INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of UNESCO)

Twentieth Session of the IOC Committee on International Oceanographic Data and Information Exchange  
Beijing, China  
4–8 May 2009

EXECUTIVE SUMMARY REPORT

In accordance with Rule of Procedure 48.3, IOC/IODE, as a primary Subsidiary Body of IOC, is required to report to a Governing Body on its sessions.

The IOC Assembly at its 25th Session will be invited to consider this Executive Summary. The full Summary Report of the Twentieth Session of the IODE Committee is available as Document IOC/IODE-XX/3

The IOC Committee on International Oceanographic Data and Information Exchange 
held its Twentieth Session (IODE-XX) at the China People’s palace Hotel in Beijing, China between 4 and 8 May 2009. The Session was attended by 67 participants from 35 IOC Member States and 4 organizations.

The agenda of the Session is attached as Annex I

The Session’s highlights included:

(i) Good progress has been achieved with the development of the IODE Ocean Data Portal Project but more NODCs should contribute as data providers. IODE must also work with other portal projects, such as SeaDataNet, to ensure interoperability between these different systems as NODCs cannot be expected to install multiple portal applications;

(ii) The committee welcomed closer arrangements with OBIS and expressed its opinion that OBIS should become part of the IODE programme and prepared a statement for the attention of the 25th Session of the IOC Assembly. The Statement is attached as Annex III;

(iii) The Groups of Experts have submitted an extensive work plans for the next two year;

(iv) ODINWESTPAC has developed a comprehensive work plan and this should ensure the further expansion of the work of IODE in the region. In addition there was renewed interest in re-invigorating the ODINCINDIO and ODINCARSA projects;

(v) Cooperation between IODE and JCOMM continued and expanded over the intersessional period. IODE and JCOMM have undertaken a number of important joint
activities such as the Ocean Data Standards Pilot Project, IODE OceanDataPortal, and the WIGOS Pilot Project for JCOMM. IODE has nominated four new members of the joint ETDMP and revised the Terms of Reference, which will be submitted to JCOMM-III.

(vi) IODE has recognized that the change of focus by ICSU (International Council of Science) from a collection of World Data Centres (WDCs) to a World Data System (WDS) may impact on the long-term secure archival of oceanographic data. The Committee established an inter-sessional working group to address the issue of future cooperation with ICSU;

(vii) The Committee recognized the importance of comprehensive, professional management as well as long-term secure archival of the IPY data, and requested all NODCs as well as WDCs Oceanography to actively participate in this activity;

(viii) The Committee further discussed the need to organize specific activities to celebrate the 50th anniversary of the IOC in 2010, and of the IODE in 2011;

(ix) The Committee re-elected Dr Malika Bel-Hassen Abid (Tunisia) and Mr Gregory Reed (Australia) as IODE Co-Chairs.

The Committee adopted two Resolutions and 5 Recommendations:

**RESOLUTIONS**

Resolution IODE-XX.1: REVISED TERMS OF REFERENCE OF THE IODE GROUP OF EXPERTS ON BIOLOGICAL AND CHEMICAL DATA MANAGEMENT AND EXCHANGE PRACTICES (GE-BICH)

Resolution IODE-XX.2: DEVELOPMENT OF THE HARMFUL ALGAL INFORMATION SYSTEM

**RECOMMENDATIONS**

Recommendation IODE-XX.1: REVISION OF THE TERMS OF REFERENCE OF THE JCOMM/IODE EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ETDMP)

Recommendation IODE-XX.2: THE OCEAN DATA STANDARDS PILOT PROJECT

Recommendation IODE-XX.3: THE IODE OCEAN DATA PORTAL PROJECT (IODE ODP)

Recommendation IODE-XX.4: THERMODYNAMICS AND EQUATION OF STATE OF SEAWATER. TEOS-10

Recommendation IODE-XX.5: PROGRAMME AND BUDGET FOR 2009-2011

They are annexed to this Report as Annex II.

The Committee reviewed and agreed upon the work plans for all IODE Groups of Experts and IODE Projects.

The Committee adopted its work plan and budget for the period June-December 2009 as well as for the biennium 2010-2011. For 2010-2011 it based itself upon an estimated allocation from the UNESCO Regular Programme of US$ 185,000 (biennium) as well as on already
confirmed extra-budgetary funding. In this regard the Committee expressed its appreciation especially to the Government of Flanders (Kingdom of Belgium), which is the main donor of IODE. The detailed financial requirements are listed in Annex I to Recommendation IODE-XX.5. It will be noted that there exists a shortfall of US$ 4,200 for 2009, and US$ 29,200 for 2010-2011 for activities that could be expected to be funded through the UNESCO Regular Programme. In addition there is a balance to finance from extra-budgetary sources of US$ 233,000 for the biennium 2010-2011.

1. Relevant observations, decisions and recommendations made by the Committee on the Agenda Items can be summarized as follows:

2. Agenda Item 4.3: REPORT OF THE IOC PROJECT OFFICE FOR IODE: The Committee instructed the Secretariat to contact countries that had indicated, in their national report (see Agenda Item 4.1), the possibility to provide seconded staff or internships, to formalize the offers.

3. Agenda Item 5.1.1: IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH): The Committee adopted Resolution IODE-XX.1 (see above)

4. Agenda Item 5.1.1.2: Impact on IODE of cooperation with OBIS: The Committee stressed that funding is a major issue. As the OBIS business plan is not yet available, the Committee was not able to comment in detail on funding issues. However, there will be implications for IOC and IODE, although the document (IOC/IODE-XX/12.2) suggested that these might be smaller if OBIS became part of IODE. Whatever the solution, extra funding will need to be sought. An indication of some of the costs involved is provided in the document - these are not trivial. The Committee agreed that OBIS should retain the high profile and identity that it had developed, but did not see that placing it within the IODE programme should diminish this in any way. Examples of other programmes within IOC and IOODE, for example GLOSS and GTSPP, illustrated that this was possible. GLOSS has remained strong and focused although it has been moved around within the IOC structure and GTSPPP has its own identity and has retained a science element despite being a part of IODE. The Committee saw no reason to change the structure of OBIS if it becomes part of IODE. The Regional OBIS Nodes (RONs) should remain: they are specialised data centres. They work well and there is no reason to try to move them into NODCs. In any case they are regional not national and they have the appropriate biological/biodiversity expertise available - which might not be the case if they were to be integrated with an NODC. However, increased collaboration between RONs and NODCs would be beneficial to both. The RONs do not receive any central OBIS funding, they are supported by their host organisations (in the same way as NODCs). The Committee noted that the OBIS data are included in GBIF, but OBIS provides a valuable, well-organised and necessary marine focus and certainly should be retained. The Committee stated that from an IODE perspective, having OBIS within IODE is an attractive option as described in the documents (IOC/IODE-XX/12.1 and 12.2), but it should be noted that there is considerably more to the management of biological data than that carried out by OBIS, as evidenced by the new terms of reference of GE-BICH. From the OBIS perspective there is much to be gained by having closer links with data, which complement the biogeographic data sets. Creating a new joint group of experts will resolve some of the issues and ensure a close working relationship. The Committee adopted the “IODE Statement of the future of OBIS” attached as Annex III to this Report. The Committee requested Mr Geoff Holland, Consultant, as well as the IODE Co-Chairs to present this statement to the 25th Session of the IOC Assembly, where this item will be further discussed and decided upon.

5. Agenda Item 5.1.3.1 and 5.1.3.2: JCOMM/IODE Expert Team On Data Management Practices (ETDMP): The Committee expressed its great satisfaction with the progress made by the ETDMP with respect to the E2EDM technology and IODE ODP v.1 development, and stated that the work carried out by the ETDMP was an excellent justification for the joint ownership of
Agenda Item 5.1.3.3: JCOMM/IODE Ocean Data Standards Pilot Project: The Committee, considering its work in the areas of vocabularies and metadata, invited the SeaDataNet project managers to submit standards proposals to the Ocean Data Standards Pilot Project. The Committee considered that this would offer the opportunity to SeaDataNet to share and promote its expertise beyond Europe. Similarly, the Committee invited Member States or regional initiatives active in the area of standardization and best practices, to submit proposals to the Ocean Data Standards Pilot Project. The Committee adopted Recommendation IODE-XX.1 (see above).

Agenda Item 5.1.3.4: IODE Ocean Data Portal: The Committee adopted Recommendation IODE-XX.3 (see above). The Committee expressed its appreciation for the support offered by the Government of Korea to host and co-sponsor a Regional Training Course on OceanDataPortal for the WESTPAC region, to be held between 31 August and 3 September 2009. In Agenda Item 5.1.3.5 it was noted that the IODE Ocean Data Portal will contribute to the WIGOS Pilot Project for JCOMM, thereby also providing a bridge between oceanography and meteorology.

Agenda Items 5.2.1 - : The Committee reviewed and approved the work plans for IODE projects including GODAR, GTSPP, GOSUD and marineXML. It also decided to close the MEDI project and tasked the JCOMM/IODE ETDMP to deal with future development and administration of MEDI.

Agenda Item 5.2.7: Thermodynamics and Equation of State of Seawater - TEOS-10: The Committee adopted Recommendation IODE-XX.4 (see above).

Agenda Item 6.1: IODE CAPACITY BUILDING: OceanTeacher and Training Activities: The Committee welcomed the success of OceanTeacher, thanked the Government of Flanders (Kingdom of Belgium) for supporting this important Project and invited Member States to (i) contribute to OceanTeacher by making available national experts as lecturers or content providers; and (ii) make use of the OceanTeacher Academy for new staff members of data and information management centres who require training; and (iii) provide sponsorship for OceanTeacher Academy students from developing countries.

Agenda Items 6.2: IODE’S REGIONAL CAPACITY BUILDING PROJECTS – ODIN:

(i) ODINAFRICA: The Committee welcomed the substantial contribution made by participating countries and other programmes/projects in the region to the implementation of planned activities. The Committee noted with appreciation the impact that the previous phases of ODINAFRICA have had on the development of marine sciences in the region, and thanked the Government of Flanders (Kingdom of Belgium) for the support that they have continued to provide. The Committee welcomed the collaboration with other organisations and projects in the region, including the Large Marine Ecosystem projects and the Western Indian Ocean Marine Sciences Association in the implementation of the next phase. The Committee also welcomed the approval of the next phase of the project, ODINAFRICA-IV.

(ii) ODINCARSA: The Committee noted the progress made with the Caribbean Marine Atlas (CMA) pilot project and the approval of the CMA project. Regarding the Latin America sub-regional component of ODINCARSA the Committee thanked Rodney Martinez Güingla (the out-going ODINCARSA regional coordinator for South America) for the excellent job he had done in the development of the ODINCARSA network since the project started in 2002. The Committee requested the IODE Secretariat to organize a
regional meeting for ODINCARSA to enable the participating countries to define new goals and to identify a new regional coordinator for the South American sub-region.

(iii) ODINCINDIO: The Committee noted with regret the slowdown in the project since the resignation of Dr Nasser Zaker from Iran as the ODINCINDIO Regional Coordinator. The Committee instructed the IODE Secretariat to follow-up with communications to IODE and IOC national contacts in the region, as well as to organize a meeting for Member States from the region during the 25th Session of the IOC Assembly (June 2009).

(iv) ODINECET: The Committee commended ODINICET on the successful implementation of their work programme during the inter-sessional period which had focused on the development of e-repositories of marine publications and noted with appreciation that the development of the ODINECET repository had resulted in a substantial increase in the citation of literature from the region, reflecting increased usage of the literature through the e-repository.

(v) ODINWESTPAC: The Committee had noted that coordination of the project had been passed on from Japan (JODC) to China (Prof. Lin Shaohua) and welcomed the impressive work plan, already prepared that will include several regional activities including a coordination meeting, training courses and data product development.

(vi) ODIN-Black Sea: The Committee welcomed Dr V. Vladymyrov as the new ODIN-Black Sea coordinator. Noting that there were now two data portal systems in development (IODE OceanDataPortal and SeaDataNet) the Committee tasked the ETDMP to compare the similarities and differences between the various portal systems that are being developed with the objective of promoting and achieving their interoperability.

(vii) ODIN-PIMRIS (Regional Network of Pacific Marine Libraries): The ODIN-PIMRIS pilot project (2009-2010) brings together five regional organizations (Pacific Islands Forum Fisheries Agency – FFA, South Pacific Applied Geoscience Commission – SOPAC, Secretariat of the Pacific Community – SPC, Pacific Regional Environmental Programme – SPREP, and University of the South Pacific – USP) and five national agencies (Cook Islands, Fiji, Kiribati, Samoa and Solomon Islands). The regional organizations concentrate their efforts on maintaining their digital libraries and e-repositories, while the PIMRIS Coordination Unit (CU) develops a standard e-collection structure based on Greenstone software platform for marine and fisheries departments in the region. The PIMRIS Coordination Unit acts as the Project coordinator. The Committee noted that there are a lot of ongoing activities related to climate change in the Pacific region and encouraged ODIN-PIMRIS to establish partnerships with these initiatives so that their publications can be made available through the ODIN-PIMRIS repositories.

Agenda Item 6.3: EMERGING NEEDS IN CAPACITY BUILDING: The Committee noted that IODE was now undertaking annual surveys amongst the IODE national coordinators (data management and information management) to assess training needs. The October 2008 survey had resulted in a list of 8 training courses that will be organized and hosted by the IOC Project Office for IODE between June 2009 and June 2010. Each course will welcome up to 20 students. Participants can be self-supported or sponsored through the OceanTeacher Academy project. The Committee agreed on the IODE course calendar and called on the Member States to promote the IODE Training activities on the national level. The Delegate of Malaysia offered to establish a regional training node in the International Centre for South-South Co-operation in Science, Technology and Innovation (ISTIC) in Kuala Lumpur, which functions under the auspices of UNESCO (http://isticunesco.org/). The Committee invited the Delegate from Malaysia as well as other Member States that may be interested in hosting a regional IODE training node, to discuss the details and requirements in more detail with the IOC/IODE Secretariat.

Agenda Item 6.4: IODE ACTIVITIES IN THE IOC CAPACITY DEVELOPMENT FRAMEWORK: The last 4 years provided opportunities for synergies between the ODINAfrica project of IODE and the Capacity-development Section of IOC. These opportunities have arisen
naturally during the capacity developing programmes of workshops for directors, and training workshops for scientists in coastal modelling. Most hosts of National Oceanographic Data Centres have participated in the workshops and this has impacted to some degree the working of these Data Centres. Two guiding principles improved effectiveness of capacity-development efforts; these were to keep engagement in issues that are need-based and country-driven. The country driven approach is used by IODE in the planning process of its ODIN networks. Heads of institutions were actively involved in the planning process of both ODINCARSA and ODINAFRICA, which resulted in a focus towards national priorities in ODIN activities. The activities of ODINAFRICA-IV will also be aimed towards specific country needs, such as the development of high quality products and tools to support decision-making, management and conservation. Specific national issues that are targeted by ODINAFRICA-IV activities include shoreline changes, marine related hazards (storm surges), management of key ecosystems and integrated coastal zone management. The Committee noted that the need driven approach for capacity building is also clearly reflected in the planning process of training activities organized under the new OceanTeacher Academy (OTA). Yearly organized surveys on DM and MIM training needs send out to the IODE network will result in the identification of priority training needs across the IODE network and planning of training activities will be based upon this. The Committee welcomed the implementation of the IOC capacity development principles into the IODE capacity building.

Agenda Item 7.1: REPORT ON THE FOLLOW-UP OF THE IODE REVIEW (BY UNESCO): The Committee noted with satisfaction that most of the Recommendations of the Review had been implemented.

Agenda Item 7.2: REPORTS ON CHANGES IN NATIONAL ARRANGEMENTS FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT AND EXCHANGE: The Committee noted that there is considerable variation in the national models used for oceanographic data and information management, ranging from the centralized model, through the mixed model to the fully distributed model, as defined in IOC Manuals and Guides No. 5 (2nd rev. ed.) 2008. The Committee stressed that it should not prescribe one single model as the model used will depend on organizational, financial and other conditions existing in a country. To ensure the best possible national coordination between the different national data centres the Committee recommended that Member States establish national data and information coordination mechanisms.

Agenda Item 7.3: IODE ARRANGEMENTS FOR THE LONG-TERM SECURE ARCHIVAL OF DATA AND INFORMATION: ICSU (International Council of Science) is changing from a collection of World Data Centers (WDCs) for many geophysics disciplines to a World Data System (WDS) of these disciplines. The Strategic Goal of the new system is to facilitate a new, coordinated global approach to scientific data and information that ensures equitable access to quality data and information for research, education, and informed decision making. It was recalled that ICSU is non-governmental and IODE is intergovernmental. IODE has previously relied on WDCs to serve as long-term archives for oceanographic data. However in recent years new technology has changed the nature of data exchange and archiving. The question was posed “If ICSU or IODE becomes a “distributed system” of data centers with one or more portals, who or what is responsible for long-term archiving of data?” The Committee established an inter-sessional working group that will address the issue of “Long-term Secure Archival of Data and Information”. It was tasked to answer the following questions: (i) What does IODE need from WDCs or their successor organizations to promote “Long-term Secure Archival of Data and Information”; (ii) What do WDCs or their successor organizations need from IODE to promote “Long-term Secure Archival of Data and Information”.

Agenda Item 7.4: DATA PUBLISHING (SCOR/IODE): It was recalled that data are collected from ocean science activities that range from a single investigator working in a laboratory to large teams of scientists cooperating on large, multinational, global ocean research projects. What these activities have in common is that all result in data, some of which are used
as the basis for publications in peer-reviewed journals. However, two major problems remain regarding data: (1) much data that are valuable for understanding ocean physics, chemistry, geology, and biology, and which will help us understand how the ocean operates in the Earth system are never archived or made accessible to other scientists; and (2) when scientists do contribute data to databases, their data become freely available, often with little acknowledgement and no contribution to their career advancement. The Scientific Committee on Oceanic Research (SCOR) and IODE convened a meeting in Oostende, Belgium on 17-19 June 2008 and prepared a work plan including: (i) detail workflow for data brief publication process; (ii) draft Terms of reference/guidelines for content contributors, repository input administrators, and NODCs; (iii) Draft deposit guidelines for content contributors; (iv) Implement pilot project with established repositories; (v) Develop technical description and requirement of repository system (certification, citation formats, file formats, metadata structures); (vi) convene meeting with publishers and editors; (vii) follow-up meeting to discuss implementation; and (viii) dissemination and promotion. Consultations were also held with ocean science journal editors and publishers to discuss how to implement greater use of data publication.

24 Agenda Item 8.2: COOPERATION WITH GEO/GEOSS: The Committee noted with appreciation and interest the contribution of IODE to GEO/GEOSS through the IODE Ocean Data Portal.

25 Agenda Item 8.3: COOPERATION WITH IOC SCIENCE PROGRAMMES: The Committee was reminded that the IOC Assembly, at its 24th Session (2007), adopted the IOC Strategic Plan for Oceanographic Data and Information Management. This led to a pro-active approach by IODE to seek cooperation with IOC Ocean Science programmes:

(i) Cooperation with the IOC HAB Programme: The IPHAB/IODE Task Team (which involves the IODE GE-BICH) sets to establish the HAIS as the premier Internet-based facility for a “one-stop shopping” range of quality-assured data and information on HABs, toxin-producing algae and associated events in the world oceans. In addition to providing a wide range of information to support the needs of a broad customer base, HAIS will contain data on national monitoring programmes and scientific expertise provided by national experts. By collating this material and making it available, HAIS will facilitate the global exchange of information on HABs and toxin-producing algae (TPA), as well as provide a safe archive of HAB and TPA data for future generations. A detailed work plan has been prepared. The Committee welcomed the cooperation with IOC/HAB on HAIS which is an example of the new role of IODE assigned to IODE within the framework of the IOC Strategic Plan for Oceanographic Data and Information Management. The Committee adopted Resolution IODE-XX.2 (a similar Resolution has been prepared by IPHAB).

(ii) Cooperation with the IOC ICAM Programme: Collaboration with IODE has been active mostly at the regional level through regional projects such as ODINAFRICA phase III and IV, the SPINCAM (Southeast Pacific data and Information Network in support to Integrated Coastal Area Management) project, and Caribbean Marine Atlas project.

26 Agenda Item 8.4: COOPERATION WITH IPY: The Committee noted that the International Polar Year (IPY) has been a tremendous success. Tens of thousands of scientists from over 60 countries around the globe have been involved in an unprecedented scientific endeavour. Over 1 billion dollars of new money has been made available for polar research. Now is the time to ensure the preservation of the IPY Legacy for future generations of scientists and for society at large to benefit from. The most important legacy is the data legacy. The goal of IPY data management is to preserve all IPY data for future generations of scientists to use. The first step is to identify all IPY data and that overview is needed well in advance of the IPY conference in Oslo in June 2010. The Committee stressed the importance of comprehensive, professional management as well as long-term secure archival of the IPY data, and called on the NODCs as well as WDCs Oceanography to actively participate in this activity. The Co-Chair of
the IPYIODP data committee and the IODE Secretariat will collaborate to mobilize the IODE NODCs.

27 **Agenda Item 8.5: COOPERATION WITH OTHER PROGRAMMES AND PROJECTS:**

(i) **OceanObs’09:** for Data management two plenary papers will be presented, dealing with the present state of the data system. The results of the meeting will be important for IODE because it will give the scientific community’s view on how data management should evolve and we need to take this into account. The Committee called on NODCs to actively participate in OceanObs’09.

(ii) **Ocean Tracking Network:** The Ocean Tracking Network (OTN) is a pilot project of the Global Ocean Observing System (GOOS) and is headquartered at Dalhousie University in Halifax, Canada. Oceanographic variables are measured by sensors on tagged animals and other oceanographic instruments and transmitted to lines of receivers on the ocean floor and/or robotic submarines (gliders) patrolling oceanic areas of interest. Next-generation receivers will "daisy-chain" data to satellites and or cabled "ocean observatories" connected to shore stations to provide near real time data. OTN is seeking IODE assistance to achieve best practices in a number of ways, including: a) creating an Ocean Expert designation for ocean tracking specialists, b) advising on proper and effective use of existing IODE and ISO standards and formats, c) formulating new standards and formats where they currently do not exist d) preparing of best practices procedures and protocols manuals and e) accepting OTN data into IODE designated repository(s).

(iii) **OneGeology:** OneGeology’s aim is to create a dynamic digital geological map data for the world. It is an international initiative of the geological surveys of the world that are working together to achieve this ambitious and exciting venture. The Committee invited NODCs to collaborate with OneGeology by providing marine geology data or to contact relevant national contacts in institutions that may hold relevant maps or data.

(iv) **Marine Metadata Interoperability Project (MMI):** The Marine Metadata Interoperability project is funded by the US NSF and supported by the Monterey Bay Aquarium Research Institution (MBARI). Its mission is "Promoting the exchange, integration and use of marine data through enhanced data publishing, discovery, documentation and accessibility.". Cooperation between IODE and MMI could focus on the co-development of content, such as references and guides, for OceanTeacher. MMI could also assist with the development of references and evaluation criteria for standards and vocabularies. This would be a useful contribution to the IODE/JCOMM Ocean Data Standards process and the MMI community could provide experts to review submitted standards and vocabularies. MMI is developing vocabulary repositories, which could be utilized by IODE to publish IODE/JCOMM vocabularies as ontologies. Both IODE and MMI could contribute to discussions about interoperable approaches to repositories. For IODE the advantages of cooperation would be: (i) cooperation on issues such as data and metadata standards and (ii) make use of the specialized resources of MMI, This would avoid duplication of effort in developing standards and ontologies. For MMI the advantages would be improved synergies and communication with the international community and this could provide high-level overarching support for IODE projects, such as Ocean Data Standards. The Committee welcomed the cooperation with MMI and recommended its continuation, thereby also taking into account the SeaVox vocabulary services and developments taking place in the IODE Marine XML Steering Group.

28 **Agenda Item 9.2: 50TH ANNIVERSARY OF THE IOC IN 2010 and 9.3: 50TH ANNIVERSARY OF IODE IN 2011:** The Committee identified a number of activities to commemorate the 50th anniversary of IODE. The Committee established an inter-sessional Working Group to finalise plans for commemoration of the 50th anniversary of IODE.
The Committee instructed the Co-Chairs to bring to the attention of the IOC Assembly the need to diversify the sources of extra-budgetary funding, recalling that over 90% of the extra-budgetary funding for IODE is now provided by one Member State. IOC Member States can assist IODE either through secondment of national experts, through hosting and co-sponsoring events either at national venues or elsewhere, or by financial contributions to the IOC Trust Fund. The Committee also called on Member States to use the Flanders-UNESCO Trust Fund for Science as an example of an effective and flexible way to provide assistance to UNESCO and its IOC and this had been confirmed by an assessment, and invited other Member States to establish similar mechanisms with IOC to support IODE and other IOC programmes. The Committee adopted Recommendation IODE-XX.5 (see above).

Agenda Item 14: DATE AND PLACE OF IODE-XXI: The delegates of Belgium and the United States of America offered to investigate the possibility of hosting the 21st session IODE-XXI in 2011. The Committee welcomed the offers and instructed the Secretariat and the Co-Chairs to follow-up on the offers.
ANNEX I

AGENDA

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      5.1.3 JCOMM/IODE Expert Team On Data Management Practices (ETDMP)
   5.2 OTHER PROJECTS
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      5.2.2 Global Temperature and Salinity Profile Programme (GTSPP)
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      5.2.4 Marine XML (marineXML)
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      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 the Central Indian Ocean Region (ODINCINDIO)
      6.2.4 Ocean Data and Information Network for European Countries in Economic Transition (ODINECET)
      6.2.5 Ocean Data and Information Network for the Western Pacific region (ODIN-WESTPAC)
6.2.6 ODIN-Black Sea
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6.2.8 Other networks: Europe - SeaDataNet

6.3 EMERGING NEEDS IN CAPACITY BUILDING

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ANNEX II

RESOLUTIONS AND RECOMMENDATIONS ADOPTED BY IODE-XX

Resolution IODE-XIX.1

REVISED TERMS OF REFERENCE OF THE IODE GROUP OF EXPERTS ON BIOLOGICAL AND CHEMICAL DATA MANAGEMENT AND EXCHANGE PRACTICES (GE-BICH)

The IOC Committee on International Oceanographic Data and Information Exchange, Recognizing that the work of the Group of Experts on Biological and Chemical Data Management and Exchange Practices has evolved from the initial focus on biodiversity to a coverage of a broader range of chemical and biological data which were not well covered before, Taking into account the decision of the IOC Executive Council on the possibility of continuation of the Ocean Biogeographic Information System (OBIS) under the umbrella of IOC, Noting that the 19th session of IOC Committee on International Oceanographic Data and Information Exchange (IODE-XIX) had extended the Terms of Reference to include communication of the results of the work of GE-BICH to the wider community of data managers and data users through a web portal and through the Ocean Teacher for education of data managers and data users, Decides that the GE-BICH adopts the following Mission Statement: “To promote greater integration of biological, chemical and physical data within IODE’s network of national data centres in support of biogeochemical research, and ecosystem studies and management.”

Further decides that the revised Terms of Reference be as follows:

i). To provide an international forum, raising awareness about new initiatives, best practices, and emerging standards for biological and chemical data management and exchange practices;

ii). To collate and compile guidelines, supporting the integrated management and quality control of biological and chemical data in IODE’s network of national oceanographic data centres;

iii). To contribute to the development of standards, controlled vocabularies, and recommended practices for the management, interoperability and exchange of biological and chemical data, supporting the scientific and operational requirements of the community;

iv). To encourage data centres to compile inventories of past and present biological and chemical data holdings, and make data available to global databases and specialised data portals;

v). To encourage data holders to contribute data to data centres for the creation of regional and global integrated oceanographic databases incorporating physical, chemical and biological data;

vi). To communicate the results from the GE to the wider community of data managers, providers and users.
Encourages IOC Member States to nominate experts having expertise in biological and chemical data management and exchange practices to the Group of Experts

Stresses the importance of:

- Continuing the close collaboration developed with OBIS within the new arrangements that will be decided on,
- Maintaining close relations with relevant IOC programmes such as HAB, IOCCP and GOOS, as well as other organizations and programmes including FAO, ICES, PICES, CIESM, ICSU, SeaDataNet.

Resolution IODE-XX. 2

DEVELOPMENT OF THE HARMFUL ALGAL INFORMATION SYSTEM

The IOC Committee on International Oceanographic Data and Information Exchange,

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,

Acknowledging the data products developed within the IOC Harmful Algal Bloom Programme on harmful algal events, harmful algae monitoring and management systems, current use of taxonomic names of harmful algae, biogeography of harmful algal species, and an expert directory and a bibliography;

Recalling Resolution XXIV-9 on the IOC Strategic Plan for Oceanographic Data and Information Management, and Recommendation IODE-XIX.1 through which the IODE Committee endorses the IOC Harmful Algal Information System as a joint IPHAB-IODE activity;

Recalling the need for a further development, integration and streamlining of these data products;

Having reviewed the Plan for a Harmful Algal Information System prepared by the Joint IPHAB/IODE Task Team on the development of the Harmful Algal Information System;

Endorses the Plan and its priorities;

Encourages its National Oceanographic Data Centres to contribute their expertise to the Harmful Algae Information System;

Endorses the continuation of the IOC Harmful Algal Event Information System as a joint IPHAB-IODE activity as stated in Resolution IPHAB-IX.2 by the IOC Intergovernmental Panel on Harmful Algal Blooms (IPHAB).
Recommendation IODE-XX.1

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

The IOC Committee on International Oceanographic Data and Information Exchange,

Recognizing an increasing importance of ocean and data management standards for the effective exchange and shared use of metadata, data and products from the JCOMM/IODE Data Centres.

Noting planned development of the IODE Ocean Data Portal, JCOMM and IODE Ocean Data Standards Pilot Project and WIGOS Pilot Project for JCOMM,

Recommends to revise the Terms of Reference of the Expert Team on Data Management Practices including membership procedures as described in the Annex to this recommendation;

Invites the IOC Executive Secretary in consultation with the Co-Chairs of IODE and the Chair of the JCOMM DMCG to submit the revised Terms of Reference to JCOMM-III for approval;

Encourages IOC Member States to support the ETDMP work through nomination of experts with expertise in data and information management.

Annex to Recommendation IODE-XX.1

Terms of Reference of the JCOMM/IODE ETDMP

The JCOMM/IODE Expert Team on Data Management Practices in close collaboration with JCOMM Programme Areas, WMO/CBS subsidiary bodies, IOC/IODE Officers and related experts, shall:

i. Manage the process of adopting and documenting standards and best practices to be used in JCOMM/IODE data management through the Ocean Data Standards Pilot Project (ODS);

ii. Review and assess the effectiveness of end-to-end data management practices, including integration and consideration of new techniques and approaches;

iii. In concurrence with the co-Presidents of JCOMM, Chair of the JCOMM Data Management Coordination Group (DMCG) and IODE Officers, establish Task Teams and Pilot Projects, as necessary, to undertake the work of the Expert Team on Data Management Practices;

iv. Direct and coordinate the activities of Task Teams and Pilot Projects referred to under (iii);

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

vi. Liaise and collaborate with other groups as needed, to ensure access to required expertise, appropriate coordination and to avoid duplication.
Membership

The membership is selected to ensure an appropriate range of expertise and to maintain an appropriate geographical representation, and includes:

i. Up to 5 experts, including the Chairperson, selected from Members/Member States with an appropriate geographical representation:

ii. Up to 4 experts with relevant expertise based on the current work plans of the Task Teams and Projects established by the ETDMP.

iii. One Co-chair of the IOC International Oceanographic Data and Information Exchange (IODE) Committee.

iv. Representatives of JCOMM Programme Areas and other expert bodies may be invited as appropriate with the concurrence of the co-Presidents of JCOMM and the Co-chairs of the IOC Committee on IODE and with no resource implications to the Commission.

Members of the Expert Team should have experience and skills in one or more of the following:

i. Extensive scientific and/or technical expertise in meteorology or oceanography;

ii. Experience in managing meteorological or oceanographic data in support of other WMO or IOC Programmes;

iii. Technical skills in information technology and software tools such as XML, web-technologies for distributed data system/GIS, relational databases, and computer programming languages.

Recommendation IODE-XX.2

THE OCEAN DATA STANDARDS PILOT PROJECT

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 data community,

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

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

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

Urges Member States to play an active role in the Ocean Data Standards Process and to adopt recommended standards at the earliest opportunity.
Recommendation IODE-XX.3

THE IODE OCEAN DATA PORTAL PROJECT (IODE ODP)

The IOC Committee on International Oceanographic Data and Information Exchange,

Noting the successful completion of the development and testing of a prototype of the IODE ODP that provides a mechanism to integrate marine data from a number of distributed sources both in the network of NODCs and from other participating systems;

Further noting that IODE and JCOMM have established collaboration through an implementation plan for the WIGOS Pilot Project for JCOMM and that IODE ODP technology will be used in the Pilot Project by some of the participating centres;

Considering that there are other similar data access systems, such as SeaDataNet, OBIS, and DMAC, being developed and that it is important for the IODE ODP Project to develop interoperability arrangements with them;

Recommends that:

i. IODE NODCs, DNAs, and other IODE projects implement the IODE ODP Project by providing access to their data resources;
ii. the IODE ODP Project works closely with the WIGOS Pilot Project for JCOMM to implement a connection between IODE centres participating in IODE ODP and meteorological centres using WIS to ensure mutual access to data and information in their respective data systems;
iii. the IODE ODP Project collaborates with other data access systems to develop technical specifications to permit mutual access to data resources of each system;
iv. the IODE Project Office and ETDMP support the IODE ODP Project operations including the technology infrastructure and training courses.

Requests the IOC Executive Secretary to invite Member States to participate in the implementation of the IODE Ocean Data Portal Project by providing access to their data resources.

Recommendation IODE-XX.4

THERMODYNAMICS AND EQUATION OF STATE OF SEAWATER. TEOS-10

The IOC Committee on International Oceanographic Data and Information Exchange,

Noting the report from SCOR WG127 that describes the significant work done on defining a new procedure to calculate the thermophysical properties of seawater;

Further noting that instrumentation that derives salinity from a measure of conductivity converts first to practical salinity and then using ancillary material and another algorithm, practical salinity can be converted to absolute salinity;

Considering that WG127 remarked that the ancillary material and the conversion algorithm from practical salinity to absolute salinity is still immature and likely to change as more data accumulate;
Further considering that the recommendation from WG127 is that:

i. principal investigators should prepare and submit salinity data in the practical salinity scale to archive centres;
ii. archive centres should continue to archive practical salinity to ensure the long term integrity of the archive;

Notes and agrees with the scientific importance of defining new thermophysical properties of seawater and expresses its interest in the outcome of considerations by the 25th IOC Assembly for its adoption;

Recommends

I. that data centres continue to archive practical salinity, not absolute or reference salinity in accordance with recommendations from WG127;
II. that WG127 widely document these practices and their rationale, similar to what was provided to IODE-XX in appropriate journals (e.g. Journal of Atmospheric and Oceanic Technology) and newsletters (e.g. EOS);
III. that in communications describing the new procedures, WG127 clearly indicate that salinity be reported to data centres in practical salinity;
IV. that the scientific community be asked to provide to national and international data centres all necessary metadata, including manufacturer and model of instrumentation used to measure salinity;
V. that data centres ensure that instrument information be stored along with the practical salinity measurements;
VI. that data centres that are compelled to accept absolute salinities request from the submitters information about the versions of the algorithm and ancillary material used to convert from practical to absolute salinity.

Recommendation IODE-XIX.5

PROGRAMME AND BUDGET FOR 2009-2011

The IOC Committee on International Oceanographic Data and Information Exchange,

Having reviewed its programme implementation requirements for the period 2009-2011,

Being aware of the continuing severe financial constraints 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 increasing 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,

Calling attention to the continued process of reform of the IODE programme that takes into consideration the recommendations made by the IODE Review,

Expressing great appreciation to the Government of Flanders, Belgium for hosting and supporting the IOC project Office for IODE and for its continuing and increasing financial support to IODE, as well as to other donors and Member States who are providing financial and in-kind support for IODE,
Appreciating the in-kind support for the IODE Programme provided by Member States through establishing and maintaining IODE Data Centres, provision of experts and through the provision of valuable ocean data and information products and services,

Calls on Member States to provide financial support to the IOC Trust Fund, 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;

Requests to the IODE Co-Chairs to bring to the attention of the next Session of the IOC assembly, the IODE Programme of work and budget for the period 2009-2011, as attached in the Annex to this Recommendation.

ANNEX I to Recommendation IODE-XX.5

RP: UNESCO regular programme; EB PO: extra-budgetary funded through project office; EB other: funding through other extra-budgetary funding sources; EB req: extra-budgetary funding to request (donor not identified)

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<th>2010</th>
<th>2011</th>
<th>Comments/timing</th>
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### Cooperation with OBIS

1. Meeting of RONs (at PO)  
   - Hosted by Project Office (provisional)
   - 25,000

### SeaDataNet

1. Sponsorship for IMDIS  
   - Participants support
   - 13,000

### Cooperation with HAB/HAIS

1. Development of HAIS; DB platform for monitoring and biogeographic data; HAEDAT back-up  
   - EB Unidentified (50% IODE/50% HAB)
   - 50,000

### Cooperation with IOC/ICAM

1. SPINCAM - DM training  
   - Hosted by project office
   - 20,000

### IODE Programme Administration

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<td>Administration sub-total</td>
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### TOTAL RP

- Requested: 49,200
- Expected available UNESCO RP: 45,000
- Project Office Requested: 124,000
- Available Project Office: 160,000
- Other extrabudgetary Requested: 0
- Other extrabudgetary identified: 1,247,704

### TOTAL Other extrabudgetary

- EXPECTED AVAILABLE UNESCO RP: 92,500
- Project Office Requested: 193,500
- Available Project Office: 200,000
- Other extrabudgetary Requested: 0
- Other extrabudgetary identified: 964,760

### BALANCE

- Balance: -4,200
- 36,000
- -11,700
- 6,500
- 0
- 142,000
- -17,500
- 154,000
- -91,000

### Deficit 2009 RP

- -4,200

### Deficit 2010-2011 RP

- -29,200

### Deficit EB unidentified 2010-2011

- -233,000
ANNEX III

IODE Statement on the future of OBIS

At its twentieth Session, the IOC Committee on International Oceanographic Data and Information Exchange (IODE) considered the two options suggested for the continuation of the OBIS programme within IOC resulting from the meeting held between IOC and OBIS in November 2008 (1). These were:

(i) The adoption of OBIS as an IODE programme activity;
(ii) The adoption of OBIS as a new programme of the Commission.

After considered discussion of the options, IODE came to the view that the preferred option was (i) above (the adoption of OBIS as an IODE programme activity) for the following reasons:

(i) The 24th session of the IOC Assembly in 2007 approved the IOC Strategic Plan for Oceanographic Data and Information Management (2009-2011), which aims to build up a comprehensive system for the management of data from all IOC programmes, including data and information from Member States obtained through operational processes and scientific investigation. This, naturally, includes the biological ocean data that is under the management of OBIS;

(ii) At present, IODE urgently needs to further develop biological data management and exchange. Adoption of OBIS will undoubtedly promote data management in this area;

(iii) Establishment of a new joint IODE-OBIS Expert Group alongside GE-BICH would facilitate synergies and efficiencies in the allocation of resources (cash and in kind) in respect of the required IODE budget and human resources, avoid duplication of effort and enhance the exchange and management of ocean biological data.

Hence the Committee agrees in principle that the OBIS programme could be sensibly accommodated within IODE. However without a more finalized version of the OBIS business plan, the financial requirements and thus the financial implications for IODE cannot be fully assessed at this point in time. Thus IODE decided that it would be premature to make a Recommendation at this stage, whilst welcoming the possibility of OBIS becoming a part of IODE.