Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies

IOC Committee on International Oceanographic Data and Information Exchange

Twenty-second Session
Ensenada, Mexico, 11-15 March 2013

UNESCO

Abstract

The IOC Committee on International Oceanographic Data and Information Exchange held its Twenty-second Session (IODE-XXII) at the "Centro Social, Civico y Cultural Ensenada", Ensenada, Mexico between 11 and 15 March 2013. The Session was attended by 78 participants from 37 IOC Member States and 14 organizations. The Session adopted 20 recommendations that provided a clear path to IODE's restructuring and re-organization. The key recommendations established a joint IAMSLIC-IODE group of experts on marine information management, an ocean data standards and best practices project and associated clearing house for data/information management practices, the IODE Associate Data Unit and IODE Global Data Assembly Centres as new structural elements, the IODE Quality Management Framework, and also revised the IODE objectives. The Committee adopted a work plan and budget that, taking into account the UNESCO financial crisis, would be based mainly on income from extra-budgetary sources. The Committee re-elected Ms Sissy Iona (Greece) and Mr Ariel Troisi (Argentina) as IODE Co-Chairs.

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

Figure 1: Group photo and venue IODE-XXII, Ensenada, Mexico

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ANNEXES

1.   OPENING

1   Ms Sissy Iona and Mr Ariel Troisi, Co-Chairs of the IOC Committee on International Oceanographic Data and Information Exchange (IODE) welcomed the participants to the Twenty-second Session of the IODE Committee at 09:00 on Monday 11 March 2013. Ms Iona thanked the members of the Committee for their agreement to use only English and Spanish as the working languages for the Session, taking into account the cost of interpretation and translation. In this regard the Government of Mexico was thanked for providing English-Spanish interpretation throughout the Session.

2   The Meeting was addressed by (i) Mr Ariel Troisi and Ms Sissy Iona, IODE Co-Chairs (their speech is attached as Annex IV.1; (ii) Dr Wendy Watson-Wright, IOC Executive Secretary and Assistant Director-General of UNESCO. (her speech is attached as Annex IV.2); (iii) Ing. Ramon Zamanillo, Coordinador des Subcomité de la CONALMEX (his speech is attached as Annex IV.3); (iv) Dr Felipe Cuamea Velazquez, Rector de la UABC (his speech is attached as Annex IV.4).

2.   ADMINISTRATIVE ARRANGEMENTS

2.1   ADOPTION OF THE AGENDA

3   The Committee was invited by the Technical Secretary, Mr Peter Pissierssens, to review and adopt the provisional agenda (**Document IOC/IODE-XXII/1 prov**.). The Committee was requested to note that all working documents were made available only as on-line documents. He also noted that any additional documentation would be placed in the pigeon holes and emailed to the primary email address with which participants registered in OceanExpert. The Technical Secretary invited the Committee to identify any new agenda items as necessary.

4   **The Committee adopted** the Agenda as attached in Annex I.

2.2   DESIGNATION OF A RAPPORTEUR

5   **The Committee**, taking into account the limited size of most delegations **decided not to nominate a Rapporteur**, and **tasked** the Secretariat and Co-Chairs with the reporting of the Meeting.

2.3   SESSION TIME TABLE AND DOCUMENTATION

6   The Committee adopted the Timetable (**Document IOC/IODE-XXII/1 Add. Prov.)**

7   The IODE Technical Secretary (Mr Peter Pissierssens) reviewed the arrangements for the Session and presented **Document IOC/IODE-XXII/4 prov**. (*List of Documents*) available on line through http://www.iode.org/iode22

8   He 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 would have four working days to deal with the substance of the meeting and there would be one day reserved for in-depth discussions on the future of IODE. 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.

2.4   ESTABLISHMENT OF SESSIONAL WORKING GROUPS

9   The Technical Secretary invited the Committee to establish sessional working groups. **The Committee established** the following sessional groups:
  (i)   Sessional working group on work plan and budget: This sessional working group was tasked with preparing a work plan and budget for the remainder of 2013 and for the period 2014 – 2015. The group was requested to bear in mind that that funds

remaining for 2013 from the UNESCO RP amounted to only US$ 17,000 (noting that US$ 15,000 for the 2013 Session of the SG-OBIS was already budgeted). The sessional working group was requested to work on the basis of a possible budget for 2014-2015 of US$ 60,000 (including OBIS) from the UNESCO Regular Programme. **The Committee elected** Mr Greg Reed as Chair of the sessional working group.

(ii)   <u>Sessional working group on the future of IODE (Wednesday 13 March):</u> It was noted that all participants were invited to participate in the work of this working group.

(iii)   <u>Sessional working group on ODINWESTPAC (proposed by China):</u> This sessional working group was tasked with reviewing the progress with implementation of ODINWESTPAC and to recommend mechanisms for strengthening the network as well as developing work plans for the next inter-sessional period. **The Committee invited** the sessional working group to elect its Chair during its meeting.

10   The Technical Secretary reminded the Committee that each Sessional Working Group should nominate a Chair who would report back to the Committee at the time the relevant agenda item was discussed in plenary.

2.5   LOCAL ARRANGEMENTS

11   The representative of the local host, Dr Carlos Rodolfo Torres Navarrete informed the Committee that Information and guidelines for participants had been made available through the IODE-XXII web site http://www.iode.org/iode22

12   He further informed the Committee on local arrangements including social events and possibilities for tourist excursions. He informed the Committee of the cocktail on Monday and "Mexican Party" on Thursday.

3.   INTRODUCTORY REPORTS

13   Under this agenda item reports were presented that provided an overall overview of the IODE system, its activities and implementation of the programme at the national, regional and global levels.

3.1   CO-CHAIR'S REPORT

14   The two Co-Chairs presented their report on inter-sessional activities. They referred to **Document IOC/IODE-XXII/5 (Co-Chairs' Report).** The IODE experienced challenging times since IODE-XXI mainly related to financial constraints resulting from UNESCO's budget cuts. The same financial constraints occurred in almost all IOC Member States thus affecting, in many cases, the activities of NODCs and ODINs. Struggling with a cut on IODE's budget of about 80% for a good part of the intersessional period, Groups of Experts, projects and activities continued to pursue their goals at different paces. Bearing these in mind, it stands to reason that not all the goals and objectives set at IODE XXI were met, and several had to be reprogrammed. Especially the budget allocations to the ODINs were affected as there was no way providing funds to all ODINs.

15   Cooperation and interaction with other IOC Programmes as well as with other Organizations was maintained amidst the aforementioned difficulties, rendering appropriate outcomes.

16   IODE has been actively involved in JCOMM activities and has contributed significantly in the revision of MCDS documentation (see agenda item 7).

17   The Co-Chairs addressed the Session as follows: "*A simple review of the activities, meetings, workshops and training courses that have taken place in the intersessional period renders a quite impressive picture in such difficult circumstances. To a large extent we have to thank the Government of Flanders (Kingdom of Belgium) for this as they have continued their substantial support to the IOC Project Office for IODE. This meant that we could continue our training programmes as well as meetings of our expert groups and several steering groups.*

18   The progress report of the IODE programme at the 26ᵗʰ Session of the IOC Assembly was well received by all Member States and Resolution XXVI-10 was adopted including, inter alia, the establishment of an IODE Group of Experts for OBIS, an IODE Steering Group for OBIS, and establishing the IOC Project Office for IODE/OBIS (albeit not at Rutgers University – this is discussed under agenda item 5.2.1). In turn, the 45ᵗʰ Session of IOC Executive Council approved decision EC-XLV/Dec.4.2.1 on the establishment of a Centre for the Ocean Data Portal at RIHMI-WDC of Roshydromet in Obninsk, Russian Federation, which will give a great impulse to ODP operation (more details are provided under agenda item 5.2.3).

19   Nevertheless, in a rapidly changing environment and after more than fifty years, IODE is at a cross-road and some serious challenges must be faced:

- *There is a need to take a careful view at the emergence/growth of well-funded data systems, their decision to link with data systems in other regions, jointly with our progress and achievements with, for example, ODP and ODS. Put more simply IODE NODCs are participating in other networks that are better funded and that are linking with other similar systems. If this continues then should IODE continue to exist as such?*

- *The level of response to IODE related emails and difficulties in having people available for IODE activities. In this regard we refer to the low level of response to the IODE national reports survey (less than half of the IODE national coordinators responded by the deadline).*

- *The ODINs development has slowed down, which can be explained partially due to the budget cuts.*

- *Individual experts have less time to spend on IODE work versus their need to focus on funded project work. This is related to the participation of the NODCs in parallel networks. Of course if you need to choose between tasks for which you get paid vs. tasks that you are doing for free then the choice is easily made. But again this puts in question the future of IODE, which has to rely on volunteer work that benefits the community. Is this model sustainable today?*

- *After adopting OBIS and issuing a Circular Letter asking Member States for funding, no contributions were received and the OBIS Project Officer position may have to be terminated by April 2014. It is easy for our Governing Bodies to make decisions on the adoption of new activities but it has to be clear that this comes with obligations, including financial.*

20   So an important question we need to ask is: is the current volunteer based model that has allowed IODE to grow still valid today? Is there still a role for IODE while regions are embarking on projects that take over some of the coordinating role of IODE? If the answer is yes then we need to re-define the role of IODE in the new global ocean data and information management architecture.

21   These are fundamental questions that we need to address in this meeting. If we do not address them now then IODE will not cease to exist immediately but will die slowly over a period of 5-10 years, but die it will. So we have allotted an entire day for these discussions during this Session. We welcome out-of-the-box views and solutions and we ask you all to carefully think about these issues.

22   Closely related to this is the issue to the target community of IODE and its users. For 50 years our community was composed of NODCs: single national entities that were responsible for all ocean related data management. Is this centralized structure still the most appropriate? Today there are many ocean research and observation "entities". They include universities, research institutions, projects and even small groups of researchers. Today's technology allows every one of these to host a data centre and many do so. Are we reaching these as IODE? The answer must be "no". Most of these do not even know about the existence of IODE. This does not help. We therefore need to find new ways of including these stakeholders, as they complement the work of our NODCs.

23   Another question is whether IODE should be involved in the development of technology. For over 10 years now we have been developing online services like OceanExpert, OceanDocs, OceanDataPortal, African Marine Atlas, Caribbean Marine Atlas, OBIS, etc. Should we continue doing so or leave these to individual member states or well-funded projects? If we decide that such services should be maintained then we also need to identify where the resources should come from

that will sustain them. We then also must make sure that our own governments focus on the resource needs of our IODE rather than supporting similar parallel and competing efforts. These other initiatives should then use our IODE services.

24   To conclude, the past two years have been a notable period. Despite the obstacles due to the financial difficulties of IOC, IODE accomplished significant achievements and created new expectations. But we need to answer to the fundamental questions raised above before we proceed with the next steps to the future, which are really very promising for our sciences and our societies."

25   **The Committee noted** the report of the Co-Chairs.

3.2   IMPLEMENTATION STATUS OF THE IODE-XXI WORK PLAN

26   This Agenda item was introduced by the Technical Secretary, referring to **Document IOC/IODE-XXII/6 (*Implementation Status of the IODE-XXI Work Plan*)** and **Document IOC/IODE-Off-2012/3 (*2012 Officers Meeting: Summary Report*).** He recalled that the IODE-XXI Action Sheet was reviewed during the IODE Officers Meeting that took place by Webex, through the IOC Project Office for IODE, between 30 January – 3 February 2012. The Officers had made a comprehensive review of the status of the implementation of the action plan at that time and had recommended remedial actions for incomplete action items. Mr Pissierssens reported that nearly all action items of the work plan, in terms of global activities, had been implemented but that considerable budget cuts had to be made in regional projects and it was shown that their level of activity had dropped. He noted that in the current budget situation a better balance of global vs. regional allocations might need to be considered.

3.3   FINANCIAL AND IN-KIND CONTRIBUTION REPORT

27   This agenda item was introduced by the Technical Secretary, referring to **Document IOC/IODE-XXII/7 (Financial and in-kind contribution report (2011-2013)**". He provided an overview of the financial situation of IODE during the biennium 2011-2012 and expected revenue for 2013.

<u>UNESCO Regular Programme funding</u>

28   He recalled that during the previous UNESCO biennium (2010-2011) IODE had received US$195,900 (including US$10,000 for OBIS). However, following the 36[th] Session of the General Conference (25 October – 10 November 2011) vote admitting Palestine as a Member State of UNESCO the United States of America and Israel have withheld their assessed contributions (22,38 % of UNESCO totals), **resulting in Regular Programme budget deficit of US$ 72 million for 2011 and a projected budget shortfall of US$ 146 million for 2012–2013, with a resulting financing gap of US$ 167 million.** To restore cash-flow stability and to eliminate the deficits for the period 2011-2013, UNESCO effected a budget reduction of US$ 188 million or 29 % of the approved budget, with all programme sectors reduced by 31 %. **For the IOC this resulted in a cut of US$ 3.2 million for 2012–2013.** Even with utilizing what little flexibility there was in staff allocation, the reduction translated into a **77 % cut to resources for activities**. At this level of cut, the IOC risks losing its recognized leadership in ocean sciences, observations, data management, and services. Achieving our objectives will depend more and more on IOC Member States contributions.

29   US law also forced the withholding of US agency voluntary contributions to UNESCO and to IOC. This situation differs from that of 1984–2002, when the USA voluntary withdrew from UNESCO while remaining a member of IOC, and thus was able to support the IOC through voluntary contributions. In the current situation, the USA remains a member of IOC and of UNESCO.

30   For IODE this meant a reduction of the budget obtained from UNESCO Regular Programme to **US$30,000 for 2012 and the same for 2013**. It was decided that 50% of this should be allocated to OBIS, at least for 2012-2013.

Extra-budgetary funding: Government of Flanders (Kingdom of Belgium)

31   In terms of extra-budgetary income the situation was more positive as the Government of Flanders decided to renew the support for the IOC Project Office for IODE. The Memorandum of Understanding (MoU) between UNESCO/IOC and the Government of (Kingdom of Belgium) was signed on 30 March 2012 and will expire on 31 December 2016. Under the agreement Flanders will continue providing the Offices, costs of utilities, and maintenance costs, and provide not less than €250,000/year (to be used as a contribution towards the operational expenses and programme activities of the Project Office) as well as not less than three FTE staff (Administrative assistant, IT system administrator and Training coordinator).

32   In addition IODE continued to benefit from the Flanders-UNESCO Trust Fund for Science through the financing of the ODINAFRICA-IV, OceanTeacher Academy and Caribbean Marine Atlas projects. Regarding the ODINAFRICA-IV project it was noted that the management and budget of this project were transferred to the Nairobi field office, together with Mr Mika Odido (March 2012). Regarding the OceanTeacher Academy project it was noted that this project funds the P-2 IT developer position held by Mr Aditya Naik Kakodkar (funds available until September 2013). Due to increased travel and per diem costs the number of courses that can be organized in 2013 from the OceanTeacher Academy project budget will be limited to two. It was noted also that the current FUST projects will all terminate on 31 December 2013.

33   A proposal was submitted to the Government of Flanders (Kingdom of Belgium) through FUST (July 2012) requesting US$ 110,000 to bridge the 2013 budget shortfall of OceanTeacher and the salary shortfall of Mr Kakodkar. At the time of the Session the Committee was informed that the proposal had been approved for funding.

Extra-budgetary funding: other sources

34   During the past biennium, no financial support was received from Member States, except for the contribution from the Government of Flanders (Kingdom of Belgium). The Technical Secretary expressed concern about the limited number of donors contributing to IODE. It was noted that many Governments are going through a period of austerity and budget cuts following the recent financial crisis. As he had predicted during IODE-XXI this has had a serious negative impact on supporting international organizations and their activities, including IODE. This period of austerity may well continue throughout the next inter-sessional period 2013-2014 and beyond. The impact of national austerity measures has also affected the participation of national experts in IODE meetings such as Groups of Experts, Steering Groups and even this IODE Committee Session. Increasingly member states call on IODE to support participation in such events.

Support to IODE/OBIS

35   IODE was invited to participate, through OBIS, in the iMarine EU FP7 project. I-Marine started in November 2011 and will end in April 2014 (30 months). This income has enabled us to hire a P-3 coordinator for OBIS. Because the funding from iMarine only arrived in February and due to the notice period Ward Appeltans started working at IODE on 2 May 2012. The IOC Assembly in June 2009, adopted OBIS within its IODE Programme (Resolution XXXV-4), and would deliver a P-4/5 head of the OBIS project office, and the host institute would provide a data manager and IT specialist. To this end IOC established a multi-source account for the support of OBIS, within the IOC Special Account. In 2010, contributions were kindly provided by Australia, Brazil and Canada. This budget enabled us to set up a contract with Edward Vanden Berghe through Rutgers University to ensure a continuation of the OBIS operations. Because Rutgers was financially not in a position to establish the IOC project office for OBIS, it was decided to move the OBIS secretariat to the IODE project office and to split the work into a P-3 OBIS manager (Ward Appeltans) and to set up a contract with Rutgers to provide technical support to OBIS. However, due to the departure of Edward, Rutgers requested to terminate this contract by 31 August 2012. Because both a coordinator and a data manager position are critical for the central OBIS secretariat, we decided to hire a P-1 data manager for OBIS at the IODE PO (to start November 2012). However, the current budget situation will not allow us to continue in this way until the end of 2013. On 21 May 2102, we issued a Circular Letter (CL 2441) requesting

IOC member states for extra-budgetary funding for OBIS. This unfortunately has not resulted in any contribution to OBIS.

<u>Revision of the IODE-XXI work plan and budget by the IODE Officers</u>

36   Faced with the dramatic cuts in UNESCO funding the IODE Officers, during their 2012 Session, had no choice but to completely revise the work plan and budget adopted by IODE-XXI and approved by the IOC Assembly (June/July 2011). It is noted that in order to maintain the core global strategic projects the Officers had no choice but to cut regional activities across the board. Subsequent to the Officers meeting all Project managers and ODIN regional coordinators were informed of the revised work plan and budget and to plan accordingly.

<u>Cooperation with European Commission: FP projects</u>

37   Unfortunately it still had not been possible to resolve the administrative issues between UNESCO and the European Commission. This caused the inability of IODE to be a full partner in SeaDataNet-2 and ODIP projects. Instead IODE was only able to be a sub-contractor in these projects (with a very limited budget). For similar reasons IODE could also not be a partner in two EMODNET project proposals.

38   The delegate from China recalled and re-iterated China's offer to establish and host a regional training centre. Further discussions on this offer were referred to Agenda Item 6.1.

39   The representative from ICES noted that ICES had gone through a similar funding situation and offered to share their experience in mobilizing external funding.

3.4   INTRODUCTION TO WORK PLAN AND BUDGET

40   This Agenda Item was introduced by Mr Ariel Troisi, IODE Co-Chair, referring, *inter alia*, to **Document IOC/IODE-XXII/8 (Introduction to Work Plan and Budget)**. He also provided a brief presentation outlining the budget requests that were included in the substantive working documents.

41   Mr Troisi informed the Committee that the available budget for the next inter-sessional period was still largely unknown. This had several reasons: (i) the US decision on November 2011 to cease payment of its assessed contribution had an immediate impact on the planning process for the UNESCO biennium 2012-2013. It had now become clear this problem would continue throughout 2013. Accordingly the budget from UNESCO's regular programme would probably continue at its 2012-2013 level (US$ 30,000/year) in 2014-2015, or be reduced even further; (ii) all IODE projects funded by the current Flanders-UNESCO Trust Fund for Science would end by December 2013. New project proposals could be submitted in 2013 but their success could of course not be assured. In this regard it was mentioned also that the ODINAFRICA-IV project had been transferred (with Mr Mika Odido, project coordinator) to the UNESCO Office in Nairobi. It therefore no longer operated under IODE management.

42   Mr Troisi further informed the Committee that the Flanders Government had decided to renew the MoU with IOC until 31 December 2016. The conditions of the new MoU remained essentially the same: use of Offices and meeting rooms, an annual financial contribution of not less than €250,000/year and not less than three full-time staff equivalents.

43   Mr Troisi noted with concern that the call for funding for OBIS through IOC Circular Letter 2441 resulted in no contributions. For other activities of IODE also no voluntary financial contributions were made. NMDIS (China) and US-NODC (USA) provided short-term secondments (local costs covered by the Project Office). The US-NODC offered, in addition, staff time (virtual secondment).

44   Mr Troisi then informed the Committee that the size of the IODE programme in terms of projects had made that the Secretariat was no longer in a position to manage all projects and activities by itself. In this regard it was noted that IODE now counted 4 Groups of Experts (GE-MIM, GE-BICH, JCOMM/IODER ETDMP and GE-OBIS), 6 Steering Groups (SG-GTSPP, SG-GOSUD, SG-OceanTeacher, SG-ODP, SG-OceanDocs and SG-OBIS) dealing with 15 global projects/activities and

6 regional projects/activities. It was noted further that each of the groups needed to meet at least once during every biennium (i.e. 10 meetings/biennium for GEs and SGs + 2 meetings of the Officers + 1 IODE Session + meetings of JCOMM DMCG and JCOMM MAN + Session of the IOC EC + Session of the IOC Assembly + 16 training courses OTA/biennium) or a total of <u>33 events per biennium</u> which the Secretariat either fully organizes or needs to participate in and prepare for. This does not include additional staff travel for events organized by other organizations. Mr Troisi noted that the Project Office has achieved cost cutting through the use of Webex video conferencing for the 2012 Officers Meeting. He also noted that a data manager is being recruited in 2013 bringing the total staff at the Project Office to 12.

45   Mr Troisi urged Member States to self-support participation in the various subsidiary bodies of IODE (Groups of Experts, Steering Groups) so they can be implemented in a sustainable fashion and without putting more pressure on the small IODE budget. If such support cannot be provided then some projects/activities might need to be terminated or postponed.

4.   NODC AND PROJECT OFFICE REPORTS

4.1   REPORTS OF NODCS, DNAS AND MARINE INFORMATION CENTRES

46   This Agenda item was introduced by Mr Ariel Troisi, IODE Co-Chair, referring to **Document IOC/IODE- XXII/9 (Report on activities of the NODCs and DNAs)** and annex.

47   He reported that 50 of the 84 (60%) of the IODE national coordinators for data management, and 28 of the 53 (53%) of the IODE national coordinators for marine information management responded to the IODE national reports 2011-2012 survey. For 2009-2010 the percentages were 71% and 75% for DM and MIM respectively. For 55% of the NODCs, staffing levels remained the same since 2009-2010 and for 17% it has increased. For only 5% of the NODCs staff decreased. For 41% of the marine libraries staffing levels increased, while for 37.5% staffing decreased. Further analysis revealed no geographic pattern.

48   For 21% of the NODCs the annual operational budget is between US$ 1,000 and US$ 10,000; for 27% of the NODCs the annual operational budget is between US$ 10,001 and US$ 50,000. For 44% of the NODCs the budget has remained the same as in 2009-2010; for 23% the budget has increased, while for 21% it has decreased. So for only 1 in 5 NODCs the budget has decreased.

49   The majority of Member States reported that they are an IODE national oceanographic data centre (NODC) and are evenly split between being a centralized (single) and distributed (multiple) centre. An overwhelming number now provide their services online and the majority of Member States have a metadata catalogue. Most receive data from government and academic agencies and a smaller proportion also receive data from privately funded research institutions and/or from industry. Most Member States have a documented data strategy and apply the 'IOC Oceanographic Data Exchange Policy'. This includes the timely, free and unrestricted international exchange of oceanographic data and associated metadata.

50   The Member States continued to collect and archive all types of oceanographic data and more of these data are available online. All of the Member States agreed that quality control should be a priority including reviewing and revising existing manuals where appropriate. A limited number of Member States continue to provide data to WDCs Oceanography. A clarification on the future of the WDCs was discussed in IODE-XXI 9.5 Cooperation with ICSU.

51   Member States continued their role in IODE activities including participation in JCOMM/ETDMP, OBIS, OceanDataPortal, the Standards Project and other IODE programmes (i.e. GE-BICH, GE-MIM, and GOSUD). There is also active participation in SeaDataNet, CLIVAR and other major science programmes.

52   The IODE capacity building strategy implemented through the ODINAFRICA and ODINCARSA projects had substantially increased the capacity of the participating countries as

reflected in the national reports. The newer ODIN programmes (ODINCINDIO, ODINECET, ODINWESTPAC, and ODINBLACKSEA) continue to develop. Participation in OceanExpert is now at all time high.

53   Support for providing direct financial support to IODE in 2011-2012 through the IOC (confirmed) and sending a visiting expert to the IOC Project Office for IODE in 2010-2012 for a period of 3-12 months has continued to be low due to the uncertain budget situations throughout the IODE community. Member States were encouraged to provide extra-budgetary funds to support IODE activities.

4.2   REPORT OF THE IOC PROJECT OFFICE FOR IODE

54   This agenda item was introduced by Mr Peter Pissierssens, Head of the IOC Project Office for IODE, referring to **Document IOC/IODE-XXII/10 (*Report of the IOC Project Office for IODE*).** He provided an overview of activities organized by the IOC project Office for IODE during the period April 2011 – March 2013.

55   He recalled that the IOC Project Office for IODE was established in April 2005 with the following objectives: (i) to provide a creative environment facilitating the further development and maintenance of IODE Projects, services and products with emphasis on improving the efficiency and effectiveness of the data and product/service stream between the stage of sampling and the user; and (ii) to assist in strengthening the capacity of Member States to manage oceanographic data and information (with special attention to the developing countries) and to provide ocean data and information products and services required by users. It was further decided that the IOC Project Office for IODE would further develop, strengthen and maintain IOC/IODE ocean data and information management training programmes and training tools; it would provide an environment ('think tank') where ocean data and information experts and students can work, meet and discuss; and it would support the development, hosting and maintenance of IOC/IODE's ocean information systems and related public awareness tools.

56   Mr Pissierssens then provided the following statistics related to events organized by the Project Office in 2011 and 2012.

Table 1: statistics on events/participants IODE 2011-2012

	2011	*2012*	*2011+2012*
Training Courses	*9 (203 participants)*	*7 (154 participants)*	*16 (357)*
Meetings, Workshops and Conferences	*3 (86 participants)*	*15 (265 participants)*	*18 (351)*
IODE events held elsewhere	*16 (479 participants)*	*4 (62 participants)*	*20 (541)*
Totals	*28 (768)*	*26 (481)*	*54 (1249)*

57   Mr Pissierssens then showed an overview of IODE events and participants between 2005-2012 (see Figures 2 and 3). He explained that the figures clearly showed that the number of courses organized in Oostende has remained fairly stable averaging about 8 per year. The number of events held in Oostende has grown steadily (except in 2011) to about 14 per year. This has mainly been due to the creation of steering groups (for the major global projects) and their meetings. He expressed concern about the growing problems of members of the groups to cover their own expenses to participate in these meetings and cautioned that the growing cost of meetings and reducing budgets would cause inability to continue covering these expenses. He called on Member States to cover the cost of their own experts in IODE meetings.
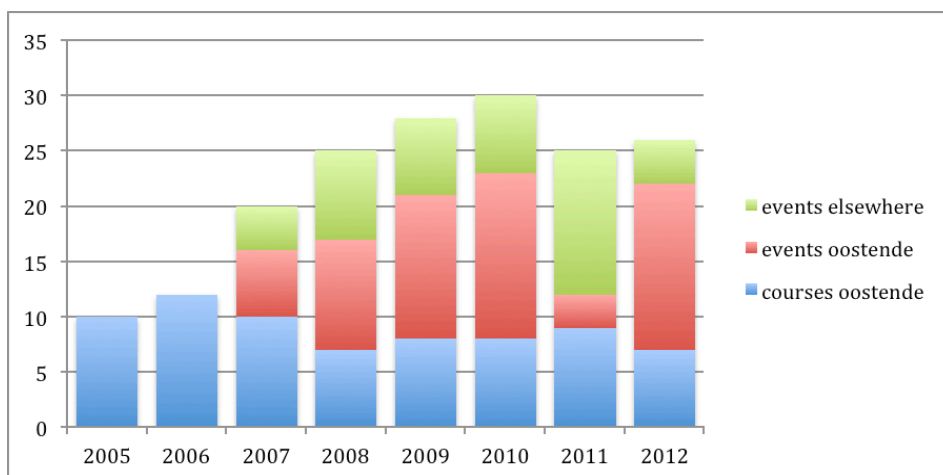
Figure 2: Number of events organized by IODE
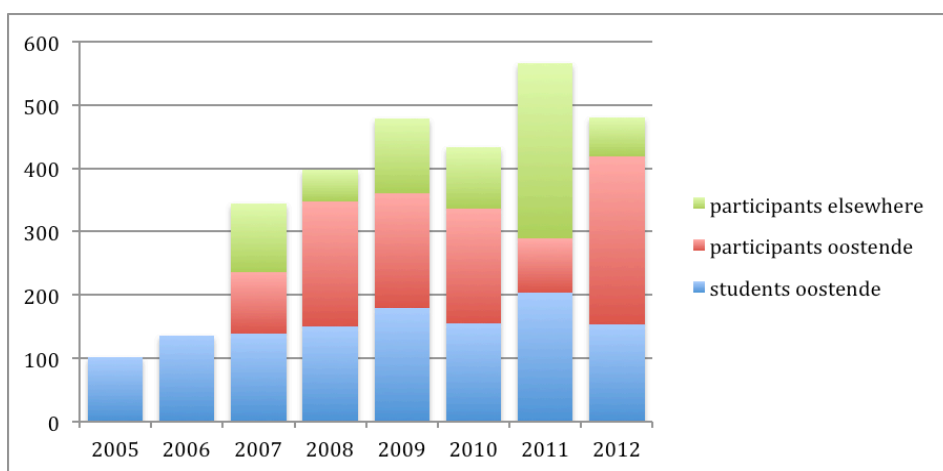
Figure 3: Number of participants in IODE events

58	**The Committee congratulated** the IODE Project Office for implementing a substantial number of IODE activities during the intersessional period, as well as for successfully hosting events for other organizations and projects.

## 5.	PROGRAMME ACTIVITY REPORTS

### 5.1	GROUPS OF EXPERTS

#### 5.1.1	IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)

59	This agenda item was introduced by Dr Hernan Garcia, Co-Chair GE-BICH, by referring to **Document IOC/IODE-XXII/11 (*Report of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)*)** which contained the details of GE-BICH's activities and work plan during the inter-sessional period. He explained that the report of the IODE GE-BICH was based on outcomes of the Ad hoc meeting of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH), 25 October 2012, Oostende, Belgium and the Second IODE Workshop on Quality Control of Chemical and Biological Oceanographic Data Collections.

60	He then summarized progress as follows: (i) GE-BICH membership was renewed following IOC Circular Letter 2369 in April 2011 with members from Ukraine, Turkey, Belgium, Canada, Tanzania, Japan, China, and USA; (ii) the GE-BICH-V work plan was reviewed – some planned

issues have been successfully completed and reported, while several new issues have been added to the 2011-2013 GE-BICH work plan; (iii) the <u>Second IODE Workshop on Quality Control of Chemical and Biological Oceanographic Data Collections</u> with <u>representatives</u> of different marine programs and projects was organized and it resulted, in particular, in the highly revised proposal describing a two-level quality flag scheme (QF) to be submitted to ODS.

61   He then informed the Committee that the GE-BICH budget requirements were limited to holding the sixth session of GE-BICH in early 2014 and the third QA/QC workshop later in 2014. He noted that these could possibly be organized back-to-back.

62   **The Committee congratulated** the GE-BICH with the work accomplished during the past inter-sessional period but **instructed** the Group to regularly review progress and to prioritize as necessary and appropriate.

63   **The Committee approved** the GE-BICH-V work plan, while **referring** discussions on financial implications to Agenda Item 10.

5.1.2   IODE Group of Experts on Marine Information Management (GE-MIM)

64   This agenda item was introduced by Ms Linda Pikula, referring to **Document IOC/IODE-XXII/12** (***IODE Group of Experts on Marine Information Management***) and to the Summary report of the GE-MIM-XII (***Document IOC/IODE-MIM-XII/3***). She informed the Committee that during the intersessional period the Group's membership had been renewed with four new members being selected from nominations received from the Member States. The new members included Ms Olga Akimova (Ukraine), Mr Richard Awah Nche (Cameroon), Ms Julia Goodman (Canada) and Ms Xue Huifen (China). A few members have now also left the Group after contributing to the work of the Group during four inter-sessional periods. These include Ms. Arame Keita (Senegal), Ms Patricia Munoz Palma (Chile) and Mr Marc Goovaerts (Belgium).

65   Ms Pikula informed the Committee that the 12th Session of the Group had been held in Miami, USA, 22-25 January 2013. The Group had reviewed progress of the GE-MIM work plan and concluded that most actions had been completed: The IOC Communication Strategy for Marine Information Management has been published as IOC/INF-1288; courses on digitization have been included in OceanTeacher; the IODE Steering Group for OceanDocs has been established and has met for its first Session in January 2012; further development of OceanExpert has progressed by adding new technologies that will make OceanExpert information available in a more structured way through Google and will also enable linking authors with their publications in OceanDocs and other repositories; the IODE Anniversary Bibliography: 50 years of service 1961-2011 had been completed and published as IOC/INF-1278 during IODE-XXI.

66   The Group had noted with regret that little progress had been made with the linking of OceanExpert with SeaDataNet's EDMO. Similarly the offer from France to make available its inventory of publications prepared after French Scientific research cruises had not been responded to. The Group had recalled that it had published 4 IOC Manuals and Guides and decided that some of these should now be revised and re-issued.

67   Regarding the proposed changes in IODE structure and terms of reference (Agenda Item 8.3) the Group had recommended that the newly proposed ADUs actively and systematically collaborate and seek cooperation from the library at their host institution, taking into account that libraries have a role and skills in data management in the area of ocean data management policy and planning, controlled vocabularies, data publication/citation, data discovery/access/mining, data preservation and client training. This should be included in the terms of reference of the ADUs.

68   The Group had considered that the role of the IODE national coordinators for marine information management required a revision and adopted Recommendation MIM-XII-3.

69   Ms Pikula then informed the Committee that at the 2012 IAMSLIC Conference, a proposal had been discussed to establish a "Joint IODE-IAMSLIC Group of Experts on Marine Information Management", taking into account the obvious shared interest in MIM between IOC/IODE and

IAMSLIC. The proposal had subsequently been approved by the IAMSLIC membership. Two IAMSLIC experts were invited to GE-MIM-XII to discuss this matter further and the Group adopted Recommendation MIM-XII-1 (see Annex). Ms Pikula noted in this regard that membership in the proposed Group will be shared between IODE and IAMSLIC.

70   Ms Pikula informed the Committee that the Group had further decided to revise the IOC Communication Strategy for Marine Information Management (published as IOC/INF-1288). In addition the Group had agreed on a number of actions to better promote ODIN activities through the IODE web site and associated mailing lists. The Group had recommended that IODE should develop a Communication Strategy or adopt the MIM Communication Strategy as the IODE Communication Strategy.

71   The Group had welcomed the substantial progress of the SCOR/IODE/MBL WHOI Data Publication Project (see also agenda item 5.2.4). The Group had recommended that the SCOR/IODE/MBL WHOI data publication project should be continued with a focus on promoting data publication in the ocean research community.

72   Regarding cooperation of OBIS with MIM, the Group had recommended that a marine information management expert should be a member of the SG-OBIS in order to e.g. provide guidance related to the citation metrics (as a performance measure) of OBIS-related publications, media, and other knowledge sources.

73   The Group had noted the excellent progress of MIM activities in Africa, through ODINAFRICA, but regretted the decline in entries in OceanDocs by some of the ODINs. This was associated with a lack of funding by IODE for ODINs in 2012.

74   Referring to the proposal to establish an "IODE Clearing House for Data and Information Practices" (see agenda item 9) the Group offered to further investigate this initiative as a GE-MIM project, in close collaboration with the SG-OceanDocs.

75   The Group, acknowledging the importance and success of IODE Data and Information Products such as OceanExpert, OceanDocs, OceanDataPortal, OpenScienceDirectory, OBIS, as well as its partner IAMSLIC Aquatic Commons, recommended that the "IODE OceanKnowledge Platform Pilot Project" should be established to bring together in an interactive, interoperable and dynamic environment all IODE Data and Information Products. The Group adopted Recommendation MIM-XII.

76   The Group also adopted its work plan for the next inter-sessional period as Recommendation MIM-XII.4.

77   **The Committee commended** GE-MIM for the progress made in implementing the planned activities.

78   **The Committee welcomed** the close relationship with the "International Association of Aquatic and Marine Science Libraries and Information Centers" (IAMSLIC) through a Memorandum of Understanding and the proposed establishment of the joint IODE/IAMSLIC Group of Experts on Marine Information Management (IODE/IAMSLIC GE-MIM).

79   **The Committee approved** the Report of the twelfth Session of the IODE Group of Experts on Marine Information Management and the four Recommendations therein, while referring discussions on financial implications to Agenda Item 10.

80   The representative of IAMSLIC expressed the enthusiasm of IAMSLIC for the establishment of the Joint GE-MIM and invited IODE national coordinators for MIM to consider membership of IAMSLIC.

81   **The Committee adopted** Recommendation IODE-XXII.1 (Establishment of the Joint IODE/IAMSLIC Group of Experts on Marine Information Management), Recommendation IODE-XXII.2 (The IODE Ocean Knowledge Platform Pilot Project) and Recommendation IODE-XXII.3 (Revision of the Terms of Reference of the IODE National Coordinators for Marine Information Management).

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

82   This Agenda Item was introduced by Dr Sergey Belov, Chair JCOMM/IODE ETDMP, referring to **Document IOC/IODE-XXII/13 (*Report of the JCOMM/IODE Expert Team on Data Management Practices (ETDMP)*)** which contained the details of ETDMP activities and work plan during the inter-sessional period. He noted that the report of the JCOMM/IODE ETDMP was based on the outcomes of the Third Session of the JCOMM/IODE Expert Team on Data Management Practices.

83   He informed the Committee that the ETDMP membership had been renewed by JCOMM-4 and, following the IOC Circular Letter 2443 on 6 June 2012, IOC had elected additional members of the Expert Team. In accordance with the work directions the relevant ETDMP Task Teams were created and appointed at the third session of the JCOMM/IODE Expert Team on Data Management Practices in October 2012 and its work plan was agreed upon.

84   Dr Belov recalled that during the intersessional period the ETDMP activities were focused on fulfilling the recommendations of IODE-XX (Recommendation IODE-XX.3), IODE-XXI (Recommendation IODE-XXI.4) and JCOMM-III (Recommendations 1(JCOMM-III), 4(JCOMM-III)). ETDMP activity was concentrated on the following items: (i) conducting the IODE/JCOMM Standards Process (ODS); (ii) improving the metadata management; (iii) development of the IODE Ocean Data Portal (ODP) and establishment of interoperability with WIS, SeaDataNet and other projects.

85   Dr Belov informed the Committee about the progress made by the ETDMP Task Team for Ocean Data Standards (ODS): (i) best practices procedures agreed during *ad hoc* ODS Meeting in April 2012; (ii) standard for 'Date and Time' has been published as an IOC/UNESCO Manuals and Guides No. 54(2); QC Flags standards submission was made by GE-BICH; additional standards (i.e. Latitude, Longitude and Altitude, Units, etc.) have been identified for submission (iii) the ToRs for ODSBP were drafted for consideration.

86   He further reported on ETDMP activities in the field of metadata management. He noted that progress was made with regard to defining a structure and performing profile comparisons. The Task Team was also instructed to consider ODAS metadata and META-T. Regarding the latter this work was completed and legacy recommendations were made.

87   Dr Belov noted further that the work on the IODE Ocean Data Portal has been focused on two main aspects: to identify new data providers from NODCs, DNAs, and other IODE related projects and secondly to develop ODP V2. During the intersessional period four data providers were connected. Significant progress was made for the GTSPP and Argo projects by the US NODC and ISDM (Canada). At present ODP is providing access to 100 datasets with over 1,000,000 profiles from NODCs/DNAs.

88   Dr Belov informed the Committee that the National Oceanographic Committee of the Russian Federation decided to offer the hosting of the Partnership Centre for the IODE Ocean Data Portal at RIHMI-WDC/NODC of Russia in Obninsk. RIHMI-WDC prepared and submitted to Roshydromet the business plan for the Partnership Centre, including the budget for the creation of the centre. It was further proposed that the Centre should be opened in 2013. The business plan was approved at the end of 2012. The official opening of the Office is planned for mid-2013, provided that the MoU between UNESCO/IOC and Roshydromet is signed.

89   **The Committee welcomed** the progress of the JCOMM/IODE Expert Team on Data Management Practices **while referring** discussions on ODP and ODS to the relevant agenda items.

90   Ms Sissy Iona, in her capacity as Chair of the JCOMM Data Management Programme Area (DMPA), noted that the ETDMP is the core link between IODE and JCOMM. It was therefore essential to ensure that the outcomes of the expert team and its task teams were related to the priorities of the DMPA and that concrete results coul be shown. She also called for increased linkages with SeaDataNet and ODIP projects (coordination between US, EU, Australia).

5.1.4 IODE Group of Experts for OBIS (GE-OBIS)

91   The Co-Chairs informed the Committee that this agenda would be discussed under agenda item 5.2.1.

5.2   PROJECTS

5.2.1   Ocean Biogeographic Information System (OBIS)

92   This Agenda Item was introduced by Mr Ward Appeltans, OBIS Project Manager, referring to **Document IOC/IODE-XXII/14 (IODE Steering Group for OBIS)).** He explained that the previous inter-sessional period has been a transition phase for OBIS, in which IODE has successfully facilitated the transfer of OBIS from being a private foundation-led activity under the Census of Marine Life, to become part of an intergovernmental organization, as a fully operational project under IODE.

93   OBIS is governed by a Steering Group and advised by a Group of Experts. The OBIS project office (hosted by the IOC Project Office for IODE in Oostende, Belgium) is responsible for the daily operations and functions as the international OBIS node (iOBIS) within a network of 22 regional/thematic OBIS nodes. OBIS nodes operate as data assembly and quality control centres for biogeographical data from their region and/or areas of expertise. All the data is integrated and served through a global online data portal. In 2012, the data portal had 50,000 unique visitors (35% are returning visitors). A survey on the activities of OBIS nodes demonstrated that the role of OBIS is not limited to raw data encoding but that they are engaged in a wide spectrum of activities, from developing tools and products to offering services (including capacity building) for data-science and science-policy activities on a local, regional to global scale.

94   During 2011-2012, 210 new datasets were collected and integrated, representing 5 million geo-referenced species distributions, and adding 5,000 marine species that were previously missing from OBIS. In total, OBIS now provides 35 millions records of 120,000 marine species from 1,130 datasets.

95   The marine biodiversity research community extensively used OBIS data. Google Scholar reports over 800 publications citing OBIS since 1999, of which 160 (20%) are published in the last two years.

96   OBIS plays a crucial role in contributing to external intergovernmental and international organizations dealing with global fisheries, environmental and biodiversity issues (e.g., the Group on Earth Observations – Biodiversity Observations Network, the Global Biodiversity Information Facility, and the Convention on Biological Diversity), and it is expected that this role will be continued and expanded in the future, e.g., to support the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

97   Mr Appeltans (IOC) and Prof Halpin of OBIS-SEAMAP (Duke University) attended the 11th Conference of the Parties (CoP) of the Convention on Biological Diversity (CBD) in Hyderabad (October 2012). OBIS is explicitly mentioned in Decisions X/29.10,35,39 (https://www.cbd.int/decision/cop/?id=12295) and draft XI/17.16 (http://www.cbd.int/cop/cop-11/doc/2012-10-24-advanced-unedited-cop-11-decisions-en.pdf). During the 10th Conference the 193 Parties to the CBD agreed to classify a diverse list of marine areas as ecologically or biologically significant. Among the areas mentioned, some are renowned for containing 'hidden treasures', such as the Sargasso Sea, the Tonga archipelago and key corals sites off the coast of Brazil. This work is part of the Strategic Plan for Biodiversity 2011-2020, and contributes in particular to Aichi Biodiversity Target 11 to conserve and sustainably manage at least 10 per cent of coastal and marine areas by 2020. OBIS is providing scientific and technical advice to define Ecologically or Biologically Significant marine Areas (EBSAs), through a series of regional workshops in 2011, 2012 and 2013.

98   The OBIS work plan was defined during the 2nd Session of the IODE Steering Group for OBIS (SG-OBIS) (Oostende, 19-21 November 2012). Several informal (task) teams were formed to execute a number of activities. The staff of the OBIS Project Office takes part in all task teams, and

the OBIS project manager (Mr Ward Appeltans) oversees the execution of the work plan and reports to SG-OBIS and all task teams on progress of the activities.

99   A major for 2013 and in the future will be on improving data and metadata quality. A new data workflow will be established in which OBIS nodes, according to their commitment as an OBIS tier II or III node will perform a number of data validation tasks to improve standardization and quality before data are harvested and integrated into the central OBIS database (the tasks of the different OBIS nodes are listed in Table 2 of SG-OBIS-2 report: http://www.iode.org/index.php?option=com_oe&task=viewEventDocs&eventID=1134).

100   Since 2011, the OBIS databases are running on the servers of the Flanders Marine Institute in Oostende, Belgium. In 2013, these servers will become connected to the D4Science GRID network, in order to provide access to OBIS data in applications of the D4Science data e-infrastructure (https://portal.i-marine.d4science.org) developed by the i-Marine EU project. In addition, a geo-load balancing mirror will become operational at INCOIS in Hyderabad, India.

101   A Memorandum of Cooperation will be signed with GBIF recognizing each other as sister networks and OBIS' focus on marine biodiversity. The GBIF Integrated Publishing Toolkit (IPT) will be introduced for data transfer between OBIS nodes and GBIF and data from OBIS will flow again to GBIF on a regular basis.

102   A process will be started to improve the OBIS (meta)data schema, as part of a marine extension of Darwin Core.

103   Within IODE's Capacity Building activities, OBIS will become an important player to provide training in biodiversity data management. Two training workshops are already planned in 2013 (India, Barbados). Also OBIS node managers will need to be trained to become familiar with the OBIS practices, standards, data validation tools, and data transfer protocols.

104   By late 2013, the OBIS task teams will produce an IOC Manual and Guides for OBIS nodes that will include the terms of reference of OBIS nodes, procedure to establish OBIS nodes, standards and best practices (OBIS handbook) and a section on quality assurance, criteria and evaluation of OBIS nodes.

105   The SG-OBIS proposes to the committee that OBIS nodes should not become a new entity on its own with the IODE structure, but that institutions that are OBIS nodes or wish to become an OBIS node should apply to become either an NODC or an ADU with a special function as OBIS node. ADUs will be further discussed under agenda item 8.3.

106   An OBIS business plan will be finalized early 2013 and will address OBIS' vision and mission, objectives and key priorities, budget needs in relation to the work plan and potential funding opportunities.

107   Communication and public awareness is another priority for OBIS. The OBIS website and data portal are the main means to distribute information about the project, but OBIS is now also active on social media (LinkedIn, FaceBook, Twitter, Google+, Google Scholar, Mendeley, SlideShare). Several OBIS node managers also contribute to the translation of the OBIS website into the following languages: English, Spanish, Portuguese, French and Japanese (others are welcome).

108   OBIS will need to maintain the momentum of international data sharing created by the projects and expeditions as part of the Census of Marine Life. OBIS (and OBIS nodes) will need to be kept engaged in new projects and expeditions, and further expand its network of data providers and OBIS nodes in order to keep its world leading position and ensure the best (global) coverage of marine biodiversity data in time and space.

109   OBIS will also need to continue (and if possible expand) providing its services to the global research community and international and intergovernmental organizations (such as UNESCO, IPBES, UNEP-CBD, UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects/World Ocean Assessment, IUCN's Global Ocean Biodiversity Initiative, Encyclopedia of Life, GBIF and GEO BON).

110   In 2012, salary costs of the OBIS project office were approximately US$175,000, which covered the salaries of the project manager in Oostende (8 months), and a data manager at Rutgers (6 months, until 31 August 2012). These costs were covered by the EU project i-Marine and ODINAFRICA. US$15,000 was provided by UNESCO's Regular Programme, which covered the costs of the SG-OBIS meeting, and around US$10,000 was spent on travel (covered by iMarine and IOC/IODE budgets). The operational expenses (for hosting the OBIS project office) are close to US$10,000 annually and are currently provided by the IOC Project Office for IODE.

111   In 2013, the salary costs will be higher (around USD 225,000) because of the addition of a full-time data manger. Funding for this new position and the Project Manager will come from two EU FP7 projects (iMarine and GEOWOW), and two IODE projects (ODINAFRICA and Caribbean Marine Atlas). The iMarine EU project runs until 30 April 2014. It is hoped that the UNESCO Regular Programme will again contribute US$30,000 to be allocated for the SG-OBIS meetings in 2013 and 2014.

112   To continue the OBIS operations beyond 2013, new financial resources are needed. There is currently US$61,000 left in the IOC special account for OBIS. A minimum of US$300,000 is needed annually to operate the OBIS project office with a minimum occupation of two professional staff (a project manager and a data manager). Based upon the current budgetary situation of UNESCO and its IOC, funding will need to come from additional extra-budgetary contributions from IOC Member States, and possibly also from project and other international funding sources. It is important to note that the full cost of the OBIS implementation includes the in-kind contributions of the OBIS nodes and Mr Appeltans thanked the Flanders Marine Institute, the Marine Geospatial and Ecology Lab at Duke University, the team at the Simon Bolivar University and INCOIS for their support to the OBIS project office.

113   The UNESCO Emergency Fund had provided US$36,000 to OBIS for contributing to the identification of EBSAs in the North Pacific and West Africa region in 2013, through the preparation of analytical material and diversity indices and by providing scientific guidance on applying the criteria for EBSAs during the regional EBSA meetings. In addition, the contribution of IOC/OBIS to the CBD will be presented in a peer-reviewed paper and at some strategic meetings.

114   China welcomed the progress made with OBIS and recalled the importance of OBIS in IODE. China reported that it will continue its support to OBIS and proposed to provide in-kind support to OBIS by setting up an OBIS mirror site in NMDIS, China, which may be jointly set-up with their CMOC.

115   Mr Keeley reminded the committee of the outcomes of OceanObs09, and referred to the new ocean observing framework document, led by the Global Ocean Observing System (GOOS). The framework provides specifications of Essential Ocean Variables (EOVs), which are likely relevant to OBIS. Collaboration with this ocean observing framework will be discussed on Wednesday. Mr Appeltans reported that one of the IODE co-chairs is a full member of the GOOS SC and GOOS created a new expert panel on biodiversity and ecosystems to specifically address the biological component of this framework. He also noted that Dr Albert Fisher (head of GOOS) will invite OBIS to their expert meetings in order to ensure coherence of both activities. Mr Appeltans also reported that OBIS is a member of two GEO BON working groups and that GEO BON has recently released a first draft of Essential Biodiversity Variables

116   The Secretariat called on member states to provide support to OBIS in order to secure its existence beyond April 2014.

117   **The Committee welcomed** the achievements of OBIS as an IODE project and **expressed its appreciation** especially to Mr Ward Appeltans, taking into account that he joined the Organization only in May 2012.

118   **The Committee adopted** [Recommendation IODE-XXII.4](#) (The IODE Biogeographic Information System (IODE/OBIS)).

5.2.2 JCOMM/IODE Ocean Data Standards

119   This Agenda Item was introduced by Prof Yutaka Michida (Co-Chair of the Ocean Data Standards pilot project), referring to **Document IOC/IODE-XXII/15 (Report on the IODE Project: JCOMM/IODE Ocean Data Standards**).

120   Prof Michida informed the committee that there was limited activity in the Ocean Data Standards pilot project during 2011-2012. An *ad hoc* ODS pilot project meeting was held in April 2012 during which important issues were raised for consideration by both JCOMM and IODE. There were no standards submitted to the pilot project for ODS consideration from Member States during the intersessional period. The project had to contend with two standards proposal, which were under review. These included the Common Data Index (CDI) metadata profile and the Quality Flag scheme proposals. Since the development of CDI in 2003, which was mostly compliant with ISO-19115, there has been an evolution of ISO standards. A more up-to-date standard, ISO-19139 has been developed, therefore, the authors of the CDI (Sea|DataNet), are reformulating CDI to be ISO-19139 compliant. The CDI update was to be ready in 2012, Consequently, the CDI proposal (2003) was withdrawn. Since CDI (2003) was a prime example of a standard practice of a project with wide use, although it could not attain broad community acceptance, it was still a very important development and at least should be represented in a Catalogue of Best practices. The Quality Flag scheme completed the review process during the intersessional period.

121   The Committee was informed that three standards had been reviewed and accepted by the ODS. Two of the standards had already been published by the IOC project office for IODE.

122   The ODS standards review process was revised. The process had no instructions on how to handle revised documents and gave only the NODC an evaluation role. The standards developed by the ODS were intended for international exchange purposes and not to impact local systems and this was clearly stated in the revision. The revised version was prepared by Mr Keeley and submitted to IODE-XXII for consideration.

123   Prof Michida recalled that data standards were essential for interoperability of data sets collected by different programmes. There have been challenges to agreeing on standards including a slow reception of proposals, a lack of action to seek out new submissions, and a review process that was taking too long. It was also difficult to find individuals who had the time required to guide a proposal through the review process. An accepted standard required some mechanism in place to maintain or update it. This necessitated the need to convert the ODS, from a Pilot Project to a Project. The transition process from the ODS Pilot Project to a Project entails closing the Pilot Project and re-starting the activity as a Project. This required formal recommendations from IODE-XXII to the IOC Assembly and as well as to JCOMM and WMO. Therefore a draft recommendation was proposed to formally close the ODS Pilot Project and re-establishing a new Project, Ocean Data Standards and Best Practices Project (ODSBP) that also incorporates a catalogue of best practices will be submitted to IODE-XXII for consideration.

124   Prof Michida informed the Committee that the Steering Group of the ODSBP would be formally constituted during its first meeting proposed during the next intersessional period. He noted that the work plan and the budget for the next intersessional period were included in the working document.

125   It was stressed that the ODS standards are intended for exchange of data, not to impose on existing systems. It was noted that OBIS standards and best practices would also be submitted to the ODS process.

126   The representative of WMO expressed WMO's strong support for the continuing development of the Ocean Data Standards initiative, and its extension into Best Practices, particularly in the framework of migration to table driven codes, and in the review of Technical Regulations being undertaken in the framework of the implementation of the WMO Integrated Global Observing System (WIGOS).

127   **The Committee approved** the ODS work plan, while **referring** discussions on financial

implications to Agenda Item 10.

128   **The Committee adopted** Recommendation IODE-XXII.5 (The Ocean Data Standards Pilot Project (ODS)) and Recommendation IODE-XXII.6 (The Ocean Data Standards and Best Practices Project (ODSBP)).

5.2.3   IODE OceanDataPortal

129   This Agenda Item was introduced by Dr Sergey Belov (Project Coordinator IODE Ocean Data Portal), referring to **Document IOC/IODE-XXII/15 (Report on the IODE Projects: IODE OceanDataPortal).**

130   Dr Belov recalled that the IODE Ocean Data Portal is delivering a standards-based infrastructure to build and manage a distributed marine data network basing on collections and inventories of data and products of the data centres of the IODE, JCOMM and other IOC projects as well as the resources from other participating systems and also provide the discovery, evaluation (through visualization and metadata review) and access to data and products.

131   He informed the Committee that during the intersessional period new data contributions were received from US, Canada, EU and Ukraine. Two new data providers were connected but because of the migration of the technology into ODP V2 the connection of new data providers using V1 components has been suspended in 2012. He informed that in total, ODP is providing access to 100 datasets from 10 NODC/DNA with over 1,000,000 profiles.

132   He further noted that ODP V2 has been developed at the end of 2011, and tested and deployed for evaluation in the middle of 2012. He also mentioned that ODP V2 components are developed mainly using open source and free software and currently running using facilities of the NODC of Russia. He informed the Committee that the ODP V2 toolkit is available for evaluation and use on request.

133   Dr Belov further noted that since ODP V2 is fully metadata-driven, metadata is broadcast to all ODP nodes so that users have sufficient information about new and existing data sources regardless of their physical location. ODP V2 metadata is fully ISO 19139 based for external exchange and sharing. He also stated that hardware requirements are specified for each type of node (national, regional/specialized and global) and details can be found in Annex A to Document IOC/IODE-XXII/15.

134   Dr Belov stated that a training programme for establishing ODP nodes using ODP V2 has been developed and training materials would be completed by May-June 2013 with further contributions to Ocean Teacher Academy.

135   He informed the Committee about the interoperability package for system-to-system communication based on metadata and data exchange. In the beginning of 2012 tests have been carried out to contribute to the EuroGEOSS Brokering Service. An ODP CSW service is available for access and metadata harvesting. A collaboration scenario has been agreed with SeaDataNet in September 2012. Regarding the implementation of interoperability, around 500 datasets from SeaDataNet and 2,300 datasets from WIS were connected and are currently available from the ODP portal.

136   Dr Belov highlighted that having strong governance from the ETDMP and SG-ODP project will lead to more targeted objectives and improvement of the technology developed by the Partnership Centre for the IODE Ocean Data Portal.

137   It was noted that ODP plays an important role in identifying important standards that can be considered by the Ocean Data Standards process. Priorities for ODS were identified by the IODE Ocean Data Portal: (i) date, time, lat/lon; (ii) platforms, instruments, organizations, parameter dictionary, projects; (iii) implication of OGC standards.

138   Dr Belov informed the Committee that the National Oceanographic Committee of the Russian Federation had agreed to offer to IOC/IODE to establish a Partnership Centre for the IODE Ocean Data Portal. Funding for 2013 has been identified including arrangements for office operation and

required staff positions. The Partnership Centre for the IODE Ocean Data Portal will: (i) develop, host and maintain the tools and specifications for the portal and its distributed marine data system operation; (ii) assist IODE's Ocean Data Information Networks (ODINs), NODCs and other IODE ODP nodes to achieve their regional and thematic objectives; (iii) develop, strengthen and maintain the IODE ODP data management training programmes and tools; (iv) monitor and report on the status and availability of the IODE ODP portal, websites, tools and specifications used by the IODE ODP node; (v) provide an infrastructure to develop and test the web-based technologies and tools, intersystem interoperability and also to generate new ideas and perspectives of the IODE ODP; and (vi) promote collaboration between all expert levels active in integrated marine data management.

139   Dr Belov invited Member States to contribute to the IODE Ocean Data Portal and to support the IODE data network based on ODP technology.

140   **The Committee expressed appreciation** for the work of ODP and congratulated Dr Belov and his team.

141   The representative of WMO strongly supported the development of the ODP, and is working closely with the IODE through the JCOMM-IODE ETDMP to achieve interoperability between the WIS and ODP. WMO offered to assist further in this process if required.

142   The delegate of the Republic of Korea announced that his country supports ODP and the "Korea Oceanographic Data Center" (KODC) is in progress to become an ODP data provider as a national node and he invited other Member States to follow.

143   **The Committee noted** that, while an ODP project manager will be essential for the further development and management of ODP, it would be unlikely that such a position could be funded by UNESCO. **The Committee invited** Member States to consider a long-term secondment (either to the IODE Project Office or hosted nationally) to cover this requirement.

144   **The Committee noted with great satisfaction** the significant progress achieved in the establishment of Partnership Centre for IODE/ODP that will provide stable and sustainable support and further development of the IODE Ocean Data Portal, and **expressed deep gratitude** to the Roshydromet of Russian Federation for allocating the Partnership center in RIHMI-WDC (Obninsk) and funding its operations from 2013 onwards as an in-kind contribution of the Russian Federation to the IOC.

145   **The Committee adopted** Recommendation IODE-XXII.7 (Revised Terms of Reference of the IODE Steering Group for the IODE Ocean Data Portal); Recommendation IODE-XXII.8 (Terms of Reference of the Structural Elements of the IODE Ocean Data Portal) and Recommendation IODE-XXII.9 (Terms of Reference of the Partnership Centre for the IODE Ocean Data Portal).

5.2.4 Data Citation/Data Publishing (SCOR/IODE)

146   This Agenda Item was introduced by Ms Cyndy Chandler referring to **IOC Workshop Report No. 252 (***SCOR/IODE/MBLWHOI Library Workshop on Data Publication, 5th Session, Woods Hole Oceanographic Institution, Woods Hole, USA, 9-10 October 2012***) and **IOC/IODE-MIM-XII/3 (***IODE Group of Experts on Marine Information Management (GE-MIM), Twelfth Session, Miami, USA, 22-25 January 2013***).

147   She explained that the Marine Biological Laboratory/Woods Hole Oceanographic Institution (MBLWHOI) Library, the Scientific Committee on Oceanic Research (SCOR) and the IODE have assembled a team of librarians, data managers and scientists who are collaborating to identify best practices for tracking data provenance and clearly attributing credit to data collectors/providers.

148   One successful outcome of this collaborative effort includes tools and procedures developed by the Marine Biological Laboratory/Woods Hole Oceanographic Institution (MBLWHOI) Library and the Biological and Chemical Oceanography Data Management Office (BCO-DMO) that automate the ingestion of metadata from BCO-DMO for deposit with a copy of each data set into the Institutional Repository (IR) Woods Hole Open Access Server (WHOAS). The system also incorporates functionality for BCO-DMO to request a Digital Object Identifier (DOI) from the

Library. This partnership allows the Library to work with a trusted data repository to ensure high quality data while the data repository utilizes library services and is assured that a permanent archived copy of the data is associated with the persistent DOI.

149   The assignment of persistent identifiers enables accurate data citation. The Library can assign a DOI to appropriate datasets deposited in WHOAS. We are particularly interested in working with authors to deposit datasets associated with published articles. The DOI would ideally be assigned before submission and be included in the published paper so readers can link directly to the data set, but DOIs are also being assigned to datasets that support papers that have already been published. WHOAS metadata records link the article to the data sets and the data sets to the article.

150   Because of the assignment of DOIs, Elsevier Publishing sought collaboration with the Library. Article records in Science Direct now contain links to datasets deposited in WHOAS that are associated with Elsevier articles.

151   The Published Data Library (PDL) is a project of the British Oceanographic Data Centre that provides snapshots of specially chosen datasets that are archived using rigorous version management. The publication process exposes a fixed copy of an object and then manages that copy in such a way that it may be located and referred to over an indefinite period of time. Using metadata standards adopted across NERC's Environmental Data Centres, the repository assigns DOIs to appropriate datasets. Current deposits include several datasets from water sample measurements.

152   SCOR, IODE, and the MBLWHOI Library have established a framework for data publication that encourages proper data citation. This framework is being shared and adopted within the marine science community. A draft version of a "Cookbook" detailing procedures to establish a repository and item level versioning for the two initial use cases, the MBLWHOI Library DSpace repository and the PDL at BODC, will be introduced at the Session and proposed for publication in the IOC Manuals and Guides series. The work plan for 2013 includes a few more technical developments but more importantly, promotion of deployment of the use cases in target communities. In this regard the 2012 Workshop had recommended that OceanTeacher should include a lecture on data publication, and that data publication should be promoted at a number of conferences.

153   Ms Chandler stressed that the proposed technical solutions are based on open source software (e.g. DSpace), are generic, standards-based (e.g. Dublin Core) and can easily be customized to local requirements. She further noted that, while there is a cost to register a DOI, this cost is dropping rapidly and the number of providers is increasing. In addition to DOIs there are also other options available for assigning globally-unique persistent identifiers..

154   SCOR informed the IODE Secretariat (email) that US$ 8,000 would be available in 2013 to continue this joint initiative.

155   Associated websites:

http://www.iode.org/datapublishing

http://www.bodc.ac.uk/data/published_data_library/

https://darchive.mblwhoilibrary.org/

http://www.bco-dmo.org/

156   **The Committee expressed great appreciation** for the work carried out by the partners in this project, and for the results achieved.

157   **The Committee recommended** that the SCOR/IODE/MBL WHOI data publication project should be continued with a focus on promoting data publication in the ocean research community.

158   **The Committee also recommended** to link the project with similar other initiatives (eg ICSU WDS, RDA, SeaDataNet CDIs,…).

5.2.5   Global Oceanographic Data Archaeology and Rescue (GODAR)/ World Ocean Database (WOD)

159   This Agenda Item was introduced by Dr Hernan Garcia, referring to **Document IOC/IODE-XXII/15 (*Report on the IODE Projects: GODAR/WOD*).**

160   The IOC/IODE "Global Oceanographic Data Archaeology and Rescue" project (GODAR) has continued during the last intersessional period. In particular the GODAR project has received more than five thousand ocean profiles for the pre-1945 period from Germany. These include data from many countries and will be of great value in documenting the changing state of the world ocean. Historical data still exist that are not part of any electronic, digital archive. We would like to encourage all countries to continue locating and digitizing if necessary, oceanographic data not previously available. However the GODAR project no longer receives specific funding from NOAA. In light of this new reality it may be appropriate for the IODE to change the status of the "GODAR project" to "GODAR activities".

161   The IOC/IODE "World Ocean Database" project continues. A new version of the World Ocean Database (WOD) called "World Ocean Database 2013" (WOD13) is in preparation. Vertical profiles will be interpolated to 102 "standard" depth levels between the sea surface and 5,500 m depth. This increased vertical resolution is made possible by increased amount of high vertical resolution CTD, profiling float, XBT, glider profiles in WOD. The additional levels will allow for improved scientific studies and assessments. The WOD, and products based on the WOD such as the "World Ocean Atlas", are being cited approximately 400 times per month in the scientific literature, which attests to the usefulness of this database. We request continuation of the WOD project by IOC/IODE.

162   A description of the GODAR and WOD projects has been published online. The reference, including website access is: Levitus, S., 2012: The UNESCO/IOC/IODE "Global Oceanographic Data Archaeology and Rescue" (GODAR) and "World Ocean Database" projects. Data Sci. J., 11, 46-71, published online on the web page https://www.jstage.jst.go.jp/browse/dsj/11/0/_contents.

163   **The Committee expressed its strong appreciation** for the work of the WDC Oceanography Silver Spring on GODAR and WOD, considering these as core elements of the IODE global data network and indispensible for climate change research**. The Committee called on** the United States of America to continue its support to US NODC/WDC Oceanography Silver Spring to enable the continuation of these valuable services**.**

164   **The Committee adopted** Recommendation IODE-XXII.10 (Global Oceanographic Data Archaeology ad Rescue (GODAR) and World Ocean Database (WOD) Projects.

5.2.6   Global Temperature and Salinity Profile Programme (GTSPP)

165   This Agenda Item was introduced by Mr Loic Petit de la Villéon on behalf of Dr Charles Sun, GTSPP Chair, referring to **Document IOC/IODE-XXII/15 (Reports of IODE Projects: Report on the Global Temperature and Salinity Profile Programme)**.

166   Mr Petit de la Villéon informed the Committee that the GTSPP programme continued to deal in greater volumes of data over past two year period. The number of real-time data handled was 4,541,361 covering the period 2011 – 2012 an increase of about 77% from the period 2009 – 2010; while the number of delayed-mode data added to the archive increased about 48% to 111,004 by the end of 2012. He then reported that the GTSPP continued to improve its capabilities of serving the GTSPP data for operations and climate research. The number of bytes transferred covering the period for 2011 and 2012 were 3.09 TB.

167   The Japan Meteorological Agency (JMA) accepted Dr Sun's invitation to join the GTSPP and became the GTSPP Data Product Centre (GTSPP-DPC) for the North Pacific Ocean in March 2011. Activities of the GTSPP Data Product Centre include, but are not limited to, 1) Monitoring the most recent 30-day data collections made by the vessels traveling along the SOOP lines in the past few years and 2) Providing access to both in-situ observations along the SOOP lines, model simulations, and inter-comparisons between them. The details of the GTSPP-DPC can be found at

http://goos.kishou.go.jp/GTSPPDPC/index.html .

168 With financial support from the IOC/IODE project office, the GTSPP was able to publish the first edition of the "Global Temperature and Salinity Profile Programme – Data User's Manual" in November 2011 (IOC Manuals and Guides, 60, 50 pp, English.) The main purpose of this manual is to describe the GTSPP data formats that are used to populate GTSPP data for the public use and document the standard conventions used therein and the goal is to provide a format that contains everything necessary to evaluate data quality, data origins and data reliability. The manual can be downloaded at the GTSPP's Web site at http://www.nodc.noaa.gov/GTSPP/document/datafmt/MG60.pdf.

169 Mr Petit de la Villéon recalled that the decision for the former joint IOC/IODE and WMO-IOC (IGOSS) GTSPP Programme to become part of JCOMM was made at JCOMM-I in 2001. As such the Steering Group is now called the joint IODE-JCOMM Steering Group for the GTSPP (SG-GTSPP).

170 The First Session of the Joint IODE-JCOMM Steering Group for the GTSPP was held at the IODE project office for IODE in Oostende, Belgium, 16 – 20 April 2011. The objectives of the meeting were to: (i) review GTSPP data flow and operations; (ii) report on the status of the XBT BAHY to BUFR migration; (iii) revive the GTSPP infrastructure, the terms of reference and composition of the Steering Group of GTSPP; (v) develop a strategic frame work of the next generation of the GTSPP netCDF format revision; (v) report on interaction with other projects; and (vi) adopt the work plan for 2012–2013. Report of the First Session of the Joint IODE-JCOMM Steering Group for the GTSPP is available at the GTSPP's Web site at http://www.nodc.noaa.gov/GTSPP/document/reports/SG-GTSPP-I_3.pdf.

171 On behalf of the SG-GTSPP, Mr Petit de la Villéon requested the Committee to consider the recommendation to national data centres to ask for and store profiles at instrument resolution rather than a decimated version. The request is referring to the action item no. 32 listed in the Annex III of the meeting report of the First Session of the SG-GTSPP.

172 Mr Petit de la Villéon further informed the committee that the U.S. National Oceanographic Data Center (NODC) currently supports two separate profile database systems: the World Ocean Database (WOD), which manages research-quality historic data using a custom data file system; and the Continuously Managed Database (CMD) of the GTSPP, which manages real-time data, and matches it to higher quality "delayed-mode" data to create a "Best Copy" product using the commercial Oracle RDBMS. While making plans for the future and preparing to operate with fewer resources, the US NODC has been examining options for how they can continue to participate in the GTSPP and has identified a proposed way forward to more efficiently manage GTSPP data that leverages NODC's recent technological advances in core IT infrastructure that provided enhanced data access services. The US NODC has been developing a single Integrated Ocean Profile System (IOPS) using an open-source RDBMS (i.e., PostGreSQL), which will incorporate both of these data sets to serve the data management needs of the two individual programs, while also achieving better integration and mutual support. It is anticipated that the advantages of this integration will include better ability to support and manage both systems, the elimination of redundant processing of incoming data by consolidating the processing of all "delayed-mode" data into the WOD system, and improvement of the function of the GTSPP continuously managed database by making both the GTSPP real-time and the complete WOD delayed-mode data sets available within a single system. It is expected that the new Integrated Ocean Profile System will improve efficiency while also enhancing the quality of the profile data products of both programs.

173 An *ad hoc* GTSPP consultation meeting was held from 5 – 9 November 2012 in Tianjin, China. The purpose of the meeting was to discuss on the future engagement of the National Marine Data and Information Service (NMDIS) of the State Oceanic Administration (SOA) of China in the GTSPP. Dr Suixiang Shi, Deputy Director-General, NMDIS, opened the meeting and welcomed Dr Charles Sun, GTSPP Chair, to visit NMDIS. Dr Shi further expressed NMDIS' support for GTSPP and wishes to explore the approach that would, ultimately, prompt NMDIS to become a member of the newly re-assembled GTSPP Steering Group (SG).   At the end of the meeting, Dr Shi, on behalf of the

NMDIS' senior management, agreed to allocate resources to implement a pilot project to demonstrate its capability of performing the role as a GTSPP Global Data Products Center to produce monthly/seasonal optimal estimates of 3-D, global ocean temperature and salinity fields and provide facilities and funds for implementing training courses on the use of GTSPP data at NMDIS. He expressed that NMDIS supports the idea of conducting the GTSPP training course in Tianjin and agreed that the training can be conducted in conjunction with the existing capacity building framework of ODINWESTPAC (Ocean Data and Information Network for the Western Pacific Region) and IOI (International Ocean Institute), which NMDIS is one of the IOI operation centres.

174   Mr Petit de la Villéon informed the committee that GTSPP is expected to continue its operation during the next inter sessional period, 2013 - 2014.

175   The delegate of China, Prof Shao Hua Lin, recalled that the SG-GTSPP Chair Dr Sun had visited NMDIS China in 2012 and as a result China decided to support the GTSPP development in setting up a "GTSPP Global Data Products Center" at NMDIS and will further support GTSPP with technical training courses in China (the first training course will take place at NMDIS during the second half of 2013). China also invited ODINWESTPAC technical staff from the Member States in the region to participate in these training courses. In order to develop high quality data products for GTSPP, China also proposed to support an expert group visit to NMDIS to evaluate the data products developed by China. China also wanted to offer an expert to join the GTSPP Steering Group in order to be able to contribute to the GTSPP development.

176   **The Committee recommended** to national data centres to ask for, and store profiles, at instrument resolution rather than a decimated version. This request is referring to the action item no. 32 listed in the Annex III of the meeting report of the First Session of the SG-GTSPP.

177   **The Committee adopted** Recommendation IODE-XXII.11 (Revised Terms of Reference and Composition of the Steering Group of the Global Temperature and Salinity Profile Programme).

5.2.7   Global Ocean Surface Underway Data Pilot Project (GOSUD)

178   This Agenda Item was introduced by Mr Loic Petit de la Villéon, GOSUD Chair, referring to **Document IOC/IODE-XXII/15 (Reports of IODE Projects: Report on the GOSUD Project).**

179   Mr Petit de la Villéon recalled that since GOSUD began, the GOSUD partners have focused their efforts on assembling together data that have been collected by various agencies around the world. Some have been regular data contributors such as SOERE SSS –former ORE (France), NOAA (USA) and Coriolis (France). Some contributors that used to provide data on non-regular basis are now sending data on a regular basis (Belgium, Japan). Some others have been simply occasional (UK, Australia, and Germany) providers. The contributions may be related to regular merchant ship lines (SOERE-SSS France) or to research vessel surveys (NOAA, IFREMER). Some contributions reach the GDAC –Global Data Centre- directly or may reach it by way of the GTS. The GDAC is operated by the Coriolis data Centre (Ifremer, France). A daily back up of the data is performed by the US – NODC (Silver Spring, USA). The quality of the data differs from one contributor to another. It is stated that the data that reach the GDAC through the GTS could be of a lower quality.

180   Regarding the network status, Mr Petit de la Villéon reported that 91 vessels transmitted GTS data in 2011, and 81 vessels in 2012. Until now, most of the data that have been submitted to the Project have been collected on board the research vessels and ships of opportunity (merchant ships). The VOS-Nippon Project provides data from 2 different vessels on a regular basis. New contributors approached the Project and proposed that data could be collected on cruise or sailing ships. However, it is the responsibility of the project to ensure that the data acquisition is done according adopted procedures. It is stated that first priority must be put on regular contributions rather than pinpoint contributions. It is also stated that the project must focus on data from identified providers. This will allow to provide some feedback on the quality of the data and to further enhance it.

181   Mr Petit de la Villéon then briefly reported on the work carried out by the Project during the inter-sessional period: (i) a new NetCDF format (version V3.) has been adapted from the 2 previous

versions but this has not yet been implemented at the GDAC level. It enables to contain in a single file both data in near real-time and delayed mode, meta data (depth of intake, serial numbers of the instruments, calibration coefficients, …) and ancillary data (data used to process the delayed mode data set, e.g. Argo collocated data, water sample analysis, …); (ii) France has produced a delayed mode data set that will be made available on the web site in April 2013; (iii) the GOSUD TSG data are distributed through the GDAC (Coriolis, France) (http://www.gosud.org/Data-delivery/FTP-access) and through the backup facilities provided by US-NODC (ftp://ftp.nodc.noaa.gov/pub/data.nodc/iode/gosud/; http://data.nodc.noaa.gov/opendap/iode/gosud/; and http://data.nodc.noaa.gov/iode/gosud/). Real-time data are distributed through a ftp site which is updated on a daily basis. The files do not hold delayed mode data. Near real-time data are distributed through a ftp site which is updated every month. The files do not contain any delayed mode data. This has been developed to fulfil the SMOS satellite data needs for validation. Delayed mode data are distributed through a ftp site which is updated each time the data from one cruise have been processed. Those files must be considered as the reference data set and of the highest quality. Those delayed mode data sets are processed using the software CVTSG developed by IRD, France; (iv) the GOSUD web site (http://www.gosud.org) has been upgraded with content migrated to a content management system application which will allow partners to directly update the web site.

182   Mr Petit de la Villéon then briefly introduced the work plan for the next inter sessional period: (i) the progress and weaknesses of the Project must be identified (2013); (ii) contributors to GOSUD must be fully identified (June 2013); (iii) evaluate the quality of the entire GOSUD data set (September 2013); (iv) development of delayed mode data sets: contact data providers and propose the development (June 2013); (v) reinforce the role of science centre (As a software, that enables to QC data and to process a delayed mode dataset, is available, it becomes easier to have a common approach on data processing and data control. Using common tools and procedures and taking into account the local or regional expertise of the partners, it is suitable to re-start the data centre activities. The objective should be that no GOSUD dataset should be distributed without a minimum of scientific expertise); and (vi) organize a joint GTSPP/GOSUD workshop in April 2014 (at the IOC Project Office for IODE, Oostende).

183   **The Committee welcomed** the achievements of GOSUD. **The Committee approved** the GOSUD work plan, while **referring** discussions on financial implications to Agenda Item 10.

5.2.8   OceanDocs, Aquatic Commons and OpenScienceDirectory

184   This Agenda Item was introduced by Ms Linda Pikula, GE-MIM Chair, referring to **Document IOC/IODE-XXII/15 (***Reports of IODE Projects: Report on OceanDocs, Aquatic Commons and OpenScienceDirectory***)**.

185   Regarding OceanDocs, Ms Pikula recalled that OceanDocs started in 2004 as a project in the framework of ODINAFRICA. In 2007 the OdinPubAfrica repository became OceanDocs, a repository for the IODE-related communities. Future projects such as the new AFRILIB (AgriOceanDSpace) will be a federated catalogue of ODINAFRICA, and will use OAI-compatible software, including AgriOcean DSpace, making it possible to exchange metadata between the local ODINAFRICA partners, the AFRILIB catalogue and the OceanDocs repository. At present students of Hasselt University, are working on an alternative submission module and on a thesaurus plug-in for future DSpace versions (or other repository software). There is also a Windows-based version of AgriOcean DSpace, which is specifically created for small marine science libraries in developing regions of the world. She reported that as on 26th Dec 2012, OceanDocs (OD) contains 3973 items. The development of repositories in the OceanDocs network has been successful: IBBS (3150 records), CEEMAR (1184 records) and KMFRI (1687). Other institutes in ODINAFRICA and OdinPIMRIS are considering and/or preparing to set up their own repository based on the standards developed for OceanDocs.

186   Ms Pikula further recalled that the IODE Steering Group was established through Recommendation IODE-XXI.6. The first meeting of the SG-OceanDocs had taken place in Oostende, 24-27 January 2012. Mr Marc Goovaerts (Belgium) had been elected Chair of the Group.

187   The GE-MIM, at its 12th Session, had recommended that Mr Kakodkar (IOC project Office for

IODE) should take over the technical management of OceanDocs. The GE-MIM had also noted with regret the decline in entries in 2011-2012.

188   A virtual meeting (ad hoc) of the Steering group was held on 1 March 2013. Not all ODIN members were able to participate and therefore no new Chair of the Steering Group was elected and Marc Goovaerts will remain the Chair until a new poll is organized.

189   **The Committee thanked** Mr Goovaerts for his strong and long-term support in developing OceanDocs.

190   Regarding Aquatic Commons Ms Pikula explained that Aquatic Commons was a document repository similar to OceanDocs but developed by the "International Association of Aquatic and Marine Libraries and Information Centers" (IAMSLIC). In 2010 IAMSLIC had requested for IODE to host the Aquatic Commons repository, until then hosted by the University of Florida. Migration from University of Florida to IODE was started in October 2010 and was completed on 15th December 2010 (final redirection of URL). A database dump of 203MB and files dump of 18GB was provided by UFL. IODE supports Aquatic Commons in trouble shooting, technical user support and custom modifications to Eprints core on request from the Aquatic Commons community. An agreement was made with IAMSLIC whereby the IOC Project Office for IODE provides 1 day/month (maximum) to Aquatic Commons.

191   As on 26th Dec 2012, Aquatic Commons (AQ) contained 8,584 items. Total number of download in the past year was 208787, with highest number of downloads from USA (41520) and least from Denmark (328). Aquatic Commons runs on Eprints 3.2.9.

192   The representative of IAMSLIC expressed appreciation to IODE on its accomplishments and announced that Aquatic Commons was extremely important for IAMSLIC.

193   **The Committee welcomed** the achievements of the OceanDocs project. **The Committee approved** the OceanDocs work plan, while **referring** discussions on financial implications to Agenda Item 10.

5.2.9   OceanExpert

194   This Agenda Item was introduced by Ms Linda Pikula, GE-MIM Chair, referring to **Document IOC/IODE-XXII/15 (Reports of IODE Projects: Report on OceanExpert).**

195   Ms Pikula reported that on 26th Dec 2012, the OceanExpert (OE) database contained 13,246 individual records, with ODINWESTPAC representing 3,662 individuals, ODINCARSA with 1151, ODINAFRICA with 896, ODINCINDIO with 666, ODINECET with 270, ODINBLACKSEA with 248, and ODINPI with 75. Google analytics is used to gather statistics for OE since February 2011. As on 25th Dec 2012, OE has 77,344 (unique visitors: 64,726) with 266,326 page views and 16.49% returning visitors. Maximum visits (18.01%) were from USA. It was recalled that OceanExpert provides the expert related information to most of the IOC dynamic web sites.

196   In the second half of 2012 the Project Office started working with "Destin Informatique" (Belgium), to implement Linked Open Data (LOD) based unique identifiers for each individual record in OceanExpert. At present there is a working model of the implementation wherein concepts from OceanDocs (OD) are indexed for each individual from OE by ASKOSI. A unique identifier is provided to each individual in ASKOSI. This is hosted on an ASKOSI demo server at "Destin Informatique". It is planned to install an ASKOSI server at the IODE project office by the end of March 2013.

197   Ms Pikula further reported that micro-tags have already been inserted in the OceanExpert template. This is to allow machines to read these micro-tags and index information easily. These tags are called rich-snippets. To simplify accessing accurate information a schema.org was created. Wherein certain tags are created for each resource type and machines could read these micro-tags and index information easily. To create a solution to this issue, sitemaps have been created for all the "people" records in OceanExpert. These sitemaps are crawled using Any23, for the rich snippets we inserted in OceanExpert and retrieve individual names in the RDF/XML format. The names are then

indexed using ASKOSI (http://askosi.org/). This is also stored in a triple store called Sesame. The names are then indexed using ASKOSI. In the future, if authors change or abbreviate their name or change part of their name or write it in a different script, it can be added to ASKOSI so that concepts matching new names can be added to the author's original name.

198 Mr Troisi reported that increased communication and awareness is needed in order to involve the ocean research and observation community. Mr Odido proposed a regional approach to ensure improved quality and coverage of expert's details.

199 The delegate of the United Republic of Tanzania proposed to establish a standard controlled vocabulary (drop-down) for details such as academic qualifications, which will substantially improve the discovery of specific experts in the database.

200 The delegates of Belgium (Mr Scory and Mr Hernandez) reported on the on-going collaboration between SeaDataNet and IODE OceanExpert to explore ways to exchange expert details. Mr Hernandez suggested linking SeaDataNet and Ocean Expert, as such that the same security info (your password in OceanExpert) could be used to get access to data in SeaDataNet.

201 **The Committee welcomed** the development of advanced functionality in OceanExpert.

202 **The Committee noted that**, while the number of individual records has increased steadily, the institutional records need heavy quality management, as there are too many duplicate records. This was the result of insufficient attention by the experts when creating their record but this should be corrected. **The Committee instructed** the GE-MIM to identify ways and means to resolve this issue. Regarding OceanExpert quality control **the Committee further instructed** the ODINs to manage expert entries for their region, including increased coverage as well as regular quality control. In this regard **the Committee instructed** the project to create a "regional editor" function as soon as possible. In addition the Committee instructed the GE-MIM to make more use of controlled vocabularies for fields such as "academic qualifications" and standard affiliations for laboratories or institutions.

203 Referring to the proposed linkage of OceanExpert and EDMO (see also Agenda Item 5.1.2) **the Committee requested** the Chair GE-MIM, Co-Chairs and Mr Serge Scory, Mr Francisco Hernandez, Mr Friedrich Nast to restart discussions with SeaDataNet.

204 **The Committee further requested** GE-MIM to discuss the possibility of accessing SeaDataNet data through using OceanExpert userID and password.

5.2.10 IODE International Coastal Atlas Network (IODE/ICAN)

205 This Agenda Item was introduced by Prof Dawn Wright referring to **Document IOC/IODE-XXII/25 (The IODE International Coastal Atlas Network Project (ICAN))**. As one of the founders of the Network she provided the background to the International Coastal Atlas Network (ICAN) initiative and pilot project and the proposal to adopt this as a formal IODE Project.

206 She recalled that ICAN began as a coastal atlas workshop held in 2006 at University College Cork, Cork, Ireland – Coastal and Marine Research Centre (CMRC), which was then repeated with a trans-Atlantic workshop in 2007 at Oregon State University, Corvallis, OR, USA. The members of this all-volunteer initiative then proceeded to fund their coastal and marine atlas development activities via international meetings in July 2008 in Copenhagen, DK, hosted by the European Environment Agency; November 2009 at UNESCO's International Centre for Theoretical Physics (ICTP), Trieste, Italy; and 2011 at the IOC Project Office for IODE in Oostende, Belgium. To date, all activities have been self-funded. The work of ICAN directly benefits both the African Marine Atlas (AMA) and Caribbean Marine Atlas (CMA) projects, and both of these were represented in the ICAN Pilot Project. The network now has more than 50 member organisations from over 14 different countries.

207 Prof Wright then recalled that the proposal to merge the ICAN initiative into an IODE Pilot Project was approved by the IODE Officers in January 2012.

208 Prof Wright further informed the Committee that, if approved, the first Session of the SG-ICAN of the new IODE/ICAN would be held in Victoria, British Columbia, Canada, in June 2013,

which would then also be the 6th ICAN meeting.

209   **The Committee expressed its appreciation** for the already existing collaboration between ICAN and two IODE projects: Caribbean Marine Atlas and the African Marine Atlas and wished to support a further collaboration with ICAN and therefore accepted ICAN as a new project under IODE.

210   The delegate of Barbados and Mr Mika Odido, speaking on behalf of the partner countries in the Caribbean Marine Atlas and African Marine Atlas respectively, expressed their gratitude to ICAN experts and support for the proposed establishment of an ICAN project within IODE.

211   **The Committee approved** the ICAN work plan, while **referring** discussions on financial implications to Agenda Item 10.

212   **The Committee adopted** Recommendation IODE-XXII.12 (The IODE International Coastal Atlas Network (IODE/ICAN).

6.   IODE CAPACITY DEVELOPMENT

6.1   OCEANTEACHER AND TRAINING ACTIVITIES

213   This agenda item was introduced by the OceanTeacher Training Coordinator, Ms Claudia Delgado, referring to **Document IOC/IODE-XXII/16 (OceanTeacher and Training Activities)**. She provided an overview of activities organized by the OceanTeacher Academy (OTA) during the period April 2011 – March 2013.

214   She recalled that the OceanTeacher is the cornerstone of the IODE capacity building programme and its main aim is to support all IODE training activities by providing training tools for data and information management. OceanTeacher is a comprehensive web-based training system that supports Classroom training (face-to-face), Blended training (combining classroom and distance learning), online tutoring and online self-learning. The OceanTeacher Academy (OTA) (as a collection of OceanTeacher training instances) offers a programme of courses related to oceanographic data and information management and the development of related products and services. It started its first academic year in 2009-2010. The OceanTeacher project, funded by the Government of Flanders through the "Flanders-UNESCO Trust Fund for Science" will end on 31 December 2013.

215   Ms Delgado then reported that the IODE Steering Group for OceanTeacher met in Miami, Florida, between 11-15 April 2011 for its Second Session and she referred to the Report IOC/IODE-SG-OT-II/3   http://iode.org/index.php?option=com_oe&task=viewEventDocs&eventID=873]. During this meeting several strategic long-term decisions were agreed upon, namely: 1) focus on blended learning; 2) have/keep updated a catalogue of courses ready to be delivered at any time; 3) fully sponsor one applicant from each Member State (MS) and co-sponsor other participants from the same MS to attend a training course; 4) survey Member States' training needs yearly; 5) increase the number of accredited training courses; 6) establish one training course per ODIN; 7) achieve at least 20-30% self sponsored students and seek co-funders and 8) actively promote OT and OTA.

216   Ms Delgado provided statistics related to events organized by the OceanTeacher Programme in 2011 and 2012, which showed an increase in 2011 and slight decrease in 2012 in the number of participants. However, the number of participants was still at the same level as in 2009, averaging 180 participants each year.

217   Ms Delgado informed the Committee that OceanTeacher now included 5 trainers and 4 content contributors in data management, 11 trainers and (the same as) content contributors in marine information management, and 4 trainers and content contributors in interdisciplinary fields.

218   Ms Delgado provided an overview of OceanTeacher events and participants between 2005-2012, with number of participants averaging nowadays 180 attendees per year. A detailed view of OceanTeacher participants at the IODE Project Office and elsewhere was provided: although the majority of the OT participants travel to Ostend to attend a training course, the number of participants on training activities elsewhere is 30% of the total participants. She recalled the growing importance

of co-sponsorship, as a means to allow more participants on OT training activities, and also a way for MS to demonstrate their willingness to become active actors on their own Capacity Building. In 2011, only 4 participants found a means to co-sponsorship their attendance to an OT course, while in 2012 this number raised to 14 participants.

219   Ms Delgado further reported on the growing collaboration with other programmes:

(i)   Between 2011 and 2012, the Harmful Algal Bloom (HAB) uploaded contents for four training course to the OceanTeacher site. Other HAB courses are expected during 2013.

(ii)   The International Tsunami Information Centre (ITIC) uses the OceanTeacher platform for its Tsunami Awareness training courses.

(iii)   EUMETSAT, SeaDataNet-2 and Pegaso are using the OceanTeacher facilities for their training activities

220   Ms Delgado then introduced the new concept "Global Classroom". She explained that while the IOC Project Office for IODE in Oostende, Belgium had been an excellent and widely appreciated venue for courses, the distance that some participants had to travel and the short duration (one week) of the courses made that they could often not participate in the best possible condition (jet lag). In addition the cost and maximum of 20 participants/course limited the number of participants/country to 1-2. It was therefore suggested to establish regional training centres that would limit travel (and cost), enabled more focus on local priorities and could also address the language problem (all courses are now taught in English). Nevertheless by using advanced video conferencing technology some courses could be taught in Oostende and then transmitted to other locations. This was conceptualized as the "OceanTeacher Global Classroom". A first experiment was organized for the "Training course on Marine-GIS" with simultaneous participation from two locations: the IOC Project Office for IODE, Oostende, Belgium and INCOIS, Hyderabad, India. In addition on several guest lecture sessions had been organized using Webex in other courses, where the lecturer did not travel to Oostende. A small-scale project proposal, requesting US$ 100,000 was submitted to FUST for implementation in 2013. The proposal was accepted for funding by the Government of Flanders.

221   Ms Delgado informed the Committee that due to increased travel and per diem costs the number of courses that could be organized in 2013 from the OceanTeacher Academy project budget would be limited to two. Additional courses would be funded from the Flanders direct contribution to the Project Office in Oostende. A new proposal for the OceanTeacher Academy for the next period (2014 – 2018) would be submitted to FUST by mid-2013. Ms Delgado called on IODE experts to contribute more actively as lecturers or content providers.

222   Ms Delgado also noted that Dr Savi Narayanan had visited the IOC Project Office for IODE on 4 March 2013 to review the results of the OceanTeacher project.

223   The Co-Chair recalled that capacity building is one the most successful cornerstones of the IODE programme. He looked forward to a successful full review of OceanTeacher and to continued funding.

224   The delegate of Spain informed the Committee about Spain's interest in collaborating with the OceanTeacher Global Classroom project by possibly establishing a Regional Training Centre at the Coastal Oceanographic Center of Canary Island (IEO), located in Santa Cruz de Tenerife to cover the Mediterranean and West African coastal region.

225   The delegate of Kenya informed the Committee of Kenya's interest to establish an IODE regional training centre. He noted that Kenya has an experienced NODC and marine library at KMFRI, Mombasa. The NODC and marine library are well known and appreciated regionally as well as internationally. He offered his collaboration to work on the proposal jointly with the Secretariat.

226   The delegate of India expressed his appreciation regarding the efforts of IODE/ OceanTeacher for successfully testing the concept of the Global Classroom during a Marine GIS course held in March 2012 simultaneously in Oostende and at INCOIS, India. He further informed the Committee that India looks forward to contribute to the OceanTeacher Global Classroom through its International

Training Centre for Operational Oceanography (ITCOocean) at ESSO-INCOIS, Hyderabad, India.

227   The delegate of Colombia expressed her country's interest in the possible establishment of a regional training centre. She informed the Committee that national consultation would be organized to identify the best facilities that comply with the technical requirements.

228   The delegate of China, Prof Shaohua Lin, re-iterated the offer of China to establish an IODE regional training centre in NMDIS, China and invited the IODE Secretariat to further discuss the way forward.

229   **The Committee noted with appreciation** the offers by Spain, Kenya, India, Colombia and China and **requested** the Secretariat to organize the drafting of a new OceanTeacher Global Classroom Project proposal for subsequent submission to relevant donors.

230   **The Committee urged** Member States, their NODCs and other relevant institutions to contribute to OceanTeacher by making available experts as lecturers and/or content providers, and to make use of the OceanTeacher training materials for their staff members.

6.2   IODE'S REGIONAL CAPACITY DEVELOPMENT PROJECTS: ODIN

231   This agenda item was introduced by Mr Ariel Troisi, Co-Chair, referring to **Document IOC/IODE-XXII/17 (Report on the IODE's regional Capacity Development Projects: ODIN)**. He noted that there was not enough time available to provide detailed reports on the achievement of each ODIN during the past inter-sessional period but that this agenda item would rather focus on problems that have occurred and on future plans. Looking at the overall picture of the ODINs the Chair will note with concern that, except for the ODINAFRICA project, most ODINs reported only limited activity during 2011-2012. While taking into account that this could be partially due to the limited financial resources available from UNESCO/IOC, some activities would have required no funding. He then invited the ODIN coordinators to provide a brief report.

6.2.1   Ocean Data and Information Network for Africa (ODINAFRICA)

232   This agenda was introduced by Mr Mika Odido (ODINAFRICA Project Manager and IOC Coordinator in Africa), referring to **Document IOC/IODE-XXII/17 (Report on the IODE's regional Capacity Development Projects: ODINAFRICA**.

233   Mr Odido informed the Committee that following the establishment of the IOC Sub Commission for Africa and the Adjacent Island States by the 26th session of the IOC Assembly, the coordination of IOC's activities in Africa, including ODINAFRICA was transferred to the secretariat of the Sub Commission, which is based at the UNESCO Regional Office in Nairobi, Kenya. The ODINAFRICA Project Manager was appointed as the IOC Coordinator in Africa effective 1 March 2012. The ODINAFRICA funds initially foreseen for the project manager position were then re-allocated to strengthen the marine biodiversity component of the project by funding a Marine Mammals Survey in West Africa in collaboration with the Canary Current LME project, as well as providing support to the Ocean Biogeographic System – OBIS so that it can better assist in the development of the African Register of Marine Species.

234   The implementation of the project has progressed well with development and maintenance of products such as the Coastal and Marine Atlases, Catalogue of libraries of institutions participating in the project, the African Register of Marine Species, experts and institutions databases, projects databases, and the NODC and project websites.

235   Workshops and training courses have been organized to equip staff of the NODCs with the necessary skills to develop the products and to manage the data and information centres. The ODINAFRICA Scientific Symposium (30 November – 01 December 2011, Saly-Mbour, Senegal) provided the opportunity to publicize the activities of ODINAFRICA and expand and strengthen the network of institutions and experts. The theme of the workshop, which was attended by more than 80 participants from 24 countries, was the "Contribution of Ocean Data and Information to Sustainable Development in Africa"

236   Some of the challenges faced include the slow pace of implementation of planned activities in some of the countries, staff mobility, difficulties in accessing some of the data sets required for atlas development, delays in development of the AgriOcean DSpace software and poor internet access in some of the countries.

237   Mr Odido then introduced the work plan for 2013 that was agreed upon by the ODINAFRICA Project Steering Committee, at its meeting in Swakopmund, Namibia in November 2012. The work plan focuses on finalizing the ODINAFRICA-IV products, with a final review workshop planned for 27-30 May 2013 in Maputo, Mozambique.

238   **The Committee expressed great appreciation** for the achievements of ODINAFRICA and **thanked** the main donor, the Government of Flanders (Kingdom of Belgium), for the substantial support provided.

239   Noting that the funding for ODINAFRICA from FUST (Government of Flanders, Kingdom of Belgium) ends in December 2013, **the Committee requested** the IODE Secretariat to work with the Member States from the region in finalizing a proposal for submission to FUST and other potential partners.

240   **The Committee referred** discussions on the financial implications to Agenda Item 10.

6.2.2   Ocean Data and Information Network for the Caribbean and South America regions (ODINCARSA)

241   This agenda item was introduced by Mr Ariel Troisi, referring to **Document IOC/IODE-XXII/17 (Report on the IODE's regional Capacity Development Projects: ODINCARSA-LA)**. He recalled that regional activity was deeply affected by budget cuts at the national level to which it had to be added the impact of the decision by the USA to cease its financial contributions to UNESCO (as from November 2011) resulting in fewer external support for regional activities. Furthermore, the lack of regional funding prevented ODINCARSA-LA National Coordinators to meet during this inter-sessional period and assess the outcomes of the existing activity plan and project the next biennium.

242   Rotation of staff in several NODCs ended in a new landscape with fewer National Coordinators standing since the inception of ODINCARSA in 2001, requiring get up-to speed with new Coordinators and additional efforts to establish current needs and requirements

243   Nevertheless, the interaction with the South Pacific Integrated Coastal Area Management Project SPINCAM, funded by the Government of Flanders, provided an unique opportunity to meet at least part of the National Coordinators as well as to promote data and information management in that sub-region. In this sense, capacity building activities were successfully carried out with a particular focus on metadata management and coastal atlas development.

244   During the present intersessional period, 40 trainees participated in Data and Marine Information Management capacity enhancement activities besides the ones related to SPINCAM. Additionally a big thrust was given to Data Management in Mexico, where an NODC was established in 2011 (almost 50% of the trainees come from Mexico).

245   The IODE OceanDataPortal (IODE ODP) was promoted in the region, with Argentina adopting the ODP infrastructure as the backbone of its new National Marine Data System. All five Member States participating in SPINCAM have committed to establish Ocean Data Portal nodes. Support in terms of ODP capacity development is needed to ensure success in the latter case, whilst in the case of Argentina expert visits were carried out in June 2011 thus creating local expertise in the establishment and operation of ODP nodes.

246   Regarding Marine Information Management Mr Troisi informed the Committee that further actions were taken to promote and develop OceanDocs in ODINCARSA-LA region, with the development of a Spanish version of the OceanDocs Policy Document, the promotion of OceanDocs within the Latin American IAMSLIC Group as well as the promotion of the inclusion of gray literature in OceanDocs to increase input. Under the sponsorship of IODE, an OceanDocs Training Workshop

was organized in 2012 by the Chilean National Coordinator for MIM

247   Mr Troisi called again the attention of the Committee to important challenges remaining in the region such as the development of partnerships, close interaction with OBIS as well as with different IOC Programs and other relevant organizations.

248   Mr Troisi then introduced Mr Roach, Coordinator of the Caribbean Marine Atlas (CMA) project. Mr Roach informed the Committee that a persistent lack of institutional capacity in the region with regard to marine data management had hindered the implementation of several components of the CMA project, including the creation of national marine atlases for the participating states. However, a total of five prototype national marine atlases had been implemented as of late 2012 (Barbados, Cuba, Dominica, Jamaica, Trinidad and Tobago) and one additional national atlas (Turks and Caicos) is expected to be published by mid-2013.

249   In addition, the CMA map application (**http://atlas.caribbeanmarineatlas.org** /) has been updated with additional datasets and features, and the CMA metadata catalogue (**http://geonetwork.caribbeanmarineatlas.org**) has been populated with both regional datasets and published datasets from the respective national marine atlases.

250   Mr Roach continued by stating that during the inter-sessional period, participants in the CMA project had also received training in advanced marine data management techniques including relational database technologies for spatial data, web map services and client applications, and catalog services for the web. Furthermore, national marine atlas stakeholder meetings were conducted in both Barbados and Jamaica to sensitize local stakeholders to the goals and requirements of both the CMA and respective national marine atlas projects.

251   With respect to interaction with other regional projects, Mr Roach indicated that the CMA was participating in a joint initiative with the Caribbean Large Marine Ecosystem (CLME) project to create a data-source inventory for information related to integrated coastal area management (ICAM) at both a regional and a national level. In addition, technical assistance was being provided by the CMA to the Caribbean Sea Commission (CSC) via the Scientific and Technical Sub-Commission for the initiative.

252   Mr Troisi informed the Committee of the proposed work plan and budget for the next inter-sessional period. In the area of data management this includes: (i) establish and support new NODCs and continue supporting those existing; (ii) designate/update IODE national coordinators for data management; (iii) improve capabilities to access and use real time and near-real time data to generate products and provide services; (iv) Development of Ocean Data Portal within the region; (v) improve IODE NODC-OBIS interaction at the national and regional level; (vi) continuing development of the regional atlas application for the CMA; (vii) further develop national atlases within participating CMA countries and deliver data products. In the area of marine information management (MIM) the focus will be on the OceanDocs and improving ASFA metadata imports into OceanDocs.

253   **The Committee**, while **expressing regret** for the slowing down of ODINCARSA activities as a result of the budget reduction, **welcomed the success** of SPINCAM and the participation of the NODCs of the participating countries.

254   **The Committee referred** discussions on the financial implications to Agenda Item 10.

6.2.3   Ocean Data and Information Network for European Countries in Economic Transition (ODINECET)

255   This agenda item was introduced by Ms Olga Akimova referring to **Document IOC/IODE-XXII/17** (*Report on the IODE's regional Capacity Development Projects: ODINECET*).

256   Ms Akimova reported on progress made with the ODINECET work plan during the inter-sessional period. This included (i) a three-day joint ODINECET–ODIN Black Sea meeting and ODINECET Workshop on Marine Information Management was held 12-14 September 2011 in Sevastopol (Ukraine) at the Sevastopol Institute of Banking, organized jointly by the ODINECET and ODINBlackSea coordinators with financial support of the IOC/IODE Project Office; (ii) 12 students

from the region participated in OceanTeacher Academy courses in 2011-2012; (iii) E-repositories were created and/or updated: IBSS, CEEMaR; (iv) A Koha e-catalogue pilot was started at IBSS; (v) a Union catalogue system, using the IMIS software developed by the Flanders Marine Institute was implemented involving 22 marine libraries in the region; (vi) working collaboration with the IODE ODINBlackSea is in progress; (vii) ASFA input centers from the ODINECET group provide links to full-text documents from CEEMaR and IBSS repositories in ASFA records; (viii) digitization of rare monographs related to marine sciences held by ODINECET partner libraries; the List of rare books was compiled, project was submitted to the Elsevier Foundation.

257   Ms Akimova then introduced the ODINECET work plan and budget for the next inter-sessional period. The proposed work plan will include (i) updating of the ODINECET web site; (ii) participation in OceanTeacher training courses; (iii) organization of a joint ODINECET workshop and meeting of Russian aquatic libraries and information centres' staff at VNIRO, Moscow in 2013; (iv) organization of an ODINECET coordination meeting in 2014; (v) continue submission of documents into CEEMaR and IBSS repositories; (vi) providing technical and equipment support to CEEMaR partners; (vii) installation of Koha software in ODINECET partner institutions; (viii) updating of the ECET Union catalogue including foreign titles stored in ODINECET partner libraries; (ix) continue to work on the project «Digitization of rare monographs related to marine sciences»; (x) update the ODINECET booklet/leaflet within recent programs; (xi) promote the input of the ECET-data to OceanExpert directory of marine and freshwater professionals.

258   **The Committee welcomed** the progress made by ODINECET despite the reduced budget.

259   **The Committee referred** discussions on the financial implications to Agenda Item 10.

6.2.4   Ocean Data and Information Network for the Western Pacific region (ODIN-WESTPAC)

260   Prof Shaohua Lin reported to the Committee that China has continued to coordinate ODINWESTPAC since IOC/WESTPAC-VII held in Malaysia in May 2008. She reported on the activities carried out by the host centre during the inter-sessional period: (i) collection of information on ODINWESTPAC contact points in 15 Member States (Australia, Cambodia, China, Fiji, France, Indonesia, Japan, Korea, Malaysia, New Zealand, Russia, Thailand, United Kingdom, United States and Vietnam); (ii) upgrade and update of the official website for ODINWESTPAC (http://www.odinwestpac.org.cn) with a great amount of data uploaded, and data products and/or graphic products provided; (iii) development of data processing techniques, quality control techniques, and standard operating procedures for data collection, processing and management; (iv) development of data services including Chinese coastal station data, other regional and international cooperation programme and project data, marine data products; (v) contacted with NEAR-GOOS and SEAGOOS and an official agreement to guarantee the data source from NEAR-GOOS.

261   Prof Lin further reported that most proposed activities were progressing slowly due to limited interest shown by the Member States. In addition Member States were slow to provide data to be made available through the ODINWESTPAC web site. Additional training also needed to be provided. The proposed regional coordination workshop and first training course could not be organized due to lack of response from the Member States in the region. Similarly no response were received to a survey on training requirements prepared by Ms Du Qiongwei during her internship at the IOC project office for IODE in 2012.

262   Prof Lin noted also that it has been difficult to implement marine information management in the region since few Member States have designated MIM coordinators.

263   The sessional working group on ODINWESTPAC was attended by China, Japan, Republic of Korea, Thailand, New Zealand and Australia. The meeting was chaired by Prof Shaohua Lin. The Group concluded that ODINWESTPAC should continue. The group re-defined the objectives of ODINWESTPAC as follows:

- Develop a marine data and information network that will promote data and information exchange and collaboration between WESTPAC member states;

- Provide a number of marine data and information products to serve the needs of WESTPAC member states and other ODINs and IODE members in data and information management, oceanographic research, marine environmental protection, marine hazards prevention and mitigation, etc.;

- Develop cooperation with other international and regional data projects in data collecting, processing, management and service;

- Implement relevant capacity building activities which specially related to ocean data and information management and service

264 The sessional working group prepared the following work plan which **the Committee adopted**:

1. Confirm national focal points for Data Management and Marine Information Management. Send a Circular Letter to both IOC national focal points and IODE national coordinators for data management and for marine information management. Responses to be requested by end May 2013.

2. ODINWESTPAC Working Group meeting proposed to be held in NMDIS, China, in the 4th quarter 2013; invite Chair IOC/WESTPAC, Head IOC/WESTPAC Office and representative from IODE. The purpose of the meeting is to discuss the development of a strategy for the ODINWESTPAC project, identify activities for the region, and develop a work plan for intersessional period.

3. Prepare draft agenda by end June 2013 and to be discussed by Working Group members at IOC Assembly. Final agenda to be agreed and distributed by end July 2013.

4. A training course proposed for 2014 with details to be decided at Working Group meeting of 2013.

5. Organize a short workshop (1/2 to 1 day) on ODINWESTPAC activities at the IOC/WESTPAC Scientific Symposium, Na Trang, Vietnam in 2014.

6. Promote the implementation of the IODE QMF for all NODCs in ODINWESTPAC

265 **The Committee, while thanking** Prof Lin for her efforts, **regretted** the low level of activity of ODINWESTPAC and urged Member States to accept the invitation to work together in this region.

266 The delegate of Thailand expressed his country's intention to collaborate more actively in ODINWESTPAC.

267 **The Committee referred** discussions on the financial implications to Agenda Item 10.

6.2.5 ODIN-Black Sea

268 This agenda item was introduced by Ms Olga Akimova on behalf of Dr Vladimir Vladymyrov, ODIN-BlackSea project coordinator.

269 Ms Olga Akimova reminded the Committee that the Ocean Data and Information Network for the Black Sea (ODIN-BlackSea) Pilot Project had been established formally during the Nineteenth Session of the IODE Committee (Trieste, Italy, March 2007) through the Recommendation IODE-XIX.10 and that all riparian Black Sea countries were participants of the project.

270 Ms Akimova informed the Committee that during Fourth Session of the ODIN-BlackSea Project Steering Committee held 12-14 September 2011, Sevastopol, Ukraine it was decided to slightly change the formulation of the project objective number 6 approved at the IODE-XIX meeting in Trieste (Italy, 12-16 March 2007) from: "Undertake the activities needed for applying modern technologies for data collection, processing, storing and dissemination to achieve end-to-end data management (E2EDM)" to "Undertake the activities needed for applying modern technologies for data collection, processing, storing and dissemination".

271 Ms Akimova further reported on the activities that had been planned for the period 2011 –

2013, providing details of what had been implemented: (i) the ODIN-BlackSea web site, hosted by the IODE/IOC Project Office, had been permanently updated; (ii) due to several reasons the implementation of the planned activities on integrating Black Sea region national data centres to the ODP program had not been fully fulfilled; (iii) collaboration with the ODINECET Project in the field of marine data information in the region was ongoing; (iv) three-day joint ODINECET–ODIN Black Sea meeting was organized 12-14 September 2011 in Sevastopol (Ukraine). Participants of the both IOC/IODE programs got acquainted with each program activities and discussed the possible fields of cooperation; (v) review analysing the structure and state of the Black Sea Region National Oceanographic Data Centres and their web sites was ongoing.

272   Ms Akimova then introduced the ODIN-Black Sea project work plan and budget for the next inter-sessional period. The proposed work plan will include: (i) updating of the ODIN-BlackSea web site; (ii) continued activities on involvement of each ODIN-BlackSea participant to ODP program; (iii) participation of the ODIN-BlackSea trainees in the different training courses; (iv) collaboration with OBIS in the field of providing regional biogeographical datasets.

273   Ms Akimova informed the Committee that no budget was requested to implement the above work plan.

274   **The Committee expressed its appreciation** for the ability of the ODINBlackSea group to implement its work plan without IODE funding and **thanked** Dr Vladymyrov on the progress made.

275   **The Committee expressed** its regret about Dr Vladymyrov's illness and **wished** him quick recovery.

6.2.6   Regional Network of Pacific Marine Libraries (ODIN-PIMRIS)

276   This agenda item was introduced by Ms Linda Pikula on behalf of Ms Susana Macanawai, ODINPIMRIS coordinator referring to **Document IOC/IODE-XXII/17 (Report on the IODE's regional Capacity Development Projects: ODINPIMRIS)**.

277   Ms Pikula recalled that the ODIN-PIMRIS Project, a joint initiative by participants of PIMRIS and the IODE programme of UNESCO/IOC was established in 2008 in response to the Pacific Islands regional need for improved marine and fisheries information access. The main objective of the project was to create a regional marine information portal that incorporates existing information sources developed by Pacific regional agencies and supports the development of institutional e-repositories for national marine and fisheries agencies. ODIN-PIMRIS contributed to the objectives of PIMRIS, by focussing on: (i) establishing a regional marine information portal; (ii) creating capacity at national and institutional level to use & contribute to the portal; (iii) promoting the portal as a valuable information source for managers and decision makers; (iv) improving access to marine/fisheries information by developing institutional e-repositories and relevant staff training.

278   ODIN-PIMRIS successfully completed its Pilot Project review meeting and training in May 2011. Project partners noted the achievement of all pilot project goals including the development of e-repositories (Greenstone software), database training for Cook Islands, Fiji, Kiribati, Samoa and Solomon Islands participants as well as the creation and updating of the 'Pacific Islands Marine Portal'- http://www.pimrisportal.org/. Tonga fisheries library was included in the next phase of the project for e-repository development and training. Pilot project participants will continue with maintenance of national database/e-repository activities and submission of required documents for the PIMRIS regional repository.

279   The ODIN-PIMRIS coordinator participated in the OceanDocs Steering Committee meeting held at the IODE project office in Oostende, Belgium from 24-27 January 2012. From this meeting, the coordinator promoted 'open access' publishing and sharing of information and on OceanDocs and related databases with colleagues and regional partners. DSpace software used by OceanDocs has been considered for trial at the Tonga Fisheries library in 2013.

280   Three ODIN-PIMRIS members participated in the twinning programme organized by Ms Suzie Davies of Great Barrier Reef Marine Park Authority (GBRMPA) in February 2012. The

twinning programme was funded by AusAID and aimed at helping Pacific Island partners gain experience and knowledge from marine libraries (twins) in Australia for the improvement of national marine information services.

281   An online content management training for selected partners was organized in Suva, Fiji in March 2012 with the assistance of Mr Aditya Kakodkar from the IODE Project Office. This hands-on training has helped project partners update the 'Pacific Islands Marine Portal' regularly and take ownership of a useful regional information resource.

282   The PIMRIS coordination unit continued to maintain its regional e-repository (Greenstone software platform) of national departmental collections in the region.

283   **The Committee noted with appreciation** the achievements of the ODINPIMRIS project.

284   **The Committee thanked** Ms Suzie Davies for her continued commitment to ODINPIMRIS.

285   **The Committee referred** the decision on the requested funding to agenda item 10.

6.2.7   Other regions

286   This Agenda Item was introduced by Mr Ariel Troisi. He invited the Committee to discuss the need to establish ODINs in any other region.

287   Mr Troisi noted that there were still gaps in the geographical distribution of the IODE NODCs. One of these is the area of the Persian Gulf and Oman Sea.

288   In 1982 a Regional Committee for the Central Indian Ocean (IOCINDIO) was established responsible for the co-ordination and supervision of the scientific and service activities of the Commission at the regional level. It was expected that the IOC policy decisions relevant to the interests and needs of the countries of the region would be supported and implemented through the concerted action of all Member States of the Gulf and the Sea (only Bahrain is not a Member of the IOC). The 4th session of IOCINDIO held in December 2005 discussed the provisions of the ODINCINDIO project proposal, which was first introduced to the 17th session of IODE in 2003 and welcomed. The proposal was also accepted by IOGOOS as the capacity building tool and was also supported by ROPME. IOCINDIO-4 expressed its satisfaction with the ODINCINDIO project proposal and highlighted the major role it can play in the advancement of oceanography in the region, as well as providing data exchange mechanism in the context of the ICG/IOTWS and IOGOOS.

289   Unfortunately since 2005 due to political, economic and priority reasons the IOCINDIO activities were implemented very slowly and there were no sessions of the regional committee. Although in Doc IOC/EC-XLI/2 Annex 5 of 2008 under IOCINDIO major activities – Establishment of ODINCINDIO was mentioned, in reality there was no progress achieved and the proposal today has been in the pipeline for long awaiting implementation ideas. In February 2012 the IODE Officers called on IOCINDIO Member States to more actively participate in making the ODINCINDIO proposal a reality. Although IOCINDIO was not specially discussed at EC-XLI in June 2012 Thailand and India urged the IOC Head Office to support and help to re-activate the IOCINDIO in near future. During 2012 actions have been taken regarding the establishment in Iran of the UNESCO Category II Center on ocean and coastal zone research and training for the Persian Gulf and the Oman Sea. The proposal and the results of its feasibility study will be brought to the attention of a coming session of the IOC Assembly in June 2013.

290   On the 14th of January 2013 an IOC Circular Letter 2467 has been dispatched calling on all Member States of the Gulf and Oman Sea region to make urgent actions in implementing the IOC Assembly decisions. As a first step all Member States of the region were invited to provide by the middle of February 2013 the following information to the IOC Secretariat: (i) information on sea and coastal research institutions, ocean data centres and marine libraries; (ii) information on sea and coastal research and observation experts, data management experts and marine librarians; (iii) expression of interest to participate in discussions on the possible establishment of a sub-regional Ocean Data and Information Network for the Gulf and Oman Sea region. The letter also invited Member States in the Persian Gulf region to identify training needs (short/medium-term) in subjects

related to ocean research and observation, including ocean data and information (library) management.

291   Mr Troisi remarked that the circulation of the Letter was very timely and may be considered as a contribution to the IOC Sustained Ocean Observations and Services Survey started on the 30th of January 2013.

292   Mr Troisi noted that, as of 11 March 2013, responses were received from only 2 countries of the region: India and Islamic Republic of Iran. Both countries emphasized the importance of the IODE and welcomed the establishment of a sub-regional Ocean Data and Information network.

293   **The Committee regretted** the extremely poor response to the Circular Letter, taking into account that ocean data and information management should be of relevance to the concerned ocean bordering countries.

294   The delegate of Kuwait informed the Committee that KISR (Kuwait Institute for Scientific Research) staff has participated in an IODE course. He called on IODE to provide more such training. While he did not have the authority to commit to the establishment of a data centre he expressed his institution's interest in increased collaboration to improve local expertise. In this regard he invited an IODE expert to visit Kuwait. He further informed the Committee of regional research cruises involving Saudi Arabia, Qatar, and Oman. He also recommended closer collaboration with the Regional Organization for the Protection of the Marine Environment (ROPME).

295   The delegate of Thailand regretted the low level of activity of ODINCINDIO during the past 7 years due to a lack of leadership. He stated that it was now a good opportunity to reactivate ODINCINDIO as many countries in the Indian Ocean rim together with organizations such as IOGOOS, Indian Ocean Panel, NOAA, SIBER (SIBER (Sustained Indian Ocean Biogeochemical and Ecological Research) etc. prepare for the 50th Anniversary of the Indian Ocean Expedition in the next few years. The numerous data and information that will be collected during cruises that commemorate the 50th Anniversary will be beneficial to the oceanographic community in the region and beyond.

6.3   CONCLUSIONS FOR IODE REGIONAL CAPACITY DEVELOPMENT

296   This Agenda Item was introduced by Mr Ariel Troisi. He invited the Committee to consider progress of the ODIN projects and to address the impact of the current financial crisis on these projects. Mr Troisi recalled some of the problems that had interfered with implementation of ODINs during the past inter-sessional period.

297   Mr Troisi recalled the discussions under Agenda Item 6.1 where several Member States had offered to host regional training centres that would contribute to the OceanTeacher Global Classroom.

298   The delegate of Belgium, Mr Francisco Hernandez, noted that the Flanders Marine Institute is collaborating with the KMFRI, Mombasa, Kenya and would be willing to support the organization of regional training courses together with KMFRI. He recommended that OBIS related training should be included in the programme as a way of improving biological data management.

299   **The Committee invited** all Member States who wish to share data with OBIS and/or wish to set up an OBIS node and need training, to inform the Secretariat of their needs, so OBIS can organise regional training workshops.

300   **The Committee endorsed** the concept of the OceanTeacher Global Classroom combining training in Oostende with training in regional training centres and using advanced video communication. **The Committee instructed** the Secretariat to develop, together with the Member States that have offered to host a regional training centre, to prepare a project proposal for submission to suitable donors at the earliest opportunity.

6.4   EMERGING NEEDS IN CAPACITY DEVELOPMENT

301   This Agenda Item was introduced by Mr Ariel Troisi. He invited the Committee to discuss any emerging needs in capacity development and how IODE can address these.

302   The delegate from India reported on the progress of India's proposal on setting up of

International Training Centre for Operational Oceanography (ITCOocean) during the inter-sessional period. The proposal aims at setting up a permanent training facility for capacity building for 'operational oceanography' at INCOIS, Hyderabad, India in continuation to the statement of Indian delegation at 43rd meeting of IOC Executive Council (IOC/EC-XLI/3 Annex IX). He referred the Committee to the document IOC/IODE- XXI/45 on India's proposal to set up ITCOocean, presented during the 21st Session of IOC/IODE.

303 He recalled that during its 21st Session the Committee strongly welcomed the initiative of India and called on the Assembly to accept the offer, stressing that the proposed Centre complied with the IOC Capacity Development Strategy which focuses on self-driven initiatives, and that the Centre would contribute substantially to the region's capacity in operational oceanography and related data and information management. The Committee further welcomed the proposed close collaboration between the Centre and IODE's OceanTeacher. The IOC Assembly, at its 26th Session adopted the proposal to set up the training centre at INCOIS, Hyderabad through Resolution XXVI-10. He further informed that in December 2012 the Ministry of Earth Sciences, Govt. of India had approved the project with a budget estimate of Rs. 100 Crores (~ US$ 18.5 Million) to build the necessary infrastructure including state-of-the-art faculty blocks and e-learning equipment, salary for the faculty and supporting staff, accommodation for students and staff, and maintenance of the facilities etc. Considering the mutual benefit for ESSO-INCOIS and IOC/IODE in the field of ocean related training and the benefit to the marine research community as a whole and specially for the Member States in the Indian Ocean rim and the islands, ESSO-INCOIS and the IOC/IODE proposed to enter into a Memorandum of Agreement (MoA) to co-operate and mutually support the training activities/programmes undertaken by IODE (International Oceanographic Data and Information Exchange) and ITCOocean being established by India at ESSO-INCOIS, Hyderabad. He informed that the Memorandum of Agreement was cleared by UNESCO and had been submitted for approval to the Government of India.

304 He informed that ESSO-INCOIS regularly conducts several training programmes and will continue the training courses as part of India's national and international commitments through the ITCOocean. The ITCOOocean could also provide impetus required for promoting ODIN activities in the region.

305 **The Committee expressed its great appreciation** for the substantial contribution of India to capacity development in the region through the ITCOocean.

7. COOPERATION WITH OTHER PROGRAMMES AND ORGANIZATIONS

306 This Agenda Item was introduced by Ms Sissy Iona, referring to **Document IOC/IODE-XXII/18** (*Cooperation with other Programmes and Organizations*).

Cooperation with GOOS

307 Following the restructuring of GOOS, both IODE co-chairs became ex-officio members of the GOOS Steering Committee. The cross-cutting nature of D&MIM determined their inclusion. After the first GSC meeting in June 2012, among the identified key issues towards future actions, was the challenge of data interoperability. The ETMC at its fourth meeting, November 2012, recognized the need, as articulated by both JCOMM-4 and the GOOS Steering Committee (GSC-1), to promote the establishment and publication of access routes to the authoritative data sets for the observing system and as a first step towards documenting the MCDS (real-time and delayed mode) data flow, an assessment will be made of the present monitoring and data management arrangements for the observing in situ networks coordinated by the JCOMM Observations Coordination Group (OCG). IODE is an important component in implementing the data management components in Goos and in the Framework for Ocean Observations.

Cooperation with ICAM

308 IODE has been actively involved together with ICAM in the development of the South Pacific

Integrated Coastal Area Management Project SPINCAM, where IODE took the lead in D&IM and CB activities.

Cooperation with WMO (see also 7.1)

309   Cooperation with WMO is canalized mainly through the interaction with JCOMM. (IODE people as chairs of ETs). The recent recommendation from JCOMM IV to establish a MCDS has direct implications for IODE, some of which will be discussed under Agenda Item 8. Other activities jointly with WMO are being covered under Agenda Item 5 such as ODS and the 2012 revised version of the Ocean Data Standards and Best Practices Review Process is now available. This document explains all steps to be taken between the submission of a candidate standard (or best practice) and its approval and publication by IODE and JCOMM.

Cooperation with POGO

310   Peter Pissierssens, together with the IOC Executive Secretary, participated in the POGO-13 meeting which was held at the University of Hawaii, East-West Center, Honolulu, between 9-11 January 2012. As a result of the IODE presentation at POGO-13 the following items were considered for future cooperation: (i) establish a formal agreement on cooperation; (ii) continued cooperation with the CofE (Centre of Excellence);(iii) co-operate with CofE to "globalize" its programme; ; (iv) cooperate with regional training centres (eg ITCOOcean); (v) provide training to POGO members through the OTA Global Classroom; (vi) POGO members to contribute content to the OTA Global Classroom through providing lecturers; (vii) POGO members to share training programes through OTA Global Classroom; (viii) POGO members invited to use ODP to share and disseminate data; (ix) POGO members invited to participate in IODE activities, standards and methods; and (x) POGO members invited to participate in Data publication/Data citation (SCOR-IODE-MBLWHOI). During the discussions it was revealed that data management is still not included in graduate university curricula and thus the need for "data management literacy" courses was appreciated by POGO Members. Especially Prof. Dr Karen Wiltshire (AWI, Helgoland) expressed strong interest in closer collaboration between POGO and IODE. Also Trevor Platt supported closed collaboration.

Cooperation with SCOR

311   The fifth SCOR/IODE/MBLWHOI Library Workshop on Data Publication was convened by the Scientific Committee on Oceanic Research (SCOR), the International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission (IOC) and the Marine Biological Laboratory/Woods Hole Oceanographic Institution Library (MBLWHOI Library) on 9-10 October 2012 to evaluate progress of the two pilot projects of the activity and to discuss related topics, such as implementation of data repositories in different data centres and cooperation with related national and international efforts, and hear about how data publication is being handled in other disciplines and interactions with publishers of scientific journals. Details were covered under Agenda Item 5.

Cooperation with ICSU

312   IODE throughout its history has forged strong cooperation with the ICSU WDC system, primarily with those WDCs dealing with marine data, to secure the long term archival of oceanographic data collected by member states. The World Data System (WDS) was initiated in 2008 and the WDC system was replaced by the WDS in 2010/2011. IODE has been incorporated to the new WDS as a Network Member.

313   The representative of ICSU, Dr Mustapha Mokrane, noted that the ICSU World Data System was probably known to the IODE community, or at least one of its predecessor bodies, the World Data Centres.

314   He explained that the revamped ICSU-WDS is still concerned with long-term data preservation and promoting full and open access to scientific data. The former WDCs for oceanography are now fully accredited as Regular Members of WDS. Therefore, continue to provide their long-term data preservation function.

315 In addition to these objectives, the WDS aims at building a multidisciplinary community of excellence for data management and this community is formed by WDS Members. There are four categories for WDS membership. Regular Members, which are typically individual data centres, Network Members, which are umbrella organizations representing several Regular Members. IODE is the archetype member in this category. We have also two other categories for co-opted Partners and Associates.

316 Regular and Network Members undergo a certification procedure against a catalogue of criteria compiled from existing standards and best practices. This certification procedure is the basis of ICSU-WDS trustworthiness. We are therefore, particularly pleased and would like to strongly support the IODE effort to establish a Quality Management Framework for NODCs aligned with WDS certification procedure. This will set an excellent example for other WDS networks.

317 ICSU-WDS is also aiming to establish some unique services as part of its framework, notably in the field of Data Publication, building a WDS Open Metadata Catalogue and a Scalable Knowledge Network. We will of course seek collaboration with and contributions from WDS Members, including IODE, with the aim to build on the valuable efforts already in place.

Cooperation with iMarine

318 iMarine's main goal is to launch an initiative aimed at establishing and operating an e-infrastructure supporting the principles of the Ecosystem Approach to fisheries management and conservation of marine living resources. IOC/IODE participates in iMarine through OBIS which is involved in the biodiversity cluster in iMarine. The project provides €244,404 to IOC over a period of 30 months (starting 1 November 2011). These funds are mainly for personnel and are fully earmarked.

Cooperation with EUMETSAT

319 Two training courses on Applications of Satellite Wind and Wave Products for Marine Forecasting were successfully hosted at the IOC project Office in Oostende in 2009 and 2011. At the later, 15 weather forecasters from 13 different countries in Europe gathered from 5 - 9 December 2011 to attend the course which was focused on marine forecasting. Given the specificity of the subjects discussed - altimetry and scatterometry - 9 lecturers were in charge of both theoretical sessions and practical exercises. The course was particularly challenging regarding IT, since many of the case studies implied connecting the classroom in Oostende with the NOAA offices in the USA, and accessing weather data in real time. Everyday a session was dedicated to discuss current weather conditions, where participants had the opportunity to discuss different weather models and the confidence on each model, combined with the different levels of experience of the participants. In the end, it was unanimous that using altimetry and scatterometry tools will certainly improve marine forecasting in the future. EUMETSAT has expressed interest in collaborating with ODP. During the 2012 IODE Officers meeting, it was discussed the possibility of hosting another training course and eventually addressing topics beyond marine meteorology and integrating also oceanography, which may thus expand the collaboration into the GOOS.

Cooperation with GEO/GEOSS

320 Interoperability test between EuroGEOSS broker system and IODE ODP has been completed successfully in the beginning of January 2012. The ODP provided CSW with a number of metadata records in ISO 19139 format. Results can be found at http://www.eurogeoss-broker.eu ("IODE" tree node).

321 OBIS informed the committee that it is a member of GEO BON Working Group 5 (marine ecosystems) and Working Group 8 (data interoperability), and Ward Appeltans attended the 2nd All Hands workshop in Asilomar, December 2012. OBIS is registered as a data core component of GEOSS:
http://geossregistries.info/geosspub/component_details_ns.jsp?compId=urn:geoss:csr:component:urn:uuid:c1d74225-f01a-10df-ea8f-8fa0fa6a4bd5

Cooperation with GEOWOW

322   The project GEOWOW (GEOSS interoperability for Weather, Ocean and Water) project was approved for funding by the European Commission under FP7 (Environment) in 2011. GEOWOW's main challenge is to improve Earth observation data discovery, accessibility and exploitability, and to evolve GEOSS in terms of interoperability, standardization and functionality. A particular focus will be on supporting inter-disciplinary interoperability and on the use of semantics for enhanced discovery of data in the selected SBAs' (Societal Benefit Area) domains. The Director of the GOOS project office (Albert Fischer) invited IODE to collaborate in 2011. The ODP coordinator (Nick Mikhailov) and the former OBIS coordinator (Edward Vanden Berghe) submitted information to the user requirements survey of GEOWOW. Some financial support could be made available (20K$) under this project.

Cooperation with ODIP

323   IODE participates as a subcontractor of NERC to the EU/FP7 Ocean Data Interoperability Platform (ODIP) project. The aim is to establish an EU / USA / Australia/ IOC-IODE coordination platform the objective of which will be achieving the interoperability of ocean and marine data management infrastructures, and to demonstrate this coordination through several joint EU-USA-Australia-IOC/IODE prototypes that would ensure persistent availability and effective sharing of data across scientific domains, organisations and national boundaries. IOC Project Office for IODE will organize the first ODIP Workshop, in the week of 25th February - 1st March 2013 in Ostend. The financial contribution of the project towards IODE will be €40,000.

Cooperation with SeaDataNet

324   The SeaDataNet project manager, Dr Michèle Fichaut recalled that IODE participates, as a subcontractor of IFREMER, in the EU/FP7 SeaDataNet Project which aims at operating and further improving a Pan-European data management infrastructure for providing up-to-date and high quality access to ocean and marine metadata, data and data products. An important area of cooperation is the interoperability between SeaDataNet and ODP. Also, the SeaDataNet standards will be submitted to the JCOMM/IODE Ocean Data Standards and Best Practices Project. The IOC Project Office for IODE organized the first project training course, on 2-6 July 2012 in Oostende, Belgium in which 51 partners participated. The second training course is scheduled for March 2015. The financial contribution of the project towards IODE will be €67,500. IODE cooperates with SeaDataNet also in the organization of the IMDIS conferences by recording the presentations and making these available through the IODE web site. Ms Sissy Iona stressed that NODCs are the backbone of the SeaDataNet data infrastructure.

Cooperation with IAMSLIC

325   IODE continues to cooperate under an MOU with IAMSLIC to provide hosting of their online repository of marine literature: Aquatic Commons. Two IODE GEMIM representatives are members of the Aquatic Commons Steering Committee. An IAMSLIC AC representative participated in the first OceanDocs Steering Committee workshop 23 January 2012, Oostende, Belgium. Under the MOU, IAMSLIC members are also encouraged to participate in OceanTeacher courses: IAMSLIC member Lisa Raymond was an Instructor for the OT Course Data Curation for MIM September 2012. Reciprocally, GEMIM Representatives Linda Pikula and Marc Goovaerts presented a workshop on OceanDocs for the IAMSLIC Conference October, 2011 Zanzibar. A panel "The Librarian's Role in Data" was coordinated by IODE GEMIM for the IAMSLIC Conference August, 2012 Anchorage, Alaska. Currently a proposal for the establishment of a joint IODE-IAMSLIC Group of Experts on Marine Information Management is under discussion. IODE supports training activities of members of ODINs.

326   The representative of IAMSLIC, Ms Maria Kalentsits welcomed the close collaboration between IAMSLIC and IODE and thanked IODE for sponsoring 25 memberships of IAMSLIC members in developing countries.

Cooperation with ASFA

327   This item on cooperation with Aquatic Sciences and Fisheries Abstracts (ASFA) was introduced by Ms Linda Pikula (Chair GEMIM) as part of Agenda Item 5.1.2. together with the report on the achievements during the past inter-sessional period.

Cooperation with FAO

328   An IODE-FAO Workshop on AgriOcean DSpace was held on 23 January 2012, Oostende, Belgium, and dealt with AgriOcean Dspace developments, AIMS – and OceanTeacher, IODE related projects (Published Ocean Data, Afrilib, OceanExpert) as well as those of FAO (Agris, Linked Open Data)

329   The OBIS Project Manager, Mr Ward Appeltans, informed the committee that OBIS collaborates with FAO in the iMarine project and in this respect it assists FAO and contributes data and information for the identification of Vulnerable Marine Ecosystems beyond areas under national jurisdiction and the impacts of fishing activities on such ecosystems, in order to facilitate the adoption and the implementation of conservation and management measures by RFMOs and flag States" as requested by the 27th session of the FAO Committee on Fisheries (COFI) and through the Resolution 61/105 of the United Nations General Assembly on sustainable fisheries adopted in 2006.

Others

330   Additional areas for cooperation are other IOC Programmes such as HAB and UN initiatives where IOC and IODE/OBIS contributes to, such as:"

- "World Ocean Assessment"

- "The Ocean's Compact, Healthy Oceans for Prosperity"

- "UN-Convention on Biological Diversity (Aichi Targets), and contribution to Ecologically and Biologically Significant marine Areas (EBSAs) within and beyond National Jurisdiction"

- "UN-Convention on Sustainable Ocean Initiative"

- IPBES, IPCC

Cooperation with IOI

331   The representative of IOI, Dr Cherdsak Virapat recalled that IODE supported IOI by providing hosting of the IOI website from 2004 to 2010. Since 2011, the IOI website has been completely stand-alone in terms of domain support and webhosting. Dr Virapat expressed IOI's gratitude for the support IODE has always given to IOI even in terms of guidance and advise in setting up its own separate system. Currently a proposal relevant to integrated ocean web-based GIS system entitled "IOI Internet Web-GIS System on the World Oceans & IOI Network activities on ocean governance and sustainable development is under discussion with IODE in particular on ocean base map information.

Opportunities for Cooperation with COOPEUS

332   The representative of COOPEUS, Dr Christophe Waldmann, informed he Committee that COOPEUS is a cooperative project involving partners from the European Union and the US and it aims at fostering links between research infrastructures in the environmental field on both sides of the Atlantic.

333   It receives support from NSF and the European Commission for its activities. The following five themes are included in COOPEUS

- Space weather research

- Carbon observation including both terrestrial and oceanic observing components

- Ocean observation in particular long term installations as planned inside EMSO and OOI

- Solid earth dynamics observations

- Biodiversity research

334   COOPEUS follows a bottom-up approach. It lives from the direct involvement of the groups that produce relevant data. Frameworks and concepts shall be derived from needs inside the research communities. Synergies will develop from crosslinking best practices and procedures. COOPEUS will fill a particular role in the group of currently running initiatives like ODIP, iCORDI, ENVRI on the European side and EarthCube on the US side. COOPEUS will link to other projects by providing information on data policies/agreements and by specifying the requirements in regard to data discovery, access and use. Furthermore, COOPEUS will explore architectures considered by the other mentioned projects that are scalable, extensible and adaptable to the involved RIs data systems. An involvement of IODE experts in COOPEUS workshops addressing long-term ocean observations would be most welcome.

Other opportunities

335   The Committee noted the creation of the Research Data Alliance (RDA) and was informed that the IODE programme manager will attend the 1st RDA plenary meeting, 18-20 March in Gothenburg, Sweden.

336   **The Committee noted with appreciation** the many cooperative links with other programmes and organizations and **recommended** to continue this approach in order to complement rather than compete with other initiatives.

7.1   THE JCOMM MARINE CLIMATE DATA SYSTEM (MCDS)

337   This agenda item was introduced by the Co-Chair, Ms Sissy Iona referring to **Document IOC/IODE-XXII/23 (The JCOMM Marine Climate Data System)**. She provided a brief introduction on the MCDS. She recalled that the Marine Climate Data System (MCDS) had been proposed at JCOMM-4 in order to respond to the need of Members/Member States for high quality marine meteorological and oceanographic historical data / metadata from the world oceans, to address the requirements of WMO and UNESCO/IOC programmes and co-sponsored programmes including climate monitoring, and the Global Framework for Climate Services (GFCS). Secondly the MCDS would modernize the Marine Climatological Summaries Scheme (MCSS) to take into account the development of new observing systems and corresponding surface marine-meteorological data systems in recent years, new techniques for data management and quality control, and the current needs of end users for better statistical and graphical marine climatological products. Thirdly the MCDS would allow modernization of management of surface drifter data, to rationalize the roles and functioning of the former IODE Responsible National Oceanography Centre for Drifting Buoys (RNODC/DB), the JCOMM Specialized Oceanography Centre for Drifting Buoys (SOC/DB) the Global Drifter Programme (GDP) Data Assembly Centre (DAC), and the JCOMM Ocean Data Acquisition System (ODAS) Metadata Service (ODASMS) management of metadata for the surface drifters.

338   Ms Iona further informed the Session that that during JCOMM-4 it was concluded that insufficient opportunity had been provided to IODE to consider the impact of the MCDS, and in particular the CMOCs, on IODE, and it was therefore requested in the adopted Recommendation 2 that "the Expert Team on Marine Climatology (ETMC), in close cooperation with IODE and other appropriate partners such as the ICSU World Data System, to develop, review and update the MCDS strategy, implementation plan, designation criteria and performance indicators of CMOCs in the next two years for achieving the Vision for a new MCDS, based upon the results of the Workshop for a new Marine Climate Data System (MCDS1, 28 Nov.-2 Dec. 2011, Hamburg, Germany) and Ocean Data Portal technologies development".

339   An extended meeting of the 4th Session of the JCOMM Expert Team on Marine Climatology and meeting of the cross-cutting Task Team on the MCDS was held at the IOC Project Office for IODE, Oostende, Belgium, 26-28 November 2012, with participation from key IODE experts, including the IODE Co-chairs. In preparation for that meeting, the IODE Secretariat had prepared a working document (JCOMM/DMPA/ETMC-4/ Doc. 4(2)) entitled "Clarifications regarding

Recommendation 2 (JCOMM-4). This document identified a number of unclarities in the adopted annexes to the Recommendation. During the meeting this document was reviewed and the meeting requested the IODE Secretariat to prepare a suggested revision of the Annexes which could be submitted to JCOMM-5, but which should also be used when the MCDS and CMOCs would be discussed at IODE-XXII.

340   She then explained that the Vision for a Marine Climate Data System (MCDS) was to formalize and coordinate the activities of existing systems, and address gaps to produce a dedicated WMO-IOC data system operational by 2020 in the view to have compiled coherent met-ocean climate datasets of known quality, extending beyond the Global Climate Observing System (GCOS) Essential Climate Variables (ECVs). These would be of known quality collected from multiple sources to be served on a free and unrestricted basis to the end users through a global network of less than ten **WMO-IOC Centres for Marine-Meteorological and Oceanographic Climate Data (CMOCs).** Data, metadata and information will be fully interoperable with the WMO Information System (WIS) and the IOC/IODE Ocean Data Portal (ODP), and would be compatible with, and contribute to the High Quality Global Data Management System for Climate (HQ-GDMSC) that is being developed by the WMO Commission for Climatology (CCl).

341   The MCDS will cover different and specific JCOMM data domains (e.g. marine meteorology, physical oceanography, historical period(s), geographical coverage, specific procedures applied to the data) and enhance international partnerships within a new JCOMM framework, taking full benefit of the existing network of IODE NODCs, in the best manner of harmonizing with the work of IODE NODCs. The primary objectives are to improve availability, recovery and archival of contemporary and historical data, metadata and products and obtain standardized quality of a high level in a more timely manner. This will ensure the long-term stability of the data management system, permit the sharing of responsibility and expertise, optimize resources and help prevent loss from technological failures. Groups of CMOCs will operate within a given data domain (e. g. global, regional, atmospheric, surface and sub-surface oceanic) and provide complimentary functions. To achieve maximum continuity, reliability and completeness of data, metadata and products, specialized CMOCs will be established that mirror the processes, data and metadata across the CMOC domain.

342   Governance for defining the functions and adoption of CMOC is proposed by JCOMM and endorsed by the WMO Executive Council and UNESCO/IOC Executive Council or Assembly.

343   During the aforementioned ETMC-4 meeting the role of IODE in the MCDS was discussed at length. The MCDS data flow diagram was revised as shown in Figure 4 (below). In this regard it was noted that a number of IODE projects such as GTSPP, WOD, GOSUD, etc could establish IODE GDACs (Global Data Assembly Centres) while NODCs, ODIN regional data centres (where established), GOOS GRA data centres (where established) and the proposed IODE SODCs (Specialized Ocean Data Centres) - see Agenda Item 8.3 – could operate at the same level as the marine meteorology DACs (Data Acquisition Centres).
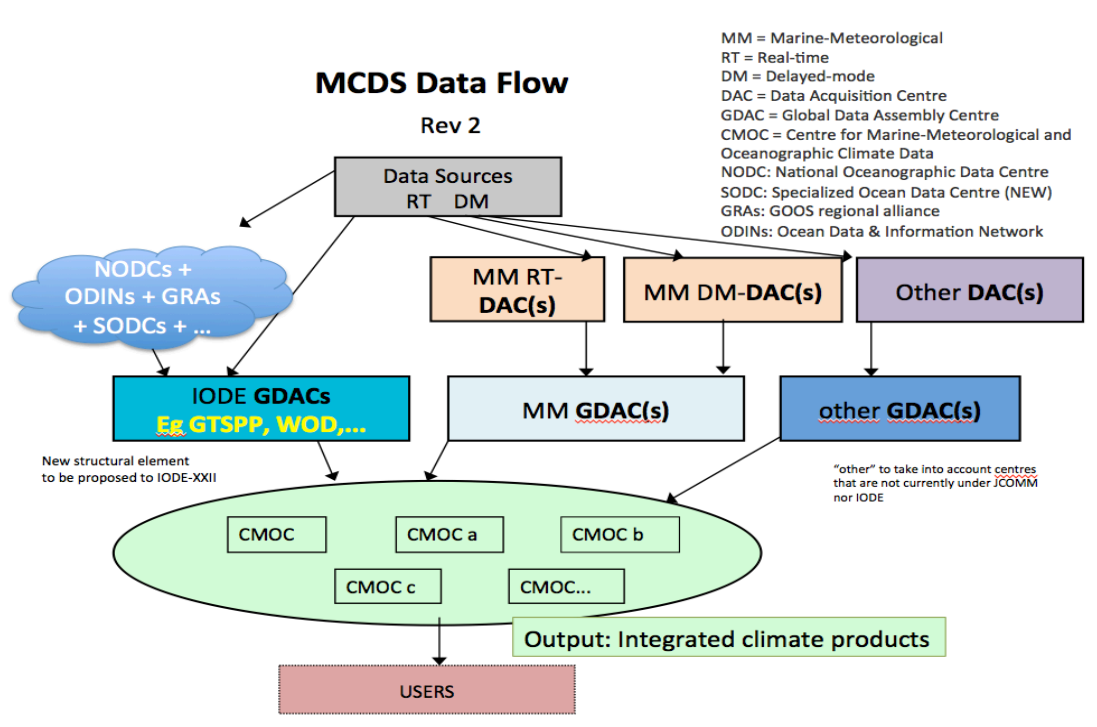
Figure 4: MCDS data flow diagram

344 Ms Iona invited the Committee to consider the data flow diagram, the cooperation of IODE in the MCDS and the possible establishment of IODE GDACs that will contribute to the MCDS. It was noted that this would also be of relevance to agenda item 8.

345 The Chinese delegation re-iterated China's strong support of IODE collaboration with JCOMM. China reaffirmed its willingness and commitment to establish a CMOC at NMDIS in order to provide assistance to WMO and IOC Member States in accessing high quality marine meteorology and oceanographic data and metadata from the world ocean. It was recalled that JCOMM-IV had approved the NMDIS to undertake CMOC functions on a trial basis and to report on the results through the JCOMM Management Committee. Subsequently China has (i) Formed a Steering Group with the Director-General of NMDIS as the Chairman to draft a work plan for the trial operation of CMOC China; (ii) Improved their network environment to solve access speed problems; (iii) Devised a construction scheme for the CMOC China website and Domain Name Application; (iv) Designed an integrated website for information release, data and product service, and users management. The data and information collected so far, including some oceanographic and meteorological data from China, has been loaded into the trial system. A brochure ("CMOC China on a trial basic Progress Report and Future Workplan") was circulated during the Committee meeting to all delegates. The delegate reminded the Committee that the JCOMM Management Committee can make decisions in between formal JCOMM Sessions.

346 Taking into account the importance of JCOMM, regular meetings of Meteorology Organizations and Oceanographic Institutes of the member states of IOC is recommended to establish a framework for providing common oceanographic data and information in each country.

347 **The Committee approved** the MCDS Strategy and **agreed** on CMOC Evaluation Criteria. The IODE Co-chairs had already provided comments on the MCDS Vision and Strategy. **The Committee decided** to establish an *ad hoc* team to review the Implementation Plan during the coming intersessional period.

348 **The Committee invited** Member States to propose members of the *ad hoc* team through a response to a Circular Letter to be issued shortly by the Secretariat. It was noted that the ad hoc team has a deadline to report to the JCOMM DMCG by 30 September 2013 and suggested changes would

be forwarded to JCOMM MAN for approval.

349   **The Committee adopted** Recommendation IODE-XXII.13 (IODE Global Data Assembly Centres (IODE GDACs**)**

350   **The Committee adopted** Recommendation IODE-XXII.14 (The Marine Climate Data System (MCDS)).

8.   THE FUTURE OF THE IODE PROGRAMME

8.1   INTRODUCTION TO THE SESSIONAL WORKING GROUP DISCUSSIONS

351   This Agenda Item was introduced by Mr Ariel Troisi, referring to **Document IOC/IODE-XXII/19 (***Introduction to the sessional working group discussions on the Future of the IODE Programme***)**. He drew the attention of the Committee to the current crisis situation in which IOC and all its programmes find themselves, including IODE. He also noted that the world has changed drastically since IODE was established in 1961. Old structures and methods may no longer server today's user needs and unless IODE adapts, it will perish. In order to address the changes that IODE needs to undergo to face the future, it was agreed to establish a sessional working group, which would meet on Wednesday 13 March 2013 for an entire day. Member States were invited to participate in the sessional working group. In order to assist the working group a number of documents were prepared. These included the aforementioned Document 19, but also **Document IOC/IODE-XXII/21 (***Changes in IODE structure and terms of reference***),** as well as **Document IOC/IODE-XXII/20 (***The IOC Strategic Plan for Oceanographic Data and Information Exchange (2013-2016))*, **Document IOC/IODE-XXII/22 (***IODE Quality Management Framework***), Document IOC/IODE-XXII/23 (***The JCOMM Marine Climate Data System***)** and **Document IOC/IODE-XXII/24 (***Proposals to create New Products for the benefit of the Ocean Research and Observation community***)**.

352   Mr Troisi then invited the introducers of agenda items 8.2, 8.3 and 8.4 to introduce their documents and invited the Committee to take these introductions into account during the discussions of the sessional working group.

353   Mr Keeley, referring to **Document IOC/IODE-XXII/26** noted that IODE Committee meetings are the only chance where all NODCs get together. It should be a time for problem identification and solution sharing. He also noted that the Committee meetings are an opportunity to share experiences on common problems. He also noted that Member States identify IODE priorities that align with national priorities and these are the ones to target for strong participation. We then need to report on these. Furthermore NODCs must meet with their research community and deliver services to them. IODE needs to be represented in international projects. He also called for performance metrics: how well have the NODCs performed towards meeting IODE goals. A set of metrics needs to be developed. He also stressed the need to identify benefits: every IODE attendee should be able to explain to his/her manager a tangible benefit of participating in the IODE Committee meeting. He suggested a description of these benefits. Finally Mr Keeley suggested that time should be set aside for breakout groups to discuss common problems/solutions/experiences. We should reduce the time for reporting and deal only with decisions required.

354   The Committee then engaged in some discussions to focus on priority areas that IODE should focus on in the future:

–   Metrics: there was agreement that IODE projects should include performance indicators to monitor progress and to adjust operations as necessary. It was not possible to define metrics at this time.

–   Resources: The "Future of IODE" survey had indicated that budgets of most NODCs had remained largely at the same as two years ago. However, it was noted that the data stream to NODCs had continued to increase as well as increased diversity of types of data, which meant that budgets were being spread over more work.

– Prioritization: several delegates commented that IODE should focus on activities in which it has specific strengths. These were generally defined as coordination, standards and best practices, data archival and capacity building. It was noted further that NODCs should identify IODE projects that were in close alignment with their national priorities and this could help to ensure the necessary in-kind support for IODE activities.

– Outreach: several delegates stressed the lack of visibility of IODE and called for a more active outreach programme. This outreach should be aimed at all IODE stakeholders. The possibility of hiring a communication consult was mentioned. In this regard also the weakness of the current IOC formal communication channels was mentioned. It was also suggested that the IODE Project Office construct a few web pages that highlighted some of the IODE projects delivering core product/outcome and that each NODC provide a link to these pages.

– Capacity building: the OceanTeacher programme was considered as one of the successful and key projects of IODE. It was noted however that this should be complemented with some hardware as a way to quick start new NODCs. It was noted also that more attention should be given on instructions how to participate in ongoing projects. The planned OceanTeacher Global Classroom was welcomed as a new mechanism to address not only local needs but also to link up with other (regional) projects which could create opportunities for joint funding of training activities. The OceanTeacher Coordinator recalled that for some of the courses very few application were received despite these courses being identified as priorities through the surveys. NODCs were requested to promote courses beyond their own walls and to share the opportunities with other national institutions. It was stressed again that OceanTeacher needed more content contributors and lecturers.

– Products: it was noted that some of the IODE key products such as WOD had been neglected in terms of promotion in recent years. WOD is being used throughout the research community and should be highlighted as a core product/outcome of IODE. OBIS, although new to IODE, should also be actively "marketed" .

– Marine Information Management: it was noted with regret that the number of marine information managers (librarians) participating in IODE Committee Sessions had diminished to almost none. This was the result of national budget cuts but obviously had an impact on the discussions on MIM related activities during the Session.

– Benefits of IODE Membership: it was suggested that a compilation of tangible benefits of participation in IODE as noted by NODCs should be assembled.

355   The delegate of Chile expressed his country's full support for the continuity of IODE and its commitment to remain being part of it. He stressed the importance of IODE for Latin American countries and looked forward to its further development and growth. He highlighted that although new structural elements and functionalities such as ADUs, GDACs and CMOCs have been discussed, the strengthening of NODCs should remain as a priority.

356   **The Committee expressed its appreciation** about the format that had been used during this Session and **decided** that future sessions should also include opportunity for open discussions on issues of common importance.

8.2   THE IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE 2013-2016

357   This Agenda Item was introduced by Mr Greg Reed (IODE Past Co-Chair), referring to **Document IOC/IODE-XXII/20 (*IOC Strategic Plan for Oceanographic Data and Information Exchange (2013-2016*))**. He recalled that the "IOC Strategic Plan for Oceanographic Data and Information Exchange (2008-2011)" was adopted by the IOC Assembly at its 24th Session (2007) through Resolution XXIV-9 and was subsequently published as IOC Manuals and Guides No. 51.

358   Mr Reed recalled that IODE-XXI established an inter-sessional working group with the task of updating the Strategic Plan and he informed the Committee that the IWG met on 1-2 March 2012.

359 The vision for the IOC Data and Information Management Strategy is for "A comprehensive and integrated ocean data and information system, serving the broad and diverse needs of IOC Member States, for both routine and scientific use."

360 The IOC Data and Information Management system resulting from this strategy will deliver:
- Assembled, quality controlled and archived data on a diverse range of variables according to scientifically sound and well-documented standards and formats;
- 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
- 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.

361 The major elements of the Strategy are:
- Adhere to the IOC Oceanographic Data Exchange Policy;
- Ensure the long-term archival, management and services of marine data and information;
- Recommended standards and best practice for management and exchange of oceanographic data;
- Acceptance and implementation of a set of interoperability arrangements, including technical specifications for collecting, processing, storing, and disseminating shared data, metadata and products;
- Discovery, access and retrieval of data from IOC programmes, as well as from programmes and organizations collaborating with IOC, through the Ocean Data Portal (ODP) and OBIS;
- Continued development of Ocean Data and Information Networks (ODINs) backed up by OceanTeacher as a capacity building tool, whilst extending OceanTeacher through cooperation with JCOMM and others as appropriate;
- Development of appropriate metrics to help evaluate the data and information system;
- Provide the crucial link between data, information and the dissemination of knowledge through the management of marine information by marine librarians;
- Facilitate proper citation of datasets by providing all the required elements of a citation including an unambiguous, unchanging reference; and
- Governance by an Advisory Group represented by experts nominated by the governing bodies of IOC programmes.

362 **The Committee noted** the importance of defining the term "data" and decided that the definition used in the IOC Oceanographic Data Exchange Policy (2003) should be used: "Data' consists of oceanographic observation data, derived data and gridded fields".

363 **The Committee endorsed** the IOC Strategic Plan for Oceanographic Data and Information Management (2013-2016) through the proposed Draft Decision of IOC-XXVII.

364 **The Committee requested** the IODE Co-chairs to formally submit the Strategic Plan and Draft Decision, on behalf of the IODE Committee, to the 27th Session of the IOC Assembly (June 2013).

8.3   CHANGES IN THE IODE OBJECTIVES AND STRUCTURE

365 This Agenda Item was introduced by Ms Sissy Iona, Co-Chair. She recalled the discussions on organizational reform during IODE-XXI including follow-up to the IODE review (2007), IODE arrangements for the long-tem secure archival of data and information, the future of RNODCs and SOCs, IODE data and information centres quality management and certification, and implementation of the IOC strategic plan for oceanographic data and information exchange. She then referred to **Document IOC/IODE-XXII/21 (*Changes in IODE Structure and Terms of Reference*).** She noted that the Document identified 3 important weaknesses of IODE today: (i) IODE is too closely knit and somewhat exclusive (limited to NODCs); (ii) there is little involvement of the ocean research and

observation community; and (iii) users of IODE services/products are not well defined.

366   Ms Iona called the attention of the Committee to two proposals formulated in the document and invited the Committee to discuss these during the meeting of the sessional working group on strategy established under Agenda Item 8.1. She further recalled that the IOC Assembly, during its 26th Session (2011) decided to "Revise the Terms of Reference of the IOC Committee on IODE, adding a reference to compliance with the IOC Oceanographic Data Exchange Policy (Recommendation IODE-XXI.4)".

367   Extensive discussions were held regarding the rationale of abolishing the IODE Designated National Agencies (DNAs). It was recalled that this structural element had been established at the time of the creation of IODE in 1961 as a first step towards the status of NODC. It was noted however that the IODE network today still counted XX DNAs: Bahamas (1979), Barbados (1982), Belize (1995), Croatia (1996), Cuba (1961), Finland (1961), Georgia (2000), Jamaica (1969), Nicaragua (1977), Romania (1970), Saint Lucia (1992), Senegal (2002), Sweden (1971), Trinidad & Tobago (1987), Ukraine).

368   **The Committee adopted** Recommendation IODE-XXII.15 (The IODE Objectives).

369   **The Committee adopted** Recommendation IODE-XXII.16 (IODE Associate Data Unit (ADU)).

370   **The Committee adopted** Recommendation IODE-XXII.17 (Structural elements of IODE).

8.4   IODE QUALITY MANAGEMENT FRAMEWORK

371   This agenda item was introduced by Mr Greg Reed (IODE Past Co-Chair) referring to **Document IOC/IODE-XXII/22 (*IODE Quality Management Framework for National Oceanographic Data Centres*)**.

372   He noted that the IODE Committee has long held the view of a need for a quality management framework to ensure that NODCs are established and operate according to defined principles, including adherence to agreed standards and the requirements of the IOC Oceanographic Data Exchange Policy and to ensure NODCs can provide data of known quality to meet the requirements of a broad community of users.

373   He also noted that IODE has been accepted as a network member of the ICSU World Data System (WDS) and, as a contributing member of WDS, NODCs will be required to demonstrate their capability to meet ICSU certification criteria.

374   Mr Reed recalled that IODE-XXI established an inter-sessional working group to "identify a set of quality management criteria for IODE NODCs taking into account those defined for the WDS".

375   The IWG met electronically through Basecamp to develop the IODE Quality Management Framework for National Oceanographic Data Centres document. This document has been disseminated to the IODE national coordinators for data management and to the IOC Officers for comment.

376   The IODE Quality Management Framework (IODE-QMF) provides the overall strategy, advice and guidance for NODCs to design and implement quality management systems (QMS) for the successful delivery of oceanographic and related data, products and services.

377   To ensure an NODC is able to provide quality data to meet the requirements of a broad and varied community of users, including ODP and WDS, an accreditation process was proposed based on compliance to a set of requirements that can be translated into quantitative indicators which will be part of a regular review of an NODC.

378   In order to obtain and maintain accreditation, an NODC will need to fulfil a minimum set of requirements to ensure compliance with IODE standards and to establish a mechanism to regularly monitor and assess the quality of data and service. These accreditation criteria are given in the IODE Quality Management Framework for National Oceanographic Data Centres document.

379 IODE capacity development, centred on OceanTeacher, will focus on providing the necessary training so that all NODCs can achieve full accreditation. Quality management will be included in the OceanTeacher training programme.

380 **The Committee requested** the Secretariat seeking nominations for membership of the SG-QMF. Nominations will be welcome from both long-established NODCs and newly-established NODCs.

381 The initial tasks for the SG-QMF will be to review the IODE Quality Management Framework (IODE-QMF) documentation, including confirming the IODE accreditation requirements for NODCs, the procedures to apply for accreditation and preparing quality management templates.

382 The SG-QMF will seek endorsement from the IODE Committee (by email) on the requirements and procedures for accreditation of NODCs, considering the ICSU Catalogue of Criteria for WDS Certification.

383 The delegate of Brazil expressed the view that a more extended deadline transition phase would result in a more effective means of turning this accreditation process into a really useful tool for the countries, specially the poorer countries, to achieve high quality NODC standards.

384 **The Committee expressed the need** to include external reviewers in the accreditation process. The representative from ICSU confirmed their readiness to provide advice and recommendations to the SG-QMF on accreditation procedures.

385 **The Committee adopted** Recommendation IODE-XXII.18 (Establishment of the IODE Quality Management Framework Project)

9. NEW INITIATIVES

386 This agenda item was introduced by Mr Ariel Troisi, Co-Chair. He referred to agenda item 8 where the need for IODE to address a wider range of stakeholders was highlighted, with special attention to the ocean research and observation communities. The Co-Chair noted that, in order to attract these communities to IODE, it would be necessary to demonstrate the added value of working with IODE. In this regard reference was made to the core duties of the NODCs: simply put this included receiving data, adding metadata as necessary, quality control, storage and making available of data.

387 Within the NODCs well-oiled processes have been designed to perform these duties and in a number of cases NODCs have been able to assist project developers with the drawing up of data management plans. Added value to the ocean research and observation community could thus consist of providing expertise related to data and information management and related management plans. For the different elements of these processes (e.g. metadata schemes, QC,...) IODE has or should have developed manuals and guides. However IODE is not the only player in this field. Many national, regional or international projects or organizations have developed a wide variety of technical procedures and published associated manuals. A service provided by IODE could be to provide a "clearing house" service for documentation related to data and information management processes.

388 Proposal 1: Clearing House Service for Data/Information Management practices: This would enable research groups that wish to embark on a new project and need to prepare a data management plan, to look for methodology already used by other projects or data centres ("best practices") rather than re-inventing these themselves (with the risk of interoperability problems at a later stage). The service would essentially be a repository of documents and links to related web sites. This could be developed within the OceanTeacher library (http://library.oceanteacher.org). Possibly this could be developed within the context of the OceanTeacher project and be part of the proposal for an OceanTeacher Academy (phase 2) to be submitted to funding agencies in 2013.[cost to be covered from extra-budgetary sources and conditional on approval of OceanTeacher Academy Phase 2].

389   Proposal 2: Expansion of OceanExpert to include ocean research and observation community: an important task required to reach a wider community will be to regularly communicate with members of that community and inform them on new tools, methods etc. related to oceanographic data and information management (if they opted in to receive this information). It will therefore be necessary to register members of the community (ocean research and observation) into OceanExpert so we can email them. Another option would be to simply create a mass mailing list. Member States will need to assist in obtaining email addresses of relevant projects and institutions. [no direct cost – in-kind support to be provided by Member States]

390   Proposal 3: Promotion of Data Publication: SCOR, MBLWHOI Library, BODC and IODE have collaborated since 2008 on developing practices related to data publication through 2 uses cases: (i) data related to traditional journal articles are assigned persistent identifiers referred to in the articles and stored in institutional document repositories; and (ii) data held by data centres are packaged and served in formats that can be cited: The Published Data Library (PDL) and Published Ocean Data repository (POD). The use cases phase was completed in October 2012 and a "Cookbook" is being published in 2013 guiding various user groups to publish their data. Data publication can provide career incentives to researchers through the citation by others of their data and this may urge researchers to make their data more available than today. IODE can play a role in the promotion of data publication and in providing the necessary training and technology to research groups and institutions. [e-publication of cookbook by the IODE Project Office at no financial cost; training cost could be included in the OceanTeacher programme 2013-2015; additional costs may be occurred if site visits are required].

391   **The Committee adopted** Recommendation IODE-XXII.19 (IODE Clearing House Service for Data/Information Management practices Project).

392   **The Committee instructed** the GE-MIM to undertake the necessary actions to expand OceanExpert to include ocean research and observation community.

393   **The Committee noted** that this issue had been covered under Agenda Item 5.2.4 and **re-iterated** that the project should now focus on promotion of data publication (*inter alia* through the Cookbook) in the wider ocean research and observation community.

10.   REQUIRED RESOURCES AND PLAN OF ACTION FOR 2013 (CURRENT UNESCO BIENNIUM 2012-2013) AND 2014-2015 (NEXT UNESCO BIENNIUM)

394   This Agenda Item was introduced by Mr Greg Reed, Chair of the sessional working group for work plan and budget. He reported on the discussions of the Sessional Working Group on work plan and budget which drafted a proposed budget based upon the estimated revenue from the UNESCO Regular Programme as well as other sources of funding.

395   **The Committee adopted** the work plan and budget for the next inter-sessional period through Recommendation IODE-XXII.20 (IODE Work Plan and Budget for 2013-2015)

11.   ANY OTHER BUSINESS

396   There was no other business.

12.   ELECTIONS OF CO-CHAIRS

397   The IODE Technical Secretary introduced this item by referring to the IOC Rules of Procedure (**Document IOC/INF-1166**), and more particularly to Rule 25, para 3. The Technical Secretary informed the Committee that, in accordance with the above Rules, and taking into account

that both Co-Chairs had completed one term (one inter-sessional period) no new Co-Chairs needed to be elected.

398   **The Committee unanimously re-elected** Ms Sissy Iona and Mr Ariel Troisi as IODE Co-Chairs.

13.   DATE AND PLACE OF IODE-XXIII

399   Ms Sissy Iona, IODE Co-Chair invited the Committee to discuss the date and venue of the twenty-third Session, taking into account the current budgetary limitations and costs, associated with organizing a Session. In this regard the Committee was invited to consider, taking into account the cost, whether it was appropriate to plan for a next Session in two years, especially bearing in mind the expected further budget cuts at UNESCO. The Committee was also be invited to consider the possibility that UNESCO and its IOC may henceforth work with an intersessional period of 4 years for programme (C/5) and a budget cycle of two years.

400   The delegate of Kenya informed the Committee that his country will investigate the possible hosting of the 23rd Session. **The Committee further recommended** that the next Session should be held in 2015.

14.   ADOPTION OF THE SUMMARY REPORT

401   This Agenda Item was introduced by both Co-Chairs. **The Committee adopted** the draft Summary Report of the Session, and the Recommendations.

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

403   **The Committee requested** the IODE Co-Chairs to present the Executive Summary with all Resolutions and Recommendations therein to the Twenty-Seventh Session of the IOC Assembly that would take place between 26 June and 5 July 2013 at the UNESCO headquarters in Paris, France.

15.   CLOSURE

404   Mr Troisi thanked the delegates for their active participation in the Session. He expressed the Committee's great thanks and appreciation for the excellent hosting by Mexico and specifically to Carlos Torres and his team for the excellent arrangements and for the warm hospitality extended to the participants.

405   Mr Pissierssens on behalf of IOC Executive Secretary expressed the gratitude of IOC to Mexico for hosting this 22nd Session. He noted that Mexico had set the bar very high for future hosts, both in terms of local arrangements and in terms of the excellent social event. He also asked the local host to express our gratitude to the UABC student dancing team who had provided us with a cultural tour of Mexico. He further noted that this Session had provided the IODE community with a new "toolbox" including a new strategic plan, a quality management framework and new structural elements such as the "ADUs" and "GDAC". Regarding the ADUs he noted that several international projects had already expressed linking with IODE through this new mechanism.

406   Ms Iona re-iterated the gratitude to the local hosts and also thanked the Secretariat members as for the hard work during the Session. She also expressed her appreciation to Mr Bob Keeley who had carefully but skilfully guided us through the Future of IODE agenda item.

407   The Co-Chairs closed the Session on Friday 15 March 2013 at 14h20.

ANNEX I

AGENDA

1. OPENING

2. ADMINISTRATIVE ARRANGEMENTS
   2.1 ADOPTION OF THE AGENDA
   2.2 DESIGNATION OF A RAPPORTEUR
   2.3 SESSION TIME TABLE AND DOCUMENTATION
   2.4 ESTABLISHMENT OF SESSIONAL WORKING GROUPS
   2.5 LOCAL ARRANGEMENTS

3. INTRODUCTORY REPORTS
   3.1 CO-CHAIR'S REPORT
   3.2 IMPLEMENTATION STATUS OF THE IODE-XXI WORK PLAN
   3.3 FINANCIAL AND IN-KIND CONTRIBUTION REPORT
   3.4 INTRODUCTION TO WORK PLAN AND BUDGET

4. NODC AND PROJECT OFFICE REPORTS
   4.1 REPORTS OF NODCS, DNAS AND MARINE INFORMATION CENTRES
   4.2 REPORT OF THE IOC PROJECT OFFICE FOR IODE

5. PROGRAMME ACTIVITY REPORTS
   5.1 GROUPS OF EXPERTS
       5.1.1 IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)
       5.1.2 IODE Group of Experts on Marine Information Management (GE-MIM)
       5.1.3 JCOMM/IODE Expert Team on Data Management Practices (ETDMP)
       5.1.4 IODE Group of Experts for OBIS (GE-OBIS)
   5.2 PROJECTS
       5.2.1 Ocean Biogeographic Information System (OBIS)
       5.2.2 JCOMM/IODE Ocean Data Standards
       5.2.3 IODE OceanDataPortal
       5.2.4 Data Citation/Data Publishing (SCOR/IODE)
       5.2.5 Global Oceanographic Data Archaeology and Rescue (GODAR)/ World Ocean Database (WOD)
       5.2.6 Global Temperature and Salinity Profile Programme (GTSPP)
       5.2.7 Global Ocean Surface Underway Data Pilot Project (GOSUD)
       5.2.8 OceanDocs, Aquatic Commons and OpenScienceDirectory
       5.2.9 OceanExpert
       5.2.10 IODE International Coastal Atlas Network (IODE/ICAN)

6. IODE CAPACITY DEVELOPMENT
   6.1 OCEANTEACHER AND TRAINING ACTIVITIES
   6.2 IODE'S REGIONAL CAPACITY DEVELOPMENT PROJECTS: ODIN
       6.2.1 Ocean Data and Information Network for Africa (ODINAFRICA)
       6.2.2 Ocean Data and Information Network for the Caribbean and South America regions (ODINCARSA)
       6.2.3 Ocean Data and Information Network for European Countries in Economic Transition (ODINECET)
       6.2.4 Ocean Data and Information Network for the Western Pacific region (ODIN-WESTPAC)

ANNEX II

RECOMMENDATIONS AND DRAFT DECISION OF IOC-XXVII

Recommendation IODE-XXII.1:   ESTABLISHMENT OF THE JOINT IODE/IAMSLIC GROUP OF EXPERTS ON MARINE INFORMATION MANAGEMENT (IODE/IAMSLIC GE-MIM)

Recommendation IODE-XXII.2:   THE IODE OCEAN KNOWLEDGE PLATFORM PILOT PROJECT (OceanKnowledge)

Recommendation IODE-XXII.3:   REVISION OF THE TERMS OF REFERENCE OF THE IODE NATIONAL COORDINATORS FOR MARINE INFORMATION MANAGEMENT

Recommendation IODE-XXII.4:   THE IODE OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM (IODE/OBIS)

Recommendation IODE-XXII.5:   THE OCEAN DATA STANDARDS PILOT PROJECT (ODS)

Recommendation IODE-XXII.6:   THE OCEAN DATA STANDARDS AND BEST PRACTICES PROJECT (ODSBP)

Recommendation IODE-XXII.7:   REVISED TERMS OF REFERENCE OF THE IODE STEERING GROUP FOR THE IODE OCEAN DATA PORTAL (SG-ODP)

Recommendation IODE-XXII.8:   TERMS OF REFERENCE OF THE STRUCTURAL ELEMENTS OF THE IODE OCEAN DATA PORTAL

Recommendation IODE-XXII.9:   TERMS OF REFERENCE OF THE PARTNERSHIP CENTRE FOR THE IODE OCEAN DATA PORTAL

Recommendation IODE-XXII.10:   GLOBAL OCEANOGRAPHIC DATA ARCHAEOLOGY AND RESCUE (GODAR) AND WORLD OCEAN DATABASE (WOD) PROJECTS

Recommendation IODE-XXII.11:   REVISED TERMS OF REFERENCE AND COMPOSITION OF THE STEERING GROUP FOR THE GLOBAL TEMPERATURE AND SALINITY PROFILE PROGRAMME (GTSPP)

Recommendation IODE-XXII.12:   THE IODE INTERNATIONAL COASTAL ATLAS NETWORK PROJECT (IODE/ICAN)

Recommendation IODE-XXII.13:   IODE GLOBAL DATA ASSEMBLY CENTRES (IODE GDACs)

Recommendation IODE-XXII.14:   THE MARINE CLIMATE DATA SYSTEM (MCDS)

Recommendation IODE-XXII.15:   THE IODE OBJECTIVES

Recommendation IODE-XXII.16:   IODE ASSOCIATE DATA UNIT (ADU)

Recommendation IODE-XXII.17:   STRUCTURAL ELEMENTS OF IODE

Recommendation IODE-XXII.18:   ESTABLISHMENT OF THE IODE QUALITY
                                    MANAGEMENT FRAMEWORK PROJECT

Recommendation IODE-XXII.19:   IODE CLEARING HOUSE SERVICE FOR
                                    DATA/INFORMATION MANAGEMENT PRACTICES
                                    PROJECT

Recommendation IODE-XXII.20:   IODE WORK PLAN AND BUDGET FOR 2013-2015

Draft Decision of IOC-XXVII: DRAFT DECISION ON THE IOC STRATEGIC PLAN FOR
                                    OCEANOGRAPHIC DATA AND INFORMATION
                                    EXCHANGE (2013-2016)

<u>**Recommendation IODE-XXII.1**</u>

ESTABLISHMENT OF THE JOINT IODE/IAMSLIC GROUP OF EXPERTS ON MARINE INFORMATION MANAGEMENT (IODE/IAMSLIC GE-MIM)

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing that the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) is non-profit volunteer association of individuals and organizations having an interest in library and information science, especially as these are applied to the recording, retrieval and dissemination of knowledge and information in all aspects of aquatic and marine sciences and their allied disciplines;

Recognizing further that there exist substantial synergies between the objectives and activities of IAMSLIC, the objectives of the IODE's Group of Experts for Marine Information Management and the IODE's marine information management programme activities;

Recalling the establishment of the IODE Group of Experts on Marine Information Management by IODE-IX (New York, 9-18 January 1984) through Recommendation IODE-IX.4 (IODE's role in marine information management);

Convinced that joint work between the IODE programme and IAMSLIC in the field of marine information management will be mutually beneficial to both Organizations and to the marine research community as a whole;

Recommends establishing the Joint IODE/IAMSLIC Group of Experts on Marine Information Management with the following Terms of Reference:

  (i)   Advocate marine information managers as essential partners in the knowledge cycle, that includes observation, management, sharing and product/service provision, contributing to the marine related decision making process;
 (ii)   Advise the IODE Committee on the policy, development and further implementation of an effective international system for scientific and technical information about the marine environment by keeping user requirements under continuing review and ensuring that these requirements can be met adequately;
(iii)   Identify the policy, technical and financial issues involved in the development and implementation of marine information systems, and make recommendations concerning their solution;
(iv)   Develop activities and information products to improve the capability of the marine information management community, particularly within developing countries, to benefit from and participate in marine information systems and keep the marine information management community informed on how they might best have access to such systems through the application of new technology;
 (v)   Provide expertise to, and participate in other organizations, programmes, projects and activities where a marine information management component has been identified;
(vi)   Foster collaboration between the marine information management community and other knowledge managers such as data managers, informaticists and archivists to create new knowledge systems.

Encourages IOC Member States and IAMSLIC to nominate experts having expertise in marine information management to the Group of Experts.

Further requests that a progress report be submitted regularly to the IODE Officers, the IODE Committee and the IAMSLIC Executive Board.

<u>Recommendation IODE-XXII.2</u>

THE IODE OCEAN KNOWLEDGE PLATFORM PILOT PROJECT (OceanKnowledge)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the importance and success of IODE Data and Information Products such as OceanExpert, OceanDocs, OceanDataPortal, OpenScienceDirectory, OBIS, as well as its partner IAMSLIC Aquatic Commons,

Noting the ongoing efforts in initiating and maintaining the products and the need to expand their utilization,

Noting further the rapid development of social platforms that integrate multiple knowledge sources, such as the Virtual Open Access Agriculture and Aquaculture Repository (VOA3R), and the availability of related open source applications,

Recommends the establishment of the IODE OceanKnowledge Platform Pilot Project to bring together in an interactive, interoperable and dynamic environment all IODE Data and Information Products, with Terms of Reference attached as Annex A,

Recommends further the establishment of the IODE Steering Group for the IODE OceanKnowledge Platform Pilot Project with Terms of Reference attached as Annex B**.**

Annex A to Recommendation IODE-XXII.2
Terms of Reference of the IODE OceanKnowledge Platform Pilot Project

<u>Objectives of the Project</u>
The OceanKnowledge Platform will offer the user a single access point to various <u>linked</u> IODE information and data products such as researcher profiles, publications, data, learning objects, etc. and will furthermore facilitate <u>social networking</u> between specialized research communities.
The strategic goal of the IODE Ocean Knowledge Platform Pilot Project:
  (i)   Combining multiple inter-linked IODE (and partner) Data and Information knowledge sources and making them discoverable and accessible through a single access point with social networking functionality;
 (ii)   Linking IODE (and partner) Data and Information Products through semantic web technologies;
(iii)   Promoting IODE (and partner) Data and Information Products within the ocean research and observation community;

<u>Duration</u>
The duration of the Project will be two years.

Annex B to Recommendation IODE-XXII.2
Terms of Reference of the Steering Group for the IODE OceanKnowledge Platform Pilot Project

<u>Objectives</u>
The SG-OceanKnowledge shall:
  (i)   Develop the work plan and timetable for the Pilot Project;
 (ii)   Identify, install and test the required technologies;
(iii)   Promote the system to its target user communities and obtain feedback;
 (iv)   Evaluate results of the Pilot Project;
  (v)   Based upon the experience obtained and the evaluation, develop a detailed proposal for a sustained IODE/OceanKnowledge project, including identification of required resources;
 (vi)   Submit the proposal for an IODE/OceanKnowledge project to the 23rd Session of the IODE Committee

Recommendation IODE-XXII.3

REVISION OF THE TERMS OF REFERENCE OF THE IODE NATIONAL COORDINATORS FOR MARINE INFORMATION MANAGEMENT

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling that the 7th Session (2002) of the IODE Group of Experts on Marine Information Management recommended (Recommendation MIM-VII.1) the nomination of IODE National Coordinators for Marine Information Management, in addition to IODE National Coordinators for Ocean Data Management,

Recalling further that the 9th Session (2007) of the of the IODE Group of Experts recommended a revision of the Terms of Reference of the IODE National Coordinators for Marine Information Management,

Noting the increased convergence between marine information management and data management in areas such as data publication and data citation, as well as knowledge integration,

Recommends the revision of the Terms of Reference of the IODE National Coordinators for Marine Information Management as follows:

   (i)   Act as a point of contact for marine librarians and marine information managers in their country, in order to liaise with the IODE community (via the GE-MIM) on matters of importance to MIM;
   (ii)   Act as a communicator of IOC activities and initiatives to the national MIM community and beyond;
   (iii)   Provide assistance and support to the GE-MIM on IODE programme activities at the national or international level;
   (iv)   Establish a national working group that will create a national network of marine related libraries/marine information centres for their country or participate in existing related networks;
   (v)   Highlight and identify issues and participate in discussions of national importance relating to MIM with the GE-MIM and the national MIM community (such as capacity building and professional standards, technological innovations and policy, communications and collaboration, national and international MIM resources);
   (vi)   Liaise with the IODE national coordinators for data management, the NODCs and ADUs, taking into account the role and expertise of marine information managers in data management;
   (vii)   Provide reports to the IODE Committee (or IODE Officers), highlighting needs and issues that should be addressed by GE-MIM, for consideration by the IODE Committee or IODE Officers. The Committee or IODE Officers can then instruct the GE-MIM to deal with these needs and issues;
   (viii) Participate in Sessions of the IODE Committee.

Invites IOC Member States to nominate experts with relevant expertise in marine information management,

Urges IOC Member States to promote active collaboration and coordination between data and information managers as well as their equitable participation in IODE Committee meetings and projects.

Recommendation IODE-XXII.4

THE IODE OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM (IODE/OBIS)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the importance of open-access, global databases on the diversity, distribution and abundance of marine species, to assist decision makers to sustainably manage our Ocean's living resources.

Noting that the 10th Conference of the Parties to the Convention on Biological Diversity (Decision COP10/29 para 10 and 35; Nagoya October 2010) requested Member States to further enhance globally networked scientific efforts, such as the Ocean Biogeographic Information System (OBIS), to continue to update a comprehensive and accessible global database of all forms of life in the sea, and further assess and map the distribution and abundance of species in the sea, and called upon IOC/OBIS to facilitate availability and inter-operability of the best available marine and coastal biodiversity data sets and information across global, regional and national scales.

Noting with Appreciation that OBIS is extensively used by the research community and is playing a crucial role in providing scientific guidance, data and information for the identification of Ecologically or Biologically Significant marine Areas, through a series of regional workshops in 2011, 2012 and 2013, as part of the Strategic Plan for Biodiversity 2011-2020, and in particular Aichi Biodiversity Target 11 to conserve and sustainably manage at least 10 per cent of coastal and marine areas by 2020, as agreed upon by the Conference of the Parties to the Convention on Biological Diversity in Nagoya in 2010.

Noting with Appreciation the successful integration of the OBIS project in IODE and the creation of two extra-budgetary Programme Specialist positions (Project Manager and Data Manager) for OBIS.

Recalling the request to the IOC Executive Secretary to prepare documentation to the Director-General and the UNESCO Executive Board requesting a regular programme post for the OBIS Programme at the earliest opportunity.

Urges Member States to provide financial and in-kind support for OBIS to enable the IOC to fulfill the commitment it made to the continuation and further development of OBIS, as well as to fulfill its role to ensure the maintenance and further growth of marine biodiversity data to serve policy and management needs as IOC and in particular OBIS is called upon by the Conference of the Parties to the Convention on Biological Diversity.

Approves the proposal that OBIS nodes can participate as NODCs and ADUs in the IODE network, and to publish the procedures, tasks, standards and best practices associated to OBIS nodes in an IOC Manual & Guides for OBIS nodes.

Encourages Member states to share their biodiversity data and to participate in OBIS through the establishment of new and/or strengthening existing OBIS nodes.

<u>**Recommendation IODE-XXII.5**</u>

THE OCEAN DATA STANDARDS PILOT PROJECT (ODS)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging that the issue of standards is one of the most critical elements for IODE, and the consolidation of a set of standards will benefit every member of IODE as well as the broader oceanographic and marine meteorology data community,

Considering existing practices in ocean data management and exchange, developed and used by IODE NODCs as well as by international projects,

Recognizing that interoperability between NODCs will be achieved through the use of internationally endorsed standards and best practices to allow shared use of metadata, data and products, and is key to the successful development of the Ocean Data Portal and similar systems,

Noting with satisfaction the work of the Ocean Data Standards Pilot Project in developing a standards process,

Recommends to adopt the following standards:

  (i)   Recommendation to Adopt ISO 8601:2004 as the Standard for the Representation of Date and Time in Oceanographic Data Exchange
 (ii)   Recommendation to Adopt ISO 3166-1 and 3166-3 Country Codes as the Standard for Identifying Countries in Oceanographic Data Exchange
(iii)   Recommendation to Adopt the Quality Flag Scheme for the Exchange of Oceanographic and Marine Meteorological Data

Urges Member States to utilize these standards in their national data centres.

<u>Recommendation IODE-XXII.6</u>

THE OCEAN DATA STANDARDS AND BEST PRACTICES PROJECT (ODSBP)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging that the issue of standards is one of the most critical elements for IODE, and the consolidation of a set of standards will benefit every member of IODE as well as the broader oceanographic and marine meteorology data community,

Considering existing practices in ocean data management and exchange, developed and used by IODE NODCs as well as by international projects,

Recognizing that interoperability between NODCs will be achieved through the use of internationally endorsed standards and best practices to allow shared use of metadata, data and products, and is key to the successful development of the Ocean Data Portal and similar systems,

Noting with satisfaction the work of the Ocean Data Standards Pilot Project in developing a standards process,

Recommends to close the JCOMM/IODE Ocean Data Standards Pilot Project,

Recommends to establish the Ocean Data Standards and Best Practices Project with the Terms of Reference as attached in the Annex to this recommendation,

Encourages all IOC Member States, Programmes, relevant organizations and projects, to collaborate with the Ocean Data Standards and Best Practices Project, by submitting standards and best practices for consideration and contributing to the evaluation process.

Urges Member States to play an active role in the Ocean Data Standards and Best Practices Project and to adopt recommended standards at the earliest opportunity,

Invites JCOMM to join the Ocean Data Standards and Best Practices Project.

Annex to Recommendation IODE-XXII.6
Terms of Reference of the Ocean Data Standards and Best Practices Project (ODSBP)

<u>Objectives of the Project</u>
The objective of the Ocean Data Standards and Best Practices Project (ODSBP) is to achieve broad agreement and commitment to adopt a number of standards and best practices related to ocean data management and exchange. This will include the following main tasks:
(i)   develop and manage a process for the reception, reviewing and recommending of standards and best practices, based upon the process developed by the Ocean Data Standards Pilot Project;
(ii)   actively liaise with all relevant communities, programmes and projects such as Ocean Data Portal, ETDMP Metadata Task Team, SeaDataNet Technical Task Team, GE-BICH, GE-MIM, SG-OBIS, GTSPP, ICSU WDS, GEO/GEOSS, ICES;
(iii)   promote and monitor the usage of recommended standards and practices in the relevant communities, including those mentioned under (ii);
(iv)   regularly review and revise recommended standards and best practices based upon feedback from the relevant communities, including those mentioned under (ii);
(v)   maintain an online catalogue of best practices, enabling easy discovery and downloading of these documents by users (e.g. JCOMM Catalogue of practices and standards).

Management

The Project will be managed by a Steering Group with the following Terms of Reference:

(i)   advise the IODE Committee on the vision, strategy and implementation of the Ocean Data Standards and Best Practices Project (ODSBP);

(ii) report to the IODE Committee (and ETDMP, as appropriate) on the progress of submission, recommendation, publishing and revision of standards and best practices recommended through the Project;

(iii) develop a document on, and maintain the process for evaluating proposals for standards and best practices.

The Steering Group will be composed, initially, of the former members of the JCOMM/IODE ETDMP Task Team for the Ocean Data Standards Pilot Project, experts from relevant JCOMM bodies, and representatives of IODE NODCs with a special interest in data standards. In addition representatives of major international oceanographic data management projects will be invited as relevant to the agenda (e.g. GTSPP, Argo, SeaDataNet, MyOcean, OceanSITES, IMOS,…), as well as other experts as deemed necessary by the Steering Group. The Steering Group will designate its own Chair(s). For the first Session the former members of the JCOMM/IODE ETDMP Task Team for the Ocean Data Standards Pilot Project will Chair the meeting.

Meetings of the Steering Group

The Steering Group will work largely by email. One Steering Group meeting will be organized annually (this can be in person or by video conferencing or mixed). Cost of participation will be met preferably by the experts.

Recommendation IODE-XXII.7

REVISED TERMS OF REFERENCE OF THE IODE STEERING GROUP FOR THE IODE OCEAN DATA PORTAL (SG-ODP)

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing the importance of integration of marine data and information from a network of distributed IODE data centres,

Recalling the establishment of the IODE Ocean Data Portal project through Recommendation IODE-XIX.4 in March 2007,

Recommends the revision of the Terms of Reference of the IODE Steering Group for the IODE Ocean Data Portal as follows:
(i)   To develop and prioritize plans for ODP related activities;
(ii)   To provide guidance on delivery of the ODP work plan and to review the results of project activities under the leadership of JCOMM/IODE ETDMP and IODE Committees;
(iii)   To develop and maintain the terms of reference for the structural elements of the IODE Ocean Data Portal.

Recommends further that the membership of the Steering Group shall be as follows: Ariel Troisi (Chair of the Steering Group), Sergey Belov (Co-Chair), ODP Project Manager (tbd), Representative(s) of the Partnership Centre for the IODE Ocean Data Portal, Representatives of the Data Providers, Partner programme representatives, IODE Secretariat.

Invites Member States to actively support the work of the Group by supporting members' participation in the activities and meetings of the Group.

<u>**Recommendation IODE-XXII.8**</u>

TERMS OF REFERENCE OF THE STRUCTURAL ELEMENTS OF THE IODE OCEAN DATA PORTAL

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing the importance of integration of marine data and information from a network of distributed IODE data centres,

Recalling the establishment of the IODE Ocean Data Portal project through Recommendation IODE-XIX.4 in March 2007,

Recommends the Terms of Reference of the structural elements of the IODE Ocean Data Portal as follows:

The <u>ODP global node</u> (IOC Project Office for IODE) shall:
(i)   Coordinate the IODE distributed data system including the monitoring of performance, system statistics and reporting;
(ii)   Manage consolidated metadata catalogues (nodes, data and services, user metadata) by accumulating metadata from associated data providers (national nodes) and synchronizing of this metadata with other nodes;
(iii)   Manage and disseminate among other nodes the common controlled dictionaries, basic electronic maps and other cross-system data and metadata;
(iv)   Provide the user access to data and services submitted by all ODP nodes. If required, it redirects users to the portal of other nodes;

The <u>ODP regional/specialized nodes</u> (ODINs centres, GDACs and centres of JCOMM and centres of other IOC/IODE programmes and projects) shall:
(i)   Coordinate the IODE distributed data system including associated data providers of its area of responsibility;
(ii)   Manage the metadata catalogues of its area of responsibility and synchronize this metadata with other nodes;
(iii)   Provide access to the IODE distributed data system of its area of responsibility and redirects users to the portal of other nodes, if required.

The <u>ODP national node (NODCs)</u> shall:
(i)   Submit metadata and data sets to IODE distributed data system for shared use.
(ii)   Undergo an accreditation procedure, based upon the IODE Quality Management Framework.
(iii)   Be reviewed periodically by the IODE Steering Group for the IODE Ocean Data Portal and the IODE Steering Group for the Quality Management Framework

<u>Recommendation IODE-XXII.9</u>

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

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing the importance of integration of marine data and information from a network of distributed IODE data centres,

Recalling the establishment of the IODE Ocean Data Portal project through Recommendation IODE-XIX.4 in March 2007 to facilitate the seamless access to oceanographic, marine meteorology, and other data and products,

Recalling further Decision EC-XVL/Dec.4.2.1 on the Centre for the Ocean Data Portal, inviting the Russian Federation to consider entering into a partnership agreement with the IOC of UNESCO concerning this Centre with a view to exchanges of information and possible joint activities related to the Ocean Data Portal at RIHMI-WDC of Roshydromet in Obninsk.

Recommends the Terms of Reference of the Partnership Centre for the IODE Ocean Data Portal as follows:

The Partnership Centre for the IODE Ocean Data Portal shall contribute to the **planning and coordination** of the IODE Ocean Data Portal by:
(i)   Maintaining and developing the IODE ODP specifications and tools, and coordinating the use of the IODE ODP technology for the distributed marine data system based upon the IODE data network and data sources from other IOC programmes, including JCOMM;
(ii)   Creating, in cooperation with the IOC Project Office for IODE, an enabling environment, and assisting in strengthening the capacity of the IODE ODP nodes to manage marine data and products, and to provide the IODE ODP resources and services required by users;
(iii)   Assisting with the coordination and monitoring of the implementation of the IODE ODP work plan as adopted by the IODE Committee.

The Partnership Centre for the IODE Ocean Data Portal shall contribute to the **development and implementation** of the IODE Ocean Data Portal by:
(i)   Developing, hosting and maintaining the tools and specifications of the IODE ODP for the portal and IODE data system operation;
(ii)   Assisting IODE's ODINs, NODCs and other IODE ODP nodes to achieve their regional and thematic objectives;
(iii)   Monitoring and reporting on the IODE ODP portal tools and specifications used by the IODE ODP nodes;
(iv)   Providing an infrastructure to develop and test the web-based technologies and tools and also to generate new ideas and perspectives of the IODE ODP

Training and Promotion:
(i)   Developing, strengthening and maintaining the IODE ODP data management training programmes and tools;
(ii)   Promoting collaboration between relevant experts in integrated marine data management in IOC programmes and projects, other organizations and systems (e.g. OBIS, WIS, GEOSS)

The IOC Project Support Centre for the IODE ODP will report to the IODE Steering Group for the IODE Ocean Data Portal and to the JCOMM/IODE ETDMP.

<u>**Recommendation IODE-XXII.10**</u>

**GLOBAL OCEANOGRAPHIC DATA ARCHAEOLOGY AND RESCUE (GODAR) AND
WORLD OCEAN DATABASE (WOD) PROJECTS**

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling the IODE objectives that call for the discovery, exchange of, access to and preservation of ocean data

Recognizing the importance of locating, collecting, quality controlling, and disseminating in electronic form, historical ocean data that are at risk of loss due to media decay or changes of format,

Further recognizing the important progress made by the Global Oceanographic Data Archaeology and Rescue (GODAR) Project, established by the 14th Session of the IODE Committee,

Taking into account that these efforts result in an invaluable contribution to several initiatives and activities, *inter alia* the World Ocean Database (WOD) Project, established by the 16th Session of the IODE Committee,

Noting that GODAR and WOD activities are core elements of the IODE global data network and a valuable integrated quality ocean profile data product essential for climate change research,

Recognizing the important contributions and support from the United States of America, through the US-NODC, in the development and continuous progress of the GODAR and WOD Projects since their inception,

Invites the United States of America to continue its support of the Global Oceanographic Data Archaeology and Rescue (GODAR) and the World Ocean Database (WOD) Projects,

Recommends Member States to provide in-kind support by continuing locating, collecting and quality controlling historical ocean data at risk, and contributing these to the WDC - Oceanography, Silver Spring, United States of America, in support of GODAR and WOD,

Invites the GODAR/WOD Project Leader to report on progress of the projects at the next Session of IODE.

<u>**Recommendation IODE-XXII.11**</u>

**REVISED TERMS OF REFERENCE AND COMPOSITION OF THE STEERING GROUP
FOR THE GLOBAL TEMPERATURE AND SALINITY PROFILE PROGRAMME (GTSPP)**

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the importance to support global observation projects,

Recalling the establishment of the GTSPP Program through Recommendation IODE-XV.4 (1996) and
its annex 1 to address Temperature and Salinity profile data management at global level,

Noting with satisfaction the work of GTSPP in establishing a long term temperature and salinity profile
data structure,

Noting the close relationship with the World Ocean Database (WOD),

Recommends the following revised Terms of Reference and General membership of GTSPP

The Steering Group shall conduct the program for the collection and management of temperature and
salinity profiledata sets to support IODE (International Oceanographic Data and Information Exchange)
and JCOMM (Joint Technical Commission for Oceanography and Marine Meteorology) requirements
with the following Terms of Reference and general membership.

Terms of Reference
(i)   Provide scientific and technical guidance for the program in the implementation and
        enhancement of the GTSPP including:
      i.   Near real time data (observations within 30 days) acquisition;
      ii.   Non real time data (observations older than 30 days or data never circulated on the
               Global Telecommunication System) acquisition;
      iii.   Communications infrastructures;
      iv.   Quality control and analysis procedures;
      v.   Continuously managed database;
      vi.   Ocean data and meta data standards; and
      vii.   Data and information products.
(ii)   In conjunction with user groups and data collectors, design and implement data flow monitoring
        systems to ensure that the data are collected, processed and distributed according to agreed
        schedules and responsibilities.
(iii)   Collaborate with international projects and global scientific programs such as GCOS (Global
        Climate Observing System) and GOOS (Global Ocean Observing System) to assemble process
        and disseminate data managed by GTSPP.
(iv)   Actively promote the GTSPP and provide information to the users of GTSPP services, such as
        the planners of international science programs.
(v)   Provide GTSPP status reports and other requested material to the IODE committee and JCOMM
        ETDMP, to international programs in which GTSPP is a participant.

General Membership
(i)   One representative from each of the core participating countries (initially Australia, Canada,
        France, Japan, and USA) as identified by the countries. The core participating countries are the
        IOC Member States and WMO Members actively engaged in data and information exchanges
        with the long term archive centre of GTSPP.
(ii)   Experts from one or more Member / Member States of other programs/projects that are of
        relevance to GTSPP may accompany these representatives.
(iii)   Representatives invited by the SG from Member States of the IODE and JCOMM and
        representatives of oceanographic projects those are important to GTSPP operations.

(iv)   The Chair will be selected by the Steering Group and will be reviewed by them every two sessions.

(v)   Funding for participants and sessions of the SG will be provided by Members or Member States.

Recommendation IODE-XXII.12

THE IODE INTERNATIONAL COASTAL ATLAS NETWORK PROJECT (IODE/ICAN)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the importance of atlases as interdisciplinary products that assist decision makers,

Noting with appreciation that ICAN has already influenced, guided and informed users on development and use of coastal and marine web atlases, through periodic workshops and international conferences held between 2006-2009, and in 2011,

Further noting that ICAN members have produced a suite of open source tools for creating integrated web atlases and a major peer-reviewed published guide,

Recommends the establishment of the IODE International Coastal Atlas Network (IODE/ICAN) Project with the Terms of Reference as attached in Annex A to this Recommendation;

Recommends the establishment of the IODE Steering group for the IODE/ICAN Project with the Terms of Reference as attached in Annex B to this Recommendation;

Urges Member States and donors to support the development of IODE/ICAN.

Annex A to Recommendation IODE-XXII.11
Terms of Reference of the IODE International Coastal Atlas Network (IODE/ICAN) Project

Objectives of the Project
The strategic goal of the IODE International Coastal Atlas Network Project is to encourage and help facilitate the development of digital atlases of the global coast, based on the principle of distributed, high-quality data and information, at local, regional, national or international scale. This will be achieved by sharing knowledge and experience among atlas developers in order to find common solutions for coastal and marine web atlas development while ensuring maximum relevance and added value for users. Many of these atlases will play an important role in informing national and regional decision- and policy-making across several themes, including:
•   Marine spatial planning
•   Climate change impacts, coastal vulnerability
•   Coastal governance (boundaries, protected areas, etc.)
•   Coastal conservation and protected areas management
•   Coastal hazards monitoring and planning
•   Coastal disaster management and mitigation
•   Population pressures
•   Resource availability and extraction

The Participants in the Project
All experts previously involved in ICAN are invited to participate in the Project, as well as other relevant experts designated by IOC Member States.

Annex B to Recommendation IODE-XXII.11
Terms of Reference of the IODE Steering Group for the IODE International Coastal Atlas Network (IODE/ICAN) Project

Objectives
The SG-ICAN shall:
(i)   Advise the IODE Committee on the global vision, mission, policy and strategy, including partnerships of the IODE/ICAN project with IOC and other projects/organizations;

(ii)   Advise the IODE Committee on IODE/ICAN's strategy for its sustainability and further development including resource mobilization;

(iii)   Assist with the preparation and implementation of work plans, and review progress;

Membership

The Project will be managed by an IODE Steering Group for IODE ICAN (SG-ICAN), initially composed of members of the former ICAN Steering Group and Management Working Group, the project coordinators of the Caribbean Marine Atlas and African Marine Atlas, as well as representatives from other regions.

Recommendation IODE-XXII.13

IODE GLOBAL DATA ASSEMBLY CENTRES (IODE GDACs)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the importance of close collaboration between IODE and JCOMM,

Recalling the usefulness of the former IODE RNODC/Data Buoys collecting, managing and making available historical drifting buoy data and metadata to end user,

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),

Complying with the proposed MCDS structure it is advantageous to IODE to introduce the element of GDACs in the IODE structure,

Recommends that IODE GDACs be included as structural elements of IODE with the following Terms of Reference with respect to particular data types:

(i)   receive and assemble marine meteorological and/or oceanographic data (real or delayed-mode) and metadata from the appropriate data streams and check the 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 of data regarding quality issues;
(v)   make data accessible through IODE/ODP;
(vi)   make discovery metadata available to IODE/ODP;
(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 oceanographic data and metadata documented in appropriate WMO and IOC publications;
(ix)   report to the IODE and JCOMM Committees on its data management status and activities.

Invites the IODE structural elements either individually or jointly to operate as IODE provisional GDACs and apply to become a GDAC, when the procedures for doing so are established.

Recommendation IODE-XXII.14

THE MARINE CLIMATE DATA SYSTEM (MCDS)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the importance of close collaboration between IODE and JCOMM,

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),

Acknowledging the important and active role of IODE in the MCDS development,

Realizing the user needs for integrated data and products for climate services and applications,

Approves the Marine Climate Data System (MCDS) Strategy taking into account decisions and the recommendations adopted by IODE-XXII on new structural elements of IODE,

Agrees with the evaluation criteria for the WMO-IOC Centres for Marine Meteorological and Oceanographic Climate (CMOCs)**,**

Invites Member States to collaborate and support the MCDS realization.

Recommendation IODE-XXII.15

THE IODE OBJECTIVES

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling the revision of the IODE objectives through Recommendation IODE-XVIII.1 and Recommendation IODE-XXI.4,

Noting the importance of including the ocean research and observation community as key stakeholders of the IODE,

Noting further the importance of providing societal benefits through appropriate data services and products,

Recommends that the Objectives of the IODE Programme be modified as follows:

  (i)   To facilitate and promote the discovery, exchange of, and access to, marine data and information including metadata, products and information in real-time, near real time and delayed mode, through the use of international standards, and in compliance with the IOC Oceanographic Data Exchange Policy for the ocean research and observation community and other stakeholders;

 (ii)   To encourage the long term archival, preservation, documentation, management and services of all marine data, data products, and information;

(iii)   To develop or use existing best practices for the discovery, management, exchange of, and access to marine data and information, including international standards, quality control and appropriate information technology;

(iv)   To assist Member States to acquire the necessary capacity to manage marine research and observation data and information and become partners in the IODE network;

 (v)   To support international scientific and operational marine programmes, including the Framework for Ocean Observing[1] for the benefit of a wide range of users.

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[1] A Framework for Ocean Observing. By the Task Team for an Integrated Framework for Sustained Ocean Observing, UNESCO 2012, IOC/INF-1284 rev., doi: 10.5270/OceanObs09-FOO

<u>**Recommendation IODE-XXII.16**</u>

IODE ASSOCIATE DATA UNIT (ADU)

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the important role and success of the IODE National Oceanographic Data Centres (NODCs) as key partners in realizing the IODE objectives,

Noting the importance of including the wider ocean research and observation community as key stakeholders of the IODE,

Noting further the growth of ocean research and observation programmes and projects, and the ability of these projects to establish data systems,

Stressing the need to share, provide access to and to preserve all ocean research and observation data,

Noting the importance of standardization and interoperability of data and information systems across the ocean research and observation communities,

Recommends the establishment of IODE Associate Data Units (ADUs) as structural elements of IODE with the following Terms of Reference:

IODE Associate Data Units (ADUs) shall:
(i)   Be national projects, programmes, institutions or organizations (other than NODCs), or regional or international projects, programmes, institutions or organizations that carry out data management functions,
(ii)   Receive information on, and contribute to, IODE standards and best practices related to ocean data management,
(iii)   Be welcomed to participate in ocean data and information management training, organized within the framework of the IODE OceanTeacher programme,
(iv)   Be invited, as observers, in Sessions of the IODE Committee,
(v)   Participate in IODE workshops and projects,
(vi)   Share expertise with other ADUs and NODCs,
(vii)   Be invited to share their data and information on their data collection (metadata catalogue), and this should be through their NODC (in the case of national projects, programmes, institutions or organizations), or through another IODE data facility (in the case of regional or international projects, programmes, institutions or organizations) or, in the case of biogeographic data, through iOBIS,
(viii) Receive assistance, upon request, from IODE, on matters related to ocean data management,
(ix)   Closely link with their IODE National Oceanographic Data Centre (NODC), if existing (in the case of national projects, organizations and institutions),
(x)   Agree to make available data management documentation (standards, practices, guides,…) used by the ADU,

Notes that ADUs will not replace NODCs (centralized or distributed) but should contribute to the objectives of NODCs by (i) improving the completeness of data coverage of NODCs; (ii) ensuring the long-term archival and preservation of ADU data by NODCs; and (iii) increasing awareness amongst the ocean research and observation community of the importance of professional data management through IODE NODCs,

Invites any project, programme, institution or organization that is willing to comply with the above-mentioned Terms of Reference to apply to join IODE as an IODE Associate Data Unit (ADU) by providing the following information:
   (i)   name and contact information of the ADU contact point(s);

(ii)   name and contact point of the head of the applicant entity;
(iii)   description of the national, regional or international project, programme, institution or organization;
(iv)   brief description of data services/products provided by the entity;
 (v)   for projects: expected lifespan of the project and indication of plan for the archival/preservation of the data, data management plan;
(vi)   letters of support;
(vii)   required expertise, training that IODE could contribute;
(viii)   data policy (if identified) of the applicant entity;
 (ix)   of the existing relationship with a NODC.

Recommends further that applications for ADUs shall be reviewed by the IODE Officers (by email or during IODE Officer meetings) in consultation with - and in the case of national projects, programmes, institutions or organization, subject to approval by the relevant NODC (if existing) - SG-OBIS (for biogeographic information) or other relevant recognized international programme.

Invites IOC Member States to actively promote ADU membership of (inter)national projects, programmes and institutions

<u>**Recommendation IODE-XXII.17**</u>

STRUCTURAL ELEMENTS OF IODE

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the important role and success of the IODE National Oceanographic Data Centres (NODCs) as key partners in realizing of the IODE objectives,

Welcoming the close and growing cooperation between IODE and JCOMM,

Noting with appreciation the considerable and sustained support by Member States in establishing and maintaining the National Oceanographic Data Centres,

Taking into account the considerable changes in information technology, the growth of ocean research and observation programmes and projects, and the ability of these projects to establish data systems,

Taking into consideration the adoption of the IODE Quality Management Framework through Recommendation IODE-XXII.[8.4], and Recommendation IODE—XXII.[8.2.3] on the establishment of IODE Associate Data Units,

Recommends the revision of the structural elements of IODE to include:
 (i)   National Oceanographic Data Centre (NODC)
 (ii)   IODE Associate Data Unit (ADU)
 (iii)   IODE Global Data Assembly Centre (IODE GDAC)

Instructs the Secretariat to communicate with current DNAs to determine the possibility of changing their status to NODC or ADU.

Recommends the OBIS nodes to become NODCs or ADUs.

Recommendation IODE-XXII.18

ESTABLISHMENT OF THE IODE QUALITY MANAGEMENT FRAMEWORK PROJECT

The IOC Committee on International Oceanographic Data and Information Exchange;

Noting the strategy, advice, guidance and tools necessary for an NODC to attain quality, efficiency and effectiveness to meet the requirements of the ocean research community as well as other stakeholders and to re-iterate the role of NODCs as trusted sources of ocean data;

Further noting the acceptance of IODE as a network member of the ICSU World Data System (WDS) and the requirement for NODCs to demonstrate their capability to meet ICSU certification criteria;

Recalling the IODE Committee (IODE-XXI) established an inter-sessional working group to "*identify a set of quality management criteria for IODE NODCs taking into account those defined for the WDS*";

Recommends the establishment of the IODE Quality Management Framework (IODE-QMF) Project to carry out the following activities:
  (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.

Recommends further the establishment of the Steering Group for IODE Quality Management Framework (SG-QMF) with the following terms of reference:
  (i)   prepare and maintain the IODE Quality Management Framework Guidelines ,
  (ii)   receive, through the IODE Secretariat, applications and review the accreditation of NODCs,
 (iii)   advise the IODE Committee on the accreditation of NODCs,

Encourages Member States to nominate experts having expertise in implementing quality management systems for management of oceanographic data to the Group of Experts;

Strongly encourages NODCs and former DNAs to apply for accreditation;

Invites Member States with a well-developed QMS in place to share experiences, expertise and documentation with other Member States developing or planning such systems.

<u>**Recommendation IODE-XXII.19**</u>

**IODE CLEARING HOUSE SERVICE FOR DATA/INFORMATION MANAGEMENT
PRACTICES PROJECT**

The IOC Committee on International Oceanographic Data and Information Exchange,

Acknowledging the important role and success of the IODE National Oceanographic Data Centres (NODCs) as key partners in realizing of the IODE objectives,

Noting the importance of including the ocean research and observation community as key stakeholders of the IODE,

Recalling the establishment of the Ocean Data Standards and Best Practices Project through Recommendation IODE-XXII.6,

Noting further the growth of ocean research and observation programmes and projects, and the ability of these projects to establish data systems, and the importance of standardization and interoperability of data and information systems across the ocean research and observation communities,

Noting further the progress of the JCOMM/IODE Ocean Data Standards Pilot Project, the JCOMM Catalogue of Practices and Standards, and also the development of practices by other organizations, programmes and projects in the area of ocean research and observation, their related data and information management, as well as marine meteorology,

Recommends the establishment of the IODE Clearing House Service for Data/Information Management Practices project, with the Terms of Reference as attached in the Annex of this recommendation.

Instructs :
  (i)   The IODE Group of Experts on Marine Information Management (GE-MIM), jointly with the IODE Steering Group for OceanTeacher and Steering Group for the Ocean Data Standards and Best Practices Project to define the functional requirements of the Clearing House, to promote the Clearing House through appropriate channels, and to report back to the IODE Officers and IODE Committee on progress of the Project;
 (ii)   The IOC Project Office for IODE to develop and implement the Project in accordance with the functional requirements defined under (i).
(iii)   The Ocean Data Standards and Best Practices Project to use the Clearing House to disseminate relevant standards and practices .

Invites IOC Member States, JCOMM, as well as other organizations, programmes and projects, to participate in, and contribute to the Project.

Annex to Recommendation IODE-XXII.19
**Terms of Reference of the IODE Clearing House Service for Data/Information Management
Practices Project**

Objectives of the Project
  (i)   The IODE Clearing House Service for Data/Information Management Practices Project will enable research groups that wish to embark on a new project and need to prepare a data management plan, to look for methodology already used by other projects or data/information centres ("best practices")
 (ii)   The service will be a repository of documents and links to related web sites.

Recommendation IODE-XXII.20

IODE WORK PLAN AND BUDGET FOR 2013-2015

The IOC Committee on International Oceanographic Data and Information Exchange,

Having reviewed its programme implementation requirements for the period 2013-2015,

Being aware of the acute 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, 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, provision of experts, through the provision of valuable ocean data and information products and services, and through financial and in-kind contributions to IOC,

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

Invites the IOC Executive Secretary to ensure stable and long-term staffing arrangements for the IODE Secretariat and for the IOC Project Office for IODE, with special attention to OBIS;

Requests to the IODE Co-Chairs to bring to the attention of the next Session of the IOC Assembly, the IODE Programme and Budget for the period 2013-2015, as attached in the Annex to this Recommendation.

ANNEX I to Recommendation IODE-XXII.20
Amounts expressed in 1000s of US Dollars

Agenda Item	Project/ Group	Item	2013 RP	2013 UNF	2013 EB	2014 RP 30K	2014 RP 100K	2014 EB	2015 RP 30K	2015 RP 100K	2015 EB
4.2	Project office	*IT staff position P-2*			20			105			110
		Project office op. exp			10			10			10
		Participation in meetings, travel			35			25			25
5.1.1	GE-BICH	*3rd GE-BICH QC workshop*						15			
		GE-BICH-VI						15			
5.1.2	GE-MIM	*GE-MIM-XIII*								15	
5.1.3	ETDMP	*ETDMP-IV*						15			
5.1.4	GE-OBIS	*GE-OBIS-I*		15							
5.2.1	OBIS	*Staff cost project manager P-3*			120			125			130
		Staff cost DB manager P-1			123			123			123
		SG-OBIS-III	10			10	15			15	
		Training courses									
		Scientific meeting					12				
		Cooperation CBD			32						
		Cooperation GBIF			4						
5.2.2	ODS	SG-ODS			15			15			
5.2.3	ODP	SG-ODP			10			15		15	
		Partnership Centre			63			150			150
5.2.4	Data Publishing			10							
5.2.5	GODAR										
5.2.6	GTSPP	*SG-GTSPP*						20			
		GTSPP training course (IODE PO)						10			
5.2.7	GOSUD										
5.2.8	OceanDocs/Aq. Com.	*SG-OceanDocs*						20			
		software development	3								
		advocacy documents		2							
5.2.9	OceanExpert										
5.2.10	ICAN	*SG-ICAN*		10		5	10			10	10	
							2				
			0.5			0.5	0.5				
6.1	OceanTeacher	*SG-OTA*		15							15

		Courses OTA1			217						
		Courses OTA2						300			300
		Courses Flanders PO									
6.2.1	ODINAFRICA	*Work plan implementation*			770						
6.2.2	ODINCARSA-LA	*expert visits*	3	5		5	8			6.8	
		training events		15			15			5	
		OceanDocs support	1	6			7.3			7	
		IAMSLIC particip.		5			5			4	
		IAMSLIC membership	0.2			0.2	0.2			0.2	
6.2.2	ODINCARSA CMA	*CMA/OBIS course*			75						
		CMA conclusion meet			10						
		CMA misc travel			19						
		CMA other			43						
6.2.3	ODINECET	*ODINECET workshop*		15							
		SG-ODINECET meeting				10	10				
6.2.4	ODINWESTPAC	*Work plan implementation*									
6.2.5	ODINBlackSea										
6.2.6	ODINPIMRIS	*Equipment and training Tonga*			5						
		Project support selected islands					5	5			
		Country expert visits									
		SG-ODINPIMRIS					8				
6.2.7	Other	*ASFA Board participation*	1	1			2			2	
		IOC-XXVII		4							
6.4	Emerging needs										
7	*Cooperation*	*JCOMM MAN*		1							
		JCOMM DMCG						10			
		IMDIS 2013			5						
12	IODE-XXIII								20	20	
	TOTAL PLANNED EXPENDITURE		**19**	**104**	1,576	**31**	100	978	**30**	100	863

Note: for 2014 and 2015 it was decided to propose to scenarios: one based on revenue from UNESCO Regular Programme of US$S 30K/year (the budget received in 2012 and 2013) and a second scenario that assumes

revenue from the UNESCO RP of US$ 100K/year (assuming that the USA would resume its contribution to UNESCO).
Note 2: UNF= unfunded; RP= UNESCO Regular Programme; EB=extra-budgetary funding (not necessarily confirmed)

DRAFT Decision of the 27ᵗʰ Session of the IOC Assembly

**IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION
EXCHANGE (2013-2016)**

The Intergovernmental Oceanographic Commission,

Recalling:
(i)   Resolution XXIV-9 which adopted the IOC Strategic Plan for Oceanographic Data and
         Information Management (2008-2011) and also agreed that the Plan should be regularly
         reviewed and revised by the IODE Committee
(ii)   Resolution XXII-6 which adopted the IOC Oceanographic Data Exchange Policy

Recognizing that:

(i)   the IOC Oceanographic Data Exchange Policy is compatible with other international relevant
         data-exchange policies that promote free and open access to data, such as WMO Resolution 40
(ii)   IODE has developed a global network of National Oceanographic Data Centres, information
         centres and related networks, representing a considerable pool of expertise in data and
         information management and sharing
(iii)   many IOC Member States have developed national distributed networks of data management
         facilities involving IODE, as well as other centres, to deal with a wide variety of ocean
         observations
(iv)   IOC and WMO have established close, efficient and effective collaboration in ocean data
         management
(v)   the IOC Committee for IODE and JCOMM have established a number of joint mechanisms to
         advance ocean data management,

Noting with appreciation 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.

Considering that the IOC Strategic Plan for Oceanographic Data and Information Management 2013–
2016 contains the following main elements:

(i)   Adhere to the IOC Oceanographic Data Exchange Policy;
(ii)   Ensure the long-term archival, management and services of marine data and information;
(iii)   Recommended standards and best practice for management and exchange of oceanographic
         data;
(iv)   Acceptance and implementation of a set of interoperability arrangements, including technical
         specifications for collecting, processing, storing, and disseminating shared data, metadata and
         products;
(v)   Discovery, access and retrieval of data from IOC programmes, as well as from programmes and
         organizations collaborating with IOC, through the Ocean Data Portal (ODP);
(vi)   Continued development of Ocean Data and Information Networks (ODINs) backed up by
         OceanTeacher as a capacity building tool, whilst extending OceanTeacher through cooperation
         with JCOMM and others as appropriate;
(vii)   Development of appropriate metrics to help evaluate the data and information system;

(viii)   Provide the crucial link between data, information and the dissemination of knowledge through the management of marine information by marine librarians;

(ix)   Facilitate proper citation of datasets by providing all the required elements of a citation including an unambiguous, unchanging reference; and

(x)   Governance by an Advisory Group represented by experts nominated by the governing bodies of IOC programmes

Endorses the IOC Strategic Plan for Oceanographic Data and Information Management 2013-2016 as given in document IOC-XXVII/2 Annex […];

Agrees that the Plan should be:

(i)   Published and distributed widely and used as a basic data strategy throughout the Programmes and Projects of the IOC; and

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

ANNEX III

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Dr Wendy Watson-Wright, IOC Executive Secretary
Dear colleagues,
Friends,
Ladies and Gentlemen,

It is a truly great pleasure for me and my Co-Chair Ariel Troisi, to be with you here in Ensenada, Mexico.

It was an honour for me to be elected IODE Co-Chair during the 21st Session of IODE which took place in 2011 which was also the fiftieth anniversary of our IODE.

First of all I wish to express my great gratitude to the Government of Mexico for hosting this 22nd Session of the IOC Committee on International Oceanographic Data and Information Exchange, as well as the pre-conference workshops at the "Autonomous University of Baja California" that many of us joined last Friday and Saturday. I also thank you for providing interpretation from English to Spanish language during the Session.

It is appropriate that we are having this 22nd Session in Mexico as Mexico established its National Oceanographic Data Centre in June 2011, bringing the total number of data centres in our network to 80.

Even through this is only the first day of our meeting I am very much impressed with the warm welcome of all those who have been working on the arrangements and of course a special thank you goes to Dr Carlos Torres and his team.

As I said this will be 22nd Session of the IODE Committee. This will not be an ordinary Session: it will be a crucial step in the life of our IODE. Today we are no longer the only player in the field of ocean data and information management. Today there are many programmes, organizations and projects that focus on similar issues. Should we compete or seek partnerships? I trust that you will all agree with me that we should seek partnerships that enrich our expertise rather than duplicate effort. Of course we also have to be realistic in terms of resources: many of our member states are going through varying degrees of financial crisis and this has an impact on all elements of society. We need to do more with less.
So during this Session we need to re-define IODE in terms of its structural elements, its functions, its products and services and more importantly maybe, its partners. We will all need to be creative to face these challenges.

I look forward to see a blueprint of our new IODE ready to serve our old and new clients for another few decades.

Thank you for your attention.

2. Dr Wendy Watson-Wright, IOC Executive Secretary

Your Excellencies,

Ladies and Gentlemen,

It is a great honour and pleasure for me to address the 22nd Session of the IOC Committee on International Oceanographic Data and Information Exchange here in Ensenada, Mexico.

Two years ago I was in Liège, Belgium opening the 50th anniversary conference of the IODE. At that time we celebrated the 50 years of success and achievement of the IODE. And let us remember again here that the IODE was in fact the first major programme of the IOC. Furthermore, along with the tsunami programme, IODE is the only programme within the IOC that is fully owned by the IOC. For me the IODE will therefore always be a core programme of our IOC.

In a little more than 5 decades the IODE has established a network of 80 national oceanographic data centres in almost as many IOC member states. IODE now covers almost the entire coastline of the globe. Within the United Nations system IODE is still unique as a network specifically designed to deal with ocean data and information.

What have been the benefits of the IODE network?

What we know about Climate Change today is in no small degree due to the work of not only the community of ocean scientists, but also of the oceanographic data management community who, for more than 50 years, have managed the research findings of the thousands of scientists, research vessels, remotely operated instruments and laboratories around the world.

Thanks to the efforts of the IODE National Oceanographic Data Centres and the ICSU World Data Centres for Oceanography it has been possible to demonstrate that climate change is indeed happening.

Despite the obvious advantages and success of IODE however we must recognize that the world has changed since IOC and its IODE were established in 1960 and 1961 respectively. In terms of technology and especially information technology we can refer to the revolution that started in the late 1970s when computing evolved from specialized and extremely expensive to being mainstreamed and affordable with the Personal Computer. This was followed by the Internet in the 1990s and now mobile and cloud computing in the current decade. IODE and its data centres and marine libraries were part of this evolution and have been able to evolve with it.

However one aspect where we have perhaps failed to evolve is with our structure of data centres. We are now often seen as a "restrictive club" of data centres, disconnected from the ocean research and observation community. Especially during the past 20 years many projects and organizations have been created to deal with particular aspects of ocean life and ocean processes. Many of these have developed their own data and information systems. Many of these are not linked to IODE.

In addition, the world around us has changed <u>politically</u>. The United Nations was established immediately after the Second World War as a platform to allow countries to discuss their conflicts rather than to fight them on a battlefield. The world was still made up of many individual countries. Today we live in a world of many regional alliances and treaties. Examples are the European Union, G8, G20, African Union, etc. Many linkages are now created between these groups of countries. Budgets for ocean research and observation are increasingly also made available through such groups of nations. The role of the United Nations and its specialized agencies will likely need to be redefined in the light of these new relationships.

During the past decade the IODE has operated in the forefront of many new technologies. I can mention here the IODE Ocean Data Portal, OceanExpert, OceanDocs, Data publication, etc. But we have not remained alone for long. In many cases commercial and other players have come along and, in some cases taken over. Should IOC and its IODE compete in the area of new technologies? Probably not. We do not have the resources and often we find ourselves competing with our own member states who we ask to fund our activities. So we need to find a new model that promotes innovation but that focuses more on making innovation available to all of our member states. In this regard one of our roles has to be in closing the digital divide: technology must be available to <u>all</u> of our member states and not just for the most developed countries.

In the opening of this year's Committee meeting I can of course not ignore the financial crisis that has hit UNESCO. During the 36th Session of the General Conference (25 October – 10 November 2011) UNESCO Member States admitted Palestine as a Member State of UNESCO. In response the United States of America and Israel have withheld their assessed contributions (22,38 % of UNESCO's total budget), resulting in Regular Programme budget deficit of US$ 72 million for 2011 and a projected budget shortfall of US$ 146 million for 2012–2013, with a resulting financing gap of US$ 167 million. To restore cash-flow stability and to eliminate the deficits for the period 2011-2013, UNESCO effected a budget reduction of US$ 188 million or 29 % of the approved budget, with all programme sectors reduced by 31 %. For the IOC this resulted in a cut of US$ 3.2 million for 2012–2013. Even with utilizing what little flexibility there was in staff allocation, the reduction translated into a 77 % cut to resources for activities. US law also forced the withholding of US agency voluntary contributions to UNESCO and to IOC. This situation differs from that of 1984–2002, when the USA voluntarily withdrew from UNESCO while remaining a member of IOC, and thus was able to support the IOC through voluntary contributions. For IODE this meant a reduction of the budget obtained from UNESCO Regular Programme to US$ 30,000 for 2012 and the same for 2013.

It should be clear that the IOC risks losing its recognized leadership in ocean sciences, observations, data management, and services. Achieving our objectives will depend more and more on IOC Member States contributions. Unfortunately our more traditional donors in Western Europe are currently facing economic hardship as well, which has left our calls for support largely unanswered. A welcome exception has been the Government of Flanders which has renewed its support for the IOC Project Office for IODE in Oostende and which, I hope, will continue its support for OceanTeacher, ODINAFRICA and activities in other regions.

Despite this current financial crisis we must look ahead as IOC and also as IODE. It is for this reason that this Committee meeting will be different from others: on Wednesday we will brainstorm on the future of IODE. We will need to address questions such as who are and will be our stakeholders, how can we better link with the ocean research and observation community, how can we connect with initiatives of the new regional alliances and what is our role, what should be the key roles of IODE in the next decade and what are the capacity development needs of our member states?

In the past few years we have welcomed new communities in IODE. The most visible has been OBIS. The Ocean Biogeographic Information System (OBIS) coordinates and manages the global marine biodiversity knowledge base, which provides an integrated view on the past and current diversity, abundance and distribution of life in the oceans. Hundreds of institutions and scientists around the globe contribute to OBIS. The information portal holds data from bacteria to whales, from the equator to the poles and from the surface to the deepest ocean trenches and is used around the globe for planning ocean conservation policies, and identifying biodiversity hotspots and global trends in species distributions. In particular, OBIS contributes to 2 of the 20 UN biodiversity targets: a sustainable management of our marine living resources, and the protection of at least 10% of coastal and marine areas by 2020. As such, it provides data for the identification of Ecologically or Biologically Significant marine Areas as part of the Convention on Biological Diversity and collaborates with the UN Food and Agriculture Organisation for the identification of Vulnerable Marine Ecosystems. Being the largest global access point for marine biodiversity data and through its integration with physical and chemical data, OBIS is well placed to provide expertise, data and

information for environmental and climate change impact studies as well as for global reporting and assessments on the state of marine biodiversity.

I am pleased to announce that IODE has been accepted as a network member of the World Data System (WDS), an interdisciplinary community of excellence under the auspices of ICSU. As a network member, all NODCs will be able to contribute to WDS. However to do this will require NODCs to demonstrate their capability and to meet certification criteria. The IODE has long held the view of a need for a Quality Management Framework to ensure that NODCs are established and operate according to defined principles, including adherence to agreed standards and the requirements of the IOC Oceanographic Data Exchange Policy. This will ensure NODCs can provide data of known quality to meet the requirements of a broad community of users. The IODE QMF includes an accreditation process based on compliance to a set of requirements which will meet the WDS certification requirements.

During this Session of IODE you will be requested to add another new component to IODE through the International Coastal Atlas Network (ICAN). The purpose is to build a functioning digital atlas of the worldwide coast and to develop this as a premier source of spatial information about coastal zones throughout the world. This is done to provide a basis for rationally-informed discussion, debate and negotiation of sustainable management policies for our societies, nations and people throughout the world. This also has implications for global spatial data infrastructures, marine spatial planning and related projects.

Moving on to marine information management we see that many marine libraries are being closed down or merged within larger university libraries. This is understandable from a budgetary point of view but the specific expertise can easily be lost. Within IODE activities are being developed a cross-link multiple information products such as OceanExpert and OceanDocs which add value for the researcher and increasingly work in the interface between data and information.

IODE has a rich tradition in capacity development. Within IOC we can certainly say that IODE has taken the lead and set an excellent example, especially during the past decade with the development of OceanTeacher. I am pleased to see that OceanTeacher is now gradually being accepted beyond IODE as an excellent platform for blended training and I am urging all IOC programmes to use OceanTeacher. ODINAFRICA is without a doubt the most successful caapcity development project of IODE and even IOC. Who can ignore the progress made in Africa? Many of the students who started in 1989 now have senior positions in their institution or even government. These same students, with IOC support, have laid solid foundations not only for data and information management, but for marine research in Africa. This was possible thanks to long-term sustained financial support from the donor. However when we tried to emulate this success in other regions, we were not successful, as we were unable to identify other donors. We must do better therefore in mobilizing resources for capacity development in all regions and in forgeing the necessary alliances. As IOC, we can do so only if the concerned Member States work on this with us.

Let me end by inviting you all to the discussions on the Future of IODE this Wednesday where you will be able to draft the next decade of success of IODE. Despite the many challenges we face today I am convinced that IODE can remain the trailblazing programme it has been since 1961. But we must redefine oursolves in a world that has changed considerably and where resources are spread amongst many players.

I wish you a most successful conference.

Thank you

3.   **Ing. Ramón Zamanillo Pérez, Director General de Educación en Ciencia y Tecnología del Mar de la Secretaría de Educación Pública y Coordinador del Subcomité de la**

Comisión Mexicana de Cooperación con la UNESCO para la Comisión Oceanográfica Intergubernamental

"Estimados miembros del presídium, distinguidos participantes de esta vigésima segunda asamblea, soy portavoz, en primer lugar, un saludo del secretario de educación, responsable de este reto de la educación en nuestro país, que desea enfrentar estos momentos importantes de lo que nos une hoy a estos países que estamos hoy reunidos y también al mismo tiempo, preparar a las generaciones del mañana".

Nuestra secretaria ejecutiva, la señora Wendy Watson Wright, tiene mucha razón en convocar a discutir las limitaciones que traban el intercambio internacional de datos e información oceanográfica, en el marco de un mundo en transformación con el imperativo mayor de supervivencia, estamos seguros que en el diálogo que hoy avanza y nos convoca en la bella Ensenada, será rico y profundo, como rica es profunda la pesca en la Baja California, bordeada de este espléndido mar.

"Estimular la investigación para el uso sostenible de los recursos, a llevado a que cada día sepamos más de las múltiples interacciones que se establecen entre el océano y la atmósfera, así como los grandes procesos físicos-químicos y biológicos que provocan y que acompañan esta dinámica.

Un dato importante es que en México es una nación que posee más agua que tierra, el Mar Territorial de México cubre una superficie de 2.9 millones de kilómetros cuadrados, sus litorales ya sean rocosos o arenosos tienen innumerables ecosistemas marinos de gran importancia y de gran variedad y diversidad de recursos marinos renovables y no renovables, además contamos con una de las barreras arrecifales más importantes del planeta, tenemos una importante zona de manglares, con todo este potencial nutrirnos de otras experiencias nos resulta fundamental.

La obtención de datos oceanográficos, su desarrollo y divulgación con la finalidad de ser usados en las diferentes investigaciones, constituye un proceso de construcción en el cual estamos inmersos y navegando. En esta perspectiva y a partir de la preocupación de nuestro país en la generación de recursos humanos para este propósito, la Secretaría de Educación Pública, en conjunto con las diversas instituciones implicadas en el manejo de datos oceanográficos ha logrado la formación de jóvenes mediante la carrera de técnico en Sistemas de Información Oceanográfica, son estos jóvenes, son capacitados por ejemplo, en realizar estudios para determinar la predicción e intensidad de la marea roja en las principales playas turísticas, donde se incluyen la verificación de estándares de la calidad del agua, análisis sobre la información de objetos georeferenciados a través de sistemas de información geográfica, muchos de los procesos que ocurren en el entorno y muchas actividades que emprendemos tienen que ver y sustentan en fenómenos que ocurren en el mar, por ello, para la predicción de muchos fenómenos es muy fundamental contar con los datos obtenidos de dicho estudio. Los cuales nos ayudan a prevenir y a proteger nuestra calidad de vida y salvaguardar asimismo de cualquier desastre natural a las generaciones futuras, debido a la gran cantidad de datos, variables, centros de investigación y plataformas de observación, es muy complejo concentrar todos los esfuerzos y asumir la responsabilidad y gestión de los datos en tiempo real.

Para ello, se han creado los Centros de Distribución de datos en congruencia con este avance desde octubre del 2011, México registro el Centro Nacional de Datos Oceanográficos (CeNDO, por sus siglas), en el programa IODE, el cual surge como iniciativa de la Comisión Nacional Coordinadora de Investigación Oceanográfica, que preside la Secretaría de Marina y la Universidad Autónoma de Baja California, aquí presente, con el apoyo de otras instituciones como la propia Secretaría de Educación Pública, a la que yo represento a través de la dirección general, el CeNDO es el encargado de estandarizar, sistematizar e instrumentar las bases de datos oceanográficas para su integración, administración e intercambio rápido entre las diferentes instituciones, así como también los diversos órganos de la sociedad, funciona además como repositorio de datos e información ambiental que proviene del Sistema Nacional de Monitoreo Oceanográfico de México (SINAMO, por sus siglas), el acceso a las bases de datos mundiales permite a los científicos de nuestro país disponer de información

para obtener un mejor conocimiento y tomar mejores decisiones por lo tanto, permítanme muy brevemente someter a su consideración el reporte país asociado al IODE, que estamos presentando.

Esfuerzo de México en materia de medición de datos, durante este periodo, los esfuerzos nacionales se enfocaron a 7 tareas:
1. Establecer el Centro Mexicano de Datos Oceanográficos
2. La integración Nacional de los Sistemas Gubernamentales existentes
3. La integración y estandarización de las bases de datos oceanográficos y de información.
4. Entrenamiento y capacitación a nivel nacional
5. La construcción de capacidades de vinculación
6. El establecimiento de nuevos observatorios marinos
7. La generación de productos como atlas.

En el primer caso, el Centro Mexicano de Datos Oceanográficos se estableció el 3 de octubre de 2011, se localiza en la Universidad Autónoma de Baja California, en Ensenada, en esta bella ciudad, en septiembre del 2012, nuestro rector el Dr. Felipe Cuamea, decretó su creación dentro del campus como ya lo señalamos, el propósito del CeNDO, entre otros es facilitar el intercambio de datos y de información oceanográfica a nivel país.

Integración Nacional de los Sistemas Oceanográficos y de Monitoreos existentes, durante el 2011, alineándose con la tendencia mundial para el monitoreo oceanográfico, México reconoció la necesidad de integrar todas las redes gubernamentales de monitoreo en el Sistema de Monitoreo Oceanográfico (SINAMO-SIMARES), como un primer paso a mediados del 2011, realizó una encuesta nacional para identificar las necesidades y capacidades en materia de monitoreo oceanográfico, cuyo objetivo fue identificar las capacidades instaladas, así como las necesidades de los distintos usuarios. Este esfuerzo, detectó que hay una importante falta de coordinación para la integración e intercambio de información y datos oceanográficos que nos tenemos que esforzar de manera importante a la promoción y acceso de información oceanográfica, la necesidad de implementar un instrumento regulador para su estandarización y publicación de datos, necesitamos contribuir con información científica para el desarrollo de políticas públicas y tomas de decisiones, respecto a mares y costas, asimismo, actualizar la tecnología para el almacenamiento y transferencia de datos, en este periodo el CeNDO ha entrenado a 117 profesionales de diversas instituciones académicas en los siguientes cursos:
1. Misión de datos oceanográficos
2. Sistemas automatizados de análisis científico y
3. Diferentes exploradores

Existe una vinculación estrecha entre el CeNDO y el observatorio Costeau en México y las costas de México, cuyo personal se impartieron diferentes cursos, fundamentalmente en La Paz, Mérida y Tuxpan, Veracruz, las comisiones Nacionales relacionadas con las actividades marinas como la CONASO que encabeza la Secretaría de Marina y la CIMARES, han trabajado en colaboración cercana para la elaboración de los lineamientos para el intercambio de la información oceanográfica como parte de la reglamentación para el Archivo Nacional de Información, como apoyo a la iniciativa de la SINAMO, la Secretaría de Medio Ambiente ha dado financiamiento a través de equipo de 3 antenas del Observatorio Costeau a los mares y costas de México.

Generación de productos, el CeNDO constribuye socialmente, durante el 2012 se elaboró el atlas Municipal de riesgos de Ensenada, como parte del Plan Nacional de Protección Costera, contribuye con productos oceanográficos con más de 600 mapas, en la formación de recursos humanos en Sistemas de Información Geográfica, la capacitación que imparte el CeNDO y la IODE ha impactado tanto en el sector gubernamental y ha permeado a las aulas, la primera generación de técnicos en Información Geográfica ya tiene en este momento 69 egresados, la formación que les brindamos a estos jóvenes es teórica y práctica, lo que los alumnos aprenden en clases, lo realizan en campo y posteriormente digitalizado en los laboratorios para ellos dispuestos.

Deseo a nombre de la Secretaría de Educación Pública, que me tocó representar, el día de hoy y una muy buena y exitosa reunión en esta ciudad de Ensenada y un feliz regreso a sus países. Bienvenidos.

4.   Dr. Felipe Cuamea Velázquez, Rector de la máxima casa de estudios

"Una reunión de carácter muy importante porque aquí se genera intercambio de datos, se acuerdan parámetros sobre el manejo de información y lo más importante es que la información oceanográfica tenga la capacidad de generar o de informar a quienes generan políticas públicas para permitir un aprovechamiento más sostenible de los recursos costeros y marinos".

La sede del Centro Nacional de Datos Oceanográficos en México, está en Ensenada, particularmente en el propio Instituto de Investigaciones Oceanológicas y fue creado en el año 2011, en colaboración con el Gobierno Federal, la Secretaría de Marina y la Secretaría de Educación Pública.

"una de las áreas más consolidadas y con más historia en la Universidad es el área de las ciencias del mar, por supuesto que estamos ya en capacidad de transferir tecnologías que ya se transfiere en el caso de la totoaba, en el caso de la almeja generosa y otras especies que están respondiendo los investigadores a que sus trabajos representan alternativas viables para el sector productivo y pesquero de Baja California".

Cuamea Velázquez, informó que la Universidad Autónoma de Baja California ha incrementado el recurso para la convocatoria interna de investigación, dicho recurso lo plantean como un recurso semilla para que posteriormente cada proyecto concurse para fondos extraordinarios en otras fuentes externas de la Universidad, por su parte, Wendy Watson Wright, Secretaria de la Comisión Oceanográfica Intergubernamental de la UNESCO, mencionó que dicha comisión está conformada por 145 estados miembros con un total de 80 centros de distribución de datos oceanográficos en el mundo, incluyendo el de Ensenada.

La señora Wendy Watson Wright mencionó que "Es muy bueno que estén generando datos pero es muy importante que estos datos se sepan manejar, no solo por científicos sino por los políticos y las instituciones, ya que si no lo hacen se puede perder mucha información de vital importancia".
Watson Wright destacó que uno de los aspectos más relevantes es que los países trabajen en conjunto para enfrentar los diferentes retos que enfrentan los mares y costas alrededor del mundo.

"Un problema muy reciente es la acidificación del océano, el pH está bajando mucho por la absorción de dióxido de carbono, lo que la gente puede hacer, creo que ese es el motivo por el cual estamos aquí, primero que nada, la sociedad y los líderes necesitan estar conscientes del estado de los océanos y creo que México está en una posición única porque tiene más tierra debajo del mar, que lo que tiene arriba, de esa manera México puede ser un líder en esa materia en el hecho de que necesitan los líderes y la sociedad estar conscientes de los problemas de los océanos y el hecho de que si no los cuidamos, este planeta no podría subsistir".

ANNEX V

LIST OF DOCUMENTS

Agenda Documents

Agenda #	Code	Title
2.1.	IOC/IODE-XXII/1 Prov.	IODE-XXII - Provisional Agenda
2.1.	IOC/IODE-XXII/2	IODE-XXII Annotated agenda
2.3.	IOC/IODE-XXII/1 Add. Prov.	IODE-XXII - Provisional Timetable
2.3.	IOC/IODE-XXII/Inf.2	List of Publications for the intersessional period April 2011 – February 2013
3.1.	IOC/IODE-XXII/5	Co-Chairs' Report 28/12/12
3.2.	IOC/IODE-XXI/3	IOC Committee on International Oceanographic Data and Information Exchange Twenty-first Session Palais des Congrès Liège, Belgium, 23-26 March 2011
3.2.	IOC/IODE-XXI/3S	Executive Summary of the IODE-XXI report
3.2.	IOC/IODE-XXII/6	Implementation status of the IODE-XI work plan
3.3.	IOC/IODE-XXII/7	Financial and in-kind contribution report (2011-2013)
3.4.	IOC/IODE-XXII/8	Introduction to work plan and budget
4.1.	IOC/IODE-XXII/9	Reports of the NODCs, DNAs and Marine Information Centres
4.2.	IOC/IODE-XXII/10	Report of the IOC Project Office for IODE (2011-2012)
5.1.1.	IOC/IODE-XXII/11	Report of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)
5.1.2.	IOC/IODE-XXII/12	IODE Group of Experts on Marine Information Management
5.1.3.	IOC/IODE-XXII/13	Report of the JCOMM/IODE Expert Team on Data Management Practices (ETDMP)
5.2.	IOC/IODE-XXII/15	Report on the IODE's Global Projects
5.2.1.	IOC/IODE-XXII/14	IODE Steering Group for OBIS (and IODE Group of Experts for OBIS)
5.2.2.	IOC Manuals and Guides 54, Vol. 3	Ocean Data Standards, Vol.3: Recommendation for a Quality Flag Scheme for the Exchange of Oceanographic and Marine Meteorological Data (Draft)
5.2.4.	IOC Workshop Report No. 252	SCOR/IODE/MBLWHOI Library Workshop on Data Publication 5th Session, Woods Hole, 9-10 October 2012
5.2.4.	IOC/IODE-MIM-XII/3	IODE Group of Experts on Marine Information Management (GE-MIM) Twelfth Session NOAA Miami Regional Library, Miami, USA 22-25 January 2013
5.2.10.	IOC/IODE-XXII/25	The IODE International Coastal Atlas Network Project (ICAN)
6.1.	IOC/IODE-XXII/16	OceanTeacher Academy activities and other related Training Activities
6.2.	IOC/IODE-XXII/17	Report on the IODE's regional Capacity Development Projects: ODIN
7.	IOC/IODE-XXII/18	Cooperation with other Programmes and Organizations
7.	WDS briefing v2.0	ICSU World Data System briefing
7.1.	IOC/IODE-XXII/23rev	The JCOMM Marine Climate Data System (MCDS)
8.1.	IOC/IODE-XXII/19	Introduction to the sessional working group discussions on the Future of the IODE Programme
8.1.	IOC/IODE-XXII/26	Suggestions on the Future of the IODE Programme
8.1.	IOC/IODE-XXII/27	The Future of IODE, according to the IODE Community: Analysis of the Survey
8.2.	IOC/IODE-XXII/20	The IOC Strategic Plan for Oceanographic Data and Information Exchange (2013-2016)
8.3.	IOC/IODE-XXII/21	Changes in IODE structure and Terms of Reference
8.4.	IOC/IODE-XXII/22	IODE Quality Management Framework for National Oceanographic Data Centres
10.	IOC/IODE-XXII/24	Proposals to create New Products and Services for the benefit of the Ocean Research and Observation community

Other Documents

Code	Title
CL-2457	Twenty-second Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XXII), Ensenada, Mexico, 11-15 March 2013
IOC/INF-1284 rev.	A Framework for Ocean Observing

ANNEX VI

IODE-XXII (2013-2015) ACTION SHEET

No	Para	Action item	Due by date	To be implemented by
		5.2.3 IODE Ocean Data Portal		
1	141	The representative of WMO strongly supported the development of the ODP, and is working closely with the IODE through the JCOMM-IODE ETDMP to achieve interoperability between the WIS and ODP. WMO offered to assist further in this process if required.	n/a	WMO, ODP PC, ETDMP
2	142	The delegate of the Republic of Korea announced that his country supports ODP and the Korea Oceanographic Data Center (KODC) is in progress to become an ODP data provider as a national node and invited other Member States to follow.	n/a	KODC, ODP PC
3	143	**The Committee invited** Member States to consider a long-term secondment (either to the IODE Project Office or hosted nationally) to cover this requirement.	2013-2014	Member States
		5.2.4 Data Citation/ Data Publishing (SCOR/IODE)		
4	157	**The Committee recommended** that the SCOR/IODE/MBL WHOI data publication project should be continued with a focus on promoting data publication in the ocean research community.	2013-2015	SCOR/IODE/MB L WHOI/BODC
5	158	**The Committee also recommended** to link the project with similar other initiatives (eg ICSU WDS, RDA, SeaDataNet CDIs,…).	2013-2015	SCOR/IODE/MB L WHOI/BODC
		1.1.1 5.2.5 Global Oceanographic Data Archaeology and Rescue (GODAR)/ World Ocean Database (WOD)		
6	163	**The Committee called on** the United States of America to continue its support to US NODC/WDC Oceanography Silver Spring to enable the continuation of these valuable services.	2013-2015	US-NODC
		5.2.6 Global Temperature and Salinity Profile Programme (GTSPP)		
7	176	**The Committee recommended** to national data centres to ask for, and store profiles, at instrument resolution rather than a decimated version. This request is referring to the action item no. 32 listed in the Annex III of the meeting report of the First Session of the SG-GTSPP.	2013-2015	NODCs
		5.2.9 OceanExpert		
8	202	**The Committee noted that**, while the number of individual records has increased steadily, the	2013-2015	OceanExpert *ad hoc* working group

		institutional records need heavy quality management as there are too many duplicate records. This was the result of insufficient attention by the experts when creating their record but this should be corrected. **The Committee instructed** the GE-MIM to identify ways and means to resolve this issue. Regarding OceanExpert quality control **the Committee further instructed** the ODINs to manage expert entries for their region, including increased coverage as well as regular quality control. In this regard **the Committee instructed** the project to create a "regional editor" function as soon as possible. In addition the Committee instructed the GE-MIM to make more use of controlled vocabularies for fields such as "academic qualifications" and standard affiliations for laboratories or institutions.		
9	203	Referring to the proposed linkage of OceanExpert and EDMO (see also Agenda Item 5.1.2) **the Committee requested** the Chair GE-MIM, Co-Chairs and Mr Serge Scory, Mr Francisco Hernandez, Mr Friedrich Nast to restart discussions with SeaDataNet.	2013-2015	Chair GE-MIM. IODE Co-Chairs, S. Scory, F. Hernandez, F. Nast
10	204	**The Committee further requested** GE-MIM to discuss the possibility of accessing SeaDataNet data through using OceanExpert userID and password.	2013-2015	OceanExpert *ad hoc* working group
		6.1 OCEANTEACHER AND TRAINING ACTIVITIES		
11	224	The delegate of Spain informed the Committee about Spain's interest in collaborating with the OceanTeacher Global Classroom project by possibly establishing a Regional Training Centre at the Coastal Oceanographic Center of Canary Island (IEO), located in Santa Cruz de Tenerife to cover the Mediterranean and West African coastal region.	2013-2015	Secretariat to discuss further with Spain
12	225	The delegate of Kenya informed the Committee of Kenya's interest to establish an IODE regional training centre. He noted that Kenya has an experienced NODC and marine library at KMFRI, Mombasa. The NODC and marine library are well known and appreciated regionally as well as internationally. He offered his collaboration to work on the proposal jointly with the Secretariat.	2013-2015	Secretariat to discuss further with Kenya
13	226	… India looks forward to contribute to the OceanTeacher Global Classroom through its International Training Centre for Operational Oceanography (ITCOocean) at ESSO-INCOIS, Hyderabad, India.	2013-2015	Secretariat to discuss further with India

14	227	The delegate of Colombia expressed her country's interest in the possible establishment of a regional training centre. She informed the Committee that national consultation would be organized to identify the best facilities that comply with the technical requirements.	2013-2015	Secretariat to discuss further with Colombia
15	228	The delegate of China, Prof Shaohua Lin, re-iterated the offer of China to establish an IODE regional training centre in NMDIS, China and invited the IODE Secretariat to further discuss the way forward.	2013-2015	Secretariat to discuss further with China
16	229	… drafting of a new OceanTeacher Global Classroom Project proposal for subsequent submission to relevant donors	7/2013	Secretariat and interested member states
		1.1.2 6.2.1 Ocean Data and Information Network for Africa (ODINAFRICA)		
17	239	Noting that the funding for ODINAFRICA from FUST (Government of Flanders) ends in December 2013, **the Committee requested** the IODE Secretariat to work with the Member States from the region in finalizing a proposal for submission to FUST and other potential partners.	7/2013	Secretariat and interested member states
		6.2.7. Other regions		
18	294	The delegate of Kuwait informed the Committee that a KISR staff has participated in an IODE course. He called on IODE to provide more such training. While he did not have the authority to commit to the establishment of a data centre he expressed his institution's interest in increased collaboration to improve local expertise. In this regard he invited an IODE expert to visit Kuwait. He further informed the Committee of regional research cruises involving Saudi Arabia, Qatar, and Oman. He also recommended closer collaboration with ROPME	2013	Secretariat and Kuwait
		6.3. CONCLUSIONS FOR IODE REGIONAL CAPACITY DEVELOPMENT		
19	299	**The Committee invited** all Member States who wish to share data with OBIS and/or wish to set up an OBIS node and need training, to inform the Secretariat of their needs, so OBIS can organise regional training workshops.	2013-2015	IOC Member States and Secretariat
20	300	**The Committee endorsed** the concept of the OceanTeacher Global Classroom combining training in Oostende with training in regional training centres	7/2013	Secretariat

		and using advanced video communication. **The Committee instructed** the Secretariat to develop, together with the Member States that have offered to host a regional training centre, to prepare a project proposal for submission to suitable donors at the earliest opportunity. SEE ALSO PARA 229		
		7.1 The JCOMM Marine Climate Data System (MCDS)		
21	347, 348	**The Committee decided** to establish an *ad hoc* team to review the Implementation Plan during the coming intersessional period. **The Committee invited** Member States to propose members of the *ad hoc* team through a response to a Circular Letter to be issued shortly by the Secretariat. It was noted that the ad hoc team has a deadline to report to the JCOMM DMCG by 30 September 2013 and suggested changes would be forwarded to JCOMM MAN for approval	4/2013 9/2013	Secretariat to issue CL (April 2013) Ad hoc team to report to JCOMM DMCG by 30 September 2013
		8.2. THE IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE 2013-2016		
22	364	**The Committee requested** the IODE Co-chairs to formally submit the Strategic Plan and Draft Decision, on behalf of the IODE Committee, to the 27th Session of the IOC Assembly (June 2013).	6/2013	IODE Co-Chairs at IOC-XXVII
		8.3. IODE QUALITY MANAGEMENT FRAMEWORK		
23	380	**The Committee requested** the Secretariat seeking nominations for membership of the SG-QMF. Nominations will be welcome from both long-established NODCs and newly-established NODCs.	4/2013	Secretariat (by email)
24	384	**The Committee expressed the need** to include external reviewers in the accreditation process. The representative from ICSU confirmed their readiness to provide advice and recommendations to the SG-QMF on accreditation procedures.	4/2013	ICSU WDS
		9. NEW INITIATIVES		
25	392	**The Committee instructed** the GE-MIM to undertake the necessary actions to expand OceanExpert to include ocean research and observation community.	2013-2015	GE-MIM
		13. DATE AND PLACE OF IODE-XXIII		

26	400	The delegate of Kenya informed the Committee that his country will investigate the possible hosting of the 23rd Session. **The Committee further recommended** that the next Session should be held in 2015.	2013-2015	Secretariat to discuss with Kenya
		14. ADOPTION OF THE SUMMARY REPORT		
27	403	**The Committee requested** the IODE Co-Chairs to present the Executive Summary with all Resolutions and Recommendations therein to the Twenty-Seventh Session of the IOC Assembly that would take place between 26 June and 5 July 2013 at the UNESCO headquarters in Paris, France.	2013-2015	IODE Co-Chairs, Secretariat

[end]