

Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies



IOC Committee on International Oceanographic Data and Information Exchange

Twentieth Session

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UNESCO

Abstract

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 Session's highlights included: (i) IODE Ocean Data Portal: good progress was reported in the development of the IODE ODP 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) OBIS: the committee expressed its opinion that OBIS should become part of the IODE programme prepared a statement for the attention of the 25th Session of the IOC Assembly; (iii) the Groups of Experts have submitted an extensive work plans for the next two year; and (iv) ODINWESTPAC has developed a comprehensive work plan and this should ensure the further expansion of the work of IODE in this region. In addition there was renewed interest in re-invigorating the ODINCINDIO and ODINCARSA projects. 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. The Committee re-elected Dr Malika Bel-Hassen Abid (Tunisia) and Mr Gregory Reed (Australia) as IODE Co-Chairs.

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

Group photograph of IODE-XIX participants



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1. OPENING

- 1 Dr Zhang Zhanhai, the Director General of International Relations at the State Oceanic Administration of China (SOA) welcomed the participants to the Twentieth Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE) at 09:30 on Monday 4 May 2009 at the China People's Palace Hotel, in Beijing, China. Dr Zhanhai invited the Deputy Administrator at SOA Mr Chen Lianzeng to address the participants and officially open the 20th session of IODE.
- 2 In his opening address, Mr. Chen Lianzeng informed the delegates that the government of China attaches great importance to the Intergovernmental Oceanographic Commission (IOC) of UNESCO and its work in organizing and coordinating intergovernmental marine cooperation, praises highly its achievements and greatly supports its work. He observed that IODE, which is responsible for coordinating oceanographic data and information exchange for the IOC, has played an important role in promoting international oceanic scientific cooperation and marine research in Member States, gaining a high reputation among relevant international organizations and countries. Ever since joining IODE in 1981 China has, through the State Oceanic Administration, endeavoured to fulfil its obligations and responsibilities, widely exchanged marine data and information with member states, actively participated in major projects of IODE, and established good cooperative relations with the world's major maritime countries.
- 3 He noted that the oceans are the main component of the global life support system. In the 21st century, the ocean is taking on a prominent position in global political, economic and social development. The 20th Session of IODE provides a good platform for experts and scholars to discuss and exchange ideas and for promoting international cooperation on marine data and information management. It will enable participants to make contributions to frontier marine scientific research and sustainable utilization of marine resources. China will, as always, strengthen cooperation with other countries and international organizations, making efforts towards our common goal of building a marine ecological civilization and harmonious development of humans and the oceans as a whole.
- 4 He concluded by wishing the participants success in their deliberations and hoped that they would enjoy their stay in Beijing.
- 5 In her opening remarks, the Co-Chair of IODE, Dr Malika Bel Hassen Abid thanked the local hosts for the excellent arrangements made for the Session. She pointed out that IODE is increasingly focussing on how to improve interactions with the broader community. The increasing recognition of data management as an important activity in many international programmes has resulted in IODE establishing and strengthening collaborative links with organisations and programs such as JCOMM, WMO, OBIS and GEOSS.
- 6 Dr Bel Hassen Abid highlighted the following as some of the key issues that the session will have to address: (i) the development of the IODE Ocean Data Portal to provide the capability to unite the National Oceanographic Data Centres into a federated network that ensures the rapid dissemination of data and information. The IODE Ocean Data Portal will also serve to coordinate the provision of ocean data resources with other developing systems such as the WMO Information System (WIS) and the Global Earth Observation System of Systems (GEOSS), (ii) the development and use of common standards. The standards process, which was initiated at the joint IODE/JCOMM sponsored meeting which was held in 2008, is an essential component for interoperability. The success of this process is dependent upon the involvement of the IODE community in the evaluation and implementation of standards, (iii) changes to the ICSU World Data Centre system and how the formation of the new World Data System (WDS) will impact on the IODE, and (iv) future cooperation between IODE and the Ocean Biogeographic Information System (OBIS).
- 7 She noted that the IODE strategy for capacity building continues to bear fruit and increasing numbers of National Oceanographic Data Centres, established under the Ocean Data and Information

Networks (ODINs), are now fully operational. However, much remains to be done to ensure that new NODCs play a functional role in data and information management and exchange at national and regional levels. The holding of IODE-XX in the WESTPAC region is a great occasion to strengthen the development of ODINWESTPAC. In addition, the establishment of the OceanTeacher Academy, as a part of the IODE Capacity Building strategy, will provide an excellent annual programme of courses related to oceanographic data and information management.

- 8 She concluded that good progress has been made to ensure easy access to all types of marine data (and information) on an appropriate time scale, encompassing global, regional and local needs. The adoption of the IOC Strategic Plan for Oceanographic Data and Information Management by the twenty-fourth Session of the IOC Assembly will allow the establishment of a comprehensive and integrated ocean data and information system, serving the broad and diverse needs of IOC Member States. She invited the Committee to make wise decisions that will ensure the future of the IODE as the key programme for ocean data and information.

2. ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

- 9 The Technical Secretary (Mr Peter Pissierssens) introduced this Agenda Item. The Committee was invited to review and adopt the provisional agenda (**Document IOC/IODE-XX/1 prov.**) – available from the IODE web site <http://www.iode.org/iode20>. The Committee was requested to note that the core working documents (Agenda, List of Documents) were now only available as on-line documents.

- 10 **The Committee adopted** the Agenda with amendments to include a presentation on OceanObs'09 under Item 8.5 (The agenda is attached as Annex I).

2.2 DESIGNATION OF A RAPPORTEUR

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

2.3 SESSION TIME TABLE AND DOCUMENTATION

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

- 13 The IODE Technical Secretary (Mr Peter Pissierssens) reviewed the arrangements for the Session and presented **Document IOC/IODE-XX/4 prov. (List of Documents)** available on line through <http://www.iode.org/iode20> and attached as Annex V.

- 14 He informed the Committee about the working hours for the Session and provided other details relevant to the conduct of the Session.

2.4 ESTABLISHMENT OF SESSIONAL WORKING GROUPS

- 15 The Technical Secretary invited the Committee to establish sessional working groups. **The Committee established the** following sessional working 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 2009 and for the period 2010 – 2011. The group was requested to bear in mind that funds remaining for 2009 from the UNESCO RP amounted to only US\$ 45,000. The sessional working group was requested to work on the basis of a budget of US\$

185,000 (for the biennium 2010/2011) from the UNESCO Regular Programme. This includes US\$ 11,100 for “IODE and OBIS”. The sessional working group was further requested to summarise the financial requests of the Group of Experts as well as those of projects and project proposals, and to propose prioritization of the requests. (See Agenda Item 12)

- (ii) **Sessional working group on the Ocean Data and Information Networks for the Western Pacific region (ODINWESTPAC), and the North and Central Indian Ocean region (ODINCINDIO):** This sessional working group was tasked with reviewing the development and implementation of the respective ODINs, recommend mechanisms for strengthening them and developing work plans for the coming inter-sessional period. (See Agenda Item 6.2.3 and 6.2.5)
- (iii) **Sessional working group on collaboration with OBIS:** This sessional working group was requested to consider the benefits of collaboration with OBIS, the creation of a joint IODE/OBIS group of Experts, increased collaboration between NODCs and the Regional OBIS Nodes (RONs), changes to the operation and management of GE-BICH, and possible collaboration in capacity building in marine biodiversity data management. (See Agenda Item 5.1.1.2)
- (iv) **Sessional working group on IODE cooperation with the ICSU WDS:** this sessional working group was requested to consider the IODE needs for long-term secure data archival and whether the new WDS will service those needs (see Agenda Item 7.3)

2.5. LOCAL ARRANGEMENTS

- 16 The local hosts informed the Committee on local arrangements. Information and guidelines for participants were made available through the IODE-XX web site (<http://www.iode.org/iode20>).

3. INTRODUCTORY REPORTS

- 17 Under this agenda item reports were presented to give an overall overview of the IODE system, its activities and implementation of the programme at the national, regional and global levels.

3.1 CO-CHAIRS REPORT

- 18 Dr Greg Reed presented the Co-Chairs report, referring to **Document IOC/IODE-XX/6 (Co-Chairs Report)**.

- 19 The Groups of Experts continue to develop and improve IODE's data and information management capabilities. At the 10th session of GE-MIM, Ms Linda Pikula was elected as the new chairperson, replacing Ms Suzie Davies. Significant progress has been made in ODINECET, with the establishment of an electronic document repository, and in the Pacific Islands with the creation of a sub-regional ODIN-project for the Pacific Islands Marine Resources Information System (ODIN-PIMRIS), which will focus on marine information management capacity building. The 4th session of GE-BICH set strategic priorities for the Group, revised its Terms of Reference and discussed the formation of a new joint Group of Experts with OBIS (GE-OBIS). The focus of the joint IODE/JCOMM ETDMP has changed and the members have revised the Terms of Reference and called for new membership with a Circular Letter sent in October 2008 inviting nominations.

- 20 The growing co-operation between IODE and JCOMM has continued during the inter-sessional period. IODE is a partner in the WMO Integrated Global Observing Systems (WIGOS) Pilot Project for JCOMM. This project aims, amongst other things, to make oceanographic data available in

real-time and delayed mode through interoperability arrangements between the WMO Information System (WIS) and the IODE Ocean Data Portal (ODP). The IODE ODP development continues with additional data providers planned for this year. IODE, in partnership with the JCOMM Data Management Coordination Group, organized the IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards in January 2008. The meeting discussed a wide variety of standards-related topics and agreed on a standards process that will enable the recommendation of a standard to the IOC and WMO.

- 21 The IOC Manuals and Guides No. 5 (2nd revision) has now been released. This Guide is intended as a tool for policy makers at the national level to assist them with the decision-making related to the establishment of national facilities for the management of oceanographic data. It is also intended to be a reference document for national organizations involved in, or planning to be involved in, oceanographic data management.
- 22 Changes to the ICSU World Data Centre system and the formation of the new World Data System (WDS) will impact on the IODE and this will require further deliberation during this session.
- 23 The fourth, and final, phase of ODINAFRICA has been approved with funding from the Government of Flanders (Kingdom of Belgium). The overall goal of ODINAFRICA-IV is to promote the sustainable management of marine and coastal resources, as well as reducing the risks of ocean related hazards, based on sound scientific knowledge.
- 24 Major changes in the structure and presentation of OceanTeacher have taken place with the move to Semantic MediaWiki (SMW+) as the technical platform and the establishment of the OceanTeacher Training Academy (a project funded by the Government of Flanders, Kingdom of Belgium) which will provide an annual teaching programme of courses related to oceanographic data and information management. Online surveys on training requirements were undertaken in October and December 2008 and, based on the results of these surveys, a new OceanTeacher Academy curriculum has been prepared for 2009-2010.
- 25 The development of the African Marine Atlas (AMA) continued during the inter-sessional period and a pilot project for the Caribbean Marine Atlas (CMA) commenced. IODE has joined the International Coastal Atlas Network (ICAN) and will host the 5th ICAN meeting in 2010.
- 26 The Co-Chairs presented the progress of the IODE programme at the 24th Session of the IOC Assembly and the 41st Session of IOC Executive Council. IOC-XXIV adopted the IOC Strategic Plan for Oceanographic Data and Information Management (Resolution XXIV-9), which aims to establish 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"*. In order to provide governance for the Strategy, the IOC Data and Information Management Advisory Group has been established. This body will oversee the implementation of the Strategy and bring together the various programme elements of IOC as well as of bodies and organizations collaborating closely with IOC.

3.2 IMPLEMENTATION STATUS OF THE IODE-XIX WORK PLAN

- 27 The Agenda item was introduced by the Technical Secretary (Mr Peter Pissierssens), referring to **Document IOC/IODE-XX/7 (*Implementation Status of the IODE-XIX Work Plan*)**. He recalled that the IODE-XIX Action Sheet was reviewed during the IODE Officers Meeting that took place at the IOC Project Office for IODE between 27-30 November 2008. 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.
- 28 Out of the 62 action items the following 5 items remained uncompleted: **11** (investigation of possible intern support by Canada), **12** (Development of model for regional or specialized centres); **39** (cooperation with ROPME on ODINCINDIO); **46** (contacting AAAS regarding translation of

OceanTeacher materials); 57 (JCOMM/IODE training course in storm surge modelling). The Technical Secretary noted that the completion rate of 82% is considerably better than the previous completion rate.

29 With regard to paragraph 11, the Technical Secretary informed the Committee that it had not been possible to get support for an intern from Canada.

30 With regard to paragraph 19 the Technical Secretary informed the Committee that not much progress had been made. A sessional working group, set up for this purpose during the current session, would discuss the future of ODINCINDIO.

31 With regard to paragraph 57 the Technical Secretary informed the Committee that a training course on modelling had been organised by IODE in collaboration with JCOMM (the Jamboree), and another is planned for October 2009. The representative of JCOMM Mr Robert Keeley reminded the Committee that the JCOMM Services Programme Area has established an Expert Team on Wind Waves and Storm Surges. The team has developed a series of courses on storm surges. IODE should contact Val Swail, Chair of the ET and explore the opportunity for collaboration.

32 **The Committee congratulated** the Co-Chairs and the IODE Secretariat for the hard work in ensuring a high level of implementation of the IODE-XIX work plan.

3.3 FINANCIAL AND IN-KIND CONTRIBUTION REPORT

33 The agenda item was introduced by the Technical Secretary (Mr Peter Pissierssens) referring to **Document IOC/IODE-XX/8 (Financial and in-kind contribution report/ Introduction to Work Plan and Budget)**. He reported that IODE has continued to receive substantial extra-budgetary funding during the inter-sessional period 2007-2008: 95% of the IODE operational budget was of extra-budgetary nature. However most of the extra-budgetary support (89%) was provided by two donors (from one Member State): The UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST) provided 53% of support (which covered the large scale projects ODINAFRICA and OceanTeacher as well as smaller scale projects such as CMA, e-repository etc); and the direct support provided by the Government of Flanders (Kingdom of Belgium) for the IOC Project Office for IODE in Oostende, Belgium. The latter included support for 3.5 local staff positions as well as approximately €200,000/year for project office activities (meetings and training courses). Efforts were being made to increase mobilization of other sources of funding which resulted so far in participation in EU-funded projects such as SeaDataNet, CASPINFO and Upgrade Black Sea SCENE which enhanced the ability of IODE to create international linkages and the wide experience with capacity building made IODE attractive to EU projects.

34 The continued increase in the number of projects implemented by IODE has created a shortage of professional staff at the Secretariat. This has been resolved partially through the inclusion of professional staff positions in extra-budgetary project budgets (e.g. UNESCO ALDs). In addition the People's Republic of China was able to provide a one-year seconded expert (local costs covered by IODE) to assist with IT matters in 2008-2009. However additional professional expertise will be required at the Secretariat to ensure appropriate support of projects such as IODE Ocean Data Portal (and associated cooperation with the WIGOS Pilot Project for JCOMM), Ocean Data Standards, support to JCOMM/IODE ETDMP, etc.

35 For the next inter-sessional period 2010-2011 the level of extra-budgetary support will be largely maintained. In this regard Mr Pissierssens mentioned the approval by the Government of Flanders (Kingdom of Belgium) of 3 new projects: ODINAFRICA-IV (see Agenda Item 6.2.1), OceanTeacher Academy (see Agenda Item 6.1) and Caribbean Marine Atlas (see Agenda Item 6.2.2). The support for ODINAFRICA is unlikely to be continued beyond the fourth phase. Provided that the review of the Project Office is positive it is also expected that its support by the Government of Flanders (Kingdom of Belgium) will continue in 2010-2011. It is further expected that the funding by

the UNESCO regular programme will remain at its present level.

36 The Technical Secretary expressed concern about the small donor base from which IODE is currently obtaining support. While the support from the Government of Flanders (Kingdom of Belgium) is very substantial and has allowed IODE to make considerable progress in many areas, there is a need to identify additional donors to provide a more sustainable and long-term future for the IODE programme. In this regard IODE should be considered as a substantial partner in regional and global programmes that have a data and information management component.

37 The Technical Secretary invited Member States to second professional staff to the IOC Project Office for IODE to assist with the implementation of the IODE work plan, which has substantially expanded following the joint programme with JCOMM. Such secondments could have a duration of a few months to 1-2 years and should preferably be funded by Member States.

38 **The Committee expressed its great appreciation** to the Government of Flanders (Kingdom of Belgium) for the support it has continued to provide for the implementation of IODE activities.

39 **The Committee also thanked** the government of China for seconding an expert to the IOC Project Office for IODE for a period of one year and **called** on other Member States to follow this example.

3.4 INTRODUCTION TO WORK PLAN AND BUDGET

40 This Agenda Item was introduced by the Co-Chairs, referring, *inter alia*, to **Document IOC/IODE-XX/8 (Financial and in-kind contribution report/ Introduction to Work Plan and Budget)**. They also provided a brief presentation outlining the budget requests that have been included in the substantive working documents referring to **Annex I to the Action Paper**. The information was referred to the sessional working group on work plan and budget for discussions.

4. NODC, WDC AND PROJECT OFFICE REPORTS

4.1 REPORTS OF NODCS, DNAS AND MARINE INFORMATION CENTRES

41 This Agenda item was introduced by Mr Robert Gelfeld, referring to **Document IOC/IODE-XX/9 (Report on activities of the NODCs and DNAs)** and **Document IOC/IODE-XX/9 add. (Full National Reports)**. In preparation for IODE-XX, and in line with recommendations by the IODE review and the IOC Assembly, the Secretariat had revised the national report format to encompass two online surveys (one for Data Management and one for Marine Information Management) to obtain more quantitative information that would enable to identify trends at the national level, as well as questions to identify capacity building and general IODE programme needs.

42 Mr. Gelfeld reported that for IODE-XX fifty-nine National Reports were received for Data Management and thirty-eight reports for Marine Information Management. The new survey format had allowed the Secretariat to better analyze the results in a timely and simple manner.

43 The majority of Member States reported that they are an IODE National Oceanographic Data Centre (NODC), but there was some confusion about whether they are a centralized or distributed centre. An overwhelming number now provide their services online and the majority 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. The majority of the reporting Member States apply the 'IOC Oceanographic Data Exchange Policy'. This implies the timely, free and unrestricted international exchange of oceanographic data and associated metadata.

44 The Data Centres maintain a well-rounded staff and a majority of the Member States have

seen an increase or status quo in budget and working staff. Travel and training resources for most centres critically benefit from membership in IODE primarily through the contacts in other centres and the experience they share. There is inconclusive information to analyze the annual operational budget for data centres (excluding staff cost) [converted into US Dollars], though the majority of Member States have indicated that it has remained the same or increased. A revised series of budget questions should be included in future surveys.

- 45 The Member States continue to collect and archive all types of oceanographic data and more of these data are available online. The majority have a metadata catalogue - though the reports indicate that these need to be made available online. The range of data types handled by Member States include: physical, chemical, biological, marine meteorology and atmospheric data, geological and geophysical data and most data centres process delayed-mode data and with some real-time data. All of the Member States agreed that quality control should be a priority including reviewing and revising existing manuals where appropriate. Most have not provided data to WDCs Oceanography in 2007 and/or 2008. This maybe due to a lack of awareness on many data centres and this will be addressed in IODE-XX document 27 - IODE arrangements for the long-term secure archival of data and information.
- 46 Results from the Marine Information Management survey showed that a majority are research institution libraries that have seen an increase in online users and number of requests for 2007-2008. They participate fully in IODE Global activities and have seen a dramatic increase and demand in online products.
- 47 The IODE capacity building strategy implemented through the ODINAFRICA and ODINCARSA projects substantially increased the capacity of the participating countries as reflected in the national reports. The newer ODIN programmes (ODINCINDIO, ODINECET, ODINWESTPAC, and ODINBLACKSEA) should continue to develop. Many Member States have hosted scientists and data managers from IODE data centres, a practice which has been mutually beneficial, and have participated in IODE training courses. Each centre benefits from membership in IODE through communication with other centres and by sharing experience. Each Member State has gained much from participation in the international projects and interactions with the scientific community who are usually also present at meetings. IODE strengthens the role of its data centres in Member States in the long term in contrast to project data centres, which are only active for a short period.
- 48 There was no positive response for providing direct financial support to IODE in 2009-2010 through the IOC (confirmed). In terms of seconding a national expert to the IOC Project Office for IODE, 16 countries answered positively for secondments up to 3 months, one for a secondment of 6 months, and two for a secondment of 12 months, but all assuming all costs will be covered by IODE.
- 49 The survey process has provided very useful information for analysis. It should be refined in the future with suggestions by Member States, Expert Team on Data Management Principles (ETDMP) and Group of Experts for Marine Information Management (GEMIM) to better focus on new ideas and tendencies for both the Data Management and Marine Information Management communities. This will help form a historical forum for future surveys and analyses.
- 50 Mr Sydney Levitus (WDC Oceanography, Silver Spring) expressed concern that the conclusion that most Member States did not contribute data to the WDCs Oceanography and the numbers obtained in the online survey were under-estimated and did not reflect the correct statistics. He stated that more data are now made available over the Internet without restrictions. WDC Oceanography, Silver Spring and WDC Oceanography, Obninsk are willing to work with the IODE Secretariat to get a clear picture of data submission and flow to the WDCs Oceanography.
- 51 Ms Linda Pikula, Chair GE-MIM, noted that for Marine Information Management any future surveys needed to capture improvements in recording repositories activity. Metrics on data publishing

would also be helpful.

52 **The Committee further recommended** that in future surveys information should also be collected on Cruise Summary Reports (CSR).

53 **The Committee**, considering that IODE-XXI will celebrate the 50th anniversary of IODE, **stressed the need** to clearly demonstrate the huge data flow into the IODE network.

54 **The Committee tasked** the IODE Officers, with assistance from other members of the Committee as appropriate, with further refining and developing metrics for quantifying data flow in the IODE network, taking account of the guidelines on metrics/indicators in Manuals and Guides No. 5 (2nd rev. ed.) 2008.

4.2 REPORTS OF THE ICSU WORLD DATA CENTRES OCEANOGRAPHY AND MGG

55 This Agenda Item was introduced by the Directors of the ICSU World Data Centres Oceanography. They referred to **Document IOC/IODE-XX/10.1, Document IOC/IODE-XX/10.2, Document IOC/IODE-XX/10.3, and Document IOC/IODE-XX/10.4.**

4.2.1 Report of the WDC Oceanography, Tianjin, China

56 Professor Lin Shaohua, Honorary Director-General, National Marine Data and Information Service (NMDIS), presented for Mr. XU Sheng, Director of the WDC Oceanography, Tianjin the report (**Document IOC/IODE-XX/10.4**) on the inter-sessional activities of the WDC Oceanography, Tianjin and its plans regarding the transition of the WDC system to the WDS. The WDC Oceanography, Tianjin strengthened its marine data collection, processing and management, and improved its services during the inter-sessional period.

Participation of the WDC-Oceanography, Tianjin in National Marine Scientific Data Sharing Project in China.

57 The WDC Oceanography, Tianjin took an active part in the collection, processing, management and service of marine data for scientific programmes and researches.

Participation of the WDC-Oceanography in International Cooperative Programs/Projects

58 The WDC Oceanography, Tianjin reported on the following international activities:

1. Participation in the Data Management and Service of Argo Project.

59 The global Argo data were downloaded from the GDAC website, quality controlled and published on the website. The Argo data management and service provided online access to the quality controlled global Argo profiles data, metadata, trajectory data and deployment information through its website (<http://www.argo.gov.cn>). By November 2008, 500,601 profiles data had been quality controlled and then published on the website, totalling 6.30GB. In addition 204,712 profile data were updated, totalling 2.77GB in 2007 and 2008. The users were able to download the data via FTP.

2. Participation in Data Management and Service of GTSP Project.

60 The WDC Oceanography, Tianjin took an active part in the GTSP data collection, processing, management and service. The GTSP data were downloaded from the MEDS system and then quality controlled for publication on the GTSP website (<http://221.239.0.160/gtsppweb/index.htm/>). By November 2008, 3.23GB of real-time GTSP data starting from November 2004 had been published on its website, and 14.3GB delayed-mode GTSP data had been quality controlled and then published on the website. 1.98GB of real-time GTSP data

and 3.08GB delayed mode GTSP data were updated in 2007 and 2008. In November 2007 the sixth GTSP Data Centre was set up in China.

3. Participation in ODAS/JCOMM Metadata Service and META-T Pilot Project

- 61 The WDC Oceanography, Tianjin took charge of the JCOMM ODAS metadata management and service. The JCOMM ODAS Metadata Management Centre was established in 2003. It conducts collection, processing and management of the metadata on the ODASs operated by the JCOMM Member States, international organizations and cooperative projects. It undertakes the operational running, maintenance and service of ODAS metadata. A website, JCOMM ODAS Metadata Service (ODASMS) (<http://www.odas.org.cn>), was set up in 2004 for publication of metadata. The ODASMS held 9,018 platform records, including the records of 4,581 profile floats, 3,452 drifting buoys, 621 fixed platforms, and 264 moored buoys by the end of 2008. These metadata were derived from the DBCP, China Argo Data Centre and the GLOSS project. Experts of the WDC Oceanography, Tianjin attended the workshop of the META-T Pilot Project in 2008 and participated in the discussions with META-T colleagues.

4. Participation in the GLOSS Project

- 62 Monthly mean sea level data of 6 Chinese coastal stations have been provided to the two GLOSS data centres every month in 2007 and 2008. Delayed-mode hourly sea level data of 9 Chinese coastal stations will continue to be provided to the two GLOSS data centres in the University of Hawaii Sea Level Center (UHSLC) and the U.K. Proudman Oceanographic Laboratory (POL). A GLOSS data collection and processing system was developed to download the world sea level data from the UHSLC and then process them. The processed GLOSS data were integrated into the marine database hosted by the WDC-Oceanography, Tianjin for data service.

Participation of the WDC-Oceanography, Tianjin in Regional Projects

1. Participation in the NEAR-GOOS Delayed-mode Data Management and Service

- 63 China's NEAR-GOOS Delayed-mode Database (DMDB) (<http://www.near-goos.coi.gov.cn/>) has been operationally working for ten years since its establishment in 1996. The WDC Oceanography, Tianjin undertook the collection of related marine data and the cooperative work with the members of NEAR-GOOS. In 2007 and 2008, 2.0GB data were downloaded from other NEAR-GOOS members. 40MB of quality-controlled data were uploaded into the China DMDB. 500 copies of the document of "A Strategic Plan for NEAR-GOOS in its Second Phase" were published and made available.

2. Participation in the Development of ODINWESTPAC Project

- 64 The WDC Oceanography, Tianjin took an active part in the development of the ODINWESTPAC project. Infrastructure was built up for the project. Integration of marine data and data products is in progress. Marine information was being collected. A regional workshop or training course is planned for the capacity building of the WESTPAC countries.

3. Participation in the Chinese NMDIS Node of The PICES Marine Metadata Federation

- 65 The PICES Marine Metadata Federation is a new project in which the WDC Oceanography started to participate in 2007. After technical training and software and hardware installation, the Chinese node was registered in the FGDC Clearinghouse in 2008. 40 records of metadata of tidal prediction products for Chinese and Southeast Asian harbours were processed according to the requirements of the project and uploaded to the clearinghouse.

Plan of the WDC-Oceanography, Tianjin in the transition of WDC

66 The WDC Oceanography, Tianjin paid much attention to the restructuring of the WDCs and FAGS. During the transition term from the end of the WDC system (October, 2008) to the time when the new World Data System (WDS) will be fully functional, the WDC Oceanography, Tianjin will continue its current activities as before, offer suggestions to the WDS Transition Team, and respond to the ICSU calls for nominations to staff the World Data System Scientific Committee (WDSSC). It will reapply formally to become a part of the WDS and will strengthen its work in the light of the principles, goals and missions of the WDS that will be clear in next months.

67 **The Committee thanked** Prof Lin Shaohua for her extensive and detailed report and **expressed its appreciation** for the considerable work carried out by the WDC Oceanography, Tianjin during the past inter-sessional period.

4.2.2 Report of the WDC for Marine Environmental Science (WDC-MARE)

68 Mr Michael Diepenbroek (MARUM, University Bremen) was unable to attend IODE-XX. Accordingly Dr Malika Bel-Hassen Abid introduced this agenda item referring to **Document IOC/IODE-XX/10.3 (ICSU World Data Center for Marine Environmental Sciences (WDC-MARE))**. She explained that WDC-MARE is operating on a long-term basis. The institutional frame is supplied by MARUM, University Bremen in cooperation with the Alfred Wegener Institute (AWI), Bremerhaven, which is a member of the Helmholtz Association of National Research Centres, funded by the Federal Ministry of Education and Research. Around 20 people are associated with WDC-MARE. The budget amounts approximately 1,2 M Euro per year for personnel, hard-, and software. Third party funds are about 70% of the total budget. Data management services on an international level have been supplied since 1996. Until 2008 PANGAEA® was and is a partner in more than 50 European to international projects covering all fields of environmental sciences (www.pangaea.de/Projects).

69 PANGAEA®, an information system for the processing, long-term storage, and publication of geo-referenced data related to earth science fields (www.pangaea.de), is used as an operating platform for WDC-MARE. Organization of data management includes quality control and publication of data, and the dissemination of metadata according to international standards. All data are long-term archived, referenced by Digital Object Identifier (DOI), and freely accessible through a map-based search engine via the Internet.

70 PANGAEA® currently holds 675.000 data sets comprising 4,5 billion data items from all earth science fields. The growth of the data inventory is exponential.

71 Besides the support for the research centre (incl. all related institutes), WDC-MARE is currently supplying **data management services** for the European part of IODP (MSP) for "post cruise" data of IODP (NSF contract), for the EU projects HERMES (IP), CARBOOCEAN (IP), EUROCEANS (NoE), SESAME (IP), CENSOR (IP), ESONET (NoE), EPOCA (CP) and CoralFish (CP), as well as for a number of national programmes and projects (e.g. the German SOLAS). Within CARBOOCEAN, WDC-MARE with contributions from CDIAC (WDC), presently compiles the largest global near-surface CO₂ data set. The project is supported by UNESCO/IOCCP, SOLAS, and IMBER. Further highlights are the recent take-over of the Baseline Surface Radiation Network (BSRN, World Climate Research Programme - WCRP) and the initiation of an „Open Access“ journal – the “Earth System Science Data (ESSD)” at Copernicus (<http://www.earth-system-science-data.net/>).

72 A further focus lies on the implementation of standard conform **Spatial Data Infrastructures** (SDI), whereby PANGAEA® on the one hand takes the role as distributor of data and metadata (e.g. GBIF, OBIS) and on the other hand implements networks, portals, or serves as broker between different e-Infrastructures. Recent activities are the implementation of the Scientific Earth Drilling

Information Service (**SEDIS**) for IODP (<http://sedis.iodp.org/>), for the World Data Center System (<http://www.world-data-centers.org/>), a national GRID project, and for the EU projects EUROCEANS and CARBOOCEAN, and ESONET/EMSO (ESFRI). The latter aims at networking European oceanographic observatories.

73 Political activities includes fostering the data publishing concept (e.g. SCOR/IODE meetings), the elaboration of a concept for sustainable management and archiving of data in the national context (science boards of German Science Foundation), and participation in the ICSU „Committee on Data and Information (SCID)“, which recently published the report on the further development of the WDC System, the WDS, incl. the Unions based FAGS and CODATA (http://www.icsu.org/3_mediacentre/RELEASES/ICSU_29GA_Data_Information_Press_Release.pdf)

74 In 2007 WDC-MARE received the Info World 100 Award (<http://www.infoworld.com/awards/index.html>) for its information system PANGAEA® (best in the section “Environment, Energy & Agriculture”).

75 **The Committee expressed its interest** in the report but **regretted** that it was not possible to ask questions due to the absence of Mr Diepenbroek.

4.2.3 Report of the World Data Centre For Oceanography, Obninsk, Russian Federation

76 This report was introduced by Mr Alexander Kuznetsov, Head of laboratory of Research Institute of Hydrometeorological Information – World Data Centre (RIHMI-WDC), Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet), Russian Federation, referring to **Document IOC/IODE-XX/10.2 (Report of the World Data Centre for Oceanography, Obninsk, Russian Federation)**.

Data and metadata flow

77 All data and information submitted to WDC (RIHMI-WDC, Obninsk, Russia) are registered in electronic WDC Catalogue which is available at: http://meteo.ru/english/publish/sp.php?id_article=33. During the inter-sessional period 48 publication volumes for 1985-2008 from 7 countries were received.

78 During the inter-sessional period the WDC accumulated oceanographic data from over 350 R/V cruises for 1991-2008 from 5 countries representing 50,000 oceanographic stations. In this period 15 CDs with data of international projects from 6 countries were received.

79 During 1964-2008 the WDC accumulated oceanographic data from over 25,500 R/V cruises carried out between 1890-2008 by 64 countries. This resulted in 1,500,000 oceanographic stations, 1,250,000 BT profiles and 200,000 CTD profiles; 800 current meter series, 36,000 marine pollution records.

Long term secure archival of data and information

80 All data and information submitted to the WDC are permanently archived at RIHMI-WDC in the original form in two holdings: Manuscript Holding (publications, DNP, SCR) and Digitized Data Holding. WDC-B digitized oceanographic data are converted to the unified format and loaded into the integrated oceanographic database to provide on-line user access.

81 All procedures used in RIHMI-WDC for the long-term data storage (holdings with appropriate conditions, periodical check and recovery as necessary) are applied to WDC data and information along with national data and information. To ensure the long-term and safe storage of digitized WDC oceanographic data their copies are written to SDLT-220 cartridges.

82 Over one million BATHY, TESAC, BUOY operational messages are received from the

telecommunication channels (GTS) of WMO every month, stored into the database to provide on-line user access and archived into the holding for the further use.

User services

- 83 The WDC oceanographic cruise catalogue, data and metadata are available on-line at http://meteo.ru/mcd/index_e.html. This is the new version of the WDC website (development started at the end of 2008). Large volumes of data are disseminated on CDs upon user request.

Transition to the World Data System

- 84 Two meetings of the ICSU World Data Centres in Russia were held in Obninsk and Moscow at the end of 2008 to discuss the new proposal of ICSU on transition of the World Data Centres to the World Data System. As a result the Council of Russian WDCs was established to coordinate the process of transition of Russian WDCs to the World Data System.

- 85 **The Committee thanked** Mr Alexander Kuznetsov for his concise report and **expressed appreciation** for the work carried out during the inter-sessional period.

4.2.4 Report of the WDC for Oceanography, Silver Spring, United States

- 86 This Agenda Item was introduced by Mr Sydney Levitus, Director of the WDC Oceanography, Silver Spring, USA referring to **Document IOC/IODE-XX/10.1rev. (*Report of the World Data Center for Oceanography, Silver Spring*)**.

Data and metadata flow

- 87 During the inter-sessional period WDC, Silver Spring acquired oceanographic data for 460 physical oceanographic data sets, 98 chemical oceanographic data sets, 15 biological oceanographic data sets, 12,386 remotely sensed ocean data, 203 marine meteorology & atmospheric science data sets. Data from approximately 0.9 million temperature profiles have been acquired and made available online. All data and metadata acquired by WDC, Silver Spring are available online at: www.nodc.noaa.gov.

Long term secure archival of data and information

- 88 All data and information submitted to WDC, Silver Spring are permanently archived and can be acquired at www.nodc.noaa.gov. Every month copies of all NODC/WDC data and products are stored offsite for safety.

User services

- 89 WDC oceanographic cruise catalogue, data and metadata are available at www.nodc.noaa.gov.

Transition to the World Data System

- 90 WDC, Silver Spring is in communication with ICSU as to the status of the new World Data System and is awaiting guidance from ICSU with respect to the future of this system. WDC Director attended the ICSU WDC Conference in Germany in May, 2007.

International visitors

- 91 WDC, Silver Spring hosted thirty visitors from ten countries during the inter-sessional period.
- 92 **The Committee noted** that overlaps in data management functions between WDCs, NODCs and project operations such as Argo, GTSP etc. appear likely. If these are real they constitute inefficiencies that should be resolved. With the re-evaluation by ICSU of the roles of WDCs **the Committee stated** this was an opportune time to have a discussion between IODE and WDCs Oceanography on their respective roles and responsibilities.

93 **The Committee recommended** that a “global map on the management of oceanographic data for the world” be prepared to assess the degree of overlap between the WDCs and the project data assembly centres’ data holdings. It should include a consideration of the physical location of the master copy of the data sets.

94 The Committee was informed that at the upcoming OceanObs’09 the scientific community will comment on how they think the oceanographic data system should evolve. In this regard the Committee was informed that a plenary paper is in preparation by Mr Keeley that will deal with describing the data collector/archives process and lessons learned over the last 10 years. It also will describe a look ahead at what a future system could look like. Mr Keeley will try to develop the map of oceanographic data systems as part of the plenary paper and requests suggestions and comments from any member of IODE. The paper is due on 1 July 2009 with the opportunity for community comment until the final form is due on 1 September 2009.

4.3 REPORT OF THE IOC PROJECT OFFICE FOR IODE

95 The Technical Secretary and Head of the IOC Project Office for IODE, Mr Peter Pissierssens, introduced this item referring to **Document IOC/IODE-XX/11 (*Report of the IOC Project Office for IODE*)**.

96 He recalled that the IOC Project Office for IODE had been 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 will further develop, strengthen and maintain IOC/IODE ocean data and information management training programmes and training tools; it will provide an environment (‘think tank’) where ocean data and information experts and students can work, meet and discuss; and it will support the development, hosting and maintenance of IOC/IODE’s ocean information systems and related public awareness tools.

97 Mr Pissierssens reported that there was a marked increase of the number of expert visits to the Project Office in the period 2005-2008, which was in line with the objective of the Project Office to function as an international meeting centre for experts to work on projects on data and information management. Also, the experts visiting the Project Office were recruited from a growing number of countries. This demonstrated the improvement of the global sourcing of expertise within the IODE programme.

98 The IOC Project Office for IODE welcomed 288 students from 93 different countries for the years 2007-2008 combined. 17 different training courses were organized during this period. These were either fully organized by IODE or in cooperation with international projects and programmes such as SeaDataNet, JCOMM, MARBEF and GLOSS.

99 The number of person-days of trainees decreased over the period 2005-2008 due to the fact that more advanced training courses were organized with a shorter duration during the last 2 years. This is a logical evolution in the life of ODINs with basic training courses being organized in the early stages of ODINs. The IODE training programme relies on a small pool of lecturers and national experts in NODCs and MIM centres are invited to join this group of trainers.

100 A new target group for IODE training activities is the group of undergraduate students. A special training course on oceanographic data management for university students has been organized

in 2008 for students of the “Vrije Universiteit Brussel” and “Universiteit Gent “(both in Belgium).

101 Mr Pissierssens further reported that from 2009 onwards the OceanTeacher Academy will offer a mix of basic, advanced and specialized training courses for groups of 18-20 trainees from different ODINs. The planning of training courses will be based upon a yearly organized training needs survey. The OceanTeacher Academy approach will focus more on pre-assessment and follow-up of trainees.

102 In terms of financial support Mr Pissierssens reported that the Government of Flanders (Kingdom of Belgium) had continued its financial support to the Project Office during the period 2007-2009 and that this support amounted to € 500,000/year (US\$ 662,000). This support covered the cost of three full-time staff members (Training Coordinator, IT manager and Administrative coordinator), support for operational expenses, and approximately € 200,000/year (US\$ 265,000) for training courses and workshops. Mr Pissierssens noted that between 2009 and 2012 an additional US\$ 1,540,000 would be available through the OceanTeacher Academy project, funded through the Flanders-UNESCO Trust Fund for Science (FUST). These funds will enable the recruitment of an additional IT expert (P-1 level) for a period of four years. He added that through the same FUST funding, a final phase of ODINAFRICA will be supported (see also Agenda Item 6.2.1) and that this will enable the recruitment of an additional professional staff position (P-3 level) for a period of four years. This will bring the total number of staff at the Project Office to eight.

103 Mr Pissierssens stressed the need for secondments to, and internships at the Project Office to ensure that the data and information services hosted by the Office are of the highest quality level and he called on Member States to provide human and financial resources to provide such assistance. In this regard he referred especially to the Ocean Data Portal project, which has been identified as one of the most important undertakings of IODE but for which too few staff resources are available in the Project Office.

104 **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.

105 **The Committee noted with interest** the report provided by the Technical Secretary and expressed its appreciation to the Government of Flanders (Kingdom of Belgium) for the support provided.

5. PROGRAMME ACTIVITY REPORTS

106 Under this Agenda Item reports on all IODE activities were provided. Each Chair (for Groups of Experts) or project coordinator provided a detailed report of inter-sessional activities and submitted a detailed work plan and budget for consideration by the Committee.

5.1 GROUPS OF EXPERTS

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

5.1.1.1 Report on inter-sessional activities of GE-BICH

107 Dr Gwenaëlle Moncoiffé, Chair of GE-BICH, reported on this Agenda Item referring to **Document IOC/IODE-XX/12 (Report of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH))**. She recalled that GE-BICH was established in 2000 with the main aim to improve the quantity and quality of chemical and biological data available to the scientific community. Until 2006, GE-BICH activities had focused mainly on

biodiversity and biological taxonomy as these had been identified as key priorities. She noted that during the third Session of GE-BICH on 27-28 November 2006, the decision had been taken to start focusing on issues more related to chemical data management while maintaining a close collaboration with OBIS and related programmes, initiatives or organizations related to biological data management.

- 108 The inter-sessional period 2007-2008 was a period of transition for the Group. Members of GE-BICH contributed to the first meeting of the Joint IPHAB/IODE Task Team on the development of the Harmful Algal Information System (Recommendation IOC/IODE-XIX-1) and also to the IOC-OBIS workshop on collaboration between IOC and OBIS towards the long-term management, archival and accessibility of ocean biogeographic data. A number of activities planned under GE-BICH II and III were completed or closed. This included the successful organization of the second Ocean Biodiversity Informatics conference OBI'07 hosted by the Centre for Marine Biodiversity and the Bedford Institute of Oceanography, Dartmouth (Canada) on 2-4 October 2007 (<http://www.marinebiodiversity.ca/OBI07/>) and organized jointly with OBIS and ICES. Fisheries and Oceans Canada have published the proceedings. (DFO 2008. Proceedings for a Conference on Ocean Biodiversity Informatics: 2-4 October 2007. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2008/024). Other activities such as those related to quality control flags, marine habitats, globally unique identifiers as used by GBIF, contribution to OceanTeacher, taxonomic data exchange are still ongoing. They will remain areas of strong interest for GE-BICH although some of these activities are likely to fall under the remit of a new Group of Experts if the proposal to adopt OBIS as a new IOC programme is approved (See Agenda Item 5.1.1.2). One activity, which was planned but could not yet be achieved, was to establish a web presence for GE-BICH. Due to lack of time and resource, this has not been possible.
- 109 The fourth Session of GE-BICH took place on 27-30 January 2009 and was key in establishing new directions for the group. It was attended by members of the group as well as invited experts representing IODE activities (MarineXML, IODE OceanDataPortal, Ocean Data Standards), CDIAC, ICES, FAO, members of ICSU's WDCs, SeaDataNet, EUR-OCEANS, OBIS, and WoRMS.
- 110 The Group reviewed its terms of reference to remove reference to taxonomy and adopted an ambitious work plan which will focus on three key areas: (i) Controlled vocabularies, (ii) Quality Assurance/Quality Control (QA/QC) of biological and chemical data, and (iii) Data reporting and data exchange. The main activities under (i) will be the compilation of comprehensive specialized vocabulary lists on categories considered important for the management of biological and chemical data, with the aim to submit these lists to the combined SeaDataNet and MarineXML Vocabulary Content Governance Group (SeaVoX). This work will complement the work undertaken by SeaDataNet. The main activities under (ii) will be a proposed workshop focusing primarily on the QA/QC of oceanographic chemical data, leading to the writing up of a white technical paper on the subject, the revision of IOC Manual 26, and input to OceanTeacher. This area will also include some activities, which will be useful to the QA/QC of taxonomic and non-taxonomic biological data. The main activities under (iii) will consist of identifying and promoting best practices for data reporting and exchange by contributing to existing initiatives and reviewing and cataloguing existing documents.
- 111 Dr Moncoiffé informed the Committee that in order to support its objectives, the Group would require a flexible web-based working environment such as a wiki. This would also enable the Group to implement the idea expressed during GE-BICH-III of developing a stronger web presence for GE-BICH. In order to achieve its goals, the Group also reviewed its membership and adopted an action plan to seek additional short-term members and maintain its strong group of invited and contributing experts.
- 112 **The Committee emphasized** the importance of having a process through which the vocabularies become standards and are distributed widely. Vocabularies will evolve and what has been assembled should be exposed quickly so that people know what is available and are able to use and comment the lists. **The Committee identified** the Ocean Data Standards process as a mechanism that

could be utilised to adopt the lists but **cautioned** that this should not delay the creation of new vocabularies. **The Committee encouraged** GE-BICH and SeaVox to proceed quickly towards establishing such a mechanism.

113 The Delegate of Belgium informed the Committee that ITIS, WoRMS and Census of Marine Life each focus on specific geographic or subject areas. WoRMS focuses on marine and estuarine environment and is used as a standard by OBIS. WoRMS also includes the Canadian Register of Marine Species.

114 The Chinese Delegation expressed their support for the revised Terms of reference for the GE-BICH. Noting that GE-BICH provides an international forum for new initiatives, best practices, and emerging standards for biological and chemical data management and exchange practices, the Delegation urged GE-BICH to collect and compile guidelines, supporting the integrated management and quality control of biological and chemical data in IODE's network of national oceanographic data centres. The Delegation informed the Committee of China's intention to nominate an expert to participate in the activities of GE-BICH, and in particular the QC/QA of biological and chemical data. Details will be provided to the Chair of GE-BICH.

115 The Delegate of the United Kingdom drew the attention of the Committee to a European Union funded project – MyOcean, which will focus on ocean monitoring and forecasting in Europe. She recommended that GE-BICH should explore the possibility for collaboration with this project, which will handle bio-chemical parameters and also intends to develop Quality Control procedures.

116 **The Committee adopted** the report of the GE-BICH-IV Session and the Recommendations included therein.

117 **The Committee adopted** **Resolution IODE-XX.1** (*Revised Terms of Reference for the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices – GE-BICH*)

5.1.1.2 Impact on IODE of cooperation with OBIS

118 This Agenda Item was introduced by Mr Greg Reed, Co-Chair referring to **Document IOC/IODE-XX/12.1 (Ocean Biogeographic Information System OBIS)** and **Document IOC/IODE-XX/12.2 (IODÉ Cooperation with OBIS)**.

119 Mr Reed informed the participants that the Ocean Biogeographic Information System (OBIS) was established by the Census of Marine Life (CoML) programme (www.coml.org) to synthesize information available on all known coastal and marine biological diversity. OBIS holds 17 million records on 104,000 marine (and estuarine) species drawn from 517 databases and innumerable personal contributions. OBIS data can be searched by scientific name, common name, dates on which recorded, depth distribution, and spatial distribution. OBIS functions through its 14 regional nodes (RON), which provide data from their regions and areas of expertise.

120 The funding for OBIS through the Sloan Foundation will cease in 2010, and the future of OBIS will depend on support from other sources. Private funds may have provided the starting point for this venture, but governments and the public will be the recipients of the resulting benefits and need to ensure that the effort continues. In this context the IOC Executive Secretary and the OBIS Governing Board (Rome, 28–29 April 2008) agreed to explore an institutional framework for the continuation of OBIS. The IOC Executive Council (EC-XLI, June 24 - July 2, 2008) requested for preparation of a document outlining different scenarios for a closer affiliation between IOC and OBIS, to be considered by the 25th Session of the IOC Assembly in June 2009. The documentation should, for different scenarios, investigate consequences for both IOC and OBIS, and should contain estimates of budgetary implications, and involve consultations, as appropriate, with potential donors and/or host organizations.

121 An initial meeting between IOC and OBIS experts was held at the IODE Programme Office in Oostende, Belgium, between November 24 -26, 2008 and several possible scenarios were discussed. The Statutes of the IOC and its accepted data management policy were found to be consistent with the policies and objectives of OBIS. The possible arrangements considered for OBIS and the IOC were (i) a formal agreement of cooperation and financial assistance between the two organizations; (ii) the adoption of OBIS as an element of the IODE, and (iii) the adoption of OBIS as an IOC programme. The meeting had considered that a cooperative agreement would not guarantee the desired sustainability for OBIS. The conclusion of the meeting was that OBIS should aim to become an IOC programme together with the establishment of a joint IODE/OBIS Group of Experts. An individual OBIS programme was considered better able to retain the ability to interact with related international partners on behalf of the IOC and UNESCO and to maintain the impetus and visibility that has been won in this undeveloped area. The Executive Summary Report of the Oostende meeting is available as **Annex B to Document IOC/IODE-XX/12.1**.

122 Mr Reed informed the Committee that the OBIS Governing Board meeting (20 – 21 April 2009) recommended that OBIS be a separate IOC programme. A Business Plan is being prepared and the final documentation and Draft Resolution will be prepared for the IOC Assembly in June 2009.

123 The Committee then discussed the two possibilities for the future of OBIS:

- the adoption of OBIS as an IODE programme activity
- the adoption of OBIS as a new programme of the Commission

124 **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.

125 **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 IODE, for example GLOSS and GTSP, illustrated that this was possible. GLOSS has remained strong and focused although it has been moved around within the IOC structure and GTSP has its own identity and has retained a science element despite being a part of IODE.

126 **The Committee saw no reason** to change the structure of OBIS if it becomes part of IODE. The Regional OBIS Nodes (RONs) should remain as 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.

127 **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.

128 After some discussion, the delegate of China summarised its view that OBIS should be

adopted as an element of IODE 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.

129 **The Committee concurred** with this summary. However if OBIS manages to mobilise the necessary financial resources then existence of OBIS as a separate programme could be considered.

130 **The Committee adopted** the “IODE Statement of the future of OBIS” attached as Annex VII to this Report. It **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.

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

131 This Agenda Item was introduced by Ms Linda Pikula, Chair GE-MIM, referring to **Document IOC/IODE-XX/13 (*Report of the IODE Group of Experts on Marine Information Management (GE-MIM)*)**. She informed the Committee that the Group of Experts on Marine Information Management (GEMIM) convened its 9th Session at the IOC Project Office for IODE in Oostende, Belgium (17-20 September 2007) as well as its 10th Session (4-6 November 2008).

132 During its 9th Session the Group discussed a wide range of topics and issues on marine information management and marine libraries. The Group decided to focus on clear actions that could be achieved within an inter-sessional period of one year. This included liaison with science publishers to request the use of the ASFA Thesaurus for keyword indexing, monitoring of e-copyright legislation, encouragement of MIM involvement in IOC projects on Marine Atlases, Ocean Portal, OceanDocs repository, OceanExpert, OceanTeacher, ODIN programmes and products, including improved access to e-journals, co-operative programmes and projects with other organizations including ASFA and IAMSILIC, mentoring and the development of communication strategies for GE-MIM and MIM National Coordinators.

133 The Group’s focus during its 10th session included the following specific issues: Integrated Library Management System software and Library Holding databases, maintenance of existing MIM products, the linking of these products, the expansion and management of important products such as institutional repositories and harvesters, consideration of the changing information technologies available, rethinking of the present and future roles of librarians and libraries, and discussion of the role of GE-MIM in assisting IODE in its future MIM activities. During its 10th Session the Group also elected a new Chair, Ms Linda Pikula.

134 Ms Pikula reported that there are currently 35 MIM National Coordinators. There is a need to update the list of MIM National Coordinators because some of the National Coordinators have retired and some countries have not yet appointed a MIM National Coordinator. She also noted that new Terms of Reference for the MIM National Coordinators were developed during the 9th session of GE-MIM.

135 Ms Pikula focused on the many achievements of GE-MIM from 2007 to date. GE-MIM has

supported the development of electronic repositories for marine scientific publications (OceanDocs, ODINECET CEEMAR) and the OpenScienceDirectory. GE-MIM also supported the organisation of surveys on the status of marine libraries in member states and capacity building needs for MIM. GE-MIM was actively involved in the development of the MIM component of OceanTeacher, also by acting as a liaison with IAMSLIC in order to recruit content providers for OceanTeacher. The Group had further contributed to several IODE products such as OceanExpert, the ODIN-PIMRIS Marine Information Portal, the Caribbean Marine Atlas and MIM related IODE Manuals.

136 Ms Pikula reported that GE-MIM will continue to cooperate and communicate within IODE and she noted that a Communication Strategy Document is under development by the Group in this regard. The Group will also cooperate in the SCOR project on data publishing in order to enhance the linking of marine data and information. Cooperation with other organisations such as IAMSLIC and ASFA will continue in future. She reported that a new MOU with IAMSLIC is in process to be ratified at the upcoming Joint IAMSLIC/EURASLIC Conference that will be held in Bruges in 2009.

137 Ms Pikula further reported that GE-MIM took an active role in ODINs (ODINAFRICA, ODINECET, ODIN-PIMRIS) by supporting the development of portals, electronic repositories, training activities and mentoring.

138 **The Committee urged** all IOC Member States to nominate IODE national coordinators for Marine Information Management and to ensure that their information is kept up-to-date in OceanExpert.

139 **The Committee stressed the need** for improved interaction between data and information managers in activities such as data publishing, keyword lists, etc.

140 **The Committee welcomed** the success of the marine information management activities and **adopted** the reports of GE-MIM-IX and GE-MIM-X as well as all recommendations included therein.

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

5.1.3.1 Introduction: Cooperation between IODE and JCOMM through the JCOMM DMPA and its ETDMP

141 This Agenda Item was introduced by Mr Robert Keeley (Chair, JCOMM Data Management Programme Area) referring to **Document IOC/IODE-XX/14.0 (*Cooperation between IODE and JCOMM through ETDMP and the JCOMM DMPA*)**.

142 Mr Keeley provided the Committee with a comprehensive list of the many areas of increased cooperation between IODE and the Data Management Programme Area (DMPA) of JCOMM over the last 3 years. Of particular importance was the administrative step by IODE to have the Chair of the DMPA serve as an IODE Officer, and by JCOMM to have an IODE Co-Chair serve as a member of the Data Management Coordination Group (DMCG). Programmatically, IODE and the JCOMM DMPA took the important step to agree to use its jointly sponsored Expert Team on Data Management Practices (ETDMP) as the vehicle to evaluate and recommend standards and best practices to both IODE and JCOMM communities. Another important step was to link the objectives and developments of the IODE OceanDataPortal to the WMO sponsored WMO Integrated Global Observing Systems (WIGOS) Pilot Project for JCOMM. This will build interoperability in access to ocean and atmospheric data and information but also address improving documentation of best practices and standards for marine data.

143 Mr Keeley informed the Committee about the excellent cooperation that had been established between IODE and JCOMM during the last JCOMM inter-sessional period (2005-2009). In this regard he provided detailed information on the following areas of cooperation:

- (i) **Use of the IOC Project for IODE:** The Project Office has been used for several activities of JCOMM, including Training Courses (5 courses were held of which 4 were joint IODE/JCOMM and fully or co-sponsored by IODE) and Meetings (4 were held).
- (ii) **Collaborative meetings:** In addition IODE and JCOMM have held another 6 meetings where cooperation was discussed.
- (iii) **Administrative activities:** IODE and JCOMM also cooperated on a number of administrative and management issues such as the joint management of the DMPA section of the JCOMM web site. The DMPA Chair is now also an IODE Officer and an IODE Co-Chair is a member of the DMCG.
- (iv) **Joint activities:** IODE and JCOMM have undertaken a number of important joint activities through the ETDMP such as the Ocean Data Standards Pilot Project, IODE OceanDataPortal, and the WIGOS Pilot Project for JCOMM.

144 Mr Keeley informed the Committee that JCOMM-III will take place 4-11 November 2009 (in Marrakech, Morocco) and he will then step down as Chair of the DMPA. Because IODE elects two Co-Chairs, the opportunity for one Co-Chair to manage DMPA has arisen. This is a logical step in consolidating the cooperation between DMPA and IODE. It has the support of the JCOMM Management Committee.

145 **The Committee expressed its gratitude** to the IOC Project Office for IODE, and its host the Government of Flanders (Kingdom of Belgium) for the considerable support provided to JCOMM through hosting training courses and workshops.

146 **The Committee expressed** its satisfaction with the level of cooperation between IODE and JCOMM and **thanked** Mr Keeley, in his capacity as JCOMM DMPA Chair, for his commitment and dynamic leadership.

147 **The Committee called** for continued and expanded cooperation between IODE and JCOMM through the JCOMM DMPA as well as through relevant capacity building activities and OceanTeacher.

5.1.3.2 Report on inter-sessional activities of the ETDMP

148 This Agenda Item was introduced by Mr N. Mikhaylov, Chair of the ETDMP, referring to **Document IOC/IODE-XX/14.1 (Report on Inter-sessional activities of the ETDMP)**. He provided a presentation on the progress of the ETDMP work in the inter-sessional period. He noted that the work was aimed at fulfilling the IODE-XIX and JCOMM-II recommendations. The main ETDMP activities were concentrated on the following topics: (i) finalizing the E2EDM technology; (ii) participating in establishing the IODE/JCOMM Standards Process; (iii) development of the IODE Ocean Data Portal Project and design of the WIGOS Pilot Project for JCOMM.

149 Mr. Mikhaylov noted further that the most significant outcomes were achieved with the E2EDM technology and he listed them as follows:

- (i) existing software components have been upgraded and new software components have been developed for discovery metadata generation and metadata/data interchange between non-homogeneous distributed marine data sources. The E2EDM documentation (11 documents) has been upgraded (<http://www.oceandataportal.org>)
- (ii) operational testing of the technology has been carried out on the basis of the ocean and marine data systems of VLIZ (Belgium), RIHMI-WDC (Russia), Ifremer (France), and MetOffice (UK);
- (iii) a training course on the establishment of national IODE OceanDataPortal nodes was held at the IOC Project Office for IODE (Oostende, Belgium, 22-25 October 2007) and RIHMI-WDC (Obninsk, Russian Federation, 20-21 March 2008) to promote the

establishment of ODP data providers. The course was attended by 15 participants from 9 countries.

- 150 The ETDMP participated in establishing the JCOMM/IODE Ocean Data Standards Pilot Project aimed at developing the standardization process for ocean and meteorological data management. The ETDMP will play an important role in this Pilot Project making the necessary arrangements to review and adopt the standards as well as to continue their management, including updating. This issue is discussed in detail under Agenda Item 5.1.3.3.
- 151 Following Recommendation IODE-XIX.4 (The IODE OceanDataPortal Project) documentation on the implementation of the Project and the IODE OceanDataPortal (Version 1) has been developed on the basis of the E2EDM technology (see <http://www.oceandataportal.org>). The Portal is accessible through <http://www.oceandataportal.net>. It includes the integration server, which harvests metadata of data providers and provides an access to data sets of data providers. This issue is discussed in detail under Agenda Item 5.1.3.4.
- 152 Cooperation has been established with the WIS prototype and interoperability of the E2EDM and WIS has been tested. The IODE Ocean Data Portal and WIS Technology Workshop was held in RIHMI-WDC (Obninsk, Russian Federation, 18-19 March 2009) to discuss the issues concerning the current progress on establishment of a distributed data system for the WIGOS Pilot Project, providing the IODE ODP (V.1) and WIS interoperability to support the WIGOS Pilot Project for JCOMM (Report available as JCOMM-MR-67-ODP-WIS). In future this activity will be carried on through the IODE OceanDataPortal project and receive a new impetus under the WIGOS Pilot Project for JCOMM. This issue is discussed in detail under Agenda Item 5.1.3.5.
- 153 Mr Mikhaylov recalled that the membership of ETDMP has now reduced to just one member (himself) which had necessitated a procedure to renew the membership. The rapid development of the E2E, IODE OceanDataPortal, WIGOS and related initiatives, and the important role of the ETDMP members in them, have called for new Terms of Reference for the ETDMP, as well as a new membership. The joint nature of the Expert Team (JCOMM/IODE) means that IOC/IODE is invited to nominate 4 members of the group (of which the total membership shall not exceed 9, including the Chair). The Chair of the JCOMM DMPA and Chair ETDMP prepared new Terms of Reference in May 2008 which took into consideration the strategy and structure of Groups of Experts as revised by IODE-XIX following the recommendations made by the IODE Review (2005). In October 2008, IOC issued Circular Letter 2277 through which Member States were invited to nominate suitable national experts for the ETDMP. Eight responses were received by the deadline of 8 November 2008 and out of these the following were selected by the IODE Officers based upon the Terms of Reference and individual expertise and experience: Canada - Mr. Mathieu Ouellet, DFO; Japan: Prof. Yutaka Michida, University of Tokyo; Russian Federation: Dr Sergey Belov, RIHMI-WDC; United States of America: Mr Don Collins. This list of names, once approved by IODE-XX will be submitted to JCOMM-III.
- 154 The Delegate from China, considering NMDIS of China has been responsible for the ODAS Metadata center as well as the META-T server for JCOMM for some years, regretted that its nomination had not been received. The Delegate expressed the wish of China to nominate one expert to participate in the JCOMM/DMPA or JCOMM/ETDMP to work closely with data management of JCOMM and continue contributing to JCOMM and IODE.
- 155 **The Committee congratulated** Mr Mikhaylov for the outstanding level of activity of the ETDMP taking into consideration especially the loss of membership in recent years.
- 156 **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 the ETDMP by IODE and JCOMM.

157 **The Committee approved** the work plan.

158 **The Committee adopted** **Recommendation IODE-XX.1**

5.1.3.3 JCOMM/IODE Ocean Data Standards Pilot Project

159 This Agenda Item was introduced by Mr Robert Keeley referring to **Document IOC/IODE-XX/14.2 (JCOMM/IODE Ocean Data Standards Pilot Project)**.

160 Mr Keeley informed the Committee that a joint IODE/JCOMM sponsored meeting, co-funded by the United States, was held in January 2008 at the IOC Project Office for IODE, to examine the potential for the development and acceptance of community wide standards for marine data and information management and exchange (more detailed information is available in **Appendix A of Document IODE/IODE-XX/14.2**). The most important result of the meeting was the development of a process to accept, evaluate and recommend proposals for community wide standards. The process, shown in **Figure 1**, uses the ETDMP as the coordination body, with teams formed as required from IODE and JCOMM members to evaluate the proposals. The proposal process has a time schedule that would limit the time that team members need devote to the work. Once a proposal is dealt with, the evaluation team would be dissolved. All documentation is posted on the Ocean Data Standards web site (<http://www.oceandatastandards.org>).

Standards Process

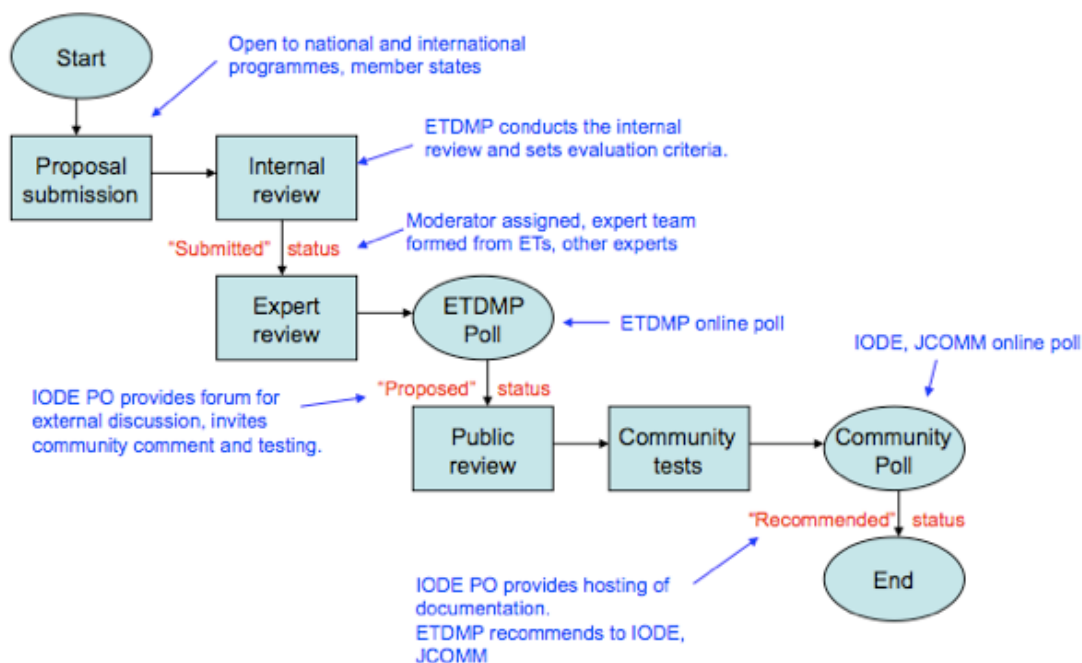


Figure 1: Ocean Data Standards Process

161 Mr Keeley informed the Committee that some ISO standards were considered to be applicable to our needs. These include ISO 8601:2004 for describing date and time; ISO 6709 for describing latitude and longitude; and ISO 3166 (-1 and -3) for country coding. ODS also considered ISO19115 for discovery metadata. The ODS meeting agreed that ISO 19115, or a community profile of ISO 19115, should be used for creating discovery metadata and requested a comparison be carried out between MCP, CDI and WMO profiles. This report, which compares these three community profiles and discusses their suitability as a recommended standard for IODE/JCOMM, was completed by Mr Reed and was distributed to all participants of the ODS meeting. The report will also be made available on the ODS web site.

162 One submission, to recommend that the international standard ISO 3166 codes for the representation of names of countries has been received and has completed an expert review, and the results of this review will be available on the ODS web site by half May 2009. The community will be invited to comment on the proposed standard through an online discussion forum and it is expected that this process will end within 2 months.

163 The success of the development and use of standards is completely dependent on community involvement. IODE centres and staff have important roles to play, not only in the evaluation process, but also in the implementation of recommended standards in their agencies.

164 Mr Keeley noted that it should be recognized that a standard accepted today may not remain static so there will be some versioning. Mr Keeley invited members of the Committee to submit initial versions of a candidate standard to the process.

165 Mr Keeley then briefly introduced a metadata entry tool developed by Canada. This is a java application, called jMetaWriter2, that can be used to create metadata records using the MCP. It allows re-use of “contact” information and uses a number of defined pick list, which are available in English and French. It is currently still in Beta release so some bugs may exist and documentation is incomplete. It is freely available. Mr Keeley invited participants to test it during the Session or request a copy of the application for evaluation. A screenshot is shown in [Figure 2](#).

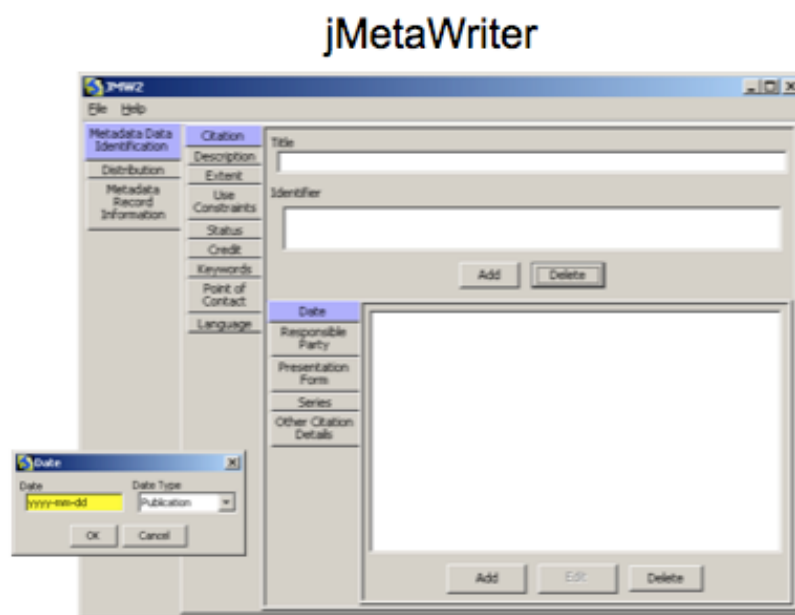


Figure 2: JMetaWriter screenshot

166 **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.

167 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.

168 The delegate of the United Kingdom, Dr Lesley Rickards, informed the Committee that the document regarding the quality control of sea level data will be submitted in June or July 2009.

169 **The Committee adopted** [Recommendation IODE-XX.2](#)

5.1.3.4 IODE Ocean Data Portal

170 This Agenda Item was introduced by Mr. N. Mikhaylov referring to **Document IOC/IODE-XX/14.3 (IODE OceanDataPortal)**. He recalled that the IODE Ocean Data Portal (ODP) Project was aimed to fulfil the IODE-XIX and JCOMM-II recommendations.

171 He recalled that the objective of the IODE OceanDataPortal is to facilitate and promote the exchange and dissemination of marine data and services. The IODE OceanDataPortal will provide seamless access to collections and inventories of marine data from the NODCs in the IODE network and will allow for the discovery, evaluation (through visualisation and metadata review) and access to data via web services. Participants in the IODE ODP Project (established through Recommendation IODE-XIX.4) include members of the IODE ODP Steering Group, ETDMP Task Team, the IOC Project Office for IODE, and IODE NODCs and DNAs. The project work packages include project coordination, ODP standards development, and portal implementation.

172 He noted that the IODE ODP development was a complex task and therefore it was decided that two versions of the portal would be developed sequentially: (i) IODE ODP with initial capabilities (version 1) operating on the basis of the E2EDM technology; (ii) IODE ODP with full capabilities (version 2) which should be based on interoperability standards and tools.

173 Mr. Mikhaylov informed the Committee that during the reported period the IODE ODP (version 1) has been developed (<http://www.oceandataportal.net>). It includes the integration server operated in the IODE Project Office, which harvests metadata from data providers and is used for portal administration and access to the distributed data sets. The architecture is shown in [Figure 3](#).

174 Mr. Mikhaylov stated that a major problem of the IODE ODP (version 1) operational implementation was the recruitment of IODE centres that were willing and able to be IODE ODP data providers. It was noted that the IODE ODP was now planned to be used under the WIGOS Pilot Project for JCOMM.

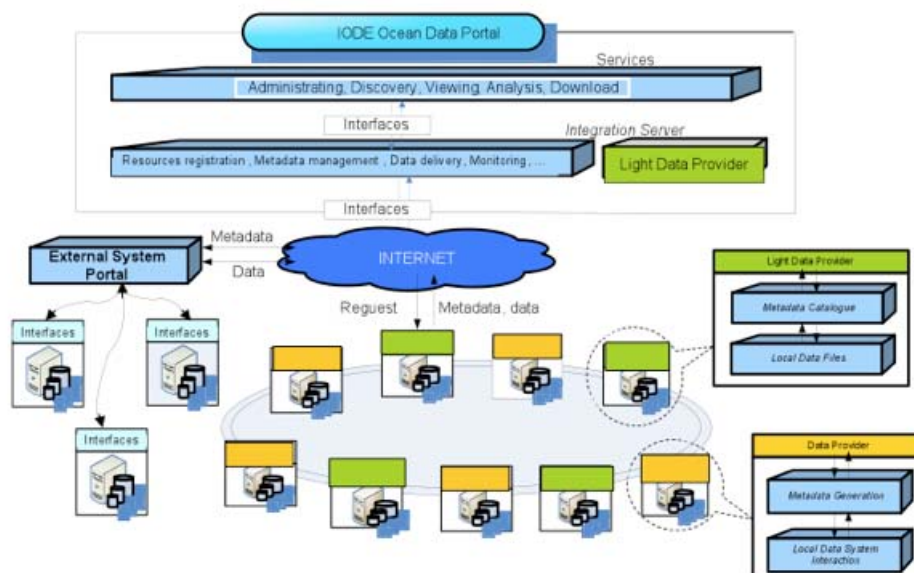


Figure 3: IODE OceanDataPortal V.1 Architecture

175 Mr. Mikhaylov reported also that a design paper “Initial IODE OceanDataPortal Architecture” was developed that includes proposals on the vision and overall architecture of IODE ODP (version

2), as well as on the operational aspects of development of the IODE ODP version with full capabilities. The documents were reviewed by the JCOMM DCMG-III meeting (March 2008, Oostende, Belgium) and the Meeting of the Joint Steering Group for the IODE OceanDataPortal and the WIGOS Pilot Project for JCOMM (September 2008, Geneva, Switzerland) and are due to be finalized taking into consideration the tasks of the IODE/JCOMM Standards Process, the IODE OceanDataPortal Project and the WIGOS Pilot Project for JCOMM.

176 Mr Mikhaylov noted that IODE ODP provides access to data in accordance with the IOC Data Exchange Policy and the following rules were defined: metadata are freely accessible without any conditions; data and products require registration and acceptance of license conditions. These imply acknowledgment through referencing of data sources (NODC/WDCs, or other organizations that provided the data and products to the IODE ODP distributed data system) and IODE ODP as the virtual data centre for end-users.

177 Mr Mikhaylov stressed that IODE ODP aims at interaction with other systems and therefore applies a “system of systems” approach. In this regard it was noted that IODE ODP can be linked with WIS in such a way (at the portal level) that enables WIS portal users to access IODE ODP data and the reverse. This is represented in [Figure 4](#).

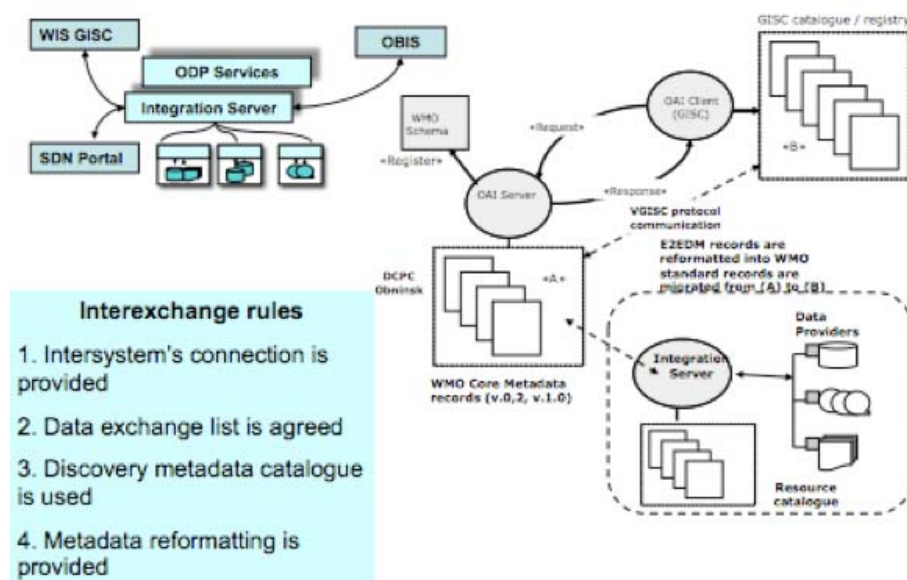


Figure 4: ODP V.1 interaction with other systems

178 A number of partners have now been identified as core WIGOS partners: (i) US NODC: World Ocean Atlas; World Ocean Database; US NODC GTSP; Surface currents from HF radar; (ii) Russian Federation NODC: Data Extract (interexchange interface) from ESIMO – observation, analysis and forecast data and products (air temperature, wind, wave, sea level, current, water temperature, salinity, oxygen); (iii) Canada, ISDM: Upper-ocean T & S gridded in situ fields; and Ocean currents derived from surface drifters; (iv) Permanent Service for Mean-Sea Level (PSMSL); (v) UK Met Office or DWD via Virtual GISC or direct impact to ODP: Marine Climatological Summaries and Global Collecting Centres (GCCs); and (vi) Blended-quality climatology products (e.g., ICOADS); and Global High-Resolution Sea Surface Temperature Pilot Project (GHRSSST-PP).

179 Mr. Mikhaylov then presented a work plan for the further IODE ODP development and implementation for the period 2009-2011 and taking into consideration proposals and requirements to the ODP on the part of the WIGOS Pilot Project for JCOMM.

180 In his conclusion Mr Mikhaylov stated that considerable progress has been made in the implementation of the IODE OceanDataPortal. There is now close collaboration between WMO and

IOC in the WIGOS Pilot Project for JCOMM. He called on Member States who participate in ODIN projects to participate in ODP V.1 as data providers.

181 Some Member States expressed concern about the need for users to “register” to obtain access to data sets. As an example the delegate of the United States pointed out that collecting information on users prior to providing them with access was not allowed by US regulations. In this regard Mr Mikhaylov informed the Committee that the user registration was not a compulsory function and could be switched off.

182 The Chinese Delegate expressed her thanks to Mr. Nick Mikhaylov for his report on the progress of the IODE Ocean Data Portal project.

183 She urged, rather than using the acronym “ODP”, to always use the full name “IODE Ocean Data Portal Project” or “IODE ODP” as only this will correctly reflect the parentage of ODP as an IOC IODE activity.

184 **The Committee congratulated** the IODE OceanDataPortal project participants in general, and the RIHMI team in particular, for the accomplishment made during the first phase of the project.

185 **The Committee cautioned** that the IODE ODP should only provide access to quality-controlled data, taking into account that 90% of data centre staff time is utilized to perform QC.

186 **The Committee adopted** the work plan for 2009-2011

187 **The Committee adopted** **Recommendation IODE-XX.3**

5.1.3.5 WIGOS Pilot Project for JCOMM

188 This Agenda Item was introduced by Mr Greg Reed, IODE Co-Chair and Co-Chair of the Joint Steering Group for the IODE Ocean Data Portal and the WIGOS Pilot Project for JCOMM, referring to **Document IOC/IODE-XX/14.4 (WIGOS Pilot Project for JCOMM)**.

189 The Pilot Project for Marine Observations under the WMO Integrated Global Observing Systems (WIGOS) framework is an interdisciplinary exercise seeking the integration of *in-situ* and space based ocean observing systems. It is one of five WIGOS Pilot Projects. The WIGOS Pilot Project for JCOMM, which will be implemented and sustained by the WMO Members and IOC Member States through JCOMM, will make appropriate datasets available in real-time and delayed mode to WMO and IOC applications through interoperability arrangements with the WMO Information System (WIS) and the IODE Ocean Data Portal (IODE ODP). The deliverables of the WIGOS Pilot Project for JCOMM are to (i) document and integrate instrument best practices and related standards, (ii) build marine data systems that are interoperable with the WIS, and (iii) promote Quality Management and Standards.

190 Cooperation with the NODCs is key to the success of the Pilot Project and will provide connections between the ODP and the WIS for historical and recent data for their integration into the WIGOS framework. A number of data providers have been identified (e.g. World Ocean Database, upper ocean thermal data from Argo profiling floats and XBTs, deep ocean time-series multi-disciplinary reference stations, high resolution SST from satellites, sea level stations, marine climatological data sets, satellite data, etc.). A joint Circular Letter, from IOC and WMO, was sent to the potential data providers in December 2008.

191 The JCOMM Catalogue of Best Practices is being developed as an initiative of the JCOMM Management Committee. It will be one of the key deliverables of the WIGOS Pilot Project for JCOMM. It will reference many IOC/IODE documents. A contractor (Bob Gelfeld, formerly from the US NODC/ WDC Oceanography Silver Spring) was hired as a contractor (through funding from the

USA) to work on the catalogue.

192 In terms of capacity building the focus will be on providing training on the establishment of IODE ODP data provider nodes in developing countries and this will be implemented through the IODE ODINs. In addition cooperation will be organized to establish joint training activities and materials on topics like WIS interoperability, best practices and standards, IODE ODP installation and use, and instrument evaluation and inter-comparison. It was noted that specific activities have already been planned in the framework of ODINAFRICA-IV. In addition the Government of the Republic of Korea has provided funding and will host an IODE Ocean Data Portal training course between 31 August and 3 September 2009. **The Committee expressed its appreciation** for this generous offer.

193 Due to the strong synergies between the IODE ODP and the WIGOS Pilot Project, for JCOMM, a joint Steering Group, with balanced representation from the IOC and WMO communities, has been established. The first meeting of the Joint Steering Group for the IODE Ocean Data Portal and the WIGOS Pilot Project for JCOMM was held from 18 to 19 September 2008 (Report available as JCOMM-MR-59-ODP-WIGOS2). The meeting reviewed the project plan, the draft implementation plan, discussed the business plan, capacity building issues, and addressed the core deliverables of the Pilot Project.

194 The IODE Ocean Data Portal and WIS Technology Workshop was held in RIHMI-WDC (Obninsk, Russian Federation, 18-19 March 2009) (Report available as JCOMM-MR-67-ODP-WIS). The workshop discussed the issues concerning the current progress of the IODE ODP V1 distributed data system for the WIGOS Pilot Project, providing the IODE ODP (V.1) and WIS interoperability to support the WIGOS Pilot Project and the ODP (V.2.) reference model and development plan.

195 The Pilot Project has published a project plan and an implementation plan. A business plan will be prepared to be used by the Directors of interested agencies to make the case at the national level for becoming a partner in the Pilot Project. Further information, including meeting reports and documentation, is available on the Pilot Project web site at http://www.wmo.int/pages/prog/www/wigos/marine_pp.html and <http://www.iode.org/wigos>

196 The Representative of the WMO, Mr Bob Keeley, expressed WMO's appreciation and great satisfaction with the cooperation with IODE in general, and with the IODE ODP contribution to the WIGOS Pilot Project for JCOMM in particular. He noted that the JCOMM Pilot Project is a lead activity amongst the Pilot Projects and WMO is very appreciative to IOC and its IODE in this regard. WMO recognizes IOC's ownership of the IOC/GOOS components and that some of the standards promoted under WIGOS have been developed in the oceanography realm. WMO stresses the importance of equitable cooperation in this regard.

197 The Delegate from the United Kingdom informed the Committee that sea level data will be contributed to WIGOS by the PSMSL. She inquired whether this provision could be organized through the SeaDataNet Portal or only through IODE ODP. Mr Mikhaylov suggested that a more technical and detailed discussion should be organized with PSMSL in this regard.

198 **The Committee adopted** the work plan for 2009-2011

5.2 OTHER PROJECTS

5.2.1 Global Oceanographic Data Archaeology and Rescue (GODAR)

199 This Agenda Item was introduced by Mr Sydney Levitus, GODAR Project Leader referring to **Document IOC/IODE-XX/15.1 (*Global Oceanographic Data Archaeology and Rescue (GODAR) and World Ocean Database Projects*)**.

200 Mr Levitus informed the Committee that since its inception in 1993 as an IOC project, the

Global Oceanographic Data Archaeology and Rescue (GODAR) Project continues its progress in locating, collecting, quality controlling, and disseminating in electronic form, historical ocean profile and plankton data that are at risk of loss due to media decay. This is a long-term, labour-intensified work. Only data for the pre-1992 period are considered to be “historical” data for the purposes of the GODAR project. Since its inception in 2001 the IOC World Ocean Database (WOD) Project continues adding new data types, e.g., temperature and salinity from Gliders and variables, e.g., tracers such as freons as well as archiving standard oceanographic data. Special attention has been paid to the speed of transfer of modern data into integrated, comprehensive oceanographic databases for research, monitoring or establishment of quality control for oceanographic data on local, regional and global scales to support research and real-time analysis of data. All data received as part of the GODAR and WOD projects are now made available online every three months at www.nodc.noaa.gov. WOD played a major role in the IPCC report. The spectacular growth of the number of temperature and salinity profiles is shown in Figure 5.

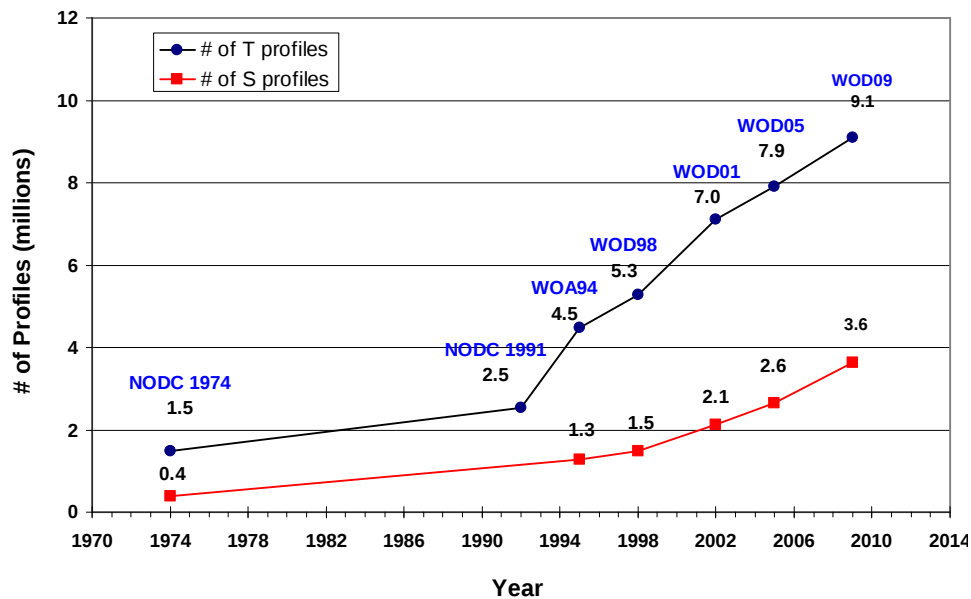


Figure 5: World Ocean Database growth of temperature and salinity profiles

201 Mr Levitus reported that cooperation on the part of IOC Member States with GODAR Project continues to be excellent. He recommended continuing the project in its present status and maintaining the flow of historical data into the IOC and WDC systems. All GODAR project profiles and plankton data will be processed and released as part of “World Ocean Database 2009” (WOD09). Online and DVD distribution of WOD09 will occur in 2010.

202 The Committee was informed that Japan is now in the process of rescuing historical oceanographic data located at universities in Japan and will make these data available to the WOD later this year.

203 **The Committee thanked** Mr Levitus for his report, **expressed appreciation** for the continuing work carried out during the inter-sessional period, and **approved** the work plan for the next inter-sessional period.

5.2.2 Global Temperature and Salinity Profile Programme (GTSP)

204 This Agenda Item was introduced by Dr Charles Sun, (GTSP Chair) referring to **Document IOC/IODE-XX/15.2 (Project Report: Global Temperature and Salinity Profile Programme (GTSP))**.

205 Dr Sun recalled that the Global Temperature and Salinity Profile Programme (GTSP) is a

joint program of the International Oceanographic Data and Information Exchange committee (IODE) and the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM). IODE and JCOMM are technical committees of the Intergovernmental Oceanographic Commission and the World Meteorological Organization.

- 206 Dr Sun reported that over past two-year period 2007–2008, GTSPP continued to deal in greater volumes of data. The Integrated Science Data Management (ISDM) of Canada managed Real-time data. The number of BATHYs reported steadily increased from 24,855 in 2007 to 27,775 in 2008, while the number of TESACs was 1,630,360 to the end of 2008, dramatically increased from 821,321 in 2007. A new data set of 6,869 CTD profiles derived from marine mammals was made available the first time since July 2008. The data are useful because they get high data return from areas far to south between 60°S and 70°S where data are very little.
- 207 The U.S. National Oceanographic Data Center (US-NODC) provided data processing services for delayed mode data and maintenance of the Continuously Managed Database (also known as the GTSPP archive). Delayed mode data include the full resolution data from XBTs or CTDs from the ships, or fully processed and quality controlled data from the organizations that provided the real time low resolution data to the GTS (Global Telecommunication System). The numbers of the delayed-mode measurements added to the archive were 12,737 and 62,252 in 2007 and 2008, respectively.
- 208 GTSPP continued to improve its capabilities of serving the GTSPP data for operations and climate research. The GTSPP data sets were available at the GTSPP Web site at <http://www.nodc.noaa.gov/GTSPP/>. The usage statistics of the GTSPP data transferred for 2008 increased to 1,557.33GB from 927.409GB in 2007; while the average number of distinct hosts served was 20,238 per year in 2007 and 2008.
- 209 GTSPP collaborated with a number of international programs. In particular, it managed the XBT data collected by the operators of the Ship-of-Opportunity Programme (SOOP), which is a subprogram of the Ship Observations Team (SOT) of JCOMM. GTSPP developed a strategy for linking XBT profiles to the SOOP XBT survey lines that were sampled and has been working closely with SOOP to assist in proper documentation of the XBT fall rate in the CMD. GTSPP produced monthly real-time maps including data density maps. GTSPP published a catalogue of the data collected, statistics of data on the GTS from various sources and monitoring reports for each ocean basin. In addition, GTSPP also publishes a monthly ship report that contains errors found. This is then sent to the operators for corrections.
- 210 GTSPP also collaborated with the Argo program to fix GTS reports from Argo floats that were reporting pressure instead of depth to the GTS. GTS also worked with the World Ocean Database project and the CLIVAR-Carbon Hydrographic Office (CCHDO) to pull CCHDO data from the Internet quarterly for providing the fully quality controlled high quality CTD data to the Argo CTD Reference Database used for delayed-mode quality control of Argo salinity data.
- 211 In May 2007, Mr Bob Keeley resigned from the GTSPP Chair position. Dr Charles Sun, US NODC, assumed Mr Keeley's responsibility of managing GTSPP. The GTSPP Steering Group met twice in conjunction with the Argo Data Management Team meetings over the last inter-session period. The most recent meeting of GTSPP took place at the East-West Center, Honolulu, Hawaii, USA on 27 October 2008. Topics discussed at the meeting included, but were not limited to, the XBT fall rate issue, GTSPP data formats, evaluation of a Cyclical Redundancy Check (CRC) in identification of real-time and delayed mode duplicates, identifying GTSPP data product centres and delayed-mode data assembly centres, cooperation with other programs, and the future of GTSPP.
- 212 Dr Sun proposed that GTSPP would like to convene a two-day workshop at the IODE Project Office in May 2010 to investigate the possibility of populating: (i) GTSPP data in WIGOS and (ii) adding additional real-time quality control test by using the method of objective analysis. An *ad hoc* meeting was organized during IODE-XX to discuss GTSPP planning and the workshop in detail.

213 **The Committee noted** that the Cyclical Redundancy Check (CRC) is a good candidate to be used as a tool for producing unique identifiers for oceanographic data. It could be a good candidate for submission to the Ocean Data Standards Pilot Project.

214 **The Committee thanked** Dr Sun for his detailed report, **expressed appreciation** for the work carried out during the inter-sessional period, and **approved** the work plan for the next inter-sessional period.

5.2.3 Global Ocean Surface Underway Data Pilot Project (GOSUD)

215 This Agenda Item was introduced by Mr Loïc Petit de la Villéon (Co-Chair GOSUD) referring to **Document IOC/IODE-XX/15.3 (Report on IODE global project: GOSUD)**.

216 Mr Petit de la Villéon recalled that during the IODE Committee, at its sixteenth Session, (November 2000), had adopted Recommendation IODE-XVI.10 establishing the Underway Sea Surface Salinity Data Archive Pilot Project and its Steering Group.

217 The objectives of the Pilot Project were to (i) Acquire, quality control, store in standard format, and disseminate the collected, mostly by cargo vessels, underway sea surface salinity data; (ii) Establish close co-operation with relevant data centres to build a database and develop data management procedures and standards; (iii) Build a comprehensive archive for underway sea surface salinity data including appropriate metadata; (iv) Develop and implement procedures for quality assessment of real-time and delayed-mode data based on the Global Temperature-Salinity Profile Program experience; (v) Provide data and information online to users in a timely fashion; (vi) Ensure safeguarding of high-resolution delayed-mode data; (vii) Co-operate with data collectors to improve the data acquisition systems and to provide information on the data they provide; (viii) Maintain close links with other data collection and management programmes such as JCOMM and SOOP; and (ix) Prepare proposals for the archiving of all potentially available underway data types. Later, IODE and GOSUD decided to expand the project to other parameters with salinity as the priority.

218 In 2006, considering that there was a strong complementary interest between the US Shipboard Automated Meteorological and Oceanographic System (SAMOS project) and GOSUD, it was decided to joint efforts to improve access to high quality underway meteorological and near-surface data collected by research vessels and merchant ships and to identify common potential data providers.

219 The GOSUD data structure is based upon a GDAC (Global Data Assembling Center) which centralizes and distributes the data. The data are provided to the GDAC either directly through national contributions or through the GTS (trackob format). The GOSUD GDAC is operated by the Coriolis data centre, hosted by Ifremer-France. The US-NODC (Silver Spring, Maryland) holds the data in their long-term ocean archive. In addition, the US-NODC continuously mirrors the GDAC FTP data server.

220 ISDM (Canada) provides a monitoring function, comparing what is circulating on the GTS and what is available at the GDAC. The objective is to identify new potential sources of data. In 2008, the data (960,086 locations) from 67 vessels have been gathered at the GOSUD-GDAC. In 2007, the data (598,330 locations) from 40 vessels were available at the GDAC. The amount of data that have been collected has significantly increased from 2007 to 2008. That means that the GOSUD effort to enlarge the network to new data providers produced positive results. For the moment, most of the data that are archived in the GDAC are near real-time data. One of the challenges of years 2009-2010 will be the ability of the project to produce a delayed mode dataset. The GOSUD status is shown in Figure 6.

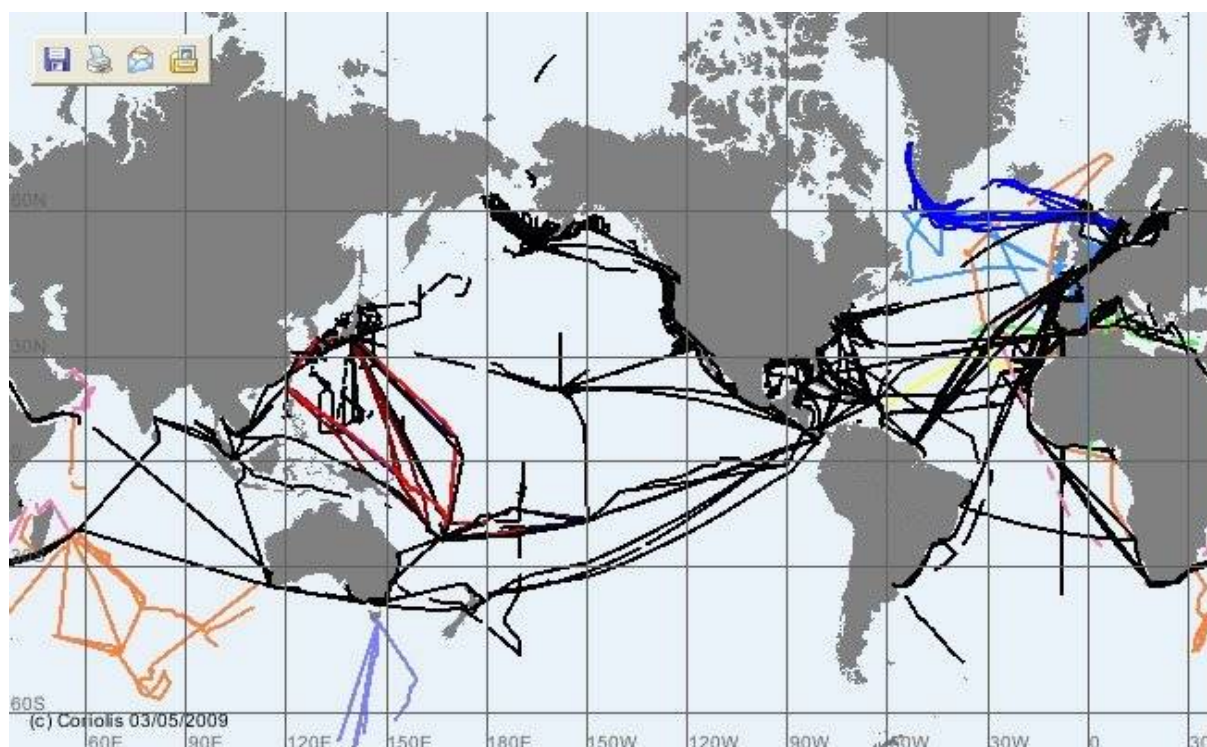


Figure 6: GOSUD status

221 70 ships have reported data from May 2008 to May 2009. Efforts to enlarge the network are on the way to be successful (only 40 vessels in 2007).

222 The GOSUD team has met five times. GOSUD held their first three meetings in conjunction with the Argo Data Management meetings. In 2006, it was decided to hold the 1st joint meeting with the US Shipboard Automated Meteorological and Oceanographic System (SAMOS) Project (see <http://samos.coaps.fsu.edu>). The primary SAMOS objective is improving access to high quality underway meteorological and near-surface ocean data collected at high-temporal frequency on research vessels and merchant ships.

223 The 2nd joint meeting was held in Seattle –June 2008- See Summary report on Annex A of Document IOC/IODE-XX/15.3. From the meeting, ten recommendations were directly linked to GOSUD activities. (i) Expand access to underway meteorological and TSG observations in remote ocean regions and marginal seas. The scientific users community must determine critical regions for increased monitoring (ii) Encourage efforts to develop new and make available historical upper-ocean and meteorological observations for use by developing nations (iii) Develop a global data discovery system to identify which research and selected merchant vessels are participating in GOSUD/TSG, SAMOS, PCO², radiation and other underway ocean and atmospheric sampling programs (iv) Vessels providing underway TSG data should routinely report both intake temperature (sea temperature) and the salinometer temperature (used to calculate salinity) (v) Initiate effort for vessels making underway TSG measurements to collect daily bottles samples of water to monitor TSG performance and to elaborate a delayed-mode data set (vi) Promote the recognition of underway sea water sampling (via GOSUD and AOML) as a critical of the Global Ocean Observing System (vii) Maintaining and distributing metadata for meteorological and TSG measurements (e.g. height/depth) is critical for all applications (e.g. data assimilation, satellite validation, etc.) (viii) Assess the impact of TSG data in forecast models (ix) Collect results of past and current research to evaluate the importance of TSG observations (x) Build best practice guides and continuing education materials to support the needs of technical personnel on the front lines of data collection at sea.

224 One strong conclusion from the meeting was that GOSUD should form a closer relationship

with the scientific community to identify which observational parameters GOSUD should acquire and from which oceanic regions to acquire them. CLIVAR is one such scientific community.

225 In March 2007, Dr Thierry Delcroix resigned from his GOSUD Co-Chair position. Mr. Loïc Petit de la Villéon was nominated as Co-Chair of GOSUD assuming the Chair position with Mr Bob Keeley.

226 Mr Petit de la Villéon concluded by informing the Committee that the proposed Work Plan for 2009-2010 will focus on (i) Continue to enlarge the network of data collectors and providers; (ii) Start the process of elaborating a delayed-mode dataset by developing a new format which allows NRT, DM data and meta-data in a unique file; develop method and software to build DM datasets taking in account water bottle samples and calibration coefficients and (iii) take in account the scientific needs and the satellite community requirements (SMOS and AQUARIUS validation). Finally, Mr Petit de la Villéon confirmed to the Committee that the Sea Surface Salinity data that are collected at national levels are welcome to be contributed to the GOSUD global dataset.

227 **The Committee thanked** Mr Petit de la Villéon for his detailed report, **expressed appreciation** for the work carried out during the inter-sessional period, and **approved** the work plan for the next inter-sessional period.

5.2.4 Marine XML (marineXML)

228 This Agenda Item was introduced by Dr Lesley Rickards on behalf of Mr Roy Lowry (Chair, Steering Group for MarineXML) referring to **Document IOC/IODE-XX/15.4 (Report of the MarineXML Steering Group)**. Dr Rickards recalled that the MarineXML Steering Group activity has primarily been in two areas of vocabulary work: (i) Content governance: the development of new and the improvement of existing vocabulary content; and (ii) Technical governance: the storage and serving of vocabularies.

Content Governance Activities

229 MarineXML SG vocabulary content governance is undertaken by the SeaVoX e-mail discussion forum, which has been involved in two areas of work. First, the IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards in Oostende, Belgium in January 2008 made two recommendations that were of relevance to SeaVoX. First, that the country codes developed in the 1980s by IODE GETADE and subsequently maintained by RNO DC (formats) should be replaced for international oceanographic data exchange by the country codes maintained by the International Standards Organization:

- ISO3166-1 for country names that are currently in use
- ISO3166-3 for deprecated country names

230 SeaVoX participants from BODC, ICES and USNODC collaborated to produce a mapping from IOC to ISO codes to support conversion work required to conform to this recommendation. This mapping has been published through the NERC DataGrid Vocabulary Server at:

<http://vocab.ndg.nerc.ac.uk/axis2/services/vocab/getMap?subjectList=http://vocab.ndg.nerc.ac.uk/list/C180/current&predicate=255&objectList=http://vocab.ndg.nerc.ac.uk/list/C32/current&inference=false>

231 The second recommendation was that the platform type vocabulary developed from the GF3 Code Table 3 by the EU SeaSearch project should be further improved, including clarification of the internal hierarchical relationship between terms. This work is published at:

<http://vocab.ndg.nerc.ac.uk/axis2/services/vocab/getMap?subjectList=http://vocab.ndg.nerc.ac.uk/list/L062/current&predicate=255&objectList=http://vocab.ndg.nerc.ac.uk/list/L061/current&inference=false>

232 The second area of work has been the development of a Sea Area gazetteer. Many local gazetteers under construction and there are clear benefits if these are linked to a common high-level discovery hierarchy of regional terms. The most obvious candidate for this is the International Hydrographic Bureau “Limits of Oceans and Seas (Special Publication No. 23)” list of sea areas. However, this has well-known shortcomings that cannot be improved due to issues in the governance process. SeaVoX has developed an ontology of regional and global sea area terms to fill the resulting void. This will be published on the Vocabulary Server and should be available by the time of the IODE XX meeting.

Technical Governance Activities

233 Technical governance for vocabularies developed by SeaVoX is provided by the NERC DataGrid Vocabulary Server, which was developed by BODC for NERC DataGrid and has been adopted by the EU SeaDataNet project. The system comprises an Oracle relational database back end handling maintenance issues such as versioning and audit trails front ended by a Java API delivering vocabulary content as XML documents.

234 During the reporting period the system has continued to evolve, developing from V1.0 to V1.1. The primary differences between versions are that V1.1 has improved functionality in the SOAP API, plus a pseudo-RESTful API (termed HTTP-POX because it delivers plain old XML in response to an HTTP GET request) and URL access to both terms and complete vocabularies.

Extension of SeaVoX membership

235 SeaVoX is an active IODE activity that is inexpensive as it is based on electronic communication rather than physical meetings but nevertheless is effective. IODE representation on SeaVoX is extensive, but not comprehensive, currently including Italy, Spain, Greece, UK, Russia, the Netherlands, Canada, Australia, Sweden and Belgium. Further IODE participation would be most welcome and may be obtained by a simple e-mail request to rkl@bodc.ac.uk.

Development of Vocabulary Technical Governance Standards

236 Several Semantic Web resources based on the ISO19135 repository model relevant to the oceanographic domain are either operational or under development. Of particular note in addition to the NDG Vocabulary Server are the ICES RECO server, the MMI Ontology Registry and an ontology registry under development in CSIRO in Australia. All of these are based around the concept of an API, typically a structured URL invoking an HTTP GET request representing a vocabulary, ontology or term that return an XML document describing the requested resource.

237 The benefit of standardized API calls and payload document XML schemas across these resources to the development of semantic interoperability would be enormous. In particular, the emergence of such standards would encourage the development of semantically aware clients. Currently, this is an area of research in progress supported by collaboration, but once maturity is reached there is clearly a role for SG MarineXML in the formalization of these standards.

238 Dr Rickards concluded by proposing that the SG MarineXML should encourage the development of these standards using the SeaVoX discussion list as the vehicle. Any results could then be formalized through the standards process proposed by the IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards in Oostende, Belgium in January 2008.

239 **The Committee suggested** that the SeaDataNet vocabularies might be excellent candidates for the Ocean Data Standards Process.

240 **The Committee was told** of a proposed joint meeting with ICES WG-DIM to discuss follow-

up of other ICES IOC SG-XML recommendations, other than vocabulary development, and to identify areas of work that need to be addressed that are not being covered by other initiatives (ISO, OGC, W3C, MMI).

- 241 **The Committee thanked** Dr Rickards for presenting Dr Lowry's report, **expressed appreciation** for the work carried out during the inter-sessional period, and **approved** the work plan for the next inter-sessional period.

5.2.5 Marine Environmental Data Inventory (MEDI)

- 242 This Agenda Item was introduced by Mr Greg Reed (Chair MEDI Steering Group) referring to **Document IOC/IODE-XX/15.5 (*Marine Environmental Data Inventory (MEDI)*)**.

- 243 Mr Reed recalled that the Marine Environmental Data Inventory (MEDI) is a catalogue system for marine datasets within the framework of the IODE programme. MEDI provides a reference point for locating marine and coastal datasets and is populated with metadata descriptions of marine datasets from IOC member states. The MEDI on-line catalogue is currently based on the GCMD Directory Interchange Format (DIF), a de-facto standard used to create metadata directories and has no defined granularity.

- 244 To comply with other metadata development within IODE and JCOMM, such as Ocean Data Portal and Ocean Data Standards, the MEDI metadata format will change to conform to the ISO 19115 (Geographic information -- Metadata) standard. This will require a new on-line catalogue that should be fully integrated with other IODE initiatives.

The following metadata activities were accomplished during the inter-sessional period:

- (i) Provision of input to the Ocean Data Portal Project. Metadata is an integral component of the IODE Ocean Data Portal and all data must have a metadata record. Participating data centres will generate discovery metadata about their datasets for distributed data search and retrieval. The ISO 19115 metadata standard (or a profile) will be used by ODP to describe data and services.
- (ii) Participation in the IODE/JCOMM Standards Process. The Marine Community Profile (MCP) of ISO 19115, developed by the Australian marine community, was one of two profiles of ISO 19115 considered at the Standards Forum. The Canadian NODC is developing a metadata entry tool that uses the MCP and this will be made available to the IODE community when released. The SG-MEDI chair has prepared a document comparing the Marine Community Profile (MCP), the WMO Core Metadata Profile, and the SeaDataNET Common Data Index (CDI).
- (iii) Cooperation with the IPET-MI and META-T. The SG-MEDI chair attended the Third Meeting of the WMO CBS Inter-Programme Expert Team on Metadata Implementation (IPET-MI). Version 1.0 of the WMO core metadata profile was finalized. This profile is now the full ISO standard and the previously proposed extensions have been removed. The SG-MEDI chair attended the meeting of the Water Temperature Instrument/platform Metadata Pilot Project (META-T) Steering Team. META-T will contribute instrument metadata and related discovery metadata to the Ocean Data Portal and WIGOS. Standards proposed by META-T will be submitted through the IODE/JCOMM Standards process for review by the wider community and to ensure metadata interoperability across the marine domain.

- 245 The Steering Group for MEDI did not meet during the inter-sessional period.

- 246 When the SG MEDI was established in 2000 (Recommendation IODEXVI.1) it was the only

IODE project associated with development of standards and tools for discovery metadata. Metadata has now become an important component of a number of IODE projects (ODP, WIGOS, ODS) and it is important that MEDI implementation becomes part of the overall IODE strategy for data discovery. Geo-Network open source metadata catalogue application could be a possible a metadata portal for the transition of historical MEDI records.

- 247 **The Committee thanked** Mr Reed and **supported** his proposal that the Steering Group for MEDI be terminated and future development and administration of MEDI should be managed by the IODE/JCOMM ETDMP.

5.2.6 Follow-Up of Terminated or terminating IODE or IODE-involved Projects

- 248 This Agenda Item was introduced by Dr Vladimir Vladymyrov in his capacity of former Head of the IOC Project Office for IODE, referring to **Document IOC/IODE-XX/15.6 (Report on completed IODE Projects)**.

- 249 Dr Vladymyrov recalled that the IODE Project Office has participated in a number of projects during the inter-sessional period and these projects have usually been managed by the IODE Project Office. The projects which have now been completed are described.

- 250 **ASCABOS** (A Supporting Program for Capacity Building in the Black Sea Region towards Operational Status of Oceanographic Services) was a three-year, EC funded programme, designed to strengthen the communication system ensuring flexible and operative infrastructure for data and information exchange between partners and end users in the Black Sea region. The duration of the project was from 2005 to 2008 and the objectives were (i) to build capacity through establishment and strengthening of the communications between partners and education and training of young scientists and end-users; (ii) to prepare necessary organizational, technological and technical prerequisites for integrated and operative Black Sea observing system; (iii) to establish an effective dialogue among all relevant Black Sea institutions and with international programmes, for a coherent implementation of the regional information and forecasting system; and (iv) to promote the European contribution to the global ocean and climate observing systems, as planned in the Global Monitoring for Environment and Security (GMES). IODE participated in Work Package 3. The main objectives were to transfer technology, know-how and operational experience to the end-users through a programme of training courses, and to increase the expertise through education and training of young scientists and end-users.

- 251 The **MOTIVE** (Marine Overlays on Topography for Annex II Valuation and Exploitation) Project, which started in September 2005 and ended in September 2007, built on the work of the MarineXML project. It provided a documented methodology for implementing and monitoring data harmonization activities between INSPIRE (Infrastructure for Spatial Information in Europe) *Annex I* (hydrography, including marine areas), *Annex II* (elevation, including shoreline) and *Annex III* (thematic marine/coastal) datasets, the latter including coastal zone management areas, natural risk zones (e.g. flooding), oceanographic geographical features (currents, wave heights), and sea regions. The IODE Project Office was a subcontractor within this project and provided the technical secretariat and maintained the project web site.

- 252 IODE was also a partner in the **SIMORC** (System of Industry Metocean data for the Offshore and Research Communities) Project from 1st June 2005 until 1st December 2007. The SIMORC service provides an overview of and access to an increasing volume of metocean datasets, collected by the oil and gas. Major oil and gas companies participated via the International Association of Oil & Gas Producers (OGP) and its OGP Metocean Committee. Datasets are submitted to SIMORC on a regular basis, indexed in the SIMORC metadatabase and stored in the SIMORC database. The SIMORC service had its public launch in March 2007 and, at the end of the EU project, held 1700 datasets from Shell, Total and BP, covering observations of winds, waves, currents and sea level. IODE was responsible for promotion and dissemination of SIMORC data and including the OGP facility in its educational programs for developing countries. Since 1st December 2007, the SIMORC

service has been operated and maintained by MARIS and BODC.

- 253 The Delegate from the UK, Dr Lesley Rickards, informed the Committee that the SIMORC project is continuing with funding from the International Association of Oil and Gas Producers (OGP) - (that is: Shell, BP, Total). As with the EU funded project, data will be quality controlled at BODC and available through the SIMORC portal, operated by Maris, Netherlands. Data sets are still being added to the portal and there are now almost 1900 available. There are two main activities that the project wishes to pursue: (1) encourage more oil companies to provide their data to SIMORC and (2) make the portal as comprehensive as possible. Data sets have been collected by oil and gas companies in Canada, USA and Australia, which are already well managed. The current plan is to contact those organisations that hold these data and request the relevant metadata be made available through the SIMORC data portal - but not the data sets themselves.
- 254 IODE had an important role in the EU project for the promotion and dissemination of SIMORC data and in its educational programs for developing countries. This is a role that IODE should continue.
- 255 The Committee was informed that operators of offshore wind farms now also collect a considerable number of metocean parameters. In most cases these data are still classified but **the Committee recommended** that contact is made with the operators to investigate the possibility to obtain and share this new source of data.
- 256 **The Committee thanked** Dr Vladimir Vladymyrov in his capacity of former Head of the IOC Project Office for IODE and for his detailed report and **expressed its appreciation** for the work carried out.

5.2.7 Thermodynamics and Equation of State of Seawater - TEOS-10

- 257 This Agenda Item was introduced by Mr Keith Alverson (Head, IOC Ocean Observation and Services Section) referring to **Document IOC/IODE-XX/14.5 (*Thermodynamics and Equation of State of Seawater. TEOS-10*)**.
- 258 Mr Alverson informed the Committee that there are three very good reasons for continuing to store Practical Salinity rather than Absolute Salinity in National Oceanographic Data Centres. First, Practical Salinity is an (almost) directly measured quantity whereas Absolute Salinity (the mass fraction of sea salt in seawater) is generally a derived quantity. That is, we calculate Practical Salinity from measurements of conductivity, temperature and pressure, whereas to date we derive Absolute Salinity from a combination of these measurements plus other measurements and correlations that are not yet well established. Calculated Practical Salinity is preferred over the actually measured in-situ conductivity value because of its conservative nature with respect to changes of temperature or pressure. Second, it is imperative that confusion is not created in national databases where a change in the reporting of salinity may be mishandled at some stage and later be misinterpreted as a real increase in the ocean's salinity. This second point argues strongly for no change in present practice in the storage of Practical Salinity SP in national databases of oceanographic data. Thirdly, the algorithm for determining the "best" estimate of Absolute Salinity is immature and will undoubtedly change in the future so we cannot recommend storing Absolute Salinity in national databases. Storage of a more robust intermediate value, the Reference Salinity, would also introduce the possibility of misuse of salinity data without providing any real advantage over storing Practical Salinity so we also avoid this possibility.
- 259 **The Committee adopted** **Recommendation IODE-XX.4**

6. IODE CAPACITY BUILDING

6.1 OCEANTEACHER AND TRAINING ACTIVITIES

260 This Agenda Item was introduced by Ms Linda Pikula (OceanTeacher Chief Editor Marine Information Manager). Reference was made to **Document IOC/IODE-XX/16 (*OceanTeacher and Training Activities*)**.

261 Ms Pikula highlighted the following accomplishments and issues related to OceanTeacher and its application for the IODE training Programme:

Inter-sessional Training Accomplishments

262 She reported that the IODE marine data and information management training programme has continued to organize successful workshops and courses, using OceanTeacher materials. The list of sessions held in the inter-sessional period is provided in Appendix A to Document IOC/IODE-XX/16. The workshops and courses involved 92 students.

Development of the Academy Concept

263 Based on informal discussions and input from students and trainers, the Secretariat developed a new project proposal, in 2008, to advance all data and information training along a new path. The resulting proposal is named: *OceanTeacher Academy: a human capacity development framework for IOC/IODE Ocean Data and Information Networks* (proposal submitted to FLANDERS UNESCO SCIENCE TRUST FUND (FUST) SC-15) [see http://ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=2688] The proposal was submitted to FUST in September 2008, and subsequently approved. The course types that will be offered by the OceanTeacher Academy are listed in Appendix C to Document IOC/IODE-XX/16.

Conversion of OceanTeacher Resources to Wiki Format

264 One of the highest priority items in the Academy project proposal was the conversion of the existing ‘content management system’ (CMS) of OceanTeacher to a ‘wiki’ environment which is becoming a widely used web application for knowledge sharing. The former CMS approach was very inflexible for purposes of authoring, and highly limiting in terms of content format. The new OceanTeacher in wiki format can be viewed at <http://www.oceanteacher.net/oceanteacher>.

Restructuring and Revision of OceanTeacher Content

265 Simultaneous with the conversion to wiki environment, the entire content of OceanTeacher has been reviewed, with an eye toward eliminating materials that have not been useful for training, and adding new materials requested by newer course offerings. The new outline for Data Management (DM) components (top two levels only) is available in Appendix A to Document IOC/IODE-XX/16. This exercise has effectively resulted in a new typology of topics related to marine data management. The Information Management (IM) outline is also attached in Appendix C to Document IOC/IODE-XX/16.

266 To streamline OceanTeacher, the policy has now been adopted of eliminating the massive inclusion of external documents, in favour of external web links to the original sources. The site contains a URL checker tool in order to check the integrity of links in the site. This reduced the total volume to approximately 300-400 definitive “articles” listed in the DM and IM outlines, approximately 100 tutorials, and a library of example data files.

Survey of Training Needs (see also Agenda Item 6.3)

267 In October/November 2008, the Secretariat developed and circulated a survey of training needs, in both the Data Management and Information Management areas, requesting all IODE national coordinators and associated experts to respond online. The survey was well received with 135 respondents to Data Management and 121 respondents to the Marine Information Management survey. The results of the survey can be accessed online through the following URLs:

DATA MANAGEMENT -

http://www.surveymonkey.com/sr.aspx?sm=BUrNrp9EwsKKGn_2fldbc3rOtRMxJedUE_2ff0xUqGveDAo_3d

INFORMATION MANAGEMENT -

http://www.surveymonkey.com/sr.aspx?sm=hQnEqjS4Axj7d209OJX_2bmRT_2bwfcETYcChq2eslabhxI_3d

A password is required to access either result. You can obtain the password by contacting p.pissierssens@unesco.org

268 Based on these results, the OceanTeacher editors and trainers developed an initial list of courses to be developed in 2009-2010 (provided in Appendix D to Document IOC/IODE-XX/16rev.).

Initiation of the OceanTeacher Training Corps

269 A 'training corps' of two dozen volunteers has been identified by the Secretariat, from nearly as many countries. After initial planning meetings by the OceanTeacher editors in early 2009, members of the training corps will be organized into authorship and training positions, according to the new OceanTeacher and Academy models.

Coordination and Cooperation with Other Programs & Agencies

270 MARINE DATA MANAGEMENT - Close ties and specific common training projects have been pursued with the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), Partnership for Observation of the Global Oceans (POGO), UNESCO's Bilko satellite imagery training program, the European Union's marine data management initiatives, and Belgian academic groups. Most of these groups were represented by at least one proposed joint course in 2009.

271 MARINE INFORMATION MANAGEMENT – Partnerships with marine information professional societies, the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC), US and Belgian graduate schools of library science, and other academic groups were developed for the next training phase of OceanTeacher.

272 Dr Wouter Rommens, IODE Training Coordinator, reported that under the new OceanTeacher Academy (OTA) concept, students can either register on a self-supporting basis (or sponsored through a third party), or can request sponsoring through the OceanTeacher Academy project. Sponsorship is available for a limited number of applicants and the application process takes into consideration the development status of the country of the applicant, benefits for the applicant's institute, endorsement of the applicant's head of institution and any co-sponsorship from the applicant's side. All OceanTeacher training materials will remain available free of charge through the OceanTeacher website.

273 Dr Gwenaelle Moncoiffe, Chair of GE-BICH, reported that guideline documents materials on quality control procedures are available for submission to OceanTeacher.

274 Mr Robert Keeley, Chair JCOMM Data Management Coordination Group, reported that JCOMM would contribute to OceanTeacher with training materials (e.g. JCOMM catalogue on standards and best practices).

275 **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.

6.2 IODE'S REGIONAL CAPACITY BUILDING PROJECTS: ODIN

6.2.1 Ocean Data and Information Network for Africa (ODINAFRICA)

276 This Agenda Item was introduced by Mr Mika Odido (ODINAFRICA-III Project Coordinator) referring to **Document IOC/IODE-XX/17 (*Ocean Data and Information Network for Africa*)**.

277 Mr Odido recalled that the implementation of the third phase of ODINAFRICA-III, which started in 2004 as a large-scale project funded under the UNESCO-Flanders Trust Fund for Science (FUST) ended in February 2009. The following are some of the achievements of this phase:

- Each of the participating institutions developed a suite of data and information products that have been quality controlled, merged and availed through the project website (www.odinafrica.org). These include: library catalogues, catalogues of national data sets and data sources (meta databases), directories of marine and freshwater professionals, directories of marine related institutions and their profiles, marine data archives and marine biodiversity databases. These are also from NODC websites (www.nodc-countryname.org e.g. www.nodc-senegal.org). Training was provided on a wide range of topics such as data and information management, development of e-repositories, websites development, application of remote sensing and GIS to coastal management, marine biodiversity data management, modeling; end to end data management; and Sea level data analysis and interpretation.
- New tide gauges were installed in Cameroon, Congo, Djibouti, Egypt, Ghana, and Mauritania. The installation of Global Navigations Satellite Systems – GNSS receivers at the sea level stations in Takoradi (Ghana), and Inhambane and Pemba (Mozambique) provides the connection between the horizontal and the vertical datum at these locations. This brings the total number of tide gauges installed along the African coastline to more than 40. Information on the network is available on the African Sea Level Network website (www.ioode.org/glossafrica), while the data from 22 of the stations can be accessed near-real time at www.sealevelstations.net.
- The African Marine Atlas developed in collaboration with the African Coelecanthe Project (ACEP), and the United Nations Environment Programme provides access to maps, images, data and information to a wide range of users. The static website (<http://omap.africanmarineatlas.net>) contains over 800 downloadable data products derived from the fields of marine geo-sphere, hydrosphere, atmosphere, biosphere, geopolitical and the human socio-economic dimensions. The map server demonstration site (<http://www.africanmarineatlas.net>) has been developed by the atlas team as a training exercise, and a data dissemination tool through which several data layers can be viewed.

278 Mr Odido reported that the next phase of ODINAFRICA will focus on application of data and information products to the sustainable management of marine and coastal resources, as well as reducing the risks of ocean related hazards. The following are the expected outcomes and deliverables of ODINAFRICA-IV:

1. Strengthened and sustainable marine data and information management infrastructure in the ODINAFRICA countries;
2. National multi-sectoral and multi-stakeholder data networks to maximize the use of available data and to make available IODE NODCs data management expertise to other stakeholders;
3. Priority [customized] products such as forecasts, predictions, models, atlases, scenarios focusing on the following priority areas;
4. Improved mechanisms for the dissemination and application of data, information and products [through standards based catalogues of data and metadata and integrated web based portals and connection to the IODE OceanDataPortal]

279 A workshop on “Assessment of Ocean Information Requirements for Coastal Management in Africa” was held at the IOC Project Office for IODE, Oostende, Belgium from 30 March – 2 April 2009. The meeting brought together the heads of institutions that had confirmed their intention to participate in ODINAFRICA-IV and representatives of other on-going regional projects, especially the LME projects.

280 **The Committee welcomed** the substantial contribution made by participating countries and other programmes/projects in the region to the implementation of planned activities. This has contributed to the success of the activities, and will ensure the sustainability of the initiatives.

281 The Delegate of the United Kingdom informed the she was encouraged by the progress achieved in development of the tide gauge network in the region. She pointed out that quality controlled delayed-mode data from the tide gauges in the region are now available from the website of the Global Sea Level Observing System. She welcomed experts from the region to access and utilise the data for scientific analysis.

282 **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.

283 **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.

284 **The Committee adopted** the work plan for ODINAFRICA for the period 2009 – 2013.

6.2.2 Ocean Data And Information Network for the Caribbean And South America Regions (ODINCARSA)

285 The Agenda Item was introduced by Mika Odido referring to Document **IOC/IODE-XX/18 (Inter-sessional Report on the Ocean Data and Information Network for the Caribbean and South America regions (ODINCARSA))**. Mr Odido informed the Committee that Mr Rodney, ODINCARSA regional coordinator had resigned recently.

286 During the 2007-2009 period, several ODINCARSA member countries developed capacity for data and/or information management at the national level. Activities took place in Cuba, Argentina, Ecuador, Colombia and Venezuela. Experts from ODINCARSA regions were trained on Biodiversity data management, E-repositories; ocean buoys data management, development of Marine Atlas. All these technical workshops were held in the IOC Project Office for IODE in Oostende, Belgium.

287 The Caribbean Marine Atlas Project has been implemented since 2008, with the financial support of the Government of Flanders (Kingdom of Belgium). Several training workshops were held

and the first version has been completed. The prototype is currently being completed by both the representatives from Barbados and Trinidad & Tobago, and is hosted on a local server for testing. The other regional partners are facilitating the completion of the prototype by delivering required datasets and completing metadata files. The processed data has been incorporated into the mapping application and the Atlas is functioning as a simple viewer for the assembled datasets.

288 One of the important achievements during this period has been the ODINCARSA contribution to OceanDocs, the Digital Repository of Marine Publications. Sub-regional training workshops were held in Argentina, Ecuador and Panama, with the participation of information experts from Barbados, Brazil, Chile, Colombia, Cuba, Mexico, Peru, Trinidad & Tobago and Venezuela. The contribution of gathered publications to the repository has increased, and more librarians from the region have been recruited to be part of this effort.

289 ODINCARSA has been contributing to the activities of the GOOS Regional Alliance for the South Eastern Pacific (GRASP), mainly assisting in the design of the data management subsystem, in coordination with the Permanent Commission for the South Pacific (CPPS), which is the Technical Secretary of GRASP.

290 ODINCARSA is participating in the SPINCAM Project (South Eastern Pacific Information Network in support to Coastal Areas Management), which is coordinated by CPPS and supported by the participating countries, IOC and the Government of Flanders (Kingdom of Belgium). SPINCAM is an example of a project that involves IOC/IODE as well as IOC/ICAM. National Oceanographic Data Centres from Panama, Colombia, Ecuador, Peru, and Chile will be strongly involved in Component 2 of the project, which is related to data and information management.

291 Another project, relevant for ODINCARSA and financed by the FUST is currently ongoing. The current initiative aims to design and develop an integrated information system (IS) in support of research and management for marine mammals in the Southeast Pacific (SEP) within the framework of the CPPS Action Plan for the Protection of the Marine Environment and Coastal Areas of the South East Pacific Area. The system will be built using open source tools and will take advantage of previous experiences of ODINCARSA such as the Portal Oceanico www.portaloceanico.net, and the experience of regional ODINCARSA partners in terms of promotion and implementation of sustainable information systems for wide range of audiences. The information system is also a practical means for regional co-operation in support of management and conservation of cetaceans, and to benefit the research community as well as the policy environment.

292 ODINCARSA has accomplished a successful cycle of activities in the region. However, because the period of existence, some of their key members have retired or moved to other positions within the institutions. In addition the initial priorities agreed on 2002 when ODINCARSA started, have changed. These factors demands to plan a new phase for ODINCARSA by defining new goals, updating the national priorities of the region and setting a Plan of activities based on the generation of regional, sub regional or national data products and information services.

293 The Delegate of Barbados informed the Committee that the Caribbean Islands were not very active till 2007 when they started participating in the Caribbean Marine Atlas project. Participation in this initiative, which builds on the experience of the African Marine Atlas, and uses the same structure, has provided an opportunity for regional capacity building. The participants in the initiative were confident that they would be able to launch a robust product in the near future. He expressed concern at the high turnover of designated national data coordinators staff in the institutions participating in the Caribbean Marine Atlas project. This may have a negative impact on the development of the project.

294 The Chair of GE-MIM commended the ODINCARSA Information Managers on their achievements, in particular the development of institutional library databases, and the repository of marine publications from the region. She noted that GE-MIM had received a letter of support from the

International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) emphasising the need for continuation of the activities of ODINCARSA.

295 The Representative of the Permanent Commission for the South Pacific (CPPS), on behalf of its Secretary-General, congratulated the IOC and the Secretariat of IODE for its excellent work. He informed the Committee that the CPPS is a Regional Intergovernmental Organization created in 1952 to coordinate the maritime policies of its Member States (Colombia, Chile, Ecuador and Peru) and to promote cooperation and assistance in maritime affairs like oceanography, meteorology, fisheries, marine data bases and data exchange, marine life conservation and pollution prevention. He recalled that CPPS is a Regional Organization that contributes to the achievement of the objectives of the IOC.

296 Within this framework, CPPS recognizes the important contribution made by IODE through ODINCARSA in the South Pacific Region, and also the importance to continue with its development, taking in to account ideas, projects, programmes and financial support that Intergovernmental Organizations like CPPS as well as NGOs and Private Sectors or Persons could give to this project in order to have common developments and benefits. He emphasized that it is important to indicate the interest of the CPPS in helping to orient, to evaluate and to plan the future of ODINCARSA, in consultation with the official representatives of the governments of the region, to be able to give the best use and optimization of the resources for benefit of marine sciences and its application.

297 **The Committee expressed appreciation** to the Government of Flanders (Kingdom of Belgium) for providing additional resources for further development of the Caribbean Marine Atlas.

298 **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, as well as CIIFEN for allowing Mr Martinez to work for the project. **The Committee noted** that his commitment and dynamic approach will be hard to follow by the next regional coordinator. **The Committee invited** Mr Martinez to continue sharing his expertise in ODINCARSA through any way possible and appropriate.

299 **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.

6.2.3 Ocean Data And Information Network for the Central Indian Ocean Region (ODINCINDIO)

300 The Delegate of India presented the report of the sessional working group that had been established to discuss the need for, and ways of re-activating the Ocean Data and Information Network for the Central Indian Ocean region (ODINCINDIO). The group noted that significant progress had been made in implementation of ODINCINDIO activities till March 2008 when Dr Nasser Zaker from Iran had resigned from his position as the ODINCINDIO Regional Coordinator. Since then there had been no communication from the region, and no progress had been reported. The group emphasised that ODINCINDIO should be re-activated in order to provide a forum for collaboration and exchange of data and information as well as experiences in the region. The group recommended two actions to be implemented in order to revive ODINCINDIO: (i) the IODE Secretariat should communicate with IOC and IODE contacts in the region to remind them to designate or update ODINCINDIO National Coordinators, (ii) the IOC Secretariat should facilitate a meeting for member states from the region during the 25th Session of the IOC Assembly (June 2009, Paris, France) to review the need and agree on possible focus for ODINCINDIO, as well as actions that should be implemented to re-activate it.

301 The Delegates of Kuwait, Malaysia, Myanmar, Oman and Thailand seconded the proposal presented by the Delegate of India and emphasised the importance of reviving ODINCINDIO.

302 **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).

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

303 Ms Olga Akimova, the ODINECET Project Coordinator, introduced this Agenda Item, referring to **Document IOC/IODE-XX/19 (*Ocean Data and Information Network for European Countries In Economical Transition (ODINECET)*)**.

304 Ms Akimova recalled that the ODINECET network constituted a capacity building strategy for Eastern and Central European countries linking training, equipment and operational support in a regional context. The project is product- and service-oriented and uses a multi-stakeholder approach and is composed of 6 IOC Member States: Bulgaria, Croatia, Estonia, Poland, Russia, Ukraine and one observer country: Latvia. Ms Akimova also noted that the network is currently focused on Marine Information Management only.

305 Ms Akimova informed the Committee that starting in 2006 and after 3 years of activity ODINECET has achieved some important results already.

306 Three training courses in Marine Information Management (basic, intermediate and advanced levels) have been held, hosted and sponsored by the IOC Project Office for IODE in Oostende, Belgium in 2006, 2007 and 2008. The Regional Marine Information Management Training course for ODINECET members from Russia and Ukraine was organized back-to-back with the EURASLIC XII Conference in Crimea, Ukraine 2007 and sponsored by IODE. Another regional training course was organized by, and held at, the Institute of Biology of the Southern Seas (IBSS) in Ukraine, for 4 Ukrainian Libraries (14-16 July 2008) and was attended by 5 participants from marine libraries of Ukraine. Lectures were provided on themes related to marine information management and practical exercises were organized on the use and management of CEEMaR. After the training two libraries have started collaboration in CEEMaR. The E-repository training course was organised by IODE for ODINs and took place at the IOC Project Office for IODE (23-28 April, 2007). Information on the ODINECET was presented by a librarian and IT person from the Institute of Biology of the Southern Seas (IBSS, Ukraine). Two months after this training course the e-repository of the IBSS was created (June, 2007). It now contains 776 original full-text documents. Other achievements include:

- ODINECET participants have developed a product called “ECET UNION Catalogue of Serials”. This catalogue gives access to information about serials available at the ODINECET-Group aquatic libraries;
- Two new IODE National Coordinators for Marine Information Management were nominated in Poland and Croatia;
- In order to promote OceanExpert documentation on the input procedure was translated into Russian, shared among scientists and a paper about the OceanExpert Directory was published in a scientific journal. There are now 326 inputs for marine and freshwater professionals from the ECET area in the OceanExpert Directory.
- In 2008 the e-repository for ODINECET CEEMaR (Central and Eastern European Marine Repository) was established and hosted by the Institute of Biology of the Southern Seas (IBSS). The domain name is <http://www.ceemar.org>. Because CEEMaR is developed as an e-repository for several institutions from different ECET region countries it has a structure similar to OceanDocs. Eleven institutes participating in the ODINECET project have joined the repository-associated activities. An additional training course (Advanced level) was held at the IOC Project Office for IODE in Oostende, Belgium (3-7 Nov., 2008) which promoted OceanDocs and CEEMaR. This resulted in 375 original documents being added to CEEMaR by the end of April 2009.

307 In conclusion Ms Akimova outlined the activities planned for implementation in 2009-2010: (i) to continue developing the ECET Union Catalogue of Serials; to consider adding to the catalogue foreign periodical titles being stored in the libraries of the ODINECET project participants. (ii) to continue the submission of relevant documents into CEEMaR; to invite collaboration from other Institutes of the ODINECET group (iii) to establish National Marine Information training centres in advanced marine libraries in each ECET country which will organize national training courses, seminars, individual consultations, etc., taking into account the language barrier; Cooperation with the IODE Project Office in preparing of instructors for such training centres. (iv) to train trainers for national MIM training courses; Continuous Professional Development Training for all ODINECET group; to organize individual internships (v) to continue encouraging the input of the scientists' details of the ECET area in OceanExpert. (vi) to add ODINECET Regional Training Courses materials to OceanTeacher (vii) to collaborate with the ODINBLACKSEA project (viii) to collaborate with FAO by providing links of full-text documents from CEEMaR and IBSS repositories to ASFA records.

308 The Delegate of Ukraine informed the Committee that the development of the ODINECET repository has resulted in a substantial increase in the citation of literature from the region, reflecting increased usage of the literature through the e-repository.

309 The Chair of GE-MIM commended ODINECET for the rapid development and population of the regional repository, as well as for the development of institutional repositories.

310 **The Committee commended** ODINICET on the successful implementation of their work programme during the inter-sessional period.

311 **The Committee adopted** the ODINECET work plan for 2009 and 2010 – 2011.

6.2.5 Ocean Data and Information Network for the Western Pacific region (ODINWESTPAC)

312 The ODINWESTPAC Coordinator, Prof. Shaohua Lin, introduced this agenda item, referring to Document **IOC/IODE-XX/20 (*Ocean Data and Information Network for the Western Pacific Region (ODINWESTPAC)*)**. A preparatory meeting for ODINWESTPAC was held in conjunction with the 3rd International workshop on GODAR-WESTPAC (4-6 December 2006, Japan), and made the proposal to initiate a pilot project for ODINWESTPAC. The proposal was approved by the 19th session of IODE (Trieste, Italy, 12 – 16 March 2007). The objectives of ODINWESTPAC were primarily to provide an effective capacity building framework, to promote regional collaboration in marine data and information and products sharing, to develop cooperation with other ODINs and international and regional projects/programs, and to provide data and information services mainly for the WESTPAC member states and other users. The Japan Oceanographic Data Centre (JODC) spearheaded the development of ODINWESTPAC, and initiated collaboration with other regional initiatives such as NEAR-GOOS, NOWPAP and PICES. JODC also developed a website for the pilot phase of ODINWESTPAC (www.odinwestpac.net)

313 The 7th session of the IOC Sub-Commission for WESTPAC (Sabah, Malaysia, May 2008), designated Prof Lin Shaohua from China as the new ODINWESTPAC Coordinator. In the period 2008 to 2009, ODINWESTPAC has undertaken several activities including establishment of a Project Coordinating Group; collection of information on focal points for data and information management in Thailand, Malaysia, Japan, Australia, United Kingdom, Vietnam, Russia, Republic of Korea, Indonesia and China; establishment of three technical working groups to work for the project at the host centre (NIMDIS, China); acquisition of hardware and software for constructing and hosting the website at NMDIS; and development of the preliminary structure of the website (this will be available at www.odinwestpac.org). The collection of information for inclusion on the website is ongoing. This will include a directory of research institutions and experts in the region, a regional e-repository of scientific publications published by WESTPAC experts, library catalogues and cruise summary

reports. It will also be possible to access metadata, basic oceanographic data, marine information products and marine meteorological data and products.

314 Prof Lin presented a work plan for ODINWESTPAC which will focus on development of capacity to enable Member States from the region establish National Oceanographic Data and Information Centres, and provide the staff of these centres with the skills for data and information management. She proposed that a workshop be organized for focal points of member states, so that they can develop a strategy and work plan for the project. She noted that Korea would host a training course on IODE OceanDataPortal data node development in 2009. She informed the Committee that Indonesia has offered to host training courses on data standards and exchange protocols for the WESTPAC region, possibly during the WESTPAC-VIII Session. She emphasised that ODINWESTPAC is still in its early stages and needs to develop further. In this regard she called for cooperation from Member States in the region. She invited member states from the region to nominate data and information managers who will work together in developing the ODINWESTPAC project. Prof Lin paid tribute to the Japan Oceanographic Data Centre for their efforts in promoting the establishment of ODINWESTPAC, and the IODE and WESTPAC secretariats for the support that they had provided in implementation of activities.

315 The Delegate of Japan commended Prof Lin for her leadership that had contributed to the growth of ODINWESTPAC.

316 The Head of the IOC Regional Secretariat for WESTPAC Dr Wenxi Zhu thanked the various people and organisations that have contributed to the establishment and development of ODINWESTPAC. He informed the Committee that the IOC Regional Secretariat for WESTPAC looks forward to continue working with them in future and expressed the hope that the spirit of cooperation will be maintained.

317 The Delegate of Malaysia congratulated Prof Lin for the tremendous progress made in development of ODINWESTPAC since the 7th session of WESTPAC. She informed the Committee that Malaysia has been encouraged to establish a National Oceanographic Data and Information Centre, and will need support from IOC Project Office for IODE, IOC Regional Secretariat for WESTPAC and other established centres in the region such as JODC. She expressed Malaysia's interest in implementing the Ocean Data Portal technology.

318 The Head of the IOC Project Office for IODE, Mr Peter Pissierssens informed the Committee that IODE encourages WESTPAC countries establishing NODCs to implement portal technology, and looks forward to assisting and working together with the NODCs to implement the technology. Korea, through KORDI, has provided funding and will host a training course on portal development in 2009.

319 **The Committee congratulated** ODINWESTPAC and its Coordinator for the progress that has been achieved in implementation of planned activities. **The Committee also thanked** JODC for its contribution to the development of the pilot phase of ODINWESTPAC.

320 **The Committee adopted** the work plan for ODINWESTPAC.

6.2.6 ODIN-Black Sea

321 This Agenda item was introduced by Dr. Vladimir Vladymyrov, the ODIN-Black Sea Project Interim Coordinator, referring to **Document IOC/IODE-XX/21 (*Ocean Data and Information Network for the Black Sea Region (ODIN-BlackSea)*)**.

322 He recalled that the ODIN-Black Sea project was established formally during the Nineteenth Session of the IODE Committee (Trieste, Italy, March 2007). All riparian Black Sea countries (Bulgaria, Russian Federation, Romania, Turkey, Georgia and Ukraine) are the participants of the

project. Dr. Atanas Palazov (IO-BAS, Bulgaria) was elected to be the ODIN-Black Sea coordinator. He informed the committee that the main activities of the ODIN-Black Sea project in 2007 were directed to the regional NODCs capacity building that included participation of the 28 ODIN-Black Sea trainees in 3 training courses organized by the IOC Project Office for IODE (one of them was organized jointly with the ASCABOS EC Project).

323 Dr Vladymyrov also informed committee that at the end of 2007 Dr. Atanas Palazov, the ODIN-Black Sea coordinator, was appointed to be a director of the Bulgarian Institute of Oceanology. Because this is a very time consuming position, Dr. Palazov unfortunately could not dedicate any time for the ODIN Black Sea Project from November 2007. As the result, the ODIN Black Sea activities had stagnated from this time till February 2009 when Dr. Vladimir Vladymyrov was appointed as the interim project coordinator.

324 He reported that several activities from the ODIN Black Sea work plan adopted in 2007 are underway now including: (1) preparation of the review presenting the results of analysis of the structure and state of the Black Sea Region National Oceanographic Data Centres; (2) organization of the ODIN Black Sea Steering Group Meeting and Training on the E2EDM prototype system for the ODIN Black Sea countries held in Obninsk, Russia, in March 2009; (3) application of E2EDM technology at the ODIN Black Sea NODCs; (4) development of the ODIN Black Sea web site (www.blacksea.org). Dr Vladymyrov drew the attention of the Committee to the following actions that needed to be implemented: (i) organisation of an ODIN-Black Sea Project Steering Committee meeting, (ii) preparation and adoption of a work plan for ODIN- Black Sea, (iii) collaboration with SeaDataNet, Upgrade Black Sea SCENE projects, funded by the EU and in which IODE is also a partner. He emphasised the importance of collaboration between ODIN Black Sea and ODINECET.

325 The Delegate of Turkey commended Dr Vladimir Vladymyrov on the efforts he had made in reviving ODIN-Black Sea. He proposed that Dr Vladymyrov be confirmed as the Coordinator for ODIN-Black Sea for a period of two years. The proposal was seconded by Russia.

326 **The Committee invited** Dr Vladymyrov to continue as the ODIN Black Sea Coordinator, and arrange a Steering Committee meeting to prepare a work plan for ODIN Black Sea, taking into account the cooperation with the EU funded Black Sea SCENE project.

327 The Delegate of Russia informed the Committee that the ODIN Black Sea region had provided a good testing ground for the Ocean Data Portal. A two-day training workshop was provided to the data centres, followed by two weeks for installation of the software in 5 countries including collection of datasets. He commended Dr Vladymyrov for contributing to the success of the data collection due to the excellent links he had with SeaDataNet and other regional initiatives and organisations.

328 The Representative of SeaDataNet noted that the countries and institutions in the region that are participating in the Ocean Data Portal initiative are also participating in SeaDataNet. He pointed out that it is important that the two initiatives collaborate, rather than developing parallel systems in the same organisations.

329 Several Delegations expressed concern that they may be required to provide information to more than one system (e.g. SeaDataNet, Ocean Data Portal, Nairobi Convention Clearing House Mechanism) and they do not have the human resources to do this.

330 The Delegate of France recalled that SeaDataNet does not impose technical constraints on local systems to be used. The most adapted technology has to be used in developing the common tools interconnecting the data centres. This development should not modify the existing systems and should take into account the local constraints.

331 **The Committee emphasised** that there will never be one single portal at national or regional level. The focus should be on ensuring that these different systems are interoperable. The IODE Ocean

Data Portal should endeavour to provide the interface to enable the systems to communicate.

- 332 **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.

6.2.7 **Regional Network of Pacific Marine Libraries (ODIN-PIMRIS)**

- 333 The Agenda Item was introduced by Ms Maria Kalenchits (ODIN-PIMRIS coordinator) by referring to **Document IOC/IODE-XX/22 (*Regional Network of Pacific Island Marine Libraries (ODIN-PIMRIS)*)**.

- 334 Ms Kalenchits informed the Committee that the Pacific Island Marine Resources Information system (PIMRIS) is a formal cooperative network of libraries and information centres within regional organisations and government agencies concerned with the development of fisheries and marine resources in the Pacific. Its aim is to improve access to information on marine resources in the region by: (i) collecting, cataloguing and preserving relevant documents in print and electronic formats, especially "grey literature"; (ii) disseminating information via new products and services; (iii) supporting the development of regional libraries and information centres through training and technical assistance; and (iv) cooperating with similar networks and institutions throughout the world, including IAMSILIC, FAO and IOC.

- 335 PIMRIS brings together five countries (Cook Islands, Fiji, Kiribati, Samoa and Solomon Islands) and five agencies (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). The agencies 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. Marine and fisheries departments in the Pacific also have valuable materials that should be preserved in electronic format in order to (i) avoid their degradation; (2) avoid loss of library resources due to departure of staff; (3) improve access to this information. Institutional repositories will include published and unpublished documents produced by those organizations. To secure a stable on-line access to this information PIMRIS will also maintain a regional e-repository; project partners are asked to submit e-copies of the relevant documents to PIMRIS for inclusion into regional e-repository. In 2009-2010 PIMRIS CU jointly with SPREP partner plans a number of regional Training Workshops in e-repository input and search techniques, and MIM.

- 336 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.

- 337 The ODIN-PIMRIS project hopes to achieve the following outcomes:

- Better management of the institution's published or unpublished information
- Secure long term storage and protection of this information
- Enhanced sharing of published and unpublished information
- Development of the skills and capacity to identify important resources available outside the institution.

338 Ms Kalenchits informed the Committee that the development of capacity building opportunities via library twinning and integrated regional training programs, scholarships and equipment support is also an important part of the project. Support to and understanding of ODIN-PIMRIS goals by regional and national authorities are seen as one of the key factors corresponding to the success of the project. In January 2009 PIMRIS CU jointly with the Project Office for IODE prepared and distributed a letter addressed to Heads of Fisheries (HoF) in Pacific countries asking them to support ODIN-PIMRIS project initiatives in their countries and to nominate project contact persons. Based on letters of interest received from HoFs the formal relation between national organizations and ODIN-PIMRIS was established in early 2009.

339 Ms Kalenchits reviewed the activities that were accomplished in 2008:

- UNESCO IOC IODE Training Workshop on Marine Information Management Towards the Ocean Data and Information Network of the Pacific Island Region was organized in Oostende, Belgium, 13-17 May 2008 and attended by 5 project participants from regional agencies (FFA, SOPAC, SPC, SPREP, USP/PIMRIS CU). Aim of workshop was to identify how IODE can help participants develop a marine library network for the Pacific region. By the end of the workshop participants produced a draft proposal document, which included a list of needs, a list of required products and services, and a suggested model and structure for regional collaboration.
- Small Scale Project Proposal for Pilot Project for a Regional Network of Pacific Island Marine Libraries (ODIN-PIMRIS) prepared by project participants and submitted by IODE to the Government of Flanders (Kingdom of Belgium) in September 2008. The Project budget approved by the Government of Flanders amounts to US\$ 22,000.
- ODIN-PIMRIS Pilot Project meeting was organized in conjunction with 34th IAMSILIC conference in Suva, Fiji on 19th September 2008 and attended by 19 participants (incl. major collaborating partners, national partners, potential partner and experts). Meeting was called to further discuss the implementation of the project work plan included in the Proposal for Pilot Project for a Regional Network of Pacific Island Marine Libraries (ODIN-PIMRIS). *Summary of discussions attached.*
- One-day Regional Training session in Marine Information Management was organized in conjunction with 34th IAMSILIC conference in Suva, Fiji on 20th September 2008. The Session was attended by 5 trainers and 10 trainees (from American Samoa, Cook Islands, Fiji, Kiribati, Marshall Islands, Solomon Islands, Tonga, and Western Samoa). Topics covered during the training included: 1) introduction to computers and networks (*by R. Raj*); 2) the role of an information officer in a special library and the role of information in the organization (*by E. Kleiber*); 3) Introduction to basic cataloguing principles (*by A. Gibert*); 4) how to organize special library (*by P. Murgatroyd*); 5) Information literacy (*by P. Murgatroyd and M. Kalenchits*); 6) e-repositories and digitization – general introduction and ODIN-PIMRIS project (*by P. Murgatroyd and M. Kalenchits*).
- E-repository software for regional and institutional marine and fisheries e- repositories is selected (Greenstone). First set of Pacific countries to participate in pilot project is identified (Cook Islands, Fiji, Kiribati, Samoa, Solomon Islands).

340 Ms Kalenchits presented the work plan for ODIN-PIMRIS for the period 2009 – 2011 which will focus on the following: Development of digital collections of marine and fisheries departments in the participating countries, Development and maintenance of digital libraries and repositories maintained by agency partners (SPC, SOPAC, SPREP, USP and FFA), and Development of PIMRIS Regional Repository of “grey literature” produced by marine and fisheries departments in the Pacific Islands (maintained and hosted by PIMRIS CU). The information available in these repositories and

databases will be accessed through the Pacific Marine Information portal to be hosted at the IOC Project Office for IODE.

341 **The Committee commended** ODIN-PIMRIS and its regional coordinator, Ms Maria Kalenchits, for the impressive range of activities implemented in the region. **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.

342 **The Committee expressed its appreciation** for the work carried out by the GE-MIM Past-Chair, Ms Suzie Davies, who had started the preparatory actions leading to the establishment of ODIN-PIMRIS.

343 **The Committee adopted** the ODIN-PIMRIS work plan.

6.2.8 Other networks: Europe - SeaDataNet

344 This Agenda Item was introduced by Mr Dick Schaap (MARIS) referring to **Document IOC/IODE-XX/23 (*Development of Marine Data Management Infrastructures in Europe (SeaDataNet)*)**.

345 SeaDataNet is a EU funded project (2006 – 2011) to develop and provide a Pan-European infrastructure for marine & ocean data management. The project builds upon earlier data management infrastructure projects, undertaken over a period of 20 years by an expanding network of oceanographic data centres from the countries around all European seas. Its predecessor project Sea-Search had a strict focus on metadata. SeaDataNet maintains significant interest in the further development of the metadata infrastructure, but its primary objective is the provision of easy access to data and generic data products. SeaDataNet is a distributed infrastructure connecting 40 data centres from 35 countries around the Black Sea, Mediterranean, North East Atlantic, North Sea, Baltic and Arctic regions. These include:

- National Oceanographic Data Centres (NODC's)
- Satellite Data Centres.

346 The SeaDataNet portal has been set up at <http://www.seadatanet.org> and it provides a platform for all SeaDataNet services and standards. It includes a number of discovery services. A key service is the Common Data Index (CDI), based upon the ISO19115 metadata model. It gives detailed insight of available datasets at partner databases and provides an on-line shopping mechanism for direct ordering and downloading of datasets from distributed data centres, also taking into account data access restrictions and types of users. This SeaDataNet V1 system is technically operational and good progress is being made with interconnecting all 40 data centres from SeaDataNet.

347 Interoperability is the key to distributed data management system success and it is achieved in SeaDataNet V1 by:

- Using common quality control protocols and flag scale
- Using controlled vocabularies from a single source that have been developed using international content governance
- Adopting the ISO 19115 metadata standard for all metadata directories
- Providing XML Validation Services to quality control the metadata maintenance, including field content verification based on Schematron.
- Providing standard metadata entry tools
- Using harmonized Data Transport Formats (NetCDF, ODV ASCII and MedAtlas ASCII) for data sets delivery
- Adopting of OGC standards for mapping and viewing services

- Using SOAP Web Services in the SeaDataNet architecture

348 For the Black Sea region and the Caspian Sea region additional projects are underway, also funded by the EU. These projects are targeted at further developing regional data management networks, that give overview and access to locally managed datasets by services, interoperable with SeaDataNet. The Up-Grade BLACK Sea Scientific Network (UP-GRADE BS-SCENE)(project started in 2009 and is successor to the previous BlackSeaSCENE project. It now engages 43 local institutes that are adopting the SeaDataNet services and standards, to populate a regional infrastructure, harmonized with SeaDataNet. The NODCs from the Black Sea countries are leading the build up of national networks and act as linking pin for transfer of expertise and tools from the SeaDataNet network. A comparable development is ongoing in the Caspian Sea region via the CASPINFO project, engaging 12 local institutes. IODE is partner in SeaDataNet, UP-GRADE BS-SCENE and CASPINFO to ensure cohesion on a global scale and to support training and capacity building activities.

349 Mr Schaap informed the Committee that the SeaDataNet activities will continue at the national level when the project ends. Another development of relevance to SeaDataNet is the adoption by the European Union of a new Marine Directive, which includes a requirement for an overarching European Marine Observation and Data Network (EMODNET), based on a “system of systems” approach. A EU Task force has produced a draft roadmap that includes a number of data pilots:

- Geology – to be executed by EuroGeoSurveys consortium
- Chemistry – to be executed by SeaDataNet consortium
- Biology – to be executed by EurOBIS-MARBEF consortium
- Hydrography – to be executed in connection with SeaDataNet consortium

350 This provides an excellent opportunity for SeaDataNet to become core element of EMODNET and as such to get sustained funding from the EU and member states for operational infrastructure.

351 Mr Schaap concluded by informing the Committee about the International Conference on Marine Data and Information Systems – IMDIS 2010 which will be held from 29 – 31 March 2010 in Paris, France. The conference will provide an overview of existing information systems to serve different users in ocean science and shows the progress in development of efficient infrastructure. He invited IODE to participate in and co-sponsor the conference as well as to assist in the publishing of the Proceedings.

352 The Delegate of Germany stressed the importance of SeaDataNet to IODE. He pointed out that SeaDataNet is a Pan European initiative that brings together many data centres, some of which have not been involved in the activities of IODE. It provides a good platform for IODE to reach these groups and strengthen collaboration between data centres.

353 **The Committee recalled** the discussions under Agenda item 6.2.6 (Ocean Data and Information Network for the Black Sea region) concerning the inter-operability of different portal systems and **recommended** that a solution be sought to address the concerns that had been raised.

6.3 EMERGING NEEDS IN CAPACITY BUILDING

354 This Agenda Item was introduced by Dr Wouter Rommens (Training Coordinator, IOC Project Office for IODE, Oostende) referring to **Document IOC/IODE-XX/24 (*Emerging needs in Capacity Building*)**.

355 Dr Rommens reported on the outcomes of 2 Surveys on emerging needs for IODE capacity building and subsequent planning of future IODE training activities in 2009-2010. Two online surveys (one on Data Management and one on Information Management) were sent out in the period October-November 2008 by email to the target audiences, being either the IODE Data Management network

(Data Managers) and the IODE Information Management Network (including IAMSLIC). In both surveys a distinction was made between basic (B), advanced (A) and specialized training courses (S). The aim of the survey was to identify emerging training needs for Data and Information Management. The results obtained from these surveys allowed the identification of priority training topics.

(i) Survey on Data Management Training Needs

356 135 members of the IODE Data Management network responded to the survey. A summary of the outcomes of the survey is given in appendix A. 10 topics were identified by the respondents as the most relevant for future training on Data Management:

- Ocean Data Products and Synthesis (B)
- Developing an Ocean Data Collection (B)
- Introduction to Marine Meteorology for Oceanographic Data Managers (B)
- Marine GIS (A)
- Ocean Modeling and related Data Management (S)
- MapServer applications for marine and coastal atlases (S)
- Website development (dynamic CMS systems) (S)
- Accessing and using real time data (S)
- Sea Level Data Management and Analysis (S)
- Web-based data services development (S).

357 The details of these planned courses (scope notes) can be found on the IODE calendar.

(ii) Survey on Information Management Training Needs

358 121 Members of the IODE Information Management network and IAMSLIC replied to the survey. A summary of the outcomes of the survey is given in appendix B.

5 topics were identified as the most relevant for future training:

- Literature of the Marine Sciences (B)
- Developing your library website (B)
- Archiving and preserving digital media (S)
- Database Management (S)
- Digital Information Services (S).
- The details of these planned courses (scope notes) can be found on the IODE calendar.

359 Dr Rommens informed the Committee that, as a result of the survey input, a course calendar was prepared by the Steering Group for OceanTeacher (IOC Project Office for IODE, 9-13 February 2009). During the meeting it was decided to organize 8 training courses in Oostende at the IOC Project Office for IODE in the framework of the OceanTeacher Academy in 2009-2010:

- Joint Data Management/Information Management Training Course on Static Website Development (15-26 June 2009)
- Marine Information Management Training Course on Digital Asset Management (2-8 October 2009)
- Marine Information Management Training Course on Literature of the Marine Sciences (23-27 November 2009)
- Training Course on Basic Oceanographic Data Management (30 November-11 December 2009)
- Data management Training Course on Marine GIS (8-12 February 2010)
- Data management Training Course on Marine Atlas Development (15-19 February 2010)
- Marine Information Management Training Course on Digital Information Services (8-12 March 2010)

- Data management Training Course on MapServer (14-18 June 2010)

360 The details of the above mentioned courses will be made available through the IODE calendar (http://www.iode.org/index.php?option=com_oeventCalendar&Itemid=45). The courses will be announced 2 months prior to the training course by email.

361 Dr Rommens further noted that the survey would be repeated annually to define the training curriculum for the next year (usually September to September).

362 More so than before under the new OTA, trainee assessments will be organised in order to evaluate the students. Provided a student passes the tests successfully a certificate will be issued.

363 The Committee was further informed that the new OceanTeacher Academy concept (OTA) promotes the establishment of regional training nodes, where local lecturers provide training at the regional level, thereby offering opportunities to larger groups of students in the region. Train-the-trainer activities can be organised at the IOC Project Office for IODE to build the necessary expertise at the nodes.

364 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://istic-unesco.org/>)

365 The Delegate of Senegal, Ms Arame Keita, reported that the outcomes of the MIM survey indeed reflect the future needs for capacity building in the MIM network of ODINAFRICA. While training activities in the previous phases of ODINAFRICA mainly focused on the establishment of Marine Information Centres, there is now an orientation towards enhancing user services and visibility by providing web based services and products in ODINAFRICA-IV. Since MIM technology is advancing at a fast rate, training remains essential in future.

366 **The Committee agreed** on the IODE course calendar and **called on** the Member States to promote the IODE Training activities on the national level.

367 **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.

6.4 IODE ACTIVITIES IN THE IOC CAPACITY DEVELOPMENT FRAMEWORK

368 This Agenda Item was introduced by Dr Wouter Rommens referring to **Document IOC/IODE-XX/33 (IODE activities in the IOC capacity development framework)**.

369 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.

370 A key and often-repeated lesson that we have carried away from workshops during these 4 years of field work, is that capacity-development activities should focus at the level of organizations starting with directors, and deepening the interactions to teams of scientists depending on the institutes concerned. This message argues in favour of continuing and further strengthening the lead role given to directors of organizations in the conception, planning and implementation of ODINAFRICA, if it is to attract recurrent government funding.

371 Two guiding principles improved effectiveness of capacity-development efforts; these were to

keep engagement in issues that are need-based and country-driven. Need-based implies that all activities should be conducted for application to a specific issue of high national priority. A possible way to apply this principle could be that ODIN activities in a country focus on information exchange for application to a specific issue in-line with the stronger emphasis on end-products now being promoted in ODINAFRICA.

372 Country-driven means that the issues which activities focus on are chosen by the country's authority – the higher the authority, the greater the legitimacy of action. Alternatively, the issue should focus on priorities outlined in relevant ministries strategy papers.

373 Possible applications of these principles that could be considered by the Committee would include, for example:

1. Streamlining of Data Centres' activities towards the listing, gathering and organization of existing data and information along applications to specific national priorities;
2. Evolving from activities implemented mainly by one data specialist towards the establishment of committees in institutes hosting NODC, representing the diversity of practitioners of data collection and research applications, that would guide NODC activities and ensure a strengthened relevance to institute priorities and buy-in of institute's scientists.

374 One area that has proved an excellent area of collaboration of several IOC sections with IODE/ODINAFRICA is the training in decision-support tools based on coastal circulation modeling. As many institutes in African Member States put a high priority on further developing such skills, this will remain an excellent area of collaboration in the coming years also.

375 Dr Wouter Rommens reported 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.

376 Dr Wouter Rommens reported 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.

377 **The Committee welcomed** the implementation of the IOC capacity development principles into the IODE capacity building.

7. IODE ORGANIZATIONAL REFORM ISSUES

7.1 REPORT ON THE FOLLOW-UP TO THE IODE REVIEW

378 This Agenda Item was introduced by Mr Greg Reed, Co-Chair, referring to Document **IOC/IODE-XX/25 (*Report on the follow-up to the IODE Review*)**.

379 An external evaluation of the IODE was conducted by UNESCO's Internal Oversight Service Unit (IOS) in 2007. The review covered the activities of the IODE from 2002-2006. The evaluation

process identified the strengths and weaknesses of the IODE programme and presented 12 recommendations. These recommendations, with the response from the IODE Officers, are listed below.

380 **Recommendation 1.** IODE should consider establishing an inter-session working group to assess and recommend approaches to address the issue of lack of awareness by the ocean sciences community with respect to the capacities of IODE already in place in terms of data management.

***Response from Officers.** The IOC Strategic Plan for Oceanographic Data and Information Management will raise awareness of IODE and should attract new user communities. The OceanDataPortal should increase visibility of, and appreciation for IODE. The Officers decided not to set up a new group for this subject at this time.*

381 **Recommendation 2.** Considering the use that Atlases, such as the African Atlas of the Ocean, can have with respect to the planning and utilization of resources in coastal areas in the context of integrated environment management; the IODE Committee should assess how best to transfer the lessons learned from the approach coordinated by ODINAFRICA to ODINCARSA, ODINCINDIO, ODINWESTPAC, ODINBLACK SEA and ODINCET, which are being established at this time.

***Response from Officers.** The Caribbean Marine Atlas, currently under development, will serve the needs of small island states in the Caribbean region as well as those of regional projects in that region such as the Caribbean LME project (see Agenda Item 6.2.2). The African Marine Atlas will be further developed under the ODINAFRICA IV project (see Agenda Item 6.2.1)*

382 **Recommendation 3:** IODE to promote the replication of efforts related to ocean and marine data and information in other regions of the world where oceanographic networks are being established, such as in the cases of the Indian Ocean, Countries in Economic Transition (CET), and the Black Sea.

***Response from Officers.** The Officers noted that each region presents different challenges in terms of language, culture, level of development and needs. ODINs have now been established in the Indian Ocean, CET and Black Sea regions (see Agenda Items 6.2.3, 6.2.4, 6.2.6).*

383 **Recommendation 4:** Only 24 States have made explicit comments on the policy thus far. The IODE Secretariat should therefore analyze the extent to which the IOC Policy on Data Exchange is having the desired impact.

***Response from Officers.** The new format for the IODE National Report asks this question (see Agenda Item 4.1).*

384 **Recommendation 5:** The IODE Committee should review the issue of translation of OCEAN TEACHER or some of its main segments into other languages such as Spanish and Russian.

***Response from Officers.** The Officers recognize the importance of having OceanTeacher materials available in all IOC working languages. Shortage of funds is the main constrain to translation of OceanTeacher translation. This issue may be addressed in the framework of the OceanTeacher-2 project (see Agenda Item 6.1).*

385 **Recommendation 6:** The IOC Project Office for IODE in Oostende should explore options, which could be foreseen to manage this concern regarding the current size of Ocean Teacher linked to the slow speed of Internet in some developing countries.

***Response from Officers.** The OceanTeacher training resources are in the process of being rewritten and converted to a “wiki” system, similar to Wikipedia, that allows for maximum flexibility in the creation of new documents (see Agenda Item 6.1).*

386 **Recommendation 7:** The IODE Committee should assess how best to proceed with respect to the issue of reduced capacity of the Secretariat considering the fact that IOC is not able to enhance the staff of the Secretariat of IODE.

Response from Officers. *The Officers concluded that they are not in a position to respond to this recommendation as this was within the purview of the IOC Executive Secretary.*

387 **Recommendation 8:** The IODE Committee should assess how best to proceed in order to reduce the existing gaps in terms of efforts in various regions of the world.

Response from Officers. *IODE national coordinators should investigate the bilateral and multilateral priorities of their own countries and to assist in submission of relevant projects to the relevant agencies.*

388 **Recommendation 9:** IODE should consider establishing an inter-sessional working group to develop indicators and benchmarks to assess the amount of data and information being exchanged for the different types of data to track the progress being made over the years.

Response from Officers. *An intersessional working group was established to discuss this matter and to provide guidelines on provision of metrics by NODCs on received/processed data. The working group expressed difficulties in establishing the metrics to assess data flow through the NODCs mainly due to the different types of data stored in each data centre and in the definition of the units to be used for each data type. Nevertheless, the group has completed a first draft, which will test whether the results provided by the NODCs are appropriate and especially inter-comparable between different data centres.*

389 **Recommendation 10:** IODE should facilitate networking activities among the WDCs so that issues related to quality control of data, management of duplicate data sets, flagging of particular data sets, and partition of data to be archived within the WDCs are addressed.

Response from Officers. *See Agenda Item 7.3.*

390 **Recommendation 11:** IODE should set up an inter-sessional working group to assess the potential problem of loss of data within NODCs, to identify corrective actions to manage the problem.

Response from Officers. *This issue is partly addressed in the revised IOC Manuals and Guides No. 5. Relevant guidelines should be drafted addressing issues of closure of data centres, disaster recovery, backup systems, and media conversion.*

391 **Recommendation 12:** IODE should conduct a global survey to address the issue of the metadata catalogues, and to identify needs to be approached in the guidelines to be developed with respect to such catalogues. It should also stress the issue of placing such catalogues on the web pages as indicators that the process can be reviewed externally and by IODE.

Response from Officers. *Metadata standards and implementation of a metadata tool will be addressed by the JCOMM/IODE Ocean Data Standards Pilot Project (see Agenda Item 5.1.3.3).*

392 The External Evaluation report is available at http://www.iode.org/index.php?option=com_oa&task=viewDocumentRecord&docID=1677

393 The Technical Secretary informed the Committee that a report on progress with the implementation of the Review Recommendations had been submitted to the Executive Board of UNESCO for its consideration.

394 **The Committee noted with satisfaction** that most of the Recommendations of the Review had been implemented.

395 Regarding Recommendation 7 **the Committee called on** the IOC Executive Secretary to consider ways and means to strengthen the staffing of the IOC Project Office for IODE (General support staff as well as Professional staff) with additional regular UNESCO positions to ensure the long-term sustainability of the Office as the IODE Secretariat. In addition the Committee, noting with concern the pending retirement of Mr Adrien Vannier from IOC/UNESCO Headquarters, urged the IOC Executive Secretary to ensure a suitable replacement is identified in a timely fashion to ensure the

essential administrative backstopping of the IODE programme.

396 Regarding Recommendation 9 **the Committee invited** NODCs to provide information on their metrics methodology to the IODE Secretariat, which will then be collated and shared with the IODE community for further consideration by the next Session of the Committee.

397 Regarding Recommendation 11 **the Committee noted** that historical as well as recent data are collected by the WDC Oceanography, Silver Spring and added to the WOD as part of the IODE GODAR and WOD projects. The risk of data loss is therefore minimized. Mr Keeley remarked that in a significant number of cases the risk of loss of data is higher for those that have not reached NODCs and as they are able, the NODCs should rescue such data.

7.2 REPORTS ON CHANGES IN NATIONAL ARRANGEMENTS FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT AND EXCHANGE

398 This Agenda Item was introduced by Mr Robert Gelfeld (Consultant) referring to **Document IOC/IODE-XX/26 (*Reports on changes in national arrangements for oceanographic data and information management and exchange*)**.

399 Mr. Gelfeld reported that the IODE system forms a worldwide service oriented network consisting of 80 NODCs and DNAs established during the past 48 years. This network has been able to collect, control the quality of, and archive millions of ocean observations, and make these available to Member States. It was stated at IODE-XIX that a National Oceanographic Data Centre's mandate is to be "a centralized facility for providing on a continuing basis ocean data/information in a usable form to a wide user community" and that NODCs "acquire, process, quality control, inventory, archive and disseminate data in accordance with national responsibilities". In addition to disseminating data and data products nationally, NODCs are normally charged with the responsibility for conducting international exchange.

400 The role of NODCs has evolved based upon (i) changes in technology and changes in society that are both forcing data centres to rethink their role and modus operandi; (ii) the need to becoming more service-orientated; (iii) the need to create data and information products, not only for other data managers and scientists, but also for policy makers and society at large. These products will assist in increasing the visibility of data centres and demonstrate the usefulness of data management to a larger audience.

401 The IODE Review had stated that: (i) NODCs are still seen as the strength of IODE; (ii) NODCs should function differently from the way they do at present; (iii) that an NODC should have a central role in ocean data management in each IOC country; and (iv) that a distributed system is viewed as being a better solution compared to the present hierarchical system. The NODC should take on an additional role as a hub for national data activities.

402 The advantages of a distributed system are the following:

- the data become more readily accessible by the public;
- the NODC is better aware of the availability of diverse data sets in the national network;
- the assembly of national data collections by the NODC is easier;
- groups with special competence in specific data types or techniques can be easily identified.

403 Mr Gelfeld reported that thirty-eight Member states responded as centralized and twenty-one responded as distributed. There appears to have been a misunderstanding in the definition of "centralized" versus "distributed".

404 **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 different models are represented in [Figure 7](#). It was decided that in the next survey a clear reference should be made to IOC Manuals and Guides No. 5 (2nd rev. ed.) 2008 to avoid confusion.

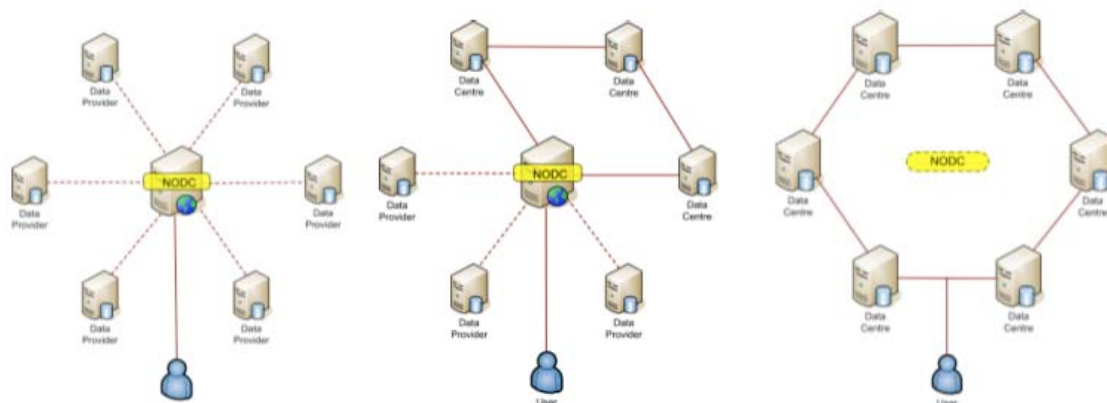


Figure 7: Centralized, Mixed and Fully Distributed data centres model

405 **The Committee recalled** that it had started this discussion in order to face the considerable increase in data types and data volumes in recent years and the resulting inability, in some cases, for single national data centres to deal with these volumes of data. Some countries had therefore developed other models to deal with this issue and these had therefore been documented in the revised version of the abovementioned IOC Manuals and Guides. However **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.

406 **The Committee also recommended** that each IOC Member State should be preferably be represented by a single IODE national coordinator for oceanographic data management and a single IODE national coordinator for marine information management, to ensure coherence in national positions regarding data and information management. 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.

7.3 IODE ARRANGEMENTS FOR THE LONG-TERM SECURE ARCHIVAL OF DATA AND INFORMATION

407 This Agenda Item was introduced by Mr Sydney Levitus, referring to **Document IOC/IODE-XX/27 (IODE Arrangements for the Long-Term Secure Archival of Data and Information)**. Mr Levitus started with a brief presentation of the issues.

408 He explained that 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. Mr Levitus posed the question “*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?*”

409 The US NODC ocean data “archive” consists of the originator’s data sent to NODC and

WDC. WOD is a product based on the archive and based on many contributions from originators. WOD does not contain all ocean data submitted to NODC and WDC Silver Spring.

- 410 The Meeting was then addressed by Prof. Liu Chuang, member of the ICSU WDS Task team. She recalled that the goal of ICSU 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.*” (p.40, Strategic Plan, 2006-2011). She explained that a strategic committee had been established for information and data (SCID). It was tasked (i) to guide and oversee the reform of the World Data Center (WDC) system and Federation of Astronomical and Geophysical data analysis Services (FAGS); (ii) to liaise with CODATA in the development of its strategic plan; and (iii) to advise the Committee on Scientific Planning and Review (CSPR) on any other actions that might be appropriate for ICSU to consider.
- 411 Prof. Liu Chuang recalled that the WDC system was established in 1957-1958 and had established 51 WDCs in 12 countries, most of which are located in OECD countries. Africa, Latin America and Asia are not well represented. It was disbanded in October 2008 after making presenting its recommendations to the 29th ICSU General Assembly (Maputo, Mozambique).
- 412 A second body, the Federation of Astronomical and Geophysical data analysis Services (FAGS) was established in 1956 in the framework of the IGY. It includes 12 permanent services operating under one or more of IAU, IUGG or URSI. Thirdly there is the Committee on Data for Science and Technology (CODATA). It was established in 1966 as an ICSU interdisciplinary body. It has 23 national members and 15 scientific union members. It focuses on data policy and priority areas. It adopted a new strategy in 2007 focusing on global information commons, the digital divide and information technology exploitation.
- 413 A number of weaknesses were identified by ICSU World Data Centers and the Federation of Astronomical and Geophysical data analysis Services. Weaknesses identified by the WDC Directors included; (i) there is no real WDC ‘system’; (ii) there is no collective management of the WDCs; and (iii) no way has yet been found to be effective across Less Economically Developed Countries (LEDC’s). Weaknesses identified by FAGS included (i) similar weaknesses to those of the WDCs (no real system, limited in LEDCs); and (ii) a product of history rather than strategy.
- 414 The SCID recommendations were as follows: ICSU should take a leadership role; there is a need for a new ICSU World Data System; CODATA should focus on its strategy and activities; a new ICSU ad hoc Strategic Coordinating Committee for Information and Data should be established; and National as well as Union committees of commissions for Information and Data should be established.
- 415 The developing ICSU World Data System (ICSU WDS) will support ICSU’s mission: “*long term stewardship, provision of quality-assessed data, full and open access*”. It will broaden the disciplinary and geographic base, and include new “state of the art” centres. It will also entail a new interdisciplinary body with its own Scientific Committee (no longer a Panel) and it will work closely with CODATA including its biannual conference.
- 416 The World Data System will include World Data Centres for X as well as World Data Analysis Services for Y.
- 417 Regarding the relationship between WDS and ICSU Unions Prof Liu Chuang explained that ICSU National Members and Unions were strongly encouraged to establish committees or commissions, where these do not already exist, focussing on data and information issues. They should identify and encourage best disciplinary centres and services to participate in the new system, help with rationalization and ongoing evaluation of existing centres, provide/advocate support for ‘World’ activities of existing disciplinary centres, and promote training and capacity building, and recognition of data services as an essential part of science.

418 A new *ad hoc* ICSU Strategic Coordinating Committee for Information and Data (SCCID) is being established to provide broad expertise and advice to ICSU in this area: (i) interface between scientists and data and information professionals; (ii) advise and monitor the implementation of the WDS and liaise with CODATA; and (iii) establish the agenda for key data and information issues. Figure 8 shows the organizational diagram of the new ICSU and its WDS elements.

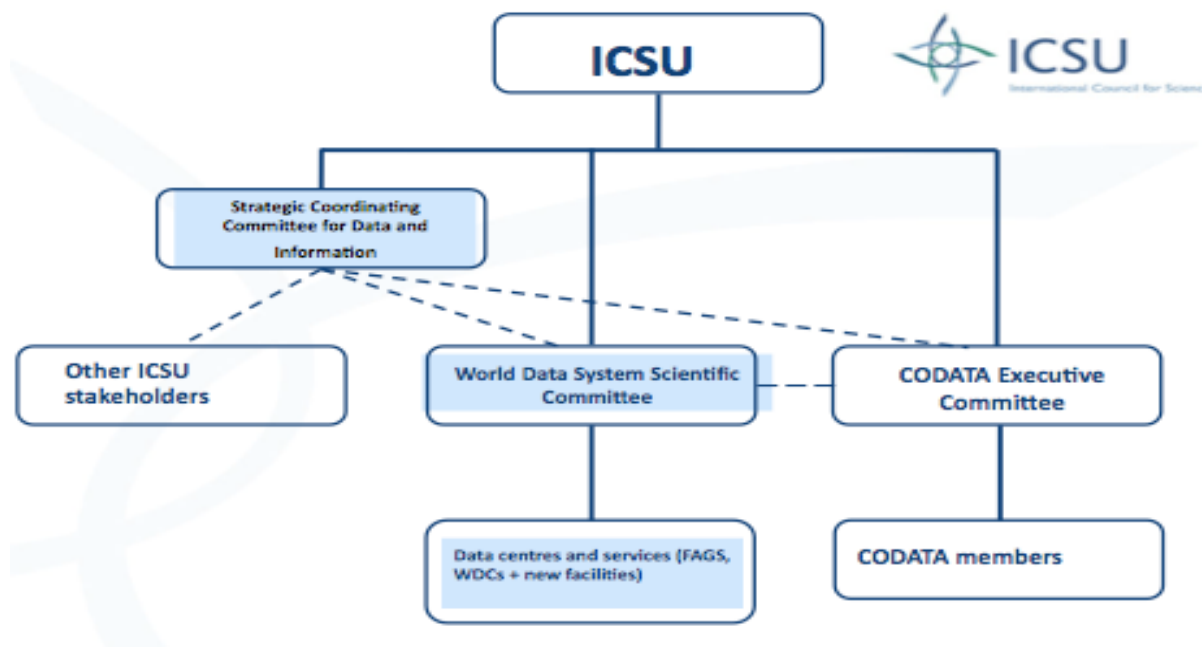


Figure 8: organizational diagram

419 Prof Liu Chuang informed the Committee that a WDS Transition Team had been established that plans the transition to the new system. Members include Co-Chair: Bernard Minster - USA/France, Co-Chair: Nicole Capitaine - France, Secretary General: David Clark - USA. Other Members: Ferris Webster - USA, Liu Chuang - China, Philip Woodworth - UK, Ruth Neilan - USA, Philip Wilkinson - Australia, Bernd Richter - Germany, and Alexei Gvishiani - Russia. A meeting of the Team was held in Paris, France between 9-11 March where other interested parties were invited as well: GEO, IPY, IODE, IAU, URSI, IUGG, CODATA. The meeting contributed to the drafting of the WDS-SC (White Paper). The paper will focus on: (i) history of WDCs and FAGS (legacies and lessons learned); (ii) what is a WDS?; (iii) potential Participants (interest survey results); (iv) motivating Stakeholders and implementing a community of practice (ICSU Members, Unions, Key partners); and (v) accreditation and Certification. The paper will be published by September, 2009.

420 The WDS will be established as a federated system: Nodes in the federated system play different roles, yet work closely together (WMO is one example) (http://www.wmo.int/pages/prog/www/WIS/centres_en.html). Some nodes could be the NODCs. Functions might include: (i) data production and/or acquisition; (ii) quality assessment/Quality control; (iii) data collection and generation of data products; (iv) long term archiving (library function); and (v) data publication & dissemination. In this concept some nodes may be National Data Centres, others may be World Data Centres and still some others may be World Data Analysis Services. Certain nodes may play multiple or special roles.

421 A prototype interoperable network of WDCs with a common data portal is exploring a tentative architecture, implemented as a pilot project focused on ocean data. It is in line with GEOSS concepts and concentrates on building a metadata catalogues served with standard protocols: the OGC catalogue service (OGC-CSW) and the Open Archives Initiatives Protocol for Metadata Harvesting (OAI-PMH). The metadata scheme is compliant with ISO-19115. The full-text search engine (Apache Lucene) allows for efficient retrieval and mapping of results. The Pilot implementation comprises

catalogues from 10 participating WDCs. The Pilot is available through <http://www.world-data-centers.org>.

422 Prof Liu Chuang concluded by providing the current status: The ICSU Committee on Scientific Planning and Review (CSPR) recently approved the draft Terms of Reference for the WDS-SC and SCCID. After receiving nominations for the WDS-SC (and SCCID from ICSU members, selected candidates have been identified for each committee. Candidates have been approved at the ICSU Executive Committee meeting, April 26-27, 2009. The First WDS-SC meeting is expected to meet in September 2009. Members List to be announced shortly.

423 **The Committee thanked** ICSU and Prof Liu Chuang for the comprehensive presentation.

424 **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”

425 **The Committee decided** that the working group will be composed as follows: (i) Sydney Levitus (Chair); (ii) Greg Reed; (iii) Prof. Lin Shoahua; (iv) Vladimir Kuznetsov; (v) Friedrich Nast; (vi) Lesley Rickards; (vii) Sissy Iona; (viii) Bob Keeley; (ix) Taco de Bruin; and (x) Linda Pikula.

7.4 DATA PUBLISHING (IODE/SCOR)

426 This Agenda Item was introduced by Ms. Gwenaelle Moncoiffé, on behalf of Mr Roy Lowry and Dr Ed Urban, referring to **Document IOC/IODE-XX/28 (Data Publishing IODE/SCOR)**.

427 Dr Moncoiffé 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.

428 The Scientific Committee on Oceanic Research (SCOR) and IODE convened a meeting in Oostende, Belgium on 17-19 June 2008 to (i) describe current status of data citation and publication in oceanography; (ii) identify problem areas in data citation and publication in oceanography; (iii) identify interoperability issues of currently used data citation and publication in oceanography; and (iv) formulate suggestions to address problem areas in data citation and publication in oceanography. The full report of the meeting is available at <http://www.scor-int.org/Publications/wr207.pdf> or http://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=2457 (IOC Workshop Report No. 207). Meeting participants concluded that new infrastructure and new approaches to data publication could help scientists who observe the ocean and model its processes. Most importantly, it is now timely to (1) increase the availability of data used to create figures, tables, and statistical analyses in traditional journal articles; and (2) encourage the expansion of journals that specialize in “data publications” or “data briefs.” Data publications are short (as little as a few paragraphs of text) and are designed to describe a data set (not to interpret the data) and provide “persistent” pointers to the data in an approved data repository. Such publications serve an important function of providing a reference that authors can cite on their curricula vitae and should be cited in papers by others who use these data. Journals in the ocean sciences that already welcome such

publications include Marine Micropaleontology; Geochemistry, Geophysics, Geosystems; Ecological Archives, and Earth System Science Data. Several other journals also acknowledge the benefits of submitting to approved databases the data underlying traditional publications, as is standard practice in the molecular biology field, in which gene sequences must be submitted to GenBank.

429 To archive and serve data related to journal publications, an expanded structure in the data management system, data repositories, is required. The purpose of data repositories is to serve as archives of data related to journal articles—both data publications and data backing up traditional journal papers—and serving data that are accessed via persistence identifiers published in the publications. SCOR and IODE will work with existing data centres to promote the development of data repositories at the institutional, national and/or regional level.

430 A work plan was prepared 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.

431 A follow-up consultation meeting was held in December 2008 to bring together ocean science journal editors and publishers to discuss how to implement greater use of data publication. The meeting included editors of the Earth System Science Data (ESSD), Fisheries Oceanography, Earth and Planetary Science Letters, JGR-Oceans, Biogeosciences, and Progress in Oceanography. Written input was received from Journal of Plankton Research, Oceanography and Palaeoceanography. The meeting summary is available as **Appendix A to Document IOC/IODE-XX/28**.

432 Dr Moncoiffé then summarized the conclusions of the meeting with the editors as follows: (i) the effort is worthwhile and many of the editors consulted want to stay involved in the discussions and participate in the development of the ideas; (ii) the idea of the peer review of datasets will require more discussion and careful consideration; (iii) the process of publication of data briefs or other stand-alone papers describing data sets is being tested by ESSD. The SCOR/IODE effort should focus for now on issues related to providing the digital backbone for data related to traditional publications; (iv) more attention needs to be given to how digital object identifiers (DOIs) can best be used to link journal articles and datasets; and (v) it is important to know whether fields outside ocean sciences are pursuing data publishing.

433 Dr Moncoiffé concluded by listing the follow-up actions that have been implemented and are being planned:

- 1) March 2009: Meeting to develop Use cases, Ostend, Belgium (BCO-DMO, BODC, WDC-MARE, IODE, Elsevier)
 - Use Case 1: Creating data publications from existing and future holdings of national data centers. BODC is developing this use case.
 - Use Case 2: Providing the “digital backbone” for traditional journal publications. BCO-DMO is developing this use case.
- 2) Pilot projects have been designed to test the processes for data publication in the two cases mentioned above, so that the approaches described in the SCOR/IODE report can be refined and implemented more broadly.
- 3) April 2009: Follow on meeting to further develop the pilot project for use case 2 with SCOR, BCO-DMO and MBL/WHOI library, Woods Hole, US
- 4) BODC will start work on its pilot project in Summer 2009.

434 The Committee was informed that data DOIs are now also available free of charge. Several

delegates expressed concern about the granularity and authorship of DOIs as was the case at IODE-XIX.

435 **The Committee instructed** the GE-MIM Chair to liaise with Ms Cathy Norton at WHOI to ensure GE-MIM participation.

436 **The Committee noted** the progress of this initiative and **instructed** the IODE experts involved in this undertaking to continue informing the Committee on progress.

7.5 IODE DATA AND INFORMATION CENTRES QUALITY MANAGEMENT AND CERTIFICATION

437 This Agenda Item was introduced by Malika Bel Hassen-Abid, IODE Co-Chair referring to Document IOC/IODE-XX/29 (***IODE Data and Information Centres quality management and certification***).

438 To promote a culture of assessment for data and information management in the IODE community there is a need for standardized criteria to support the development of evaluation tools and other performance measures. These criteria are in relation to the capacity of the NODCs and marine information centres to fulfil a minimum number of requirements to ensure the compliance with IODE standards and also to establish mechanisms to regularly monitor and assess the quality of data and service of NODCs and marine information centres. The use of standard tools will assist NODCs and information centres to provide quality products and services.

439 With the development of the IODE Ocean Data Portal (ODP), which will provide on-line access to the marine data and information resources of NODCs and will support the data access requirements of all IOC programmes areas, including GOOS, JCOMM, HAB and TWS, NODCs will be invited to contribute historical and recent data as IODE ODP data providers for integration into the WIGOS framework. In this context, NODCs should be able to demonstrate their capabilities to provide data and services in compliance with established functions and responsibilities. The adherence to agreed standards and the requirements of the IOC Oceanographic Data Exchange Policy must be met and sustained.

440 To ensure that NODCs are established according to predefined standards and are able to provide quality data to meet the requirements of a broad and varied community of users, there is a need to introduce a form of certification for data centres. This process should be based on the identification of relevant criteria that could be translated into quantitative indicators to set up standard metrics which will become part of a regular review of the NODCs.

441 Several Delegates reported that their data centres underwent regular assessments and audits that assessed at the quantitative as qualitative level. Methodologies mentioned included ISO 9000 quality management certification and ISO-20000 (the first international standard for IT Service Management which “promotes the adoption of an integrated process approach to effectively deliver managed services to meet the business and customer requirements” and the Information Technology Infrastructure Library (ITIL) which is a set of concepts and policies for managing information technology (IT) infrastructure, development and operations. It was noted that these can easily be adapted to oceanographic data centres.

442 **The Committee tasked** the IODE Officers to look into this matter and report back to the next Session, and also to monitor the accreditation and certification process of data centres established by the WDS.

8. COOPERATION WITH OTHER PROGRAMMES

8.1 COOPERATION WITH GOOS

443 This Agenda Item was introduced by Mr Keith Alverson, Director of the GOOS Project Office. Mr Alverson provided a brief overview of GOOS, progress to date, future challenges, and some of the important linkages between GOOS and IODE. The successful build-up of the climate module of GOOS over the past decade was highlighted with examples of the Argo float network, the GLOSS core network of sea level gauges, and improvements in coverage of essential climate variables from space based remote sensing. The status of the entire in-situ global observing system was shown to be at just over 60% of the design target for the ocean component of the Global Climate Observing System as will be reported to the UN Framework Convention on Climate Change in June 2009 (see Figure 9). Notable successes include the Argo float network and drifting buoy network which are at 100% of their design specifications of 3000 floats and 1250 buoys respectively. Sustaining these networks at their design specifications remains a challenge as sustained, operational, funding for deployments is not available in all participating member states. Furthermore, enhancing the usefulness of these in situ platforms – for example through adding barometers to drifting buoys and oxygen sensors to Argo floats is an additional ongoing challenge.

444 Mr. Alverson then provided an overview of some lessons learned from GOOS data over the past decade. These included spurious reporting of cooling ocean temperatures associated with a subset of Argo floats and warm bias due to incorrect fall rates of XBTs. The importance of storing metadata was stressed given the diverse, and changing, makeup of the platforms and sensors comprising the in-situ observing system. A second example, in this case Arctic summer sea ice extent as derived from satellite based SSMR and SSMI, showed how the same underlying data can lead to substantially different derived products. This issue is also of great relevance to IODE as it seeks to provide the long-term storage of measurements produced by GOOS. Finally, it was noted that national commitments to multilaterally implement the climate module of GOOS remain too weak. Achieving the target design of 100% implementation by 2012 (see figure) now seems impossible without substantially increased engagement by member states.

445 The coastal module of GOOS is implemented by member states, often acting through GOOS Regional Alliances. In light of the location of IODE-XX in China, a brief introduction to the North East Asia Regional Alliance (NEAR-GOOS) was given. Highlights shown included real time coastal station data from Korea, delayed mode regional data sets from Russia and China, and daily SST maps served by Japan. The NEAR-GOOS alliance was shown to have substantially increased the availability of real time ocean profile data made available over the GTS as well as delayed mode data held in relevant National data centres for NEAR-GOOS exchange.

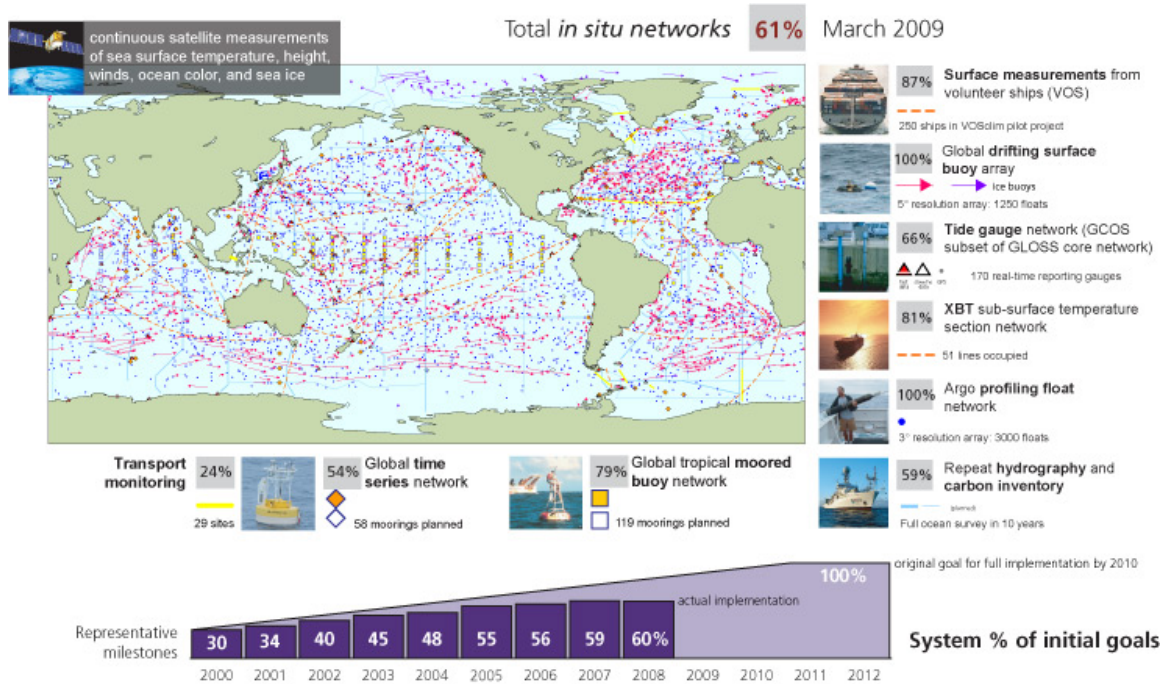


Figure 9: in-situ global observing system

446 The Delegate of France stressed the importance of the sea surface salinity observations. **The Committee requested** the Technical Secretary to contact the JCOMM Observations Programme Area, through the GOOS Project Office, to include the sea surface salinity network in reporting the status of the global observing system.

447 **The Committee thanked** Mr Alverson for the valuable information provided in his presentation.

8.2 COOPERATION WITH GEO/GEOSS

448 This Agenda Item was introduced by Mr Greg Reed, Co-Chair. He informed the Committee on the involvement of IODE in GEO/GEOSS.

449 Mr Reed recalled that The Group on Earth Observations was established in 2005 and is an Intergovernmental Organization with 72 Members. Its goals are to create the GEO System of Systems (GEOSS) over a period of 10 years (see <http://www.earthobservations.org/>). The GEO objectives are to improve and coordinate observation systems, to provide easier and more open access to data, and to focus on 9 societal benefits. GEOSS aims to be a Global, Coordinated, Comprehensive and Sustained System of Observing Systems. GEOSS will be a distributed system of systems, building on existing observing and processing systems, while encouraging new components. *"The success of GEOSS will depend on data and information providers accepting and implementing a set of interoperability arrangements, including technical specifications for collecting, processing, storing, and disseminating shared data, metadata, and products."* The GEOSS architecture will provide systems interoperability and easier, more open data access. The interoperability requirements are defined within the data collection, processing and dissemination stages.

450 Mr Reed informed the Committee that direct cooperation with GEO/GEOSS was difficult due to the substantial number of working groups and frequent meetings. However IODE is indirectly contributing to GEOSS through its contribution to the WIS through implementation of the OceanDataPortal and the WIGOS Pilot Project for JCOMM. The ODP development will work closely WIS and GEOSS to ensure interoperability. IODE can thus support GEOSS through contributing to WIS and through support and implementing the OceanDataPortal. The interaction with, and

contribution to GEO/GEOSS is displayed in [Figure 10](#).

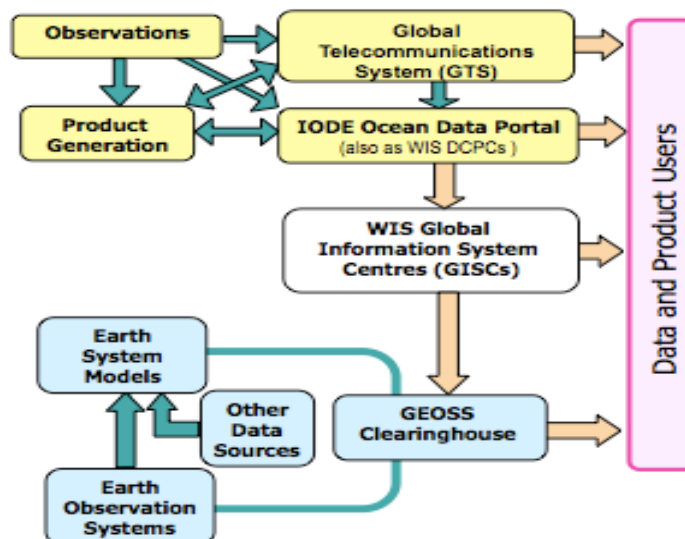


Figure 10: IODE interaction and contribution to GEO/GEOSS

451 The Committee noted with appreciation and interest the contribution of IODE to
GEO/GEOSS through the IODE Ocean Data Portal.

8.3 COOPERATION WITH IOC SCIENCE PROGRAMMES

8.3.1 Cooperation with the IOC HAB Programme

452 This Agenda Item was introduced by Dr. Gwenaëlle Moncoiffé, referring to **Document IOC/IODE-XX/32 (AN INTERNATIONAL HARMFUL ALGAL INFORMATION SYSTEM (HAIS))**. The Committee was reminded that the IOC Assembly, at its 24th Session (2007), adopted the IOC Strategic Plan for Oceanographic Data and Information Management. As a first example of the implementation of the Strategic Plan and to identify the ways that IODE (and its network of oceanographic data centres) would be able to cooperate with the development of the HAIS the Joint IPHAB/IODE Task Team on the development of the HAIS was established. This Task Team met at the IOC Project Office for IODE, 8- 9 January 2008 for the “Joint IPHAB/IODE Task Team on the development of the Harmful Algal Information System Design Workshop”. This meeting was attended by IODE experts (F. Hernandez, S. Konovalov, G. Moncoiffé), HAB (Catherine Belin, Oejvind Moestrup, Adriana Zingone, Zivana Gladan, Richard Gowen, Antoine Huguet, Seppo Kaitala, Jennifer Martin, Vera Trainer, Monica Lion), OBIS (Edward Vanden Berghe) and Encyclopedia of Life (Paddy Patterson). The purpose of the meeting was “to describe the vision, structure and partnerships for an international information system on the occurrence, impacts, identification, and monitoring of marine and brackish water planktonic and benthic microalgae perceived as harmful by humans”. As an outcome of the Meeting the Document “An international harmful algal information system, vision, design and partnerships” was published.

453 The HAIS vision is “an easy-to-navigate, dynamic, integrated, and distributed system with: visual and interactive quality-assured data and scientific information on harmful algae provided by experts, coupled with general information on authorities and institutions involved with sea food safety, statutory monitoring of harmful algae / toxins and institutions involved in HAB research”. [Figure 11](#) shows the different components of HAIS.

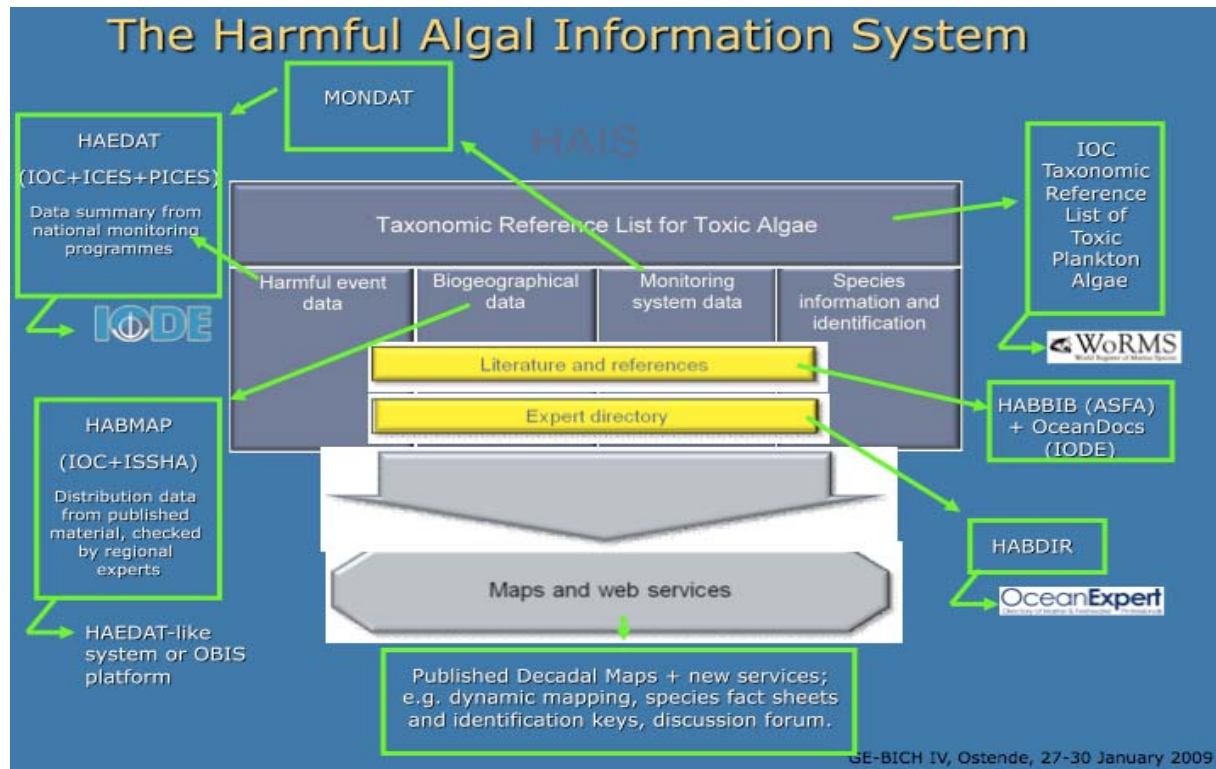


Figure 11: HAIS data and information components

454 The IPHAB/IODE Task Team 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.

455 Dr Moncoiffé mentioned some of the long-term development challenges for HAIS such as (i) enabling access to primary time-series data and near real-time data; (ii) inclusion of harmful-algae-related illness data; and (iii) assessing the feasibility of greater involvement from NODCs and the IODE OceanDataPortal for data acquisition and access.

456 The Committee was informed of the elements of 2009-2010 work plan, the implementation of which would depend heavily on the availability of extra-budgetary funding:

- WoRMS to develop a customised data entry tool and user interface to the taxonomic reference list (already implemented)
- IODE PO to work on platform development for HAEDAT, HABMAP and MONDAT
- IODE PO to transfer HABMAP data to OBIS via the DiGIR protocol
- IODE PO and EOL to work on HAIS design and architecture
- MBL Informatics to develop customised user interface
- MBL Informatics to develop taxonomic identification key
- IOC HAB Centres to compile and QA data for HABMAP
- Organization of two IPHAB-IODE Task Team oversight and development workshops
- Organization of a HAIS System design/architecture workshop at IODE PO

457 Dr Moncoiffé concluded by informing the Committee that the Report, work plan, and continuation of the HAIS Task Team had been endorsed by IPHAB-IX, Paris, 24 March 2009.

458 The Acting Head of the IOC-UNESCO Regional Secretariat for Western Pacific (WESTPAC), Mr Wenxi Zhu called for closer cooperation between the WESTPAC HAB programme that has been in existence for 10 years, and the international HAB programme and called to ensure that more experts from developing countries become involved in the HAB expert teams.

459 **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.

460 **The Committee adopted** **Resolution IODE-XX.2**

8.3.2 Cooperation with the IOC/ICAM Programme

461 This Agenda Item will be introduced by Mr Greg Reed, Co-Chair referring to **Document IOC/IODE-XX/30 (Cooperation with ICAM)**.

462 Mr Reed informed the Committee that the Integrated Coastal Area Management of IOC was established in 1997 with the purpose to (i) assist IOC Member States in their efforts to build marine scientific and technological capabilities in the field of ICAM; (ii) ensure that scientific requirements are integrated into national and regional ICAM programmes and plans, (iii) harmonize and disseminate existing and new scientific approaches relevant to coastal management.. Within the existing Medium Term Strategy (2008-2013), the ICAM programme's priority area are: 1) Adaptation to climate change in the coastal zones (in particular through the ACCC Project); 2) Development of marine spatial planning methodologies and their application; 3) Development and testing of guidelines for the mitigation of coastal hazards through ICAM; 4) Development and application of performance indicators for coastal management plans and programmes.

463 Collaboration with IODE has been active mostly at the regional level through 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.

464 In ODINAFRICA-III the involvement of IOC/ICAM ICAM programme contributed to Work Package 4: Product Development and end user communication and information delivery. This work package focused on (i) identification of end users of marine and coastal data and products; (ii) identification and development of core products to be prepared by each NODC; (iii) development of Regional Marine Atlases; (iv) improvement of atmospheric and oceanic monitoring databases; and (v) promotion and dissemination of project outputs to stakeholders.

465 In the case of the Caribbean Marine Atlas the ICAM programme had developed a set of core indicators (see IOC Manual and Guides No 46, ICAM Dossier No 2), which can be used by coastal managers and stakeholders to assess ecological indicators, governance indicators, and socio-economic indicators. These indicators have been useful in developing the Caribbean Marine Atlas, particularly in defining coastal zone management issues and deriving data that could be visualized through the Atlas.

466 ICAM and IODE are now also working jointly in developing the Southeast Pacific Data and Information Network in support to Integrated Coastal Area Management (SPINCAM) project proposal, which is funded by the Government of Flanders (Kingdom of Belgium). This project aims to establish an ICAM indicator framework in each country of the Southeast Pacific region (Chile, Colombia, Ecuador, Panama and Peru). The project will be implemented over a 3 years period. NODCs will be invited to play a leading role in the development of national coastal indicators through their participation in this process.

467 The former ODINAFRICA-III project coordinator Mika Odido informed the Committee that there was close collaboration with IOC/ICAM during the third phase of the project. There will also be

close cooperation with the ICAM programme during the fourth phase, in particular with the ICAM project on Adaptation to Climate Change in the Coastal Zones of West Africa (ACCC). ODINAFRICA and ACCC will cooperate in the development of decision making tools, such as vulnerability maps and interactive scenario tools that can support assessments and decision making on shoreline change, storm surge, and flooding. The proposal is to develop visual aids such as vulnerability maps and interactive scenario tools that can support assessments and decision making on shoreline change, storm surge, and flooding. Mr Odido informed the Committee that it is now being considered to start other such initiatives in East and West Africa as well.

468 The Delegate of Barbados, speaking on behalf of the CMA group, stated that the IOC/ICAM programme had been responsible for some of the training. The Caribbean Marine Atlas will have a regional scope. Technologies and skills learned will also be used in the development of national atlases by participating countries and these will play a central role in the participating agencies' coastal management related duties.

469 The Representative of CPPS referred to SPINCAM as a very important activity coordinated by CPPS, through the Action Plan for the Protection of the Marine Environment and Coastal Areas of the South Pacific framework. This CPPS Action Plan has been executed since 1981 by the Governments of Colombia, Chile, Ecuador, Peru and Panama. The realization of this important regional project is part of the joint activities that are ongoing in the framework of the IOC (IODE)/CPPS Cooperation Agreement that was renewed last year. The Representative expressed CPPS's high appreciation for the financial support to SPINCAM provided by the Government of Flanders (Kingdom of Belgium)

470 **The Committee welcomed** the cooperation with ICAM, which is another example of the new role assigned to IODE within the framework of the IOC Strategic Plan for Oceanographic Data and Information Management.

8.4 COOPERATION WITH IPY

471 This Agenda Item was introduced by Mr Keith Alverson, Director of the GOOS Project Office referring to **Document IOC/IODE-XX/34 (*Ensuring an Oceanic Data Legacy of the International Polar Year 2007-2009*)**.

472 Mr Alverson recalled that The IOC Executive Council, at its 37th Session (Paris, 23–29 June 2004), by Resolution EC-XXXVII.3, endorsed the IPY. At its 39th Session (Paris, 21–28 June 2006), the Executive Council agreed that GOOS, JCOMM and IODE should play active roles in the IPY and urged IOC Member States to provide sufficient resources to implement all the oceanographic proposals in the IPY Plan. The Assembly, at its 24th Session (Paris, 19–28 June 2007) called on IODE to “collaborate with the International Polar Year to ensure that all data collected by IPY projects will be professionally managed, disseminated and archived.” [IOC-XXIV, para. 258].

473 Numerous IOC Member States have contributed substantially to the immensely successful program of observations and research carried out during IPY. Dr Alverson suggested there would be three important legacies of IPY: Research results, sustained observing systems, and data, the most relevant to IODE concerns being of course the data. He showed that a substantial number of IPY projects were ocean based and that the data management plans for about two thirds of these ocean projects remain unknown since the project coordinators have yet to respond to questionnaires that were distributed by the IPY data committee co-chairs (Figure 12). Mr. Alverson urged IODE member NODCs to ensure national level IPY marine data is stored in their holdings and flagged as IPY data, in order to help ensure the long-term stewardship of the data legacy of IPY.

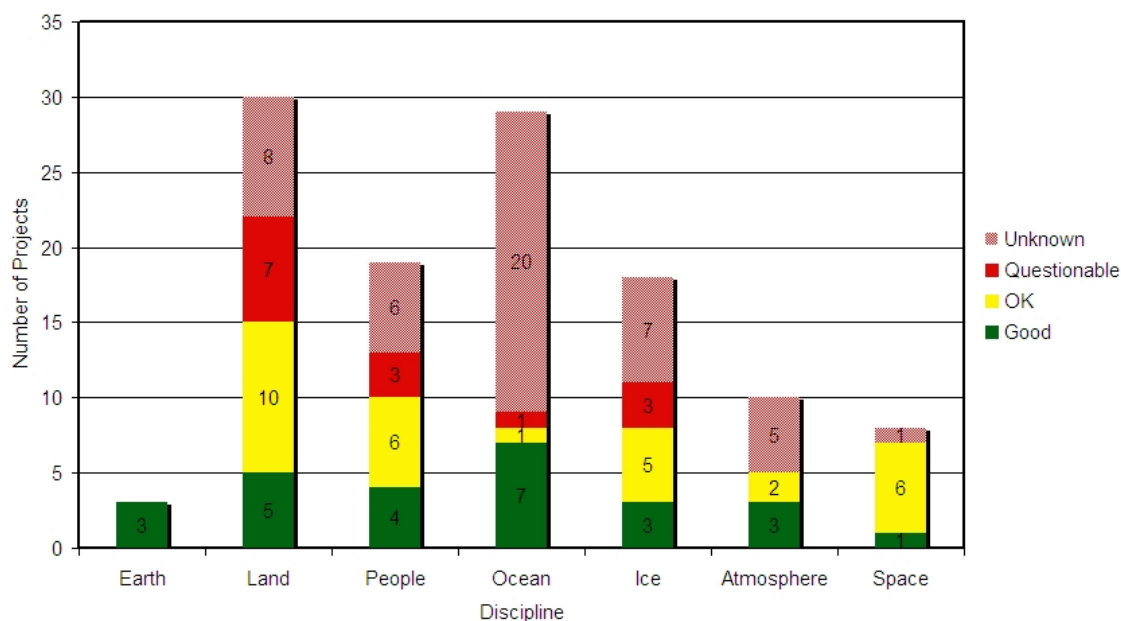


Figure 12: Responses to IPY questionnaire

474 The Delegate of the Netherlands and Co-chair of the IPY data committee, Mr Taco de Bruin, then addressed the Committee. He informed the Committee 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, that is, money on top of the regular budgets 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 success of IPY and the enthusiasm with which the scientists have been involved also causes a problem for data management. 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. Originally over 1200 scientific projects had been proposed. IPY has grouped these 1200 project proposals into the 170 science projects. So each of these 170 projects consists of a whole series of subprojects, each of the subprojects being an international project in itself, with 'sub-sub projects' at the national level. Each of the 170 projects has a coordinator. This coordinator is the IPY point of contact, also for questions on data management and data archival of those sub-projects. But the coordinator doesn't necessarily know many details about these subprojects, let alone about data archival for the sub-sub projects, on the level below those subprojects. That probably (or perhaps hopefully) explains the poor track record for the oceanographic community in answering the survey the IPY data committee sent out.

475 The new approach for tracking the IPY data is through NODCs and the help and support of IODE is needed. Each of the oceanographic subprojects and on the level below that, each of the sub-sub projects, must have had funding from national funding agencies. That means that NODCs must or ought to be aware of projects funded by national means and consequently of the data resulting from those projects. NODCs will most likely have a national responsibility for and a natural involvement with the data from these projects.

476 Mr De Bruin proposed to contact each of the NODCs involved in IPY projects and ask those NODCs to identify (and consequently manage and preserve) the IPY data from that NODC country. That is to start at the level of the 170 honeycomb project and then go down to the level of the subprojects and the sub-subprojects. Mr De Bruin would contact those concerned during IODE-XX or in the very near future and he asked for active support from the IODE community in this matter.

477 Several Delegates from Member States including Germany, USA, UK and Russia expressed their willingness to support the data legacy of IPY. The USA suggested an IODE Circular Letter be sent to NODCs on this topic. Mr De Bruin agreed to also make contact at the working level with relevant NODCs to supplement the Circular Letter, and to keep the IODE secretariat informed of progress. Germany offered to help in ensuring Arctic research cruise summary reports are made available. Russia informed the meeting that it has already set up a dedicated website (www.mpg-info.ru) that already contains more than half of the Russian research vessel cruise data taken during IPY. The UK noted the importance of ship operators inputting data into cruise planning databases such as the one maintained by POGO and noted that the new draft SCAR data and information strategy envisions a strong partnership with IODE for marine data exchange and stewardship for the Southern Ocean.

478 The Committee was further informed that IPY data were not limited to those collected during the IPY period but rather all polar data collected between 2005 and 2010.

479 **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.

8.5 COOPERATION WITH OTHER PROGRAMMES AND PROJECTS

8.5.1 OceanObs'09

480 This Agenda Item was introduced by Mr Bob Keeley. He explained that OceanObs'09 is a follow on to the original OceanObs'99 held a decade ago. OceanObs'99 set some targets for observational programmes by bringing together representatives from the main observing programmes at the time. It spawned, for example, the development of the Argo Project, and the adjustments of the SOOP XBT sampling programme.

481 OceanObs'09 will be held in Venice 21-25 September, 2009. It intends to look at accomplishments in the last decade, to analyse what lessons have been learned, and to look ahead to set some goals for the next decade. The meeting is organized as a sequence of Community White Papers (CWPs) which have been widely invited. These are encouraged to develop a consensus of what should be done looking into the future. In data management, the CWPs describe details of various data systems, lessons learned and a look ahead.

482 The CWPs are posted on the OO'09 web site <http://www.oceanobs09.net> (see also <http://www.oceanobs09.net/blog/>). The submission deadline was end of April. Everyone is invited to comment and suggest actions for the future. The lead authors will take the comments and take them into consideration. The CWPs will turn into posters for the meeting.

483 Mr Keeley informed the Committee that for Data Management two plenary papers will be presented, dealing with the present state of the data system. The first one will talk about moving observations from data collectors at sea to well managed archives. The second paper will deal with moving the data from archives to users. The presentations will be 15 minutes. Bob Keeley will give the first paper. The plenary papers will be posted by 1 July with final forms from lead authors due 1 September 2009. A third and final data management paper, to be delivered on the final day, will present a vision of what the data system could look like in 10 years time.

484 Mr Keeley concluded that 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.

485 **The Committee thanked** Mr Keeley for his presentation and called on NODCs to actively participate in OceanObs'09.

8.5.2 Ocean Tracking Network

486 The director of the GOOS project Office, Mr. Keith Alverson, introduced this item. 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. It is a biologically driven ocean observing system organized into 14 regions that has so far deployed 2 receiver lines (Halifax Canada, Perth Australia). OTN is scheduled to deploy a further 28 receiver lines by 2013. 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.

487 OTN is committed to making the world's ocean tracking metadata and data freely accessible without charge by the broader scientific community as well as to respecting the intellectual property rights of its providers. Collaborators will submit oceanographic observations directly (in real time if feasible) to IODE National Oceanographic Data Centres (NODC) for quality control and integration into international data flows. Animal behaviour data will be submitted to the data centre at Dalhousie where it is assembled into integrated tracks and linked to available oceanographic data. Although behaviour data from non-OTN sources may be temporarily restricted, all OTN data will be described using International Standards Organization (ISO) standards to facilitate global discovery and eventually be reported to international biodiversity facilities such as the Ocean Biogeographic Information System (OBIS). Unrestricted data will also be routinely copied to an IODE designated repository such as the Integrated Science Data Management (ISDM) Branch of the Canadian Department of Fisheries and Oceans (DFO) for integration with other IOC programs and for long term archiving. All individuals using OTN data will be expected to provide formal attribution to OTN and its providers as well as to inform OTN of uses being made.

488 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).

489 The Delegate from Canada, Mr Robert Keeley, informed the Committee that his data centre is discussing with Dalhousie University the possible long-term archival of OTN data.

490 **The Committee welcomed** the planned establishment of a long-term archival for OTN data at the Canadian NODC.

8.5.3 OneGeology

491 This Agenda Item was introduced by Dr Lesley Rickards. She informed the Committee that 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. Figure 13 shows the countries that are currently participating in, or serving data to the portal.



Figure 13: Countries participating in, or serving data to the OceanGeology portal

492 The project's aims are to: (i) create dynamic digital geological map data for the world; (ii)
make existing geological map data accessible in whatever digital format is available in each country.
The target scale is 1:1 million but the project will be pragmatic and accept a range of scales and the
best available data; (iii) transfer know-how to those who need it, adopting an approach that recognises
that different nations have differing abilities to participate and (iv) the initiative is truly multilateral
and multinational and will be carried out under the umbrella of several global organisations.

493 The Web portal displays digital geological map data from geological surveys. The digital
geological map data are placed on Survey's own web server (or associated geological survey – its
'buddy'). The system is based on the use of interoperable technology. The Portal is the main hub
computer that gathers data into one place and makes it accessible. The technology used is WMS (Web
Map Service). OneGeology's website and portal are accessible through the URLs
<http://www.onegeology.org> or <http://portal.onegeology.org>

494 Dr Rickards noted that IODE can assist in OneGeology by coordinating worldwide
recruitment using IODE contacts and encouraging participation. New participants should agree with
the terms of the accord (www.onegeology.org/what_is/accord.html). They should agree to serve
digital map data according to the guidelines in the 'Cookbooks'
(www.onegeology.org/technical_progress/technical.html). For further information or to participate
contact the OneGeology Secretariat onegeology@bgs.ac.uk.

495 The Secretariat of OneGeology asked assistance from IODE to provide marine geology data.
Some national geological surveys may have data but have not contributed them. IODE was invited to
participate in the project and to mobilize the marine geological maps that are available.

496 **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.

8.5.4 Marine Interoperability Project (MMI)

497 This Agenda Item was introduced by Mr Greg Reed, IODE Co-Chair. He explained that the
Marine Metadata Interoperability (MMI) project is funded by the US NSF and supported by the
Monterey Bay Aquarium Research Institution (MBARI). The MMI mission is *"Promoting the
exchange, integration and use of marine data through enhanced data publishing, discovery,
documentation and accessibility."* MMI supports collaborative research in the marine science domain,
it encourages scientists and data managers to apply good metadata practices, and it provides guidance

and resources for data management and community metadata tools and services. He explained that Mr Taco de Bruin and Greg Reed are members of the MMI Steering Committee. John Graybeal (MMI) contributed to the IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards in 2008. There are a number of common activities that offer opportunities for cooperation between IODE and MMI.

498 Mr Reed explained that 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.

499 **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.

9. IODE PUBLIC AWARENESS

9.1 IODE WEB SITES, BROCHURES, POSTERS AND PUBLICATIONS

500 This Agenda Item was introduced by Dr Wouter Rommens. He informed the Committee on public information activities undertaken, and related products produced during the inter-sessional period. In this regard reference was made also to Agenda Item 9.2 and 9.3.

501 Dr Wouter Rommens reported that the IODE website plays an important role in public awareness, by providing information on IODE and IODE related activities and documents. Public awareness materials such as brochures (IOD, OceanDocs) and posters can be downloaded or obtained through the website.

502 He reported that IODE also contributed to the ‘Planeet zee’ project (<http://www.planeetzee.org>) with one module on ocean related hazards. This project is an initiative of the Flanders Marine Institute intended to raise awareness on sea and ocean related issues for high-school students.

503 IODE has reported regularly with news items in the UNESCO INFO newsletter of “UNESCO Platform Vlaanderen”, an organization aimed at raising awareness about UNESCO related activities in Flanders.

504 The IOC Project Office for IODE is visited regularly (8-10 times a year, 100-150 persons) by interested groups (general public). These visitors receive a presentation on IODE and its activities.

505 **The Committee** requested to send at least one paper copy of information materials published by the Project Office to NODCs.

9.2 IODE AND THE 50TH ANNIVERSARY OF THE IOC (2010)

506 The Technical Secretary, Mr Peter Pissierssens, introduced the Agenda Item. He informed the Committee that IOC had decided to celebrate its 50th Anniversary (1960–2010) during the period from June 2010 to October 2011. The 50th anniversary would provide an opportunity to demonstrate to governments and to the public, the value and importance of the Commission's achievements. The IOC Executive Council, at its Forty-first Session, adopted an "Outline of the Indicative IOC Plan of Action" for the commemoration (Res. EC-XLI.2, Annex). This includes:

- The 43rd IOC Executive Council, in 2010, to be held at the UN headquarters in New York and, if possible, be associated with the Informal Consultative Process (ICP), and with a theme related to ocean science and policy;
- Regional science conferences and a global conference, perhaps in Paris and involving the IOC, the UN and other partner organizations;
- The 26th Session of the IOC Assembly, in 2011, should be held in association with the UNESCO 36th General Conference, and if possible, the General Conference should include an Ocean Day, with a ministerial roundtable on ocean affairs, exhibitions and key speakers;
- The publication of a book on the first 50 years of IOC, guided by a geographically-balanced advisory editorial board, and including a CD containing key documents and publications;
- The creation of a central web-based calendar and portal to all anniversary events; and
- Generic activities including preparation of flags, badges, calendars, a photographic competition, medals and prizes for eminent oceanographers and young people.

507 He informed the Committee that IODE had contributed a chapter to the book on the first 50 years of IOC.

508 He invited the Committee to note the activities planned and consider ways and means to contribute, either nationally or internationally (as IODE).

509 The ODINAFRICA Coordinator informed the Committee that ODINAFRICA would be publishing a book on the achievements of the project as part of the IOC's 50th Anniversary celebrations. The book, entitled "The African Coasts and Oceans" will be ready in time for the 25th Session of the IOC Assembly in June 2009.

9.3 50TH ANNIVERSARY OF IODE IN 2011

510 The IODE Co-Chair, Dr Malika Bel Hassen Abid introduced this Agenda Item. She reminded the Committee that IODE was one of the first programmes of IOC to be created and had been operational since 1961. She outlined some activities that could be implemented as part of the celebration of IODE's 50th anniversary. These include: (i) organisation of an international conference on data and information management back-to-back with the 21st session of IODE in 2011, (ii) publication of a book on the achievements of IODE in the period 1961 – 2001, (iii) design of a logo for IODE's 50th anniversary, (iv) distribution of media messages on the importance of data and information management, (v) production of promotional materials, and (vii) celebrations at regional level organised by the ODINs. She invited the Committee to consider these, and propose other activities that could be implemented to commemorate this auspicious occasion.

511 **The Committee identified** as possible activities for commemoration of the 50th anniversary

A. The 2011 IODE Conference:

- The Conference will be held before the IODE Session
- The Conference duration will be two days (e.g. Monday to Tuesday)
- The IODE Session will follow and will last 3 days (Wednesday to Friday)
- Each NODC, DNA, WDC, Project and ODIN should display a poster so that every member can commemorate and contribute to the dissemination of the IODE activities and achievements
- A poster template will be provided to the participants in order to facilitate the demonstration of the contents in a consistent way.
- The 1st Announcement will be advertised on March 2010 (one year before the Conference)
- The conference topics and any relevant items should be outlined by December 2009
- A Steering Group has to be set up for the Conference

B. Other Products:

- Logo for the 50th Anniversary
- Promotional material such as: a movie with the IODE activities, brochures, pins, digital photo album, etc
- Publicity on the media (TV, newspapers)
- Global maps with the R/Vs of every country
- A Book dedicated to the IODE Publications, Projects, History

512 **The Committee invited** other suggestions from Member States

513 The Delegate of France reminded the Committee that the International Conference on Ocean Data and Marine Information Systems (IMDIS) would be held in 2010, this should be taken into account when considering a conference back-to-back with the 21st session of IODE.

514 **The Committee requested** the NODCs and Marine Information Centres to send historical photographs of data centres, information centres and their equipment and staff to the IOC project Office for IODE (printed or electronic).

515 **The Committee established** an inter-sessional Working Group to finalise plans for commemoration of the 50th anniversary of IODE. The group, Chaired by Greece, will include Belgium, Canada, France, Germany, Senegal, South Africa, Turkey, Ukraine, the IODE Co-Chair (Malika Bel Hassen Abid), the ODINAFRICA Coordinator, and the Chair GE-MIM.

516 **The Committee instructed** the Group to submit its Report to the Officers by the end of 2009.

10. IODE VISION AND STRATEGY

10.1 IOC OCEANOGRAPHIC DATA EXCHANGE POLICY: IMPLEMENTATION BY MEMBER STATES

517 This Agenda Item was introduced by Mr Robert Gelfeld. He reported that 57% of the reporting (through the online survey) Member States apply the 'IOC Oceanographic Data Exchange Policy' adopted as Resolution IOC-XXII-6 in 2003 (see <http://www.iode.org/contents.php?id=200>), 27% do not and 16% did not know. This clearly indicates that more effort will be needed to ensure the application of the Policy by IOC Member States.

518 **The Committee instructed** the NODCs to add a link to the 'IOC Oceanographic Data

Exchange Policy' on their own web page.

10.2 IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE

519 This Agenda Item was introduced by Dr Malika Bel Hassen-Abid, IODE Co-Chair, referring to **Document IOC/IODE-XX/31** (*IOC Strategic Plan for Oceanographic Data and Information Exchange*).

520 The IOC Assembly, at its 24th session, adopted the "IOC Strategic Plan for Oceanographic Data and Information Management (Resolution XXIV-9). This strategy aims to establish 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".

521 In order to provide a governance system for the Strategy, the "IOC Data and Information Management Advisory Group" has been established with 46 members. The membership includes representative of:

- Co-Chairs of IODE
- JCOMM DMPA
- WMO
- GOOS (GSSC, I-GOOS)
- IOC ocean science programmes (HAB, Ocean Carbon, ICAM, tsunami)
- IOC capacity development programme
- GOOS GRAs
- IODE ODINs
- Project Offices (IODE, JCOMMOPS, GOSIC, CDIAC)

522 The objective of the Strategic Plan is to deliver a system that will be the system of choice for all ocean activities, particularly those of research programs. This future system will be built around already existing and operational national, regional, and international systems. There are many IOC and IOC-related programmes and projects with a data management component and the considerable expertise available in these structures will be fully exploited. In this context, the first step towards the implementation of this strategy was to survey the data management structures in the IOC and IOC-related programmes and projects in order to identify existing systems and to assess where effort should be strengthened to achieve full integration of data management activities under IOC and other international programmes.

523 The result of this survey indicated that most of the IOC and IOC-related programmes and projects do not have data management plan or strategy. Only three programmes/projects indicated that they have a D&IM strategic plan. The establishment of a comprehensive strategy and plan to meet the variety of requirements of these programmes will begin with a study of the general characteristics of the applications to be served by these programmes. This will include discussions on provision of access to the data, data products, and services; archiving strategies and standards and capacity building. An analysis of the existing successful programmes will form the basis of the IOC D&IM strategy and will be used to define the guiding principles and common characteristics of the IOC data and information strategy for the future.

524 IODE and HAB have agreed to cooperate to develop a Harmful Algal Information System (HAIS). Another area of cooperation within the framework of the IOC strategy is between IODE and OBIS.

525 The Executive Council, during its 41st Session (2008) identified the need to manage ocean biogeographic data for ocean and coastal resource management and considered OBIS the relevant programme. The OBIS Governing Board is currently investigating different scenarios for closer cooperation between IOC and OBIS. An IOC/OBIS expert meeting was held to consider and

recommend options.

- 526 **The Committee expressed** its concern that not all 46 members of the "IOC Data and Information Management Advisory Group" will be active in the governance system for the Strategy. The Co-Chairs will need to identify a smaller group to take action. The next key issue will be on the Impact on IODE of cooperation with OBIS and this needs to be done before the next IOC Assembly.

11. ANY OTHER BUSINESS

- 527 No new items were proposed under this Agenda Item.

12. REQUIRED RESOURCES AND PLAN OF ACTION FOR 2009 (CURRENT UNESCO BIENNIUM 2008-2009) AND 2010-2011 (NEXT UNESCO BIENNIUM)

- 528 This Agenda Item was introduced by Mr Greg Reed, Co-Chair referring to Document IOC/IODE-XX/8 as well as Annex 1 to the Action Paper, which summarizes the resource requests formulated in all working documents available at the time of publication of the Action Paper. The SWG met three times and has completed the budget.

- 529 Mr Reed noted that there is limited funding from the UNESCO RP. There are funds for the Project Office, which can be used for some expert meetings and training courses. For 2009 USD 45,000 was available from the UNESCO Regular Programme budget. For 2010-2011 the sum of USD 185,000 has been allocated to IODE (this includes USD 10,000 for the costs associated with OBIS). Mr Reed informed that bearing in mind this revenue some requests had been cut back and some items had been moved to the IOC Project Office for IODE, Oostende to be funded through the extra-budgetary funds and other sources of funding available there. The cost of IODE-XXI has not been included and neither were any costs related to the 50th anniversary of IOC and IODE or the merger with OBIS. However the IODE Officers will meet inter-sessionally and can review and adapt the budget to needs.

- 530 **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.

- 531 **The Committee adopted** Recommendation IODE-XX.5

13. ELECTIONS OF CO-CHAIRS

- 532 The IODE Technical Secretary introduced this Agenda Item by referring to the IOC Rules of Procedure (Document IOC/INF-1166), and more particularly to Rule 25, para. 3.

- 533 **The Committee unanimously re-elected** Dr Malika Bel Hassen-Abid and Dr Greg Reed as Co-Chairs of IODE for a second term. Dr Bel Hassen-Abid and Mr Reed expressed their appreciation to the delegates for the confidence they had expressed in them by giving them the opportunity to serve IODE for a second term.

- 534 **The Committee commended** the Chair and Vice Chair for their hard work and dynamic approach, which has ensured the efficient implementation of IODE activities.

14. DATE AND PLACE OF IODE-XXI

- 535 Mr Greg Reed, the Co-Chair of IODE invited the Committee to decide on the date and place of the Twenty first Session, taking into consideration that the 50th Anniversary of IODE will be held in 2011 and the related discussions under Agenda Item 9.3.
- 536 The delegates of Belgium and the United States of America offered to investigate the possibility of hosting the 21st session IODE-XXI in 2011.
- 537 **The Committee welcomed** the offers and **instructed** the Secretariat and the Co-Chairs to follow-up on the offers.

15. ADOPTION OF THE SUMMARY REPORT

- 538 The Committee adopted the draft Summary Report of the Session, and the Resolutions and Recommendations as presented in Annex II.
- 539 **The Committee requested** the its Co-Chairs and the IOC Secretariat to make editorial corrections as necessary, taking into account the discussions held during the session.
- 540 **The Committee requested** the IODE Co-Chairs to present the Executive Summary with all Resolutions and Recommendations therein to the Twenty-Fifth Session of the IOC Assembly that will take place between 16 and 25 June 2009 at the UNESCO headquarters in Paris, France.

16. CLOSURE

- 541 The IODE Co-Chair Mr Greg Reed stated that this 20th session of the IODE committee has been very successful and has made important decisions about the future of the programme. He thanked the Committee for its support and contribution. Mr Reed then summarized some the highlights of the Session:
- 542 Excellent progress has been achieved in the development of the IODE ODP Project, however the Committee needs to ensure that more members 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. The Committee has expressed its opinion that OBIS should become part of the IODE programme and this message will be conveyed to the IOC Assembly in June. The Groups of Experts have submitted an extensive work plans for the next two years and the IODE officers will monitor progress. ODINWESTPAC has also developed a comprehensive work plan and this should ensure the further expansion of the work of IODE in this region. In addition there is has been renewed interest in re-invigorating the ODINCINDIO and ODINCARSA projects
- 543 Mr Reed concluded by noting that IODE-XX had adopted a very extensive work plan for the next intersessional period and he stated that both himself and Dr Malika Bel Hassen Abid looked forward to providing leadership of IODE for the next two years.
- 544 Finally Mr Reed, on behalf of the committee thanked the IODE-XX hosts of the State Oceanic Administration and the National Marine Data and Information Service for their support in making this

meeting such a success. He also thanked the members of the IODE Secretariat for their excellent job in reporting on the proceedings of the meeting.

545 Dr Malika Bel Hassen thanked all the Chinese colleagues who provided outstanding
assistance.

546 The Co-Chairs closed the Session at 13h10 on Friday 8 May 2009.

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
3. INTRODUCTORY REPORTS
 - 3.1 CO-CHAIRS REPORT
 - 3.2 IMPLEMENTATION STATUS OF THE IODE-XIX WORK PLAN
 - 3.3 FINANCIAL AND IN-KIND CONTRIBUTION REPORT
 - 3.4 INTRODUCTION TO WORK PLAN AND BUDGET
4. NODC, WDC AND PROJECT OFFICE REPORTS
 - 4.1 REPORTS OF NODCS, DNAS AND MARINE INFORMATION CENTRES
 - 4.2 REPORTS OF THE ICSU WORLD DATA CENTRES OCEANOGRAPHY AND MGG
 - 4.2.1 Report of the WDC Oceanography, Tianjin, China
 - 4.2.2 Report of the WDC for Marine Environmental Science (WDC-MARE)
 - 4.2.3 Report of the World Data Centre For Oceanography, Obninsk, Russian Federation
 - 4.2.4 Report of the WDC for Oceanography, Silver Spring, United States
 - 4.3 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)
 - 5.2 OTHER PROJECTS
 - 5.2.1 Global Oceanographic Data Archaeology and Rescue (GODAR)
 - 5.2.2 Global Temperature and Salinity Profile Programme (GTSP)
 - 5.2.3 Global Ocean Surface Underway Data Pilot Project (GOSUD)
 - 5.2.4 Marine XML (marineXML)
 - 5.2.5 Marine Environmental Data Inventory (MEDI)
 - 5.2.6 Follow-Up of Terminated or terminating IODE or IODE-involved Projects
 - 5.2.7 Thermodynamics and Equation of State of Seawater - TEOS-10
6. IODE CAPACITY BUILDING
 - 6.1 OCEANTEACHER AND TRAINING ACTIVITIES
 - 6.2 IODE'S REGIONAL CAPACITY BUILDING 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 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
- 6.2.7 Regional Network of Pacific Marine Libraries (ODIN-PIMRIS)
- 6.2.8 Other networks: Europe - SeaDataNet
- 6.3 EMERGING NEEDS IN CAPACITY BUILDING
- 6.4 IODE ACTIVITIES IN THE IOC CAPACITY DEVELOPMENT FRAMEWORK
- 7. IODE ORGANIZATIONAL REFORM ISSUES
 - 7.1 REPORT ON THE FOLLOW-UP TO THE IODE REVIEW
 - 7.2 REPORTS ON CHANGES IN NATIONAL ARRANGEMENTS FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT AND EXCHANGE
 - 7.3 IODE ARRANGEMENTS FOR THE LONG-TERM SECURE ARCHIVAL OF DATA AND INFORMATION
 - 7.4 DATA PUBLISHING (IODE/SCOR)
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- 8. COOPERATION WITH OTHER PROGRAMMES
 - 8.1 COOPERATION WITH GOOS
 - 8.2 COOPERATION WITH GEO/GEOSS
 - 8.3 COOPERATION WITH IOC SCIENCE PROGRAMMES
 - 8.3.1 Cooperation with the IOC HAB Programme
 - 8.3.2 Cooperation with the IOC/ICAM Programme
 - 8.4 COOPERATION WITH IPY
 - 8.5 COOPERATION WITH OTHER PROGRAMMES AND PROJECTS
 - 8.5.1 OceanObs'09
 - 8.5.2 Ocean Tracking Network
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 - 8.5.4 Marine Interoperability Project (MMI)
- 9. IODE PUBLIC AWARENESS
 - 9.1 IODE WEB SITES, BROCHURES, POSTERS AND PUBLICATIONS
 - 9.2 IODE AND THE 50TH ANNIVERSARY OF THE IOC (2010)
 - 9.3 50TH ANNIVERSARY OF IODE IN 2011
- 10. IODE VISION AND STRATEGY
 - 10.1 IOC OCEANOGRAPHIC DATA EXCHANGE POLICY: IMPLEMENTATION BY MEMBER STATES
 - 10.2 IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE
- 11. ANY OTHER BUSINESS
- 12. REQUIRED RESOURCES AND PLAN OF ACTION FOR 2009 (CURRENT UNESCO BIENNIUM 2008-2009) AND 2010-2011 (NEXT UNESCO BIENNIUM)
- 13. ELECTIONS OF CO-CHAIRS
- 14. DATE AND PLACE OF IODE-XXI
- 15. ADOPTION OF THE SUMMARY REPORT
- 16. CLOSURE

ANNEX II

RESOLUTIONS AND 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

RESOLUTIONS

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 (IODP 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)

[illegible]

[illegible]

Cooperation with OBIS													
1. Meeting of RONS (at PO)		25,000											Hosted by Project Office (provisional)
SeaDataNet													
1. Sponsorship for IMDIS					13,000								Participants support
Cooperation with HAB/HAIS													
1. Development of HAIS; DB platform for monitoring and biogeographic data; HAEDAT back-up								50,000					EB Unidentified (50% IODE/ 50% HAB)
Cooperation with IOC/ICAM													
1. SPINCAM - DM training						20,000				20,000			Hosted by project office
<i>Cooperation sub-total</i>	0	25,000	0	0	13,000	20,000	0	50,000	0	20,000	0	0	
IODE Programme Administration													
Project Office basic expenses								25,000				25,000	Telecom, cleaning, maintenance
Secretariat and Officers travel expenses	5,000				15,000				15,000				
Officers meeting						10,000							
IODE-XXI									30,000				
IODE-50 celebrations												40,000	
<i>Administration sub-total</i>	5,000	0	0	0	15,000	10,000	0	25,000	45,000	0	0	65,000	
TOTAL RP Requested	49,200				104,200			110,000					
Expected available UNESCO RP	45,000				92,500			92,500					
TOTAL Project Office Requested		124,000				193,500				46,000			
Available Project Office		160,000				200,000				200,000			
TOTAL Other extra-budgetary Requested				0				142,000				91,000	
Other extra-budgetary identified			1,247,704				964,760				686,184		
Balance	-4,200	36,000		0	-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

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ANNEX IV

SPEECHES HELD AT THE OPENING CEREMONY

A - Opening Address by Mr. Chen Lianzeng, Deputy Administrator, State Oceanic Administration of China

Respected Chairmen,
Distinguished guests,
Ladies and gentlemen,

Good morning!

First, please allow me, on behalf of the State Oceanic Administration of China, to express my sincere congratulations on the successful convening of the 20th Session of the IOC Committee on International Oceanographic Data and Information Exchange, and to extend the warmest welcome and the most gracious greetings to all participants and guests.

As the organization responsible for coordinating oceanographic data and information exchange of IOC, IODE has been playing an important role in promoting international oceanic scientific cooperation and marine research of each member state, winning a high reputation among relevant international organizations and countries.

Chinese government attaches great importance to IOC and its work in organizing and coordinating intergovernmental marine cooperation, praises highly its achievement and shows great support to its jobs. Ever since the joining of IODE in 1981, China endeavors to fulfill its obligations and responsibilities, widely exchanges marine data and information with member states, actively participates in major projects of IODE and established good cooperative relations with the world's major maritime countries.

Under the direction of the State Oceanic Administration, China has joined in a number of important international and regional programs, made notable progress in areas of oceanographic data and information exchange. In recent years, we participated in projects like Argo Data Management, GTSP, GLOSS, NEARGOOS, ODINWESTPAC, etc., carried out wide range of oceanic data and information exchange and communication with many international organizations and countries, greatly promoted the development of international marine research and management.

Ladies and gentlemen, dear friends,

Oceans are the main component of the global life support system. In the 21 century, the ocean is taking on a prominent position in global political, economic and social development. The 20th Session of the IOC Committee on International Oceanographic Data and Information Exchange provides a good platform for experts and scholars to discuss and exchange ideas on marine data and information exchange, and for promoting international cooperation on marine data and information management.

We sincerely wish that IODE member states further strengthen communication to expand and deepen oceanographic data and information exchange, especially in the fields of digital oceans and marine data and information application, continue making contributions to the frontier marine scientific research and the sustainable utilization of marine resources.

China will, as always, strengthen cooperation with other countries and international organizations, making efforts towards our common goal of building marine ecological civilization and the harmonious development of human and oceans as a whole.

At last, I would like to wish the 20th session a complete success and hope all of you enjoy your work and stay in Beijing.

Thank you!

B- Opening Address by Dr Malika Bel Hassen Abid, IODE Co-Chair

Mr. Chen Lianzeng □ Deputy Administrator, State Oceanic Administration (SOA),

Dr. Zhang Zhanhai, Director-General, Department of International Cooperation, State Oceanic Administration (SOA),

Dear Hosts,

Dear Participants,

It is my great honour to open this IODE XX session. First of all I would like to thank our local hosts for agreeing to host IODE XX. I also extend my special thanks and congratulations to the local hosts for preparing the necessary logistic for the holding of this session, which allows us to be together today in Beijing.

Ladies and gentleman

Over the past two years the IODE has become increasingly focussed on how we can better interact with the broader community and this session of the IODE committee will discuss issues which are important for our future. The increasing recognition of data management as an important activity in many international programmes has resulted in IODE establishing and strengthening collaborative links with organisations and programs such as JCOMM, WMO, OBIS and GEOSS. The development of common standards are the basis of this collaboration which ensures common methods are established to discover data, to assess or indicate the quality of the data, and to handle data from a variety of disciplines. The agreement on shared standards should ensure the success of the IODE's goal of developing an Ocean Data Portal.

I would like to highlight what I think are some of the key issues.

- The development of the Ocean Data Portal will provide the capability to unite the National Oceanographic Data Centres into a federated network and this will ensure the rapid dissemination of data and information. The Ocean Data Portal will provide seamless access to collections and inventories of marine data from not only the NODCs in the IODE network, but will also serve to coordinate the provision of ocean data resources with other developing systems such as the WMO Information System and the Global Earth Observation System of Systems. All NODCs are encouraged to participate as Data Providers to this project.

- Standards are an essential component for interoperability and this is closely related to the development of the Ocean Data Portal. The standards process was initiated at the joint IODE/JCOMM sponsored meeting which was held in 2008 to look at the potential for the development and acceptance of community wide standards for marine data and information management and exchange. The success of the development and use of common standards is dependent on the involvement of the IODE community in the evaluation and implementation of standards.

- Changes to the ICSU World Data Centre system and the formation of the new World Data System will impact on the IODE and this will require further deliberation during this session. However the IODE programme is committed to supporting a system which will ensure the long-term secure archive of oceanographic data.

- Future cooperation between IODE and the Ocean Biogeographic Information System (OBIS) is another important issue we must consider. The OBIS Governing Board has proposed that OBIS becomes an IOC programme and this will be discussed at the IOC Assembly in June and the opinion of this committee should form part of those discussions.

The IODE strategy in terms of capacity building continues to bear fruit and increasing numbers of national oceanographic data centres established under the Ocean Data and Information Network (ODIN) are now fully operational. However, much remains to be done to ensure that new NODCs can join the IODE network and play a functional role in data and information management and exchange at national and regional levels. In this context, we hope that holding of IODE XX in the WESTPAC region will be a great occasion to strengthen the development of ODINWESTPAC which aims to provide an effective capacity building framework to promote regional cooperation in marine data and information product and sharing. In addition, the establishment of the Training Academy, as a part of IODE CB strategy, will provide an excellent annual teaching programme of courses related to oceanographic data and information management.

Good progress has been made to ensure easy access to all types of marine data (and information) on an appropriate time scale, encompassing global, regional and local needs. The adoption of the IOC Strategic Plan for Oceanographic Data and Information Management by the twenty-fourth IOC Assembly will allow to establish a comprehensive and integrated ocean data and information system, serving the broad and diverse needs of IOC Member States. Further progress is needed to ensure a fully implementation of this strategy.

To conclude, I look forward to a week of active discussion and I would invite the committee to make wise decisions so we can ensure the future of the IODE as the key programme for ocean data and information.

Thank you!

ANNEX V

LIST OF DOCUMENTS

WORKING DOCUMENTS

Agenda #	Code	Title
2.1.	IOC/ODE-XX/1 Add. prov.	ODE-XX - Provisional Timetable
2.1.	IOC/ODE-XX/2	ODE-XX - Action Paper
3.1.	IOC/ODE-XX/6	ODE-XX - Co-Chairs Report
3.2.	IOC/ODE-XX/7	ODE-XX - Implementation Status of the ODE-XIX work plan (ODE-XIX Action Sheet) as on 16 February 2009
3.3.	IOC/ODE-XX/8	ODE-XX - Financial and in-kind contribution report/ Introduction to Work Plan and Budget
3.4.	IOC/ODE-XX/8	ODE-XX - Financial and in-kind contribution report/ Introduction to Work Plan and Budget
4.1.	IOC/ODE-XX/9	ODE-XX - Reports of the NODCs, DNAs and Marine Information Centers
4.1.	IOC/ODE-XX/9add	ODE-XX - Bundled Reports NODCs/ MIM NC
4.2.	IOC/ODE-XX/10.1	ODE-XX - Inter-Sessional Report of the WDC for Oceanography, Silver Spring
4.2.	IOC/ODE-XX/10.2	ODE-XX - REPORT OF THE WORLD DATA CENTRE FOR OCEANOGRAPHY, Obninsk, Russian Federation
4.2.	IOC/ODE-XX/10.3	ODE-XX - ICSU World Data Center for Marine Environmental Sciences (WDC-MARE)
4.2.	IOC/ODE-XX/10.4	ODE-XX - Report of The WDC-Oceanography, Tianjin
4.3.	IOC/ODE-XX/11	ODE-XX - Report of the IOC Project Office for ODE
5.1.1.1	IOC/ODE-BICH-IV/3	ODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH), Fourth Session, IOC Project Office for ODE Oostende, Belgium 27-30 January 2009
5.1.1.1	IOC/ODE-XX/12	ODE-XX - Report of the ODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)
5.1.1.2	IOC/ODE-XX/12.1	ODE-XX - Ocean Biogeographic Information System(OBIS)
5.1.2.	IOC/ODE-XX/13	ODE-XX - Report of the ODE Group of Experts on Marine Information Management (GE-MIM)
5.1.3.1	IOC/ODE-XX/14.0	ODE-XX - Cooperation between ODE and JCOMM through ETDMP and the JCOMM DMPA
5.1.3.1	IOC/ODE-XX/14.0add.	ODE-XX - Interim Report on the preparation of the Catalogue of Applicable Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) Best Practices Standards
5.1.3.2	IOC/ODE-XX/14.1	ODE-XX - Report on Inter-Sessional Activities of the ETDMP
5.1.3.3	IOC/ODE-XX/14.2	ODE-XX - JCOMM/ODE Ocean Data Standards Pilot Project
5.1.3.4	IOC/ODE-XX/14.3	ODE-XX - ODE OceanDataPortal
5.1.3.4	JCOMM Meeting Report No. 67	ODE Ocean Data Portal and WIS Technology Workshop (OBNINSK, RUSSIAN FEDERATION, 18-19 MARCH 2009)
5.1.3.5	IOC/ODE-XX/14.4	ODE-XX - WIGOS Pilot Project for JCOMM
5.2.1	IOC/ODE-XX/15.1	ODE-XX - Global Oceanographic Data Archaeology and Rescue (GODAR) and World Ocean Database Projects
5.2.2	IOC/ODE-XX/15.2	ODE-XX- Project Report: Global Temperature and Salinity Profile Programme (GTSP)
5.2.3	IOC/ODE-XX/15.3	ODE-XX - Report on ODE global project: GOSUD
5.2.4	IOC/ODE-XX/15.4	ODE-XX - Report of the MarineXML Steering Group
5.2.5	IOC/ODE-XX/15.5	ODE-XX - Marine Environmental Data Inventory (MEDI)
5.2.6	IOC/ODE-XX/15.6	ODE-XX - Report on completed ODE projects
5.2.7.	IOC-XXV/2 Annex 6	CONSIDERATIONS REGARDING THE POSSIBLE ADOPTION OF A NEW FORMULATION OF THE EQUATION OF STATE FOR SEAWATER
5.2.7.	IOC/ODE-XX/14.5	ODE-XX - Thermodynamics and Equation of State of Seawater. TEOS-10
6.1.	IOC/ODE-XX/16	ODE-XX - OceanTeacher and Training Activities
6.2.1	IOC/ODE-XX/17	ODE-XX - Ocean Data and Information Network for Africa
6.2.2	IOC/ODE-XX/18	ODE-XX - Inter-sessional Report on the Ocean Data and Information Network for the Caribbean and South America regions (ODINCARSA)
6.2.4	IOC/ODE-XX/19	ODE-XX - OCEAN DATA AND INFORMATION NETWORK FOR THE EUROPEAN COUNTRIES IN ECONOMICAL TRANSITION (ODINECET)
6.2.5	IOC/ODE-XX/20	ODE-XX - OCEAN DATA AND INFORMATION NETWORK FOR THE WESTERN PACIFIC REGION (ODINWESTPAC): PROGRESS REPORT 2008-2009
6.2.6	IOC/ODE-XX/21	ODE-XX - OCEAN DATA AND INFORMATION NETWORK FOR THE BLACK SEA REGION (ODIN-Black Sea)
6.2.7	IOC/ODE-XX/22	ODE-XX - REGIONAL NETWORK OF PACIFIC ISLAND MARINE LIBRARIES (ODIN-PIMRIS) PROGRESS REPORT FOR 2008-2009; WORK PLAN AND BUDGET FOR 2010- 2011
6.2.8	IOC/ODE-XX/23	ODE-XX - Development of Marine Data Management Infrastructures in Europe (SeaDataNet)

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6.3.	IOC/IODE-XX/24	IODE-XX - Emerging needs in Capacity Building
6.4.	IOC/IODE-XX/33	IODE-XX - IODE activities in the IOC capacity development framework
7.1.	IOC/IODE-XX/25	IODE-XX - Report on the follow-up to the IODE Review
7.2.	IOC/IODE-XX/26	IODE-XX - Reports on changes in national arrangements for oceanographic data and information management and exchange
7.3.	IOC/IODE-XX/27	IODE-XX - IODE Arrangements for the Long-Term Secure Archival of Data and Information
7.4.	IOC/IODE-XX/28	IODE-XX - Data Publishing (IODE/SCOR)
7.5.	IOC/IODE-XX/29	IODE-XX - Report on IODE data and information centres quality management and certification
8.3.1	IOC/IODE-XX/32	IODE-XX - AN INTERNATIONAL HARMFUL ALGAL INFORMATION SYSTEM (HAIS)- AN INTERNATIONAL HARMFUL ALGAL INFORMATION SYSTEM (HAIS)
8.3.2	IOC/IODE-XX/30	IODE-XX - Cooperation with IOC/ICAM
8.4.	IOC/IODE-XX/34	IODE-XX - Ensuring an Oceanic Data Legacy of the International Polar Year 2007-2009
9.	IOC/IODE-XX/35	IODE-XX - Ocean Tracking Network
10.2	IOC/IODE-XX/31	IODE-XX - IOC Strategic Plan for Oceanographic Data and Information Exchange

Background Documents

Agenda #	Code	Title
3.1	IOC/INF-1145	IODE Officers Meeting, 2007 Session, IOC Project Office for IODE, Ostend, Belgium, 27-30 November 2007: Summary Report
3.2	IOC/IODE-XIX/3	IOC Committee on International Oceanographic Data and Information Exchange, Nineteenth Session, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, 12-16 March 2007
3.2	IOC/IODE-XIX/3s	Executive Summary Report of the Nineteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Trieste, Italy, 12-16 March 2007
5.1.1.2	IOC Workshop Report No. 209	Workshop on Collaboration Between IOC and OBIS Towards the Long-term Management, Archival and Accessibility of Ocean Biogeographic Data IOC Project Office for IODE, Oostende, Belgium, 24-26 November 2008
5.1.2	IOC/IODE-MIM-IX/3	IODE Group of Experts on Marine Information Management (GE-MIM), Ninth Session, IOC Project Office for IODE, Oostende, Belgium, 17-20 September 2007
5.1.2	IOC/IODE-MIM-X/3	IODE Group of Experts on Marine Information Management (GE-MIM), Tenth Session, IOC Project Office for IODE, Oostende, Belgium, 4-6 November 2008
5.1.3.1	JCOMM TR40 - JCOMM DM PLAN	JCOMM Data Management Plan
5.1.3.1	JCOMM-MR-56	JCOMM Data Management Coordination Group, Third Session
5.1.3.3	IOC Workshop Report No. 206	IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards, IOC Project Office for IODE, Oostende, Belgium, 21-25 January 2008
5.1.3.4	JCOMM-MR-57-WIGOS1	Final report, ad hoc planning meeting for the JCOMM Pilot Project for WIGOS, Ostend, 29 March 2008
5.1.3.4	JCOMM-MR-59-ODP-WIGOS2	Final report, meeting of the joint Steering Group for the IODE Ocean Data Portal (ODP) and the WIGOS Pilot Project for JCOMM
6.2.2	IOC Workshop Report No. 205	IODE/ICAM Workshop on the Development of the Caribbean Marine Atlas (CMA)
7.4	IOC Workshop Report No. 207	SCOR/IODE Workshop on Data Publishing
9.1	IOC Manuals and Guides No. 5 - 2nd revision	Guide for establishing a National Oceanographic Data Centre; 2nd revised version
12	IOC/INF-1236:	Improving the IOC's Performance Management System: IODE reporting as a pilot project
12	IOC/IODE-XIX/46	Guidelines for the Development of the IODE short-term (2008-2009) and medium-term (2008-2013) Work Plan and Budget

Other Documents

Code	Title
CL2277	IOC Circular Letter 2277 - NOMINATION OF MEMBERS OF THE JCOMM/IODE EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ETDMP)
CL2280	IOC Circular Letter 2280 - Invitation of Member States to IODE-XX
CL2281	Invitation of Organizations to IODE-XX

ANNEX VI

IODE-XX (2009-2011) ACTION SHEET

No	Para	Action item	Due by date	To be implemented by
1	52	The Committee further recommended that in future surveys information should also be collected on Cruise Summary Reports (CSR).	IODE-XXI	Secretariat
2	54	The Committee tasked the IODE Officers, with assistance from other members of the Committee as appropriate, with further refining and developing metrics for quantifying data flow in the IODE network, taking account of the guidelines on metrics/indicators in Manuals and Guides No. 5 (2 nd rev. ed.) 2008.	2010 Session of the IODE Officers Meeting	IODE Officers
3	93	The Committee recommended that a “global map on the management of oceanographic data for the world” be prepared to assess the degree of overlap between the WDCs and the project data assembly centres’ data holdings. It should include a consideration of the physical location of the master copy of the data sets.	2010 Session of the IODE Officers Meeting	WDCs Oceanography, IODE Officers
4	104	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.	End of 2009	IODE Secretariat
5	112	The Committee emphasized the importance of having a process through which the vocabularies become standards and are distributed widely. Vocabularies will evolve and what has been assembled should be exposed quickly so that people know what is available and are able to use and comment the lists. The Committee identified the Ocean Data Standards process as a mechanism that could be utilised to adopt the lists but cautioned that this should not delay the creation of new vocabularies. The Committee encouraged GE-BICH and SeaVox to proceed quickly towards establishing such a mechanism.	Continuously	GE-BICH, SeaVox
6	115	The Delegate of the United Kingdom drew the attention of the Committee to a European Union funded project – MyOcean, which will focus on ocean monitoring and forecasting in Europe. She recommended that GE-BICH should explore the possibility for collaboration with this project, which will handle bio-chemical parameters and also intends to	IODE-XXI	GE-BICH

		develop Quality Control procedures.		
7	116	The Committee adopted the report of the GE-BICH-IV Session and the Recommendations included therein.	Implementation of action plan by IODE-XXI	GE-BICH
8	117	The Committee adopted Resolution IODE-XX.1 (Revised Terms of Reference for the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices – GE-BICH)	IODÉ-XXI	GE-BICH/ IOC Member States
9	130	The Committee adopted the “IODÉ Statement of the future of OBIS” attached as Annex VII to this Report. It requested Mr Geoff Holland, Consultant, as well as the IODE Co-Chairs to present this statement to the 25 th Session of the IOC Assembly, where this item will be further discussed and decided upon.	June 2009	G. Holland
10	138	The Committee urged all IOC Member States to nominate IODE national coordinators for Marine Information Management and to ensure that their information is kept up-to-date in OceanExpert.	July/August 2009	IODÉ Secretariat to send Circular Letter IOC Member States
11	140	The Committee welcomed the success of the marine information management activities and adopted the reports of GE-MIM-IX and GE-MIM-X as well as all recommendations included therein.	Implementation of action plan by IODE-XXI	GE-MIM
12	147	The Committee called for continued and expanded cooperation between IODE and JCOMM through the JCOMM DMPA as well as through relevant capacity building activities and OceanTeacher.	continuous	JCOMM DMPA and OceanTeacher
13	157	The Committee approved the (ETDMP) work plan.	IODÉ-XXI	ETDMP
14	158	The Committee adopted Recommendation IODE-XX.1 (REVISION OF THE TERMS OF REFERENCE OF THE JCOMM/IODÉ EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ETDMP))	JCOMM-III	IOC Executive Secretary/ IODE Co-Chairs/ Chair JCOMM DMCG/ IOC Member States
15	166	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	Continuous	SeaDataNet project managers
16	167	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.	Continuous	IOC Member States
17	168	The delegate of the United Kingdom, Dr Lesley Rickards, informed the Committee that the document regarding the quality control of sea level data will be submitted	July 2009	Dr L. Rickards

		in June or July 2009.		
18	169	The Committee adopted Recommendation IODE-XX.2 (THE OCEAN DATA STANDARDS PILOT PROJECT)	IODE-XXI	IOC Member States
19	186	The Committee adopted the (IODE Ocean Data Portal) work plan for 2009-2011)	IODE-XXI	IODE ODP Project Steering Team
20	187	The Committee adopted Recommendation IODE-XX.3 (IODE Ocean Data Portal)	IODE-XXI	NODCs, IODE projects, IOC Member States
21	192	...the Government of the Republic of Korea has provided funding and will host an IODE Ocean Data Portal training course between 31 August and 3 September 2009	August/September 2009	IODE Secretariat/ Republic of Korea
22	198	The Committee adopted the (WIGOS Pilot Project for JCOMM) work plan for 2009-2011	IODE-XXI	Joint Steering Group for the IODE Ocean Data Portal and the WIGOS Pilot Project for JCOMM
23	203	The Committee thanked Mr Levitus for his report, expressed appreciation for the continuing work carried out during the inter-sessional period, and approved the work plan for the next inter-sessional period.	IODE-XXI	GODAR Project Leader
24	213	The Committee noted that the Cyclical Redundancy Check (CRC) is a good candidate to be used as a tool for producing unique identifiers for oceanographic data. It could be a good candidate for submission to the Ocean Data Standards Pilot Project.	IODE-XXI	GTSP Chair
25	214	The Committee thanked Dr Sun for his detailed report, expressed appreciation for the work carried out during the inter-sessional period, and approved the work plan for the next inter-sessional period.	IODE-XXI	GTSP Co-Chairs
26	227	The Committee thanked Mr Petit de la Villéon for his detailed report, expressed appreciation for the work carried out during the inter-sessional period, and approved the work plan for the next inter-sessional period.	IODE-XXI	GOSUD Co-Chairs
27	239	The Committee suggested that the SeaDataNet vocabularies might be excellent candidates for the Ocean Data Standards Process.	IODE-XXI	SeaDataNet project managers
28	241	The Committee thanked Dr Rickards for presenting Dr Lowry's report, expressed appreciation for the work carried out during the inter-sessional period, and approved the work plan for the next inter-sessional period.	IODE-XXI	MarineXML Steering Group
29	247	The Committee thanked Mr Reed and supported his proposal that the Steering Group for MEDI be terminated and future development and administration of MEDI should be managed by the IODE/JCOMM	IODE-XXI (report from ETDMP)	ETDMP

		ETDMP.		
30	255	The Committee was informed that operators of offshore wind farms now also collect a considerable number of metocean parameters. In most cases these data are still classified but the Committee recommended that contact is made with the operators to investigate the possibility to obtain and share this new source of data.	IODE-XXI	Offshore wind farm operators
31	259	The Committee adopted Recommendation IODE-XX.4 (THERMODYNAMICS AND EQUATION OF STATE OF SEAWATER. TEOS-10)	IODE-XXI	NODCS
32	273	Dr Gwenaelle Moncoiffe, Chair of GE-BICH, reported that guideline documents materials on quality control procedures are available for submission to OceanTeacher.	June/July 2009	G. Moncoiffé
33	274	Mr Robert Keeley, Chair JCOMM Data Management Coordination Group, reported that JCOMM would contribute to OceanTeacher with training materials (e.g. JCOMM catalogue on standards and best practices).	End of 2009	R. Keeley
34	275	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.	IODE-XXI	Member States
35	284	The Committee adopted the work plan for ODINAFRICA for the period 2009 – 2013	IODE-XXI	ODINAFRICA project manager
36	298	The Committee invited Mr Martinez to continue sharing his expertise in ODINCARSA through any way possible and appropriate.	IODE-XXI	Rodney Martinez
37	299	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.	2009/2010	IODE Secretariat/ ODINCARSA participating countries
38	302	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 25 th Session of the IOC Assembly (June 2009).	June 2009	IODE Secretariat/ ODINCINDIO participating countries
39	311	The Committee adopted the ODINECET work plan for 2009 and 2010 – 2011	IODE-XXI	ODINECET project coordinator

40	320	The Committee adopted the work plan for ODINWESTPAC.	IODE-XXI	ODINWESTPAC project coordinator
41	326	The Committee invited Dr Vladymyrov to continue as the ODIN Black Sea Coordinator, and arrange a Steering Committee meeting to prepare a work plan for ODIN Black Sea., taking into account the cooperation with the EU funded Black Sea SCENE project.	2009/2010	V. Vladymyrov/ ODINBlackSea participating countries
42	332	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.	IODE-XXI	ETDMP
43	343	The Committee adopted the ODIN-PIMRIS work plan.	IODE-XXI	ODIN-PIMRIS project coordinator
44	364	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://istic-unesco.org/)	IODE-XXI	Malaysia
45	366	The Committee agreed on the IODE course calendar and called on the Member States to promote the IODE Training activities on the national level.	IODE-XXI	Member States
46	367	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.	IODE-XXI	Malaysia/ Member States
47	395	Regarding <u>Recommendation 7</u> (...reduced capacity of the Secretariat) the Committee called on the IOC Executive Secretary to consider ways and means to strengthen the staffing of the IOC Project Office for IODE (General support staff as well as Professional staff) with additional regular UNESCO positions to ensure the long-term sustainability of the Office as the IODE Secretariat. In addition the Committee, noting with concern the pending retirement of Mr Adrien Vannier from IOC/UNESCO Headquarters, urged the IOC Executive Secretary to ensure a suitable replacement is identified in a timely fashion to ensure the essential administrative backstopping of the IODE programme.	IODE-XXI	IOC Executive Secretary
48	396	Regarding <u>Recommendation 9</u> (...develop indicators and benchmarks to assess the amount of data and information being exchanged ...) the Committee invited NODCs to provide information on their metrics methodology to the IODE Secretariat, which will then be collated and	IODE-XXI	NODCs

		shared with the IODE community for further consideration by the next Session of the Committee.		
49	406	The Committee also recommended that each IOC Member State should be preferably be represented by a single IODE national coordinator for oceanographic data management and a single IODE national coordinator for marine information management, to ensure coherence in national positions regarding data and information management.	IODE-XXI	Member States
50	406	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.	IODE-XXI	Member States
51	424	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"	IODE-XXI	(i) Sydney Levitus (Chair); (ii) Greg Reed; (iii) Prof. Lin Shoahua; (iv) Vladimir Kuznetsov; (v) Friedrich Nast; (vi) Lesley Rickards; (vii) Sissy Iona; (viii) Bob Keeley; (ix) Taco de Bruin; and (x) Linda Pikula.
52	435	The Committee instructed the GE-MIM Chair to liaise with Ms Cathy Norton at WHOI to ensure GE-MIM participation (in the SCOR/IODE activity on data publishing).	IODE-XXI	GE-MIM
53	436	The Committee noted the progress of this initiative and instructed the IODE experts involved in this undertaking to continue informing the Committee on progress.	IODE-XXI	IODE experts involved in the activity
54	442	The Committee tasked the IODE Officers to look into this matter (WDS) and report back to the next Session, and also to monitor the accreditation and certification process of data centres established by the WDS.	IODE-XXI	IODE Officers
55	446	The Committee requested the Technical Secretary to contact the JCOMM Observations Programme Area, through the GOOS Project Office, to include the sea surface salinity network in reporting the status of the global observing system.	June 2009	IODE Secretariat
56	459	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.	IODE-XXI	IODE/ HAB

		The Committee adopted Resolution IODE-XX.2 (DEVELOPMENT OF THE HARMFUL ALGAL INFORMATION SYSTEM)		
57	470	The Committee welcomed the cooperation with ICAM (on SPINCAM, CMA, AMA), which is another example of the new role assigned to IODE within the framework of the IOC Strategic Plan for Oceanographic Data and Information Management.	IODE-XXI	IODE/ ICAM
58	476	Mr De Bruin proposed to contact each of the NODCs involved in IPY projects and ask those NODCs to identify (and consequently manage and preserve) the IPY data from that NODC country. That is to start at the level of the 170 honeycomb project and then go down to the level of the subprojects and the sub-subprojects. Mr De Bruin would contact those concerned during IODE-XX or in the very near future and he asked for active support from the IODE community in this matter.	July 2009	T. De Bruin
59	477	The USA suggested an IODE Circular Letter be sent to NODCs on this topic. Mr De Bruin agreed to also make contact at the working level with relevant NODCs to supplement the Circular Letter, and to keep the IODE secretariat informed of progress.	June 2009	IODE Secretariat
60	477	Germany offered to help in ensuring Arctic research cruise summary reports are made available	End of 2009	German NODC
61	477	The UK noted the importance of ship operators inputting data into cruise planning databases such as the one maintained by POGO and noted that the new draft SCAR data and information strategy envisions a strong partnership with IODE for marine data exchange and stewardship for the Southern Ocean.	IODE-XXI	IODE/ POGO/ SCAR
62	479	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.	IODE-XXI	NODCs, WDCs Oceanography
63	485	The Committee thanked Mr Keeley for his presentation and called on NODCs to actively participate in OceanObs'09.	September 2009	NODCs
64	490	The Committee welcomed the planned establishment of a long-term archival for OTN data at the Canadian NODC.	IODE-XXI	Canadian NODC
65	496	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.	IODE-XXI	NODCs
66	499	The Committee welcomed the cooperation with MMI and recommended its continuation, thereby also taking into account the SeaVox vocabulary services	IODE-XXI	MMI coordinators

		and developments taking place in the IODE Marine XML Steering Group.		
67	505	The Committee requested to send at least one paper copy of information materials published by the Project Office to NODCs.	continuously	IODE Secretariat
68	514	The Committee requested the NODCs and Marine Information Centres to send historical photographs of data centres, information centres and their equipment and staff to the IOC project Office for IODE (printed or electronic).	End of 2009	NODCs, Marine Information Centres
69	515	The Committee established an inter-sessional Working Group to finalise plans for commemoration of the 50 th anniversary of IODE. The Committee instructed the Group to submit its Report to the Officers by the end of 2009	End of 2009	The group, Chaired by Greece, will include Belgium, Canada, France, Germany, Senegal, South Africa, Turkey, Ukraine, the IODE Co-Chair (Malika Bel Hassen Abid), the ODINAFRICA Coordinator, and the Chair GE-MIM.
70	518	The Committee instructed the NODCs to put a link to the 'IOC Oceanographic Data Exchange Policy' on their own web page.	End of 2009	NODCs
71	525	The Committee expressed its concern that not all 46 members of the "IOC Data and Information Management Advisory Group" will be active in the governance system for the Strategy. The Co-Chairs will need to identify a smaller group to take action. The next key issue will be on the <u>Impact on IODE of cooperation with OBIS</u> and this needs to be done before the next IOC Assembly.	June 2009	Co-Chairs
72	530	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	June 2009	IODE Co-Chairs
73	530	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.	IODE-XXI	Member States
74	531	The Committee adopted <u>Recommendation IODE-XX.5</u>	IODE-XXI	IOC Member States, members

				of the IODE Committee
75	536	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.	Early 2010	IODE Secretariat
76	540	The Committee requested the IODE Co-Chairs to present the Executive Summary with all Resolutions and Recommendations therein to the Twenty-Fifth Session of the IOC Assembly that will take place between 16 and 25 June 2009 at the UNESCO headquarters in Paris, France.	June 2009	IODE Co-Chairs

ANNEX VII

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 2008¹. 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.

¹ Workshop on Collaboration Between IOC and OBIS Towards the Long-term Management, Archival and Accessibility of Ocean Biogeographic Data, Oostende, Belgium, 24-26 November 2008. Paris, UNESCO, 32 pp. 2009. (IOC Workshop Report No. 209) (English)

ANNEX VIII

LIST OF ACRONYMS

ALD	Appointment of Limited Duration (UNESCO)
AMA	African Marine Atlas
AOML	Atlantic Oceanographic and Meteorological Laboratory (NOAA)
API	Application Programming Interface
ASCABOS	A Supporting Programme for Capacity Building in the Black Sea Region towards Operational Status of Oceanographic Services
ASFA	Aquatic Sciences & Fisheries Abstracts
BATHY	code for reporting bathythermal observations
BCO-DMO	Biological and Chemical Oceanography Data Management Office (US NSF)
BODC	British Oceanographic Data Centre
BSRN	Baseline Surface Radiation Network
CDI	Common Data Index (SeaDataNet)
CDIAC	Carbon Dioxide Information Analysis Center
CEEMaR	Central and Eastern European Marine Repository
CIMO	Commission for Instruments and Methods of Observation (WMO)
CMA	Caribbean Marine Atlas
CMD	Continuously Managed Database
CODATA	Committee on Data for Science and Technology (ICSU)
CoML	Census of Marine Life
CPPS	Permanent Commission for the Southeast Pacific
CRC	Cyclical Redundancy Check
CSM	Content Management System
CSR	Cruise Summary Reports
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
CTD	Conductivity-Temperature-Depth Probe
CU	Coordinating Unit
CWP	Community White Paper
DBCP	Data Buoy Cooperation Panel
DCPC	Data Production & Collection Centre
DiGIR	Distributed Generic Information Retrieval
DMAC	IOOS Data Management & Communication
DMCG	Data Management Coordination Group (JCOMM)
DMPA	Data Management Programme Area (JCOMM)
DNA	Designated National Agency
DOI	Digital Object Identifier
DWD	Deutscher Wetterdienst (Germany)
E2E	End-To-End
E2EDM	End to End Data Management
ECET	European Countries in Economic Transition
EMODNET	European Marine Observation and Data Network
EPOCA	European Project on Ocean Acidification
ESONET	European Seafloor Observatory Network
ESSD	Earth System Science Data
ETDMP	Expert Team on Data Management Practices (JCOMM/IODE)
EU	European Union
EURASLIC	European Association of Aquatic Sciences Libraries & Information Centres
FAGS	Federation of Astronomical and Geophysical Data Analysis Services (ICSU)
FAO	Food & Agriculture Organization of the United Nations
FFA	Pacific Islands Forum Fisheries Agency
FGDC	US Federal Geographic Data Committee
FUST	Flanders UNESCO Science Trust Fund

GBIF	Global Biodiversity Information Facility
GDAC	Global Data Assembling Center
GCC	Global Collecting Centre (WMO)
GCMD	Global Change Master Directory
GDAC	Global Data Assembly Centre
GE	Group of Experts
GE-BICH	IODE Group of Experts on Biological & Chemical Data Management & Exchange Practises
GE-MIM	IODE Group of Experts on Marine Information Management
GEO/GEOSS	Global Earth Observations/Global Earth Observation System of Systems
GHRSSST	Global High-Resolution Sea Surface Temperature
GIS	Geographic Information System
GISC	Global Information System Centre (WMO)
GLOSS	Global Sea Level Observing System
GODAR	Global Oceanographic Data Archaeology & Rescue
GOOS	Global Ocean Observing System
GOSIC	Global Observing Systems Information Center
GOSUD	Global Ocean Surface Underway Data Pilot Project
GRASP	GOOS Regional Alliance for the South Pacific
GSSC	GOOS Scientific Steering Committee
GTS	Global Telecommunication System
GTSP	Global Temperature & Salinity Profile Programme
HAB	Harmful Algal Bloom Programme
HABMAP	Habitat Mapping for Conservation & Management of the Southern Irish Sea
HAE-DAT	Harmful Algal Events Database
HAIS	Harmful Algal Information System
HMEI	Association of Hydro-Meteorological Equipment Industry
IAMSLIC	International Association of Aquatic & Marine Libraries & Information Centres
IAU	International Astronomical Union (ICSU)
IBSS	Institute of Biology of the Southern Seas (Ukraine)
ICAM	Integrated Coastal Area Management
ICAN	International Coastal Atlas Network
ICES	International Council for the Exploration of the Sea
ICES-RECO	ICES Reference coding system
ICOADS	International Comprehensive Ocean-Atmosphere Data Set
ICSU	International Council for Science
ICTP	Abdus Salam International Centre for Theoretical Physics
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (French Institute of Research & Exploitation of the Sea) (France)
IMBER	Integrated Marine Biogeochemistry and Ecosystem Research
IMDIS	International Conference On Marine Data and Information Systems
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCCP	International Ocean Carbon Coordination Project
IODE	International Oceanographic Data & Information Exchange
IOI	International Ocean Institute
IPET-MI	Inter-Programme Expert Team on Metadata implementation
IPHAB	Intergovernmental Panel on Harmful Algal Blooms
IPY	International Polar Year
ISDM	Integrated Science Data Management
IT	Information Technology
ITIL	Information Technology Infrastructure Library
IUGG	International Union of Geodesy and Geophysics (ICSU)

JCOMM	WMO-IOC Joint Technical Commission on Oceanography and Marine Meteorology
JCOMMOPS	JCOMM in situ Observing Platform Support Centre
JGOFS	Joint Global Ocean Flux Study
JODC	Japan Oceanographic Data Centre
KODC	Korea Oceanographic Data Centre
KORDI	Korea Ocean Research and Development Institute
LEDC	Less Economically Developed Countries
LME	Large Marine Ecosystems
MARBEF	Marine Biodiversity and Ecosystem Functioning
MARIS	Marine Information Services (Netherlands)
MBARI	Monterey Bay Aquarium Research Institute
MBL-WHOI	Marine Biological Laboratory - Woods Hole Oceanographic Institution
MEDI	Marine Environmental Data Inventory
MEDS	Marine Information Data Service (Canada)
META-T	JCOMM Water Temperature [instrumental] metadata
MIM	Marine Information Management
MMI	Marine Metadata Interoperability Project
MONDAT	HAB Monitoring Database
MOTIIVE	Marine Overlays on Topography
MOU	Memorandum of Understanding
NASA	National Aeronautics & Space Administration (US)
NDBC	National Data Buoy Center
NEAR-GOOS	North-East Asia Regional Global Ocean Observing System
NDG	NERC Data Grid (United Kingdom)
NMDIS	National Marine Data & Information Service
NOAA	National Oceanic & Atmospheric Administration
NODC	National Oceanographic Data Centre
OAI-PMH	Open Archives Initiative – protocol for Metadata Harvesting
OBIS	Ocean Biogeographic Information System
ODAS	Ocean Data Acquisition System
ODASMS	ODAS Metadata Service
ODIN	Ocean Data Information Network
ODINAFRICA	Ocean Data & Information Network for Africa
ODINBLACKSEA	Ocean Data & Information Network for the Black Sea Region
ODINCARSA	Ocean Data & Information Network for the Caribbean & South America Regions
ODINCINDIO	Ocean Data & Information Network for the Central Indian Ocean Region
ODINECET	Ocean Data & Information Network for European Countries in Economic Transition
ODIN-WESTPAC	Ocean Data & Information Network for the Western Pacific Region
ODP	OceanDataPortal
ODS	Ocean Data Standards
ODV	Ocean Data View
OGC	Open Geospatial Consortium
OGC-CSW	OGC catalogue service
OGP	International Association of Oil & Gas Producers
OOS	Ocean Observations & Services
OTA	OceanTeacher Academy
OTN	Ocean Tracking Network
PIMRIS	Pacific Island Marine Resources Information System
POGO	Partnership for Observation of the Global Oceans
POL	Proudman Oceanographic Laboratory
PSMSL	Permanent Service for Mean Sea Level
QA	Quality Assurance

QC	Quality Control
RIHMI	Russian Institute of HydroMeteorological Information (Russia)
RMIC	Regional Marine Instrument Centre
RON	Regional OBIS Nodes
RP	Regular programme
SAMOS	Shipboard Automated Meteorological and Oceanographic System
SCAR	Scientific Committee for Arctic Research
SCCID	Strategic Coordinating Committee for Information and Data (ICSU)
SCOR	Scientific Committee for Oceanic Research
SDI	Spatial Data Infrastructure
SEDIS	Scientific Earth Drilling Information Service
SEP	Southeast Pacific
SG-MEDI	Steering Group for the MEDI Project
SIMORC	System of Industry Metocean Data for the Offshore & Research Communities
SISMER	Système d'Informations Scientifiques pour la Mer (France)
SMOS	Soil Moisture and Ocean Salinity
SOA	State Oceanic Administration (China)
SOAP	Simple Object Access Protocol
SOLAS	Surface Ocean - Lower Atmosphere Study
SOOP	Ship-of-Opportunity Programme
SOPAC	Pacific Islands Applied Geoscience Commission
SOT	Ship Observations Team (JCOMM)
SPC	Secretariat of the Pacific Community
SPINCAM	South Eastern Pacific Information Network in support to Coastal Areas Management)
SPREP	Pacific Regional Environmental Programme
SSMR/SSMI	special sensor microwave radiometer or imager
SST	Sea Surface Temperature
TESAC	Temperature, Salinity & Current Report
TSG	ThermoSalinoGraph
TWS	Tsunami Warning System
UHSLC	University of Hawaii Sea Lee Center
UNESCO	United Nations Education, Science & Cultural Organization
URSI	International Union of Radio Science/ Union Radio-Scientifique Internationale
USP	University of the South Pacific
VLIZ	Vlaams Instituut voor de Zee (Flanders Marine Institute) (Belgium)
WCRP	World Climate Research Programme
WDC	World Data Centre (ICSU)
WDC-MARE	World Data Centre for Marine Environmental Sciences
WDS	World Data System (ICSU)
WESTPAC	IOC Sub-Commission for the Western Pacific Region
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization
WMS	Web Map Service
WOCE	World Ocean Circulation Experiment
WOD	World Ocean Database
WoRMS	World Register of Marine Species
XBT	Expendable Bathythermograph
XML	Extensible Markup Language

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