JCOMM DATA MANAGEMENT PROGRAMME AREA COORDINATION GROUP (DMCG)
Second Session

Geneva, Switzerland, 10-12 October 2006

SUMMARY REPORT

JCOMM Meeting Report No. 43

WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

JCOMM DATA MANAGEMENT PROGRAMME AREA COORDINATION GROUP (DMCG)
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N O T E

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TABLE OF CONTENTS

ANNEXES

1. OPENING OF THE SESSION

1.1 WELCOME

The Meeting was opened by Mr Robert Keeley at 09:05 in the WMO Headquarters, Geneva, Switzerland on 10 October 2006. In his opening words, Mr Keeley welcomed the participants to the Second Session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) Data Management Coordination Group (DMCG). Mr Keeley then introduced Mr Edgard Cabrera, Chief of the Ocean Affairs Division of the World Meteorological Organization (WMO) Secretariat.

On behalf of the Secretary-General of the WMO, Mr Michel Jarraud, and the Executive-Secretary of the Intergovernmental Oceanographic Commission (IOC) Dr Patricio Bernal, Mr Cabrera welcomed the participants. He emphasized the importance of the DMCG's activity in the WMO and IOC efforts in various domains; for example, working towards better interoperability between the different data management systems being developed, including with the WMO Information System (WIS). The development of the JCOMM Data Management Strategy, stressing interoperability aspects, free and unrestricted data exchange, real-time distribution of the data, migration to table driven code forms and quality management is particularly welcomed in this regard. Mr Cabrera recalled the outcome from the JCOMM Management Committee (MAN) that met the previous week at the WMO, and particularly the development of the JCOMM Implementation Plan to support the JCOMM strategy document adopted by the Commission, and of the JCOMM Communication Strategy. The Management Committee undertook a detailed review of work plans and strategies for each of its three Programme Areas (PAs) and for the Cross-cutting Teams on Capacity Building (CB) and Satellite Data Requirements (SDR). The Committee also agreed that there is a need to better define cross-Programme Area (PA) issues and urged the PA Coordinators to define a strategic and implementation plan for PA cross-cutting activities and interactions, also addressing the WMO cross-cutting programmes and activities, such as the Natural Disaster Prevention and Mitigation Programme (DPM), the WMO Programme for the Least Developed Countries (LDCs), the WMO Information System (WIS) as well as IOC programmes. Mr Cabrera further invited the participants to take these aspects into account when discussing relevant agenda items. He noted that the JCOMM has been contributing to the efforts to establish a Global Earth Observation System of Systems (GEOSS), in providing technical guidance as well as international coordination and infrastructure such as the WIS. Mr Cabrera recalled that the WMO was very supportive of the End-to-End Data Management (E2E) technology and that it has provided support to the Obninsk Pilot Project. Mr Cabrera concluded his remarks by assuring the continued commitment of the WMO and IOC to support and strengthen the work of the DMCG through the Data Management Programme Area of JCOMM, and wished for a productive and successful meeting to the participants.

The Chairperson then invited participants to introduce themselves.

The Chair referred to the long intersessional period of the DMCG, and the work assigned by JCOMM-II to the Data Management Programme Area. Mr Keeley invited participants to provide paragraphs on their introduction of agenda items for the Summary Report by Wednesday morning. He proposed not to adopt the Summary Report during the meeting, but to adopt only an action list. Mr Keeley further proposed to focus on the JCOMM Data Management Strategy, and on how planned actions will fit into the strategy. He also stressed the need for good linkages with other programme areas. The Chair also noted that funding for JCOMM was minimal and this would need to be taken into consideration when drafting the upcoming work plan.

The List of participants is attached as *Annex I*.

1.2 ADOPTION OF THE AGENDA

The DMCG adopted the agenda for the Session as attached in *Annex II*.

1.3 WORKING ARRANGEMENTS

The DMCG agreed on its hours of work and other practical arrangements. The Secretariat introduced the documentation for the Session.

2. REVIEW OF JCOMM DATA MANAGEMENT ACTIVITIES DURING THE INTERSESSIONAL PERIOD

2.1 OCEAN DATA ACQUISITION SYSTEMS (ODAS)

Ms Dengwen Xia provided this item with a PowerPoint presentation and referred to *Document DMCG-II/6*.

Ms Jixiang Chen presented a report on behalf of the ODAS Metadata Management Centre, which is operated by the National Marine Data and Information Service (NMDIS), China. Ms Chen reported that the centre is working on metadata collection and delivery, as well as on developing products based on the collected metadata. The Centre was initially focusing on metadata obtained from the Argo Pilot Project and the Data Buoy Cooperation Panel (DBCP). She explained that although the metadata provided by the DBCP and downloaded via the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) had a complex structure, the metadata centre has succeeded in transforming the data structure for integration into the centre's database since September 2005. Argo metadata are obtained via the China Argo Data Centre (CADC) and regular updates have been made since March 2006. The NMDIS has followed the recommendations from the Water Temperature Metadata Pilot Project (META-T), and updated its archives especially with input from the US National Oceanic and Atmospheric Administration (NOAA) and the National Coastal Data Development Center (NCDDC), although better collaboration with the latter needs to be established. An ODAS metadatabase format was released and online tools have been developed for metadata submission and metadatabase querying. The NMDIS recommended expanding the ODAS metadata standard to make it complementary to META-T.

Mr Etienne Charpentier, Scientific Officer, Ocean Affairs Division of the WMO, reported on the On-line Information Service Bulletin on non-drifting ODAS. This regular service, which is providing information on ocean data buoy operated by Member Countries/States has been in place since 1977. The Service is including non-drifting ODAS only and is provided electronically through the Marine Environmental Data Service (MEDS), Canada (http://www.meds-sdmm.dfo-mpo.gc.ca/odas/main.htm). Information is requested by the IOC on a yearly basis, through a form agreed upon by the WMO-IOC Integrated Global Ocean Services System (IGOSS, superseded by JCOMM) in 1998. Despite the JCOMM circular letter issued in April 2002, requesting Member Countries/States to provide input on a yearly basis to the On-line Information Service Bulletin on non-drifting ODAS, the META-T Workshop (Reading, United Kingdom, 28 to 29 March 2006), noted that updates had not been made in the ODAS metadata report.

The DMCG stressed that metadata should, as much as possible, be collected via internationally coordinated observational programmes instead of directly from national programmes.

The Chair suggested that the On-line Information Service Bulletin on non-drifting ODAS operated by MEDS (Canada), could be superseded by equivalent tools provided by the ODAS Metadata Centre operated by NMDIS (China). **The DMCG agreed** with this proposal. The need to collect and record the metadata for historical purposes was stressed. Dr Nick Mikhailov explained that it was important to establish the link between the data and the metadata and that this was a complex task. **The DMCG agreed** that the collection of metadata from coastal stations could be facilitated if the global community succeeds in building an operational metadata collection system that could eventually be used as a model. It was thus recommended to first stress global issues.

The DMCG recalled the discussions of the JCOMM Management Committee meeting the previous week and **endorsed** the Committee recommendation that real-time metadata collection should be dealt with as a matter of priority.

The DMCG made the following **decisions and recommendations**:

- The ODAS Metadata Centre should supersede the On-line Information Service Bulletin provided by MEDS (Canada). The IOC will continue to collect ODAS metadata on a yearly basis from the IOC Member States and will submit the information to the ODAS Metadata Centre through data submissions. Practical arrangements need to be discussed between the IOC Secretariat and the ODAS Metadata Centre;
- MEDS will provide its historical ODAS metadata to the ODAS Metadata Centre;
- The Expert Team on Marine Climatology (ET-MC) should liaise with the META-T Pilot Project and the ODAS Metadata Centre in order to design and adopt an electronic format for ODAS, based on the JCOMM recommended list of ODAS metadata. The format should be compliant with META-T requirements;
- The ODAS Metadata Centre should (i) focus on instrumentation metadata (platform position information is generally not required unless the same identifier is re-used), (ii) improve the presentation of its website (explanations of columns in reports, submission, web direct access, metadata requests, web services, etc.), and (iii) document its online and batch submissions procedures;
- The META-T should consider making recommendations for recording information that links the metadata to the original project site(s);
- A WMO/IOC Joint Circular Letter should be issued by the Secretariats, requesting Member Countries/Member States and sponsored Projects to provide metadata to the ODAS Metadata Centre routinely with the appropriate format;
- Historical metadata should be archived and properly documented;
- Real-time metadata should remain a priority item.

Relevant action items were added to the Action List (See *Annex VII*)

2.2 THE EXPERT TEAM ON DATA MANAGEMENT PRACTICES (ET-DMP)

This Agenda Item was introduced by Dr Nicolay Mikhailov, referencing *Document DMCG-III/7*.

Dr Mikhailov reported that the ET-DMP had concentrated on the development and testing of end-to-end data management technology (E2E Technology). The goals of this technology are as follows: (i) to integrate the non-homogenous real-time and delayed-mode local data systems into a unified distributed marine data system that will provide transparent exchange between the local data systems, and (ii) to provide end-user access to any data or information generated by the systems.

The DMCG notably appreciated that the E2E Technology is now a WIS prototype component, constituting a WIS Data Collection and Production Centre (DCPC), and is currently based at the Russian National Oceanographic Data Centre (NODC) in Obninsk.

The DMCG further noted that, at present, there are a number of initiatives such as the Ocean Biogeographical Information System (OBIS), WIS, Pan-European Infrastructure for Ocean & Marine Data Management (SeaDataNet) with very similar objectives using various technical solutions and standards. **The DMCG stressed** the importance of providing a common (or compatible) system vision and basic technical metadata/data standards for system inter-operability.

Taking this into consideration**, the DMCG established a Task Team** that will focus on E2E Technology. The Terms of Reference (ToR) of the Task Team are provided in *Annex III*.

The DMCG noted that the ET-DMP had a membership that was working exclusively on E2E/WIS technical issues. The DMCG would like to see a broader scope for this ET, particularly to assist in helping to converge the diverse data systems in place in JCOMM. The chairs of the DMCG and ET-DMP resolved to develop a workplan that would reflect broader interests and requested the Secretariats to invite invitations for membership on ET-DMP.

The DMCG stressed the importance of starting work on the JCOMM / International Oceanographic Data and Information Exchange (IODE) Ocean Data Portal that will be based on E2E Technology.

The DMCG requested the Chair of the ET-DMP, in consultation with the Chair of the DMCG to prepare a checklist of technical requirements for participation in the Ocean Data Portal, for consideration by IODE-XIX.

Relevant action items were added to the Action List (See *Annex VII*).

2.3 THE EXPERT TEAM ON MARINE CLIMATOLOGY (ET-MC)

This Agenda Item was introduced by Mr Scott Woodruff, Chairperson of the ET-MC referencing *Document DMCG-II/8.*

Mr Woodruff provided an overview of the accomplishments of the ET-MC since JCOMM-II:

- a website was established for the ET-MC, hosted by NOAA under the International Comprehensive Ocean-Atmosphere Data Set (ICOADS) web portal; the recent establishment of a related website for the RECovery of Logbooks And International Marine data (RECLAIM) project was also noted;
- a revised draft was completed, summarizing the results of a JCOMM questionnaire on the future of the Marine Climatological Summaries Scheme (MCSS) Summaries (tabular climatological summaries);
- action was completed toward finalization of the Second JCOMM Workshop on Advances in Marine Climatology (CLIMAR-II) Special Issue of the International Journal of Climatology as the Dynamic Part of the WMO Guide to the Application of Marine Climatology;
- discussions began on the arrangements for CLIMAR-III, scheduled tentatively in 2008;
- a website was completed for the United Kingdom Global Collecting Centre (GCC), together with software for Version 3 of the Minimum Quality Control Standards (MQCS);

- two ET-MC Members (Ms Elizabeth Kent and Mr Scott Woodruff) agreed to serve as members on the Joint Commission for Climatology (CCl) / Climate Variability and Predictability programme (CLIVAR) / JCOMM Expert Team on Climate Change Detection and Indices.

Mr Woodruff identified a number of future directions and tasks for the ET-MC. One important task will be to resolve the future of the MCSS Summaries. A related task is an examination, as requested by JCOMM-II, of how both oceanographic and ice climatologies could be coordinated with the marine meteorological data to be seen as an integrated product – this might naturally be tied into modernization of the MCSS Summaries. The International Maritime Meteorological Archive (IMMA) format, widely used for ICOADS, was suggested for wider review within ET-MC, to be possibly followed by a formal JCOMM publication. The ET-MC was also requested to consider the possibility of developing, with the Expert Team on Wind Waves and Storm Surges (ET-WS) and other appropriate groups, a JCOMM extreme wave event archive. Finally, the possibility of broadened connections with other marine (e.g., Numerical Weather Prediction (NWP)) and oceanographic Quality Control (QC) was noted.

The Management, formatting and QC of delayed-mode Voluntary Observing Ship (VOS) data have long formed important tasks of the ET-MC (and of its predecessor organization, the Commission for Marine Meteorology (CMM) Sub-group on Marine Climatology). These tasks, which form the other (non-Summaries) part of the MCSS, remain crucial for climate applications, including because of security issues, developing with the Global Telecommunication System (GTS) reporting of VOS, plus other longstanding GTS code limitations.

The Meeting agreed that maintaining the International Maritime Meteorological Tape (IMMT) format was important but that management of the MCSS, including the two separate functions of VOS data handling and MCSS Summaries, needed to be modernized. As a first step, it recommended establishment of a new self-funded Task Team on Delayed-Mode Voluntary Observing Ship data (TT-DMVOS), to focus exclusively on the first function, with membership recommended by the ET-MC that would be tasked amongst other things to manage the GCCs, establish requirements for the IMMT format and the MQCS, reconcile the IMMT and the IMMA formats, revise relevant WMO technical publications as needed, and establish a website to share relevant information.

The DMCG expressed appreciation to the NOAA Climate Database Modernization Program (CDMP) for the work done on the imaging and digitization of WMO Publication No. 47.

The DMCG made the following decisions and recommendations:

(i) to establish the Task Team on Delayed Mode Voluntary Observing Ship data (TT-DMVOS), to include the management of the GCCs, IMMT and MQCS. The Terms of Reference (ToR) of the Task Team are provided in Annex IV;
(ii) separately, to modernize the Marine Climatological Summaries Scheme (MCSS) Summaries (tabular climatological summaries);
(iii) to revise the relevant WMO technical publications through work under tasks (i) and (ii);
(iv) to establish a connection between the Expert Team on Sea-Ice (ET-SI) and the ET-MC;
(v) to develop, in conjunction with ET-WS, the Extreme Wave Event Archive and to prepare a proposal in this regard for submission to IODE-XIX;

(vi) to discuss MQCS issues and better integration of the VOS and the Global Ocean Surface Underway Data Pilot Project (GOSUD) within the MQCS, and to prepare scoping document on common issues (including consideration of SAMOS);
(vii) to investigate interest of the Global Oceanographic Data Archaeology and Rescue (GODAR) Project in Historical Ship Data Rescue activity (by contacting,the GODAR Project Leader, Mr Sydney Levitus);
(viii) to organize CLIMAR-III.

Relevant action items were added to the Action List (*See Annex VII*).

2.4 CAPACITY BUILDING

The JCOMM Data Management Programme Area (DMPA) Capacity Building Rapporteur, Dr Rudy Herman, introduced this item referring to *Document DMCG-II/9*. Dr Herman referred to the decision made by JCOMM-II to restructure and to appoint Capacity Building Rapporteurs for each of the Programme Areas. Dr Herman was subsequently appointed Capacity Building Rapporteur for the Data Management Programme Area.

Dr Herman recalled that the JCOMM Data Management Capacity Building activities are embedded in the recently defined Capacity Building Strategies of the IOC and WMO, and are based on the new developments and programme activities of the WMO (WIS) and IOC (IODE and the Global Ocean Observing System (GOOS)). Both strategies advocate organising capacity building activities in close partnership with relevant international organisations and programmes and to do so, by preference jointly, in a regional context.

Focus has been given towards 'Hands on Training' as well as towards 'Training of Trainers", primarily to meet the regional needs. In addition these items, attention was given to specific South-South cooperation (between developing countries), thus North-South-South cooperation (between developing countries as well as with an industrialized country) attendance was stimulated. The IOC Project Office for IODE has been instrumental in supporting data management activities within the context of the IOC and JCOMM. Since its inception in April 2005, the Project Office has organised nineteen training courses which have been attended by 227 trainees from 74 IOC Member States.

Dr Herman further reported that all trainers and trainees involved in training events, organized by the IOC Project Office for IODE, were invited to give feedback on the various organizational and content aspects of workshops and training activities.

Dr Herman noted that further development of the OceanTeacher, and the introduction of new technologies, will contribute to create the necessary national capacity to develop web-based tools and applications, meeting the needs of the Member States involved. Remote tools to help resource personnel would also be beneficial to many developing countries. The establishment of a "*Virtual Capacity Building Discussion Platform*" could also be instrumental and provide guidance in this capacity.

The DMCG expressed its appreciation to the IODE Project Office facilities in Ostend, Belgium as it provided an excellent training environment. **The DMCG welcomed** the close working collaboration between the IODE and the JCOMM Data Management Programme Area (DMPA) which will enable the JCOMM to utilize their excellent facilities.

The DMCG also expressed its appreciation for the use of OceanTeacher as an excellent and comprehensive training tool that was now complemented by a new multimedia module that includes video recordings of lectures. However, **the DMCG noted** that the OceanTeacher was still mainly a tool for IODE training and **called** for urgent development of JCOMM-related modules (operational oceanography and marine meteorology). In this

regard, **the DMCG requested** the OceanTeacher Data Management Editor, Dr Murray Brown, to identify missing materials and submit the list to the Chairperson of the DMCG.

Mr Pissierssens also informed the DMCG that during the Fifth Session of the JCOMM Management Committee (MAN-V), discussions had taken place with Dr Craig Donlon with regards to the objective of re-launching discussions on the possible integration of the UNESCO Virtual Global Faculty for Remote Sensing (BILKO) training material and software into OceanTeacher. In this regard, reference was also made to possible cooperation between OceanTeacher, BILKO and the Flemish "HyperTeach" Project.

Related to the E2E Technology prototype, **the DMCG tentatively requested** the organization of a training course for E2E Technology prototype data providers, possibly to be hosted by the IODE Project Office in September/October 2007.

Mr Peter Pissierssens informed the DMCG per the discussions and decisions by MAN-V related to capacity building:

The DMCG established an *ad hoc* working group, for which the Terms of Reference are provided in *Annex V*.

Relevant Action Items were added to the Action List (See *Annex VII*)

2.5 SATELLITES

This Agenda Item was introduced by the JCOMM DMPA Satellite Expert, Professor Hiroshi Kawamura with reference to *Document DMCG-II/10*. Professor Kawamura reviewed activities on remote-sensing coordination during the intersessional period of 2002 to 2005 in his capacity of JCOMM DMPA Satellite Expert.

During the past two decades, satellite remote-sensing has become a mature technology for measurements of ocean parameters. It now provides Sea Surface Temperature (SST), Sea Ice, Surface wind, Surface waves, Sea Surface Heights (SSH) and Chlorophyll-a (Chl-a) measurements for the global ocean with high temporal/spatial resolutions. Retrieval methodologies for these parameters are well established. Experience has clearly demonstrated that space-based observations are a complement to *in-situ* data.

The present satellite data requirements from the GOOS are summarized in the Committee on Earth Observation Satellites (CEOS), WMO Satellite requirements. The Third Session of the JCOMM Management Committee discussed how JCOMM should continue to consider the requirements for future satellite missions, and other related matters associated with remote-sensing, and further decided to form a Task Team. Its Terms of Reference (ToR) are to include the following items: (i) take responsibility for oversight of the space-based remote-sensing activities that are essential for JCOMM services and products, (ii) maintain JCOMM satellite remote-sensing data requirements, based on regular contact with the Coordination Group for Meteorological Satellites (CGMS), the WMO Space Programme, the IOC Remote Sensing Plan, the CEOS, the relevant Integrated Global Observing Strategy (IGOS) Themes, the WMO high level policy meetings, the Coastal Ocean Observations Panel (COOP) and the Ocean Observing Panel for Climate (OOPC), and other appropriate groups, (iii) advise on the distribution and dissemination of satellite data and relevant data products, in consultation with other JCOMM Programme Areas, (iv) report to the JCOMM Management Committee. The Secretariat for the Group should be provided by the WMO Space Programme Office.

The DMCG recommended including a satellite data centre as an E2E Technology prototype project data provider.

Relevant Action Items were added to the Action List (See *Annex VII*).

3. WMO AND IOC ACTIVITIES RELEVANT TO JCOMM DMPA

3.1 WMO QUALITY MANAGEMENT FRAMEWORK

Mr Etienne Charpentier reported on the development of the WMO Quality Management Framework (QMF), referencing *Document DMCG-II/11*.

Mr Charpentier informed the DMCG that the WMO Executive Council had noted that quality management for the WMO constitutes one of the most important issues and comprises two distinct aspects: (i) an overall strategy for the WMO, which would cover all WMO technical programme activities that relate to the delivery of products, data and services, and (ii) the implementation of quality management systems by its Members. An Inter-Commission Task Team on Quality Management Framework (ICTT-QMF) has been established to deal with these issues. The QMF aspects should eventually become an integral part of the work of the technical commissions. The Council supported the recommendation of the ICTT-QMF, to include "quality management" at the highest level of the Technical Regulations in an independent Volume IV (Quality Management Framework) encompassing the overall WMO policy related to quality and including a chapter for each of the Commissions. A draft resolution will be prepared for the next Congress on these matters. The Executive Council also decided to establish a closer collaboration with the International Organization for Standardization (ISO) with a view to develop a formal working agreement aimed at developing joint ISO-WMO technical standards, based on the WMO Technical Regulations and Manuals and Guides, which would widen the recognition of the WMO Standards.

The Quality Management Framework will include, in particular: (i) harmonization of the terminology related to quality and to the nomenclature of the technical guidance documents while adhering to the definitions provided in the ISO 9000:2005 *Standard for Quality-Related Terms*, and (ii) the review of the Technical Commission technical documentation, so that Members have easy access to all the relevant valid documentation and, if appropriate, include the content of some technical documents in their guides/manuals and/or develop necessary Quality Assurance (QA) / QC procedures.

The DMCG noted that a list of JCOMM Technical Publications had been prepared, but that it required editing and should include additional information, such as: (i) a contact point, (ii) the name of the Expert Team or group responsible for updating it, and (iii) information, whether it is obsolete, or needs to be updated.

The DMCG agreed to focus on the documents describing standards. However, it was noted that making documentation ISO compliant was a time consuming exercise and that it was not always possible or feasible to find the resources to do this. The meeting noted that the documents relevant to the DMPA constituted only a subset of all WMO documents, and that even more resources would be needed by the WMO to update its documentation to comply with the ISO document standards.

The DMCG made the following decisions or recommendations:

(i) for the WMO and IOC Secretariats to identify contact points for each of the JCOMM Publications, circulate the list to the DMCG and focal points, and ask for recommendations or comments, as appropriate;

(ii) for contact points (in liaison with the Secretariats and the authors, when relevant and possible) to provide any additional information regarding the documentation (Expert Team in charge, obsolete or not, needs to be updated/when, updating frequency requirement, electronic version available and QMF requirements);

(iii) for Leslie Rickards (Chairperson of the IODE) to look into the status of the IODE documents and add them to the list;

(iv) for a new consolidated table of documents to be circulated to the DMCG for comments, recommendations or approval, as appropriate;

(v) to review the JCOMM documents to ensure that the terminology used within is in agreement with the decision of the Fifty-Eighth WMO Executive Council (EC-LVIII);

(vi) to review, and possibly incorporate, the content of some documents in others to ensure that Members have easy access to all relevant valid documentation and to ensure compatibility with the documentation of other commissions;

(vii) to further develop Quality-Assurance and Quality-Control procedures;

(viii) to identify the JCOMM advantageous Technical Standards that would be submitted as joint ISO-WMO Standards;

(ix) to include relevant documents in OceanTeacher and prepare training modules.

Relevant Action Items were added to the Action List (See *Annex VII*).

3.2 WMO INFORMATION SYSTEM (WIS)

This Agenda Item was introduced by Mr Jean-Michel Rainer who presented an overview of the WMO Information System. Mr Ranier explained that the present GTS was efficient in interconnecting the National Meteorological and Hydrographic Service (NMHS), but that international programmes did not necessarily have easy access to the GTS for data submission or data access. The concept to build an overarching system based not only on the GTS but also on new facilities that will permit other international programmes such as the GOOS or the Global Climate Observing System (GCOS) to access the system was endorsed by the WMO Congress and was named WIS. The WIS is designed as an interdisciplinary system that will provide for common information exchange standards, metadata catalogues based on ISO Standards (e.g., the ISO 19100 series, Geographical Information Standard), and industry standards. Its functional structure is based on the following: (i) National Centres (NC, data generation and collection in the country acting as a national portal to the WIS), (ii) Data Collection and Production Centres (DCPC, collecting and distributing data of interest for a larger community and data meant for international exchange; they can be programme related, and provide for push and pull data access mechanisms; they maintain metadata catalogues), (iii) Global Information System Centres (GISC, they are key global centres synchronising the data with one other; they receive information from the NCs and the DCPCs, and provide for global pull mechanism for data access; they generate and maintain catalogues of data and metadata, and are fully-operational), and (iv) data telecommunication networks.

The WIS only addresses information exchange and data information-related issues. Interoperability is a key to WIS and active involvement from all of the Technical Commissions, including JCOMM, is required. The WMO Core Metadata profile has been developed for data discovery. At this time, it needs further development. The WIS should provide various types of services to meet the different requirements; the following fundamental types of services could be identified:

(i) Routine collection and dissemination service for time-critical and operation-critical data and products (i.e., push, multicast and broadcast, smooth evolution from the GTS and the Integrated Global Data Dissemination Service (IGDDS));
(ii) Data Discovery, Access and Retrieval (DAR) service (pull); and
(iii) Timely delivery service for data and products (push).

Two implementation phases for the System are planned. Phase A will improve the GTS and provide support to other programmes than the World Weather Watch (WWW). Phase B will be an extension of the Information System through flexible data discovery and access. The IGDDS, which is providing for space-based observational data and products, will be further developed under both Phase A and B.

A number of Pilot Projects have already been implemented, including in particular, the JCOMM End-to-End Data Management Pilot Project (E2EDM), which will provide for a DCPC function. Dr Nick Mikhailov, Chair of the ET-DMP, will attend the upcoming Technical Conference on the WIS (TECO-WIS) which will meeting in Seoul, Republic of Korea, from 6 to 8 November 2006, to demonstrate the prototype.

Mr David Thomas suggested establishing rapporteurs for the DMPA for the three main WIS Expert Teams and their participation in *ad hoc* Specialist Working Groups. These include the Expert Teams on WIS-GTS to include the following: the Expert Team on Communication Techniques and Structure (ET-CTS), the Expert Team on WIS GISCs and DCPCs (ET-WISC) and the Inter Programme Expert Team on Metadata Implementation (IPET-MI). It was noted that all Expert Teams have links with all Pilot Projects and all are managing metadata. The meeting identified issues to be resolved, including compliance of metadata profiles with the ISO, and ISO not meeting all of the requirements (e.g., time, validity period, time averages and vertical coordinates).

The DMCG agreed that there was a need to bring more centres into JCOMM End-to-End Data Management. The requirements for being accredited as a WIS DCPC were discussed. Mr Jean Michel Rainer explained that an important requirement was to ensure that a candidate for the DCPC would provide for interoperability and appropriate interface to the WIS, while meeting the Technical Commission's requirements. Therefore, the Technical Commission's endorsement was required as well. The DMCG will prepare a checklist for candidate centres for review and adoption by the IODE-XIX (see section 2.2). The NODCs attending the IODE meeting will have opportunities to review and comment, as appropriate.

The DMCG made the following decisions and recommendations:

(i) to support ongoing participation in the Inter-commission Coordination Group on the WMO Information System (ICG-WIS);
(ii) to nominate rapporteurs in the three main WIS Expert Teams, and to participate in the *ad hoc* Specialist Working Groups (ET-CTS Rapporteur; ET-WISC Rapporteur, e.g., ET-DMP Member and IPET-MI Rapporteur);
(iii) to assist the WIS Expert Teams in establishing a WMO Extensible Markup Language (XML) profile for data exchange;
(iv) to identify and endorse Ocean and Marine Data Centres as the DCPC. A checklist should be prepared by the ET-DMP and provided to IODE-XIX, as appropriate, with document and list of candidates eventually to be submitted to the WMO. (see also *Annex III*);
(v) work to reconcile marine profiles and the WMO core metadata profile. Assist the ET-WIS to establish a XML profile for data exchange;

(vi) for Ms Sylvie Pouliquen and Bob Keeley to discuss links to other global programmes such as the Global Monitoring for Environment and Security (GMES).

Relevant Action Items were added to the Action List (See *Annex VII*).

3.3 WMO TABLE DRIVEN CODES ISSUES

This Agenda Item was introduced by Mr Etienne Charpentier, referencing *Document DMCG-II/13*.

The DMCG noted that Groups and Panels under the JCOMM are increasingly requiring additions or changes to the WMO Code Tables, and, in particular, to the BUFR (Binary Universal Form for the Representation of meteorological data, FM 94–XI Ext. BUFR) and the CREX (Character form for the REpresentation and eXchange of Data, FM 95–XII CREX) Tables, and to the BUFR templates. Some of the requirements relate to more than one Panel (e.g., META-T, Tsunami monitoring, the Global Ocean Data Assimilation Experiment (GODAE) High Resolution SST Pilot Project (GHRSST) and Acoustic Doppler Current Profilers (ADCP)). Additionally, the provision of the same variable or metadata from different types of platforms or instruments requires introducing some level of consistency between the different BUFR templates proposed (e.g., Consistency between templates Expendable Bathythermograph (XBT) / Expandable Conductivity, Temperature and Depth profiling system (XCTD) and Argo templates, consistency between the VOS and TRACKOB (Report of marine surface observation along a ship's track, FM 62–VIII Ext. TRACKOB), consistency between all ship templates with regards to metadata and consistency between all templates providing SST and/or Temperature profile data as far as metadata are concerned (META-T). In other cases, one Panel might have to deal with different coding requirements. For example, the JCOMM Ship Observations Team (SOT) is presently considering a large number of coding requirements, and has established a Task Team on coding to deal with GHRSST-PP requirements, as well as an *ad-hoc* SOT Task Team on BUFR for the VOS and the Voluntary Observing Ship Climate Project (VOSClim) which was established by the Third International Port Meteorological Officers (PMO-III) Workshop (Hamburg, Germany, 23 to 24 March 2006). The SOT is currently interacting with the META-T Pilot Project considering metadata encoding requirements. The SOT will further review all these requirements and proposals at its next meeting in April 2007.

All the above-mentioned requirements need to be relayed to the Commission for Basic Systems (CBS) Expert Team on Data Representation and Codes (ET-DRC) for adoption. Each Panel is presently submitting its requirements separately. Considering the diversity of the requirements, the number of groups involved, and cross-cutting issues, the meeting agreed that it would be more efficient if there was a group within the JCOMM DMPA responsible for collecting all JCOMM-related coding requirements, for compiling them in a consolidated JCOMM proposal and for submitting them to the CBS Expert Team. A representative from the group could also attend the CBS ET-DRC Meeting on behalf of the JCOMM.

Also, while the CBS ET-DRC is maintaining Master Table 0 for meteorological data, a separate set of BUFR tables for oceanographic data called Master Table 10 (MT10) had been defined a few years ago. A copy of the MT10 can be obtained from the ISDM (Canada). Rules for establishing and maintaining separate Master Tables have been refined by the CBS ET-DRC at its meeting in Oman, December 2005. The MT10 is not conforming to these rules. Changing the MT10 to conform to the new set of rules is relatively simple, only the GHRSST-PP is using it, and the GHRSST-PP has indicated that it could implement any required changes relatively easily. Also, it has been proposed to use the Master Table 10 as a Pilot Project for the real-time distribution of ship data produced by SeaKeepers while taking

the GHRSST-PP requirements into account. The DMCG therefore suggested that the new codes group be responsible for regularly reviewing and updating BUFR Master Table 10 for oceanographic data.

The DMCG established a Task Team on Table Driven Code forms. The Terms of Reference (ToR) are provided in *Annex VI*.

Relevant Action Items were added to the Action List (See *Annex VII*).

3.4 METADATA MANAGEMENT

3.4.1 Water Temperature METADATA PILOT PROJECT (Meta-T)

This Agenda Item was introduced by Mr Etienne Charpentier referencing *Document DMCG-II/14prov.*

Following previous discussions with the DBCP, the SOT, the JCOMM Observations Coordination Group (OCG), and the JCOMM Management Committee, the Water Temperature Metadata Pilot Project (META-T) was established by the JCOMM/OCG Workshop (Reading, United Kingdom, 28 to 29 March 2006). In line with the recommendations from the Fifth Session of the JCOMM Management Committee (MAN-V), the Meeting agreed that the META-T Pilot Project was an important activity to support and that it was essential for a number of applications, including: (i.) Numerical Weather Prediction (NWP), (ii.) SST analysis and GODAE High Resolution SST Pilot Project (GHRSST), (iii.) data assimilation and ocean field analysis, (iv.) ocean modelling, (v.) ocean modelling validation, (vi.) climate forecast, (vii.) seasonal to decadal climate variability, (viii.) satellite calibration, (ix.) satellite validation, (x.) operational activities (e.g., weather forecasters and disaster response), (xi.) quality assurance activities serving the above-mentioned applications, and (xii.) diagnostic by platform operators.

The Pilot Project is aiming at providing a standard framework for collecting SST and temperature profile instrumentation metadata from a number of observational systems, including those for which implementation or data management are being coordinated via the DBCP, SOT, Global Sea-level Observing System (GLOSS), Argo, OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES), GOSUD, Global Temperature and Salinity Profile Programme (GTSPP), and ODAS. To that extent, the following categories of metadata have been drafted so far: (i.) metadata required for real-time distribution, along with the observational data, (ii.) metadata required for real-time use, but not necessarily being transmitted along with the observational data (available via servers), and (iii.) other metadata not required in real-time. Possible types of instrumental metadata have been identified and cross-checked with the user requirements. An initial categorization could thus be drafted. Category definitions and categorization have since been refined by the META-T PP Steering Committee.

The DMCG noted with appreciation the offer made by the National Marine Data and Information Service (NMDIS, China), to host metadata servers for the Pilot Project. The National Data Buoy Center (NDBC, NOAA, USA) also expressed its interest to participate in this pilot project by hosting a mirror server, and is currently investigating to see if this would be feasible.

The DMCG agreed that META-T could eventually be used as a pilot for the collection of instrumentation metadata related to other variables. Dr Mikhailov explained that the E2E prototype project was very supportive of the META-T initiative and that he would be providing input regarding how instrumentation metadata and metadata profiles relate to each other. Professor Kawamura stressed that instrumentation metadata are essential for

combining *in-situ* and satellite data, and that the satellite community, including the GHRSST, was also very supportive of this initiative.

The DMCG expressed its support for the recommendations by the Reading Workshop, and requested:

- for the META-T Pilot Project to define a time table for its work, considering real-time (Category 1, then 2) as a matter of priority. Categorization for Category 1 should be ready by the next SOT Session (SOT-IV) in April 2007 for review and consideration along with other SOT-related requirements (report to be presented);
- for the META-T Pilot Project to make recommendations to the DMCG Codes Group where BUFR requirements are concerned;
- for the META-T Pilot Project to consider ODAS metadata (the existing ODAS format adopted by JCOMM), and categorization of these metadata, as appropriate. Metadata collected through the META-T Pilot Project should eventually be included in the ODAS metadata database;
- For the satellite community to be active in the META-T Pilot Project.

The DMCG further instructed Dr Mikhailov to provide input on how instrumentation metadata and metadata profiles relate to one other.

Relevant Action Items were added to the Action List (See *Annex VII*).

3.4.2 IODE Marine Environmental Data Information Referral Catalogue (MEDI)

This Agenda Item was introduced by Mr Bob Keeley referring to the Report of the Third Session of the IODE Steering Group for MEDI (SG-MEDI) (*Document IOC/IODE-SG-MEDI-II/3*). Mr Keeley recalled that the Marine Environmental Data Information Referral Catalogue (MEDI) is a directory system for datasets, data catalogues and data inventories that was developed by the IODE. The IODE Steering Group for MEDI (SG-MEDI) was established to support the MEDI System and the MEDI Project. Due to the increasing recognition of the importance of metadata, in particular discovery metadata, the last IODE Session reinvigorated this Group, and recommended the development of a marine profile of ISO19115. The recent Session of the SG MEDI brought together those working with major (marine or environmental) metadata systems, including the Global Change Master Directory (GCMD), the European Directory of Marine Environmental Data (EDMED), the US Federal Geographic Data Committee (FGDC), and the JCOMM META-T Pilot Project. The Steering Group members reported on current metadata developments of relevance to MEDI, including the Access to Biological Collection Data (ABCD), Natural Environment Research Council (NERC), DataGrid (NDG) and the SeaDataNet discovery metadata, the US NODC metadata repository using FGDC and the Marine Metadata Interoperability Project (MMI), created in 2004 with a mission to create a community of metadata-aware scientists and data managers.

The SG-MEDI had further discussed the implementation of a marine community profile of the ISO19115 metadata standard. This profile has been developed under the sponsorship of the Australian Ocean Data Centre Joint Facility (AODCJF). The Marine Profile has been developed as a subset of the international standard, and includes all ISO19115 core metadata elements and selected non-core elements. It will be disseminated for comment through a new IODE metadata discussion list (iode-metadata@sympa.iode.org). The SG-MEDI will review comments received, and recommend a marine profile for MEDI, as appropriate. The SG-MEDI agreed that governance of vocabularies used by MEDI should be responsibility of the IODE Steering Group on MarineXML, and to be led by the British Oceanographic Data Centre (BODC).

The Steering Group discussed cooperation with the META-T Pilot Project and agreed that the SG-MEDI can assist the META-T Pilot Project by providing discovery metadata tools and formats, as well as with the technical governance of controlled vocabularies.

DMCG recommended that there be further interaction between the SG-MEDI and the IPET-MI. The JCOMM could combine resources with the IODE by requesting the Chair of SG-MEDI to become a member of the IPET-MI, and to help inform JCOMM of results. A second useful result would be the comparison of the ISO meteorological profile, prepared by IPET-MI, and the oceanographic profile prepared by SG-MEDI.

Relevant Action Items were added to the Action List (See *Annex VII*).

3.5 INFORMATION ON OTHER DISTRIBUTED DATA MANAGEMENT AND ACCESS SYSTEMS

This Agenda Item was introduced by Dr Lesley Rickards, Chair of the IODE, referencing *Document DMCG-II/15*.

Dr Rickards informed the Group that several distributed data systems are either currently under development or are at the prototype stage. These include the following:

- the JCOMM/IODE End-to-End Data Management (E2EDM) Pilot Project (ET-DMP);
- the WMO Information System (WIS);
- the SeaDataNet: A five-year EU-funded project to develop a pan-European marine data management infrastructure, bringing together forty-nine major institutes and marine data centres from thirty-five countries. The online access to *in situ* and remote-sensing data, meta-data and products will be provided through a unique portal interconnecting, in the first phase, platforms from eleven interoperable nodes. The development and adoption of common communication standards and adapted technology will ensure the platforms' interoperability. This activity will be developed to gradually connect all other data centres to the interoperable system. Common standards and procedures, in accordance to the international standards (ISO) and authorities (IOC/IODE, the International Council for the Exploration of the Sea (ICES)), will ensure the overall consistency and quality level of data sets and for communication; and
- the US Integrated Ocean Observing System (IOOS) Plan for Data Management and Communications (DMAC).

In addition, there are other national initiatives that are also currently underway to try and achieve similar objectives (i.e., Australia, the Netherlands, Russia and the United Kingdom).

Within the oceanographic community, although there are still improvements to be made, the global archiving of some of the individual streams of data are very effective. There are consistent ways to manage, for example: profiling float data, surface drifters data, current meter data, or satellite data. Examples of these, particularly relevant to the JCOMM include: Argo, GOSUD, GTSPP and OceanSITES. From the biological community, there is the Ocean Biogeographical Information System (OBIS) and the Coastal and Oceanic Plankton Ecology, Production & Observation Database (COPEPOD), in addition to others.

There are many centres where data are archived, ranging from the World Data Centres, through regional centres (e.g., the ICES Data Centre), to national centres (e.g., over 60 NODCs). In addition, project data centres exist, for example the World Ocean Circulation Experiment (WOCE) / CLIVAR Data Assembly Centres.

However, even though there are many initiatives underway and many centres act as long-term archives for data, there are a number of problems which currently exist. There is no common way to:

- Discover data of interest, no matter where in the world they are housed;
- Assess or indicate the quality of data in our archives;
- Name variables and attributes of data and information. This means that when data are exchanged, or data from two centres are delivered to a user, they may have different labels;
- Handle data from the variety of disciplines that constitute our data holdings. Even worse, there is no common way of handling data from the same disciplines.

In addition, data are duplicated many times as data holdings are exchanged. Users may receive the same data from different places, yet the information may look different. This situation is confusing and wasteful. Encouraging signs are visible for discovery metadata systems. Although various systems exist, including the Global Change Master Directory (GCMD), the FGDC, the European Directory of Marine Environmental Data (EDMED), the IOC/IODE MEDI and the AODCJF (Australia) metadata system, for example, are all moving towards the ISO19115/19139 compliance, which will improve interoperability considerably. Within the IODE, the MEDI Steering Group is taking the lead for this activity.

A further problem is that of naming conventions. Variables receive different "names" at different places, and also different variables may in fact receive the same name. This lack of standards creates confusion regarding data delivery. However, the Marine Metadata Interoperability (MMI) project is seeking to improve these deficiencies.

Quality control of data is another area which suffers from a lack of standards. Some projects have successfully standardised procedures (e.g., some global and EU projects such as GODAR, GTSPP, GOSUD, Surface drifter archive and Argo), yet, there is a real need for further standardization. This is required for automatic checks in real-time, where in the USA, the Quality Assurance of Real-Time Oceanographic Data (QARTOD) is making progress (and also in delayed-mode). The EU SeaDataNet Project will produce a quality control manual over the next few months, starting from existing procedures and standards. This will cover many variables, including: marine biology, biodiversity, fisheries and chemistry as well as physical variables. This will be a positive step forward towards documenting recommended best practices and making this information easily accessible.

Various mechanisms are available or are currently under development for data transfer and access. Two of these mechanisms, the Open-source Project for a Network Data Access Protocol (OPeNDAP) and the Distributed Generic Information Retrieval (DiGIR), are described below. Improved handling of data and information is still required with better tools to handle the received data. Computer security and firewalls are still an issue, as are bandwidth and management of large data files.

Thus, the question for the JCOMM DMCG to address is how to guide the current initiatives to ensure convergence to common standards and interoperability.

Dr Sylvie Pouliquen provided a presentation on the Marine Environment and Security for the European Area (MERSEA). The MERSEA Information System, developed under the GMES European Commission funding (Global Monitoring for Environment and Security) should be seen as a major European contribution to GEOSS. The MERSEA Integrated Project (IP) has developed the first European Integrated System for both global and regional ocean monitoring and forecasting. It provides an integrated access to observations, both satellite and *in situ*, as well as model data, to a wide variety of intermediate users such as

service providers (coastal monitoring, oil spill, ship routing, seasonal forecasting, etc.) and also to the general public and the research community.

It is based on two main components:

- Thematic Portals (TEP) which are logical system entities responsible for providing services, aggregated on a thematic basis, to other TEPs, general services (MERSEA Information Management) or other users. In general, a TEP has no physical implementation, and consists of a collection of services distributed among providers' physical systems. However, it is under the TEP responsibility to define, describe and ensure that necessary services are implemented. In other words, the TEPs are delegation mechanisms to thematic communities to organize the MERSEA services they have to operate.

- MIM (MERSEA Information Management) which is, in essence, the glue between the TEPs that facilitates the system federation. It implements a portal that allows product catalogue/inventory and services directory browsing, as well as centralized visualization of the products and their assessment reports. It also performs the system monitoring. It will implement user management at MERSEA. It will also provide a service acting as a relay for data queries towards the connected TEP services which can also be accessed directly.

The objective of the Information Management within MERSEA is to implement the needed services in order to fullfil the needs of the targeted users. Following the Infrastructure for Spatial Information in Europe (INSPIRE) recommendations, the MERSEA System is providing the following services:

- DISCOVERY: Making it possible to search for spatial data sets and services on the basis of the content of the corresponding metadata, and to display the content of said meta-data. For this, it has developed its own catalogue and discovery engine, based on ISO19115 standards, and agreed on common vocabulary to handle satellite, *in situ* and model data.
- VIEW: Making it possible, as a minimum, to display, navigate, zoom in/out, pan or overlay viewable spatial data sets and to display legend information and any relevant content of meta-data. A first version is a basic quick-look tool that provides an integrated view of MERSEA products. The next version will be a more dynamic tool based on Googlemap-like technology. In each of the cases, the data are distributed at the TEP server level.
- ACCESS/DOWNLOAD: Enabling copies of the spatial data sets, or parts of such sets, to be downloaded and, when possible, accessed directly. This has required first to agree on a common data policy for MERSEA products, and to implement a SSO (Single Sign On) protocol to be able manage users and define common format for data delivery to users.

In summary, the MERSEA Information System is an End-to-End System developed to respond to operational oceanography needs in Europe that covers a broad range, from observation data collection to product delivery to users. It is built on standards (ISO19115, Inspire compliance, OpenDAP, …). It is expected to be sustained within the GMES Marine Core Services.

The system is flexible enough to be extended to handle other products and connect new TEPs to serve additional European or international needs. The JCOMM DMPA can benefit from standardization activities carried out within the MERSEA project and vice versa. The MERSEA will benefit from the JCOMM DMPA, both at the TEP and the MIM levels.

The MERSEA follow-on Information System plans to be one component of the European Information System as well as of the GEOSS.

Mr Bob Keeley provided a brief presentation on the activities of the U.S. Integrated Ocean Observing System (IOOS) Data Management and Communications (DMAC) system. The IOOS is envisioned as a network of regional and national systems that rapidly and systematically acquires and disseminates data and data products to serve the critical and expanding needs of society.

The IOOS National Office, established the DMAC Steering Committee in the spring of 2002 to develop a detailed, phased implementation plan that will lead to an effective data management and communications component of the IOOS, and to provide oversight during its evolution. This plan includes the establishment of expert teams (ETs) and caucuses to represent segments of the community. Mr Keeley is the Chair of the International Caucus, and as such informs the DMAC of related activities outside of the US as well as provides points of contact between the DMAC and these external activities.

Mr Keeley informed the DMCG that as yet, the DMAC has no stable funding, but it has interim funding that allows it to hold meetings twice a year and to sponsor some expert team activities. Thus far,, cooperation is developing between the DMAC and metadata activities of SeaDataNet. Initial contacts are starting between the developers of the E2E system data of the ET-DMP and the DMAC. The Chair asked for additional volunteers who may be interested, to become members of the caucus, and Dr Sylvie Pouliquen requested to be included.

Relevant Action Items were added to the Action List (See *Annex VII*).

3.6 OCEAN RELATED HAZARD WARNING AND MITIGATION SYSTEMS: CONTRIBUTION OF JCOMM

This Agenda Item was introduced by Mr Edgard Cabrera, referencing *Document DMCG-II/16*. Mr Cabrera reported on progress of the WMO Natural Disaster Prevention and Mitigation Programme (DPM), of which the goal is to enhance contributions of NMHSs, in a more cost-effective, systematic and sustainable manner, towards improvement of safety and security of communities. This is being done through coordinated and organizational partnerships (i.e., through the implementation of concrete projects by Technical Commissions, Regional Structures, Members, and Secretariat, by mobilizing extra-budgetary resources in support of National and Regional projects). In particular, Mr Cabrera recalled that the Fifty-eighth Session of the WMO Executive Council (EC-LVIII, June 2006) had approved a cross-cutting coordination framework for identifying the WMO DPM Programme's strategic priorities and projects that would be prioritized and build upon activities of the WMO Programmes, Technical Commissions, Regional Associations, and strategic partnerships.

Mr. Cabrera recalled that a similar discussion of these systems had been held at the recent JCOMM MAN meeting. **The JCOMM-MAN recognized** that the JCOMM has a critical role to play in contributing to this Programme, as well as to the IOC Tsunami Warning and Mitigation Systems.

The JCOMM-MAN identified the following potential areas of interest for JCOMM: (i.) the use of satellite technology for enhanced climatology and real-time detection of ocean-related hazards, (ii.) implementation of a CREX code format for sea-level data monitoring, (iii.) upgrade and enhancement of the GLOSS network, (iv.) developing synergies between the DBCP and the Tsunameter Consortium, (iv.) enhanced cooperation with the IMO and IHO for issuing Maritime Safety Information (MSI) to mariners related to

Tsunami monitoring, and (v.) enhancing statistical analysis of storm surge at a national and sub-regional level.

The DMCG noted that work has already been undertaken in terms of collaboration between Technical Commissions. For example, collaboration with CBS have been established for designing a CREX code format for sea level data monitoring, for developing QC standards for real-time GTS sea-level data, and for enhancing public storm surge warning; linkages with the Commission for Atmospheric Science (CAS) and the Tropical Cyclone Programme (TCP) were promoted for a better utilization of ocean information in Tropical Cyclone research and operational forecasting, and linkages with the Commission for Hydrology (CHy) have been strengthened for interfacing storm surge and coastal flooding models. The JCOMM Expert Team on Wind Waves and Storm Surges (ET-WS) has been working on developing a demonstration project for storm surge warnings. A module on applications of data for marine hazards is being developed for inclusion in OceanTeacher.

In this context, the DMCG recalled Rec. 12 (JCOMM-II) and the Action Plan developed and agreed upon by the expert meeting on possible JCOMM contributions to the development and maintenance of marine multi-hazard warning systems (Geneva, Switzerland, 1 to 3 February 2006).

The meeting recalled that three experts from the CBS Expert Team on Data Representation and Codes have been working on drafting a CREX template for tidal data. These experts included: Atsushi Shimazaki (Japan Meteorological Agency (JMA)), Charles Sanders (Bureau of Meteorology (BOM)), and Eva Cervena (Czech Hydrometeorological Institute (CHMI)). TheWMO Secretariat was asked to provide the Group, via email, with a copy of the draft for review. While noting that Spain has developed real-time quality control procedures, the Group noted that recommendation has been made by the Intergovernmental Coordination Group for the Tsunami Warning and Mitigation System in the Indian Ocean (ICG-IOTWS) and the expert meeting on possible JCOMM contributions to the development and maintenance of marine multi-hazard warning systems (Geneva, Switzerland, 1 to 3 February 2006), to develop and publish quality control standards for real-time GTS transmission of sea-level data. The Meeting noted that the Chair of the GLOSS Group of Experts (GLOSS-GE), had not yet seen any such proposal. The Group also noted that real-time quality control procedures had already been defined under GLOSS. The Group therefore agreed that coordination was needed between GLOSS, DMCG, CBS, and the International coordination groups dealing with Tsunami warning systems. The Group recommended that the GLOSS Technical Workshop addresses the issue. The Group agreed that tidal forecasting services, such as those being developed in Australia, are also driving the development of the GTS data transmission formats as well as real-time quality control procedures.

The Meeting noted that that the Expert Team on Wind Waves and Storm Surges (ET-WS) was interested in contributing to the OceanTeacherPortal. It recommended that Mr Val R. Swail, Chair of the ET-WS and Murray Brown liaise on the issue, investigate current OceanTeacher's content in this regard, and suggest additions, where appropriate.

The DMCG reviewed the status of implementation of actions assigned to the DMPA, and made the following recommendations:

(i) A draft CREX template has been prepared by the CBS ET-DRC in consultation with sea-level experts. The draft should be circulated to the DMCG Task Team on Table Driven Codes.

(ii) The Chair of the IODE will provide additional information on existing real-time QC procedures related to GLOSS to the DMCG Chairperson. The DMCG Chair will liaise with the Chair of the GLOSS Group of Experts and with Mr Torkild Aarup to ensure that the GLOSS participates in relevant panels and that the

information is eventually presented to the different Tsunami international coordination groups for further discussion. It will be recommended that these issues be addressed at the upcoming GLOSS Technical Workshop.

(iii) The Chair of the ET-WS, in liaison with Murray Brown ,will be invited to investigate what is presently available via OceanTeacher in terms of ocean-related hazards (e.g., wind waves and storm surges), and to identify additional documentation that might be added.

The JCOMM Observations Programme Area (OPA) needs to address the relationship with the IOC Ocean Data and Information Network for Africa (ODINAFRICA) sea-level data service, including for monitoring purposes, and to engage in discussions regarding the use of the data.

Relevant Action Items were added to the Action List (See *Annex VII*).

4. JCOMM DATA MANAGEMENT STRATEGY

4.1 REVIEW OF THE DRAFT JCOMM DATA MANAGEMENT STRATEGY

Mr Keeley introduced this Agenda Item referencing *Document DMCG-II/17*. Mr Keeley recalled that the vision of the JCOMM is that of an organization which coordinates, regulates and facilitates, at the global level, a fully integrated marine observing, data management and services system that uses state-of-the-art technologies and capabilities; and is responsive to the evolving needs of all users of marine data and products; and includes an outreach programme to enhance the national capacity of all maritime countries. The JCOMM aims to maximize the benefits for its Members/Member States in the projects, programmes and activities that it undertakes in their interest and that of the global community in general.

Each Programme Area and sub-programme has its own history of managing data and information prior to its incorporation into JCOMM. The choice was made to place Data Management in a separate Programme Area, to recognize the importance of Data Management. The data management plan discusses what activities the JCOMM should undertake to ensure that the data collected under its programmes are well managed.

The major data management themes are:

- Data and Information Exchange, which includes issues of transporting data to and between archives or processing centres;
- Archives, which include issues of data quality assessment, version control, content, etc.;
- Access, which includes issues of finding, browsing, and moving data and information to users, as appropriate;
- Coordination, which includes issues of how activities in the different PAs need to link together, and the links between JCOMM and other organizations;
- Communications, to include the dissemination of information regarding JCOMM data management, training materials, performance measures, reports, etc.

Document DMCG-II/17 includes a number of recommendations for each of the themes.

After his introduction, Mr Keeley invited the participants to provide comments, as appropriate. And, based upon these comments, Mr Keeley stated that he would revise the Strategy document and send it to a wider audience by the end of October 2006. Further

comments would be invited until the end of December 2006. A new version will then be released in January 2007. In addition, Mr Keeley will start drafting an implementation plan. This will be distributed to the DMCG Members for comments by the beginning of 2007.

Below is an itemized summary of the comments and recommendations made by the DMCG Members for revision of the Strategy document. These comments are included in this report to assist Mr Keeley with the revision of the Strategy Document.

- Introductory paragraph should be added in each section;
- A section on "satellites" should be added. Satellite products can be viewed as observational data (to be assimilated in models);
- Clarify in the documents what kind of data (i.e., *in situ*, satellites, model);
- Add an executive summary to the strategy;
- **Vision and objectives of the JCOMM**: Distributed systems must be mentioned, interoperability, to be included in the vision;
- **Purpose and scope of the plan**:
- Comments from Scott Woodruff: chemistry, biological etc., will they be suitable to WDCs? WDCs to consider what they should be holding based on their specifications.
- "Model Outputs" should appear in the strategy in addition to "observational data". Depending on the state operational/research of the model, output can be kept or not. Metadata required characterizing how the models work. Catalogues of models are being defined and built. Assessing in an integrated way products (*in situ*, observations, satellite products, model outputs, combined products, etc.);
- Paragraph on models will be added by Robert Keeley;
- The DMCG discussed whether model outputs should be archived. It was stated that it is up to the model providers to decide. The JCOMM can provide for data policy recommendations (what are adequate archive practices). Archiving is part of the JCOMM Vision. The JCOMM provides for a framework. There are archive functions within JCOMM already;
- Should we view satellite products that are meant in particular for data assimilation in models as "observational data" (e.g., combined SST analysis)? Status of such products should be refined;
- **Organization of the plan**: archives should stay in the plan. "Production processes" might be a better wording than archive. The statement after "Data and Information Exchange" needs to be reworded;
- **4.1 Data Exchange**: Rec 4.1. This should be advertised. Sensor output standardization is needed. "Encourage" is better word than "investigate"
    - **Using the GTS**: it was recommended to use. "Table Driven Code forms" rather than "BUFR". There is a need for "people readable" formats. There is a need to refer to CREX. "Operational time critical delivery" should be the title of the paragraph 4.2;
    - **"Using the Internet"**: parts that are operational time critical will be moved to the new 4.2. Conversions from one format to another should be made easy as was made in defining Argo Network Common Data Form (NetCDF) and BUFR templates;
    - **xml**: to be renamed to "naming conventions". Naming conventions are important, section should include details on this. Converge naming conventions with other formats (e.g., NetCDF, BUFR, XML, etc.);
- **Add a section 4.5**: delayed-mode distribution for research and archival. Background on GCCs, IMMA, IMMT. Work on best practices with JCOMM and IODE to avoid duplicates (as opposed to managing existing duplicates);
- **Archive**s: Section to be renamed "Processing production line". Proposal to add input on exchange formats, introduction paragraph: archiving may be expensive when relying on formats like NetCDF, BUFR. Archiving needs to be decoupled from the

format issue. Preserving the original data (in original format) is important (e.g., BUFR does not necessarily accurately preserve the data). When observations have been converted to geo-physical units these are the data that should be preserved;

- Data quality: stating that there is a distinction in terms of requirements between real-time and delayed-mode Quality Control. Delayed-mode QC is more difficult, there is perhaps no generic QC procedure (e.g., salinity from moorings, floats, vessels). Easier to propose Real-time [automatic] QC strategy and recommendations can be made. There is also the distinction between automatic (real-time to a large-extend) and manual checks (delayed-mode). The time constraint drives whether QC should be automatic or not. Near-real-time can use some manual features;
- Data Versions: *in situ* vs. satellites. Levels of data: Sylvie to provide input to Bob Keeley. Eric Lindstrom also to provide input on satellites. Craig Donlon to provide input on GHRSST. Argo to be mentioned in 5th paragraph (pilot project). David Thomas will also send level information;
- Duplicates: Master source of the data need to be identified and unique ID must be recorded. Unique WMO numbers can now be allocated to OceanSITES;
- Contents: Describe what are the ideas of bricks. Relates to discovery data but not only. Encapsulation of different components to serve applications. Nick to provide information to Bob on the ISO technical concepts as well as NetCDF document on constructors (specific IP);
- Processing history: Idea is to keep track of what has been done;
- Metadata: Production line to produce the metadata in support of discovery; common naming; Dublin Core; ISO standards. Bringing these concepts in a way that permits the access. Sylvie: comment related to MERSEA: thematic view, catalogues attached metadata to platforms or individual data sets; need to reference data sets; metadata for satellites, in situ observations, and models outputs, in a coherent way. Data stream/platform/instrument vs. Variable "centric": both ways should be possible. So there are different levels of catalogues. Bob Keeley to refine these concepts (e.g., "Consumer use metadata";

- Classes of metadata: high-level, time-range, level-range and space-range. Nick: Grid level, Profile level, Point level. Bob Keeley to describe better the concepts in this section. Nick: for user interface purposes, there is a need of defining the granularity of the data. Word "comprehensive metadata model" is better than "categorization". Leslie to provide Bob with document. Sylvie: Use another word than ontology in the first paragraph;
  - SOCs **and RNODCs**: Leslie: existing RNODCS: which ones to keep? Responsible National Oceanographic Data Centre for Drifting Buoys (RNODC/DB), IGOSS BATHY/TESAC Specialized Oceanographic Data Centre (SOC). Leslie to provide some text on what is happening;
- **6.1 Discovery**: Interoperability of catalogues is needed and we should try to integrate them. Generic catalogue. The Open Geospatial Consortium (OGC) compliant catalogues and its registry service can be used for that. ISO 19115 ISO 19239 & registry services. "To guide the Data Management (DM) community for moving towards interoperability of catalogues". Bob will elaborate on WMO Core and Ocean Profile. Plus interoperability, what OGC compliant means, registries. Add a recommendation in this section. Make reference in the cooperation section;
- **6.2 Browse**: Scott: threads, OpenDAP: Bob to add a few lines. Visualization should be mentioned (using applications that are compliant with the standard). Standardization exercise is also important;
- **6.3 Download**: rename to "access and delivery". Metadata need to be considered as they are complementary to this concept. Web services. Ease access to distributed

systems (a few interchangeable formats or structures). Nick: Class of web services for preparation of transfer of data; request response mechanisms;

- **6.4 Security** (new section): Security issue is important for integrated download and integrated viewing: Focusing on data where there are no big restrictions. Compliance with WMO and IOC data policies. What recommendation? No technical details should be included. If no recommendation, no new section. Nick stressed that such a section is needed, no necessarily details. Computer assets need to be protected from pirates, intruders, etc.;
- **7 Coordination and linkages**;
- **7.1 Within JCOMM activities**: Link to satellites to be added;
- **7.2 With IODE activities**: Leslie is happy;
- **7.3 Renamed to IOC programmes (was With GOOS and others)**: GOOS, OOPC, GODAE, GHRSST, Argo. Address the satellites issue and move towards operational products. Sylvie: clients of GODAE will move toward operational. Specialized data centres. Key players in the system (e.g., GMES). Bob Keeley will indicate that plan addresses the first part of O33. Other activities will be included. Paragraph on Capacity Building need to be included;
- **7.4 with WMO**: MERSEA is a good candidate to be part of WIS but there are other programmes. Paragraph on Capacity Building to be included;
- "Coordination with other programmes" or "Big programmes" section needs to be created. Cooperation with those programmes. GMES, DMAC, Blue-Link, Japan, Asia. Hiroshi, Leslie, Nick to provide input. Ensure experts are engaged in these activities and see how JCOMM can be connected to them;
- **7.5 With the International Council for Science (ICSU) World Data Centres (WDC)**: Sylvie: advocating for annual release of world ocean database: this is more an implementation issue. Bob will use the example of WDC and put it in a paragraph … need for regular updates … what are our respective roles in the bigger picture. Bob will ask Sid whether this is appropriate. Nick agrees;
- **7.6 Satellites**: new section to be added;
- **8. Communications**: no comments;
- **9. Conclusions**: no comments.

Relevant Action Items were added to the Action List (See *Annex VII*).

4.2 UPDATE REPORT ON IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT

This Agenda Item was introduced by Dr Lesley Rickards, Chairperson of the IODE. This item was included in the Agenda for information purposes and to aim at synergy between the JCOMM and IOC data management strategies.

Dr Rickards recalled that the IOC is in the process of developing an IOC integrated data management strategy, encompassing all its programmes. For this experience gathered in the preparation of other strategies as examples both within IOC and elsewhere (e.g., GOOS DM, GCOS DM, WMO Information System, JCOMM, GEOSS, International Polar Year (IPY), OBIS, etc.) will be used. The Task Team report (2003) formulated a draft statement on vision, rationale, principles/objectives and elements of governance for this Strategy. Subsequently, a sessional working group during IODE-XVIII (2005) followed this up and produced a suggested approach and strategy document outline.

The vision statement for the strategy is as follows:

"A comprehensive and integrated ocean data and information system, serving the broad and diverse needs of IOC Member States, for both routine and scientific use".

- The concept of delivering a data service for the "global ocean commons" (global public good) is central to this vision.

The scope is:

- Comprehensive and across all of the disciplines within the mandate of the IOC;
- No *a priori* separation of functions based on the lead time for data delivery (e.g., real-time versus delayed-mode);
- Different strategies might be employed to satisfy global, regional and local requirements, and to meet timeliness needs.

Suggested document outline:

1. Executive Summary
2. Introduction
3. The IOC Data Management Vision
4. The Long-Term Objectives: Define what IOC data management wants to be;
5. Basic Principles: data policy, data provision to all member countries, etc.; products and services; technological aspects, capacity building; involvement of the NODCs, specialized data centres, project data management elements; collaboration with other relevant groups; etc.;
6. Current Structure of data management: Description of the IOC programs that have implications to and responsibility for data management; Description of programs (research and conventions) that have data of interest to the IOC community; example – those under the regional seas conventions, regional alliances); how these are run (ex. At IOC how the Secretariat deals with the responsibility, same for other programs; Coordination: Chair, Management Committee, Capacity Building aspects, etc.;
7. Key Gaps
8. Proposed structure: organizational structure, operational structure (how things should work together; data flow, QC, etc.); technological tools and standards; define components: how data can be acquired, processed, managed; data flow; data centres, special data centres; type of data acquisition;
9. How to apply the principles in new data management: This could include incorporation of new elements, pilot projects, science and technology workshops and conferences, and role of regional bodies;
10. Mechanism to collaborate with other entities: This may involve subsidiary bodies of the United Nations (UN) system, other governmental and non-governmental global organizations, links to science programmes, and the private sector. Every IOC programme should have a data management element;
11. Performance Evaluation: Review of work plans of subsidiary structure, reporting to the parent bodies, external review. Regular review and assessment should be part of the IOC data management strategy;
12. Communications and Outreach: Need to use a variety of tools. The IODE has already developed a range of these (including websites, posters, OceanTeacher, etc.).

Some discussions on the Strategy were held at the IODE Officers Meeting early in 2006. These discussions also covered the development strategy for the IODE to cover the next four years. Four main strands of activity were agreed upon, leading towards the development of a Global Ocean Data Portal. These activities centre on metadata, quality control, use of modern technology and capacity building, and build on the current work of the IODE and its expert teams. A progress report on the IOC Data Strategy was given to the IOC

Executive Council in June 2006. The IODE Chair is leading the drafting of the Strategy, and the intention is that a preliminary version will be distributed for comment at the end of 2006. A draft Strategy will be submitted to IODE-XIX in March 2007 and to the IOC Assembly in June 2007.

5. OTHER BUSINESS

5.1 TRAINING AND TRAINING MATERIALS

This Agenda Item was introduced by Mr Bob Keeley. Mr Keeley noted that this Agenda Item had been discussed largely under Agenda Item 2.4. Mr David Thomas called attention to computer-aided training activities undertaken by the Comet Programme (http://www.comet.ucar.edu/).

The DMCG recommended that Dr Murray Brown, OceanTeacher Data Management Editor, to further investigate Comet and possibly seek collaboration between OceanTeacher and Comet or identify what courses are already covered by Comet and should therefore not be covered anymore by OceanTeacher (OT).

Relevant Action Items were added to the Action List (See *Annex VII*).

5.2 GROUP ON EARTH OBSERVATIONS (GEO) / GEOSS

This Agenda Item was introduced by Mr Bob Keeley, referencing the "GEO Group on Earth Observations – Workplan for 2006" and the Task Matrix distributed to the DMCG Members. Mr Keeley reported that both he and Dave Thomas had participated in a number of teleconferences. The GEOSS is very far reaching as evidenced by the fact that there are seventy-three tasks in their work plan. Parts that are of direct relevance to the DMPA are the Data and Architecture and Data Management Sections, as well as some tasks in Climate. Initially, the IOC and WMO Secretariats had identified areas/tasks that were of interest to the WMO and IOC. As such, Bob Keeley and Lesley Rickards were identified as relevant experts.

As the work plan was developed, there has been some concern that there was little representation of ocean experts in the GEO/GEOSS. This led to the establishment of Ocean United. Mr D. Farmer has been discussing with the GEOSS Secretariat, and Jim Baker has made some recommendations to change the GEOSS activities related to Oceans. Bob Keeley, Nick Mikhailov, Scott Woodruff and Lesley Rickards were able to contribute the discussion and to add the comments and recommendations, where appropriate. With regards to the climate-side of the discussion, work has been done primarily through the WMO Members. There has been some interaction with GEOSS regarding the WIS.

The DMCG noted that the WMO and IOC have not effectively participated in the GEOSS. This is of concern as the GEOSS Work Plan includes a number of activities and objectives that are directly relevant to the JCOMM. It was recognized that the number of GEO/GEOSS teleconferences and meetings are too high for the Secretariats to participate in, or for only a few selected members. Accordingly, the DMCG Members agreed to participate in these events based upon their expertise and availability. It was further agreed that the Secretariats would circulate all emails related to the GEO/GEOSS events for follow-up by the DMCG Members. Any Members participating in such meetings were asked to provide a brief summary to others on the DMCG and Secretariats, to keep the participants appraised of the relevant information.

The DMCG requested Dr Jean-Louis. Fellous, Co-president of JCOMM, to discuss the importance of the JCOMM involvement in data management related GEO/GEOSS activities with the GEO/GEOSS Secretariat.

Relevant Action Items were added to the Action List (See *Annex VII*).

5.3 COMMUNICATION STRATEGY

This Agenda Item was introduced by Mr Etienne Charpentier. Mr Charpentier presented the outcome from the Fifth Session of the JCOMM Management Committee Meeting (MAN-V, Geneva, Switzerland, October 2006), in terms of the JCOMM Communication Strategy. The JCOMM Management Committee identified three segments that needed to be addressed within the JCOMM Communications Strategy, and are as follows: (i.) "IN" Reach (most of the communications requirements), (ii.) "OUT" Reach, and (iii.) capacity building. It agreed that there was a need to develop an early assessment study of information needs. For "IN" reach, a unified website, hosted by the IOC will be established and managed jointly by both the WMO and IOC Secretariats. Sub-websites can be developed, provided that they have similar appearance. As far as "OUT" Reach, the Management Committee agreed that much communication was already being made through GOOS and other international, regional, or national programmes. However, it is recognized that despite the risk of some duplication, there was a need for the JCOMM to communicate with a wider audience, including decision-makers. The Management Committee agreed that a comprehensive needs analysis was required and that a consultant should be hired for conducting it. The analysis would address categorization of audiences and their needs (i.e., the private sector, public sector, decision makers, Non-Governmental Organizations (NGOs) and news media).

As far as capacity building is concerned, the Committee agreed that communication should be managed separately from the in-reach and outreach activities. For example, a separate CB website with separate domain name could be established, with links to and from the main JCOMM website. The CB website would include information on project proposals, and existing JCOMM tools such as seminars, workshops, training courses, OceanTeacher, BILKO, etc.

The Management Committee recommended that Programme Areas carefully address their needs in a way consistent with the JCOMM Communications Plan and should avoid redundancy between the JCOMM and associated websites.

The DMCG agreed with the recommendations from the Management Committee and after discussion **the DMCG made the following decisions or recommendations**:

- to establish a DMPA website hosted by the IOC. The website will use a Content Management System and will provide for secured access for parts of it. Redundancy with other websites will be avoided;
- the structure of the website will be discussed and defined by the Chairs of the DMCG, the ET-MC, and the ET-DMP, as well as with the WMO and IOC Secretariats;
- the ET-DMP will establish its website and comply with the recommendations from the JCOMM Management Committee and the DMCG;
- the ET-MC website will be updated to reflect the recommendations from the JCOMM Management Committee and the DMCG;
- a mailing list for the DMCG will be developed.

Relevant Action Items were added to the Action List (See *Annex VII*).

6. DATE AND PLACE OF THE NEXT SESSION

The DMCG recommended having its next Session in January 2008. Offers to host the meeting were made by the DMCG Chairperson (Canada), the ET-DMP Chairperson (Russia) and the IOC/IODE Secretariat (Ostend, Belgium). The DMCG noted that the MAN-VI was tentatively planned to take place in September/October 2007, and the upcoming CLIMAR-III Conference was scheduled for May 2008.

7. ADOPTION OF THE ACTION LIST

The DMCG adopted the Action List as attached in *Annex VII*.

In order to maintain the momentum of the DMCG's progressing work, the Chair requested progress reports to be submitted every three-months, to be prepared by the Secretariats, based upon input received from the responsible members of the DMCG. Following the Action List, it was expected that the work plan will be fully implemented around April 2007. Additional tasks might be assigned to the DMCG and its Expert Teams by MAN-VI.

8. CLOSURE

The Chair closed the Second Session of the JCOMM Data Management Coordination Group at 14h20, Friday, 12 October 2006.

ANNEX I

JCOMM Data Management Coordination Group, Second Session
Geneva, Switzerland, 10 to 12 October 2006

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GROUP PICTURE

ANNEX II

AGENDA

1. OPENING OF THE SESSION
   - 1.1 WELCOME
   - 1.2 ADOPTION OF THE AGENDA
   - 1.3 WORKING ARRANGEMENTS

2. REVIEW OF JCOMM DATA MANAGEMENT ACTIVITIES DURING THE INTERSESSIONAL PERIOD
   - 2.1 ODAS
   - 2.2 ET-DMP
   - 2.3 ET-MC
   - 2.4 CAPACITY BUILDING
   - 2.5 SATELLITES

3. WMO AND IOC ACTIVITIES RELEVANT TO JCOMM DMPA
   - 3.1 WMO QUALITY MANAGEMENT FRAMEWORK
   - 3.2 WMO WIS
   - 3.3 WMO TABLE DRIVEN CODES ISSUES
   - 3.4 METADATA MANAGEMENT
     - 3.4.1 Meta-T
     - 3.4.2 IODE MEDI
   - 3.5 INFORMATION ON OTHER DISTRIBUTED DATA MANAGEMENT AND ACCESS SYSTEMS
   - 3.6 TSUNAMI (MULTI-HAZARD) WARNING AND MITIGATION SYSTEMS: CONTRIBUTION OF JCOMM

4. JCOMM DATA MANAGEMENT STRATEGY
   - 4.1 REVIEW OF THE DRAFT JCOMM DATA MANAGEMENT STRATEGY
   - 4.2 UPDATE REPORT ON IOC STRATEGIC PLAN FOR OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT

5. OTHER BUSINESS
   - 5.1 TRAINING AND TRAINING MATERIALS
   - 5.2 GEO/GEOSS
   - 5.3 COMMUNICATION STRATEGY

6. DATE AND PLACE OF THE NEXT SESSION

7. ADOPTION OF THE ACTION LIST

8. CLOSURE

ANNEX III

**TERMS OF REFERENCE OF THE
JCOMM DMPA TASK TEAM ON THE END TO END PROTOTYPE**

The Team will:

(i) decide what data types in data centres should be included (e.g., Ice Portal, ODIN projects, etc.);
(ii) prepare proposals of work that needs to be done to improve connections with the WIS;
(iii) Prepare, by March 2007, a "checklist" of technical requirements to become a data provider. This "checklist" should be submitted to the IODE-XIX (March 2007) with the view of attracting additional data providers from the IODE Data Centres community. In this regard, special attention should be given to also involve data providers in developing countries through the IOC Ocean Data and Information Network (ODIN) networks;
(iv) to prepare during 2006-2008:
- a vision on system architecture;
- a common ISO19115 metadata profile and its implementation under ISO 191XX (19136, 19139) for discovery, access, delivery and other functions;
- a common dictionary of data/metadata elements (naming conventions), data exchange format (data transport format), based on NetCDF.

The Team will be composed, as a minimum, of:
(i) the existing E2E data providers;
(ii) the JCOMM ODAS Centre (China);
(iii) the META-T Pilot Project;
(iv) the IODE project office;
(v) the Chair ET-DMP (who will also be the Chair of the Task Team)

ANNEX IV

TERMS OF REFERENCE (TOR) OF THE JCOMM DMPA TASK TEAM ON DELAYED-MODE VOLUNTARY OBSERVING SHIP DATA (TT-DMVOS)

Background: The Marine Climatological Summaries Scheme (MCSS), established in 1963 (Resolution 35, Cg-IV), has as its primary objective the international exchange, quality control and archival of delayed-mode marine climatological data, in support of global climate studies and the provision of a range of marine climatological services. Eight countries (Germany, Hong Kong, China, India, Japan, Netherlands, Russian Federation; United Kingdom and USA) were designated as Responsible Members (RMs) to gather and process the data, including also data from other Contributing Members (CMs) worldwide; and to regularly publish Marine Climatological Summaries (MCS) for representative areas, in chart and/or tabular forms. Two Global Data Collecting Centres (GCCs) were established in 1993 in Germany and the United Kingdom to facilitate and enhance the flow and quality control of the data. Eventually all data are to be archived in the appropriate World Data Centres, such as the NOAA National Climatic Data Center (NCDC).

Scope: In practice, the delayed-mode marine climatological data, handled under the MCSS, and published in the MCS, have generally been limited to Voluntary Observing Ship (VOS) data (i.e., excluding buoy or other non-ship data), in accordance with the original intent of the MCSS. The Task Team will focus primarily on modernizing the management and quality control of the delayed-mode VOS data, while at the same time exploring possible connections with the management of real-time VOS and other ship-based data (e.g., Shipboard Automated Meteorological and Oceanographic System (SAMOS) and GOSUD). So as to develop a clearer separation between data processing, and the preparation of climatological summaries, the team's scope will be limited to data management. Because the RMs and the GCCs have primary involvement in the data processing, they will be invited to contribute to the work. The review and modernization of the MCS is clearly also an important task, which will be considered separately by the ET-MC, and to which the RMs will also be invited to contribute. In addition, as part of the collective modernization of the data management and the MCS, it is anticipated, in due course, that the "MCSS" terminology will be replaced by a new and more up-to-date terminology reflecting a separation between the two functions.

The self-funded Task Team will primarily work via email and shall:

(i.) Examine current delayed-mode VOS data management practices, including those of the GCCs, and streamline them as possible to reduce redundancies (if any), standardize operations, and exploit appropriate modern technologies;
(ii.) Examine possibilities for convergence of the data management of the delayed-mode data, with real-time VOS data;
(iii.) Keep under review the International Maritime Meteorological Tape (IMMT) format, and suggest changes if necessary;
(iv.) Keep under review the Minimum Quality Control Standards (MQCS), and suggest changes if necessary;
(v.) Submit proposals to the JCOMM via the ET-MC for revising technical publications, in particular the WMO *Manual* (No. 558) and *Guide* (No. 471) *on Marine Meteorological Services*, to incorporate possible changes in the IMMT and the MQCS, and to reinvent the MCSS terminology;
(vi.) Review the International Maritime Meteorological Archive (IMMA) format, and suggest ways to reconcile the IMMT and IMMA formats;
(vii.) Establish and maintain a website to share relevant information;
(viii.) Collaborate and liaise with other groups (e.g., SAMOS and GOSUD), as needed, both to ensure access to expertise and appropriate coordination.

Tentative Membership (from ET-MC; including both GCCs as Co-chairs, and all RMs presently represented on the ET-MC) include: Elanor Gowland (Co-chairperson), Elizabeth C. Kent, Frits B. Koek, Alexander Vorontsov, Wing-tak Wong, Takashi Yoshida, Scott D. Woodruff, and Reinhard Zöllner (Co-chairperson).

Proposed additional members (not on the ET-MC) include: A representative from US/NOAA/NCDC, Graeme Ball (Chairperson of the OPA/SOT) and Julie Fletcher (Chairperson of the OPA/SOT/VOS Panel).

Reporting mechanisms*:*
(a.) The Team will produce a project plan to guide operations for the next three years. The plan should explain the linkages to other components of the JCOMM, including the SOT and other pertinent programs.
(b.) The Team will establish an annual reporting mechanism to the ET-MC and the SOT.
(c.) The Team will report to the ET-MC and the SOT at their regular meetings.

ANNEX V

**TERMS OF REFERENCE (TOR) OF THE
JCOMM DMPA *AD HOC* WORKING GROUP ON CAPACITY BUILDING**

The *ad hoc* Working Group on Capacity Building will be tasked to prepare:

1. **A JCOMM Strategic Plan**, taking into consideration, *inter alia*:

   (i) The JCOMM CB structure, as adopted by JCOMM-II;
   (ii) The interaction of the cross-cutting team on CB with the Pas, as described in the ToRs of the JCOMM CB Rapporteurs, adopted by JCOMM-II;
   (iii) The need for interaction between the JCOMM, WMO and IOC CB activities;
   (iv) The need for a mechanism and guidelines to receive, review and adopt CB proposals;
   (v) The need for a mechanism and guidelines to review and evaluate JCOMM CB activities;

2. **Guidance on a JCOMM CB Implementation Plan**

Membership: Mr Peter Pissierssens (lead), Ms Miriam Andrioli, Mr Rudy Herman, Dr Craig Donlon, Mr Ehrlich Desa and Ms Alice Soares.

Timing: Report to be completed within three months for MAN review, and to finalize within six months).

ANNEX VI

**TERMS OF REFERENCE (TOR) OF THE
JCOMM DMPA TASK TEAM ON TABLE DRIVEN CODE FORMS**

Objectives:

(i) collect and compile requirements from the JCOMM Panels and Expert Teams and submit them to the CBS Expert Team on Data Representation and Codes (ET-DRC) (one Member of the Group to attend the ET-DRC Meetings);
(ii) to make BUFR Master Table 10 (MT10) compliant with the WMO Rules;
(iii) defining a mechanism for updating and maintaining the MT10 on behalf of the JCOMM in compliance with rules defined by the CBS ET-DRC. Coastal variables and bio-chemical data will have to be included;
(iv) look at templates and suggest how to standardize content.

Current Membership:

Bob Keeley (TT Chairperson), (a metadata expert designated by the NMDIS), Mr Etienne Charpentier (WMO Secretariat), Ms Hester Viola (Technical Coordinator of the SOT), an expert designated by David Thomas, an IODE expert designated by Leslie Rickards, Scott Woodruff (Chairperson, ET-MC), and an E2EDM expertdesignated by Nick Mikhailov.

ANNEX VII

ACTION LIST

2.1 ODAS					
a.- The IOC/WMO to continue requesting updates on instruments employed on non-drifting ODAS platforms	CL issued and results passed to MEDS and ODAS China	Secretariats	March/April 2007	0	0
b.- Alert OPA to the importance of metadata for historical data	Document to the OPA	Chair of the DMCG	March 2007	0	0
c.- ODAS to contact programmes/projects (not only Member States) to ask for submission of metadata in required format (consult with OPA)	Circular Letter	Secretariats	March/April 2007	0	0
d.- Create links from ODAS back to instrument operator website	Links reported to the DMPA Chair	ODAS China (Chen Jixiang) Dengwen Xia	January 2007	0	0
e.- ODAS (China), in consultation with ET-MC, to document existing XML format for ODAS metadata and recommend to adopt as standard (to the ET-MC and JCOMM-III)	Document	ODAS China (Chen Jixiang)	March 2007	0	0
2.2 ET-DMP					
a.- Establish a JCOMM Task Team on E2E prototype *(Responds also to JCOMM-II: Paragraph 7.1.6 Encourage synergies between the ET-MC and the ET-DMP)* *(Responds to JCOMM-II: Paragraph 7.1.6 Encourage synergies between the ET-MC and the ET-DMP)*	Membership List and Work Plan to the DMCG Chair	Chair of the ET-DMP	Immediate (meeting to be held May 2007)	0	5K-10K
b.- Invite nominations for the ET-DMP renewal (Circular Letter)	Membership List	Secretariats	End of 2006	0	0
c.- Prepare work plan and proposals to improve connections between prototypes, WIS and	Document to the DMCG	Chair of the ET-DMP	January 2007	0	0

others					
d.- Submit a draft checklist of technical requirements to be met by E2E prototype data providers, discuss with the DMCG Chair and finalize	Document	Chair of the ET-DMP Chair of the DMCG	1 March 2007	0	0
e.- Submit document to the IODE and invite IODE Data Centres to participate in the E2E prototype	Document sent to the IODE Secretariat as IODE-XIX Working Document	Chair of the DMCG Chair of the ET-DMP	March 2007 (IODE-XIX)	0	0
f.- Present checklist document to IODE-XIX (12 to 16 March 2007)	Presentation	Chair of the DMCG or the Chair of the ET-DMP	March 2007 (IODE-XIX)	0	0
g.- Identify additional data providers from existing data portal providers (projects) *(Responds to MAN-V: 3.3.8 Regarding the overall role of JCOMM within the WIS, the Committee asked the WMO Secretariat to prepare a questionnaire to Member States represented on JCOMM asking for information on potential JCOMM DCPCs for marine meteorological and oceanographic variables* ***(Action: Secretariats and DMPA)****).*	List of providers and related projects and/or IODE Data Centres	Chair of the DMCG (lead) Projects IODE Data Centres Chair of the IODE	May 2007	0	0
h.- Continue technical development of E2E prototype	Technical work	Task Team on E2EDM prototype	JCOMM-III	0	5K (CCT)
i.- Propose possible participation of ODIN networks as E2E data providers, possibly through EB projects	Document	DMPA CB Rapporteur	May 2007	0	Tbd (EB)
2.3 ET-MC					
a.- Establish a new JCOMM Task Team on Delayed Mode Voluntary Observing Ship (VOS) data *(JCOMM-II: Recommendation 9 (JCOMM-II): Implement the new version of the International*	Membership List and Work Plan to the DMPA Chair	Chair of the ET-MC	January 2006	0	0

Maritime Meteorological Tape format for all data collected as from 1 January 2007)					
b.- Explore connection between the ET-SI and ET-MC (GDSIDB)	Report to Chair of the DMCG	Chair of the ET-MC	April 2007	0	0
c.- Develop a proposal for an Extreme Wave Event Archive	Project proposal presented to IODE-XIX	Chair of the DMCG (lead) Chair of the ET-WS Chair of the ET-MC	March 2007 (IODE-XIX)	0	0
d.- Prepare document on common issues of quality control of surface marine variables	Document to the DMCG	Chair of the ET-MC (lead) Chair of SAMOS Chair of GOSUD Chair of the DMCG	May 2007	0	0
e.- Determine interest of GODAR in Historical Ship Data Rescue activity	Results to the DMCG	Chair of the ET-MC	End of 2006	0	0
f.- CLIMAR-III organization *(Responds to JCOMM-II: Paragraph 7.1.17: Organize a Third JCOMM Workshop on Advances in Marine Climatology to be held in 2007)*	Event	Chair of the ET-MC	May 2008	0	0
g.- WMO to issue a Circular Letter if deadline to meet minimum QC standards have been met (MQCS and IMMT)	Circular Letter	WMO	January 2007	0	0
JCOMM-II: Recommendation 9 (JCOMM-II): Implement the new version of the Minimum Quality Control Standards for all data collected from 1 January 2007	*Report on progress of implementation from the Chair of the ET-MC to the Chair of the DMPA*	*Members / Member States and ET on MC*	*JCOMM-III*		
JCOMM-II: Recommendation 9 (JCOMM-II): Review the implementation and value of the revised format and quality control standards	*Report from the Chairof the ET-MC to Chair of the DMPA*	*ET on MC*	*JCOMM-III*		
2.4 Capacity Building					
a.- Tentative: To organize training course for E2E Technology prototype data providers (Ostend, Belgium)	Event	Chair of the ET-DMP (lead) Chair of the DMCG	September 2007	0	20K (EB)

b.- Identify missing digital library material and course material for the OT related to JCOMM subject areas *(Responds to MAN-V: 3.3.3 The Committee agreed to task the DMCG with the coordination of the submission of materials to OceanTeacher* ***(Action: DMPA))*** *(Responds to the* JCOMM-II: Paragraphs 7.2.3 and 7.2.5, and Recommendation 7/1 (JCOMM-II): Organize training workshops through the IOC Project Office for IODE	Document to the DMPA and CB	M. Brown Chair of the DMCGDM CB Rapporteur (lead)	March 2007	0	0
JCOMM-II: Paragraph 8.1.7: Evaluate all specific JCOMM training events, based on the of questionnaires developed, and involving the donors, the recipients and the executing agencies	*Assessments*	*Management Committee and Cross-cutting Team on Capacity Building*	*Intersessional*	*0*	*0*
JCOMM-II: Paragraph 8.1.2: Continue, expand and formalize regional requirements surveys		*CB Rapporteurs*	*Continuing*		
2.5 Satellites					
a.- Involve a satellite data centre as E2E Technology prototype data provider	Data provider established	Task Team on E2E prototype DMPA Satellite Expert	May 2007	0	0
b.- Propose possible GHRSST-like continuous intercomparison/validation for other variables	Document to the DMPA and SPA	DMPA Satellite Expert	July 2007	0	0
3.1 WMO Quality Management Framework					
a.- Prepare an assessment table of the WMO and IOC documents	Document to the DMPA	Secretariats (E. Charpentier) Members of the DMCG to recommend additional documents for list	End of 2006	0	0

b.- Identify first contact points for the IOC and WMO documents	responses to secretariat	Members of the DMCG	February 2007	0	0
c.- Coordinate an assessment process	status report on documents (obsolete, revise, okay) to the Chair of the DMCG	contact points and Secretariats	Report on progress to IODE-XIX, WMO Congress (June 2007) and the IOC Assembly (June 2007)	0	0
3.2 WMO WIS					
a.- Assist the WIS ET in establishing XML profile for data exchange; reconcile marine profile and WMO core metadata profile	document of profile to the DMCG	David Thomas (lead) Chair of the ET-DMP Chair of the IODE Chair of the DMCG	March 2007 (progress report)	0	0
b.- Propose how marine XML and how it can be used in WIS	document to the DMCG and IODE	David Thomas (lead) Chair of the IODE Chair of the DMCG Chair of the ET-DMP	March 2007	0	0
c.- Submit a list of candidate DCPCs (see 2.2.i) to the WMO	Document	Chair of the DMCG Chair of the ET-DMP	May 2007	0	0
d.- Provide checklist of requirements to be a DCPC of WIS	Document	David Thomas	March 2007	0	0
e.- Agree on accreditation process for the DCPCs, suggested by JCOMM and IODE	agreement reported to the IODE and DMCG	Chair of the DMCG (lead) Chair of the ET-WISC (H. Knottenberg, Germany) David Thomas	June 2007	0	0
f.- Investigate participation of ET-DMP expert(s) in ET-WISC and the ET-CTS	Name(s) of designated expert(s)	Chair of the ET-DMP (lead) Chair of the DMCG David Thomas	Prior to meeting dates of WT-WISC and ET-CTS	0	5K
g.- Discuss linkages of the DMCG, WIS and other major programmes	report results to the DMCG	S. Pouliquen Chair of the DMCG (lead)	June 2007	0	0

3.3 WMO Table driven codes					
a.- Establish the JCOMM Task Team on Table Driven Code Forms *(Responds to MAN-V: 3.3.13 After lengthy discussion stressing the need to engage concerned data providers, the Committee decided to proceed with the preparation of BUFR tables for non-physical parameters* ***(Action: DMPA))****.* *(Responds to JCOMM-II: Paragraph 7.5.3: Initiate actions for the BUFR encoding for the GTS exchange of oceanographic data, as appropriate, including in particular profiling float data)* (*JCOMM-II: Recommendation 2 (JCOMM-II) and Annex*)	Membership List and Work Plan of the DMPA	R. Keeley (lead) Dengwen Xia (*) E. Charpentier H. Viola D. Thomas (*) L. Rickards (*) S. Woodruff N. Mikhailov (*) (*)= contact point. Will identify suitable expert	immediate	0	0
b.- Propose the JCOMM Representative to the CBS attend the CBS ET-DRC Meetings	Letter or email	Chair of the DMCG	May 2007	0	2K
3.4 Metadata					
MAN-V: 3.3.7 In terms of metadata management, the DMCG Chairperson reported that quite some progress has been made both within JCOMM (e.g., ODAS and Meta-T) and IODE (SG-MEDI), but further consolidation is required and adoption of the developed standards by the relevant communities is highly needed ***(Recommendation: DMPA)****.*					
JCOMM-II: Recommendation 2 (JCOMM-II) and Annex					
3.4.1 Meta-T					
a.- Ensure linkage between the ODAS and Meta-T	Dengwen Xia (ODAS) member of Meta-T	ODAS	done		
b.- Recommend for Meta-T to prepare report for SOT-IV (April 2007) for category 1	Document	Chair of the Meta-T	April 2007		

c.- META-T to make recommendations to the TT on table driven codes as far as BUFR requirements are concerned	Document	Meta-T	Mid-2007		
d.- Meta-T to define timetable for its workplan	Timetable	Meta-T	Mid-November 2006		
3.4.2 IODE MEDI					
a.- Recommend for the SG-MEDI Chair to participate in the IPET-MI *(Responds to MAN-V: 3.3.7 The Committee noted that the SG-MEDI and DMPA had common interests and should work together more* ***(Recommendation: DMPA))***	Email or Letter to the Chair of the IPET-MI (S. Foreman, UK) (cc to the Chair of IODE)	Chair of the DMCG	immediately	0	0
b.-Comment on SG-MEDI ISO ocean profile and IPET-MI ISO atmospheric profile	Document to Chairs DMCG, SG-MEDI, IPET-MI	Chair of the ET-DMP	End of 2006	0	0
3.5 Information on other distributed data management and access systems					
See 5.3 and 4.1					
3.6 Tsunami Warning and Mitigation Systems: contribution of JCOMM					
a.- Review and comment to WMO/CBS ET-DRC team on current CREX code form	document	Chair of the DMCG	immediate	0	0
b.- Propose ESEAS QC procedures to GLOSS Chair and find out who in ICG technical working group to contact as best practices *(Responds to MAN-V: Through the DMPA together with CBS, to develop, agree on standards including QC, and implement the CREX code format for sea level data*	document	Chair of the DMCG (lead) Chair of the IODE	June 2007 (GE-GLOSS)	0	0

monitoring in support of tsunami EWS ***(Action: for DMPA))*** *(Responds to JCOMM-II: Paragraph 11.5.17 and Recommendation 11/1 (JCOMM-II): Develop an action plan for JCOMM contributions to multi-hazard warning systems)*					
c.- Request the Chair of the ET-WS to identify material on multi hazard warning and mitigation for OceanTeacher (See Also 2.4)	Content for OceanTeacher	Chair of the ET-WS	March 2007 (IODE-XIX)	0	0
d.- Consider including the African Sea Level Data Facility in OPA scope of activities and address data sharing policy and monitoring aspects	Communication to the Chair of the OCG	Chair of the DMCG	April 2007 (OCG Meeting)		
4.1 Review of the draft JCOMM data management strategy					
a. Prepare revised draft and circulate to JCOMM, IODE, ... for comments *Responds to MAN-V: 3.3.6 The Committee noted that there was still work to do to arrive at a metadata profile that meets both meteorological and oceanographic needs. Both the DMCG and ET-DMP Chairpersons are involved in this work. The location of the data discovery metadata records and the way those records relevant to the JCOMM and/or IODE are built will have to be clarified by the DMCG and included in the JCOMM Data Management Strategy* ***(Recommendation: DMPA)****.) (Responds to MAN-V: 3.3.9 The Committee also encouraged the DMPA and other Programme Areas to engage in more unified data management operations*	revised document	Chair of the DMCG	01 December 2006	0	0

***(Recommendation: DMPA and other PAs)**.)* *(Responds to MAN-V: 3.4.5 The Committee recognized that there is a need to better define cross-PA issues and urged the PAs to define a strategic and implementation plan for PA cross-cutting activities and interactions **(Recommendation: PAs)**.)* *(Responds to JCOMM-II: Paragraph 7.7.1 and Recommendation 7/2 (JCOMM-II): Develop a JCOMM Data Management Strategy to be closely coordinated with those of the IODE and WMO Information System)* *(Responds to JCOMM-II: Paragraph 7.2.2: Work with the IODE and IOC to develop a data management strategy document as a guide for complementary progress between relevant WMO and IOC programmes)* *(Responds to MAN-V: 3.3.10 The Committee noted the development of an IOC Strategic Plan for Oceanographic Data and Information Management Plan and stressed that it should be made as far as possible consistent with the JCOMM Data Management strategy **(Recommendation: DMPA)**.)* *(Responds to JCOMM-II: Recommendation 2 (JCOMM-II) and Annex: Develop a rolling implementation plan, with the wider community, for the integration of new technological developments in data and product management)*					
b. Revise draft based on received comments and distribute final version to JCOMM Co-presidents	final document	Chair of the DMCG	01 February 2007	0	0
c. Prepare draft implementation plan	document to co-	Chair DMPA (lead)	April 2007	0	0

	Presidents				
(MAN-V: 3.3.6 The Committee noted that there was still work to do to arrive at a metadata profile that meets both meteorological and oceanographic needs. Both the DMCG and ET-DMP Chairpersons are involved in this work. The location of the data discovery metadata records and the way those records relevant to the JCOMM and/or IODE are built will have to be clarified by the DMCG and included in the JCOMM Data Management Strategy ***(Recommendation: DMPA)****. – See Also 3.4)*					
4.2 IOC Strategic Plan for Oceanographic Data and Information Management					
See body of report					
5.1 Training and training materials					
SEE ALSO 2.4					
a.-Investigate possible collaboration with COMET (http://www.comet.ucar.edu/) and MetEd programme (related to meteorology training)	report to chair DMCG, chair IODE	OceanTeacher DM Editor (Murray Brown) (lead) DMPA CB Rapporteur (also consult David Thomas)	March 2007	0	0
5.2 GEO/GEOSS					
a.-Members of the DMCG to participate in GEOSS teleconferences, as per invitation received from Secretariats (and based upon their availability and expertise)	Short reports on participation	DMCG Members	as required	0	0

(Responds to JCOMM-II: Paragraph 11.1.5: Incorporate the appropriate actions within the Plans prepared by GCOS and by the GEO into the activities of the relevant JCOMM Coordination Groups).					
5.3 Communications Strategy					
a.-Establish a Task Team for the DMPA web presence to discuss building the DMPA website and sub-sites for ETs	Task Team for the DMPA web presence established	Chair of the DMCG Chair of the ET-DMP Chair of the ET-MC Secretariats – (lead)	completed	0	0
b.-Prepare document describing website layout, structure and content guidelines and distribute to the DMCG Members	Document to the DMPA	Task Team for the DMPA web presence	30 October 2006 (may need revision)	0	0
c.- create DMPA web presence templates	Web site templates hosted on server	Secretariats Task Team for the DMPA web presence	30 November 2006 (may need revision)	tbd	tbd
d-Populate the DMPA websites	Website	The DMCG Members Secretariats	As of 01 December 2006 (may need revision)	0	0
MAN-V: 3.5.6 The Committee agreed that the division of information and avoidance of duplication between the main JCOMM website and more specific sub-websites would need to be reviewed and revised on a continuing basis ***(Recommendation: Secretariats and PAs)****.*					
MAN-V: 3.5.8 The Committee recommended the preparation and publishing of a Communication Strategy document but agreed that the discussion and specific proposals on the latter could be deferred to the breakout working group the following day ***(Recommendation: Secretariats, JCOMM Co-presidents and PAs Coordinators)****.*					
OTHER ACTION ITEMS FOR					

DMPA FORMULATED BY MAN-V					
*4.1.4 Efforts remain to be made in order to collect all required data sets, including delayed-mode data and metadata, from the fleet (**Recommendation: DMPA and OPA**).* *4.1.5 Some specific activities were suggested to the Management Committee by the OOPC Chair: Continue and improve collaboration with tsunami programmes (**Action**: all PAs and DMP Rapporteur);* *Reference: 3.6AB* *4.6.1 The meeting developed and agreed on a range of possible contributions of the JCOMM, through its Programme Areas and component Expert Teams, to multi-hazard warning systems, within the areas of expertise of the Commission. The Committee reviewed the status of implementation of this action plan and urged the JCOMM PAs to continue to implement these actions **(Action for PAs)**.* *Reference:3.6AB* *4.6.8 To refine, publish and implement QC standards for real-time GTS transmission of SL data **(action for DMPA)**;* *REF 3.6AB*					
OTHER ACTION ITEMS FOR DMPA FORMULATED BY JCOMM-II					
JCOMM-II: Paragraph 7.2.6: Consider		Management	Intersessional		

supporting financially the activities of GE-BICH Pilot Projects Comment: no funding		Committee			
JCOMM-II: Recommendation 2 (JCOMM-II) and Annex: Establishment (under the DMCG and IODE) of an *ad hoc* Task Team, comprising representatives of the JCOMM DM, IODE and GODAE (metadata and data formats) Comment: Chairperson of the DMCG to discuss with the Chair of the SPA		Data Management Coordination Group, JCOMM Co-residents and Management Committee			
JCOMM-II: Paragraph 7.6.3: Prepare a revised Expert Team Data Management Practices work plan for Implementation of OIT project Comment: no longer relevant (OIT closed down; activities taken in other activities)		Expert Team on the DMP and IODE	Before MAN-V		
JCOMM-II: Paragraph 7.6.2: Convene a joint JCOMM/IODE/GODAE Workshop on quality control and data assembly Comment: Chairperson of the DMCG to discuss with the Chair of the SPA and the Chair of IODE		Data Management Coordination Group, IODE and GODAE	2007		
JCOMM-II: Paragraph 7.5.16 : Provide an appropriate JCOMM participation in the CBS activities related to data exchange References: 3.3, 3.4, 2.2		Management Committee and Data Management Coordination Group	Intersessional. JCOMM being represented at CBS meetings, including: ET-EGOS, ET-IOS, ET-ISS, ET-AWS		
JCOMMM-II: Paragraph 7.1.4 References: 4.1, 3.2? Comment: covered in website	Maintain a permanent list of oceanography and marine meteorology data management initiatives to promote complementarity and synergy	Data Management Programme Area Coordinator and IODE	Continuing		

JCOMM-II: Paragraph 7.1.8–Intensify collaboration of the IODE NODC`s with the WMO NMHS at the national level on JCOMM data management activities References: 3.2, 3.3, 3.4? Comment: could also be addressed partially under CB (ODINs)		Data Management Programme Area and IODE	Continuing		

JCOMM-II: Paragraphs 7.6.7 and 7.6.10: Ensure wider participation of the GTSPP and GOSUD in Expert Team Data Management Practices Pilot Projects, carrying out the functions of the GTSPP and GOSUD data sources under the E2EDM system prototype REMOVE FROM ACTIONS OF THIS MEETING: put in other annex		Expert Team on the DMP, IODE, GTSPP and GOSUD	Continuing		

ACTIONS THAT WERE SAID TO BE FOR WORK PLAN, NOT ACTION LIST:

b-Propose data types to be included in prototype (e.g., project data sets, ice climatology, etc.) REMOVE FROM ACTIONS BUT INCLUDE IN WORK PLAN	Document to the DMPA	Task Team on E2E Technology prototype			
b-Collect and compile requirements from JCOMM panels and expert teams and construct BUFR templates to meet OPA requirements REMOVE FROM ACTIONS BUT INCLUDE IN WORK PLAN	Document to the Chair of the DMCG	JCOMM Task Team on Table Driven Codes	April 2007 (SOT-IV)	0	0

b-Propose and implement a modern Marine Climatological Summaries Scheme (MCSS) Summaries (old-style tabular climatological summaries) and IMMT REMOVE FROM ACTIONS BUT INSERT INTO WORK PLAN	Document to the DMPA	Task Team on MCSS			
c-Revise relevant WMO Guide after (b) REMOVE FROM ACTIONS BUT INSERT INTO WORK PLAN	Document to WMO	Task Team on MCSS			
c-Make templates BUFR Master Table 10 compliant with the WMO Rules REMOVE FROM ACTIONS BUT INCLUDE IN WORK PLAN	Document to the Chair of the DMCG	JCOMM Task Team on Table Driven Codes GHRSST	Mid-2007	0	0
d-Propose how to administer BUFR Master Table 10 on behalf of JCOMM REMOVE FROM ACTIONS BUT INCLUDE IN WORK PLAN	Document to the Chair of the DMCG	JCOMM Task Team on Table Driven Codes	Mid-2007	0	0
D2–Investigate commonalities between BUFR tables, XML, GF/3, CF REMOVE FROM ACTIONS BUT INCLUDE IN WORK PLAN	Document to Chair of the DMCG	JCOMM Task Team on Table Driven Codes	End-2007	0	0

ANNEX VIII

LIST OF ACRONYMS

ABCD	Access to Biological Collection Data
ADCP	Acoustic Doppler Current Profiler
AODCJF	Australian Ocean Data Centre Joint Facility
BATHY	Report of bathythermal observation (FM 63–XI Ext. BATHY)
BILKO	UNESCO Virtual global faculty for remote sensing
BODC	British Oceanographic Data Centre
BOM	Bureau of Meteorology (Australia)
BUFR	Binary Universal Form for the Representation of meteorological data (FM 94–XI Ext. BUFR)
CADC	China Argo Data Centre
CAS	WMO Commission for Atmospheric Sciences
CB	Capacity Building
CBS	WMO Commission for Basic Systems
CCl	WMO Commission for Climatology
CDMP	NOAA Climate Database Modernization Program
CEOS	Committee on Earth Observation Satellites
CGMS	Coordination Group for Meteorological Satellites
CHMI	Czech Hydrometeorological Institute
CHy	WMO Commission for Hydrology
CLIMAR	JCOMM Workshop on Advances in Marine Climatology
CLIVAR	WCRP Climate Variability and Predictability programme
CM	MCSS Contributing Member
CMM	Commission for Marine Meteorology (superseded by JCOMM)
COOP	Coastal Ocean Observations Panel
COPEPOD	Coastal & Oceanic Plankton Ecology, Production & Observation Database
CREX	Character form for the REpresentation and eXchange of Data (FM 95–XII CREX)
DAR	Data Discovery, Access and Retrieval
DBCP	Data Buoy Cooperation Panel
DCPC	Data Collection and Production Centre (of WIS)
DiGIR	Distributed Generic Information Retrieval
DM	Data Management
DMAC	IOOS Data Management and Communications (USA)
DMCG	JCOMM Data Management Coordination Group
DMPA	JCOMM Data Management Programme Area
DPM	Natural Disaster Prevention and Mitigation Programme of WMO
E2E	End to End Data Management
E2EDM	End to end Data Management Pilot Project
EC	Executive Council
EDMED	European Directory of Marine Environmental Data
ET-CTS	CBS Expert Team on WIS-GTS, Communication Techniques and Structure
ET-DRC	CBS Expert Team on Data Representation and Codes
ET-WISC	CBS Expert Team on WIS GISCS and DCPCs
ET-DMP	JCOMM Expert Team on Data Management Practices
ET-MC	JCOMM Expert Team on Marine Climatology
ET-SI	JCOMM Expert Team on Sea Ice
ET-WS	JCOMM Expert Team on Wind Waves and Storm Surges
FGDC	Federal Geographic Data Committee (USA)
GCC	Global Collecting Centre
GCMD	Global Change Master Directory

GCOS	Global Climate Observing System
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GHSST	GODAE High Resolution SST Pilot Project
GISC	Global Information System Centres (of WIS)
GLOSS	JCOMM Global Sea-level Observing System
GLOSS-GE	GLOSS Group of Experts
GMES	Global Monitoring for Environment and Security
GODAE	Global Ocean Data Assimilation Experiment
GODAR	Global Oceanographic Data Archaeology and Rescue
GOOS	Global Ocean Observing System
GOSUD	Global Ocean Surface Underway Data Pilot Project
GTS	Global Telecommunication System
GTSPP	Global Temperature and Salinity Profile Programme
ICES	International Council for the Exploration of the Sea
ICG-IOTWS	Intergovernmental Coordination Group for the Tsunami Warning and Mitigation System in the Indian Ocean
ICOADS	International Comprehensive Ocean-Atmosphere Data Set
ICG-WIS	Inter-commission Coordination Group on the WMO Information System
ICSU	International Council for Science
ICTT-QMF	Inter Commission Task Team on Quality Management Framework
IGDDS	Integrated Global Data Dissemination Service
IGOS	Integrated Global Observing Strategy
IGOSS	WMO-IOC Integrated Global Ocean Services System (superseded by JCOMM)
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
IOOS	Integrated Ocean Observing System (USA)
IMMA	International Maritime Meteorological Archive
IMMT	International Maritime Meteorological Tape
INSPIRE	Infrastructure for Spatial Information in Europe
IPET-MI	CBS Inter Programme Expert Team on Metadata Implementation
IPY	International Polar Year
ISO	International Organization for Standardization
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM *in situ* Observing Platform Support Centre
JMA	Japan Meteorological Agency
LDC	WMO Programme for the Least Developed Countries
MAN	JCOMM Management Committee
MCSS	Marine Climatological Summaries Scheme
MCS	Marine Climatological Summary
MEDI	Marine Environmental Data Information Referral Catalogue
MEDS	Marine Environmental Data Service (Canada)
META-T	Water Temperature metadata Pilot Project
MERSEA	Marine Environment and Security for the European Area
MIM	MERSEA Information Management
MQCS	Minimum Quality Control Standards
MMI	Marine Metadata Interoperability Project
MT10	BUFR Master Table number 10 (Oceanographic Data)
NC	National Centre (of WIS)
NCDC	National Climatic Data Centre
NCDDC	NOAA National Coastal Data Development Center (USA)
NDBC	NOAA National Data Buoy Centre (USA)
NERC	Natural Environment Research Council

NDG	NERC DataGrid
NetCDF	Network Common Data Form
NGO	Non Governmental Organization
NMDIS	National Marine Data and Information Service (China)
NMHS	National Meteorological and Hydrographic Service
NOAA	National Oceanic and Atmospheric Administration (USA)
NODC	IODE National Oceanographic Data Centre
NWP	Numerical Weather Prediction
OBIS	Ocean Biogeographical Information System
OceanSITES	OCEAN Sustained Interdisciplinary Timeseries Environment observation System
OCG	JCOMM Observations Coordination Group
ODAS	Ocean Data Acquisition System
ODIN	IOC Ocean Data and Information Network
ODINAFRICA	IOC Ocean Data and Information Network for Africa
OGC	Open Geospatial Consortium
OOPC	Ocean Observing Panel for Climate
OPA	JCOMM Observations Programme Area
OPeNDAP	Open-source Project for a Network Data Access Protocol
OT	OceanTeacher
PA	Programme Area (of JCOMM)
PMO	Port Meteorological Officer
QA	Quality Assurance
QARTOD	Quality Assurance of Real-Time Oceanographic Data
QC	Quality Control
QMF	WMO Quality Management Framework
RECLAIM	RECovery of Logbooks And International Marine data project
RM	MCSS Responsible Member
RNODC	Responsible National Oceanographic Data Centre (IODE)
RNODC/DB	Responsible National Oceanographic Data Centre for Drifting Buoys (IODE)
SAMOS	Shipboard Automated Meteorological and Oceanographic System
SDR	Satellite Data Requirements
SeaDataNET	Pan-European infrastructure for Ocean & Marine Data Management
SG-MEDI	IODE Steering Group for MEDI
SOC	Specialized Oceanographic Data Centre (of former IGOSS, now JCOMM)
SOT	JCOMM Ship Observations Team
SSH	Sea surface Height
SSO	Single Sign On
SST	Sea Surface Temperature
TCP	WMO Tropical Cyclone Programme
TECO-WIS	Technical Conference on the WIS
TEP	Thematic Portals
TESAC	Temperature, salinity and current report from a sea station (FM 64–XI Ext. TESAC)
TRACKOB	Report of marine surface observation along a ship's track (FM 62–VIII Ext. TRACKOB)
TT-DMVOS	Task Team on Delayed Mode Voluntary Observing Ship data
UN	United Nations
VOS	Voluntary Observing Ship
VOSClim	Voluntary Observing Ship Climate Project
WDC	ICSU World Data Centre
WIS	WMO Information System
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment

WWW	World Weather Watch
XBT	Expendable Bathythermograph
XCTD	Expandable Conductivity, Temperature and Depth profiling system
XML	Extensible Markup Language