


**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION**  
**(of UNESCO)**  
**Twenty-second Session of the IOC Committee on International Oceanographic**  
**Data and Information Exchange (IODE-XXII)**  
**Ensenada, Mexico, 11-15 March 2013**

**Report on the IODE's Global Projects**

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**This document covers the following agenda items (global projects):**

- 5.2.1 Ocean Biogeographic Information System (OBIS)  
*(this is actually covered in Document IOC/IODE-XXII/14)*
- 5.2.2 JCOMM/IODE Ocean Data Standards
- 5.2.3 IODE Ocean Data Portal
- 5.2.4 Data citation/data publishing
- 5.2.5 Global Oceanographic Data Archaeology and Rescue (GODAR)/ World Ocean Database (WOD)
- 5.2.6 Global Temperature and Salinity Profile Programme (GTSP)
- 5.2.7 Global Ocean Surface Underway Data Pilot Project (GOSUD)
- 5.2.8 OceanDocs, Aquatic Commons and OpenScienceDirectory
- 5.2.9 OceanExpert
- 5.2.10 IODE International Coastal Atlas Network (IODE/ICAN)

**ISSUES TO BE DISCUSSED**

The Committee will be invited to consider progress of the IODE global projects.

**DECISIONS/ACTIONS REQUIRED FROM THE COMMITTEE**

The Committee is requested to comment on progress of the projects and to consider recommendations submitted.

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## **APPENDIX: DRAFT TEXT FOR INCLUSION IN THE SUMMARY REPORT OF IODE-XXII**

### **5.2.1 Ocean Biogeographic Information System (OBIS)**

See Document IOC/IODE-XXII/14

### **5.2.2 JCOMM/IODE Ocean Data Standards**

- 1 *This agenda was introduced by Prof. Yutaka Michida (Co-Chair of the Ocean Data Standards pilot project), referring to Document IOC/IODE-XXII/15 (Report on the IODE's Global Development Projects: ODS).*
- 2 *Prof. Yutaka informed the committee that there was limited activity in the Ocean Data Standards pilot project during 2011-2012. An Ad-Hoc ODS pilot project meeting was held in April 2012 during which important issues were raised for consideration by both JCOMM and IODE. There were no standards submitted to the pilot project for ODS consideration from Member States during the intersessional period. The project had to contend with two standards proposal which were under review. These included the Common Data Index (CDI) metadata profile and the Quality Flag scheme proposals. Since the development of CDI in 2003 which was mostly compliant with ISO-19115, there has been an evolution of ISO standards. A more up-to-date standard, ISO-19139 has been developed, therefore, the authors of the CDI (Sea/DataNet), are reformulating CDI to be ISO-19139 compliant. The CDI update was to be ready in 2012, consequently, the CDI proposal (2003) was withdrawn. Since CDI (2003) was a prime example of a standard practice of a project with wide use, although it could not attain broad community acceptance, it was still a very important development and at least should be represented in a Catalogue of Best practices. The Quality flag scheme is under the community review process. It was submitted back to the authors for revision during the Second IODE Workshop on Quality Control of Chemical and Biological Oceanographic Data Collections. It will be re-submitted back as version 1.3 of the proposed standard, having addressed the areas of contention related to the primary and secondary level flags.*
- 3 *The committee was informed that two standards had been reviewed and accepted by the ODS. The standards have already been published by the project office for IODE, though as yet they have not been formally recommended by either IODE or WMO. This was considered by ETDMP-III. A draft recommendation for IOC Committee on IODE (IODE-XXII) citing these two standards has been prepared for their consideration as well as by the JCOMM through their Management Team on behalf of JCOMM-V.*
- 4 *The ODS standards review process was also revised. The process had no instructions on how to handle revised documents and gave only the NODC an evaluation role. The standards developed by the ODS are intended for international exchange purposes and not to impact local systems and this was clearly stated in the revision. The revised version was prepared by Mr. Keeley, and will be presented to the IODE-XXII for their consideration after being considered by ETDMP-III.*
- 5 *Data Standards are essential for interoperability of data sets collected by different programmes. There have been challenges to agreeing on standards including a slow reception of proposals, a lack of action to seek out new submissions, and a review process that was taking too long. It was also difficult to find individuals who had the time required to guide a proposal through the review process. An accepted standard required some mechanism in place to maintain or update it. This necessitated the need to convert the ODS, from a Pilot Project to a Project. The transition process from the ODS Pilot Project to a Project entails closing the Pilot Project and re-starting the activity as a Project. This requires formal recommendations from IODE-XXII and IOC Assembly and to JCOMM and WMO. Therefore a draft recommendation proposing to formally close the ODS Pilot Project and re-establishing a new Project, Ocean Data Standards and Best Practices Project (ODSBP) that also incorporates a catalogue of best practices will be submitted to IODE-XXII for consideration. The draft recommendations will also include its Terms of Reference (TOR).*
- 6 *The Member States are requested to actively participate in reviewing and promoting Ocean Data Standards.*
- 7 *The Committee was invited to adopt Recommendation IODE-XXII.[5.2.2.1] and IODE-XXII.[5.2.2.2].*

**DRAFT RECOMMENDATION IODE-XXII.[5.2.2.1]**

**THE OCEAN DATA STANDARDS PILOT PROJECT (ODS)**

The IOC Committee on International Oceanographic Data and Information Exchange,

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

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

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

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

**Recommends** to adopt the following standards:

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

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

**DRAFT RECOMMENDATION IODE-XXII.[5.2.2.2]**

**THE OCEAN DATA STANDARDS AND BEST PRACTICES PROJECT (ODSBP)**

The IOC Committee on International Oceanographic Data and Information Exchange,

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

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

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

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

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

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

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

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

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

## **Annex to Recommendation IODE-XXII.[5.2.2.2]**

### **Terms of Reference of the Ocean Data Standards and Best Practices Project (ODSBP)**

#### **Objectives of the Project**

The objective of the Ocean Data Standards and Best Practices Project (ODSBP) is to achieve broad agreement and commitment to adopt a number of standards and best practices related to ocean data management and exchange. This will include the following main tasks:

- (i) develop and manage a process for the reception, reviewing and recommending of standards and best practices, based upon the process developed by the Ocean Data Standards Pilot Project;
- (ii) actively liaise with all relevant communities, programmes and projects such as Ocean Data Portal, ETDMP Meta-Data Task Team, SeaDataNet Technical Task Team, GE-BICH, GE-MIM, SG-OBIS, GTSP, ICSU WDS, GEO/GEOSS;
- (iii) promote and monitor the usage of recommended standards and practices in the relevant communities, including those mentioned under (ii);
- (iv) regularly review and revise recommended standards and best practices based upon feedback from the relevant communities, including those mentioned under (ii);
- (v) maintain an online catalogue of best practices, enabling easy discovery and downloading of these documents by users (e.g. JCOMM Catalogue of practices and standards).

#### **Management**

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

- (i) advise the IODE Committee on the vision, strategy and implementation of the Ocean Data Standards and Best Practices Project (ODSBP);
- (ii) report to the IODE Committee (and ETDMP, as appropriate) on the progress of submission, recommendation, publishing and revision of standards and best practices recommended through the Project;
- (iii) develop a document on, and maintain the process for evaluating proposals for standards and best practices.

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

#### **Meetings of the Steering Group**

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

#### **Financial implications**

2013	US\$ 5,000	(RP)
2014	US\$ 5,000	(RP)

### 5.2.3 IODE OceanDataPortal

- 8 *This agenda item will be introduced by Dr Sergey Belov by referring to Document IOC/IODE-XXII/15 (Report on the IODE Projects: IODE Ocean Data Portal). It will be recalled that “The ODP is delivering a standards-based infrastructure to build and manage a distributed marine data network basing on collections and inventories of data and products of the data centers of the IODE, JCOMM and other IOC projects as well as the resources from other participating systems and also provide the discovery, evaluation (through visualization and metadata review) and access to data and products.”*
- 9 *He will note that during the intersession period main activities were focused on implementation of ODP V2 technology and new data provider involvement. ODP V2 architecture is based on: interoperability, network model, role of data centres and new functionality and services. Since June 2012 ODP V2 is running on the servers of NODC of Russia. NODCs and DNAs as well as other interested programmes, projects and initiatives will be welcomed to set up either national or regional/specialized node according to their roles (See Annex A). ODP V2 toolbox is ready for endorsement and distribution.*
- 10 *Dr. Belov will inform that Argentina national data system will be based on the ODP technology contributing into the IODE Ocean Data Portal. Future data providers will be presented by the Ministry’s Information Systems Department and from other centres that produce sea data such as the National Research Institute on Fishery (INIDEP), the Argentinean Antarctic Institute, and some Research Institutes and Universities with oceanographic research activity. The first Argentinean Data Provider in Patagonia (CENPAT) has been established. ODP technical team will provide all required assistance and guidance in this process. Business plan for 2013-2014 has been received from MINCyT and presented in Annex B.*
- 11 *During the intersession period four data providers were connected. Significant contribution has been made for the GTSP and Argo projects by NODC (USA), ISDM (Canada). Argo data is available through ODP using GDAC Argo FTP index. At present ODP is giving access to 100 datasets from 10 NODC/DNA with over 1 000 000 profiles.*
- 12 *Collaboration process has been established between ODP and SeaDataNet, and ODP and WIS. The contribution to EuroGEOSS has been made in early 2012.*
- 13 *It was noted that ODP plays an important role in identifying important standards for its operation within Ocean Data Standards process. Priorities for ODS were identified by the IODE Ocean Data Portal: (i) date, time, lat/lon; (ii) platforms, instruments, organizations, parameter dictionary, projects; (iii) implication of OGC standards.*
- 14 *The National Oceanographic Committee of the Russian Federation had agreed to offer to IOC/IODE to establish a Partnership Centre for the IODE Ocean Data Portal. Funding for 2013 has been arranged including arrangements for office operation and required staff positions. The Partnership Centre for the IODE Ocean Data Portal will:(i) develop, host and maintain the tools and specifications of the IODE ODP for the portal and its distributed marine data system operation;(ii)assist IODE's Ocean Data Information Networks (ODINs), NODCs and other IODE ODP nodes to achieve their regional and thematic objectives;(iii) develop, strengthen and maintain the IODE ODP data management training programmes and tools;(iv) monitor and report on the status and availability of the IODE ODP portal, websits, tools and specifications used by the IODE ODP node;(v) provide an infrastructure to develop and test the web-based technologies and tools, intersystem interoperability and also to generate new ideas and perspectives of the IODE ODP;(vi) promote collaboration between all expert levels active in integrated marine data management.*
- 15 *The Committee will be invited to consider (i) the revision of the Terms of Reference of the IODE Steering Group for the IODE Ocean Data Portal Project (Recommendation IODE-XXII.[5.2.3.1]); (ii) the Terms of Reference of the Structural Elements of the IODE Ocean*

*Data Portal (Recommendation IODE-XXII.[5.2.3.2], and (iii) Terms of Reference of the Partnership Centre for the IODE Ocean Data Portal.*

**DRAFT RECOMMENDATION IODE-XXII.[5.2.3.1]**

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

The IOC Committee on International Oceanographic Data and Information Exchange,

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

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

**Recommends** the revision of the Terms of Reference of the IODE Steering Group for the IODE Ocean Data Portal as follows:

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

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

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

**Financial implications**

2013	US\$ 10,000
2014	US\$ 10,000
2015	US\$ 10,000

**DRAFT RECOMMENDATION IODE-XXII.[5.2.3.2]**

**TERMS OF REFERENCE OF THE STRUCTURAL ELEMENTS OF THE IODE  
OCEAN DATA PORTAL (SG-ODP)**

The IOC Committee on International Oceanographic Data and Information Exchange,

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

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

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

**The ODP global node (IOC Project Office for IODE) shall:**

- Coordinate the IODE distributed data system including the monitoring of performance, system statistics and reporting;
- Manage consolidated metadata catalogues (nodes, data and services, user metadata) by accumulating metadata from associated data providers (national nodes) and synchronizing of this metadata with other nodes;
- Manage and disseminate among other nodes the common controlled dictionaries, basic electronic maps and other cross-system data and metadata;
- Provide the user access to data and services submitted by all ODP nodes. If required, it redirects users to the portal of other nodes;

**The ODP regional/specialize nodes (ODINs centres, centers of other IOC/IODE programmes and projects) shall:**

- Coordinate the IODE distributed data system including associated data providers of its area of responsibility;
- Manage the metadata catalogues of its area of responsibility and synchronize this metadata with other nodes;
- Provide access to the IODE distributed data system of its area of responsibility and redirects users to the portal of other nodes, if required.

**The ODP national (data provider) node shall:**

- Submit metadata and data sets to IODE distributed data system for shared use.
- Undergo an accreditation procedure, based upon the IODE Quality Management Framework.
- Be reviewed periodically by the IODE Steering Group for the IODE Ocean Data Portal and the IODE Steering Group for the Quality Management Framework



**DRAFT RECOMMENDATION IODE-XXII.[5.2.3.3]**

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

The IOC Committee on International Oceanographic Data and Information Exchange,

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

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

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

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

The Partnership Centre for the IODE Ocean Data Portal shall contribute to the **planning and coordination** of the IODE Ocean Data Portal by:

- Maintaining and developing the IODE ODP specifications and tools, and coordinating the use of the IODE ODP technology for the distributed marine data system based upon the IODE data network and data sources from other IOC programmes, including JCOMM;
- Creating, in cooperation with the IOC Project Office for IODE, an enabling environment, and assisting in strengthening the capacity of the IODE ODP nodes to manage marine data and products, and to provide the IODE ODP resources and services required by users;
- Assisting with the coordination and monitoring of the implementation of the IODE ODP work plan as adopted by the IODE Committee.

The Partnership Centre for the IODE Ocean Data Portal shall contribute to the **development and implementation** of the IODE Ocean Data Portal by:

- Developing, hosting and maintaining the tools and specifications of the IODE ODP for the portal and IODE data system operation;
- Assisting IODE's ODINs, NODCs and other IODE ODP nodes to achieve their regional and thematic objectives;
- Monitoring and reporting on the IODE ODP portal tools and specifications used by the IODE ODP nodes;
- Providing an infrastructure to develop and test the web-based technologies and tools and also to generate new ideas and perspectives of the IODE ODP

**Training and Promotion:**

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

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

**Additional information is provided in Annex I**

**5.2.4 Data Citation/Data Publishing (SCOR/IODE)**

- 16 *This agenda will be introduced by Ms Cyndy Chandler referring to IOC Workshop Report No. 252 (SCOR/IODE/MBLWHOI Library Workshop on Data Publication, 5th Session, Woods Hole Oceanographic Institution, Woods Hole, USA, 9-10 October 2012) and IOC/IODE-MIM-XII/3 (IODE Group of Experts on Marine Information Management (GE-MIM), Twelfth Session, Miami, USA, 22-25 January 2013).*
- 17 *She will explain that the Marine Biological Laboratory/Woods Hole Oceanographic Institution (MBLWHOI) Library, the Scientific Committee on Oceanic Research (SCOR) and the IODE have assembled a team of librarians, data managers and scientists who are collaborating to identify best practices for tracking data provenance and clearly attributing credit to data collectors/providers.*
- 18 *One successful outcome of this collaborative effort includes tools and procedures developed by the Marine Biological Laboratory/Woods Hole Oceanographic Institution (MBLWHOI) Library and the Biological and Chemical Oceanography Data Management Office (BCO-DMO) that automate the ingestion of metadata from BCO-DMO for deposit with a copy of each data set into the Institutional Repository (IR) Woods Hole Open Access Server (WHOAS). The system also incorporates functionality for BCO-DMO to request a Digital Object Identifier (DOI) from the Library. This partnership allows the Library to work with a trusted data repository to ensure high quality data while the data repository utilizes library services and is assured that a permanent archived copy of the data is associated with the persistent DOI.*
- 19 *The assignment of persistent identifiers enables accurate data citation. The Library can assign a DOI to appropriate datasets deposited in WHOAS. We are particularly interested in working with authors to deposit datasets associated with published articles. The DOI would ideally be assigned before submission and be included in the published paper so readers can link directly to the data set, but DOIs are also being assigned to datasets that support papers that have already been published. WHOAS metadata records link the article to the data sets and the data sets to the article.*
- 20 *Because of the assignment of DOIs, Elsevier Publishing sought collaboration with the Library. Article records in Science Direct now contain links to datasets deposited in WHOAS that are associated with Elsevier articles.*
- 21 *The Published Data Library (PDL) is a project of the British Oceanographic Data Centre that provides snapshots of specially chosen datasets that are archived using rigorous version management. The publication process exposes a fixed copy of an object and then manages that copy in such a way that it may be located and referred to over an indefinite period of time. Using metadata standards adopted across NERC's Environmental Data Centres, the repository assigns DOIs to appropriate datasets. Current deposits include several datasets from water sample measurements.*
- 22 *SCOR, IODE, and the MBLWHOI Library have established a framework for data publication that encourages proper data citation. This framework is being shared and adopted within the marine science community. A draft version of a "Cookbook" detailing procedures to establish a repository and item level versioning for the MBLWHOI Library DSpace repository will be introduced at the Session and proposed for publication in the IOC Manuals and Guides series. The work plan for 2013 includes a few more technical developments but more importantly, promotion of deployment of the use cases in target communities. In this regard the 2012 Workshop had recommended that OceanTeacher should include a lecture on data publication, and that data publication should be promoted at a*

number of conferences.

23 SCOR informed the IODE Secretariat (email) that US\$ 8000 would be available in 2013 to continue this joint initiative.

24 Associated websites:

<http://www.iode.org/datapublishing>

[http://www.bodc.ac.uk/data/published\\_data\\_library/](http://www.bodc.ac.uk/data/published_data_library/)

<https://darchive.mblwhoilibrary.org/>

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

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

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

26 This agenda will be introduced by Dr Hernan Garcia, referring to Document IOC/IODE-XXII/15 (Report on the IODE Projects: GODAR/WOD).

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

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

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

### **5.2.6 Global Temperature and Salinity Profile Programme (GTSP)**

30 This agenda item will be introduced by Mr Loic Petit de la Villéon on behalf of Dr Charles Sun, GTSP Chair, referring to Document IOC/IODE-XXII/15 (Reports of IODE Projects: Report on the Global Temperature and Salinity Profile Programme).

31 Mr Petit de la Villéon will inform the committee that continued to deal in greater volumes of data over past two year period. The number of real-time data handled was

4,541,361 covering the period of 2011 – 2012, an increase of about 77% from the period of 2009 – 2010; while the number of delayed-mode data added to the archive increased about 48% to 111,004 by the end of 2012. He then reported that the GTSPP continued to improve its capabilities of serving the GTSPP data for operations and climate research. The number of bytes transferred covering the period for 2011 and 2012 were 3.09 TB.

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

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

34           Mr Petit de la Villéon will recall that the decision for the former joint IOC/IODE and WMO-IOC (IGOSS) GTSPP Programme to become part of JCOMM was made at JCOMM-I in 2001. As such the Steering Group is now called the joint IODE-JCOMM Steering Group for the GTSPP (SG-GTSPP). The revised terms of reference and composition of the SG-GTSPP are described in Annex II.

35           The First Session of the Joint IODE-JCOMM Steering Group for the GTSPP was held at the IODE project office for IODE in Oostende, Belgium, 16 – 20 April 2011. The objectives of the meeting were to: (i) review GTSPP data flow and operations; (ii) report on the status of the XBT BAHY to BUFR migration; (iii) revive the GTSPP infrastructure, the terms of reference and composition of the Steering Group of GTSPP; (v) develop a strategic frame work of the next generation of the GTSPP netCDF format revision; (v) report on interaction with other projects; and (vi) adopt the work plan for 2012–2013. Report of the First Session of the Joint IODE-JCOMM Steering Group for the GTSPP is available at the GTSPP's Web site at [http://www.nodc.noaa.gov/GTSPP/document/reports/SG-GTSPP-I\\_3.pdf](http://www.nodc.noaa.gov/GTSPP/document/reports/SG-GTSPP-I_3.pdf). The agenda of the meeting is attached in Annex III.

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

37           Dr Petot de la Villéon will further inform the committee that the U.S. National Oceanographic Data Center (NODC) currently supports two separate profile database systems: the World Ocean Database (WOD), which manages research-quality historic data using a custom data file system; and the Continuously Managed Database (CMD) of the GTSPP, which manages real-time data, and matches it to higher quality "delayed-mode" data to create a "Best Copy" product using the commercial Oracle RDBMS. While making plans for the future and preparing to operate with fewer resources, the US NODC has been examining options for how they can continue to participate in the GTSPP and has identified a proposed way forward to more efficiently manage GTSPP data that leverages NODC's recent technological advances in core IT infrastructure that provided enhanced data access services. The US NODC has been developing a single Integrated Ocean Profile System (IOPS) using an open-source RDBMS (i.e., PostGreSQL), which will incorporate both of these data sets to

*serve the data management needs of the two individual programs, while also achieving better integration and mutual support. It is anticipated that the advantages of this integration will include better ability to support and manage both systems, the elimination of redundant processing of incoming data by consolidating the processing of all “delayed-mode” data into the WOD system, and improvement of the function of the GTSPP continuously managed database by making both the GTSPP real-time and the complete WOD delayed-mode data sets available within a single system. It is expected that the new Integrated Ocean Profile System will improve efficiency while also enhancing the quality of the profile data products of both programs.*

38 *An ad hoc GTSPP consultation meeting was held from 5 – 9 November 2012 in Tianjin, China. The purpose of the meeting was to discuss on the future engagement of the National Marine Data and Information Service (NMDIS) of the State Oceanic Administration (SOA) of China in the GTSPP. Dr. Suixiang Shi, Deputy Director-General, NMDIS, opened the meeting and welcomed Dr. Charles Sun, GTSPP Chair, to visit NMDIS. Dr. Shi further expressed NMDIS' support for GTSPP and wishes to explore the approach that would, ultimately, prompt NMDIS to become a member of the newly re-assembled GTSPP Steering Group (SG). At the end of the meeting, Dr. Shi, on behalf of the NMDIS' senior management, agreed to allocate resources to implement a pilot project to demonstrate its capability of performing the role as a GTSPP Global Data Products Center to produce monthly/seasonal optimal estimates of 3-D, global ocean temperature and salinity fields and provide facilities and funds for implementing training courses on the use of GTSPP data at NMDIS. He expressed that NMDIS supports the idea of conducting the GTSPP training course in Tianjin and agreed that the training can be conducted in conjunction with the existing capacity building framework of ODINWESTPAC (Ocean Data and Information Network for the Western Pacific Region) and IOI (International Ocean Institute), which NMDIS is one of the IOI operation centers.*

39 *Mr Petit de la Villéon will inform the committee that GTSPP is expected to continue its operation during the next inter sessional period, 2013 - 3014. The tasks listed for completion in 2013 may spill into 2014 depending on competing work pressures. Tasks listed as ongoing are activities that are expected to continue into the future.*

Task No.	Action item description	To be implemented by	Deadline date	Requested from UNESCO RP
2013				
1	<i>Continue to acquire profiles and make real- time &amp; delayed mode profile data available.</i>	<i>GTSPP Steering Group</i>	<i>continuing</i>	<i>None</i>
2	<i>Submit the Cyclic redundancy check (CRC) calculation document to the JCOMM/IODE Ocean Data Standard Pilot Project for consideration of publishing in the IOC Manuals and Guides series as a best practice in real-time and delayed mode duplicates identification process</i>	<i>US NODC</i>	<i>June 2013</i>	<i>None</i>
3	<i>Complete the GTSPP training material for use in the IODE training/outreach programs</i>	<i>US NODC</i>	<i>September 2013</i>	<i>None</i>
4	<i>Conduct the performance review of the prototype GTSPP Global Data Product Center</i>	<i>GTSPP Data Experts</i>	<i>October 2013</i>	<i>None</i>
5	<i>conduct the first GTSPP training course in conjunction with the existing capacity building framework of ODINWESTPAC and IOI in Tianjin</i>	<i>GTSPP Data Experts, NMDIS</i>	<i>October 2013</i>	<i>None</i>

6	<i>Update the GTSP data user guide manual</i>	<i>US NODC</i>	<i>December 2013</i>	<i>None</i>
<i>2014</i>				
1	<i>Continue to acquire profiles and make real-time &amp; delayed mode profile data available.</i>	<i>GTSP Steering Group</i>	<i>continuing</i>	<i>None</i>
2	<i>Complete the development of the Integrated Ocean Profile System</i>	<i>US NODC</i>	<i>March 2014</i>	<i>None</i>
3	<i>Convene a three-day GTSP bi-annual meeting at the IODE Project Office</i>	<i>GTSP Steering Group</i>	<i>April/May 2014</i>	<i>USD20,000.00</i>
4	<i>Conduct a training course on using the GTSP data in Oostende</i>	<i>US NODC</i>	<i>October 2014</i>	<i>USD10,000.00</i>

## **DRAFT RECOMMENDATION IODE-XXII.[5.2.6]**

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

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

#### **Terms of Reference**

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

#### ***General Membership***

- One representative from each of the core participating countries (initially Australia, Canada, France, Japan, and USA) as identified by the countries. The core participating countries are the IOC Member States and WMO Members actively engaged in data and information exchanges with the long term archive centre of GTSP.
- Experts from one or more Member / Member States of other programs/projects that are of relevance to GTSP may accompany these representatives.
- Representatives invited by the SG from Member States of the IODE and JCOMM and representatives of oceanographic projects those are important to GTSP operations.
- The Chair will be selected by the Steering Group and will be reviewed by them every two sessions.
- Funding for participants and sessions of the SG will be provided by Members or Member States.

### 5.2.7 Global Ocean Surface Underway Data Pilot Project (GOSUD)

40 This agenda item will be introduced by Mr Loic Petit de la Villéon, GOSUD Chair, referring to Document **IOC/IODE-XXII/15 (Reports of IODE Projects: Report on the GOSUD Project)**.

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

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

43 Mr Petit de la Villéon will then briefly report on the work carried out by the Project during the inter-sessional period: (i) a new NetCDF format (version V3.) has been adapted from the 2 previous versions but this has not yet been implemented at the GDAC level. It enables to contain in a single file both data in near real-time and delayed mode, meta data (depth of intake, serial numbers of the instruments, calibration coefficients,...) and ancillary data (data used to process the delayed mode data set, e.g. Argo collocated data, water sample analysis,...); (ii) France has produced a delayed mode data set that will be made available on the web site in April 2013; (iii) the GOSUD TSG data are distributed through the GDAC (Coriolis, France) (<http://www.gosud.org/Data-delivery/FTP-access>) and through the backup facilities provided by US-NODC (<ftp://ftp.nodc.noaa.gov/pub/data.nodc/iode/gosud/>; <http://data.nodc.noaa.gov/opendap/iode/gosud/>; and <http://data.nodc.noaa.gov/iode/gosud/>). Real-time data are distributed through a ftp site which is updated on a daily basis. The files do not hold delayed mode data. Near real-time data are distributed through a ftp site which is updated every month. The files do not contain any delayed mode data. This has been developed to fulfil the SMOS satellite data needs for validation. Delayed mode data are distributed through a ftp site which is updated each time the data from one cruise have been processed. Those files must be considered as the reference data set and of the highest quality. Those delayed mode data sets are processed using the software CVTSG developed by IRD, France; (iv) the GOSUD web site (<http://www.gosud.org>) has been upgraded with content migrated to a content management system application which will allow partners to directly update the web site.

44 Mr Petit de la Villéon will then briefly introduce the work plan for the next inter sessional period: (i) the progress and weaknesses of the Project must be identified (2013); (ii) contributors to GOSUD must be fully identified (June 2013); (iii) evaluate the quality of the



entire GOSUD data set (September 2013); (iv) development of delayed mode data sets: contact data providers and propose the development (June 2013); (v) reinforce the role of science centre (As a software, that enables to QC data and to process a delayed mode dataset, is available, it becomes easier to have a common approach on data processing and data control. Using common tools and procedures and taking into account the local or regional expertise of the partners, it is suitable to re-start the data centre activities. The objective should be that no GOSUD dataset should be distributed without a minimum of scientific expertise); and (vi) organize a joint GTSP/GOSUD workshop in April 2014 (at the IOC Project Office for IODE, Oostende).

**Additional information is provided in Annex II**

**5.2.8 OceanDocs, Aquatic Commons and OpenScienceDirectory**

45 This agenda item will be introduced by Ms Linda Pikula, GE-MIM Chair, referring to Document IOC/IODE-XXII/15 (Reports of IODE Projects: Report on OceanDocs, Aquatic Commons and OpenScienceDirectory).

46 Regarding OceanDocs, Ms Pikula will recall that OceanDocs started in 2004 as a project in the framework of OdinAfrica. In 2007 the OdinPubAfrica repository became OceanDocs, a repository for the IODE-related communities. Future projects such as the new AFRILIB (AgriOceanDSpace) will be a federated catalogue of ODINAFRICA, and will use OAI-compatible software, including AgriOcean Dspace, making it possible to exchange metadata between the local ODINAFRICA partners, the AFRILIB catalogue and the OceanDocs repository. At present students of Hasselt University, are working on an alternative submission module and on a thesaurus plug-in for future DSpace versions (or other repository software). There is also a Windows-based version of AgriOcean DSpace, which is specifically created for small marine science libraries in developing regions of the world. She will report that as on 26<sup>th</sup> Dec 2012, OceanDocs (OD) contains 3973 items.

47 Ms Pikula will further recall that the IODE Steering Group was established through Recommendation IODE-XXI.6. The first meeting of the SG-OceanDocs had taken place in Oostende, 24-27 January 2012. Mr Marc Goovaerts (Belgium) had been elected Chair of the Group. The Committee will be informed that Mr Marc Goovaerts had decided to step down as Chair of the Group and technical manager of OceanDocs, due to other commitments and responsibilities.

48 The GE-MIM, at its 12<sup>th</sup> Session, had therefore recommended that Mr Kakodkar (IOC project Office for IODE) should take over the technical management of OceanDocs immediately. The GE-MIM had also noted with regret the decline in entries in 2011-2012.

49 A virtual meeting (ad hoc) of the Steering group was held in February 2013. At that occasion [.....] was elected as new Chair of the Steering Group.

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

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

52 As on 26<sup>th</sup> Dec 2012, Aquatic Commons (AQ) contained 8584 items. Total number of download in the past year was 208787, with highest number of downloads from USA (41520) and least from Denmark (328). Aquatic Commons runs on Eprints 3.2.9.

### 5.2.9 OceanExpert

53 This agenda item will be introduced by Ms Linda Pikula, G-MIM Chair, referring to **Document IOC/IODE-XXII/15 (Reports of IODE Projects: Report on OceanExpert)**.

54 Ms Pikula will report that on 26<sup>th</sup> Dec 2012, the OceanExpert (OE) database contained 13246 individual records from 6070 institutions, with ODINWESTPAC representing 3662 individuals, ODINCARSA with 1151, ODINAFRICA with 896, ODINCINDIO with 666, ODINECET with 270, ODINBLACKSEA with 248, and ODINPI with 75. Google analytics is used to gather statistics for OE since February 2011. As on 25<sup>th</sup> Dec 2012, OE has 77,344 (unique visitors: 64,726) with 266,326 page views and 16.49% returning visitors. Maximum visits (18.01%) were from USA. It will be recalled that OceanExpert provides the expert related information to most of the IOC dynamic web sites.

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

56 Micro-tags have already been inserted in the OceanExpert template. This is to allow machines to read these micro-tags and index information easily. These tags are called rich-snippets. To simplify accessing accurate information an schema.org was created. Wherein certain tags are created for each resource type and machines could read these micro-tags and index information easily. These tags are called rich-snippets. To create a solution to this issue, we have created sitemaps for all the records of OceanExpert people. We crawl these sitemaps using Any23, for the rich snippets we inserted in OceanExpert and retrieve individual names in the rdfxml format . The names are then indexed using ASKOSI (<http://askosi.org/>). This is also stored in a triple store called Sesame. The names are then indexed using ASKOSI. This is also stored in a triple store called Sesame. In the future if authors change or abbreviate their name or change part of their name or write it in a different script, it can be added to ASKOSI so that concepts matching new names can be added to authors original name.

57 **The Committee welcomed** the development of advanced functionality in OceanExpert. **The Committee called on** the ODINs to ensure that all national experts are included in OceanExpert and that records are updated annually.

### 5.2.10 IODE International Coastal Atlas Network (IODE/ICAN)

58 This agenda item will be introduced by Prof. Dawn Wright referring to **Document IOC/IODE-XXII/25 (The IODE International Coastal Atlas Network Project (ICAN))**. As one of the founders of the Network she will provide the background to the International Coastal Atlas Network (ICAN) initiative and pilot project and the proposal to adopt this as a formal IODE Project.

59 She will recall that ICAN began as a coastal atlas workshop held in 2006 at University College Cork, Cork, Ireland – Coastal and Marine Research Centre (CMRC), which was then repeated with a trans-Atlantic workshop in 2007 at Oregon State University, Corvallis, OR, USA. The members of this all-volunteer initiative then proceeded to fund

*their coastal and marine atlas development activities via international meetings in July 2008 in Copenhagen, DK, hosted by the European Environment Agency; November 2009 at UNESCO's International Centre for Theoretical Physics (ICTP), Trieste, Italy; and 2011 at the IOC Project Office for IODE in Oostende, Belgium. To date, all activities have been self-funded. The work of ICAN directly benefits both the African Marine Atlas (AMA) and Caribbean Marine Atlas (CMA) projects, and both of these were represented in the ICAN Pilot Project. The network now has more than 50 member organisations from over 14 different countries.*

- 60 *Prof. Wright will then recall that the proposal to merge the ICAN initiative into an IODE Pilot Project was approved by the IODE Officers in January 2012.*
- 61 *Prof. Wright will further inform the Committee that, if approved, the first Session of the SG-ICAN of the new IODE/ICAN would be held in Victoria, British Columbia, Canada, in June 2013, which would then also be the 6<sup>th</sup> ICAN meeting.*

**DRAFT RECOMMENDATION IODE-XXII.[5.2.10]**

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

The IOC Committee on International Oceanographic Data and Information Exchange,

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

**Noting with appreciation** that ICAN has already influenced, guided and informed users on development and use of coastal and marine web atlases, through periodic workshops and international conferences held in 2006, 2007, 2008, 2009, and 2011,

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

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

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

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

Financial implications

2013 US\$ 10,000 (SG-ICAN-I)

2014 US\$ 10,000 (SG-ICAN-II)

2015 US\$ 10,000 (SG-ICAN-III)

## **Annex A to Recommendation IODE-XXII-[5.2.10]**

### **Terms of Reference of the IODE International Coastal Atlas Network (IODE/ICAN) Project**

#### Objectives of the Project

The strategic goal of the IODE International Coastal Atlas Network Project is to encourage and help facilitate the development of digital atlases of the global coast, based on the principle of distributed, high-quality data and information, at local, regional, national or international scale. This will be achieved by sharing knowledge and experience among atlas developers in order to find common solutions for coastal and marine web atlas development while ensuring maximum relevance and added value for users. Many of these atlases will play an important role in informing national and regional decision- and policy-making across several themes, including:

- Marine spatial planning
- Climate change impacts, coastal vulnerability
- Coastal governance (boundaries, protected areas, etc.)
- Coastal conservation and protected areas management
- Coastal hazards monitoring and planning
- Coastal disaster management and mitigation
- Population pressures
- Resource availability and extraction

#### The Participants in the Project

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

## **Annex B to Recommendation IODE-XXII-25**

### **Terms of Reference of the IODE Steering Group for the IODE International Coastal Atlas Network (IODE/ICAN) Project**

#### Objectives

The SG-ICAN shall:

- (i) Advise the IODE Committee on the global vision, mission, policy and strategy, including partnerships of the IODE/ICAN project with IOC and other projects/organizations;
- (ii) Advise the IODE Committee on IODE/ICAN's strategy for its sustainability and further development including resource mobilization;
- (iii) Assist with the preparation and implementation of work plans, and review progress;

#### Membership

The Project will be managed by an IODE Steering Group for IODE ICAN (SG-ICAN), initially composed of members of the former ICAN Steering Group and Management Working Group, the project coordinators of the Caribbean Marine Atlas and African Marine Atlas, as well as representatives from other regions, as listed in Annex A-1.

Members for the initial SG-ICAN have all been approached and accepted appointment to the SG. The first meeting of the full SG-ICAN will be held in Victoria, British Columbia, Canada, in June 2013, at the ICAN-6 meeting.

# ANNEX I: IODE OCEAN DATA PORTAL – DISCUSSION DOCUMENT

## 1. REPORT ON ACTIVITIES CARRIED OUT DURING THE INTER-SESSIONAL PERIOD

Ocean Data Portal V2 technical specification whitepaper has been prepared and presented on SG-ODP-I (February, 2012) for the wider review and comments. This document is structured in terms of the Reference Model for Open Distributed Processing (RM-ODP, ISO/IEC 10746) defining the overall conceptual framework for building the distributed data/processing systems.

Within the work on expansion of data providers providing data into ODP following results were achieved during 2011-2012 (listed by countries and/or projects): USA (US NODC): new GTSP data according inventory update (for 2011 and 2012); Canada (ISDM): Surface drifters data submitted; EU: Argo data (IFREMER) data provided from GDAC FTP via IODE PO Light Data Provider; ODINBlackSea: MHI – drifter profile data has been submitted. Following data providers were connected to ODP by installation of Data Provider software: MIRC (Japan), Met Office (UK). Because of the migration of the technology into ODP V2 the connection of new data providers using V1 components has been suspended in 2012. In total, ODP is providing access to 100 datasets from 10 NODC/DNA with over 1 000 000 profiles.

ODP V2 has been developed in the end of 2011, tested and deployed for evaluation in the mid of 2012. ODP V2 components are developed mainly using open source and free software. Since the ODP V2 is running on the servers of NODC of Russia following transfer of all components to the IOC Project Office for IODE will be started. NODC of Russia will continue to handle mirroring function. Functional tasks, implemented by ODP V2 presented below:

*Task 1.* Collection, download metadata/data/services (further, resources) and their integration:

- registration of the resources by participating data centres for exchange;
- download and maintenance of metadata, data and services from local data sources and (or) with prescribed data sources network and making them available for distribution;

*Task 2.* Provide a single security policy:

- ODP user registration, maintenance of user account information, assigning user roles to authorize access to resources;
- implementation of single sign-on (SSO) of users on distributed ODP nodes;
- Synchronization metadata about users, maintaining a consolidated user catalogue.

*Task 3.* Metadata management

- forming and supporting relevant sets of metadata categories:
  - Catalogue of ODP nodes and components in nodes;
  - Catalogue resources for search, access and retrieval of data/services from distributed and heterogeneous data sources;
  - Catalogue of resources for search, access and retrieval of data/services from distributed and heterogeneous data sources;
  - Catalogue of resource dissimulation for implementation of the accessing mechanism on a subscription basis;
  - Catalogue of users.

- implementing interfaces for metadata with external systems to access and retrieve data and services;
- synchronization metadata of ODP nodes and metadata consolidation, providing metadata storage and recovery;

*Task 4. Data management*

- dissemination of data and services on a subscription basis ("push") to authorized (internal and external) users (end-users or systems) under the Catalogue of resource dissimilation and specified conditions (resource content, the point of delivery, method etc.);
- access to data and services on request ("pull") authorized (internal and external) users through Catalogue of resources and on-line specified criteria (subject, geography, time, data source, etc.);
- "caching" of the prescribed data to accelerate the access ability to resources, their storage and recovery in emergency conditions.

*Task 5. System management:*

- administration of processes of the data and service exchange
- monitoring the work of the ODP nodes and components in nodes;
- providing reporting on the status and performance of the system.

Providing the management of data and services:

- disciplines: oceanography, marine meteo and other categories in context ODP requirements;
  - data format: alphabetic-numeric data, images and documents, spatial data.
  - processing level: observation data, climate data, analysis and forecast data;
  - temporal level: real-time and near real-time (up to 7 days from the observations), historical data (more than 7 days after the observations).
  - data access policy: public data, confidential data.
  - data source types: data files, DBMS, web- and geo-services. The system has a means of understanding the "tabular" data file formats by setting their structure;
- The ODP technology can be used to build the national distributed data system of IOC Member State by means of establishing the ODP-based national oceanographic data and information system as it was considered earlier.

In this context, a unified system is a set of interacting components. Component consists of a set of tools: telecommunication equipment (routers, connectors, firewalls, etc.); computing equipment (servers, workstations); software - operating system software, environment of operation (the application server, web-server, etc.), specialized software; information resources (databases and metadata). Each component fulfils certain services grouped by following layers: interface layer (data exchange with data sources and other components); business logic layer (data conversion, metadata generation, etc.); presentation layer - a visual (tabular, graphical and cartographic) representation of information in graphical interfaces for ODP end users.

ODP V2 enterprise architecture is presented on figure 1.

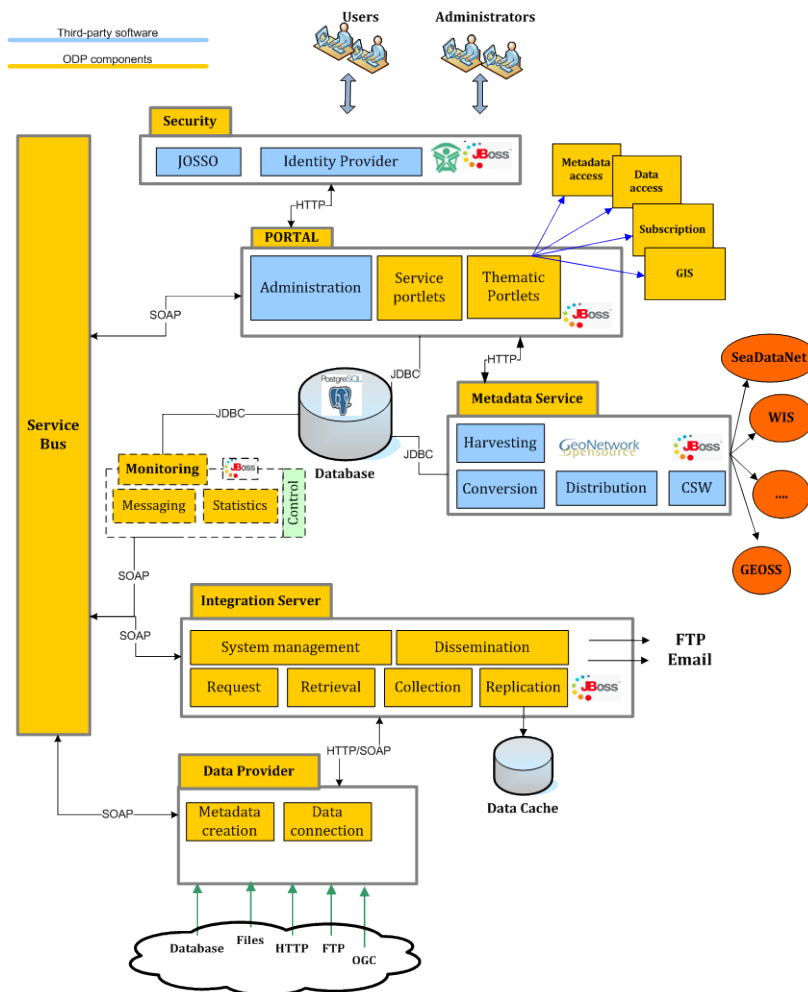


Figure 1 – ODP V2 enterprise architecture

During the 2012 the ODP V2 toolkit has been completed. It will be distributed as a set of snapshots of virtual machines. Installations from the “scratch” can be also handled. ODP V2 toolkit is a complete set of components used for “plug and play” of the ODP node. Specific composition of the ODP V2 components is building ODP node. Below the list of components is presented grouped by functions:

*Functions: Integration, exchange and delivery*

- Data Provider;

Data contribution tool for ODP metadata creation and data connection from databases, data files, HTTP, FTP, OGC web services;

- Integration Server;

*Functions: Metadata harvesting, data providers control, data delivery and distribution*

- Data Cache;

24h data cache for all data in the distributed system. Update using notification scheme from the data provider through the Integration Server.

*Functions: Processing, analysis and presentation of information for decision-making*

- Portal – portal core environment and administration tools;

Data portal generally is a single point of access to the data and services of distributed data system. The ODP web portal server contains a number of services and solutions to search and discover data/services, provide data visualization, news and other relevant information to the user community. Portal also provides administrative functions for

data/service providers and users through the user (end-users, external systems) catalogue and their account information.

- Thematic portlets – metadata search & browse, data access, news, display of operational alerts, , GIS viewer, etc;

*Functions: Control and management of the system*

- Service Bus – dispatching of the component interaction, service registry and audit;

It also allows composition of basic and composite services using OASIS Business Process Execution Language – BPEL2, typically from multiple service providers. The orchestration engine is the service used to execute the resulting composite services.

- Security - authorization, authentication and accounting (AAA) of users;

User registration and management of their account records, identification and checking of a user's role, presentation of information on the user through access to registration repository.

- *Monitoring* - monitoring of computational and telecommunication resources;

- *Statistics* – reporting and analytics on system.

Adjustment of the services execution, access to the information on the data/service's status on time scheduling and regularities of their use, ODP statistics, the logging information, measurement of an overall performance of services, etc.

Metadata is broadcasted to all ODP nodes so that users have sufficient information about the new and existing data sources no matter of their physical location. ODP V2 metadata is fully ISO 19139 based for external exchange and share.

Hardware requirements are specified for each type of node (national, regional/specialized and global). Annex A contains details on organizational structure of ODP V2.

Training programme for establishing ODP nodes using ODP V2 has been developed. Training materials have to be completed by 2<sup>nd</sup> quarter of 2013. Training materials will be published into the Ocean Teacher Academy for public access.

Proposals were made for the strategic plan of the IOC IODE related to the expansion of the use of ODP.

Argentina national data system will be based on the ODP technology contributing into the IODE Ocean Data Portal. Future data providers will be presented by the Ministry's Information Systems Department and from other centres that produce sea data such as the National Research Institute on Fishery (INIDEP), the Argentinean Antarctic Institute, and some Research Institutes and Universities with oceanographic research activity. The first Argentinean Data Provider in Patagonia (CENPAT) has been established. ODP technical team will provide all required assistance and guidance in this process. Business plan for 2013-2014 has been received from MINCyT and presented in Annex B.

ODP V2 includes interoperability packages to establish system to system communication based on metadata and data exchange. In the beginning of 2012 required testes has been accomplished to contribute to the EuroGEOSS Brokering Service. ODP CSW service is available for access and metadata harvesting. Collaboration scenario has been agreed with SeaDataNet in September of 2012. ODP stays an external DCPC within the WIS system.

Having strong governance from the ETDMP and SG-ODP project will be following targeted aims and improving the technology by the Partnership Centre for the IODE Ocean Data Portal.



In 2011 the National Oceanographic Committee of the Russian Federation adopted the decision to offer the establishment and hosting of the IOC Support Centre for IODE/ODP at RIHMI-WDC/NODC of Russia (Obninsk).

The objectives are:

- To maintain and develop the IODE ODP specifications and tools, coordinate the use of the IODE ODP technology for the distributed marine data system basing on the IODE data network, data sources from other IOC programmes, including JCOMM;
- To create, in cooperation with the IOC Project Office for IODE an enabling environment, and assist in strengthening the capacity of the IODE ODP nodes to manage marine data and products, and to provide the IODE ODP resources and services required by users;
- To assist with the coordination and monitoring of the implementation of the IODE ODP work plan as adopted by the IODE Committee.

Responsibilities of the Partnership Centre:

- Develop, host and maintain the tools and specifications of the IODE ODP for the portal and IODE data system operation;
- Assist IODE's ODINs, NODCs and other IODE ODP nodes to achieve their regional and thematic objectives;
- Develop, strengthen and maintain the IODE ODP data management training programmes and tools;
- Monitor and report on the IODE ODP portal tools and specifications used by the IODE ODP nodes;
- Provide an infrastructure to develop and test the web-based technologies and tools and also to generate new ideas and perspectives of the IODE ODP;
- Promote collaboration between relevant experts in integrated marine data management in IOC programmes and projects, other organisations and systems (e.g. OBIS, WIS, GEOSS)
- The offer includes office space, equipment and three staff positions.

The 45<sup>th</sup> Session of the Executive Council (June, 2012) accepted the offer (Decision EC-XLV/Dec.4.2.1: *“Invites the Russian Federation to consider entering into a partnership agreement with the IOC of UNESCO concerning this Centre with a view to exchanges of information and possible joint activities related to the Ocean Data Portal at RIHMI-WDC of Roshydromet in Obninsk.*) and instructed the IOC Secretariat to start negotiations with Roshydromet to conclude a formal agreement.

The IOC Secretariat prepared the draft of the Memorandum of Understanding on the “Partnership Centre for the IODE Ocean Data Portal” and submitted it for approval to Roshydromet. Roshydromet made some changes in the text of the memorandum with the Ministry of Foreign Affairs and the Ministry of Natural Resources of the Russian Federation. Updated memorandum has been sent back to the UNESCO legal department. RIHMI-WDC prepared and submitted to Roshydromet the business plan for the Partnership Centre for the IODE Ocean Data Portal, including the budget for the creation of the centre and its operation starting in 2013. The business plan for 2013 with some changes has been approved. Funding for 2013 (50 K Euro) has been arranged. The official opening of the Office is planned for mid-2013 taking into account the time required for the purchase of computer and telecommunication equipment, office preparation, and re-assigning of staff.

## **2. REVISED WORK PLAN AND TIME TABLE FOR THE CURRENT INTER-SESSIONAL PERIOD**

<b>Action</b>	<b>Task</b>	<b>Deadline</b>
1	Review the ToR for SG-ODP and Partnership centre for IODE	February 2013

	ODP	
2	Liaise and collaborate with other groups in order to establish strong links with existing regional and global initiatives	Continuous
3	Describe the profile (responsibilities, tasks and competences) of the ODP project manager, For consideration at IODE-XXII and IOC GA	December 2012
4	Monitor progress on the ODP 2012-2013 work plan and advise the SG-ODP on changes if necessary	Continuous
5	Assess the deployment of the ODP nodes with assistance of the Partnership Centre for IODE ODP	1Q 2014
6	Liaise with ODS TT on standards and best practices related topics; identify, prioritize, and assign work activities resulting from discussions	Continuous, Quarterly webex calls
7	Liaise with Metadata TT on vocabularies and metadata related topics; identify, prioritize, and assign work activities resulting from discussions	Continuous, Quarterly webex calls
8	Revise and distribute the document on interoperability and migration of the ODP metadata into the ISO 19139 encoding in coordination with ETDMP TT for Metadata	May 2013
9	Identify and network with potential new data providers (projects, programmes and other communities)	Nov 2012, and continuous
9(i)	Identify and assess the contribution of the data from SeaDataNet	Q4 2013
9(ii)	Identify and assess the contribution of the data from EuroGOOS	Q4 2013
9(iii)	Identify and assess contributions from: NMDIS, NODC of Russia, US NODC, ISDM, IMOS, OBIS and other existing data providers	Q4 2013
9(iv)	Prepare a document "Technical specification on interaction with SeaDataNet, WIS, EuroGOOS, OBIS and ESIMO". Distribute the document within IODE, JCOMM, SeaDataNet, WIS, EuroGOOS and ESIMO.	Q4 2013 - Q1 2014
10	Identify and interact with the ODP user community (feedback/bug tracking)	Continuous
11	Provide specifications for the ODP portal interface (features, functionalities, appearance, and user-friendliness – manual on how to use the portal)	December 2012
12	Revise and distribute the technical documentation on the ODP V2 toolkit components	March 2013

13	Identify and prioritize ODP training requirements	March 2013
14	Prepare “Manuals and Guides on IODE ODP”	June 2013
15	Develop documentation and guidance material for the training courses on ODP regional nodes for ODINs with assistance of the Partnership Centre for IODE ODP	End of 2013

**3. REQUESTED FUNDING FOR THE NEXT INTER-SESSIONAL PERIOD**

Action item description	To be implemented by	Deadline date	Requested from UNESCO RP	Requested from other sources
Second session of SG-ODP	2013	April 2013	10 000	
Fourth session of ETDMP	2014	April 2014	10 000	
Third session of SG-ODP	2014	2Q 2014	10 000	

**Annex A. ODP V2 Organization-functional structures**

In accordance with the existing IODE structure and taking account the IOC Strategic Plan for Data and Information Management the following schematic diagram of the ODP organization-functional model is given on Figure 2.

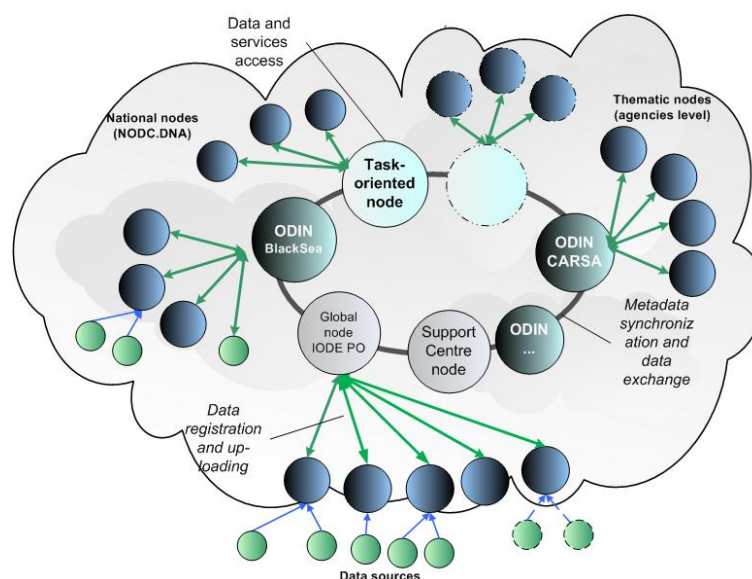


Figure 2. The vision of the IODE Data and Information System based on ODP

The IOC Member States and IODE centres participating in system implementation provide the operation of three types of ODP nodes:

- Global;
- Regional and Specialized;
- National,

*The Global ODP node* operates at the IODE Project Office and main task will be the coordination of the operation of the IODE marine distributed data and information system including the monitoring the system performance, dissemination of system statistics and reports.

The ODP technology uses the full metadata-driven approach using a series of catalogues that contain metadata describing ODP components, data and services, users

and its subscriptions, etc It is designed that catalogues will be synchronized between all ODP nodes. Global ODP centre have responsibility to consolidate and back up of synchronized catalogues of all nodes of the ODP.

As well as hosting the catalogues Global centre will manage and disseminate among other nodes the common controlled dictionaries, basic electronic maps and other cross-system data. This ODP node will provide the user access to data and services submitted by all ODP nodes and redirect to portal of other nodes if it is required;

Within the next layer encircling the Global centre are *the Regional and Specialized ODP nodes*. These nodes will provide the management regional (based on ODINs and IOC regional programmes such as regional GOOS, Tsunami, AoA) or programme specific (JCOMM operational systems and etc.) segments of IODE distributed data system.

*The National nodes* are centres represented by existing NODC/DNA as well as other specialist centres that IOC Member State may wish to have connected directly to ODP. National nodes feed data and services collected/generated in the country to a Global or Regional/Specialize nodes. They also serve as portal for national users.

There is the data provider level to realize the only submission of the data and services to relevant nodes using interoperability interfaces or ODP Data Provider component. It can be national organizations (institutes) participating in IOC programmes, or organizations (data centres) operating under non-IOC programmes including external systems such as WIS, WDS, SeaDataNet and etc.

Users communicate with the system via any ODP node portal to run data access services to search needed data/services on metadata catalogue, request data/services, visualize data and invoke service automatically sourced from any nodes/data providers, load data to user computer. User (end-user or external system) can be subscribed on the needed data from distributed data system with data delivering in given point and on given time schedule.

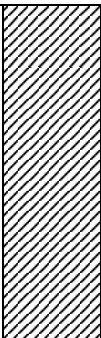


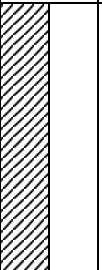

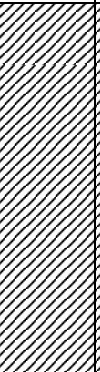
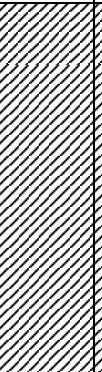


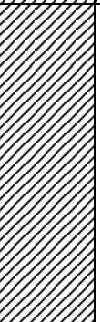

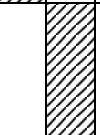
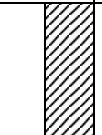

The IOC data policy will be applied and an access to all resources of ODP will be provided through the global portal and portals of other nodes.

The ODP technology can be used for building the national distributed data system of IOC Member State by means of establishing the ODP-based national oceanographic data and information system as it was considered above.

### ***Annex B. SEA DATA NATIONAL SYSTEM (Argentina)***

#### **Work Plan 2013-2015**

<b>Steps</b>	<b>Description</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Creating the National System of Sea Data (SNDM) and appointing members of the Advisory Council.</b>	Through Administrative Act (Resolution) N° 601/2010. <a href="http://www.mincyt.gov.ar/multimedia/archivo/archivos/Resolucin_de_creacin_SNDM.pdf">http://www.mincyt.gov.ar/multimedia/archivo/archivos/Resolucin_de_creacin_SNDM.pdf</a>						

<p><b>Selecting a data publishing tool</b></p>	<p>2 members of the Advisory Council were sent to Paris, France to an international meeting of Marine Sciences to know different initiatives: SeaDataNet and Ocean Data Portal IODE/NOC teams were contacted.</p>						
<p><b>Training IT staff of central and data providers' nodes - Part I.</b></p>	<p>Training from Russian National Oceanographic Data Centre (NODC) as part of the IODE program - July 2011.</p>						
<p><b>Development and production of SNDM website and online application form to join the National System.</b></p>	<p>Website: <a href="http://www.datosdelmar.mincyt.gob.ar">http://www.datosdelmar.mincyt.gob.ar</a></p>						
<p><b>Call for R+D institutions that produce and collect data from the sea .</b></p>	<p>Voluntary and permanent process of joining SNDM to all scientific institutions and universities with own data through an online form: <a href="http://www.datosdelmar.mincyt.gob.ar/adhesion.php">http://www.datosdelmar.mincyt.gob.ar/adhesion.php</a></p>						
<p><b>Implementation of the technology infrastructure.</b></p>	<ul style="list-style-type: none"> <li>- Acquisition of Hardware (2012Q2/2012Q3)</li> <li>- Software Configuration and Network environment (2012Q4)</li> <li>- Integration Server + Data Provider</li> </ul>						
<p><b>Testing</b></p>	<p>To ensure proper use of the Data Portal it is scheduled a testing stage starting in November 2012 and ending in April 2013.</p>						
<p><b>Training - Parts II,III, etc.</b></p>	<p>IODE's and local training in software component improvements, new architectural approaches</p>						

	and national standards and protocols to data providers.								
<b>Publication of data of national institutions members of SNDM</b>	The joining process has already started and the call is open all year. After being evaluated and accepted as members of the SNDM, institutions are available to post their data.								
<b>Connecting the global portal - ODP/IODE</b>	Considering terms and steps above, we think we will be ready for testing and publication at Global Portal connection around the second half of 2013.								

Our first member: the Argentinean Institute of Oceanography (IADO) with 10 groups of data containing 5,300,875 million records (Physics and Chemical data), with 60% of them already digitized and available to be posted. And expecting to evaluate this month the application form of 2 more institutions:

Institutions	Collections/Sets	Records	Digitized
National Patagonian Center (CENPAT)	4 (Biological Data)	37.973	40%
Southern Center for Scientific Research (CADIC)	7 (Biological, Physics and Chemical Data)	1.285.766	65%

Annex C. **DRAFT RECOMMENDATION IODE-XXII.[5.2.3.1]**

**REVISED Terms of Reference of the Steering Group for the IODE Ocean Data Portal (SG-ODP)**

The Steering Group shall conduct the development of the IODE Ocean Data Portal and the establishment of IODE ODP nodes.

**ACTIVITIES:**

- To develop and prioritize plans for ODP related activities;
- To provide guidance on delivery of the ODP work plan and to review the results project activities under the leadership of JCOMM/IODE ETDMP and IODE Committees;
- To develop and maintain the terms of reference for the structural elements of the IODE Ocean Data Portal (Please refer to ANNEX D).

**MEMBERSHIP:**

POSITION	MEMBERS	ROLE
CHAIR, IODE CO-CHAIR	Ariel Troisi	1. Chair of the steering group 2. Member of the core team

CO-R	Sergey Belov	3. Co-Chair of the steering group 4. Member of the core team
IODE SECRETARIAT/ PROJECT OFFICE (PO)	Peter Pissierssens	5. Secretariat and other support 6. Member of the core team
ODP PROJECT TO BE IDENTIFIED MANAGER		7. Development and maintenance of the ODP work plan 8. Member of the core team
IOC PROJECT SUPPORT CENTRE FOR THE IODE ODP	Sergey Mikhailov + 1 full time position + 3 ¼ time positions	9. Represents the team responsible for implementation and support of the ODP technology, training resources, and integration with other program infrastructure 10. Member of the core team
DATA PROVIDER REPRESENTATIVES	Various	11. Representatives from regional, national, and global nodes
PARTNER REPRESENTATIVES	Various Ward Appeltans, Albert Fischer etc. (representative from GOOS Project Office)	12. Representatives from programs such as OBIS, SeaDataNet, etc.

**REPORTING:**

The core team will meet via video conference and report on a quarterly basis.

The full team will meet in person and report on an annual basis.

**Financial implications**

2013 US\$ 10,000 (SG-ODP-II)

2014 US\$ 10,000 (SG-ODP-III)

2015 US\$ 10,000 (SG-ODP-IV)

**Annex D. DRAFT RECOMMENDATION IODE-XXII.[5.2.3.2]**

**Terms of Reference for structural elements of the Ocean Data Portal**

**PURPOSE:**

- To define the terms of reference for the structural elements of the IODE Ocean Data Portal (nodes and accreditation procedure)

**The ODP global node (IOC Project Office for IODE) shall:**

- Coordinate the IODE distributed data system including the monitoring of performance, system statistics and reporting;
- Manage consolidated metadata catalogues (nodes, data and services, user metadata) by accumulating metadata from associated data providers (national nodes) and synchronizing of this metadata with other nodes;
- Manage and disseminate among other nodes the common controlled dictionaries, basic electronic maps and other cross-system data and metadata;
- Provide the user access to data and services submitted by all ODP nodes. If required, it redirects users to the portal of other nodes;

**The ODP regional/specialize nodes (ODINs centres, centers of other IOC/IODE programmes and projects) shall:**

1. Coordinate the IODE distributed data system including associated data providers of its area of responsibility;
2. Manage the metadata catalogues of its area of responsibility and synchronize this metadata with other nodes;
3. Provide access to the IODE distributed data system of its area of responsibility and redirects users to the portal of other nodes, if required.

**The ODP national (data provider) node shall:**

- Submit metadata and data sets to IODE distributed data system for shared use.

*All IOC programme data and products shall be submitted to the ODP. In appropriate cases it shall be sufficient to notify the ODP.*

**The ODP nodes shall also:**

4. Update and maintain the ODP software components and operate them according to the interoperability specifications (without using any ODP software components);
5. Always provide up to date data and metadata.
6. Provide a plan and a list of data and products that should be submitted to IODE distributed data system.

**ODP node accreditation and evaluation**

- The accreditation mechanism and procedures shall be established to govern the process by which the ODP participants can seek formal designation. These mechanism and procedures shall be based on the IODE-QMF requirements taking account the ODP specifics.
- The ODP node accreditation shall be carried out along with NODC accreditation process under IODE-QMF and provided by SG-ODP and SGQMF.
- The capability and performance of an ODP node shall be periodically reviewed by the SG-ODP and SG-QMF.
  - If it will be found that compliance to the accreditation requirement has not been met the accreditation of the ODP node may be withdrawn.

Annex E. **DRAFT RECOMMENDATION IODE-XXII.[5.2.3.3]**

**Terms of Reference *Partnership Centre for the IODE Ocean Data Portal***

**ACTIVITIES:**

**Planning and Coordination:**

- To maintain and develop the IODE ODP specifications and tools, coordinate the use of the IODE ODP technology for the distributed marine data system basing on the IODE data network, data sources from other IOC programmes, including JCOMM;
- To create, in cooperation with the IOC Project Office for IODE an enabling environment, and assist in strengthening the capacity of the IODE ODP nodes to manage marine data and products, and to provide the IODE ODP resources and services required by users;
- To assist with the coordination and monitoring of the implementation of the IODE ODP work plan as adopted by the IODE Committee



### **Implementation and Support:**

- To develop, host and maintain the tools and specifications of the IODE ODP for the portal and IODE data system operation;
- To assist IODE's ODINs, NODCs and other IODE ODP nodes to achieve their regional and thematic objectives;
- To monitor and report on the IODE ODP portal tools and specifications used by the IODE ODP nodes;
- To provide an infrastructure to develop and test the web-based technologies and tools and also to generate new ideas and perspectives of the IODE ODP

### **Training and Promotion:**

- To develop, strengthen and maintain the IODE ODP data management training programmes and tools;
- To promote collaboration between relevant experts in integrated marine data management in IOC programmes and projects, other organisations and systems (e.g. OBIS, WIS, GEOSS)

### **REPORTING:**

The IOC Project Support Centre for the IODE ODP will report to the ETDMP on the status of project activities initiated under the team's leadership.

In addition, the IOC Project Support Centre for the IODE ODP may also report on an as required basis to the Steering Group for the IODE Ocean Data Portal (SG-ODP) through its member on the steering group.

**NOTE: It is critical that reporting from the IOC Project Support Centre for the IODE ODP remains consistent across steering groups and other governing bodies. The ODP project manager should be engaged in order to assist with consolidating status reporting into a single archive location co-located with the ODP work plan.**

*The reporting requirements are subject change based upon initiatives in which the IOC Project Support Centre for the IODE ODP is engaged.*

### **Annex F. Project manager profile for the Ocean Data Portal**

#### **Introduction**

The purpose of this document is to define the roles, responsibilities, and competencies required of the Ocean Data Portal (ODP) project manager.

#### **Background**

The ODP program is broad in scope and requires active involvement on the part of many stakeholder groups in order to be successful. The assignment of a dedicated project manager, even on a part-time basis, was identified as a necessity in order to separate ongoing technical work from the project planning and management activity. This change will improve delivery of project activities by separating work tasks from the monitoring and reporting function.

The ODP program is governed by the Steering Group for the IODE ODP (SG-ODP). The SG-ODP is responsible for establishing the ODP work plan and priorities, monitoring delivery on tasks, and reviewing the results in collaboration with other steering groups and teams as appropriate. These responsibilities will be carried out by the ODP project manager as a member of the SG-ODP.

The ODP work plan will be delivered by multiple teams and the ODP project manager will regularly not have direct control over these resources. As such, the project manager must understand the roles of the various teams (outside the SG-ODP), the governance structures they adhere to, and be able develop the working relationships required in order to deliver upon the ODP work plan through these arms-length relationships.

Finally, the ODP project manager be sufficiently engaged with the ODP user community in order to understand their needs and objectives, and to ensure the ODP program is working to serve those objectives.

### **Role of the ODP project manager**

The ODP project manager provides function support in three areas:

- Work planning and project management
- Management engagement and liaising
- User engagement

The ODP project manager must fulfill the following **planning and project management** functions:

- Develop, maintain, and report against the high level work plan for the ODP in collaboration with the teams delivering on individual work plan elements.
- Maintain ongoing contact with individual teams in order to identify and manage risks and issues which impact work plan delivery.
- Provide work planning and project management related support and advice to the teams delivering on ODP work elements as required.
- Communicate the ODP work plan and report on progress and issues to managing committees.

The ODP project manager must fulfill the following **management oversight and liaising** functions:

- Participate in stakeholder steering groups, committees, and associated functions (e.g. workshops, meetings) as the individual responsible for the ODP work plan.
- Manage and communicate requirements between client stakeholders and teams delivering on those requirements, managing scope and impacts of change in project activities, and provide advice on future opportunities to collaborate within the ODP program.

The ODP project manager must fulfill the following **user engagement** functions:

- Seek opportunities to improve user engagement and participate in engagement activities within the ODP work plan.
- Incorporate results of user engagement activities into the ODP work plan by working with IODE steering groups, expert teams, and task teams to initiate new project activities, and where necessary, re-scope current activities to achieve established goals.

### **Responsibilities of the ODP project manager**

The core responsibilities of the ODP project manager are listed below. Other ad-hoc responsibilities may arise while working with the teams delivering on the ODP work plan.

Core responsibilities related to **project management** include:

- Provide an integrated view of all major work activities related to the ODP

project.

- Identify and document high level work elements for the ODP work plan and work with ETDMP and other teams to secure commitments for delivery on these elements.
- Develop the ODP work plan in collaboration with the teams (e.g. ODP Task Team, ODP Steering Group) responsible for delivering on work elements within the ODP work plan.
- Develop the high level ODP project plan (work breakdown structure and other project artifacts which communicate the plan for delivering the elements of the work plan), establish key milestone dates, and monitor and report against the project plan based on input from the delivering teams.
- Host project planning and reporting meetings with the teams delivering on the elements of the ODP work plan.
- Provide project management and planning related support and advice as required to the teams delivering on the individual elements of the ODP work plan.
- Participate in the delivery of work plan elements based on the project plan.
- Work with teams delivering on elements of the ODP work plan to investigate and propose solutions to delivery issues and other topics of related to fulfilling the requirements of the ODP.
- Report on the status of the project to JCOMM and IODE managing committees.

Core responsibilities related to **management oversight and liaising** include:

- Participate in meetings and discussions and represent the ODP program.
- Participate in meetings and discussions as the knowledge expert on the ODP work plan, providing advice and assessing opportunities and impacts (positive and negative) associated with proposed changes to ODP work activities.
- Provide support in improving networking between steering groups, committees, and teams working towards common goals or addressing common issues.
- Provide support in improving networking between steering groups, committees, and teams within the ODP program and the user communities and complementary programs supported by the ODP program.

Core responsibilities related to **user engagement** include:

- Ensuring user engagement activities are included within the ODP work plan.
- Proposing, participating in, monitoring, and analyzing the results of user engagement activities.
- Communicating the results of user engagement activities to relevant steering groups, committees, and teams and to work with the teams to update the ODP work plan in response to the results of user engagement activities.

### **Competencies required from the ODP project manager**

The **essential** (mandatory) and **asset** (non-mandatory) competencies for the ODP project manager are listed below. It is assumed that the ODP project manager will utilize the available ODP related resources (teams, documentation, etc.) in order to become fluent in the nature and needs of the project in order to effectively manage and report on the state of the project.

### **Essential Requirements**

The following competencies are **essential** and must be met by the ODP project manager:

7. Strong written and verbal communication skills.
8. Project management experience.
9. Experience in the development, monitoring, and reporting against work plans.

10. Strong interpersonal skills.
11. Ability to lead and work within a technical project team.
12. Ability to lead and work within a management and oversight team.
13. Ability to lead and work within a user focused team.
14. Ability to elicit, manage, and communicate requirements.
15. Ability to work within a program environment built upon a complex governance structure.
16. Knowledge of the IODE steering group and technical teams relevant to the ODP program.
17. Knowledge of programs complementary to the ODP program (e.g. OBIS, SeaDataNet).
18. Basic understanding of distributed data systems such as the ODP.
19. Basic understanding of the ODP technology stack.
20. Basic understanding of web services.
21. Basic understanding of XML based technologies in the context of data and metadata delivery.

### **Asset Competencies**

The following competencies would be **assets** for the ODP project manager, but are not essential:

- Working knowledge and experience in development and use of XML technologies.
- Working knowledge and experience in web services development.
- Working knowledge of ISO metadata content standards and profiles.
- Working knowledge of OGC geospatial web services.

### **Core ODP Work Plan Elements**

The ODP is more than a suite of applications alone and the work plan must reflect all aspects of the ODP project.

The following represent the core work elements of the ODP work plan, although other elements may be added or removed depending upon the direction of the project and the needs of the user community:

#### **Work planning, project management, and project administration**

The formalized planning, management, and administration of the ODP project is critical to its success. This activity involves not only the ODP project manager, but also requires commitments from the teams defining and delivering on the elements of the ODP work plan. There are costs associated with the execution of any project, especially in a case such as the ODP where the project will be ongoing.

Key to securing the support and commitments by all required parties is ensuring the managing bodies are fully aware of the requirements and costs and that they support securing the required commitments from the various teams.

#### **ODP requirements gathering and management**

New developments in any work plan element requires a level of requirements gathering and management. The requirements gathering phase identifies the high level deliverables for the coming phase (typically planned on a yearly basis) and their relative priority. The teams delivering on the work plan element respond to the deliverables and priorities within their respective work and project plans, which are then communicated and rolled into the master plan by the ODP project manager.

### ODP technical environment

The ODP technical environment (ODP data provider and ODP portal interface) will be a permanent element within the ODP work plan. Work activities within this element would not only include new development, also maintenance and other operational tasks.

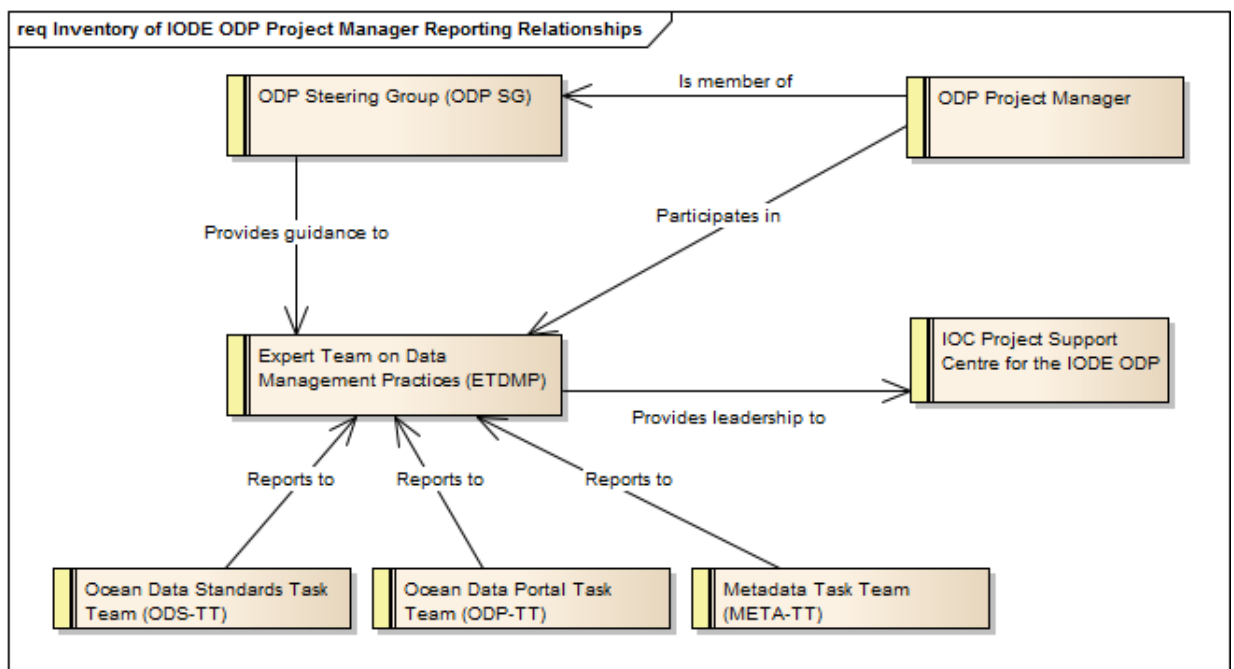
### Wiki and supporting web presence

The ODP wiki and web presence are used to communicate the state of the ODP, promote the ODP, and support the technical and non-technical stakeholder communities. A stable, up to date web presence portrays an active ODP community and commitment to the environment and project as a whole.

Typical work activities within this work plan element would include ongoing refresh and update of existing content, addition of new content in support of particular activities, and operational maintenance and support of the infrastructure hosting the wiki and web presence.

### Communications, promotion, and stakeholder engagement

Communications and the related engagement include both communicating the status of the ODP program, but to also ensure engagement of stakeholders in requirements gathering and other feedback exercises used to ensure the ODP program is supporting its key stakeholders.



### Reporting structure and relationships to core teams

Key points:

- The ODP project manager is a member of the Steering Group for the IODE Ocean Data Portal (SG-ODP), reporting, the steering group responsible for establishing and monitoring delivery of the work plan for the Ocean Data Portal program.
- The ODP project manager participates in and provides support to the IODE Expert Team on Data Management Practices (ETDMP), the team responsible for

providing leadership to the IOC Project Support Centre for the IODE ODP.

- The Ocean Data Standards Task Team (ODS-TT), Ocean Data Portal Task Team (ODP-TT), and Metadata Task Team (META-TT) are teams within the ETDMP. The task teams are responsible for developing work plans for their respective areas of responsibility and these plans contribute to the high level work plan managed by the ODP project manager.
- IOC Project Support Centre for the IODE ODP is a critical team involved in the delivery of the ODP work plan, supporting both operational management of the ODP while also delivering on elements of the detailed work plans developed by the ETDMP task teams.
- The teams delivering on ODP work plan elements (IOC Project Support Centre for the IODE ODP and ETDMP task teams) report progress, changes in their respective project plans and scheduling, and issues to ETDMP and the ODP project manager as their contributions to the ODP project reporting. The ODP project manager integrates updates from the teams into the ODP work plan, and works with the individual teams to investigate and resolve project issues as required.

## ANNEX II: GOSUD REPORT FOR 2011-2012

*During the intersessional period no GOSUD meeting has been held. The last GOSUD workshop was held in May 2010 (Oostende –Belgium) and since then the work has been done at national levels.*

*No steering committee and advisory group have been nominated for GOSUD.*

*After a 12 years of life, the question of the future of GOSUD must be raised.*

*The contribution of IODE will be of a great help to review the Project plan and adapt the Project activities to both science needs and operational needs.*

### **1. INTRODUCTION**

The Global Ocean Surface Underway data (GOSUD) Project is an Intergovernmental Oceanographic Commission (IOC) programme designed as an end to end system for data collected by ships at sea. The goal of the GOSUD Project is to develop and implement a data system for surface ocean data, to acquire and manage these data. The data concerned are those collected when a platform is underway and from the ocean surface down to about 15 m depth. All information relative to the project is available from the web site (<http://www.gosud.org>) hosted by Ifremer.

The aims of the project are to organize the surface underway data that are collected, to work with data collectors to improve practices to meet the benchmarks of spatial and temporal sampling and data accuracy set forth by GOOS. More precisely the following goals are targeted:

- Building comprehensive archives for surface underway ocean data. This encompasses data collected by any instrumentation at any time. It will contain sufficient meta-data that users will have clear information about accuracy, instrumentation, sampling, etc
- Adding value to the archives by refining and standardizing existing quality assessment procedures carried out in near real-time and in delayed mode data and documenting both
- Providing users with easy and efficient access to data and information. At any time after data collection, a user should be able to access the highest quality and the latest release. Users should be able to distinguish levels of quality in the archives. Users will be able to use the data and easily combine them with data from other sources.
- Working with data providers to improve the data acquisition systems and to return information to data collectors about the data they provide.
- Working with scientific organizations interested in surface data to provide products to a broader community.

### **2. REPORT ON ACTIVITIES CARRIED OUT DURING THE INTER-SESSIONAL PERIOD**

#### **1.1 Status of the Project**

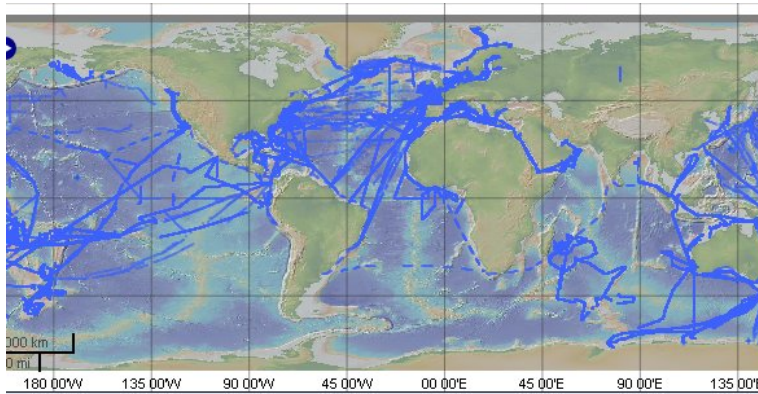
Since it began, the GOSUD partners have focused their efforts on assembling together data that have been collected by various agencies around the world. Some have been regular data contributors such as SOERE SSS –former ORE (France), NOAA (USA) and Coriolis (France). Some contributors that were used to provide data on non regular basis are now sending data on a regular basis (Belgium, Japan). Some others have been simply occasional (UK, Australia, and Germany). The contributions may be related to regular merchant ship lines (SOERE-SSS France) or to research vessel surveys (NOAA, IFREMER). Some contributions reach the GDAC –Global Data Centre- directly or may reach it by way of the GTS.

The GDAC is operated by the Coriolis data Centre (Ifremer, France). A daily back up of the data is performed by the US –NODC (Silver Spring, USA).

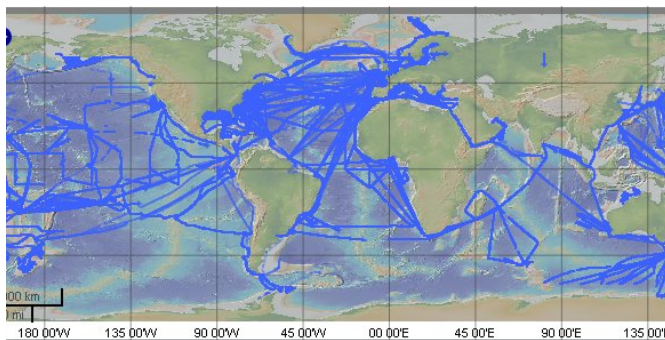
The quality of the data differs from one contributor to another. It is stated that the data that reach the GDAC through the GTS could be of a lower quality.

France began to elaborate delayed-mode datasets

### 1.1.1 Network status

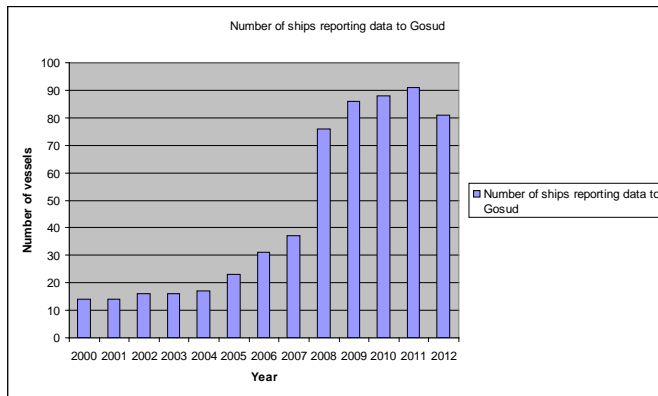


81 vessels have transmitted TSG data in 2012



91 vessels have transmitted TSG data in 2011





### Number of ships that have reported TSG data to Gosud

Until now, most of the data that have been submitted to the Project have been collected on board the research vessels and the ships of opportunity (merchant ships). The VOS-Nippon Project provides data from 2 different vessels on a regular basis. New contributors approached the Project and proposed that data could be collected on cruise or sailing ships. However, it is of the responsibility of the project to ensure that the data acquisition is done according adopted procedures

It is stated that first priority must be put on regular contributions rather than pinpoint contributions.

It is also stated that the project must focus on data from identified providers. This will allow to provide some feedback on the quality of the data and enhance it.

#### 1.1.2 Work carried out during the intersessionnal period

- During the inter-sessional period a new NetCDF format (version V3.0) has been adapted from the 2 previous versions
- It fixes up the modifications that have been carried out from V2.0
- For the moment, GOSUD V3.0 is not yet implemented at the GDAC level.
- It enables to hold in a single file both data in near real time , delayed mode data, meta data (depth of intake, serial numbers of the instruments, calibration coefficients, ...) and ancillary data (data that have been used to process the delayed mode dataset ie Argo collocated data, water samples analysis,...)
- France has produced a delayed mode dataset that will be made available on the web site (April 2013)
- The GOSUD TSG data are distributed
  - through the GDAC (Coriolis-France-)
    - <http://www.gosud.org/Data-delivery/FTP-access>
  - Through the backup facilities provided by US-NODC.
    - <ftp://ftp.nodc.noaa.gov/pub/data.nodc/iode/gosud/>
    - <http://data.nodc.noaa.gov/opendap/iode/gosud/>

- <http://data.nodc.noaa.gov/iode/gosud/>
  - Real time data are distributed through a ftp site which is updated on a daily basis. The files do not hold delayed mode data
  - Near real time are distributed through a ftp site which is updated every month. The files do not contain any delayed mode data. This has been developed to fulfill the Smos satellite data needs for validation.
  - Delayed mode data are distributed on a ftp site which is updated each time the data from one cruise have been processed. Those files must be considered as the reference data set and of the highest quality. Those delayed mode datasets are processed using the software CVTSG developed by IRD -France-
- The statistics of access to GOSUD dataset are not impressive. Action must be undertaken to highlight the GOSUD project.
- Quality control software. CVTSG is the software developed by IRD. It applies the method developed by IRD. Using the data received in near real-time or when the ship arrives in the port and with the help of the salinity samples taken with bottles or / and data collected by neighboring instruments such as Argo, it is possible to evaluate the drift of the conductivity sensor and to propose salinity values adjustments that could fit the water samples analysis results and that take into account the calibration coefficients of the instruments. This software has been developed using Matlab and is available on request to GOSUD partners.
- **Gosud information and web site.** The Gosud web site has been upgraded. The former site has been transferred to a Content Management System (CMS) which will allow identified partners to directly update the web site

### **3. PROPOSED WORK PLAN AND TIME TABLE FOR THE NEXT INTER-SESSIONAL PERIOD**

#### **In 2013, the progress and weaknesses of the project must be assessed.**

Contribution from IODE is requested to identify an advisory group and a steering committee. June 2013

**Identify the contributors.** Some of them are very well known, some others are less identified (data reaching the Project through the GTS). June 2013

#### **Evaluate the quality of the whole GOSUD data set available (September 2013).**

Help is welcome

**Delayed mode datasets.** Contact the data providers and propose them to elaborate delayed mode datasets. June 2013

**Reinforce the role of science centre.** Since a software, that enables to QC data and to process a delayed mode dataset, is available, it becomes easier to have a common approach on data processing and data control. Using common tools and procedures and

taking into account the local or regional expertises of the partners, it is suitable to re-start the data centre activities. The objective should be that no Gosud dataset should be distributed without a minimum of scientific expertise.

**Propose to have a joint GTSP / GOSUD workshop in April 2014.** Ostende-Belgium-

**3. REQUESTED FUNDING FOR THE NEXT INTER-SESSIONAL PERIOD**

No funds requested.

Host the joint GTSP / GOSUD meeting in April 2014. Ostende

**[end of document]**