to contribute to it.

3.4 REPORTS OF THE IODE GROUPS OF EXPERTS

This agenda item was introduced by Ms Cyndy Chandler, Co-Chair. She recalled that IODE-XXIV had abolished two Groups of Experts (GE-BICH and GE-OBIS), leaving two: The JCOMM/IODE Expert Team on Data Management Practices (ETDMP) and the IODE/IAMSLIC Group of Experts on Marine Information Management (GE-MIM). As these Groups are joint groups with other Organizations it was noted that they cannot be abolished without agreement of the other Partner.

Ms Chandler invited the Chairs of the Groups of Experts to report briefly. She noted that the approval of any proposed work plan and budget would be dependent on the future of the Groups of Experts.

3.4.1 JCOMM/IODE Expert Team on Data Management Practices (ETDMP)

This agenda item was introduced by Ms Alessandra Giorgetti, Chair JCOMM/IODE ETDMP. She referred to Document JCOMM/IODE/ETDMP-VI/3.4.1

She recalled the objectives of the Joint IOC/IODE Expert Team on Data Management Practices (ETDMP) focus on adopting or sharing principles and practices for the end-to-end data management processes, also including required data management best practices and standards for such subjects as metadata, common codes, vocabularies, etc. ETDMP also assists the development of tools and services within the emerging IOC Ocean Data and Information System (ODIS) to better serve the IOC and WMO communities. ETDMP also investigates and proposes the adoption of internationally endorsed metadata standards. Ms Alessandra Giorgetti explained how these general objectives are better reflected within the proposed changes in the ETDMP Terms of References.

Ms Alessandra Giorgetti informed that during last inter-sessional period the ETDMP identified a number of actions as detailed in the summary report for ETDMP-VI (report available here). In particular, the Team suggested that all pending documents in the Ocean Data Standards and Best Practices (ODSBP) portal be submitted to the Ocean Best Practices system (OBPS) and recommended the revision of the current ODSBP process that has proved to be very lengthy and
not very efficient. She also suggested, in her capacity as Chair of ETDMP, that ODSBP should be renamed to ‘Ocean Data Standard’, for example, to avoid possible confusion with the proposed OBPS project. The Group renamed the task team for the Ocean Data and Information System that offered its assistance to the IWG-ODIS by identifying suitable metadata elements and scheme for the ODIS prototype. The ETDMP instructed the TT on Metadata to revise its work plan and re-prioritize activities being focus on submitting best practices to the OBPS. The ETDMP established a joint ETDMP/ETMC working group to revise the ToRs of structural elements of the MCDS for both IODE and WMO, in cooperation with the ETMC. This should also include mapping of data streams of projects (GTSPP, GOSUD, IQuOD,…). ETDMP in a dialogue with ETMC and IPET-MOIS recommended to consider developing and using ODIS as a broker to buffer data for WIS and to provide WIS required metadata. Having ODIS act as a metadata “mediator” between CMOCs, DCPCs, and NCs, the ETDMP encouraged the installation of a network of ERDDAP servers, which has been shown to enable easy integration of multiple data sources.

60 The Committee acknowledged the accomplishments of the JCOMM/IODE Expert Team on Data Management Practices (ETDMP).

61 The Committee adopted Recommendation IOC/IODE-XXV/3.4.1

3.4.2 Joint IODE/IAMSLIC Group of Experts on Marine Information Management in a transitional capacity (GE-MIM)

62 This agenda item was introduced by Ms Chandler on behalf of Ms Jennifer Walton, Acting Chair IODE/IAMSLIC/GE-MIM who was unable to attend the Session. She referred to the report of the meeting of the Joint IODE/IAMSLIC Group of Experts on Marine Information Management in a transitional capacity (GE-MIM) on 21-22 May 2021. The group had created a form and application process for the creation of AIUs. Currently two applications have been approved (see Agenda Item 3.2.1). The group continues to work with IAMSLIC and marine libraries to encourage more libraries to apply.

63 Ms Chandler commended the GE-MIM for its considerable contribution to including marine information management elements into the IODE programme which had resulted in several high-profile projects such as OceanExpert, OceanDocs and more recently the Ocean Best Practices System project proposal which is built upon the solid foundation of Ocean Data Practices. The GE-MIM had also been instrumental in proposing the new AIU structural element in IODE which will hopefully lead to a dynamic network of marine libraries actively participating in the work of IODE. In addition, the GE-MIM had contributed substantially to capacity development at the regional level through the various ODIN projects.

64 However, bearing in mind the decision of previous IODE Committee Sessions to abolish Groups of Experts and focus more on projects, the Committee decided to propose to IAMSLIC to abolish the IODE/IAMSLIC Group of Experts on Marine Information Management. In this regard the Committee instructed the Co-Chairs to discuss this proposal with the IAMSLIC President.

65 The Committee further instructed the Co-Chairs to discuss the continued support by IODE of IAMSLIC through Aquatic Commons, IAMSLIC membership sponsoring etc.

66 The IODE Committee invited the IAMSLIC to jointly seek new and innovative ways to collaborate on the promotion of marine information management as an essential component in the “ocean knowledge” value chain.

67 The Committee urged marine libraries to register as IODE Associate Information Units to ensure their input into the work of IODE through projects, activities and capacity development.
The Committee requested the IOC/IODE Secretariat and IAMSLIC to consider and further discuss the establishment of a new MoU focusing on specific targets and deliverables.

The Committee decided that IODE should continue the hosting and maintenance of the IAMSLIC Aquatic Commons repository.

The Committee instructed the IODE Management Group to manage the establishment of the new MoU with IAMSLIC and further collaborative arrangements.

3.5 PROGRESS REPORTS OF GLOBAL IODE PROJECTS

This agenda item was introduced by Prof Yutaka Michida, Co-Chair. He recalled that during the past few Sessions the Committee, as part of its re-organization and abolishing of the Groups of Experts has gradually transformed most IODE activities into projects in order to arrive at a more results focused programme where results can be measured and evaluated. Each project, with clear terms of reference, should be managed by a Steering Group with one or two (Co-)Chairs designated by the Steering Group. Some projects may also designate project coordinators and/or technical managers. All Member States are welcome to participate in the work of Projects and their Steering Groups.

He recalled that at its 24th Session the IODE Committee approved the Report of the Inter-sessional Working Group to Propose a Re-structuring of IODE which recommended revising the current structure, projects and activities of IODE and decided that the relation between projects (e.g. data flow) should be better communicated within the IODE community but also to the user communities. The Committee agreed that both existing and new IODE projects and activities will benefit from a more effective tracking and oversight process to help ensure that they meet IODE strategic goals and objectives. The Committee adopted Decision IODE-XXIV.3 IODE (Project and Activity Performance Evaluation). These procedures apply to both existing and new projects and activities. As a follow-up IOC Manuals and Guides No 81 entitled “Procedures for Proposing and Evaluating IODE Projects and Activities” was published in August 2018 (http://www.iode.org/mg81).

While previously all IODE project Steering Group Chairs were invited to present a brief report on key results and outputs prepared during the past inter-sessional period and to introduce a concise work plan for the next inter-sessional period, Prof Michida noted that this would not be possible this time due to the limited duration of the Session. Instead he referred to the project progress reports requested from each project and invited the Committee to limit its attention to specific requests for action by the Committee as formulated by the Projects.

He noted that requested budgets would be considered by the sessional working group for work plan and budget taking into account confirmed revenue from the UNESCO regular programme and extra-budgetary sources. In this regard he referred to agenda item 7.

He informed the Committee that, in order to limit the number of working documents, all project reports (in standardized format) were collated into two documents: Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-XXV/3.5.2b.

In order to save time, it was decided that there would not be any oral reports for the projects during the Session but that summaries would be included in the Report of the meeting. During the session only draft decisions/recommendations would be briefly introduced and discussed (their adoption was under Agenda Item 11).

3.5.1 Ocean Biogeographic Information System (OBIS)

This agenda item was introduced by Prof Eduardo Klein (SG-OBIS Chair).
The 7th Session of the IODE Steering Group for OBIS took place between 12-16 November 2018 at the IOC Project Office for IODE, Oostende, Belgium. The meeting was attended by 36 participants from 24 countries representing 24 OBIS nodes. The SG-OBIS adopted 35 recommendations and approved a work plan with 48 action items. The report is available at https://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=19894.

During the intersessional period, 4.3 million species distribution records were added to OBIS from 350 new datasets, providing 11,300 new marine species to OBIS. OBIS now has 52.1 million occurrences of 121,400 species from 2,533 datasets. The OBIS network grew with eight new OBIS nodes (31 OBIS nodes in total). In partnership with IOC’s OceanTeacher Global Academy (OTGA) and contributions from many other institutions, OBIS has trained 317 people from 71 countries in 20 training courses, of which 8 OBIS training courses took place in 2018, and several more are already scheduled for 2019.

With the release of OBIS 2.0 (December 2018) OBIS has a more solid foundation to build improved data processing/integration workflows, new data synthesis routines that add value to OBIS data, and new types of products and applications for scientific and decision-making analysis. The 7th SG-OBIS meeting established new focused and time limited projects, such as a Data Quality Control project team which will develop a quality assessment scheme (linked to the IODE quality flag scheme, MG54/3) iterating on a judicious set of criteria using the various quality control checks in the OBIS 2.0 system to flag and filter out the most suspect or problematic records. A Vocabulary Infrastructure project team will establish a basic framework for organizing and curating vocabularies used in OBIS. This will especially be important for the future of OBIS when incorporating new data types that characterize marine ecosystems in support of Essential Ocean Variables (EOVs) and other assessment and indicator needs.

OBIS is working toward a more open and inviting process of co-developing OBIS as a global networked open-source data system. A dynamic OBIS "software" ecosystem of code repositories will enable the community to organize, document, and contribute analytical codes that interface directly with the OBIS API, provide analyses, and share results. The OBIS communication team will use these tools to develop data-driven analytics to develop regular news leads on new and interesting phenomena suggested from the new data and leverage its network with the Convention on Biological Diversity, the Intergovernmental science-policy Platform on Biodiversity and Ecosystem services (IPBES), and other groups to bring together researchers and other experts, including policymakers, to develop policy briefs specific to different issues such as the UN negotiations for a legally-binding instrument to conserve and sustainable use marine biodiversity of areas beyond national jurisdiction (BBNJ), ocean acidification, and others.

OBIS may seek a cooperative development with an emerging alliance under the Global Biodiversity Information Conference (GBIC) which could focus on realizing economies of scale in the core data integration infrastructure needed for OBIS operations with accompanying increases in our ability to apply specific marine biodiversity knowledge into the system (e.g. marine-specific observation and measurement types, specific taxonomic enhancements and quality control, importance of third dimension in spatial aspects of the data, etc.).

This co-development process will need to involve collaboration between the OBIS data manager and tool developers. Recent survey responses about the types of technical and methodological tools that many of the OBIS nodes are willing and able to contribute are evidence of a growing level of technical maturity across the network. Nonetheless, the overall sustainability of the OBIS network remains vulnerable. The OBIS network just lost three OBIS nodes due to the fact that their funding source dried out. Only one third of the OBIS nodes have their operational budget secured for 2019-2020 and are sufficiently resourced in terms of staffing. To optimally run the OBIS enterprise and process the backlog of datasets (>600 datasets), the OBIS nodes would collectively need an additional 25 full-time equivalents (FTEs), to a total of 76 FTEs or increase from 1.8 to 2.8 FTE per OBIS node.
The situation at the OBIS secretariat, where currently only the OBIS project manager position is covered by IOC’s regular programme funds, is even more problematic. The OBIS data manager position, a mission-critical position, needs to be secured beyond 2019 and the SG-OBIS is asking more urgency from the IOC Member States and non-governmental partners to pledge resources to UNESCO and/or the IOC special account for OBIS to enable IOC to create a regular programme post for the OBIS data manager and support the implementation of the OBIS work plan, in order to secure the continuation of OBIS under IOC/IODE beyond 2019.

The Committee stressed the importance of securing the OBIS data manager position beyond 2019 and requested the IOC Executive Secretary to prepare the documentation to the UNESCO Director-General to create a regular programme post for the OBIS Data Manager at the earliest opportunity, and preferably within the 40C/5 (2020-2021).

The Committee urged Member States and non-governmental partners to provide extra-budgetary resources to the IOC Special Account for OBIS in order to support the implementation of the OBIS work plan and secure the continuation of OBIS beyond 2019.

NODCs represent an important and underutilized part of the OBIS network where the community should be able to count on these institutions for core data repository and management capacity. The Committee instructed OBIS to undertake a study to fit NODCs into the OBIS network construct and characterize the shared data management responsibility between NODCs, ADUs, and OBIS Nodes in fulfilling this mission for the biological data appropriate for OBIS.

### 3.5.1.1 OBIS-Event-DATA Pilot Project

This agenda item was introduced by Mr Ward Appeltans on behalf of Mr Francisco Hernandez (SG-OBIS-EVENT-DATA Chair) who could not attend.

This IODE pilot project OBIS EVENT DATA for Scientific Applications (OBIS-EVENT-DATA) was established through Recommendation IODE-XXIV.3. The main objectives of this project are to (i) enhance the scientific applications of OBIS-ENV-DATA with the aim to support data and information product development within the framework of GOOS and GEO BON MBON, (ii) select early adopters of OBIS-ENV-DATA from among the marine biodiversity monitoring communities of Practice, (iii) further validation/evaluation of OBIS-ENV-DATA, (iv) develop data products and applications, (v) develop training packages for scientists and (vi) report results at IODE-XXV in 2019.

The first OBIS-Event-Data workshop took place between 23-26 April 2018, in which 22 participants from 8 countries representing the major animal telemetry networks in Africa, Antarctica, Australia, Canada, Europe and the USA met at the IOC project office for IODE in Ostend to test the OBIS-ENV-DATA standard through the development of data products for scientific applications. The workshop report is available at https://iode.org/components/com_oe/oe.php?task=download&id=38289&version=1.0&lang=1&format=1.

In summary, the workshop participants agreed to use the OBIS-ENV-DATA Darwin Core standard to exchange and publish detection data through OBIS (both acoustic and satellite) and work with OBIS and the scientific community to develop data products for the Essential Ocean Variables (EOV) of the Global Ocean Observing System (GOOS), in particular the “Marine turtles, birds, mammals abundance and distribution EOV” and the “Fish abundance and distribution EOV”. It was felt important that OBIS provides access to the relevant (aggregated) data needed to calculate scientific products (e.g. species home ranges, migration pathways and movement patterns) and provide links back to the original (raw) data sources to ensure proper data provenance and allow reproducibility. The IODE/ADU Ocean Tracking Network (OTN) is currently developing such a data aggregation tool as an open-source project and is happy to contribute this to the OBIS toolset.
The guidelines for the implementation of the OBIS-ENV-DATA standard for tracking data (acoustic and satellite detections) were agreed upon and are further refined and documented in collaboration with the data standardization working group of the International Bio-logging Society as well as the Biodiversity Information Standards (TDWG) community which oversees development of Darwin Core. These guidelines are developed in a dedicated GitHub repository: https://github.com/tdwg/dwc-for-biologging with the aim to publish these as an ocean best practice.

A second OBIS-Event-Data workshop could not take place due to the lack of funding.

The Committee expressed its appreciation for the work achieved and decided to close the project.

The Committee noted that the OBIS-ENV-DATA standard also constitutes an important contribution to the Global Biodiversity Information Facility (GBIF) and this implementation of DarwinCore has been taken up as a data best practice by several other communities, including the International Bio-logging Society.

3.5.1.2 Development of Information Products and Services for Ocean Assessments (DIPS-4 Ocean Assessments)

This agenda item was introduced by Mr Ward Appeltans, OBIS Project Manager.

Funded through the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST) this project runs between 2015-2019 and aims to develop biodiversity indices based on the Ocean Biogeographic Information System (OBIS) to support global assessments on the state of the marine environment, as well as publish an IOC-UNESCO Global Harmful Algal Bloom (HAB) Status Report based a global HAB data set in OBIS, the Harmful Algal Event Database (HAEDAT) and the World Register of Marine Species/HAB (WoRMS/HAB) on the distribution and impact of harmful algae.

During the intersessional period, the OBIS secretariat has been supporting global assessments, such as those undertaken by the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) and the UN Regular Process (World Ocean Assessment, WOA). OBIS data and maps are used in the global and regional IPBES assessments. Members of OBIS are also actively engaged in the preparations of the second cycle of WOA.

In addition, the OBIS data manager has developed a new mapper including data download functions based on the new OBIS 2.0 API. The OBIS exploration portal shows new statistics including a quality report on the dataset level and allows to filter records on these quality flags. However, the development of new products temporarily slowed down because the OBIS secretariat needed to focus on re-engineering the OBIS infrastructure and technology stack (OBIS 2.0). The FUST Steering Committee therefore approved the extension of the DIPS project with one year, until the end of 2019.

During 2019, the DIPS project will support the development of the OBIS-HAB data portal and a new data input/output interface for the Harmful Algal Event Database (HAEDAT), which will result in merging HAEDAT into OBIS. At the 18th International Conference on Harmful Algae, 21-26 October 2018 - with 735 participants - at least 8 presentations included HAB data from HAEDAT and OBIS. There is now community wide reference to HAEDAT and OBIS as the system for HAB data and the Global HAB Status Report is seen as a community supported effort.

The Committee expressed its appreciation for the work achieved and thanked the Government of Flanders (Kingdom of Belgium) for the financial support provided.
3.5.1.3 Concept for OBIS FUST funded projects

This agenda item was introduced by Mr Ward Appeltans, OBIS Project Manager.

With the release of the second generation of OBIS (OBIS 2.0), we now have a more solid foundation to build improved data processing/integration workflows, new data synthesis routines that add value to OBIS data, and new types of products and applications for scientific and decision-making. OBIS follows an “API-first mindset,” meaning that everything starts with a robust Application Programming Interface (API) that then serves the needs of a web portal, mapping tool, and scientific programming packages (R and Python). The future of OBIS will be in working toward an open and inviting process of co-developing OBIS as a global networked open-source data system that will enable the community to organize, document, and contribute analytical codes that interface directly with OBIS, provide analyses, and share results. The power of this approach is in its ability to mobilize and enable the broader global community in building tools and capabilities on an open framework.

OBIS can serve as the nexus where data from new technologies and observing methodologies can integrate, and OBIS can help provide mapping across diverse variables to calculate metrics and produce biodiversity indicators in society relevant areas such as food security, tourism, blue economy, area-based management and climate-change adaption and mitigation. With the necessary funding and partnerships, OBIS can support the development of data products/applications in documenting and forecasting e.g. (but not limited):

(i) Changes in foodweb dynamics (linked to climate change)
(ii) Socio-economic impacts of Harmful algal blooms
(iii) Health status of Coral Reefs including impacts of bleaching events
(iv) Health status of mangroves, seagrass meadows and kelp forests (role as carbon sinks)
(v) Impact of ocean acidification on biodiversity (including aquaculture)
(vi) Behaviour of migratory species and habitat connectivity
(vii) Invasive species and consequences for Marine Protected Areas (MPAs)

The organizational structure of OBIS and its placement within UNESCO’s IOC provides a mandate and institutional framework for continual capacity building as a core function. In the last 2 years, there has been a multiplication of training efforts catalysed through the OceanTeacher e-learning platform by various institutions linked to the national OBIS nodes which organized OBIS training courses in Chile, Ecuador, Brazil, Germany, Kenya, Mexico, Russia, Iran, and the United States. These efforts represent direct return on investment to the OTGA and its funders, increasing the distribution and development of knowledge on marine data management and use worldwide.

The Committee, while expressing its appreciation for support already provided, invited the Government of Flanders (Kingdom of Belgium) through the FUST, as well as other Member States and donor agencies, to consider providing financial support to OBIS (and its community network) to ensure OBIS can facilitate the co-development of a data and analytics platform for policy relevant applications, involving relevant partners, as well as to create specific training packages in collaboration with the OceanTeacher Global Academy.

3.5.2 Global Oceanographic Data Archaeology and Rescue Project (GODAR)

Reference was made to Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-XXV/3.5.2b. Additional information was provided by Mr Tim Boyer.
The Global Ocean Data Archeology and Rescue (GODAR) project continued through the 2017-2018, albeit with reduced capacity. Significant additions of digitized and digital source data were compiled for the World Ocean Database through the World Data System and other data flow mechanisms. While agreements for data exchange were completed in the 2017-2018 period, data flow was not optimal for historical oceanographic data. Assistance from the IODE would be most welcome in facilitating data flow through GODAR into the World Ocean Database to enhance the global availability of historic oceanographic profile data for climate and oceanographic studies.

The Committee expressed its appreciation for the work achieved.

The Committee noted with sadness the passing of Carla Coleman. Carla was a dedicated (and cheerful) data digitizer for the GODAR project. She patiently copied thousands of historic oceanographic casts from manuscript to digital form, thereby making these valuable data available to generations of oceanographers and climate scientists. Carla died in 2018 after a year’s long battle with illness. She is greatly missed both in her work and in her presence.

3.5.3 World Ocean Database (WOD)

Reference was made to Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-XXV/3.5.2b. Additional information was provided by Mr Tim Boyer.

The World Ocean Database (WOD) project continues to maintain and expand the world’s largest unrestricted access uniform format, quality controlled, ocean profile database. More than 500,000 oceanographic profile casts, both historic and recent, have been added to the WOD in the last year, bringing the total number of oceanographic casts to slightly more than 15.4 million. Of recent data, the Argo profiling float program continues to be the largest contributor. There are also substantial recent data from the Ship of Opportunity (SOOP) expendable bathythermograph (XBT) program and Conductivity-Temperature-Depth (CTD) and bottle data from oceanographic research cruises from international and domestic sources. Glider data are becoming the main source of coastal and continental shelf data found in the WOD. Significant interaction with oceanographic data centres around the world continues to augment the WOD holdings, but IODE is urged to ensure that all member states are contributing ocean profile data to the WOD project. For the next two years, WOD will continue to aggregate recent and historical ocean profile data, enhance quality control procedures, interact with oceanographic data centres, research projects, and other sources of data. The WOD project will continue to work to incorporate more of the numerous glider data into the WOD on a regular basis. The IODE is asked to facilitate the flow of data from member states to the WOD and to clarify the use of Data Object Identifiers (DOIs) for oceanographic profile data, as well as to clarify the use of Creative Commons (CC) and related data use licenses. The WOD has been approved by JCOMM to be a Centre for Marine Meteorological and Oceanographic Climate Data (CMOC) in the Marine Climate Data System (MCDS). The IODE is urged to assist in constructing the MCDS by simplifying the definition of a Global Data Assembly Centre (GDAC) to allow for compatibility with World Meteorological Organization (WMO) GDAC definition. The WOD project is not asking for any funds from IODE.

The Committee expressed its appreciation for the work achieved.

The Committee urged NODCs and ADUs to continue submitting data for inclusion in WOD.

3.5.4 Global Temperature and Salinity Profile Programme (GTSPP)

Reference was made to Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-XXV/3.5.2b. Additional information was provided by Mr Peter Chu.

The objectives of the project are: (i) to provide a timely and complete data and information base of ocean temperature and salinity profile data, (ii) to implement data flow monitoring system for improving the capture and timeliness of real-time and delayed-mode data, (iii) to improve and
implement agreed and uniform quality control and duplicates management system and (iv) to facilitate the development and provision of a wide variety of useful data analyses, data and information products, and datasets.

During the inter-sessional period the following activities were implemented: (i) continued GTSSP daily operations to process and preserve both real-time and non-real-time temperature and salinity data and maintained the project web sites at http://www.nodc.noaa.gov/GTSSP/ and http://www.meds-sdm.dfo-mpo.gc.ca/isdm-gdsi/gtsp/index-eng.htm, (ii) populated the outcomes of the comparison between observed versus model-simulated temperature data for the North Pacific Region at http://ds.data.jma.go.jp/gmd/gtsp/data/index.html, (iii) conducted the fourth (4th) Session of the GTSSP steering group, 11-13 April 2018, Oostende, Belgium; (iv) developed the terms of reference of the GTSSP Chair and (v) elected Dr Peter Chu of the Naval Postgraduate School to be the next GTSSP chair.

The GTSSP future work plan shall cover 2020 in order to be in line with the IODE-XXV work plan. He anticipated that the GTSSP will conduct the action items from the meeting during the next inter-sessional period and continue its functions including, but not limited to, (i) real-time data acquisition from the Global Telecommunication System, (ii) submission of the delayed-mode data from the GTSSP participants, (iii) provide data services by the U.S. National Centers for Environmental Information and the Marine Environmental Data Section of the Oceans Science Branch, Fisheries and Oceans, Canada, (iv) publish the results of comparison between temperature observations circulated on the GTS and model-simulated temperature data by the Japan Meteorological Agency, (v) continue to integrate the GTSSP CMD and the WOD (World Ocean Database), (vi) publish the GTSSP CMD system document and (vii) plan to hold two GTSSP steering group meetings in 2019 and 2020.

The Committee expressed its great appreciation to Dr Charles Sun for his years of commitment to IODE and the GTSSP project.

The Committee expressed its appreciation for the work achieved. The Committee welcomed Dr Peter Chu as the new Chair of the SG-GTSSP.

The Committee recommended that GTSSP should interact with GOOS.

3.5.5 Global Ocean Surface Underway Data Project (GOSUD)

He mentioned that during the reporting period the GOSUD operations have been successfully conducted but on a routine mode. In Situ, Sea Surface Salinity (SSS) and Sea Surface Temperature (SST) data have been collected, quality controlled and distributed in near-real time. He mentioned that he plans to retire before the end of the next reporting period and that he has not been able to identify a new chair person. He mentioned that during the reporting period no Steering Group meetings were held. He recalled that, taking into account the updated Project Plan will continue routine operations on SSS and SST but also will work to set up the following facilities: (i) provide a distribution for Carbon data and related parameters. This was proposed during the last SG meeting but, since then, no progress was made on this issue; (ii) provide a repository for FerryBox multi-parameters data; (iii) provide a repository for Ship-Born ADCP data from GO-SHIP.

He reminded the Committee that GOSUD is a best effort project and, for this reason, it is difficult to conduct it. Taking into account the ongoing work performed by the joint WMO-IOC Consultation Group on the Reform of JCOMM, GOSUD is considering that the opportunity of strengthening the relationship between SOT and GOSUD must be considered. We propose that
GOSUD remains an IODE project but with privileged relationship with SOT and consequently report to both SOT and IODE. The objective of such a closer relationship would be to help GOSUD in defining an implementation plan and also to take benefit from the JCOMM-OBS facilities for monitoring the GOSUD contribution to the global ocean observing system. GOSUD could also be more involved in the OCG JCOMM activities.

Ir Petit de la Villéon announced that he will retire as GOSUD Chair by the end of 2019.

The Committee expressed its appreciation for the work carried out and thanked especially Ir Loic Petit de la Villéon for his leadership of GOSUD for many years.

The Committee recommended a closer relationship with the JCOMM/OCG and the SOT. The Committee urged the SG-GOSUD to elect a new Chair by the end of 2019.

### 3.5.6 International Coastal Atlas Network project (ICAN)

Reference was made to Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-XXV/3.5.2b. Additional information was provided by Ms Tanya Haddad. The following activities were implemented during the intersessional period:

(i) Governance Meetings (Steering Group Meetings). Meetings of the Steering group were held via phone conference/webex in December 18th, 2017, June 18th, 2018, and November 13th, 2018. A mini face-to-face meeting was held September 27th, 2018; (ii) expert travel & technical support to regional atlases. ICAN members from the CMA2 project and ICAN Tech teams participated in workshops related to the African Coastal Marine Atlas (ACMA) in November 2017 in Oostende, Belgium, and Swakopmund, Namibia, in March 2018. These efforts resulted in a proof of concept delivery of an instance of the GeoNode platform for serving the previously produced products of the ACMA community. The intent was that this proof of concept be a launching point for funding proposals and future work to develop the ACMA platform by the member countries and LMEs; (iii) Workshops and Outreach activities. ICAN organized a mini-workshop in conjunction with CoastGIS 2018 conference in Ísafjörður, Iceland, in September 2018. The workshop featured presentations on recent ICAN member activities around the world, and a brainstorming session on the theme of “How can ICAN and CWA operators contribute to SDG14 and the Decade of Ocean Science?” Presenters included Ms Kathrin Kopke (University College Cork, Ireland), Dr David Hart (University of Wisconsin Sea Grant, USA), Dr Anja Kreiner (National Information and Research Centre, Namibia), Mr Francisco Arias (INVEMAR, Colombia), Ms Kathy Belpaeme (Provincie West-Vlaanderen, Belgium). Approximately 30 participants from 13 countries were surveyed both before and after the event to gauge their reaction to, and perception of the topics and approach. Overall, reactions from participants were positive regarding the group break out approach, and participants reported increased knowledge about ICAN, the Ocean Decade of Science, and the SDGs after the conclusion of the event. Presentations will be posted on the ICAN website.

The Committee expressed its appreciation for the work achieved.

### 3.5.7 International Quality Controlled Ocean Database project (IQuOD)

Reference was made to Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-XXV/3.5.2b. Unfortunately, the Co-Chairs of the SG-IQuOD were not able to participate. Accordingly, the item was introduced by Mr Tim Boyer.

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

Major activities during this inter-sessional period included:
(i) Release of first interim product: IQuOD v0.1 (via NOAA/NCEI), including detailed
documentation;

(ii) Development of new intelligent metadata algorithms based on deterministic and machine
learning approaches (Palmer et al., 2018; Leahy et al., 2018 submitted);

(iii) Development of software tools for automated QC benchmarking (IQuOD github);

(iv) Development of a prototype cloud-based interface for expert QC (and including machine
learning approaches for training the next generation of data scientists) at
https://expertqc.castelao.net

The Committee expressed its appreciation for the work achieved.

3.5.8 IO DE Ocean Data Portal (ODP)

Reference was made to Document IOC/IODE-XXV/3.5.2a and Document IOC/IODE-
XXV/3.5.2b. Additional information was provided by Dr Sergey Belov on behalf of Mr Tobias
Spears.

During the intersessional period, the IO DE Ocean Data Portal activity focused primarily on
core technology upgrades and support, attempts to improve support to existing node and data
providers, enhancing interoperability capabilities and contributing to the development of IOE ODIS.
At present state IOE ODP includes more than 700 data sets (information resources) and
connects over 68000 data sets (metadata with references to data, by metadata harvesting)
obtained from interacting with related systems: the European data network - SeaDataNet, WMO
Information System - WIS, NOAA National Centers for Environmental Information (US NCEI)2,
Australian Ocean Data Network (AODN). ODP also automatically delivers data to EMODnet
Physics on a routine basis.

The ODP team actively participated in the ongoing development of IOE ODIS, both through
the IWG-ODIS and through ETDM. The team is contributing to the next version of the ODIS
concept paper (action from IOE XXIV), has provided feedback on the initial ODIS prototype
developed by VLIZ, and participated in the development of a recommended metadata profile
for ODIS submitted to the IWG-ODIS by ETDM. The ODP team is actively supporting ETDM
through participation on TT-Metadata and leading TT-ODIS (formally TT-ODP).

Discussions related to node connectivity and accessibility issues have been re-started with
ODINBlackSea, ODINAfrica, and ODINWESTPAC in an attempt to re-establish and/or improve the
support to these regional ODP nodes. New discussions with the Indonesia Data Buoy Center may
also result in a new specialized ODP node.

The ODP core technology continues to be maintained, though issues related to network
connectivity from some of the regional nodes have impacted the ability of the Partnership Centre
for the IOE ODP to implement some upgrades. Limited progress in increasing the network of
ODP node and data providers continue to be major challenges, despite that IOE QMF requires
Member States to share their data, products and services using IOE ODP.

The Committee expressed its appreciation for the work achieved.

The Committee instructed ETDM to specify the role of the ODP in the development of IOE
ODIS development based on system interoperability/convergence approaches.

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2 The former National Geophysical, Climatic and Oceanographic Data Centers were merged into NOAA
National Centers for Environmental Information (NCEI) in 2015.
3.5.8.1 Review of the Partnership Centre for the IODE Ocean Data Portal

This agenda item was introduced by Prof Yutaka Michida, referring to Document IOC/IODE-XXV/3.5.8.1.

The review was requested by IOC/IODE taking into account that the current MoU expired on 27 March 2018 and could be renewed after approval by the 2 participants.

On the basis of terms of reference for the review of the “Partnership Centre for the IODE Ocean Data Portal”, the approach recommended by IOC/IODE for the review was an assessment over four major topics:

(i) Organizational performance
(ii) Enabling environment
(iii) Organizational motivation
(iv) Organizational capacity

IOC/IODE asked the reviewers to take into consideration the following additional elements:

(i) The IOC Audit on IODE (200 EX/20.INF.2)
(ii) The IOC Data Exchange Policy (IOC-XXII-6, 2003, clause 5)
(iii) The Opening Address by IOC executive secretary at IODE-24 (IOC/IODE-XXIV/3, Annex V)
(iv) The recent IOC decision (IOC-XXIX/3s/Decisions) to task IODE the further develop the development of a concept paper for an Ocean Data & Information System, which should take into account the results and functioning of the IODE Ocean Data Portal, to be submitted in 2019;
(v) The fact that TT-MOWIS is trying to establish connections between WMO (and thus IOC) member states and the WIS states publishing oceanographic data on the WIS, by offering interoperability.

It was also noted that the reviewers did not have to address the question whether ODP as a project should be continued or not. Reviewers from IODE (Dr Michèle Fichaut and Dr Toru Suzuki) and Roshydromet implemented site review of the Partnership Centre for IODE Ocean Data Portal (further, Centre) on 11-12 September 2018. Reviewers also visited the office of the Centre and had the opportunity to communicate with the staff of the Centre. While the final version of the report was not yet available at the time of release of this Action Paper the main conclusions were as follows:

(i) The IODE ODP Partnership Centre fulfills its obligations. As described in the Memorandum of understanding, RIHMI-WDC is developing a distributed ocean data system and its web portal that can be used, by the IODE network of NODCs and data units, as a showcase to display and distribute their oceanographic and / or meteorological data. The system is also designed to deliver monitoring for hardware, software and information resources of the ODP nodes.

(ii) The system has very ambitious capabilities but is maybe not sufficiently user oriented: this could be improved through communications with the ODP nodes and their users, as well as by some kind of surveys sent to the connected users.
ODP can be seen as the oceanographic component of the GEOSS portal; it already includes many pan-European countries through its link to SeaDataNet infrastructure and USA through its link to the WDC-A of NOAA. The missing components of the system are mainly non-European countries as only Argentina is represented for the South American part, Kenya for the African countries and one institute from Japan and another one from China.

The ODP partnership centre has huge ambitions which would need more funds and more human resources than what is already provided in order to be able to attract new NODCs by financial incentive to connect to the ODP infrastructure.

Presently the ODP governance relies on a steering group composed of three IODE members and the project technical manager. The reviewers recommend that IOC-IODE implement a wider governance composed of at least two parts: (i) a political governance for the project and financial management and (ii) a technical governance involving some major technical actors of the major Research infrastructures already well developed, in order to use common standards and protocols. A user committee could also be added to this schema in order to have feedback from the community to improve the system and answer the user needs by developing user-oriented services in cooperation with other projects. The reviewers recommended that the steering group should include at least one external member not directly involved in the IODE decision bodies. The reviewers recommended that an Annual plan should be submitted to the steering group in order to establish and adopt a clear roadmap.

The ODP user interface for data discovery and download uses some vocabularies with no references to already existing standards: the reviewers recommended to use standards (WMO, SeaDataNet...) where possible and to upgrade the data transport format from netCDF2 to netCDF4.

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 made with the ODIS task team to address the following items: “agree on following meta-data structure and on vocabularies”, this should be done also in close cooperation with the international bodies working on this subject (e.g. SeaDataNet standards should be taken into account).

It is recalled that IODE-XXIV had established an Inter-sessional Working Group “to develop a concept paper for the ODIS” (IWG-ODIS) to finalize concept paper. The working group had met for its first session between 5-8 March 2018 at the IOC Project Office for IODE, Oostende, Belgium, and the group recommended that ODIS should include an inventory of existing data sources and identify the global/regional systems built by the IODE network members like WOD, AODN, SeaDataCloud, MCDS and describe how they can be used, as “Ocean Data and Information Sources System”, and concluded that a “central data portal” is not realistic as an objective for ODIS now because of the substantial resource requirements. At this point the reviewers concluded that it may be different concept between ODP and current status of ODIS, and that it may be premature to progress ODP as a core technology for ODIS.

In conclusion, the reviewers recognised that the Centre made a great contribution to maintain and progress of ODP project, then it was recommended that the MoU should be renewed for a next term if IOC/IODE decides to continue the ODP project.

The Committee expressed its appreciation to the Partnership Centre for IODE Ocean Data Portal for the progress in implementation and maintaining of the IODE Ocean Data Portal project.
The Committee 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.

3.5.9 IODE OceanDataPractices

Additional information was provided by Ms Pauline Simpson, Project Manager of the ODPr project. Ms Simpson referred to agenda item 7.1.1

3.5.10 IODE OceanDocs

Reference was made to Document IOC/IODE-XXV/3.5.2b. Additional information was provided by Ms Arame Keita (former SG-OceanDocs Chair).

OceanDocs is an ongoing IODE Project repository which aims to collect, preserve and facilitate discovery and access to all research output from members of the ocean research and observation community and specifically their Ocean Data and Information Networks (ODINS).

There has been an increase in deposits to OceanDocs over the past intersessional period from 8376 (September 2017) to 12642 (September 2018) but they came mainly from the Islamic Republic of Iran and Latin America. The Steering Group is concerned at the decrease in contributions from the Africa region but acknowledges that the OceanDocs strategy of encouraging and supporting the implementation of repositories within own institutions will reduce contributions to the central OceanDocs.

The lack of IODE IT support impacted OceanDocs ability to move forward in terms of its user interface. Much of the remedial software requirements are still outstanding and it has been a frustrating intersessional, knowing what needs to be changed for improved community support but unable to achieve significant progress. Despite this, new registrations on OceanDocs grew by 66 users over the intersessional (unfortunately, location unidentified because of Gmail, Yahoo, Hotmail email accounts).

The Secretariat informed the Committee that new IT staff has been recruited in October 2018 and Mr Arno Lambert has been requested to manage the IT needs of OceanDocs.

During the intersessional period, the Steering Group for the OceanDocs project met in Oostende, Belgium between 10-12 October 2018. You can find the report in IODE website: https://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=22891

The Group reviewed progress with the implementation of its previous work plan and adopted a work plan for the next two years 2019-2020. The Group decided to develop a promotional leaflet to highlight 10 reasons to use OceanDocs to develop an institutional repository. The Group reviewed and revised the Policy Document of OceanDocs. The Group welcomed the development of the OBPS system and recommended considering using the semantic text mining, searching and natural language processing in OceanDocs.

The Group further defined six questions related to the future development of OceanDocs. The Group elected Ms Andrea Cristiani and Ms Kateryna Kulakova as Co-Chairs of the IODE Steering Group for OceanDocs for the next inter-sessional period.

The Committee encouraged all Member States to deposit works in OceanDocs or implement their own national/institutional e-repository with OceanDocs assistance.

3.5.11 IODE OceanExpert (OE)

Reference was made to Document IOC/IODE-XXV/3.5.2b. Additional information was provided by the IODE Secretariat upon request.
The OceanExpert user interface has been redesigned and redeveloped. A variety of issues with the old portal and paperclip were addressed in the new version. In the past two years OceanExpert was used by 78,322 individuals. The top countries with maximum users were from United States, India, France and United Kingdom. Highest number of users accessing the website were from regions speaking English, French and Spanish. During the same period 3224 oceanographers created their OceanExpert profiles in the system and 5926 updated theirs. During the yearly clean-up and the quality control 107 expert profiles were deactivated. Similarly, 1388 institutional records were newly created, 4229 were edited and 265 were deactivated. The system was also used to manage 376 events and 1919 documents during the past two years. OE statistics are available at http://www.oceanexpert.net/statistics.

It was further noted that OceanExpert is now a key element of several IOC information systems such as the IOC web sites, IOC country profiles, GOSR, TMT/CHM, etc.

The Committee was informed that the SG-OceanExpert is currently composed of mostly IOC Secretariat staff members (see https://www.iode.org/index.php?option=com_oe&task=viewGroupRecord&groupID=321) and the Group is used mostly to share experience on issues that need attention. Because of this, no work plan and budget had been submitted. The IODE Management Group (at its December 2018 Session) recommended to re-constitute the SG-OceanExpert and to include a meeting in 2019 to prepare a detailed work plan that takes into account the various services provided by OceanExpert to other IOC projects.

It was noted that OceanExpert is now a key element of the IOC information system while the role of OceanExpert as a “global directory” has diminished due to the emergence of social media as well as services like ORCID, LinkedIn etc. For this reason, it was suggested that OceanExpert should perhaps no longer be presented as a “global directory” but as an IOC expert community database.

The Committee recommended that OceanExpert should remain an IODE project managed by IODE but with close consultation with IOC programmes and considering that IODE is a data and information provider for all IOC programmes.

3.5.12 IODE OpenScienceDirectory

This agenda item was included for information only. The Committee noted that OpenScienceDirectory activity is not a “standard” project but is rather a service offered by a Member State and commercial company to the ocean research community since 2008. The Open Science Directory (http://www.opensciedirectory.net), which utilizes EBSCO’s A-to-Z® locator product to provide access to useful scientific information needed in many of the world’s developing nations, has originally been developed by EBSCO and Hasselt University Library based upon a request by marine information management experts collaborating within the framework of the IOC’s IODE programme.

3.5.13 IODE OceanKnowledge Platform Pilot Project

This agenda item was included for information only. The Committee noted that the IODE OceanKnowledge Platform Pilot Project has been put on hold taking into account the development of the ODIS project which will encompass most of the services that were planned under the OceanKnowledge Platform Pilot Project.

3.5.14 IODE Quality Management Framework project (QMF)

Progress reporting on this project was referred to Agenda Item 3.6.
3.6 IODE QUALITY MANAGEMENT FRAMEWORK IMPLEMENTATION

3.6.1 Centre/Information Centre accreditation: status and way forward

This agenda item was introduced by Mr Greg Reed. He referred to Document IOC/IODE-XXV/3.5.2b.

The objectives of the IODE-QMF project are: (i) provide the overall strategy, advice and guidance to NODCs to establish organizational quality management systems for the delivery of oceanographic and related data, products and services; (ii) initiate and review existing standards and Manuals and Guides with respect to the inclusion of quality management procedures and practices; (iii) apply the necessary capacity development activities to ensure accreditation of NODCs according to agreed criteria in order to bring all NODCs to a minimum agreed level.

The focus for IODE-QMF was on educating the community and encouraging NODCs to apply for accreditation. A successful OTGA training course was held from 11-14 September 2017 on Quality Management System Essentials for National Oceanographic Data Centres attended by 11 representatives of NODCs and ADUs. The training course provided an introduction to the development, implementation and management of a Quality Management System and the IODE accreditation requirements for NODCs. The aims and objectives of the training course were (i) to introduce the IODE Quality Management Framework, (ii) to introduce the ISO 9000 series of standards, (iii) to provide a description of a Quality Management System, (iv) to describe the importance of quality management for oceanographic data, and (v) to describe the accreditation process for NODCs and ADUs.

IOC Manuals and Guides 67 (IODE Quality Management Framework for National Oceanographic Data Centres) is under review and a new version will include reference to the ISO 9001:2015 standard and the criteria for evaluating the performance of Accredited NODCs and ADUs which needs to be performed every four years. This new version will be completed by mid-2019.

During the inter-sessional period six applications for accreditation were received and positively evaluated by the SG-QMF: British Oceanographic Data Centre (BODC), Korea Oceanographic Data Center (KODC), Institute of Oceanography and Environment (INOS), Japan Oceanographic Data Center (JODC), Marine Institute Ireland (MI) and VLIZ Data Centre (VMDC). INOS was the first Accredited IODE Associate Data Unit. This now brings the total number of accredited NODCs and ADUs to ten.

The Committee welcomed the progress of the IODE-QMF project.

The Committee urged all IODE NODCs and ADUs to apply for accreditation.

The Committee invited Member States to nominate suitably qualified experts with experience in implementing quality management systems for management of oceanographic data to the SG-QMF for the next intersessional period.

The Committee, in order to prepare ADUs for applying, instructed the SG-QMF to assist interested ADUs with the accreditation process (e.g. through examples of applications).

The Committee instructed the SG-QMF to develop the necessary criteria for AIU accreditation, and invited IAMSLIC to assist with this.

The Co-Chairs then handed over the Certificates of Accreditation to the following centres:

(i) BODC (United Kingdom) (24 August 2017)
(ii) Flanders Marine Institute - VMDC (Belgium) (20 February 2019)
In addition, INOS (Malaysia) was acknowledged as having achieved accreditation during the past inter-sessional period and received the certificate previously (29 January 2018).

### 3.6.2 IODE Project and activity performance evaluation: status and way forward

This agenda item was introduced by Mr Greg Reed. The project reports were analysed by the IODE MG during its December 2018 meeting, and scored according to the evaluation criteria documented in IOC Manuals and Guides No.81 (2018). All projects obtained a rating of at least 60% which means they met the minimum criteria to enable the IODE MG to recommend the projects for continuation to the Committee. The IODE MG suggested a single annual project report be submitted and discontinue the biannual project activity report. The annual project report should include 2 additional questions to be responded to, prior to IODE Committee sessions (i) workplan and budget; and (ii) draft text for the action paper. The IODE MG recommended that the IOC Manuals and Guides No.81 be updated to reflect the suggested changes. All projects are required to submit annual reports using the template available from IOC Manuals and Guides No. 81 (2018).

The Committee decided to reduce the number of reports to an annual report that includes project reporting. The annual report submitted prior to the IODE Session will also include a workplan and budget for the next inter-sessional period. The Committee further decided to include a SWOT analysis in the report.

The Committee instructed the IODE Secretariat to revise IOC Manuals and Guides No. 81.

### 3.6.3 IODE Manuals, Guidelines and other advisory materials

This agenda item was included for information only. The following IOC Manuals and Guides, relevant to IODE, have been published over the previous intersessional period:

- IOC Communication and Outreach Strategy for Data and Information Management (2017-2019). [IOC Manuals and Guides No. 79](https://ioc.unesco.org/mg81), 22 Sep 17
- Procedures for Proposing and Evaluating IODE Projects and Activities. [IOC Manuals and Guides No. 81](https://ioc.unesco.org/mg81), 23 Aug 2018

Reference was made to the OceanBestPractices (OBP) site (https://www.oceanbestpractices.net and http://www.oceanbestpractices.org) which is a secure, permanent document repository that aims to provide a discovery point for research groups to search and find community accepted existing ocean best practices. This service also invites the ocean research, observation and data/information management communities to submit their own best practice documents to share globally with their colleagues.

Reference was made further to the IODE/GOOS Ocean Best Practices System project proposal (agenda item 7.1.1).
3.7 PROGRESS REPORTS OF JOINT ACTIVITIES WITH OTHER IOC PROGRAMMES AND OTHER PARTNERS

This agenda item was introduced by Ms Cyndy Chandler, IODE Co-Chair.

3.7.1 IOC Global Programmes

This agenda item was introduced by Ms Cyndy Chandler.

Ms Chandler referred to IODE cooperation with IOC Ocean Science (GOSR, HAEDAT, Ocean acidification), GOOS (GOOS biology), and MPR (Marine Policy and Regions) (IODE contribution to SDG indicator reporting and the SPINCAM project). Several of these make use of OceanExpert, OBIS and the OceanTeacher Global Academy. In addition, cooperation has started between GOOS and IODE on the Ocean Best Practices system (see agenda item 7.2.1).

Ms Chandler noted that, while collaboration between IODE and other IOC programmes had so far been organized and implemented on a case by case basis she recommended that future actions should be seen within the larger ODIS vision, noting that all IOC programmes either generate, manage or use data and information. IODE would be one contributing partner within ODIS sharing its existing network, data and data/information management expertise with other IOC programmes.

The Committee welcomed the existing cooperation and called on other IOC programmes to collaborate with IODE for their ocean data and information management requirements.

3.7.2 IOC regional programmes (sub-commissions and regional committees)

This agenda item was introduced by Prof Yutaka Michida.

ODINAFRICA: (reported by Mr Mika Odido): IOCAF RICA, in collaboration with the MARISA project (Benguela Current Commission) and the MAMI Wata project (UNEP Abidjan Convention Secretariat) organized a training course on Geonode in Swakopmund, Namibia from 12-14 March 2018. This was followed by a workshop to migrate the African Coastal and Marine Atlas from SmartAtlas to Geonode from (12-16 March 2018). The development of the African regional node for the Ocean Data portal continued with the creation of a meta-database of cruises undertaken in the Large Marine Ecosystems (LMEs) of Africa both historical and contemporary as a continuation of the earlier work that was done to compile the historical data sets of the Western Indian Ocean region. This will be completed in the first half of 2019. Four training workshops on marine spatial planning were organized in Cape Verde (in February 2018 in Portuguese), Mombasa, Kenya (in September 2018 in English), in Dakar, Senegal (in September 2018, in French) and Mauritius (in October 2018 in French). These initiatives have provided the tools and the expertise that can be relied on to develop the data and information products necessary for the integrated management of the ocean and coastal areas in the region.

ODINWESTPAC (reported by Dr Shi Suixiang). A Regional Workshop on the contribution of oceanographic data and information management and exchange to Ocean and Coastal Sustainability held in Tianjin, China, 16-18 May 2017, and the session on Ocean Observations, data and information management in the Indo-Pacific: Major Advances and Challenges took place on 18 April, 2017 during the 10th WESTPAC International Scientific Conference (17-20 April 2017, Qingdao, China), and a series of efforts that highlight ODINWESTPAC projects. The following results were achieved during the inter-sessional period: (i) the new web service platform release and upgrade (http://www.odinwestpac.org); (ii) regional data and information products updated; (iii) collaboration with other projects on enhancing the regional capacity building activities. The outcomes of regional climate statistical and ocean reanalysis products R&D, collaboration on sea level rising assessment and sharing the best practice on Blue Economy development.
ODINWESTPAC will continue to work on promoting the regional data and information exchange, through specialized data product R&D, ocean knowledge sharing as well as capacity building.

194 The Committee was informed about the discussions at the ODINWESTPAC information meeting held on Thursday 21 February. The meeting had discussed opportunities for potential cooperation with IOC/WESTPAC including (i) discussing regional capacity development needs with IOC/WESTPAC and strengthening the linkages between OTGA-RTC China and OTGA-RTC Malaysia and IOC/WESTPAC, (ii) improving communication between ODINWESTPAC and IOC/WESTPAC, for example, by inviting each group to meetings and workshops, (iii) providing assistance to member states in the region which have not established a NODC/ADU/AIU, and (iv) working with IOC/WESTPAC regional bodies such as NEAR-GOOS and SEA-GOOS, and other regional projects such as PICES, to ensure their data and information requirements are included in the ODINWESTPAC workplan.

195 ODINCARSA (reported by Mr Ariel Troisi). The activities implemented, and results achieved during the inter-sessional period, include the participation in CMA2, SPINCAM and CLME projects. The region continues suffering from extremely limited financial resources to support activities. Nevertheless, the OTGA RTC at INVEMAR, Santa Marta, Colombia, provided important opportunities for continuing capacity development in the region. An asymmetrical distribution of capacities in terms of human resources and infrastructure continues to be a challenge that requires, inter alia, support for the development of DM and MIM at basic and advanced levels including the development of products and services. Despite the efforts made and the activities carried out during the inter-sessional period, several shortcomings remain. Although the critical importance of proper data and information management and associated capacity development remains unchallenged, the continuation of ODINCARSA-LA under its current form and structure should be revised.

196 ODINBLACKSEA (reported by Mr Murat Elge). The following activities were achieved during the past intersessional period (i) a Steering Committee (SC) Meeting was held between 6-8 November 2017 with participation of the representatives of all member states, including a briefing from Mr. Ward Appelans on the objectives of OBIS and the opportunities for ODINBLACKSEA to contribute, (ii) the Commission on the Protection of the Black Sea Against Pollution (Black Sea Commission) has been contacted about possible collaboration and Implementation Officer, Ms Irina Makarenko, attended to the meeting, (iii) a new Ukrainian NODC was established, (iv) detailed inventories of Black Sea Countries "Ocean Data Base" and "Real Time Ocean Observation Stations" finalized were submitted to IOC/IODE Project Office, (v) the Scientific Hydrophysical Centre of the National Academy of Science of Ukraine organized Scientific and Practical Seminar “International Cooperation in the Field of Marine Scientific Research, an Important Factor in the Development of Black Sea Regional Projects”, held in Kiev, Ukraine on 19 October, 2017 in close relation with ODINBS activities. The following action items are planned to be conducted for the next intersessional period of 2019-2021: (i) two SC Meetings will be held, (ii) one Capacity Building Activity will be held (in IOC/IODE project office or in Russian NODC), (iii) the ODINBLACKSEA web site will be sustained, (iv) Research Vessel Work Plan Documents for 2019 and 2021 will be prepared, (v) update the Black Sea inventories of “Ocean Data Base” and “Real Time Ocean Observation Stations”, (vi) continued support for OBIS activities and encourage Black Sea countries to be part of OBIS network, (vii) create synergy to apply IODE accreditation process for all ODIN BLACKSEA members, (viii) provide assistance in the development, operation and strengthening of National Oceanographic Data (and Information) Centres and Associate Data Units (ADU) of Black Sea Countries and to establish oceanographic data and information network amongst them by applying IOC/IODE Ocean Data Portal (ODP).

197 ODINECET (reported by Ms Kateryna Kulakova). The latest KOHA Software version has been installed at the Institute of Marine Biological Research (IMBR, Sevastopol, Crimea) as a local open source library catalogue. The next intersessional period will be devoted to expanding the KOHA ILS Project and raising it to the regional or even national level. It is planned to implement the final stage of the project: create a union catalog, including from 10 to 20 marine libraries and
information centers from the ODINECET Group, who are willing to participate in the joint ILS based on KOHA software. It is also expected that AIUs will be established (at least 2 or 3 members within the Russian Federation and one AIU in each Eastern European country).

ODINCINDIO (reported by the Iranian National Institute for Oceanography and Atmospheric Science). ODINCINDIO has been revitalized and started activities, including (i) negotiation with Oman and Kuwait IOC contact points requesting them to express their interest for establishment of their National Ocean Data Centres (expert visit program) in 2017, (ii) receive the letters of Interest of Oman and Kuwait for visit of an expert from IODE to help them establishing their Ocean Data Centre (the expert visit program) in 2018, (iii) visit of Mr Greg Reed to Kuwait in 2018, and (iv) contribution of ODINCINDIO to the First International Conference on Oceanography for West Asia, 30-31 October 2017, Tehran, Iran for enhancing the Capacity Development in the region.

The Committee recalled that ODINs were established more than 20 years ago when regional cooperation through the Regional Subsidiary bodies was still limited. The objective of the ODINS then was to develop data and information capacities in the regions to prepare them for the management of data and information generated by emerging ocean science and observation activities. The situation in the regions has changed substantially since then with active and dynamic regional subsidiary bodies.

The Delegate from Thailand noted that the IOC Sub-Commission for the Western Pacific (WESTPAC) continues to employ inclusive, adaptive and self-driven approaches, to develop integrated capacity development tools to meet countries’ requirements and contribute to expected results (outcomes) specified in the IOC Capacity Building Strategy. In addition to regular training course and summer schools as part of its research programmes, WESTPAC has been endeavouring to develop the IOC Regional Network of Training and Research Centers (RTRCs) on Marine Sciences. At the present, there are 2 RTRCs have been operating which one RTRC is in Qingdao, China, on the ocean dynamic and climate and the other is in Jakarta, Indonesia on marine biodiversity and ecosystem health. The RTRC in China and Indonesia have been providing capacity building since 2011 and 2017 respectively, receiving a number of trainees both from within and outside the region such as Africa, South America, and North India Ocean. There are other three RTRCs have been proposed to establish in the WESTPAC this year as following: (1) on marine plastic debris and micropastics monitoring and research (East Normal University, Shanghai, China) (2) on coral reef monitoring and management (National University of Philippines) and (3) on marine biotoxin and seafood safety (National Oceanographic Institute, Vietnam).

The Committee invited existing ODINs and IOC Regional Subsidiary bodies and GOOS and its regional alliances to work closely together and invited the IOC Regional Subsidiary Bodies and GOOS and its regional alliances to identify CD and collaboration assistance requirements and discuss these with IODE at the regional (ODIN) and/or global level.

The Committee requested IOC Regional Subsidiary Bodies and GOOS and its regional alliances to include data and information management in the agenda of their meetings.

3.7.3 Aquatic Sciences and Fisheries Abstracts (ASFA)

This agenda item was briefly introduced by Ms Cyndy Chandler noting that this agenda item was included for information only as no particular financial allocation was needed, except for participation by the IODE Secretariat in the annual meeting of the ASFA Advisory Board (usually approx. $3000/year).

3.7.4 Cooperation with IAMSLIC

This agenda item was covered under Agenda Item 3.4.2 (GE-MIM).
4. IODE CAPACITY DEVELOPMENT

This agenda item was briefly introduced by Ms Cyndy Chandler, Co-Chair.

4.1 CONTRIBUTIONS OF IODE TOWARDS THE IMPLEMENTATION OF THE IOC CAPACITY DEVELOPMENT STRATEGY

4.1.1 IODE OceanTeacher Global Academy project (OTGA)

This agenda item was introduced by Dr Cláudia Delgado (OTGA Project Manager and IODE training coordinator).

Dr Delgado recalled that one OceanTeacher Global Academy Steering Group Meeting took place during the inter-sessional period. Whilst the previous OTGA SG meetings took place in Ostend, Belgium (IODE PO), the 4th OTGA SG meeting was held at the Herman Teirlinck Building in Brussels between 16 – 18 May 2018, after the FUST Oceans Meeting (14-15 May 2018). The OTGA SG meeting had a strong focus on the adaptations needed as a consequence of the ISO Certification obtained in the meantime, considering the use of Moodle as a tool to implement some of the adaptations requested and included a ‘Moodle Refresher’ course as well as an overview of the use of the OTGA Back Office.

She informed the Committee that during the inter-sessional period all candidate Regional Training Centres (RTC) implemented their work plans within OTGA. Besides the IOC Project Office for IODE in Belgium, six (6) RTCs achieved ‘Designated’ status given the positive performance (Colombia, India, Kenya, Malaysia, Mozambique and Senegal), while the other two (2) RTCs kept the ‘Candidate’ status (China and Iran).

She further noted that during the inter-sessional period 30 strictly OTGA training courses were organised by OTGA network of RTCs, involving 733 participants. Additionally, another 15 training activities were supported by OTGA, involving no less than 500 participants. These include supporting training activities jointly with IOC/OOS/HAB, MPR/IOC, POGO, SeaDataCloud, MBon, Gent University, DOALOS, amongst others. Support consisted mostly, although not exclusively, on hosting training resources on the OceanTeacher e-Learning Platform (OT e-LP). She informed the Committee that this support is provided without extra financial support, except in the case of SeaDataCloud.

She further informed the Committee that no less than twenty (20) new training courses were uploaded on the OT e-LP, in 4 different languages (English, French, Spanish and Portuguese). The necessary software upgrades have been performed as needed and the application process is done fully online.

She further informed that the IODE Project Office obtained its Certification as a Learning Services provider (ISO 29990) in April 2018, considering quality Management Framework in place when organising the training activities delivered through the OTGA Project.

She further informed that given the extra workload under the new OTGA structure, Mr Greg Reed is hired as a consultant and tasked to develop training contents as well as supervising the Quality Management Framework for OTGA. Ms Sofie de Baenst is hired as an administrative officer under OTGA since September 2017, and provides administrative and logistics support to all training activities held at the IODE Project office and administrative support to other RTCs. She finally informed that Mr Aditya Naik Kakodkar left the IODE Project Office in June 2018.

She recalled the Committee that the OTGA is an extra-budgetary Project project funded by FUST (Government of Flanders, Kingdom of Belgium) ending in December 2019 and informed about the work plan for 2019.
She informed the Committee that the OTGA Project was subject to an extensive external review by FUST during 2018. The review was very positive about the Project’s achievements and performance but suggested that a new project proposal will need to (i) be more ‘KPI oriented’, (ii) serve all IOC training needs and (iii) the business model will need to be adapted. She finalised by informing that the IODE Project Office is drafting a new OTGA project proposal taking these recommendations in consideration for submission for funding once a new call for proposals is open by FUST.

The Committee expressed its appreciation for the work achieved.

4.1.1.1 IODE OceanTeacher Global Academy: Phase 2

This agenda item was introduced by Dr Cláudia Delgado (OTGA Project Manager and IODE training coordinator).

She recalled the OTGA work achieved and described under the previous agenda item. The OTGA Project has grown from the former OceanTeacher Academy with a single training centre in Belgium into a truly global academy. Thanks to its RTCs, OTGA has been able to deliver a growing number of training courses for the Regions in different languages, with a record number of courses and participants in the last year 2018.

Despite its overall success, namely confirmed by the external FUST evaluation, a few issues have been identified:

- RTCs have very different capacity in terms of administrative as well as teaching staff to secure a smooth organisation of the courses;
- The OTGA Secretariat takes over many of the tasks expected from the RTCs, not only at the administrative level but also in what regards uploading new contents on the OceanTeacher e-Learning Platform (OT e-LP);
- A limited number of new courses/topics was developed by the RTCs;
- Some RTCs depend entirely on OTGA funds to organise the courses, whilst other RTCs cannot manage external funds, thus relying on the OTGA Secretariat/IODE Project Office to organise many aspects of the course logistics;
- Slow uptake of the use of the OceanTeacher e-Learning Platform (OT e-LP);
- Poor uptake of the use of the OT e-LP and the network of RTCs by the other IOC Programmes.

She continued by informing the Committee that the Government of Flanders (Kingdom of Belgium) has informed about its decision to renew FUST. The new FUST Agreement should be put in place during the first semester of 2019, which should allow the submission of new project proposals during the second semester of 2019. However, some aspects will need to be reinforced in new project proposals, namely:

- Projects should clearly demonstrate co-funding by other parties, either in actual funds and/or in-kind contribution;
- Projects should allow clear opportunities for full valorisation (scientifically, socially, economically) of their results, including also where this is based on the cooperation of Flemish partners.
The new FUST phase will prioritise smaller projects over the course of the 5 years FUST Agreement, as opposed to previous phases where a few large-scale projects were funded.

Projects should focus on the potential for application of the products and services developed, namely to the private sector (Blue Economy).

Given the above and building on the achievements and lessons learned from the OTGA Project, a project proposal will be submitted for funding to FUST before the end of 2019.

The new project will have as main objectives to become IOC’s training tool, serving not only IODE’s training needs but also all IOC’s Programmes and Regions training needs. It will do so by expanding the network of RTCs and further exploring the use of the OceanTeacher e-Learning Platform. The RTCs will become more topic specific, i.e., RTCs should promote/organise courses within their area of expertise (e.g. the different IOC Programmes relevant topics such as Tsunami warning System, MSP, etc…). Change in business model: as opposed to the previous OTGA and OTA projects, the new OTGA phase will focus on developing ‘packaged courses’ that can be delivered ‘on demand’. For this, the project will hire international experts in the different topics, which will be charged with developing the specific training courses (packaged courses). The course contents developed by the content providers will be uploaded on the OceanTeacher e-Learning Platform by the OTGA Secretariat. Courses will be delivered either fully online, blended learning and/ or face-to-face (classroom), depending on the suitability of the topics. The different OTGA RTCs will host the classroom phase of the courses, depending on the target region, training topic, as well as relevant language for the training.

Fellowships: budget will be assigned to support the attendance of classroom courses, although in a limited number; the selection process for the fellowships will often depend on performance during an online phase of the course (i.e., prior to the classroom phase); co-funding by the course participant and/or his/her host institute will be further promoted.

The course portfolio to be developed will consider/integrate any training needs relevant to the implementation of the Agenda 2030 and its 17 SDGs, with special attention to the SDG 14, as well as the UN Decade of Ocean Science for Sustainable Development (2021-2030).

The Committee welcomed the positive results obtained by the Regional Training Centres and the growing collaboration with other IOC Programmes using the OTGA. However, the Committee noted that other IOC Programmes making use of OTGA should also contribute to the related Secretariat tasks.

The Committee invited IOC Regional Subsidiary Bodies to jointly, with OTGA, plan and implement courses through the RTCs in their region.

The Committee thanked the Government of Flanders (Kingdom of Belgium) for the substantial support provided to the OTGA project.

The Committee welcomed the planned submission of a new proposal to FUST.

### 4.1.2 IOC Group of Experts on Capacity Development (IOC GE-CD)

This agenda item was introduced by Mr Ariel Troisi referring to Document IOC/IODE-XXV/4.1.2. He recalled that the 27th Session of the IOC Assembly (IOC-XXVII), held in Paris from 26 June to 5 July 2013, established an Inter-sessional Working Group for Developing a Draft Strategic Plan for Capacity Development. The work of the Group resulted in the adoption of Resolution IOC-XXVIII-2 on the IOC Capacity Development Strategy (2015-2021) by the 28th Session of the IOC Assembly (IOC-XXVIII) in 2015, which was published the same year as IOC/INF-1332. The Strategy identifies 6 outputs that all need to be addressed on a long-term and
sustained basis. These outputs are all inter-related and essential, and the IOC already has a very extensive range of Capacity Development (CD) activities responding to most of them.

The 28th Session of the IOC Assembly (IOC-XXVIII) in 2015 also agreed that the IOC global and regional programmes needed to develop programmatic and regionally relevant capacity development work plans based on this strategy and related needs assessments conducted in a consistent manner, building on ongoing activities and making use of existing training and education facilities.

This resulted in a comprehensive document submitted to the 29th Session of the Assembly (IOC-XXIX), held in Paris from 21 to 29 June 2017, that includes mappings between the six outputs and relevant actions of all IOC programmes. This revealed a number of gaps that need to be addressed. The document also compares the IOC CD Strategy outputs with the IOC Criteria and Guidelines on the Transfer of Marine Technology defined in 2005 noting that a number of required tools have already been developed. In order to continue the work that should lead to a detailed implementation plan, the IOC Assembly at its 29th Session established the IOC Group of Experts on Capacity Development. The tasks assigned to the Group are: (i) Assist global and regional programmes with the implementation of capacity development needs assessments in a consistent manner; (ii) Assist global and regional programmes with the development of programmatic and regionally relevant capacity development work plans based on the IOC CD Strategy and related needs assessments, building on on-going activities and making use of existing training and education facilities; (iii) Assist with the mobilization of financial and in-kind resources to enable the implementation of global and regional capacity development work plans; (iv) Provide advice to global and regional programmes on relevant methods and tools to improve the quality and impact of CD efforts; (v) Advise the Assembly on, and start implementation of the Transfer of Marine Technology Clearing House Mechanism (CHM) as requested by the IOC Criteria and Guidelines on the Transfer of Marine Technology making use, to the largest extent possible, of existing data and information systems already available at IOC.


The First Session of the IOC GE-CD further agreed to establish an Inter-sessional Task Team on the implementation of a TMT/CHM portal and related activities, to further seek answers on the questions and issues formulated by the sessional working group on TMT/CHM and taking into account the Decade preparations. The task team will report back to the GE-CD. ToR: based on the recommendations of the GE-CD, to develop the scoping and needs assessment of the CHM (which should be developed, as much as possible, using existing information systems and sources), and (if possible) develop a proof of concept.

Secondly the Group agreed to start work to identify CD requirements of Member States in relation to the IOC CD strategy (taking into account the work already done and focusing on SIDS, LDCs and the Member States that are currently not member of any of the 3 Sub-Commissions and IOCINDIO and Black Sea regional committees) and taking into account the Decade preparations.

The Inter-sessional Task Team on the implementation of a TMT/CHM is chaired by Dr Ann-Katrien Lescrauwaet and the Inter-sessional Task Team to identify CD requirements of SIDS and LDC Member States in relation to the IOC Capacity Development Strategy is chaired by Ms Pauhla McGrane.

Through IOC Circular Letter No 2738 a “Capacity Development Needs Assessment Survey” was organised by the IOC Group of Experts on Capacity Development, designed to assess the capacity development requirements of member countries, specifically Small Island Developing
States (SIDS) and Least Developed Countries (LDCs), in order to contribute to the implementation plan (under development) of the Capacity Development Strategy of IOC.

The survey also contains a part on a Clearing House Mechanism (CHM) as a tool “to provide interested users in Member States with direct and rapid access to relevant sources of information, practical expertise in the Transfer of Marine Technology (TMT), as well as to facilitate scientific, technical and financial cooperation to that end’. The overarching legal framework for this CHM is UNCLOS (Part XIV).

In addition, IOC CL No 2738 recommends Member States to designate an “IOC CD focal point” in order to enable an effective communication on the results of the survey, as well as to assist with the implementation plan and its future implementation in Member States.

The Group will be submitting its work to the upcoming 30th Session of the IOC Assembly that will take place 26 June – 4 July, 2019.

The Committee was informed about the JCOMM external stakeholder survey (available as Document JCOMM-5/INF. 23 on JCOMM web site: https://www.jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=21127). This shows prioritization of data management standards best practices, modelling/forecasting as high priority needs.

The Committee welcomed the survey and instructed the Secretariat to disseminate the results of the survey to all IODE contacts. The Committee further noted that the survey results should be of great interest to the planning process of the UN decade.

The Committee welcomed the development by INVEMAR Colombia of the CHM/TMT for the Latin America region, demonstrating the expertise within the IODE community.

The Committee invited other IODE partners to consider assisting with other regional CHM/TMT setups in other regions, in close consultation with the IOC Regional Subsidiary Body in their region as well as other partners.

5. THE FUTURE OF IODE

This agenda item was briefly introduced by Ms Cyndy Chandler, Co-Chair.

5.1 IODE MANAGEMENT ISSUES

This agenda item was introduced by Ms Cyndy Chandler. She recalled that IODE-XXIV through Decision IODE-XXIV.2 had established the IODE Management Group with membership including the current two IODE Co-Chairs, one expert on data management, one expert on information management, one or both past IODE Co-Chairs and the Head of the IODE project office. Unfortunately, it had proven to be impossible to identify or designate one individual for DM and one for MIM who would be able and willing to represent all aspects of IODE. Therefore, the IODE management group has operated without these two individuals during the inter-sessional period.

The Committee adopted Draft Decision IODE-XXV.5.1.

5.2 IOC OCEAN DATA AND INFORMATION SYSTEM (ODIS)

This agenda item was introduced by Mr Tobias Spears (via Skype) referring to Document IOC/IODE-XXV/5.2.

The IOC Ocean Data and Information System (ODIS) concept was presented at IODE-XXIV as a first step in responding to the recommendation resulting from the audit of IOC
operations in 2016. IODE-XXIV adopted Decision IODE-XXIV.4 (Ocean Data and Information System” stating “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”.

IODE-XXIV also established an intersessional working group to continue the development of the ODIS concept and to undertake a number of actions outlined in the terms of reference for the group:

(i) Prepare a brief introductory document summarizing the Ocean Data and Information System Concept Paper (IOC/IODE-XXIV/6.2.1, 19 March 2017), including general proposal of benefits and impacts, for the 29th session of the IOC Assembly in June 2017;

(ii) Identify and recommend a strategy to move towards the implementation of a universal marine data and information system in response to the 2016 external audit of the IOC and its activities;

(iii) Further develop the concept paper to construct a universal information system and data portal, to be known initially as the IOC Ocean Data and Information System (ODIS), based on the Ocean Data and Information System Concept Paper (IOC/IODE-XXIV/6.2.1, 19 March 2017) and feedback from the 29th Session of the IOC Assembly;

(iv) Liaise and collaborate with other IOC programmes and with JCOMM, to ensure ODIS is inclusive and supports stakeholders at all levels;

(v) Develop a cost-benefit analysis for ODIS to determine potential infrastructure, development, implementation, and maintenance costs;

(vi) Define the scope of ODIS in areas such as content coverage, system coverage and search, access, and visualization capabilities;

(vii) Finalize and submit the Concept Paper for consideration and approval by IODE-XXV.

Although progress has been made on the majority of tasks assigned to the group, work has progressed more slowly than expected. Progress has been made on all tasks except for Task (v), the full cost-benefit analysis and costing.

The IODE Project Office and IWG-ODIS members represent and continue to engage a number of communities within and outside the IODE community to assist with shaping the vision for ODIS and to ensure both contributors and users are well-represented in the ODIS implementation. As such, Task (iv) will be an ongoing activity.

The Inter-sessional Working Group for the IOC Ocean Data and Information System (ODIS) met in person and discussed and revised the ODIS the original concept to better communicate the scope of ODIS (e.g. discovery system intended to expose/advertise existing resources/systems as opposed to being a separate, ‘new’ data and information system) and to reflect a phased implementation strategy deemed to be more feasible with the resources available to IODE.

It was confirmed that ODIS would be evolutionary in terms of its implementation, initially a catalogue and basic search capabilities, with the longer-term goal of providing more value-added resource and technical metadata that would facilitate reuse of advertised resources by other organizations. Although a full cost breakdown has not been developed, it was agreed to implement ODIS in small development cycles that could costed/funded and delivering incremental advances as opposed to attempting to pursue a larger-scale, end-to-end project that may also succeed, but would take longer and provide more challenging to resource. Although Task (ii) from the IWG-ODIS terms of reference is closed in terms of the high-level strategy, it is expected that the
strategy will be revisited repeated as ODIS develops and IODE continues to engage partners within and outside the IOC communities.

253 As a complementary activity to the work undertaken by the IWG-ODIS directly, the Expert Team on Data Management Practices (ETDMP) developed a proposed metadata scheme for ODIS, which was considered by IWG-ODIS from which a Version 1.0 metadata scheme was agreed upon. The metadata scheme also included advice on semantic resources (established sources and internal vocabularies which may be superseded by other sources in the future).

254 A follow-up concept paper was developed rather than continuing development on the original paper. The original concept paper included much of history which led to the current state (no universal marine data and information system) while the new concept paper focused more on the future, taking into account the discussions within IWG-ODIS and with other organizations. This paper was complemented by a separate document outlining the ODIS Version 1.0 metadata scheme developed jointly with the Expert Team on Data Management Practices.

255 The new concept paper and metadata scheme close Tasks (iii) and (vii) from the IWG-ODIS terms of reference.

256 The IOC Assembly, at its 29th Session, adopted Decision IOC-XXIX/6.2.1:

“Requests Member States to provide comments and suggestions to the IODE Secretariat, not later than December 2017”

257 No comments or suggestions were received.

“Instructs the IODE intersessional Working Group to further develop the concept paper for the IOC Ocean Data and Information System, taking into account, inter alia, the results and functioning of the IODE Ocean Data Portal as well as comments and suggestions received from Member States, and submit the final document to the Assembly at its 30th session in 2019 together with a draft implementation plan, supported by a cost-benefit analysis as feasible.”

258 The Committee was reminded that the JCOMM-5 session (Nov. 2017, Final report published online: https://www.jcomm.info/index.php?option=com_oe&task=viewEventRecord&eventID=1805) recognized with appreciation, IODE efforts to develop a global ocean data and information system, to be referred to as the Ocean Data and Information System (ODIS). It further recommends JCOMM teams on data, service and forecasting support and assist the development of the ODIS concept paper, considering fundamental issues ranging from infrastructure, standards and strategies for harmonization, and considering requirements expressed in the JCOMM Data Management Strategy.

259 As explained above a Concept Paper was now available as Document IOC/IODE-XXV/5.2.

260 The Committee approved the concept paper for the IOC Ocean Data and Information System as presented in Document IOC/IODE-XXV/5.2.

5.2.1 Ocean Data Sources inventory pilot service

261 This agenda item was introduced by Mr Tobias Spears (by Skype) referring to Document IOC/IODE-XXV/5.2. It was noted that a demo was provided during the IODE-XXV Scientific Conference by Mr Arno Lambert.

262 Following the IWG-ODIS meeting in 2018, an initial ODIS prototype was developed by VLIZ (Flanders Marine Institute) to foster discussions on ODIS catalogue content, functionality, and user experience. Although the first prototype was published very quickly (using a pre-existing metadata
profile supported by VLIZ on another project), there was no agreement on adopting the search facilities and user experience provided by the tool.

With the development of the proposed ODIS metadata scheme in collaboration with ETDMP, there was sufficient analysis completed of semantic requirements, business rules, and potential integration with other systems (OceanExpert) to guide a second prototype development project to be led by the IODE project office. This subsequent effort supports the submission and maintenance of ODIS sources in addition to delivering the discovery/access services, along with the development of core process and governance. Although this work closes Task (vi) from the ODIS terms of reference for the current development iteration, it is expected that the functional requirements and specifications for ODIS will continue to be re-visited as ODIS continues to evolve.

The Committee was informed that there had been an opportunity to enter/update information in the pilot site during the scientific conference. Committee members were invited to contact Mr Arno Lambert during the Session for further input/editing (during coffee breaks).

The Committee invited IODE community members to enter and/or update records in the ODIS Catalogue of Sources.

The Committee noted the importance of the ability of ODISCat to continue to evolve. The ODISCat concept, the metadata scheme, and semantics should all evolve and have a place in the workplan. Community engagement will be essential to further develop and improve the Catalogue.

The Committee noted the importance of early consultation of end users through relevant organizations and instructed the project, being established through Recommendation IODE-XXV/5.2.1, to define clear objectives (undertake a needs assessment).

The Committee decided that the URL for the ODIS Catalogue of Sources (ODISCat) should be catalogue.odis.org

The Committee adopted Recommendation IODE-XXV/5.2.1

5.2.2 Current IODE and other IOC programme products and services that should be included in ODIS

This agenda item was introduced by Mr Tobias Spears (by Skype).

ODIS is intended to support the registration of a variety of sources, ranging from data and information, to systems such as catalogues/portals/webs sites, to manuals/guidance/standards. IODE and other IOC programs have the potential to contribute many types of resources to ODIS. Examples include:

- **Data catalogue** - IODE Ocean Data Portal (catalogue component)
- **Data systems/portals (allowing downloading of data sets)** - IODE Ocean Data Portal, OBIS (portal), World Ocean Database
- **Data products (model output, forecasting products, climatologies, re-analysis, etc)** -
- **Maps and atlases (geospatial products)** - ODP GIS Component, OBIS Map Interface
- **Real-time observing systems (and access to their metadata and data)** - ARGO
- **Code lists and vocabularies** - BODC NVS
• Software (ocean related) - ODP Node and Data Provider
• Multimedia content -
• Information on experts and organizations - OceanExpert
• Information on projects - IODE Web Site
• Information on vessels (including research vessels) -
• Information of platforms (buoys, sensors, floats, gliders, satellites) -
• Bibliographic infobases including library catalogues and document repositories -
• Manuals, guidelines, standards and best practices - Ocean Best Practices
• Journals (open source and commercial) -
• Education and training materials (related to oceans) - Ocean Teacher

The ODIS metadata scheme provides flexibility to register sources at a granular level which, when combined with other source classification information, will provide opportunities to deliver finely tuned purpose, community, and theme-based experiences.

5.2.3 Development of additional ODIS components and their integration into ODIS

This agenda item was introduced by Mr Tobias Spears (via Skype).

As IODE continues to engage with the IOC and non-IOC communities, opportunities will continue to be sought expand on the capabilities of ODIS to support evolving needs.

Ongoing development of ODIS will include a combination of core technical development, standards development and adoption, specialized product development, and integration with other systems:

(i) Core technical development - Core technical development for ODIS will include backend infrastructure, search facilities, and user experience (portal). In keeping with capabilities of most modern catalogue portals, it is expected that ODIS will evolve in terms of its content, user experience, and machine-to-machine (web services, APIs) functionality.

(ii) Standards and best practices - Standards and best practices related development will include ongoing development of the ODIS metadata scheme and associated vocabulary development but will also include other standards and best practices development as appropriate, along with their submission through IODE standards and best practices processes. The original vision for ODIS in terms of standards development was focused specifically on the ODIS metadata schema and supporting controlled vocabularies and interoperability protocols. However, feedback received during ETDMP VI also raised the potential role for ODIS and standards development beyond it inward facing needs. It was proposed that mobilizing metadata expertise to support ODIS (as one example) could be extended to also consider other metadata exchange with WIS and other systems.

(iii) ODIS product development - ODIS thematic or purpose-specific view of ODIS sources, integration of resources sources into the ODIS portal, and spin-off projects intended to facilitate integration/re-use/promotion of sources registered with ODIS.
Development in support of interoperability with other programs/systems - A primary goal for ODIS is to provide more than a simple list of sources and to achieve this goal, ODIS will support integration efforts between ODIS and other systems/programs, along with other IODE integration efforts.

The Committee adopted Decision IODE-XXV.5.2.3

5.3 IODE CONTRIBUTION TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

This agenda item was introduced by Mr Julian Barbière, Head IOC/MPR.

The UN General Assembly, at its 72nd session, proclaimed in December 2017 the UN Decade of Ocean Science for Sustainable Development from 2021 to 2030. The period 2018-2020 will focus on the preparation of the Implementation Plan for the Decade, which will encompass both a Science Plan as well as an Engagement Plan. The IOC was tasked by UNGA with the preparation of the Implementation Plan in "consultation with Member States, specialized agencies, funds, programmes and bodies of the United Nations, as well as other intergovernmental organizations, non-governmental organizations and relevant stakeholders."

The strategic approach to the Decade will be transformative. The ocean science community should be willing to think beyond "business as usual" and to aspire for real change, whether in relation to the depth of knowledge related to the ocean, or in the way cooperation and partnerships are leveraged in support of sustainable development and healthy ocean.

The 51st session of the IOC Executive Council took note and welcomed the Decade Roadmap prepared by the Secretariat which provides an initial guide for the steps and processes needed to develop an Implementation Plan for the Decade. It also proposed governance and structural arrangements in the form of an Executive Planning Group to act as an advisory expert group to the IOC Secretariat and a Stakeholder forum open to a broad range of communities (science, technology, ocean management, private sector, civil society) that are interested in contributing to the Decade. The IOC Executive Council endorsed the establishment of both the Executive Planning Group (EPG) and Stakeholder Forum. IOC convened the 1st meeting of the EPG on 17-19 December 2018 to brainstorm on scientific, governance, communications, and engagement elements of the Decade ahead of a first Global Planning Meeting and a series of regional consultations foreseen in 2019 that will channel stakeholders' inputs into the preparatory process.

In terms of objectives and potential outcomes, the Decade will consist of top down and bottom up science initiatives to map the ocean floor and processes, bolster ocean observation systems in all basins, develop a data and information portal, establish an integrated multi-hazard warning system, advance ocean component in earth-system models, research and production, and strengthen capacities, ocean literacy and technology cooperation. The Implementation Plan will seek to achieve additional specific results, driven by the mission needs of society and science, and produce lasting benefits.

Beyond its coordinating role in relation to the preparation phase of the Decade, the Commission also needs to initiate strategic thinking on how to sustain delivery on all its programmes, whilst making use of the Decade to upgrade and augment the impact of its core programmes. Existing programmes such as IODE can catalyze opportunities for new and expanded collaboration and should be a foundation of planning for the Decade.

The Decade with its current proposed goals, societal outcomes, and Research & Development Areas provide a framework within which one would hope that various communities would find space to develop their own flagship initiatives. The Decade can bring highly visible branding, and policy relevance, as well as convening and partnership power across the UN but
also by attracting stakeholders that are not usually seen within the IOC circles (e.g. private sector, technology community).

In terms of data and information requirements, a robust data and information management component will be needed to support the programmatic elements of the decade structured around a high-level science plan which is yet to be defined (early 2020). This should allow for the archiving and dissemination of the Decade results at all levels and should be part of the overall legacy process that the Decade will leave by 2030. It is proposed that IODE should play a leading role in supporting this objective. In this context, Data and Information Management efforts would be primarily directed at supporting individual science plans as well as the overall Decade program goals, by encouraging early sharing of data using internationally agreed rules of data exchange.

By the start of the Decade, a number of actions will need to have taken place, these would include:

(i) Agreement on common data exchange policy for data collected under the Decade,
(ii) Agreement on protocols and metadata structure,
(iii) Agreement on quality control/quality assurance procedures for all data types,
(iv) Agreement on modalities for, and enable the dissemination of data,
(v) Agreement on modalities and establish a mechanism for the long-term preservation of Decade data,
(vi) Publication of research results,
(vii) Develop and update data and information management capacity,
(viii) Identify and review potential data and information management infrastructure that could be established during the implementation phase (2021-2030) to coordinate data management activities.
(ix) Concerning the initial steps towards the establishment of an ocean data and information portal building on ODISCat, the Committee Recommends the IOC Assembly to request the IOC Secretariat to explore through UN-Oceans the interest of relevant UN bodies to develop a joint data and information portal under the Decade and to start assessing respective data and information policies and identify relevant data and information repositories that may contribute to such portal;
(x) Establish an IODE inter-sessional working group to develop a work plan, required resources and possible timetable to address (i) to (ix) above.

A second entry point for IODE in the planning of the Decade relates to the achievement of specific breakthrough/outcome that the Decade should achieve in terms of data. The roadmap identifies the need for data and information portal (see ref to Research and Development Area 4 in the Roadmap document) that would bring to a variety of stakeholders (policy makers, ocean economic sectors, ocean management, scientists, civil society) authoritative information on the state of the ocean.

The vast majority of ocean data is not easily accessible to enable analysis and insight. There are already a number of different data initiatives and platforms, but no all-encompassing platform combining it all. Systemizing available knowledge and data, and making it readily available for the public, decision-makers and businesses worldwide would greatly alleviate some of the major challenges currently facing the ocean and contribute to the transformative nature of the Decade. Such platform would be based on open collaboration with existing data
providers and knowledge hubs for ocean data and would require integration across various type of
data (eg fisheries, pollution, biodiversity, etc). This could also be linked closely to the SDG process
in terms of providing a platform to visualize progress in terms of SDG targets implementation.

To be successful, such global endeavour will need to be user and demand driven. It is
therefore recommended that as first step towards this high-level outcome, a user needs
assessment is conducted to identify specific interests across various communities. Given the
important contributions of other UN bodies in terms of curating ocean-related data (for e.g.
fisheries, biodiversity, meteorology, shipping, pollution, etc), a task group could be established
under IODE with the participation of experts from relevant UN bodies, to develop and conduct such
user needs assessment in the course of 2019. In parallel, the development of ODIS will provide a
catalogue of web-based data/information sources developed by IOC Member States, hence
delivering a first order assessment on what type of data exist and could potentially be integrated in
the Decade data platform. ODIS would also need to be expanded in order to include topics related
to fisheries, pollution, bathymetry, health, agriculture based on collaboration with other
organizations.

The user-need information collected and as well as the expressions of interest from
institutional partners would provide the basis for organizing an international workshop in 2020
aimed at developing a conceptual model for the Platform envisaged. Fund-raising and partnership
will be sought from national, international donors as well as philanthropic Organizations.

The IODE Committee, (i) considering the need to derive the greatest benefit from the
observations collected and information from the UN decade of the ocean science; (ii) considering
the complexity and use of international observing systems during the UN decade of the ocean
without overarching data and information access and use, recommended to the IOC to include, as
part of preparatory process, the formulation of common guidelines/principles on flow, discovery,
access, and re/use of data collected during the decade. The IODE Committee offered its
assistance in this regard.

Concerning the initial steps towards the establishment of an ocean data and information
system building on ODISCat, the Committee Recommended the IOC Assembly to request the IOC
Secretariat to explore through UN-Oceans the interest of relevant UN bodies to develop a joint
data and information system under the Decade and to start assessing respective data and
information policies and identify relevant data and information repositories that may contribute to
such system;

The Committee adopted Recommendation IODE-XXV.5.3

The IODE Committee identified interested experts for the IWG: Dr Hernan Garcia (USA), Dr
Rorie Edmunds (WDS), Ms Alessandra Giorgetti (Italy), Dr Graham Allen (United Kingdom), Mr
Neil Holdsworth (ICES), Mr Serge Scory (SeaDataNet), Mr Jan-Bart Calewaert (EMODNET), Mr
Kevin O’Brien (JCOMM OCG), Dr Pier Luigi Buttigieg (OBPS Project), Mr Francisco Arias
(Colombia), IODE Co-Chairs.

The Committee stressed the need for active participants and strong leadership in the
IWG, taking into account the very short timelines.

Mr Jan-Bart Calewaert (EMODnet) expressed interest, on behalf of the European
Commission, to host the first meeting of the group in Brussels during the fall of 2019.

The Committee requested the IOC Secretariat to further finalize the draft recommendation
in preparation for the IOC Assembly.
5.4 IOC STRATEGIC PLAN FOR DATA AND INFORMATION MANAGEMENT (2022–2026)

This agenda item was introduced by Mr Greg Reed, referring to Document IOC/IODE-XXV/5.4.

He recalled that IODE-XXIV submitted a Draft Decision for the 29th Session of the IOC Assembly (June 2017), which was adopted. Subsequently the IOC Strategic Plan for Oceanographic Data and Information Management (2017-2021) was published as IOC Manuals and Guides No. 77.

Mr Reed noted the current Plan will conclude in 2021 and that the IOC Assembly requested the Plan should be regularly reviewed and revised. He also noted the next Session of IODE would take place around March 2021, and work on updating of the Strategic Plan should take place during the next inter-sessional period for submission to the 31st Session of the IOC Assembly in June 2021.

The Committee adopted Decision IODE-XXV.5.4

5.4.1 JCOMM DATA MANAGEMENT STRATEGY

This agenda item was introduced by Ms Champika Gallage (WMO), referring to Document IOC/IODE-XXV/5.4.1.

The primary objective of the JCOMM Data Management Programme Area (DMPA) is to implement and maintain a fully integrated end-to-end data management system across the entire marine meteorology and oceanographic community. JCOMM-4 requested the Data Management Coordination Group (DMCG) to keep the JCOMM Data Management Plan and its Implementation Details under review, and to update them as needed. The format of the JCOMM Data Management Plan, adopted by JCOMM-4 and further updated during the intersessional period, no longer allows to address the current challenges in JCOMM data management;

Accordingly, DMCG developed the draft Joint WMO and IOC strategy for marine meteorological and oceanographic data management for the period 2018 to 2021. (see https://www.jcomm.info/images/stories/docs/JCOMM-TR-40-Rev4-JCOMM-DM-STRATEGY-V0.47-31May2018.pdf)

The Strategy provides a Vision and mechanisms enabling JCOMM to deliver its mission, aligned with the JCOMM Vision and WMO and IOC strategic plans, in the field of oceanographic and marine meteorological data management in order to facilitate the collection, sharing and distribution of oceanographic and marine meteorological data, and their use by WMO and IOC users.

The Strategy defines the mission with six outcomes, and seventeen deliverables with guidance on activities that can be conducted within JCOMM but also in collaboration with other relevant WMO and IOC Constituent Bodies particularly the IOC Committee on International Oceanographic Data and Information Exchange (IODE).

The strategy was developed taking following into consideration;

(i) The holistic and strategic approach with regard to marine meteorological and oceanographic data management in the WMO and IOC frameworks, involving all Programme Areas and the International Oceanographic Data and Information Exchange (IODE),
The current 2016-2019 and future 2020-2023 WMO Strategic Plans, and the IOC Medium Term Strategy 2014-2021, including in particular the WMO Information System 2.0 Strategy and the IOC Strategic Plan for Data and Information Management (2017-2021),

Fast technological developments in the area of data management, information systems, and emerging data issues (e.g. big data)

The Strategy was developed by the JCOMM Data Management Programme Area, guided by the JCOMM Management Committee, in collaboration with the IODE and the Observations Programme Area.

The IODE Committee welcomed the Vision, Mission, Outcomes and Activities outlined in the draft Joint WMO and IOC strategy for marine meteorological and oceanographic data management for the period 2018 to 2021.

The IODE Committee decided to:

(i) assist JCOMM to develop the implementation Plan responding to the Data Management Strategy and to collaborate in the implementation of the Strategy;

(ii) promote the Strategy and its implementation within IODE projects, activities and members;

(iii) assist DMPA to review and update the strategy and the implementation plan as necessary;

(iv) endorse the Strategy and invited JCOMM to submit it to the 30th Session of the IOC Assembly (2019) for approval.

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

This agenda item was introduced by Prof Yutaka Michida referring to Document IOC/IODE-XXV/5.5 (Proposed modalities for the performance review of the IOC Project Office for IODE, Oostende, Belgium). He recalled that the current MoU between the Flanders Marine Institute (VLIZ) will expire on 31/12/2021 and, in order to renew the MoU, a performance review would be required, referring to Article IV (Line management, Reporting and Review" which states:

“5. 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 IOC Committee that oversees the Project Office activities. The IODE Committee may, as it deems necessary, recommend the renewal or extension of this agreement and will submit this Recommendation to the next available Session of the IOC Assembly or Executive Council.”

Prof Michida noted that, if IODE-XXVI would be expected to recommend a renewal of the current MoU, the review report should be completed by November 2020.

The Committee adopted the modalities included in Document IOC/IODE-XXV/5.5 as guidelines for the review.

The Committee instructed the IODE Co-Chairs in consultation with past Chairs to designate members of the review team and to agree on the timeline for the review.

5.6 REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY

This agenda item was introduced by Prof Yutaka Michida, IODE Co-Chair. He recalled that IODE-XXIV (para 105) had requested that the IOC should revise the “IOC Oceanographic Data Exchange Policy”, and in particular Clause 5 which states “Member States shall, to the best
practicable degree, use data centres linked to World Data System, to IODE’s NODC and WDC network as long-term repositories for oceanographic data and associated metadata”.

The Committee approved Draft Decision IOC-XXX/7.2.1 (IODE-XXV) for adoption by the 30th Session of the IOC Assembly.

The Committee instructed the IODE Management Group to consider the existence of other organizations that host long-term repositories for oceanographic data and associated metadata, of relevance to IOC/IODE, and possibly recommend further revisions of the Policy in future, to accommodate these.

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

6.1 UNESCO REGULAR PROGRAMME FINANCIAL RESOURCES REMAINING FOR 2019 AND EXPECTED FOR THE BIENNium 2020-2021

This agenda item was introduced by Mr Taco de Bruin. He explained that 2019 will be implemented under the 2018-2019 biennial work plan of UNESCO (39 C/5). The biennium 2020-2021 will fall under the 40 C/5. It is expected that UNESCO will continue under a zero nominal growth budget (518M$/biennium) which, taking into account additional costs within IOC, will result in a budget cut for the IOC programmes of approx. 12%. However, if UNESCO’s Governing Body decides to cut further (507M$) then the cuts in the IOC budget may reach 25%.

This resulted in three budgetary allocations (assuming the 518M$ scenario):

<table>
<thead>
<tr>
<th></th>
<th>2019 (US$)</th>
<th>2020 (US$)</th>
<th>2021 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IODE &amp; OBIS core systems:</td>
<td>41,000</td>
<td>35,933</td>
<td>35,933</td>
</tr>
<tr>
<td>IODE &amp; OBIS products and services</td>
<td>33,500</td>
<td>29,359.5</td>
<td>29,359.5</td>
</tr>
<tr>
<td>IODE &amp; OBIS training and education</td>
<td>42,500</td>
<td>37,247.5</td>
<td>37,247.5</td>
</tr>
<tr>
<td>Totals</td>
<td>117,000</td>
<td>102,540</td>
<td>102,540</td>
</tr>
</tbody>
</table>

It was noted however that funds were already spent on preparation for IODE-XXV (2019) and other on-going commitments. Accordingly, Mr de Bruin reported that the real funds available for 2019 from the UNESCO RP would be around US$ 100,000 (three allocations combined)

Mr Pissierssens recommended that the sessional working group on work plan and budget should take into account the expected cuts when preparing the draft work plan and budget for the next inter-sessional period.

6.2 IODE HUMAN RESOURCES (CURRENT AND REQUIRED)

This agenda item was introduced by Mr Peter Pissierssens. He informed the Committee that the staffing of the IOC Project Office for IODE had changed substantially.

He first recalled the untimely death of Mr Mark Van Crombrugge in February 2018. In June 2018 Mr Aditya Naik Kakodkar left the Project Office and returned to India. Mr Samuel Bosch left the Project Office in September 2018. Mr Mithun Gawas left the Project Office in December 2018 and returned to India. We welcomed Mr Arno Lambert in October 2018, replacing Mr Gawas and Mr Van Crombrugge.

Project Office staff now includes:
(i) Mr Peter Pissierssens, Head of Office (UNESCO position – P-5)
(ii) Mr Ward Appeltans, OBIS Project Manager (UNESCO position – P-3)
(iii) Mr Pieter Provoost, OBIS Data Manager (Project Appointment – P-3)
(iv) Ms Claudia Delgado, Training Coordinator (Seconded by VLIZ)
(v) Ms Kristin de Lichtervelde, Administrative manager (Seconded by VLIZ)
(vi) Mr Arno Lambert, IT developer (Seconded by VLIZ)
(vii) Ms Sofie de Baenst, Administrative assistant (Temporary position)
(viii) Ms Lies Groen, Office assistant (Contracted through VLIZ, ½ time)
(ix) Mr Greg Reed (Consultant)

Mr Pissierssens reported that one internship had been provided during the inter-sessional period 2017-2019: Mr Xuan Truong Trinh (Vietnam) was provided by Japan (University of Tokyo) for 3 months (mid-September - mid-December) 2018 to assist with OceanTeacher Global Academy and other CD activities in Oostende.

The Committee thanked Japan for the secondment of an intern.

In addition, Ms Rae Sita Pratiwi works for OBIS at the IOC Project Office for IODE, Oostende as a UNESCO volunteer for 6 months (October 2018 – March 2019) to support OBIS in communication and the development of the OBIS node in Indonesia.

6.3 CONFIRMED EXTRA-BUDGETARY FINANCIAL RESOURCES

This agenda item was introduced by Mr Peter Pissierssens. He informed the Committee that the following extra-budgetary projects were currently on-going. He noted however that these funds are earmarked and cannot be used for other purposes than those included in the already defined and approved project work plans.

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Funding source</th>
<th>Starting date</th>
<th>Ending date</th>
<th>Allocation 2019</th>
<th>Allocation 2020</th>
<th>Allocation 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>OceanTeacher Global Academy</td>
<td>Flanders</td>
<td>May 2014</td>
<td>June 2019</td>
<td>485,000</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Caribbean Marine Atlas Phase 2</td>
<td>Flanders</td>
<td>May 2014</td>
<td>June 2019</td>
<td>138,700</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Small data matters (OBIS)</td>
<td>Flanders</td>
<td>July 2018</td>
<td>July 2019</td>
<td>45,872</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>DIPS-4 (OBIS)</td>
<td>Flanders</td>
<td>May 2014</td>
<td>December 2019</td>
<td>136,988</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>ECOPOTENTIAL</td>
<td>European Commission</td>
<td>June 2015</td>
<td>October 2019</td>
<td>137,240</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>OTGA-II</td>
<td>Flanders</td>
<td>2020?</td>
<td>??</td>
<td>??</td>
<td>??</td>
<td>??</td>
</tr>
</tbody>
</table>

Mr Reed noted that the Government of Flanders (Kingdom of Belgium) had decided to renew the Flanders- UNESCO Trust Fund for Science through which IOC/IODE had received considerable funding since 1998. Submission of new proposals would probably be possible around autumn 2019 to start in 2020.
329 He noted that the IOC Project Office for IODE would also continue to receive a direct financial contribution funding from the Government of Flanders: €160,000/year between 2019 and 2021.

330 The IOC Project Office for IODE has been supporting several other IOC data/information management activities (eg IOC Country Profiles, Global Ocean Science Report, Ocean Acidification data,...) which has resulted in staff cost contributions for Project Office IT staff. The resulting products and services should be considered as examples of the growing cross-cutting role of IODE within the IOC programmes but they cannot and should not replace the “traditional” IODE activities involving the data and information management community in IOC Member States.

331 Mr Pissierssens recommended that the sessional working group on work plan and budget should take into account the expected cuts when preparing the draft work plan and budget for the next inter-sessional period.

332 Mr Reed called on the IODE community to involve IOC in projects that have international coverage and partnerships and through which IODE can be sustained. He cautioned that the continuing budget cuts of UNESCO and its IOC may well lead to budgets that are below a sustainable level, resulting in the closing down of the IODE programme. The expected budget for 2020-2021 will come very close to $100,000/year which for a programme like IODE should be considered as the viability limit. He noted that assistance to developing regions had been declining for several biennia already and the impact was clearly visible in the ODIN projects. OBIS, as one of IODE’s flagship projects may also come below sustainability level in 2020 if no additional funding can be identified. Finally, while expectations from IODE are considerable regarding the development of ODIS, it is unrealistic to expect results at the current level of funding.

333 The Committee expressed its great appreciation to the Government of Flanders (Kingdom of Belgium) for the considerable support provided to IODE in the past and for the decision to continue support through FUST.

334 The Committee expressed its appreciation to the Government of Japan for providing an intern and invited Japan as well as other Member States to provide interns or seconded staff.

6.4 OTHER RESOURCE OPPORTUNITIES FOR 2019–2021

335 This agenda item was introduced by Ms Cyndy Chandler. She invited the Committee to report or propose other resource opportunities for the next inter-sessional period.

7. PROPOSED WORK PLAN FOR THE NEXT INTER-SESSIONAL PERIOD (2019-2021)

7.1 NEW INITIATIVES

336 This agenda item was introduced by Prof Yutaka Michida. He informed the Committee that one new project has been submitted. He then invited Ms Pauline Simpson to introduce this project.

7.1.1 The IODE/GOOS Ocean Best Practices System Project

337 This agenda item was introduced by Ms Pauline Simpson, referring to Document IOC/IODE-XXV/7.1.1 and Document IOC/IODE-XXV/7.1.1b

338 The long-term objective of the Ocean Best Practices System (OBPS) is to provide the ocean research, observing and application communities with a mechanism to discover, review, agree upon, adopt and support the widest possible dissemination of ocean best practices.

339 The OBPS addresses many of the issues that underlie the propagation and use of best practices. It includes: 1. a permanent repository (OBPS-R) offering the scientific community a
platform to publish their ocean-related best practices and find practices of others using innovative search and access technology; 2. a peer review journal publishing outlet and a community forum; 3. a training resource leveraging community capabilities. These three elements of the system will (i) support a community of content providers (contributing best practices); (ii) build a community of users (who will use and also rate the quality and usability of the best practices); (iii) provide an online journal to peer review articles on a best practice to add a “seal of quality”; (iv) contribute, by supporting the participating communities, to identify a smaller number of “recommended” best practices; support the expansion in use of best practice through engagement with new and expert users, and provide training and capacity building. This will encourage interoperability reproducibility and use of common methodologies assisted with training related to the implementation of the best practices.

One important element of OBPS mentioned above is the OceanBestPractices Repository which started in 2014 with Recommendation IODE-XXII.19 from the JCOMM/IODE/WMO/ICES Steering Group for Ocean Data Standards and Best Practices (ODSBP) http://www.oceandatastandards.org/, as a repository named OceanDataPractices (ODPr) http://www.oceandatapractices.net/.

The Committee was informed that the ETDMP offered to be an expert panel for review of data management practices deposited in OBPS and that GOOS expert panels will introduce an endorsement procedure.

The Committee approved Draft Decision (Assembly IOC-XXX Agenda Item 7.2.1 IODE-XXV)

7.1.2 Contribution of IODE to the JCOMM Observations Coordination Group Project: Open Access to the GTS

This agenda item was introduced by Mr Kevin O’Brien. JCOMM’s OCG, in support of the OCG Open Access to the GTS project, requests IODE to assist in identifying member states interested in participating in the project, either as data producers wanting to put their data on the GTS and/or IODE NODCs and ADUs willing to support Open Access to GTS workflows to harvest data and encode for distribution on GTS. The Committee was informed that more information is available from https://www.jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=22595

The Committee invited IODE NODCs and ADUs to participate in the JCOMM OCG Open Access to the GTS project and to contact Mr Kevin O’Brien in this regard.

7.2 IODE PROMOTION OPPORTUNITIES 2019-2021

This agenda item was introduced by Prof Yutaka Michida, Co-Chair. He called on the participants to identify important events that will take place during the next inter-sessional period where IODE should be promoted.

The Committee noted the opportunity to promote IODE at, inter alia,

(i) the upcoming OceanObs19 conference, to be held in Honolulu, Hawaii, September 2019;

(ii) the upcoming regional and global consultations during the preparatory phase of the UN Decade of Ocean Science for Sustainable Development;

(iii) the UN Ocean Conference to be held in Lisbon, Portugal in 2020;

(iv) the IAMSLIC Conferences to be held in Port Aransas, Texas, USA in October 2019 and Wellington, New Zealand, October 2020;
(v) COLACMAR to be held in November 2019 in Mar del Plata, Argentina;
(vi) IMDIS Conference to be held in Amsterdam, The Netherlands in October 2020;
(vii) 12th Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-XII) to be held in March 2019, Kish Island, Islamic Republic of Iran;
(viii) Oceans 2019 Conference, to be held in October 2019 in Seattle, WA, USA; (ix) World Marine Biodiversity Conference, to be held in November 2020 in Auckland, New Zealand, and urged IODE experts to actively promote IODE at these occasions. In this regard the Committee requested Committee members to inform the IODE Co-Chairs about their planned participation, and for the Co-Chairs to discuss ways and means to promote IODE at these events.

The Committee further urged Committee members to actively promote IODE at relevant national events.

7.3 WORK PLAN AND BUDGET 2019–2021

This agenda item was introduced by Prof Yutaka Michida, Co-Chair. He provided an overview of the work plan and budget based upon the previous sub-items of this agenda item.

The Committee noted that, with the continuing decline of the UNESCO regular programme funding, it will be necessary to assign funding based on metrics that take into account performance as well as the IOC Data and Information Management Strategy to ensure that IODE activities respond to the requirements of the Strategy.

The Committee instructed the Management Group to refine the existing metrics during the inter-sessional period.

The Committee adopted Recommendation IODE-XXV.7.3

8. ANY OTHER BUSINESS

This agenda item was introduced by Prof Yutaka Michida, Co-Chair. He recalled that no additional items were identified.

9. DATE AND PLACE OF THE NEXT SESSION

Ms Cyndy Chandler, IODE Co-Chair invited the Committee to discuss the date and venue of the twenty-sixth Session. The Committee was invited to consider holding the meeting during the month of March 2021, taking into consideration the need to report to the IOC Assembly in June 2021.

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 2020. Full information on the in-kind contributions expected from a Host are available upon request from the IODE Secretariat.

The representative from Poland formally expressed interest to host the next Session in Sopot, Poland in 2021.

The Committee thanked Poland for the offer and instructed the Secretariat to discuss the administrative arrangements with Poland.
The Committee urged Member States from developing regions to more actively participate in Sessions of the Committee as well as in IODE working groups and other subsidiary bodies in order to improve the geographic balance within IODE. Similarly, the Committee urged Member States to take into account gender balance when nominating experts for IODE related activities, groups and nominations.

10. ELECTION OF THE CO-CHAIRS

The IODE Technical Secretary, Mr Peter Pissierssens introduced this item by referring to the IOC Rules of Procedure (Document IOC/INF-1166), and more particularly to Rule 25, para 3. The Technical Secretary informed the Committee that, in accordance with the above Rules, the current two Co-Chairs (Ms Cyndy Chandler and Prof Yutaka Michida) had completed two terms and so new Co-Chairs needed to be elected.

The IODE Technical Secretary informed the Committee that a call for candidatures for the position of IODE Co-Chairs had been made through IOC Circular Letter 2725, issued on 23 August 2018. Information on arrangements for the elections had been provided through IOC Circular Letter 2750, issued on 14 January 2019 with a deadline for formal nominations by 8 February 2019. In response to the latter, the IOC Secretariat received two valid nominations: Dr Sergey Belov (Russian Federation) and Mr Taco de Bruin (The Netherlands).

The Committee elected Dr Sergey Belov (Russian Federation) and Mr Taco de Bruin (The Netherlands) as IODE Co-Chairs for the next inter-sessional period.

The outgoing Co-Chairs then invited the incoming Co-Chairs to briefly address the Session.

Mr de Bruin thanked the Committee for his election and also thanked the outgoing Co-Chairs for the fantastic work achieved and raising the bar to a very high level. He referred to the well-deserved achievement awards which were handed to them earlier this week. He also expressed his gratitude to the staff of the IODE Secretariat for their hard work and continued dedication to IODE. Mr de Bruin welcomed that the former Co-Chairs will continue to actively assist the work of IODE, in collaboration with the IODE Secretariat. Mr de Bruin stated that he happily accepted the challenge to continue building IODE but that that is not something the co-chairs can do on their own. Mr de Bruin ended by calling for action from the entire IODE community as all of us need to contribute to the IODE programme.

Dr Belov noted that the IODE-XXV Scientific Conference highlighted the important role of IODE and high expectations from it in the upcoming UN Decade of Ocean Science for Sustainable Development and in the implementation of SDGs. IODE is well recognized in many communities outside the IOC system, but still a lot remains to be done to cooperate better. Dr Beov stated that, in his new role, he will make all possible and impossible efforts to ensure that these goals are achieved, that we will move forward all IODE activities in data management, information management and capacity development, and improve our collaboration with other communities. He further noted that outgoing co-chairs set an incredibly high-level for this position. He ended by saying that it would be a great honour for him to try to reach it.

Ms Chandler and Prof Michida congratulated Mr de Bruin and Dr Belov with their election. Prof Michida expressed his enthusiasm to work with the incoming Co-Chairs.

11. 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 considered requesting its Co-Chairs and the IOC Secretariat to make editorial corrections as necessary, taking into account the discussions held during the session.

The Committee considered requesting the IODE Co-Chairs to present the Executive Summary with all Resolutions and Recommendations therein to the Thirtieth Session of the IOC Assembly that would take place in June 2019 at the UNESCO headquarters in Paris, France.

12. CLOSURE

The Co-Chairs addressed the Committee and closed the Session on Friday 22 February 2019 at 12:00.

Ms Chandler, in her closing remarks, thanked all participants who participated in the Session. There is an extraordinary range of activities in the IODE programme with most of the work done pro bono by the experts. She expressed her appreciation for the openness during discussions to reach consensus on decisions. She expressed her thanks to JODC, in particular Dr Yabuki and Mr Norio Baba as well as their staff who have made the Session so successful. She further thanked Mr Peter Pissierssens and the staff at the IOC Project Office for IODE for their help: Kristin, Sofie, Arno, Pieter, Cláudia, Greg and Ward and thanked them for their professionalism. She also thanked Prof Michida as Co-Chair noting his wide knowledge of IOC. She also thanked Mr Ariel Troisi and Ms Sissy Iona for sharing their experience as previous Co-Chairs. She further wished the incoming Co-Chairs good luck, steering the IODE ship into the future.

Prof Michida, in his closing remarks, also expressed deep appreciation to the local host JODC for organizing the events starting with the scientific conference. Followed by the IODE-XXV. It was a great pleasure having then event in Tokyo as it was the first time for Japan to host an IODE meeting. [ADD HISTORY: ASK YUTAKA]. Now 20 years later he saw the excellent performance of JODC for this event. He also expressed appreciation to all participants. We achieved a lot of progress for the next intersessional period through the decisions and recommendations. He thanked the IODE secretariat staff for the work done in preparation for, and during the Session. He thanked Cyndy as Co-Chair for all the work during the past 2 intersessional meetings. Finally, he congratulated Dr Sergey Belov and Mr Taco de Bruin as incoming Co-Chairs and wished them all the best for the next inter-sessional period, referring especially to the UN Decade. He then gave the floor to Dr Yabuki.

Mr Peter Pissierssens thanked all the participants. With so many different activities in IODE, it has become a challenge to fit everything in a three-day session. We had a busy agenda, but we managed to cover it all and finish on time. He was very pleased with the two-day science conference prior to the IODE session. The quality of the presentations was very high and combining a science conference with the more formal IODE session has brought some balance between the science aspects and the administrative aspects. This was the first time that we organized live streaming, which allowed around 100 people per day to follow the conference and session remotely. We received a lot of positive feedback on this. Mr Pissierssens also thanked the entire secretariat team of the IODE project office, without whom he would not be able to organize this session.

Dr Yabuki offered a gift to the incoming Co-Chairs on behalf of JODC and congratulated them on their election.

Prof Michida invited the local support staff from JODC to come forward.

Prof Michida closed the Session on 22 February 2019 at 12:20.
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. Local arrangements

3. REPORT ON THE PAST INTER-SESSIONAL PERIOD (2017-2018)
   3.1. Progress Report on the IODE-XXIV Work Plan
   3.2. Status of the IODE network
      3.2.1. Reporting summary of NODCs, ADUs and AIUs
      3.2.2. New structural elements of IODE
      3.2.3. The JCOMM Marine Climate Data System (MCDS)
      3.2.4. Possible actions to expand or review the existing network
   3.3. IODE Cooperation with JCOMM: Reform of WMO and Future of JCOMM
   3.4. Reports of the IODE Groups of Experts
      3.4.1. JCOMM/IODE Expert Team on Data Management Practices (ETDMP)
      3.4.2. Joint IODE/IAMSLIC Group of Experts on Marine Information Management in a transitional capacity (GE-MIM)
   3.5. Progress Reports of Global IODE Projects
      3.5.1. Ocean Biogeographic Information System
         3.5.1.1. OBIS-Event-DATA Pilot Project
         3.5.1.2. Development of Information Products and Services for Ocean Assessments (DIPS-4 Ocean Assessments)
      3.5.2. Global Oceanographic Data Archaeology and Rescue Project (GODAR)
      3.5.3. World Ocean Database (WOD)
      3.5.4. Global Temperature and Salinity Profile Programme (GTSPP)
      3.5.5. Global Ocean Surface Underway Data Project (GOSUD)
      3.5.6. International Coastal Atlas Network project (ICAN)
      3.5.7. International Quality Controlled Database project (IQuOD)
      3.5.8. IOC Ocean Data Portal (ODP)
         3.5.8.1. Review of the Partnership Centre for the IODE Ocean Data Portal
3.5.9. IODE OceanDataPractices
3.5.10. IODE OceanDocs
3.5.11. IODE OceanExpert
3.5.12. IODE OpenScienceDirectory
3.5.13. IODE OceanKnowledge Platform Pilot Project
3.5.14. IODE Quality Management Framework project (QMF)

3.6. IODE Quality Management Framework
3.6.1. Centre/Information Centre accreditation: status and way forward
3.6.2. IODE Project and activity performance evaluation: status and way forward
3.6.3. IODE Manuals, Guidelines and other advisory materials

3.7. Progress Reports of joint activities with other IOC Programmes and other Partners
3.7.1. IOC Global Programmes
3.7.2. IOC regional programmes (sub-commissions and regional committees)
3.7.3. Aquatic Sciences and Fisheries Abstracts (ASFA)
3.7.4. Cooperation with IAMSLIC

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
      4.1.1.1. IODE OceanTeacher Global Academy: Phase 2
   4.1.2. IOC Group of Experts on Capacity Development

5. THE FUTURE OF IODE
5.1. IODE Management Issues
5.2. IOC Ocean Data and Information System (ODIS)
   5.2.1. Ocean Data Sources inventory pilot service
   5.2.2. Current IODE and other IOC programme products and services that should be included in ODIS
   5.2.3. Development of additional ODIS components and their integration into ODIS
5.3. IODE contribution to the UN decade of Ocean Science for Sustainable Development
5.4. IOC Strategic Plan for Data and Information Management (2022-2026)
   5.4.1. JCOMM DATA MANAGEMENT STRATEGY
5.5. Performance review of the IOC Project Office for IODE
6. INTRODUCTION TO WORK PLAN AND BUDGET (FINANCIAL RESOURCES 2019-2021)

   6.1. UNESCO Regular Programme Financial Resources remaining for 2019 and expected for the biennium 2020-2021

   6.2. IODE human resources (current and required)

   6.3. Confirmed extra-budgetary financial resources

   6.4. Other resource opportunities for 2019-2021

7. PROPOSED WORK PLAN FOR THE NEXT INTER-SESSIONAL PERIOD (2019-2021)

   7.1. New Initiatives

       7.1.1. The IODE/GOOS Ocean Best Practices System Project

       7.1.2. Contribution of IODE to the JCOMM Observations Coordination Group Project: Open Access to the GTS

   7.2. IODE promotion opportunities 2019-2021

   7.3. Work Plan and Budget 2019-2021

8. ANY OTHER BUSINESS

9. DATE AND PLACE OF NEXT SESSION

10. ELECTION OF CO-CHAIRS

11. ADOPTION OF DECISIONS, RECOMMENDATIONS AND SUMMARY REPORT

12. CLOSURE
ANNEX II

DECISIONS AND RECOMMENDATIONS OF IODE-XXV

IODE-XXV Decisions

3.2.4 ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP ON THE REVIEW OF NODC HEALTH STATUS WITHIN THE IODE NETWORK

5.1 IODE MANAGEMENT STRUCTURE

5.2.3 ESTABLISHMENT OF THE INTER-SESSIONAL WORKING GROUP TO DEVELOP THE IMPLEMENTATION PLAN AND COST-BENEFIT ANALYSIS FOR THE IOC OCEAN DATA AND INFORMATION SYSTEM

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

Draft Decisions for IOC Assembly (IOC-XXX)

5.6 REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY (Assembly agenda item 7.2.1)

7.1.1 ESTABLISHMENT OF THE IOC OCEAN BEST PRACTICES SYSTEM PROJECT (OBPS) (Assembly agenda item 7.2.1)

IODE-XXV Recommendations

3.2.2 JCOMM/IODE GLOBAL DATA ASSEMBLY CENTRES (GDACs)

3.4.1 REVISION OF THE TERMS OF REFERENCES OF THE JCOMM/IODE EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ETDMP)

5.2.1 ESTABLISHMENT OF THE IOC OCEAN DATA AND INFORMATION SYSTEM CATALOGUE OF SOURCES PROJECT (ODISCat)

5.3 ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP TO PROPOSE A STRATEGY ON OCEAN DATA AND INFORMATION STEWARDSHIP FOR THE UN OCEAN DECADE (IWG-SODIS)

7.3 IODE WORK PLAN AND BUDGET FOR 2019-2020
Decision IODE-XXV.3.2.4

ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP ON THE REVIEW OF NODC HEALTH STATUS WITHIN THE IODE NETWORK

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling Recommendation IODE-XXII.18 (Establishment of the IODE Quality Management Framework Project), to ensure accreditation of NODCs according to agreed criteria in order to bring all NODCs to a minimum agreed level, and recalling Decision IODE-XXIV.1, which revised the Terms of Reference of the IODE QMF project to accommodate ADUs.

Referring to the responsibilities and requirements of an NODC as defined in chapters 3 and 4 of the second revision of IOC Manuals and Guides No. 5 (Guide for Establishing a National Oceanographic Data Centre) published in May 2008.

Noting that so far 15% of NODCs are accredited and only 50% provided national reports to IODE-XXV.

Decides to establish an inter-sessional working group on the review of NODC health status within the IODE network, with the Terms of Reference as attached in Annex A to this Decision.

Annex A to Decision IODE-XXV.3.2.4

Terms of Reference of the Inter-sessional working group on the review of NODC health status within the IODE network

Objectives

This working group will:

(i) propose metrics and processes for determining the health status of NODCs in the IODE network;

(ii) propose a process to assist NODCs for 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.

Membership

The membership will include Canada (Mr. M. Ouellet), India (Mr Patthabi Rama Rao), IODE Co-Chairs, SeaDataNet (Ms Michèle Fichaut).
THE IODE MANAGEMENT STRUCTURE

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling decision IODE-XXIV.2 to replace the IODE Officers with the IODE Management Group (IODE-MG),

Noting the proposed membership of the IODE-MG included one expert on data management (IODE-DM) and one expert on information management (IODE-IM),

Recognizing the difficulty to identify or designate appropriate individuals for the roles IODE-DM and IODE-IM who would be able and willing to represent all aspects of IODE,

Decides to amend the current terms of reference of the IODE-MG with the terms of reference described in Annex A of this Decision.

Annex A to Decision IODE-XXV.1

Revised Terms of Reference of the IODE Management Group (IODE-MG)

Objectives

The IODE-MG will have the following terms of reference:

(i) Be responsible for reviewing progress of the work plan and budget approved by the IODE Committee and adjusting them as required,

(ii) Oversee the assessment of IODE projects and activities and recommend their endorsements when these meet the agreed evaluation criteria,

(iii) Evaluate for efficacy any existing IODE groups formed by the IODE Committee.

Membership

The membership of IODE-MG will comprise the following Executive and Non-executive members, bearing in mind that, ideally, both data and marine information management should be represented:

Executive members

- The current two IODE Co-Chairs,
- One or both past IODE Co-Chairs (to be agreed by past Co-chairs)\(^3\),
- IODE Secretariat members (non-voting member)\(^4\)

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\(^3\) The inclusion of one or both the past IODE co-chairs will provide continuity from the preceding intersessional period

\(^4\) Members of the Secretariat are responsible for the administrative and financial implementation of projects and the MG will require their guidance and support on these matters.
Non-executive members

- Current (Co-)Chair(s) of IODE (data and information) project steering groups or their designee, or IODE project leaders where no SG exists,

- Additional experts as needed\(^5\) (3)

The IODE-MG will reach decisions by consensus of its voting members (executive + non-executive). IODE-MG members should not participate in decisions that relate to a project on which there may a perceived conflict of interest.

The full IODE-MG should meet once every three months (by email or video conference) or as appropriate.

The Executive members of the IODE-MG should meet face-to-face once during the intersessional period to review the status of the approved workplan and budget.

**Decision IODE-XXV.5.2.3**

**ESTABLISHMENT OF THE INTER-SESSIONAL WORKING GROUP TO DEVELOP THE IMPLEMENTATION PLAN AND COST-BENEFIT ANALYSIS FOR THE IOC OCEAN DATA AND INFORMATION SYSTEM**

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling Decision IODE-XXIV.4 on the Ocean Data and Information System which established the “Inter-sessional working group to develop a concept paper for the Ocean Data and Information System” (IWG-ODIS),

Noting the need for IODE and external collaborators to work together to effectively address the challenges of developing a universal view of the marine data and information landscape,

Taking into account, and building upon, the work carried out by the IWG-ODIS, the JCOMM/IODE ETDM and the IODE Ocean Data Portal,

Recognizing there is a major component of the ocean data and information system landscape not linked to the IOC and there is a need to collaborate with those communities/systems in order to achieve improved accessibility, unrestricted use and interoperability of data and information,

Decides 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,

Decides further to establish an inter-sessional working group to develop the implementation plan and cost-benefit analysis for the IOC Ocean Data and Information System, with the Terms of Reference attached in Annex A to this Decision.

\(^5\) The IODE-MG may seek the advice of subject matter experts and others as appropriate to help formulate its decisions and recommendations.
Annex A to Decision IODE-XXV.5.2.3

Terms of Reference of the Inter-sessional Working Group
to develop the implementation plan and cost-benefit analysis
for the Ocean Data and Information System (IWG-ODIS-IPCB)

Objectives

The Group will:

(i) Prepare the draft implementation plan and related cost-benefit analysis of the Ocean Data and Information System, detailing the proposed services that will be offered by ODIS, using the list included in agenda item 5.2.2 of Document IOC/IODE-XXV/2;

(ii) Prepare a work plan including an initial set of services that will be developed during 2019-2021;

(iii) Submit (i) and (ii) above to the 30th Session of the IOC Assembly, for its consideration.

Membership

In addition to representatives from IODE, the group should include representatives from IOC Programmes and JCOMM. Additional experts will also be invited to contribute to IWG-ODIS-IPCB. The IWG-ODIS-IPCB will carry out its work electronically.

Representatives from IODE will include, IODE Co-Chair(s), Russian Federation (Nick Mikhailov), Italy (Alessandra Giorgetti), Chair ETDMP Task Team for ODIS (Mr Tobias Spears), Belgium (Serge Scory, Francisco Hernandez), United States (Hernan Garcia), ODISCat project manager, JCOMM Co-President (Nadia Pinardi), EMODNET (Patrick Gorringe), Poland (Marcin Wchorowski), JCOMM OCG (Kevin O’Brien), WDS (tbd), Ireland (Adam Leadbetter).

Decision IODE-XXV.5.4

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

The IOC Committee on International Oceanographic Data and Information Exchange,

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 IOC Data and Information Management system resulting from this strategy will deliver:

(i) assembled, quality controlled and archived data on a diverse range of variables according to scientifically sound and well-documented standards and formats,

(ii) timely dissemination of data on a diverse range of variables (observations and model outputs) both on real-time and delayed modes depending on the needs of user groups and their technical capabilities (automatic dissemination as well as “on demand”), and

(iii) easy discovery and access to data and information on 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 update the Strategic Plan, with the Terms of Reference as attached in Annex A to this Decision.

Annex A to Decision IODE-XXV.5.4

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 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.

Membership

The initial membership will include Mr Hernan Garcia (USA), Mr Graham Allen (UK), IODE Co-Chairs, Ms Lenore Bajona (OTN), Ms Alessandra Giorgetti (Italy), Ms Paula Sierra (Colombia, INVEMAR), Ms Pauline Simpson (OBPS Project), Ms Champika Gallage (WMO), Mr Eduardo Klein (Co-Chair SG-OBIS). The Group will designate its (Co-)Chair(s) and may invite additional members as necessary.

DRAFT DECISIONS FOR IOC-XXX

Draft Decision of the 30th Session of the IOC Assembly
(Assembly agenda item 7.2.1)

REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY

The Intergovernmental Oceanographic Commission,

Recalling the IOC Assembly during its twenty-second session adopted Resolution IOC-XXII-6 entitled the IOC Oceanographic Data Exchange Policy;

Recognizing the need for free and open access to oceanographic data for the global common good;

Noting the World Data System (WDS) has superseded the World Data Centres (WDC);

Further noting the Ocean Biogeographic Information System (OBIS) is a global open-access data and information clearing-house on ocean biodiversity for science, conservation and sustainable development;

Decides to revise Clause 5 of Annex to Resolution XXII-6 (IOC Oceanographic Data Exchange Policy) to the revision attached in Annex A of this Decision;

Invites all Member States to contribute their oceanographic data to the IODE network of data centres, the Ocean Biogeographic Information System (OBIS), the World Ocean Database or the World Data System.
Annex A

Annex to Decision IOC-XXX.xxx

IOC Oceanographic Data Exchange Policy

Clause 5 (Use of IODE system)

Member States shall, to the best practicable degree, use data centres linked to the World Data System (WDS) and IODE’s NODCs, such as the World Ocean Database (WOD) and the Ocean Biogeographic Information System (OBIS), as long-term repositories for oceanographic data and associated metadata.

Draft Decision of the 30th Session of the IOC Assembly

(Assembly Agenda item 7.2.1)

ESTABLISHMENT OF THE IOC OCEAN BEST PRACTICES SYSTEM PROJECT (OBPS)

The Intergovernmental Oceanographic Commission,

Recalling Recommendation IODE-XXII.19 for the establishment of the IODE Clearing House Service for Data/Information Management Practices Project, which replaced the JCOMM Catalogue of Best Practices;

Recognizing that:

(i) the dissemination and use of rigorously tested best practice methods in ocean observing promote and facilitate activity within and across disciplinary boundaries of ocean science;

(ii) IODE has successfully established a permanent repository offering the scientific community a platform to publish their ocean-related best practices and find practices of others using innovative search and access technology, a peer review journal publishing outlet and community forum, and a training resource leveraging community capabilities;

(iii) IOC and JCOMM have established close, efficient and effective collaboration in ocean best practices;

Noting that the Ocean Best Practices System Repository (OBPS-R) of best practices will support all IOC programmes and contribute to the UN Decade of the Ocean and UN Sustainable Development Goals by providing permanent curated archive of best practices in ocean sciences;

Noting further that within the context of the project, a best practice is defined6 as a methodology that has repeatedly produced superior results relative to other methodologies with the same objective; to be fully elevated to a best practice, a promising method will have been adopted and employed by multiple organizations.

Noting further that best practices can be in many forms including standard operating procedures, manuals, etc.

Decides to:

(i) establish the IOC Ocean Best Practices System (OBPS) project with the terms of reference as attached in Annex A of this Decision;

(ii) establish the IOC Steering Group for the Ocean Best Practices System (OBPS) project with the terms of reference as attached in Annex B of this Decision;

Urges member states to actively participate in the OBPS project by submitting relevant community practices on ocean observation, data management, products and services, and by promoting the use of practices contained in the OBPS at the national, regional and global level.

Invites relevant stakeholders to contribute community practices and collaborate with the OBPS;

Annex A to Decision IOC-XXX.[xxx]

Terms of Reference of the IOC Ocean Best Practices System Project (OBPS)

Objectives

The objectives of this project are to:

(i) Increase efficiency, reproducibility and interoperability of the entire ocean observing value chain by providing the community with a unified, sustained and readily accessible knowledge base of interdisciplinary best practices;

(ii) Provide coordinated and sustained global access to best practices in ocean observing to foster innovation and excellence by developing a system and engaging ocean observing communities in a joint and coordinated effort in producing, reviewing and sustaining best practice documents.

Annex B to Decision IOC-XXX.[xxx]

Terms of Reference of the IOC Steering Group for the Ocean Best Practices System (SG-OBPS)

Objectives

The SG-OBPS will have the following Terms of Reference:

(i) Propose the vision, strategy, work plan and timetable for the Ocean Best Practices System Project;

(ii) Advise on technical aspects such as user interface, back office, etc. to the project technical task team;

(iii) Report to the IOC and to other partners on the progress of the Ocean Best Practices System Project;

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

(v) Identify funding sources to further develop the OBPS.
Membership

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

(i) Representatives from IOC Programmes and JCOMM;

(ii) Project Manager/Chief Editor;

(iii) Project Technical Manager;

(iv) Invited Experts from the ocean observing community;

(v) Representative of the IODE Secretariat.

**IODE-XXV RECOMMENDATIONS**

**Recommendation IODE-XXV.3.2.2**

**JCOMM/IODE GLOBAL DATA ASSEMBLY CENTRES (GDACs)**

The IOC Committee on International Oceanographic Data and Information Exchange,

**Acknowledging** the importance of close collaboration between IODE and JCOMM,

**Recalling** the Recommendation IODE-XXII.13 that established GDACs as a structural element of IODE,

**Recalling** the establishment of the Marine Climate Data System (MCDS) by JCOMM-4, through Recommendation 2 (JCOMM-4), to address the WMO and IOC applications requirements for appropriate marine-meteorological and oceanographic climatological data (met-ocean climate data), and particularly address those for long term climate monitoring (GCOS), seasonal to inter-annual climate forecasts, for the Global Framework for Climate Services (GFCS), and ocean climate requirements of the Global Ocean Observing System (GOOS),

**Noting** the recommendation of the JCOMM/IODE Expert Team on Data Management Practices Sixth Session (ETDMP-VI) to establish joint GDACs, to avoid duplication of effort, with revised the Terms of Reference,

**Acknowledging** the effort made by ETMC in revising MCDS GDACs Term of Reference to align with IODE GDAC Term of Reference,

**Recommends** that the Terms of Reference for GDACs be amended to:

(i) receive and assemble marine meteorological and/or oceanographic data (real-time or delayed-mode) and metadata from the appropriate data streams and check they are consistent;

(ii) identify duplicates and if possible resolve by keeping the best copy of a dataset;

(iii) make sure that the data are quality controlled according to the international standards and methods established by IODE, WMO or JCOMM as appropriate;

(iv) provide feedback to the sources on data quality issues;

(v) make data accessible through IODE/ODIS;
(vi) make discovery metadata available to IODE/ODIS and WIS;

(vii) forward data and metadata to the appropriate CMOC(s) in agreed format(s) within defined timescales;

(viii) contribute to WMO and IOC Applications by collecting and processing worldwide marine-meteorological and/or oceanographic data and metadata using practices documented in appropriate WMO and IOC publications;

(ix) report to the IODE and JCOMM on its data management status and activities,

(x) clearly identify real-time and delayed-mode data, flag differences when both streams exist.

Invites the IODE structural elements, either individually or jointly, to apply to become a GDAC.

Recommendation IOC/IODE-XXV/3.4.1

REVISION OF THE TERMS OF REFERENCES OF THE JCOMM/IODE EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ETDMP)

The IOC Committee on International Oceanographic Data and Information Exchange,

Noting the Resolution 4 at JCOMM-I (2000) establishing ETDMP as a JCOMM subsidiary body,

Further Noting the Recommendation IOC/IODE-XVII.3, Merging the IODE Group of Experts on the Technical Aspects of Data Exchange (GETADE) with the JCOMM Expert Team on Data Management Practices,


Noting further that the JCOMM/IODE ETDMP Terms of Reference were modified by JCOMM MAN (JCOMM Meeting Report No. 141, 2018, Annex V) as in the following:

The JCOMM/IODE Expert Team on Data Management Practices, in close collaboration with JCOMM Programme Areas, Commission for Basic Systems subsidiary bodies, IODE Management Group and related experts, shall:

(a) Manage the process of adopting and documenting standards and best practices to be used in IODE-JCOMM data management by complementing the Ocean Data Standards and Best Practices (ODSBP) Process with the Ocean Best Practices System (OBPS);

(b) Assist in the further integration of the IODE Ocean Data Portal with other IODE projects (OBIS, GODAR/WDC, GTSP, GOSUD, OBPS), with IODE GDACs, NODCs, ADUs and with other ocean data systems (e.g. SeaDataNet, IMOS, EOOS, EMODnet), their interoperability with the IOC Ocean Data and Information System (ODIS) with JCOMM OCG associated data activities and the WMO Information System (WIS), and their capacity development activities to ensure full participation of Members/Member States;

(c) In close cooperation with the Expert Team on Marine Climatology (ETMC), assist with the development, review and update of the Marine Climate Data System (MCDS)
strategy, implementation plan and performance indicators, in the next two years, for achieving the Vision for a new MCDS

(d) In concurrence with the co-presidents of JCOMM, the chairperson of the JCOMM Data Management Coordination Group (DMCG) and IODE Management Group, establish task teams and pilot projects, as necessary, to undertake the work of the Expert Team on Data Management Practices;

(e) Direct and coordinate the activities of the task teams and pilot projects referred to under (d)

(f) Provide advice to the IODE and the Data Management Coordination Group (DMCG) and other groups of JCOMM, as required;

(g) Liaise and collaborate with other groups as needed, to ensure access to required expertise, appropriate coordination and to avoid duplication.

Acknowledging the benefits of cooperation with JCOMM through the ETDMP,

Recommends revising the terms of reference of the JCOMM/IODE Expert Team on Data Management Practices (ETDMP) as provided in the Annex of this Recommendation.

Annex to Recommendation IOC/IODE-XXV/3.4.1

The JCOMM/IODE Expert Team on Data Management Practices, in close collaboration with JCOMM Programme Areas, Commission for Basic Systems subsidiary bodies, IODE Management Group and related experts, shall:

a. Manage the process of adopting and documenting standards and best practices to be used in IODE-JCOMM data management by complementing the Ocean Data Standards and Best Practices (ODSBP) Process with the Ocean Best Practices System (OBPS);

b. Assist in the further integration of the IODE Ocean Data Portal with other IODE projects (OBIS, GODAR/WDC, GTSSP, GOSUD, OBP-S), with IODE GDACs, NODCs, ADUs and with other ocean data systems (e.g. SeaDataNet, IMOS, EOOS, EMODnet), their interoperability with the IOC Ocean Data and Information System (ODIS) with JCOMM OCG associated data activities and the WMO Information System (WIS), and their capacity development activities to ensure full participation of Members/Member States;

c. In close cooperation with the Expert Team on Marine Climatology (ETMC), assist with the development, review and update of the Marine Climate Data System (MCDS) strategy, implementation plan and performance indicators, in the next two years, for achieving the Vision for a new MCDS

d. In concurrence with the co-presidents of JCOMM, the chairperson of the JCOMM Data Management Coordination Group (DMCG) and IODE Management Group, establish task teams and pilot projects, as necessary, to undertake the work of the Expert Team on Data Management Practices;

e. Direct and coordinate the activities of the task teams and pilot projects referred to under (d) above;

f. Provide advice to the IODE and the Data Management Coordination Group (DMCG) and other groups of JCOMM, as required;
g. Liaise and collaborate with other groups as needed, to ensure access to required expertise, appropriate coordination and to avoid duplication.

**Recommendation IOC/IODE-XXV/5.2.1**

**ESTABLISHMENT OF THE IOC OCEAN DATA AND INFORMATION SYSTEM CATALOGUE OF SOURCES PROJECT (ODISCat)**

The IOC Committee on International Oceanographic Data and Information Exchange,

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

Recognizing there is a major component of the ocean data and information system landscape not linked to the IOC and there is a need to collaborate with those communities/systems in order to achieve improved accessibility, unrestricted use and interoperability of data and information,

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,

Recommends the establishment of the IOC Ocean Data and Information System Catalogue of Sources (ODISCat) 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,

**Annex A to Recommendation IODE-XXV/5.2.1**

**Terms of Reference of the IOC Ocean Data and Information System Catalogue of Sources (ODISCat)**

**Objectives**

The ODIS "Catalogue of Sources" aims to be an online browsable and searchable catalogue of existing ocean related web-based sources/systems of data and information as well as products and services. It will also provide information on products and visualize the landscape (entities and their connections) of ocean data and information sources.

It will contribute to the objectives of the Agenda 2030, and in particular the UN Decade for Ocean Science for Sustainable Development.

ODISCat will (initially) describe a variety of source types such as (i) bibliographic infobases, (ii) code lists and vocabularies, (iii) data catalogues (metadata), (iv) data products, (v) data systems/portals (that allow downloading of data sets), (vi) education and training materials,(vii) information on platforms, (viii) information on experts and institutions, (ix) information on projects, (x) information on vessels, (xi) journals (open source and commercial), (xii) manuals, guidelines, standards and best practices; (xiii) maps and atlases; (xiv) multimedia content; (xv) real-time observing systems; and (xvi) software (ocean related).
Annex B to Recommendation IODE-XXV/5.2.1

Terms of Reference of the IODE Steering Group for the IOC Ocean Data and Information System Catalogue of Sources (ODISCat) Project (SG-ODISCat)

Objectives

The IODE Steering Group for the IOC Ocean Data and Information System Catalogue of Sources (ODISCat) Project (SG-ODISCat) will have the following terms of reference:

(i) Propose the vision, strategy, work plan and timetable of the ODISCat project;
(ii) Advise on technical aspects of the ODISCat web application;
(iii) Report to the IODE Committee and IOC Assembly on the progress of the Project;
(iv) Provide guidance to the ODISCat manager/editor and ODISCat technical manager;
(v) Develop a communication strategy to promote the use of ODISCat, taking into account the UN Decade of Ocean Science for Sustainable Development (2021-2030).

Membership

IODE Steering Group for the IOC Ocean Data and Information System Catalogue of Sources (ODISCat) Project (SG-ODISCat) will have the following (initial) membership:

(i) Project manager/editor;
(ii) Project technical manager;
(iii) IODE Co-Chair(s);
(iv) Representatives of IOC programmes and regional subsidiary bodies;
(v) Representative of the IODE Secretariat;
(vi) Representative of the JCOMM/IODE ETDMP;
(vii) Representatives from IOC Member States;
(viii) Representatives from other Organizations;
(ix) Other members may be invited by the Steering Group as needed.

Notes:

- The Steering Group will designate the Project manager/editor during its first Session from (iv) to (ix).
- The Project technical manager will be Mr Arno Lambert (while ODISCat is being hosted and developed by the IOC Project Office for IODE). Additional expertise may be called for by the SG.
Recommendation IODE-XXV.5.3

ESTABLISHMENT OF AN INTER-SESSIONAL WORKING GROUP TO PROPOSE A STRATEGY ON OCEAN DATA AND INFORMATION STEWARDSHIP FOR THE UN OCEAN DECADE (IWG-SODIS)

The IOC Committee on International Oceanographic Data and Information Exchange,

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 Decade, and stating that the Decade could benefit from making scientific data and information freely and openly available in accordance with the applicable legal framework,

Further recalling the invitation made by the UNGA to the IOC to prepare an implementation plan for the Decade in consultation with Member States, specialized agencies, funds, programmes and bodies of the United Nations, as well as other intergovernmental organizations, non-governmental organizations and relevant stakeholders,

Noting the establishment of an expert advisory body to the IOC governing bodies, referred to as an Executive Planning Group (EPG) to support the preparation of the implementation plan,

Noting further the establishment of the IOC Ocean Data and Information System Catalogue of Sources (ODISCat) Project (Recommendation IOC/IODE-XXV/5.2.1) and that IODE has taken initial steps towards the establishment of an ocean data and information system (ODIS), which aims to contribute to the objectives of the Agenda 2030, and in particular the Decade,

Referring to IOC Resolution EC-LI.1 requesting that IOC subsidiary bodies engage in the work of the Decade and identify potential contributions during the next intersessional period,

Recommends to establish an inter-sessional working group to propose a strategy on ocean data and information stewardship for the UN ocean decade (IWG-SODIS), with the Terms of Reference as attached in Annex A to this Recommendation.

Annex A to Recommendation IODE-XXV.5.3

Terms of Reference of the Inter-sessional working group to propose a strategy on ocean data and information stewardship for the UN ocean decade (IWG-SODIS)

Objectives

This working group will:

A. Explore through UN-Oceans the interest of relevant UN bodies to develop a joint data and information system under the Decade and to start assessing respective data and information guidelines and policies and identify relevant data and information access and repositories that may contribute to such a system,

B. Investigate the future scope of scientific data and information stewardship activities of the Decade, including and not limited to:
   a. Agreement on common data contributions, flow, latency, discovery, access, and re/use principles,
   b. Documenting data and information requirements and best practices,
c. Agreement on data and information protocols and metadata content and structure,

d. Agreement on science-based quality control/quality assurance requirements and procedures for all data types,

e. Agreement on modalities for contribution and dissemination of data and information,

f. Agreement on modalities and establish a strategy for the long-term preservation of Decade data for future use,

g. Agreement on access and use of potential data synthesis and tailored data products derived from the Decade,

h. Develop and update data and information management capacity,

i. Identify and review potential data and information management infrastructure that could be established during the implementation phase (2021-2030) to coordinate data management activities,

C. Prepare a proposed Ocean Data and Information Stewardship Strategy including a work plan, timetable, and required resources to be submitted to the Executive Planning Group (EPG) before its Second EPG meeting (November 2020) for their consideration and inclusion in the preparatory process and the Science Plan of the Decade.

D. Identify a group of subject matter experts that may continue providing advice and expertise on scientific data stewardship during the operational phase of the UN decade.

Modalities

The IWG-SODIS aims to have at least 2 meetings (second half 2019 and first half 2020). Members of the IWG-SODIS are invited to submit proposals (including coverage of expenses) to host IWG-SODIS meetings to the IOC secretariat before 1 September 2019. The group may also meet via online services as appropriate.

Membership

Recommended membership will include experts from UN-Oceans members (including IOC programmes), other organizations, networks or projects that have an interest in contributing to the data and information aspects of the UN Decade.

Membership will also be discussed with the EPG.

The IWG-SODIS will designate 2 co-chairs. The IWG-SODIS may compose writing groups or other task teams as necessary.

The IOC Secretariat will issue invitations to the above-mentioned potential participating entities. Expressions of interest for membership should be sent to the IOC secretariat before 1 September 2019. The IWG-SODIS will reach decisions on its recommendations by consensus of its members. The group may seek the advice of subject matter experts and others across UN and international organizations as appropriate to help formulate sound recommendations.

Reporting:

IWG-SODIS will report regularly to the UN Ocean Decade EPG and the 26th session of IODE (2021).
Recommendation IODE-XXV.7.3

IODE WORK PLAN AND BUDGET FOR 2019–2020

The IOC Committee on International Oceanographic Data and Information Exchange,

Having reviewed its programme implementation requirements for the period 2019-2020,

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

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 important role of IODE in JCOMM and 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, responding to the IOC Strategic Plan for Oceanographic Data and Information Management,

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, the Russian Federation for its support through the hosting of the Partnership Centre for the IODE Ocean Data Portal in Obninsk, as well as to other donors and Member States who are providing financial and in-kind support for IODE,

Appreciating the in-kind support for the IODE Programme provided by Member States through establishing and maintaining IODE Data Centres, OBIS nodes and Associate Data Units, Associate Information Units, provision of experts, through the provision of valuable ocean data and information products and services, and through financial and in-kind contributions to IOC,

Requested the IOC Executive Secretary to prepare the documentation to the UNESCO Director-General to create a regular programme post for the OBIS Data Manager at the earliest opportunity, and preferably within the 40C/5 (2020-2021), in order to the secure the continuation of OBIS beyond 2019,

Calls on Member States to provide financial support to the IOC Special Account, earmarked for IODE and OBIS, or in-kind support through the secondment of experts to the IOC Project Office for IODE or to the IODE and OBIS secretariat;

Requests that the IODE Co-Chairs bring to the attention of the next Session of the IOC Assembly, the IODE Programme and Budget for the period 2019-2020, as attached in the Annex to this Recommendation.
<table>
<thead>
<tr>
<th>IODE projects</th>
<th>BUDGET</th>
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ANNEX IV
OPENING ADDRESSES

Opening Speech Dr Testuichiro Yabuki, Director, Japan Oceanographic Data Center

Dr. Ryabinin, IOC Executive Secretary, Dr. Chandler and Prof Michida, IODE Co-chairs, distinguished representatives from various countries and institutions, lady and gentleman at the science conference,
I’m Testuichiro Yabuki of Director, Japan Oceanographic Data Center.

I’m much honored to welcome all of you here in Tokyo and to make an opening address as the host of the 25th session of IOC committee on IODE, today.

As a representative organization of Japan at IODE, JODC has been operating in Japan since 1965, for more than half a century, with the understanding and cooperation by marine research institutes and researchers in Japan, to collect, manage and provide marine research data and information, as well as to cooperate in data management activity in international projects and to improve capacity of marine data and information management in the Western Pacific region.

I recognized that we had a very beneficial exchange of views on the future of oceanographic data information management at the science conference for two days from the national data centers and representatives of international organizations as well as local participants.

Meanwhile, I understand that it is a common challenge among the data centers of IODE to cope with diversifying marine data information needs and rapid developing ocean observation technology and information and communication technology. I believe that coordination with end user and cooperation among the data centers are indispensable to achieve the challenge while our available resources are limited.
In such important turning point for IODE this time, it is very honourable for Japan to hold the IODE25 and Scientific Conference in Japan, and I assumed that it very much contributed to promote an understanding of Japanese researches and stakeholders on marine data and information management.

As the host country, I hope we will be able to conduct this important meeting of IODE 25 smoothly and to have beneficial discussions. I conclude my opening address wishing your comfortable stay in Japan.
Thank you so much for your kind attention.

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Opening Speech Dr Vladimir Ryabinin, IOC Executive Secretary

Thank you very much Dr Chandler, dear Co-Chairs, Dr Michida-san, our gracious host, Dr Yabuki-san, good morning ladies and gentlemen, and welcome to the 25th edition of the IODE Committee.

My impression is that it’s a special session because the previous session was held at the time when we didn’t know that the decade of ocean science would be proclaimed by the United Nations, then the next session will be already at the time when the decade will be on, so this is actually a unique session where IODE can brace and prepare for the achievements that we are supposed to do and achieve in the course of the decade.

The challenges for the science of oceanography are significant. We all know that climate change is going on and emissions remain unabated. I would like to state that very soon there will be this special report of the IPCC on ocean cryosphere and change in climate and we know that the situation is quite dramatic with the health of the ocean. We also need to continue developing oceanographic services. These are the 3 big challenges in front of oceanography and of course also in front of IODE which is the backbone of oceanography.

IODE is a guardian of oceanographic data exchange. The science that we support is, I think, in the period of transition from curiosity driven science to the science that supports, effectively and efficiently, the society. That means that science has to offer solutions to the multitude of problems that I already tried to outline a little bit. Such solutions must be characterized by 2 features: the first is that it has to be really best science, the cutting-edge, science but also it has to be science and solutions for all. This outlines 2 pillars of the IODE work, the work on data that has to be also cutting-edge work and also capacity development so everyone could join and benefit from the services provided. Thus IODE has to move forward continuing these 2 assets in the IODE portfolio.

The key to this would be indeed moving forward developing your role as the standard setting organization and best practices setting organization. The conference that that we held 2 days before was informative and successful. We discussed how to move forward and, despite there is no consensus, but my impression is that the ODIS version 2 that will be moving us from the state that we have to a consolidated system in terms of joint products. ODIS would look into such products and then the ultimate goal is to offer to the world a portal of ocean data that will be holding most important, maybe sometimes stationary but also changing in real-time information about the state of the world.
So, I just urge this community to work towards the design of such a system that will be delivering data, taking it to the surface, making it in accordance with IODE and IOC data policy of free and unrestricted and open data access. What is also important is that historically the focus of many IOC programmes has been on global programmes. The global ocean observing system remains a very strong partner. Maintenance of what existed in JCOMM because of the imminent restructuring of our partner, the World Meteorological Organization, the maintenance of all the services and all elements that existed in these two programmes and also IOC/IODE and WMO has to be moved forward. We will have an advisory board together with WMO to agree on the modalities of moving forward keeping all the elements but how we package all these elements remains not fully clear. It is more or a less a solved problem but at the same time we have to move forward in a coherent way and keep all the portfolio of very important activities for the world.

So I think what has to be strengthened in IODE and IOC during the decade is the focus on regions where the action is taking place, work more with helping to develop ocean based economies, so called blue-economies, keeping it green blue economy, sustainable blue economy, which means work with the private sector that can also contribute very much to the work on data. The data has a cross-cutting role in the design of the decade and what I think is useful is that together with the global ocean observing system, which in turn with partners is organizing a big conference “OceanObs19” in Hawaii in September this year, this community can also think of a seminal meeting that would be changing the paradigm in how the data is used in the world. We really need to open the data to the world and benefit from that, to create a pull for data - so we need to work with partners.

It is our job of IOC to enable sustainable use of the ocean that means supporting with data coastal zone management, maritime spatial planning, adaptation to climate change, services related to safety of people like tsunami services, meteorological and climate predictions and many other services including also supporting the work in terms of data on the state of the ocean, of fisheries, aquaculture and you name it. There are many applications that wait to be supported to move forward the agenda of sustainability. United Nations is with us, is focusing more and more on ocean science. There is sustainable development goal 14 focused on the ocean, the fact that the decade of ocean science for sustainable development, following the proposal of IOC, was proclaimed by the 72nd session of the United Nations General Assembly. This all means that the United Nations is very much interested in ocean and also ocean science. There will be very important discussions on the United Nations informal consultative process on the ocean, the ocean and decade of ocean science that will take place in the middle of June before the IOC Assembly. This means that take ocean now to the highest echelons of work of United Nations. We recently met with United Nations special envoy on the ocean, Ambassador Peter Thomson, and he assured us that in early June from 2-6 of June 2020 in Lisbon, hosted by Portugal and Kenya, there will be the second conference on the oceans for sustainable development on SDG14. Four targets of SDG14 materialize in 2020: the situation is not easy but the world is ready to discuss at the highest level the state of the ocean and that conference will also be having a stronger focus on ocean science, so I think the of this committee is to really engage data in helping the science to find most important solutions for our civilization. This is why I would like really to call on you to have a very constructive discussion and agree on solutions that will be then discussed at the IOC Assembly 30 that starts on 26 June this year so that we could move forward in a coherent way proposing good solutions for data management and information management for the science towards the ocean we need for the future we want. Thank you very much for what you do and I wish you success in that.
3.2.2 New functional elements of IODE

The Committee noted that the Terms of Reference of the IODE GDAC with the MCDS GDAC (written in WMO-471) are now converging and suggested to amend the IODE ToR. The IODE GDAC ToR includes all functions and tasks of MCDS GDAC for the benefit of JCOMM/IODE GDACs.

The Committee adopted Recommendation IODE-XXV.3.2.2.

The IODE Committee invited JCOMM ETMC to work together with JCOMM/IODE ETDMP on functions and requirements to become a GDAC and requested the JCOMM/IODE ETDMP to report to the IODE Management Group.

3.2.3. The JCOMM Marine Climate Data System (MCDS)

The IODE Committee invited JCOMM to jointly elaborate on MCDS structural elements, such as DACs, noting that they could be functional elements of IODE.

The IODE Committee urged the Joint WMO-IOC Consultation Group on the Reform of JCOMM to take into consideration the MCDS when discussing the future of JCOMM.

3.2.4 Possible actions to expand or review the existing network

The Committee adopted Decision IODE-XXV.3.2.4.

3.3 IODE COOPERATION WITH JCOMM: REFORM OF WMO AND FUTURE OF JCOMM

The Committee, referring to the ongoing development of WMO WIS 2.0 and IOC ODIS, remarked that many changes are taking place which makes long-term strategic planning regarding collaboration between WMO and IOC/IODE challenging.

The Committee entrusted the IODE Management Group to reflect the comments by the Committee in the discussions of the Joint WMO-IOC Consultation Group on the reform of JCOMM.

The Committee recommended:

(i) continued collaboration between IOC and WMO regarding data management and capacity development activities;

(ii) to assure that activities related to interoperability of IOC ODIS and WMO WIS 2.0, both under development, will be maintained in the proposed future structure of JCOMM;

(iii) that IOC Member States promote the IODE OceanExpert database as a joint pool of experts within IOC and invite WMO to contribute to it.

3.4.1 JCOMM/IODE Expert Team on Data Management Practices (ETDMP)

The Committee acknowledged the accomplishments of the JCOMM/IODE Expert Team on Data Management Practices (ETDMP).

The Committee adopted Recommendation IOC/IODE-XXV/3.4.1
3.4.2 Joint IODE/IAMSLIC Group of Experts on Marine Information Management in a transitional capacity (GE-MIM)

However, bearing in mind the decision of previous IODE Committee Sessions to abolish Groups of Experts and focus more on projects, the Committee decided to propose to IAMSLIC to abolish the IODE/IAMSLIC Group of Experts on Marine Information Management. In this regard the Committee instructed the Co-Chairs to discuss this proposal with the IAMSLIC President.

The Committee further instructed the Co-Chairs to discuss the continued support by IODE of IAMSLIC through Aquatic Commons, IAMSLIC membership sponsoring etc.

The IODE Committee invited the IAMSLIC to jointly seek new and innovative ways to collaborate on the promotion of marine information management as an essential component in the “ocean knowledge” value chain.

The Committee urged marine libraries to register as IODE Associate Information Units to ensure their input into the work of IODE through projects, activities and capacity development.

The Committee requested the IOC/IODE Secretariat and IAMSLIC to consider and further discuss the establishment of a new MoU focusing on specific targets and deliverables.

The Committee decided that IODE should continue the hosting and maintenance of the IAMSLIC Aquatic Commons repository.

The Committee instructed the IODE Management Group to manage the establishment of the new MoU with IAMSLIC and further collaborative arrangements.

3.5.1 Ocean Biogeographic Information System

The Committee stressed the importance of securing the OBIS data manager position beyond 2019 and requested the IOC Executive Secretary to prepare the documentation to the UNESCO Director-General to create a regular programme post for the OBIS Data Manager at the earliest opportunity, and preferably within the 40C/5 (2020-2021).

The Committee urged member states and non-governmental partners to provide extra-budgetary resources to the IOC Special Account for OBIS in order to support the implementation of the OBIS work plan and secure the continuation of OBIS beyond 2019.

NODCs represent an important and underutilized part of the OBIS network where the community should be able to count on these institutions for core data repository and management capacity. The Committee instructed OBIS undertake a study to fit NODCs into the OBIS network construct and characterize the shared data management responsibility between NODCs, ADUs, and OBIS Nodes in fulfilling this mission for the biological data appropriate for OBIS.

3.5.1.1 OBIS-Event-DATA Pilot Project

The Committee expressed its appreciation for the work achieved and decided to close the project.

The Committee noted that the OBIS-ENV-DATA standard also constitutes an important contribution to the Global Biodiversity Information Facility (GBIF) and this implementation of DarwinCore has been taken up as a data best practice by several other communities, including the biologging society.

3.5.1.2 Development of Information Products and Services for Ocean Assessments (DIPS-4 Ocean Assessments)
The Committee expressed its appreciation for the work achieved and thanked the Government of Flanders (Kingdom of Belgium) for the financial support provided.

3.5.1.3 Concept for OBIS FUST funded projects

The Committee, while expressing its appreciation for support already provided, invited the Government of Flanders (Kingdom of Belgium) through the FUST, as well as other Member States and donor agencies, to consider providing financial support to OBIS (and its community network) to ensure OBIS can facilitate the co-development of a data and analytics platform for policy relevant applications, involving relevant partners, as well as to create specific training packages in collaboration with the OceanTeacher Global Academy.

3.5.2 Global Oceanographic Data Archaeology and Rescue Project (GODAR)

The Committee expressed its appreciation for the work achieved.

The Committee noted with sadness the passing of Carla Coleman. Carla was a dedicated (and cheerful) data digitizer for the GODAR project. She patiently copied thousands of historic oceanographic casts from manuscript to digital form, thereby making these valuable data available to generations of oceanographers and climate scientists. Carla died in 2018 after a year’s long battle with illness. She is greatly missed both in her work and in her presence.

3.5.3 World Ocean Database (WOD)

The Committee expressed its appreciation for the work achieved.

The Committee urged NODCs and ADUs to continue submitting data for inclusion in WOD.

3.5.4 Global Temperature and Salinity Profile Programme (GTSSP)

The Committee expressed its great appreciation to Mr Charles Sun for his years of commitment to IODE and the GTSSP project.

The Committee expressed its appreciation for the work achieved. The Committee welcomed Dr Peter Chu as the new Chair of the SG-GTSSP.

The Committee recommended that GTSSP should interact with GOOS.

3.5.5 Global Ocean Surface Underway Data Project (GOSUD)

The Committee expressed its appreciation for the work carried out and thanked especially Ir Loic Petit de la Villéon for his leadership of GOSUD for many years.

The Committee recommended a closer relationship with the JCOMM/ OCG and the SOT. The Committee urged the SG-GOSUD to elect a new Chair by the end of 2019.

3.5.8 IODE Ocean Data Portal (ODP)

The Committee expressed its appreciation for the work achieved.

The Committee instructed ETDMP to specify the role of the ODP in the development of IOC ODIS development based on system interoperability/convergence approaches.

3.5.8.1 Review of the Partnership Centre for the IODE Ocean Data Portal

The Committee expressed its appreciation to the Partnership Centre for IODE Ocean Data Portal for the progress in implementation and maintaining of the IODE Ocean Data Portal project.
The Committee 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.

3.5.10 IODE OceanDocs

The Committee encouraged all Member States to deposit works in OceanDocs or implement their own national/institutional e-repository with OceanDocs assistance.

3.5.11 IODE OceanExpert

The Committee recommended that OceanExpert should remain an IODE project managed by IODE but with close consultation with IOC programmes and considering that IODE is a data and information provider for all IOC programmes.

3.6.1 Centre/ Information Centre accreditation: status and way forward

The Committee welcomed the progress of the IODE-QMF project.

The Committee urged all IODE NODCs and ADUs to apply for accreditation.

The Committee invited Member States to nominate suitably qualified experts with experience in implementing quality management systems for management of oceanographic data to the SG-QMF for the next intersessional period.

The Committee, in order to prepare ADUs for applying, instructed the SG-QMF to assist interested ADUs with the accreditation process (e.g. through examples of applications).

The Committee instructed the SG-QMF to develop the necessary criteria for AIU accreditation, and invited IAMSLIC to assist with this.

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

The Committee decided to reduce the number of reports to an annual report that includes project reporting. The annual report submitted prior to the IODE Session will also include a workplan and budget for the next inter-sessional period. The Committee further decided to include a SWOT analysis in the report.

The Committee instructed the IODE Secretariat to revise IOC Manuals and Guides No. 81.

3.7.1 IOC Global Programmes

The Committee welcomed the existing cooperation and called on other IOC programmes to collaborate with IODE for their ocean data and information management requirements.

3.7.2 IOC regional programmes (sub-commissions and regional committees)

The Committee invited existing ODINs and IOC Regional Subsidiary bodies and GOOS and its regional alliances to work closely together and invited the IOC Regional Subsidiary Bodies and GOOS and its regional alliances to identify CD and collaboration assistance requirements and discuss these with IODE at the regional (ODIN) and/or global level.

The Committee requested IOC Regional Subsidiary Bodies and GOOS and its regional alliances to include data and information management in the agenda of their meetings.
4.1.1.1 IODE OceanTeacher Global Academy: Phase 2

The Committee welcomed the positive results obtained by the Regional Training Centres and the growing collaboration with other IOC programmes using the OTGA. However, the Committee noted that other IOC Programmes making use of OTGA should also contribute to the related Secretariat tasks.

The Committee invited IOC Regional Subsidiary Bodies to jointly, with OTGA, plan and implement courses through the RTCs in their region.

The Committee thanked the Government of Flanders (Kingdom of Belgium) for the substantial support provided to the OTGA project.

The Committee welcomed the planned submission of a new proposal to FUST.

4.1.2 IOC Group of Experts on Capacity Development

The Committee welcomed the survey and instructed the Secretariat to disseminate the results of the survey to all IODE contacts. The Committee further noted that the survey results should be of great interest to the planning process of the UN decade.

The Committee welcomed the development by INVEMAR Colombia of the CHM/TMT for the Latin America region, demonstrating the expertise within the IODE community.

The Committee invited other IODE partners to consider assisting with other regional CHM/TMT setups in other regions, in close consultation with the IOC Regional Subsidiary Body in their region as well as other partners.

5.1 IODE MANAGEMENT ISSUES

The Committee adopted Draft Decision IODE-XXV.5.1.

5.2 IOC OCEAN DATA AND INFORMATION SYSTEM (ODIS)

The Committee approved the concept paper for the IOC Ocean Data and Information System as presented in Document IOC/IODE-XXV/5.2.

5.2.1 Ocean Data Sources inventory pilot service

The Committee invited IODE community members to enter and/or update records in the ODIS Catalogue of Sources.

The Committee noted the importance of the ability of ODISCat to continue to evolve. The ODISCat concept, the metadata scheme, and semantics should all evolve and have a place in the workplan. Community engagement will be essential to further develop and improve the Catalogue.

The Committee noted the importance of early consultation of end users through relevant organizations and instructed the project, being established through Recommendation IODE-XXV/5.2.1, to define clear objectives (undertake a needs assessment).

The Committee decided that the URL for the ODIS Catalogue of Sources (ODISCat) should be catalogue.odis.org

The Committee adopted Recommendation IODE-XXV/5.2.1
5.3 IODE CONTRIBUTION TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

The IODE Committee, (i) considering the need to derive the greatest benefit from the observations collected and information from the UN decade of the ocean science; (ii) considering the complexity and use of international observing systems during the UN decade of the ocean without overarching data and information access and use, recommended to the IOC to include, as part of preparatory process, the formulation of common guidelines/principles on flow, discovery, access, and re/use of data collected during the decade. The IODE Committee offered its assistance in this regard.

Concerning the initial steps towards the establishment of an ocean data and information system building on ODISCat, the Committee Recommended the IOC Assembly to request the IOC Secretariat to explore through UN-Oceans the interest of relevant UN bodies to develop a joint data and information system under the Decade and to start assessing respective data and information policies and identify relevant data and information repositories that may contribute to such system;

The Committee adopted Recommendation IODE-XXV.5.3

The IODE Committee identified interested experts for the IWG: Dr Hernan Garcia (USA), Dr Rorie Edmunds (WDS), Ms Alessandra Giorgetti (Italy), Dr Graham Allen (United Kingdom), Mr Neil Holdsworth (ICES), Mr Serge Scory (SeaDataNet), Mr Jan-Bart Calewaert (EMODNET), Mr Kevin O’Brien (JCOMM OCG), Dr Pier Luigi Buttigieg (OBPS Project), Mr Francisco Arias (Colombia), IODE Co-Chairs.

The IODE Committee stressed the need for active participants and strong leadership in the IWG, taking into account the very short timelines.

The Committee requested the IOC Secretariat to further finalize the draft recommendation in preparation for the IOC Assembly.

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

The Committee adopted Decision IODE-XXV.5.4

5.4.1 JCOMM DATA MANAGEMENT STRATEGY

The IODE Committee welcomed the Vision, Mission, Outcomes and Activities outlined in the draft Joint WMO and IOC strategy for marine meteorological and oceanographic data management for the period 2018 to 2021.

The IODE Committee decided to:

(i) assist JCOMM to develop the implementation Plan responding to the Data Management Strategy and to collaborate in the implementation of the Strategy;

(ii) promote the Strategy and its implementation within IODE projects, activities and members;

(iii) assist DMPA to review and update the strategy and the implementation plan as necessary;

(iv) endorse the Strategy and invited JCOMM to submit it to the 30th Session of the IOC Assembly (2019) for approval.
5.5 PERFORMANCE REVIEW OF THE IOC PROJECT OFFICE FOR IODE (agreement expiring 31/12/2021)

The Committee adopted the modalities included in Document IOC/IODE-XXV/5.5 as guidelines for the review.

The Committee instructed the IODE Co-Chairs in consultation with past Chairs to designate members of the review team and to agree on the timeline for the review.

5.6 REVISION OF THE IOC OCEANOGRAPHIC DATA EXCHANGE POLICY

The Committee approved Draft Decision IOC-XXX/7.2.1 (IODE-XXV) for adoption by the 30th Session of the IOC Assembly.

The Committee instructed the IODE Management Group to consider the existence of other organizations that host long-term repositories for oceanographic data and associated metadata, of relevance to IOC/IODE, and possibly recommend further revisions of the Policy in future, to accommodate these.

6.2 IODE HUMAN RESOURCES (CURRENT AND REQUIRED)

The Committee thanked Japan for the secondment of an intern.

6.3 CONFIRMED EXTRA-BUDGETARY FINANCIAL RESOURCES

The Committee expressed its great appreciation to the Government of Flanders (Kingdom of Belgium) for the considerable support provided to IODE in the past and for the decision to continue support through FUST.

The Committee expressed its appreciation to the Government of Japan for providing an intern and invited Japan as well as other Member States to provide interns or seconded staff.

7.1.1 The IODE/GOOS Ocean Best Practices System Project

The Committee approved Draft Decision (Assembly IOC-XXX Agenda Item 7.2.1 IODE-XXV)

7.1.2 Contribution of IODE to the JCOMM Observations Coordination Group Project: Open Access to the GTS

The Committee invited IODE NODCs and ADUs to participate in the JCOMM OCG Open Access to the GTS project and to contact Mr Kevin O’Brien in this regard.

7.2 IODE PROMOTION OPPORTUNITIES 2019-2021

The Committee noted the opportunity to promote IODE at, inter alia,

(i) the upcoming OceanObs19 conference, to be held in Honolulu, Hawaii, September 2019;

(ii) the upcoming regional and global consultations during the preparatory phase of the UN Decade of Ocean Science for Sustainable Development;

(iii) the UN Ocean Conference to be held in Lisbon, Portugal in 2020;

(iv) the IAMSLIC Conferences to be held in Port Aransas, Texas, USA in October 2019 and Wellington, New Zealand, October 2020;

(v) COLACMAR to be held in November 2019 in Mar del Plata, Argentina;
(vi) IMDIS Conference to be held in Amsterdam, The Netherlands in October 2020;

(vii) 12th Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-XII) to be held in March 2019, Kish Island, Islamic Republic of Iran;

(viii) Oceans 2019 Conference, to be held in October 2019 in Seattle, WA, USA; (ix) World Marine Biodiversity Conference, to be held in November 2020 in Auckland, New Zealand,

and urged IODE experts to actively promote IODE at these occasions. In this regard the Committee requested Committee members to inform the IODE Co-Chairs about their planned participation, and for the Co-Chairs to discuss ways and means to promote IODE at these events.

The Committee further urged Committee members to actively promote IODE at relevant national events.

7.3 WORK PLAN AND BUDGET 2019-2021

The Committee noted that, with the continuing decline of the UNESCO regular programme funding, it will be necessary to assign funding based on metrics that take into account performance as well as the IOC Data and Information Management Strategy to ensure that IODE activities respond to the requirements of the Strategy.

The Committee instructed the Management Group to refine the existing metrics during the intersessional period.

The Committee adopted Recommendation IODE-XXV.7.3

9. DATE AND PLACE OF THE NEXT SESSION

The Committee thanked Poland for the offer and instructed the Secretariat to discuss the administrative arrangements with Poland.

The Committee urged Member States from developing regions to more actively participate in Sessions of the Committee as well as in IODE working groups and other subsidiary bodies in order to improve the geographic balance within IODE. Similarly, the Committee urged Member States to take into account gender balance when nominating experts for IODE related activities, groups and nominations.

10. ELECTION OF THE CO-CHAIRS

The Committee elected Dr Sergey Belov (Russian Federation) and Mr Taco de Bruin (The Netherlands) as IODE Co-Chairs for the next inter-sessional period.
ANNEX VI

IODÉ-XXV SCIENTIFIC CONFERENCE, 18–19 FEBRUARY 2019

The full information as well as video recordings of all presentations can be found on http://www.iode.org/iode25_sciconf

Objective: the objective of the IODE-XXV Scientific Conference is to provide an overview of recent and new initiatives in ocean research, observation and services to which IODE can and should contribute, and to stimulate discussions on how IODE can contribute.

PROGRAMME

Monday 18 February 2019

1. OPENING OF THE CONFERENCE

1.1 Opening address by IODE Co-Chairs

1.2 Opening address by Japan

(MAMI OYAMA (MS), Secretary-General, Japanese National Commission for UNESCO, Ministry of Education, Culture, Sports, Science and Technology (MEXT))

2. THEME: UN Decade

- Presentation 1: General overview of the UN Decade of Ocean Science for Sustainable Development (Dr Vladimir Ryabinin)
- Presentation 2: The Decade and UN partners (Mr Julian Barbière)
- Discussions and questions - Moderator: Prof Yutaka Michida

3. THEME: Regional IODE developments

- Keynote speaker/session lead: Prof Yutaka Michida
- Presentation 1: WESTPAC: Data and information exchange efforts in WESTPAC and AOGEO (Dr Ken Ando)
- Presentation 2: IOCAFICA - (Ms Arame Keita)
- Presentation 3: IOCARIBE - (Mr Ariel Troisi)
- Presentation 4: IOCINDIO - (Mr Pattabhi Rama Rao ELURI)
- Presentation 5: Europe - (Mr Jan-Bart Calewaert)
- Presentation 6: North America - (Dr Hernan Garcia)
- Discussions and questions - Moderator: Ms Paula Sierra-Correa

4. THEME: Capacity Development

- Keynote speaker/session lead: Mr Ariel Troisi
5. THEME: How is IODE collaborating in ongoing major initiatives and activities that may contribute to the UN Decade

- Keynote speaker/session lead: Ms Cyndy Chandler - Not presented
- Presentation 1: SDGs: (Ms Kirsten Isensee).
- Presentation 2: GOSR (Mr Yoshihisa Shirayama)
- Presentation 3: JCOMM to JCOM (Prof Nadia Pinardi)
- Presentation 4: MCDS and WIS (Mr Tim Boyer)
- Presentation 5: Open access to GTS project (Mr Kevin O'Brien)
- Presentation 6: World Data System (Dr Rorie Edmunds)
- Presentation 7: World Ocean Database (Mr Tim Boyer)
- Presentation 8: Ocean Biogeographic Information System (Prof Eduardo Klein)
- Presentation 9: The GOOS 2030 Strategy (Mr Toste Tanhua)
- Discussion and questions - Moderator: Dr Sergey Belov

Tuesday 19 February 2019

Fred Grassle Memorial Lecture

- Introductory talk about Fred Grassle (Ms Cyndy Chandler)
- Lecture by Prof Yoshihisa Shirayama (JAMSTEC)

6. THEME: Future of IODE and emerging opportunities including the UN Decade

- Brief introduction by Prof Yutaka Michida
- Presentation 1: Ocean Best Practices (Mr Jay Pearlman and Ms Pauline Simpson)
- Presentation 2: IOC Ocean Data and Information System (Mr Tobias Spears and Mr Arno Lambert)
- Presentation 3: Capacity Development: IODE products that can contribute: OTGA RTC mechanism, OTGA e-learning platform, OceanExpert, OTGA alumni system, … (Dr Cláudia Delgado)
- Presentation 4: Cooperation between GEBCO and IODE (Dr Graham Allen)
- Discussions and questions - Moderator: Dr Sergey Belov
7. THEME:  Cooperation with Partners (Japan)

- Keynote speaker/session lead: Prof Toshio Yamagata, professor emeritus of the University of Tokyo

- Presentation 1: Utilization of Maritime Spatial Data in GIS - (Mr Yosuke Sakurai, Esri Japan Corporation)

- Presentation 2: New Basic Plan on Ocean Policy and Japan's Efforts for Ocean Data and Information Sharing - (Mr Taisei Morishita, Counsellor, National Ocean Policy Secretariat, Cabinet Office)

- Presentation 3: Japan's Contribution to UN Decade of Ocean Science for SD - (Mr Tatsuya Watanabe, Director for Deep Sea Research, Ocean and Earth Division, Research and Development Division, Ministry of Education, Culture, Sports, Science and Technology (MEXT))

- Presentation 4: ISC Future Earth "Knowledge Action Networks and Ocean Science" - (Prof Em Mitsuo Uematsu, University of Tokyo)

- Presentation 5: UNEP and Regional Seas Contribution to the Development and Follow up of Ocean-related SDG Indicators - (Dr Lev Neretin, Ph.D., Coordinator, Northwest Pacific Action Plan (NOWPAP))

- Presentation 6: PICES - (Dr Joon-Soo Lee, Ph.D., Korea Oceanographic Data Center, Ocean Climate & Ecology Research Division, National Institute of Fisheries Science)

- Presentation 7: Nippon Foundation: The Importance of Partners in Forming the Future of Oceans - (Mr Mitsuyuki Unno, Executive Director of the Nippon Foundation)

- Discussions and questions - Moderator: Mr Norio Baba

8. CONCLUSIONS OF THE CONFERENCE (PANEL)

- Moderated by Dr Vladimir Ryabinin

- Panellists: Keynote speakers of all sessions Prof Yutaka Michida, Mr Ariel Troisi, Ms Cyndy Chandler, Prof Toshio Yamagata.

[END]