JCOMM MANAGEMENT COMMITTEE
THIRD SESSION

Geneva, Switzerland, 17-20 March 2004

FINAL REPORT

JCOMM Meeting Report No. 31

WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

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N O T E

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C O N T E N T S

1. Opening of the session

1.1. Opening

1.1.1 The third session of the Management Committee of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) was opened at 0930 hours on Wednesday, 17 March 2004, in conference room 7L of the WMO headquarters building, Geneva, by the Commission co-president, Savi Narayanan. Dr Narayanan welcomed participants to the session, and introduced the Assistant Secretary-General of WMO, Dr Hong Yan.

1.1.2 On behalf of the Secretary-General of WMO, Mr Michel Jarraud, and of the Executive Secretary IOC, Dr Patricio Bernal, Dr Yan welcomed participants to the session, to the WMO Secretariat and to Geneva. He noted that the first intersessional period of JCOMM was a crucial one for the future long-term success of the Commission, both conceptually and practically. Building on the enthusiasm and optimism established in Akureyri, it was now incumbent on the Management Committee to ensure that concrete results are achieved in the implementation of the Commission's work plan, and also in demonstrating the value of joint efforts by meteorologists and oceanographers. There was no doubt that the future for all UN specialized agencies must involve greatly enhanced interagency cooperation and coordination, and the development and ultimate success of JCOMM was being closely watched, as a possible model for similar cooperative work in WMO, IOC and elsewhere in the UN System. Dr Yan further noted that JCOMM was also now critical to the enhancement of cooperation among meteorologists and oceanographers nationally and regionally. JCOMM provided the mechanism for this to happen, and it was incumbent on everyone to ensure that the mechanism works well, and for the benefit of both communities.

1.1.3 Dr Yan recognized that this session of the Management Committee came at an important time, over midway through the intersessional period. With some 18 months remaining until JCOMM-II, it was a time to carefully review progress in implementing the various Programme Area work plans; to begin thinking ahead to the next intersessional period, to the goals and work programme for this period to be presented to the session for adoption, and to the subsidiary body structure necessary for the implementation of the work programme; and to agree an agenda and document plan for JCOMM-II. In addition to this work, which was largely internal to JCOMM, Dr Yan stressed that it was important for this session of the Management Committee to be aware of, to review thoroughly, and to plan input to, a number of external activities directly relevant to the Commission and its work. These included, in particular:

(i) The outcomes of the Earth Observations Summit, Washington, DC, July 2003, and the work of the Group on Earth Observations, GEO;
(ii) The planning now underway for the International Polar Year, 2007-08;
(iii) The further development of the Future WMO Information System;
(iv) The broader space/remote sensing programmes of WMO and IOC.

1.1.4 Dr Yan concluded by assuring the session of the full support of the joint JCOMM Secretariat, as well as of all other WMO Secretariat staff, throughout the session and beyond. He wished everyone a successful meeting and an enjoyable stay in Geneva.

1.1.5 Colin Summerhayes, Head of the IOC component of the joint JCOMM Secretariat and Director of the GOOS Project Office, spoke on behalf of the IOC, which is deeply committed to the success of JCOMM. IOC and JCOMM appreciate the secondment by NOAA of Candyce Clark to the JCOMM Secretariat.

1.1.6 Dr Summerhayes listed the challenges to JCOMM from the perspective of the IOC as including: (i) the need to respond to the recommendations of the Coastal Ocean Observations Panel (COOP); (ii) the need to expand JCOMM's involvement in oversight of remote sensing activities, given that the full observing system demands integration of in situ and satellite data to produce products and services; (iii) the need to ensure full global coverage of subsurface ocean measurements as a necessary complement to surface measurements, leading to the eventual

need to operationalize Argo; (iv) the need to expand Argo to include under ice measurements from polar regions; (v) the need to complete the proposed merger of the GOOS and JCOMM capacity building groups; and (vi) the need to ensure that JCOMM's requirements are fully and comprehensively considered by the GEO process and incorporated into the eventual 10 year plan for global observations that is expected to be presented to the G8 ministers in spring 2005. This is the highest level of political attention that ocean observations have ever received and we must exploit the opportunity to the full.

1.1.7 Dr Summerhayes presented apologies from Dr Silvana Vallerga, Chair of the Intergovernmental Panel for GOOS, but noted that GOOS interests would be well represented at this meeting by present and past members of the GOOS Steering Committee (Philippe Dandin and Worth Nowlin), the chair of the Ocean Observations Panel for Climate (Ed Harrison) and a co-chair of the Coastal Ocean Observations Panel (Tony Knap).

1.1.8 The list of participants in the session is given in *Annex I.*

1.2. Adoption of the agenda

1.2.1 The Committee adopted its agenda for the session on the basis of the provisional agenda prepared by the Secretariat. This agenda is given in *Annex II*.

1.3. Working arrangements

1.3.1 The Committee agreed its hours of work and other practical session arrangements. The documentation was introduced by the Secretariats.

2. Reports of co-presidents and Secretariat

2.1 The Committee was presented with brief reports by the co-presidents and the JCOMM Secretariat on the activities undertaken within the framework of JCOMM since MAN-II. In this report, the co-presidents outlined what were, for them, the key issues (i) that had arisen since JCOMM-I; (ii) facing JCOMM at the present time; (iii) to be addressed by JCOMM-II. The Committee thanked the co-presidents and the Secretariat for their report, for the work achieved so far, and for their ongoing efforts on behalf of JCOMM. Detailed discussion on the contents of the report and the various issues raised is included in this report under subsequent agenda items, including the Programme Area reports and agenda item 5, JCOMM Development. The Committee agreed that the list of action items from MAN-I and MAN-II should be reviewed in detail as the meeting progressed, and again at the end. It also agreed that a small ad hoc Task Team of the Management Committee should be established, to work with the Secretariat to develop the JCOMM-related component of the seventh WMO Long-term Plan. **(Action: Co-presidents to work with the Secretariat to consolidate the JCOMM input to the WMO Long-term Plan and to present this at the appropriate time.)**

3. Scientific input and requirements

3.1 Ocean Observations Panel for Climate

3.1.1 The Committee was presented with a report by the Chairman of OOPC, Dr Ed Harrison. The Committee was first reminded of OOPC's Terms of Reference.

3.1.2 The highlights of the recommended "Next Steps towards the implementation of the initial global ocean observing system" were presented. These are:

- Sustaining proven satellite and in situ activities, many of which are now research projects without sustained funding;
- Completing the initial composite surface and subsurface ocean observing systems;

- Improving the ocean data system, including data telecommunications, as much data is lost due to bandwidth limitations;
- Increasing effort on ocean analysis and reanalysis;
- A strong recommendation to improve links with research programmes for data collection, evaluation, new technology, and new science.

These are described in detail in the GCOS second report on the adequacy of the global observing system for climate, and are the basis upon which the OPA priorities are now based.

3.1.3 Progress against the OOPC's goals in the past year was achieved on many fronts. The OOPC was present in its liaison, advice and feedback activities at more than 25 meetings. In response to its design and implementation goal, a major effort was its contribution to the Global Climate Observing System (GCOS) 2nd Report on the Adequacy of the Global Observing Systems for Climate in support of the UN Framework Convention on Climate Change (UNFCCC). The 9th session of the Conference of Parties (COP-9) of the UNFCCC accepted the report and invited GCOS to prepare an implementation plan, an activity that is underway. Progress in making evaluations of the global ocean observing system are underway, helped by the JCOMM OCG. These "Next Steps" toward an initial global ocean observing system for climate were endorsed by the GOOS SC, GCOS SC, WCRP's JSC, and UNFCCC COP 9. An OOPC pilot project, the Global Ocean Data Assimilation Experiment (GODAE), is now in its second year of the demonstration phase, with data servers and products online and of increasing capabilities, and intercomparison activities underway. Conceived as a global activity, the initial phases of several projects deliver products that are regional, due to sponsor constraints. The second GODAE Symposium will take place in November 2004, and a summer school in September 2004 will encourage young scientists and scientists from lesser developed countries to become involved.

3.1.4 Incremental progress against the Next Steps was achieved during the past year, and OOPC requested JCOMM to continue its coordination of implementation with all vigour.

3.1.5 The Committee decided that a strategy for monitoring, analysing and reporting on performance of the system, based on a suite of metrics is needed. **(Action: Mike Johnson and Worth Nowlin will prepare an initial system analysis and post to a web site for Management Committee review as soon as feasible.)** The yearly I-GOOS reporting template, updated with targeted questions and separated into global and coastal domains, was considered as a useful tool **(Action: Secretariat to request the GPO to modify the I-GOOS yearly reporting template, to separate into coastal and open-ocean domains, and include targeted questions on national commitments and data availability)**. It was also noted that GCOS yearly action reports were not in practice shared with JCOMM, a situation that should be remedied. **(Action: Secretariat to contact the GCOS Project office to establish a process for sharing of GCOS national action reports)**

3.1.6 The Committee stressed the importance of VOS observations and associated PMO services, and requested that this importance should be reiterated with national weather services. **(Action: Secretariat to address NWS on this issue)**.

3.2 Coastal Ocean Observations Panel

3.2.1 The Committee was presented with a report by the co-chairman of COOP, Dr Tony Knap. Dr Knap gave an update on progress in the development of an Implementation Plan for the coastal component of GOOS, of which the first draft will be delivered in September. The initial Design Plan was published in June 2003 and contains advice on the strategy, the approaches to be taken and the variables to be measured. The objective is to facilitate the routine and rapid detection of change on a wide range of time and space scales. Several of the variables are those currently measured under JCOMM, such as sea-level, temperature, salinity, currents and surface waves, and which contribute to marine services and the forecasting of natural hazards and climate change.

3.2.2 Of the 17 core variables, a sizeable number are chemical or biological. Some of these can be measured relatively easily now, including: nutrients, human pathogens, dissolved oxygen, suspended particulate matter, phytoplankton pigments, litter and plastics, and oil. If JCOMM had advice on the measuring instruments, the measurement approach (time and space and accuracy), the standards and the reference materials, and knew what products were required and what national agencies should produce them, then a start could be made to consider how these variables could be handled within JCOMM. Once the Implementation Plan has been agreed then the GOOS Steering Committee needs to consider mechanisms for developing appropriate standards and reference materials for measurements proposed by COOP, with a view to making JCOMM responsible for the application of these standards and reference materials in due course.

3.2.3 Dr Knap explained that COOP was searching to develop a range of cheap, rapid and efficient ways for assessing ecosystem health, as opposed to using a number of slow, expensive chemical analyses for that purpose. The new methods come under the RAMP concept (Rapid Assessment of Marine Pollution), and include such things as monitoring crab heartbeats, and simple immunoassay methods (like neutral red retention in which the time for the red stain to emerge from a cell is a taken as a rapid measure of cell health).

3.2.4 The Integrated Design Plan for the Coastal Module of GOOS (GOOS Report No. 125; IOC Information Documents Series N^{o} 1183; UNESCO 2003) focused on developing a Global Coastal Network (GCN) with the common variables, combined with the broader activities of the GOOS Regional Alliances (GRAs), with the GCN and GRAs forming a matrix. The Implementation Plan will focus on the development of GRAs to contribute to the GCN. Pilot Projects will be used to establish new approaches before systems are mature enough to consider handing them over to JCOMM. As and when COOP variables evolve into potential product streams, JCOMM's programme area groups should consider how they might best take on the management of the activities.

3.2.5 The Management Committee noted that measurements of some of the COOP variables (e.g. nutrients) are already being made on a routine basis on coastal buoys by many national agencies, on yachts, cruise ships, and piers by the SeaKeepers Association, and on ferries through the European Ferry-Box project. JCOMM programme areas should consider how to take on board these new measuring programmes. The Committee agreed that the co-president's report to the IOC Executive Council should include mention of the continuing positive interactions between COOP and JCOMM, and the willingness of JCOMM, in coordination with IODE, to consider taking on the responsibility for managing the data and product streams suggested by COOP as and when those systems mature. **(Action: COOP to provide the Implementation Plan and a working document for JCOMM-II by end 2004.)**

3.2.6 It was expected that JCOMM could consider taking on responsibility for the use of measures like ocean colour as an estimate of chlorophyll distribution, once the IOCCG is satisfied with the algorithms required for that purpose. Taking on other such items will depend on the availability of widely acceptable standards (e.g. for nutrients), and the successful completion of pilot projects (like RAMP).

4. Review of programme area activities

4.0 Each of the following agenda items was introduced by the respective Programme Area (PA) coordinators, who in particular highlighted the issues within their PAs needing action or discussion by the Committee.

4.1 Services Programme Area

4.1.1 The Committee noted with appreciation a report by the Services PA Coordinator, Mr Phil Parker (Australia). The summary of the report follows.

4.1.2 The first session of the Expert Team on Wind Waves and Storm Surges (ETWS-I) was held in Halifax, Canada, 11-14 June 2003, which completed the first-round meetings of all SPA ETs. The SPA ETs on Maritime Safety Services (ETMSS) and Sea Ice (ETSI) continued their extensive work programmes following ETMSS-I and ETSI-I in 2002.

4.1.3 A considerable focus of effort for the Programme Area during the year has been planning for the Ocean Ops 04 workshop (Toulouse, France, 10-15 May 2004). Further planning has been required for the JCOMM Marine Pollution Emergency Response Support System (MPERSS) and the second session of the Services Coordination Group (SCG-II), to be held directly after the workshop. All ETs have made significant progress on outstanding projects that were nominated by JCOMM-I or which have been subsequently commissioned by them or the SCG. There are, however, several remaining projects which require further and sustained effort to finalize in the lead-in to JCOMM-II, including resolution of the future of the JCOMM Electronic Products Bulletin (JEB) and the functioning of the new ad hoc Task Team on Development of Ocean Services. Work underway or concluded included:

ETMSS

- Improvement of access to GMDSS products through development of an integrated (one-stop) web site and, in conjunction with Inmarsat, determination of technical specifications for a new satellite broadcast service to provide graphical products;
- Finalization of the proposal for redeveloping WMO No. 9, Vol. D, *Information for Shipping;*

ETWS

- Revision and electronic part-publication of the *Guide to Wave Analysis and Forecasting* and development of the *Guide to Storm Surge Forecasting*;
- Preparation of a range of reviews or inventories covering operational wave and surge models and products, and wave and surge data sets;
- Further work on the standardized verification of wave models;

ETSI

- Correction and updating of sea ice nomenclature;
- Development of new standards for sea ice charts;
- Development of additional publications about global sea ice services;
- Interactions with other international/intergovernmental sea ice bodies;
- Planning for ETSI-II, (Hamburg, Germany, 15-17 April 2004).

SCG

- Further discussion on the strategy for redeveloping the JCOMM Electronic Products Bulletin;
- Planning and preparations for Ocean Ops 04 and the first meeting of the ad hoc Task Team on MPERSS (Toulouse, France, 17-18 May 2004).

4.1.4 While the recent year has seen considerable progress on several initiatives, nevertheless the resources of the key personnel involved in the SCG and ETs have been stretched to a major extent. That, together with major changes in staffing of senior positions in the Secretariats in the immediate time frame, will undoubtedly make for a very interesting time for the SPA during the remaining intersessional period.

4.1.5 The Committee endorsed the work plan of the ETs and expressed its appreciation for their efforts and accomplishments. In particular, the Committee was pleased to note that a GMDSS weather information website (http://weather.gmdss.org) had been established and that some industries also found it useful to get marine weather information. The Committee expressed its appreciation to Mr Henri Savina (France, ETMSS chair) and Météo-France for their efforts in developing and maintaining the web site.

ITSU

4.1.6 The SPA Coordinator discussed the prospects for closer ties between JCOMM and the IOC International Coordination Group for the Tsunami Warning System in the Pacific (ITSU) while attending ITSU-XIX (Wellington, New Zealand, 29 September – 3 October 2003). It was agreed that a discussion paper on possible cooperation will be prepared in consultation with ITSU Chairman, Dr Francois Schindele (France), with the view to submission for consideration by the IOC EC and subsequently JCOMM-II. The Committee agreed the IOC EC should be informed through the co-presidents of this development. The Committee noted that one of the apparent benefits of the collaboration would be seen in the field of operational deployment/usage of high-frequency sea level gauges.

Ocean Ops 04, JCOMM Electronic Products Bulletin, Product and Services

4.1.7 The Committee noted the advance planning for Ocean Ops 04. The Committee further noted that, in order to determine expectations and requirements for ocean products and services effectively, the organizing committee of the workshop was preparing a questionnaire to conduct a survey at the workshop. To have an industry view, the Committee agreed that Ralph Rayner (Fugro GEOS, GSC member) should be invited to give a presentation at the workshop. **(Action: Worth Nowlin to contact Dr Rayner as soon as possible and advise the Organizing Committee of his availability)**

4.1.8 With regard to the redevelopment of the JCOMM Electronic Products Bulletin, the Committee agreed that it was no longer appropriate for it to continue in its present form, but that in the future it should more likely be re-developed as a form of web portal to ocean products directly related to JCOMM. It therefore agreed that an ad hoc Task Team should be established, to prepare a draft strategy for the future JEB, to be discussed by SCG at its session following Ocean Ops 04. The Team is composed of Bob Keeley (Canada), Peter Pissierssens (IODE), and representative(s) of SCG-II, chaired by the SPA coordinator. The Committee requested the SCG to develop a proposal to be submitted to the Management Committee, based on the draft and input from Ocean Ops 04. The future of GOSIC and the status and content of OceanPortal should be taken into consideration. **(Action: ad hoc Task Team on JEB should submit their proposal to the co-presidents following Ocean Ops 04)**

4.1.9 The Committee agreed that a strategy for the development of new ocean products and services should be developed. It noted that a Task Team on the Development of Ocean Services had been established based on proposals of SCG-I and that several members had been nominated by Members/Member States. The Team was composed of Graham Warren (Australia), Takashi Yoshida (Japan), Valery A. Martyschenko (Russia), Jon Turton (United Kingdom), the OOPC chair and the OPA Coordinator and chaired by the SPA Coordinator. However, the Team had not been activated. The Committee therefore agreed to re-establish a Task Team on Ocean Products and Services composed of Savi Narayanan, Neville Smith, Philippe Dandin and Miriam Andrioli, in addition to the current members of the Team. The Team should discuss primarily by correspondence, with an ad hoc meeting during Ocean Ops 04, and consider what kind of ocean products and services are required and how to deliver them to end-users, as well as requirements of the JEB. This ad hoc meeting should be open to all interested participants in Ocean Ops 04, and announced in the workshop documentation. A draft strategy should be submitted to MAN-IV. The Committee noted that the US GOOS, US Integrated Ocean Observing System (IOOS) and EuroGOOS web sites could provide appropriate references for the Team. The Committee noted that results of the questionnaire surveys conducted in all the WMO Regional Associations should be referred to, in this process, for the purpose of identifying product and service requirements of developing countries. **(Action: Task Team on Ocean Products and Services, by MAN-IV; Announcement of ad hoc meeting in workshop documentation)**

4.1.10 The Committee noted with interest and appreciation a presentation by Dr Ivan Frolov on the status of the Arctic sea ice cover and the development of the Russian North Pole drifting station's activities. It was noted that drifting stations in the Arctic Ocean are the best natural platforms for in

situ measurements for validation of space-based measurements. It was further noted that the International Ice Chart Working Group (IICWG) had developed requirements for sea ice observations. It was hoped that such requirements could eventually find their way into the GEO process. Noting the important role of satellites for sea ice observation, the Committee agreed that further collaboration between JCOMM and the satellite community would be desirable in this context. The Committee noted that a new IGOS-P Cryosphere Theme was under development. The Committee agreed that a comprehensive marine data processing for Polar Regions was important, both for operational applications as well as climate research.

4.2 Observations Programme Area

4.2.1 The Committee noted with appreciation the report of the Observations Programme Area Coordinator, Mr Michael Johnson. Each of the implementation panels continued to deal with technical issues specific to their ongoing operations. At the same time three observing system issues were common across all elements of the OPA, and the Observations Coordination Group (OCG) had chosen to give priority attention to these:

- Achieving global coverage by the in situ networks;
- System-wide monitoring and performance reporting;
- Funding to meet implementation targets.

4.2.2 The first issue was the fundamental need for achieving global coverage by the in situ networks. There was presently significant international momentum for implementation of a composite global observing system consisting of: 1) the in situ networks -- moored and drifting buoy arrays, profiling floats, tide gauge stations, and repeat ship lines; 2) continuous satellite missions; 3) data and assimilation subsystems; and 4) system management and product delivery. The GCOS *Second Adequacy Report to the UN Framework Convention on Climate Change (UNFCCC)*, in particular, had called for "urgent action" by the Parties to implement global coverage by the in situ networks. At the same time GCOS and the UNFCCC were bringing this imperative to the attention of governments, and the recent Earth Observation Summit was bringing a similar message that went beyond climate. The JCOMM panels were particularly well positioned to provide the logistics and organizational infrastructure needed to implement the international global arrays. In particular, the implementation panels were looking to:

- Data Buoy Cooperation Panel
    - Deploy and maintain a sustained array of 1250 drifting buoys (presently 902 buoys)
    - Extend the Tropical Moored Buoy network across the Indian Ocean
    - Integrate the emerging Ocean Observatories network

- Ship Observations Team
    - Implement 200 VOSClim ships (presently 89 ships)
    - Fully occupy the 45 high resolution and frequently repeated XBT lines that were specified by the 1999 upper ocean thermal workshop (presently 23 lines)
    - Achieve better integration of the Ship of Opportunity Programme, Volunteer Observing Ship Programme, and Automated Shipboard Aerological Programme
    - Integrate with the emerging International Ocean Carbon Coordination Project

- Global Observations of the Sea Surface, Group of Experts
    - Improve tide gauge station reporting – only 168 of the 290 core network stations report regularly
    - Implement GPS/DORIS at altimeter calibration and long-term trends subsets of stations -- 86 stations initially (presently 37 stations)

- Argo
    - Achieve a global array of 3000 floats (presently 1117 floats)

- o Maintain funding long enough to complete the array and demonstrate value (this objective is common to all the networks)

4.2.3 Secondly, a major challenge for the Observations Programme Area was to develop easy to understand performance reports that could help in evaluating the effectiveness of the observing system and help in efforts to convince governments to provide the funding needed to meet global implementation targets. The OCG was working to develop standard base maps showing required global coverage against what was presently in place. JCOMMOPS had made good progress in standardized mapping over the past year. Much work was being done by JCOMMOPS, the implementation panels, and other partners around the world to evaluate observing system status and effectiveness. The Observations Coordination Group was working to bring together elements of this work in order to develop summary reports illustrating how advancements toward global coverage improved the adequacy of the observational information that was essential for monitoring the state of the ocean and marine meteorology.

4.2.4 Third, as noted above, JCOMM ought to help in efforts to convince governments to provide the funding needed to meet global implementation targets. Global coverage could not be achieved with the resources that were presently being applied. In general the technical experts who participated in the JCOMM panels were not in positions to make decisions to increase governmental funding to the observing system. But the OPA could develop easy to understand statistics and reports that the decision makers would be able to use to justify new funding.

4.2.5 The JCOMMOPS Coordinator, Etienne Charpentier, reported on progress at the centre in Toulouse. He stressed that services offered by JCOMMOPS are system management tools in support of programme implementation; JCOMMOPS does not provide data but information on system status and statistical information. It acts as a web portal and provides links to national data centres. Based on metadata information collected, the production of maps showing the contributions of the countries in terms of deployed in situ instruments has potential positive impact on such contributions, i.e., if a country wants to be on the map, then it has to contribute data to the system.

4.2.6 He also reported on the outcome of the Argo Science Team (AST) meeting in Brest, 9-11 March 2004. Argo is now well developed with over 1100 floats reporting sub-surface temperature and salinity profiles from the world oceans. A challenge for Argo is global deployment. Cooperation in terms of ship deployment logistics might be needed with DBCP in this regard since the DBCP faces a similar challenge. The AST renamed itself the “Argo Steering Team (AST).” Argo management issues were discussed related to the Argo Information Centre at JCOMMOPS. It was tentatively decided that in the future, as in the past, two full time positions are needed at JCOMMOPS for management of JCOMM and Argo system reporting.

4.2.7 The Committee emphasized that a key issue for JCOMM was the cooperation and interaction among the various in situ networks including Argo even though Argo is not an official JCOMM element. In this regard, the committee noted that communications need to be routine between the AST and the JCOMM panels, for example to share common facilities such as ship or aircraft time for deployment of platforms.

4.2.8 The Committee noted the ongoing requirement by the meteorological community that all drifting buoys deployed outside the tropics be equipped with an atmospheric pressure sensor. It endorsed that requirement and urged buoy operators and national meteorological organizations to make suitable arrangements to that end. The Committee noted the work undertaken within the European Community by EUMETNET/EUCOS to rationalize the operational meteorological network with the unique objective of making operational meteorology more cost effective. Such action may result in decreased emphasis on global observations required by JCOMM. (**Action: Secretariat to relay message to Met. Services, buoy operators, DBCP**).

4.2.9 The question was raised of the possibility of establishing a common fund for consumables under the OPA. The Committee requested the OPA coordinator to examine such a possibility and

make relevant recommendations to the next session of the Committee (**Action: OPA coordinator and Secretariat to prepare a proposal for MAN-IV on possible action by JCOMM-II**).

4.2.10 Under this item the Committee was also presented with a report by the JCOMM Satellite rapporteur, Dr Hiroshi Kawamura. Dr Kawamura presented the satellite requirements, noting the need for continuing updates by COOP and OOPC. He also noted the broad range of satellite activities including the IOC strategy, the WMO Space Programme, the IGOS Themes (Ocean, Coastal, Carbon, Water Cycle), the Coordination Group for Meteorological Satellite (CGMS) and so on. Aside from space-based measurements, JCOMM also needed to consider the need for key *in situ* measurements for validating space based measurements. He drew particular attention to the need to consider how best to disseminate satellite data to GRAs, and how to distribute data that is not yet widely distributed in real time – such as vector winds and surface waves. The Committee noted that the IGOS Partners Ocean Theme is now being revised under the leadership of Eric Lindstrom, that the Coastal Theme is at the full development stage, and that a Cryoshpere Theme proposal is being considered. Under the Coastal Theme there is a question about which agencies will carry out the relevant processing.

4.2.11 The Committee discussed how JCOMM should continue to consider the requirements for future satellite missions, and other matters associated with remote sensing. The Committee decided that JCOMM should form a Task Team, reporting to the JCOMM Management Committee, to take responsibility for oversight of the space-based remote sensing activities that were essential for JCOMM services and products. This Task Team should provide the primary interface between JCOMM and CGMS, the WMO Space Programme, the IOC Remote Sensing Plan, CEOS, the relevant IGOS Themes, the WMO high level policy meetings, the COOP and OOPC requirements mechanism, and so on. It should also advise on the distribution and dissemination of satellite data, in consultation with other Programme Areas. The new Task Team should provide JCOMM with a position paper, which would be the basis for JCOMM input to the WMO high level policy meeting in 2005, to CGMS, to IGOS-P and other relevant fora. The Task Team should report to the Management Committee. In the meantime, the Committee called again for detailed specifications on satellite requirements from all JCOMM PAs, including needs related to sea ice, wind waves and maritime safety services. The Terms of Reference and membership for the new Task Team are given in *Annex III*. **(Action: co-presidents and Secretariat to formally establish the Task Team. Task Team on Satellite Data Requirements to prepare a position paper for the 2005 high level policy meeting, and undertake other actions as required.)**

4.3 Data Management Programme Area

4.3.1 The Committee noted with appreciation the report of the Data Management Programme Area Coordinator, Professor Lin Shaohua. Professor Lin reported that the First Session of the JCOMM/IODE Expert Team on Data Management Practices (ETDMP) was held in Oostende, Belgium, 15-18 September 2003. It was recalled that IODE-XVII had agreed that the merger of IODE/GETADE with JCOMM/ETDMP would result in more effective use of resources and avoid duplication. One of the main objectives of the IODE is now to develop cooperation with GOOS and JCOMM. Many IODE centres are closely involved with Argo, GLOSS, Marine XML and the ICES-IOC SGXML, co-sponsors of Ocean Information Technology (OIT).

4.3.2 ETDMP-I had reviewed a wide variety of issues including (i) the data management requirements of GCOS, COOP, MMS, GCOS/COOP/MMS (for satellite and sea ice data), and the regional GOOS Regional Alliances (GRAs) requirements; (ii) existing data management mechanisms and practices including metadata management systems and metadata integration issues; (iii) oceanographic data management (with special attention to standards) and marine meteorological data management; (iv) non-physical data management; (v) satellite, sea ice and spatial data management; and (vi) cooperation with other programmes.

4.3.3 The Team had then focused its attention on the development of a JCOMM strategy for end-to-end data management (E2EDM). It stated that a JCOMM E2EDM system would be provided through (i) the improvement of the existing data management practices for operationally observed

data, marine diagnostic and forecast information, delayed mode data and climate products; and the transfer and sharing of the best data management practices, experience and knowledge at mono-disciplinary and multi-disciplinary levels; (ii) the development of new information technology enabling the integration of various data management components and the coordinated management and use of marine information sources at regional/global scale; and (iii) the development of an E2EDM scheme to meet GCOS/COOP/MMS (as external forces) needs, and the adoption and implementation of such a scheme by all JCOMM members.

4.3.4 The Team had been informed of the proceedings of the First Session of the Steering Team for the Ocean Information Technology (OIT) Project (Brussels, 29 November 2002) that had identified the following components to be included in the OIT Pilot Project: (i) improved telemetry; (ii) metadata management; (iii) data assembly, data set integrity, quality control; (iv) data circulation and transport; (v) archives and archaeology; (vi) applications and user interfaces; (vii) capacity enhancement, training; and (viii) governance, oversight, metrics. The OIT Steering Team had prepared an action plan focusing on the following priorities: (i) metadata systems; (ii) data circulation and communication; and (iii) data assembly, quality control and quality assurance. The ETDMP-I had agreed to work closely with the OIT Pilot Project.

4.3.5 The Team agreed that cooperation between the US DMAC and ETDMP should be enhanced. Dr Steve Hankin (DMAC) had been requested to explore the possibility of a member of the ETDMP joining the US DMAC. **(Action: The Committee recommended that similarly Bob Keeley (Canada) should be nominated as an ETDMP observer to US DMAC and requested the co-presidents to contact US DMAC in this regard**.) The Committee was informed that at the European level a proposal called SeaDataNet had been submitted to the European Commission for funding recently. SeaDataNet has objectives similar to those of US DMAC.

4.3.6 The Team agreed on an Action Plan for the intersessional period based on three pilot projects: (i) metadata management; (ii) data assembly, quality control and quality assurance; and (iii) the development of an E2EDM Prototype.

4.3.7 The Committee was informed that the implementation of the ETDMP Pilot Projects is progressing but was delayed slightly due to the unexpected departure of Mr Greg Reed (IODE Secretariat) and the unavailability (at this time) of the required funds. The staff problem has recently been resolved through the hiring of Dr Vladimir Vladymyrov, who took up his position on 15 March 2004. The establishment of the ODAS metadata management centre in China is progressing and the Committee requested that JCOMMOPS and the DBCP to assist with the collection of the ODAS metadata.

4.3.8 The 22nd Session of the IOC Assembly adopted the new IOC Oceanographic Data Exchange Policy. Resolution IOC-XXII-7 took the following decisions: (1) Merge the IODE Group of Experts on Technical Aspects of Data Exchange and the JCOMM Expert Team on Data Management Practices; (2) Task the IODE Secretariat with the IOC Secretariat duties for the DMPA of JCOMM; (3) Establish and implement the OIT Pilot Project.

4.3.9 It had been decided to postpone work on the IOC data management strategy awaiting the results of the IODE review to take into consideration the outcome of that exercise, as this would be most relevant to the strategy.

4.3.10 The IODE review is progressing well. The review team was composed late 2003 and the team leader was identified (Dr Dieter Kohnke). It had been decided to use a similar methodology as for the GOOS review and accordingly a detailed questionnaire has been prepared and will be mailed to data centres, information centres, IOC action addresses, and various “users”. It is expected that the review will be completed by the end of 2004. **(Action: The IODE Secretariat to send the questionnaire to appropriate meteorology and climatology addressees, through the WMO Secretariat. A preliminary analysis of the questionnaire results should be made available by July to enable their use for the IOC and JCOMM data management strategies.)**

4.3.11 With regard to marine XML activities, IODE is involved in the ICES-IOC SGXML, which was established in 2001, and the EU Marine XML project, which commenced in 2003. The Committee requested IODE to also take into consideration the activities of the US Navy with regard to marine XML.

4.3.12 The newly established IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BCDMEP) is progressing well and a second Session of the Group is taking place between 22 and 24 March 2004 (Liverpool, UK). The Committee noted that the scope of the Group is huge and it may be necessary to share the work with other (JCOMM) group(s). The Committee called on the GE-BCDMEP to closely liaise with COOP. **(Action: the JCOMM Secretariat to liaise with the IODE Secretariat on this issue.)**

4.3.13 The Committee was informed that although some IODE data centres still focus on delayed-mode physical oceanography data, many were and are involved in multi-disciplinary and/or operational oceanography data management activities such as JGOFS, WOCE, CLIVAR, GLOSS and Argo.

4.3.14 The meeting was informed that the IODE Project Office in Oostende, Belgium will be officially opened in April 2005, during IODE-XVIII. It was recalled that the Project Office aims to be an environment for training and experimental work related to ocean data and information management. JCOMM was invited to make use of these new facilities. The Committee welcomed the establishment of the IODE Project Office and recommended that the JCOMM should utilize the Office for relevant training and technical activities.

4.3.15 Actions underway by the Expert Team on Marine Climatology include: The IMMA format has been finalized; some action has been taken to compile a catalogue of global storm surge data holdings; investigation of the possibility to re-establish a global wave metadata archive centre; providing support to CCI and assigning experts to assist CCI in preparing the revised Guide to Climatological Practices; continuing with the digitization of non-electronic earlier versions of WMO-No. 47; keeping under review the IMMT format and MQCS; participation in the work of the organizing/scientific committee of the Workshop on Advances in Marine Climatology - CLIMAR-II.

4.3.16 The Future WMO Information System (FWIS) has similarities with E2EDM. The key issues are data catalogues and technologies to support the system, which will be used for the collection and sharing of information for all WMO and related international programmes. It will provide an integrated approach to ETDMP-I requirements. Mr David Thomas (Australia) represented JCOMM at the October 2003 meeting of FWIS. Follow-ups to this meeting include that JCOMM should have a FWIS focal point on each JCOMM subsidiary body, in addition to the ongoing JCOMM representation on FWIS by a member of the DMCG. A questionnaire will be sent to all WMO Commissions seeking clarification of issues relating to FWIS. The Committee agreed that Savi Narayanan should in the future represent JCOMM on the WMO Inter-Commission Task Team on FWIS.

4.3.17 The Committee noted that, although the WOCE-DAC for shipboard ADCP, co-located at the University of Hawaii's Joint Archive for Shipboard ADCP (JASADCP) and at JODC, RNODC-ADCP, there does not appear to be an arrangement for long-term archival of ADCP data. **(Action: JCOMM/IODE ETDMP and IODE to look into the issue of ADCP QC and archival, in close consultation with the JCOMM SOT)**

4.3.18 The Committee endorsed the ETDMP-I work plan and urged the ETDMP to ensure timely completion of its work plan. Taking into consideration the well-defined work plan of the ETDMP and the scarceness of financial resources, the Committee agreed that sessions of the DMCG and ETDMP planned for 2004 and 2005 could possibly be postponed and the funds used for the implementation of the ETDMP-I work plan. If meetings of these bodies should be required then they should preferably be organized back-to-back with other meetings (e.g. IODE-XVIII) and JCOMM members should be called upon to co-sponsor cost of participation. The Committee further invited JCOMM members to provide extra-budgetary funding or in-kind support (e.g. short-

term experts) through WMO or IOC to support the implementation of the ETDMP. **(Action: JCOMM Secretariat to inform IODE of this proposal)**

4.3.19 Discussions on the IODE's capacity building activities (OceanTeacher and ODIN) were referred to Agenda Item 4.4.

4.4 Capacity Building Programme Area.

4.4.1 The Committee noted with appreciation the report of the Capacity Building Programme Area Coordinator, Ms Miriam Andrioli. This report included detailed information on actions undertaken during the intersessional period 2003/2004, in compliance with the tasks assigned to the CBCG by the Workplan for the Management Committee (from MAN-I & II decisions). Among those actions were the submission of the Western Indian Ocean Marine Applications Project (WIOMAP) to the Task Team on Resources for evaluation; the analysis and study of possible future JCOMM support to the Potential Applications of Ocean Observations for the Pacific Islands; an analysis of the possible modules within Ocean Teacher that should be developed for JCOMM/GOOS; the Capacity Building requirements of the Coastal Ocean Observations Panel (COOP) Design Plan; the development of an enhanced version of the Storm Surge proposal for the Gulf of Guinea at the request of and for submission to ITSU and ETWS; a summary of the survey results on the JCOMM Capacity Building requirements in WMO RA VI – Europe; a revision of the "Participant/Institution evaluation of JCOMM capacity building" in response to TTR-I requirements; and the nomination of a CBCG member, Ms Regina Folorunsho, as representative on the Steering Group for Ocean Teacher.

4.4.2 Other activities of the Group included coordination with Professor Geoff Brundrit, Chair of the GOOS CB Panel, in preparation of the future JCOMM Capacity Building Programme Area – GOOS Capacity Building Panel merger. As a result of this work, a final agreed document containing the proposed vision, Terms of Reference, considerations for the appointment of members and chairs, and a priority list of immediate future joint actions of the future merged Group had been prepared by the two chairs for submission to and consideration of the managerial levels of both JCOMM and GOOS.

4.4.3 The Committee congratulated Ms Andrioli and Professor Brundrit for the excellent work they had accomplished in preparing the JCOMM/GOOS capacity building merger plan. It reviewed, slightly revised, and approved this plan, which is given in *Annex IV*, and agreed that its implementation should proceed once it had also been approved by the appropriate GOOS bodies. The Committee agreed that the Task Team on Resources, which was a body of importance to both JCOMM and GOOS, should continue as a subsidiary body of the merged panel. It further agreed that the user forums proposed at JCOMM-I should best be activated through the GOOS Regional Alliances.

4.4.4 In discussing various issues raised in the report of the CB Coordinator, the Committee agreed:

(i) That each PA coordinator should, in the future, routinely inform the CB coordinator of CB activities within their respective PAs, to enhance cross-PA coordination. At the same time, the CB coordinator should provide the other PAs with information on relevant regional CB requirements from the regional CB surveys. **(Action: All PA coordinators to keep CB coordinator informed of CB activities; CB coordinator to inform other PAs of requirements)**

(ii) That efforts should be made to enhance the designation of national focal points for JCOMM, as a means of improving national contacts on CB issues. **(Action: Secretariat to send reminder letters)**

(iii) That the rapporteurs designated by the WMO Regional Associations on Marine Meteorological and Oceanographic Services should become corresponding members of the new merged CB Panel. **(Action: Secretariat to take necessary action)**

The Committee noted that the COOP Implementation Plan will contain a pathfinder CB project, utilizing the TTR. The Committee also noted that the TTR is already reviewing the WIOMAP project.

4.4.5 The Committee noted the success of the ODIN (Ocean Data and Information Network) capacity building concept developed by IODE in 1998 and based on linking provision of equipment, training and operational support. ODIN support is provided over period of at least 4 years in a regional framework, addressing national as well as regional requirements. The concept has been applied with considerable success in Africa in an IODE context between 2000 and 2003 (ODINAFRICA-II), and will now be expanded into an end-to-end project involving observations, data management and product/service provision (ODINAFRICA-III) involving GOOS, IODE and IOC/ICAM. Other ODIN networks are being developed in the Caribbean and South America (ODINCARSA), Indian Ocean (ODINCINDIO) and one is planned for the South Pacific. The Committee decided that the ODIN concept should be applied for JCOMM capacity building and welcomed cooperation with IODE (and other relevant IOC and WMO programmes) in this regard. (**Action: The Committee requested the Secretariat to work with IODE to ensure that ODIN networks promote and establish linkages between the oceanographic and meteorological communities.)**

4.4.6 The Committee was informed that a new phase of the OceanTeacher project is planned to start in May 2004. OceanTeacher aims to provide in a single integrated e-learning and expert system all the expert and training resources for marine data management and marine information management needed by professional ocean data and information managers and scientists involved in data management, as well as to provide ocean researchers and students with the necessary knowledge to interact effectively with their national oceanographic data centres. In response to the request of the second session of the Management Committee (MAN-II) (Paris, February 2003) OceanTeacher, initially focusing on “traditional” IODE subjects, will now be expanded to cover the full range of JCOMM data and information management subject areas.

4.4.7 The Committee was presented with a draft table of contents of the Operational Oceanography modules of OceanTeacher. The Committee (i) reviewed the proposed draft table of contents; and (ii) provided names of suitable experts who will be able to provide content for the Resource Kit and Training Modules, and provide feedback to the IODE Secretariat, to enable the OceanTeacher Steering Group (that will meet in Cape Town, South Africa between 19 and 23 April 2004) to take the feedback into consideration in their work plan. The Committee requested to ensure that Ms Folorunsho, nominated by the CBPA coordinator as JCOMM representative in the Steering Group OceanTeacher, can attend the Cape Town meeting.

4.4.8 The Committee further requested that marine meteorology materials should also be included in OceanTeacher and requested the WMO Secretariat to contact relevant experts and coordinate the provision of such materials (in electronic format) to the IODE Secretariat for inclusion in OceanTeacher. **(Action: WMO Secretariat to contact relevant experts for the provision of material to OceanTeacher)**

4.4.9 The Committee was informed by Johannes Guddal, co-president, of the proposal for a “JCOMM/IODE Jamboree”, tentatively planned to take place in Bergen, Norway (17-22 April 2005) and Oostende, Belgium (1-6 May 2005) as a joint JCOMM/IODE activity. The objective of the event will be to bring modellers and ocean data managers together to explain their complementarity and mutual dependence to provide operational services and products. The event will focus on developing countries. The session in Bergen will invite modellers and focus on a “training of trainers” session to learn how to set up a numerical model and prepare model output; the session in Oostende will invite oceanographic data managers and focus on ground-truthing of the models using in-situ data. Both sessions will possibly also include an IOI (International Ocean Institute) lecture on ocean governance that will demonstrate the relevance of ocean modelling in a socio-economic context. The Committee approved the proposed “JCOMM/IODE Jamboree” initiative.

5. JCOMM Development

5.1 Specialized Oceanographic Centres (SOCs)

5.1.1 The Committee recalled that MAN-II had established a small ad hoc group to review and advise on the future of the SOCs established under the former IGOSS. Mr Phil Parker, SPA coordinator and chairperson of the ad hoc group, reported on a proposed objective methodology for determining which of the existing JCOMM SOCs might be continued. The report of the 1st Session of the task Team on the Development of an IOC Strategic Plan for Oceanographic Data and Information Management (UNESCO Headquarters, Paris, 23 June 2003) provided useful and relevant background information regarding basic requirements for establishing specialized centres.

5.1.2 The Committee expressed appreciation to Mr Parker for his interesting presentation and requested that the suggested methodology be applied to make a preliminary assessment and set of recommendations regarding the existing SOCs during the intersessional period, for consideration by MAN-IV. **(Action: Phil Parker to undertake this task)**

5.2 Communications

5.2.1 MAN-I noted that the GOOS Steering Committee had been in the process of developing a communications strategy. However, it was now likely that GOOS will use for its communications strategy the document that is now being prepared as an IOC communications strategy for presentation to the IOC EC in June 2004. In due course JCOMM would need to consider the way in which it can capitalize on this document. In addition, Worth Nowlin informed the Committee that the US IOOS was also developing a communications strategy that might help in the development of such a strategy for JCOMM.

5.3 Relationship with other organizations and bodies

5.3.1 Under this item, the Committee was presented in particular with reports on the Earth Observations Summit (Washington, DC, July 2003) and the work of the ad hoc Group on Earth Observations (GEO), established by this summit, and on plans for the International Polar Year (2007/08).

5.3.2 The Committee was reported on the development of the Earth Observation Summit (EOS), which was initiated by the Government of the United States in Washington DC, on 30 July–2 August 2003, with the purpose “to promote the development of a comprehensive, coordinated, and sustained earth observation system or systems among governments and the international community to understand and address global environmental and economic challenges”. The Summit called for an international effort to move towards a comprehensive, coordinated and sustained Global Earth Observation System of Systems (GEOSS), pursuing not only socio-economic benefit but also improvement of the understanding of the earth system, providing support to decision-making processes and to sustainable development. She noted that this process was to develop a conceptual framework and implementation plan, with the ministerial level of support.

5.3.3 The intergovernmental *ad hoc* Group on Earth Observation (GEO) was launched for the above goal, co-chaired by the United States, the European Commission, Japan, and South Africa, and joined by 43 governments, European Commission, and 26 international organizations (as of 27 February). It also noted that the GEO had been working by five subgroups – User Requirement and Outreach, Architecture, Data Utilization, Capacity Building, and International Cooperation - as well as a secretariat to prepare a Framework Document for policymakers and the GEO Report, in time for the Earth Observation Summit II (EOS II) in April 2004, Tokyo, which are to describe the major elements and the general approach to achieving a comprehensive, coordinated and sustainable Earth observation capability within the next 10 years. The results of the GEO effort is supposed to be reported by Member governments to the next G-8 meeting, to be held in the United States.

5.3.4 The Committee noted that the GEO was on the way to establishing the 10-Year Implementation Plan for the creation of GEOSS, taking into account existing activities and building on existing systems and initiatives, by the Task Team to be established in EOS II, in time for the EO Summit III to be hosted by the European Union in February 2005. The IOC and WMO had been active in the GEO process, being aware of existing observing systems such as GOOS and WWW as key components of GEOSS. In this context, the committee noted with satisfaction that the JCOMM activity was well recognized in the Framework Document and the GEO report.

5.3.5 The Committee noted the importance of the Member Countries acknowledging the existing observation system and ongoing efforts in the ocean observation for decision-making in the GEO process. In this context, it requested the Secretariat to prepare a Joint Circular Letter (JCL) urging Members/Member States to make sure that their governments participate in the GEO process with due recognition of JCOMM, GOOS and GCOS, and their plans and programmes, which are consistent with each other, as well as to provide the appropriate information about ongoing ocean observations and future plans to their GEO national representatives. **(Action: Secretariat to work with the GOOS and GCOS Project Offices to prepare and issue a JCL to Member States)**

5.3.6 The Committee noted that Fourteenth World Meteorological Congress (May, 2003) had approved by Resolution 34 (Cg-XIV) the idea of holding an International Polar Year 2007-2008 (IPY) and had requested EC-LVI to examine the preparation and holding of the IPY in collaboration with other relevant international organizations. As follow-up actions the Secretary-General had established at the Secretariat an internal Steering Committee on the IPY, with a Task Team that developed an outline of programme activities to be implemented as contributions of WMO Programmes to the IPY.

5.3.7 The Committee also noted that according to the outline of programme activities the major WMO contributions for the IPY should be focused on the following areas of activities:

- Improvement and further development of the WWW GOS in the polar regions;
- Enhancement of monitoring of the ozone layer, with an increased spatial and temporal coverage;
- Intensification of long-term integrated measurement/modelling of the transport of greenhouse gases and aerosols, particularly to the Arctic;
- Assessment of global-to-regional influences on initiation, evolution and predictability of high impact weather events of polar;
- Intensification of polar climate studies addressing the role of cryospheric processes and feedbacks through which the cryosphere interacts with other components of the climate system;
- Establishment of a comprehensive database of polar climate data to carry out specialized studies of current, and assessment and projection of future, climate change in polar regions;
- Investigation of physical processes in polar oceans and establishment of Arctic Ocean and Southern Ocean Observing Systems;
- Further development of capabilities to observe and model or parameterize the hydrological cycle of regions with cold climate.

5.3.8 As regards the area of activities related to polar oceanography, the Committee agreed that it should include:

- Investigation of physical processes in polar oceans, such as the formation of deep water, sea ice formation and melting, iceberg discharge, atmosphere-ocean interaction as well as the role of polar oceans in climate change.
- Establishment of Arctic Ocean and Southern Ocean Observing Systems, including the reactivation of existing and the establishment new sea level measurements stations as part of GLOSS, strengthening of the International Arctic Buoy Programme (IABP) and International Programme for Antarctic Buoys (IPAB) ice drifter networks, deployment of ocean moorings, upward looking sonars for ice drift, and Argo floats in Southern Ocean,

establishing of research stations on drifting ice and conducting marine expeditions on board ships, icebreakers, submarines, national airborne visual and radar patrols, supplemented by satellites with active and passive microwave sensors, optical scanners and sounding instruments.

- Enhanced service provision in polar regions, including sea ice services, maritime safety services and services related to marine pollution incidents.

5.3.9 The Committee stressed that JCOMM by its nature should play a substantial role in the planning and implementation of the IPY, in particular as leading mechanism in the establishment of long-term measurement system for the observing in both polar oceans. This system would provide products and services creating socio-economic benefits for the communities that live on polar coasts and hinterland (especially in the Arctic) and provide data to improve understanding of the climate system and projection of climate change. Other JCOMM areas such as Services, Data management and Capacity building are also closely related to the IPY activities, so the involvement of the JCOMM as well as GOOS and GCOS was considered as fully appropriate. In this context the Committee decided to submit a JCOMM Position Paper on the IPY (*Annex V*) to the IPY Discussion Forum to be held in Paris on 31 March 2004 and authorized Colin Summerhayes to present the Statement to the Forum. **(Action: Colin Summerhayes to present the statement from JCOMM to the IPY Discussion Forum)**

5.3.10 The Committee underlined that involvement of JCOMM, GOOS and GCOS in the IPY meant that IOC as co-sponsor of these programmes should play an active role in the planning and the implementation of the IPY. It therefore requested the IOC Executive Council to undertake appropriate actions in this regard at its forthcoming session. The Committee appointed Professor Ivan Frolov, Russian Federation, and Mr Steve Pendlebury, Australia as JCOMM focal points responsible for communication with IPY mechanisms, and requested them to represent JCOMM on the WMO Intercommission Task Force on the IPY. **(Action: co-presidents to finalize the focal points)**

5.4 Integration issues

5.4.1 Based on the information given and discussion conducted under agenda items 2-4, the Committee discussed future directions for the PAs, and in particular, the issue of enhanced interaction among and possible integration of the different PAs. It was agreed that, as a first step, all the PA coordinators should develop proposals for enhancing coordination and communications, and communicate these to the co-presidents. **(Action: PA coordinators to undertake this task as soon as possible)**

5.5 JCOMM Strategy Document

5.5.1 The Committee recalled that MAN-II had agreed that a JCOMM Strategy Document should be submitted to JCOMM-II for approval and requested the co-presidents and the Secretariat to prepare the basic structure and input for the document (see agenda item 5.1 of MAN-II). The Committee noted that, unfortunately, pressures of other work had meant that no progress had been made on this issue during the past year.

5.5.2 The Committee strongly agreed on the importance of having such a JCOMM Strategy Document. During a brainstorming session, a draft outline for this document was discussed and agreed upon. **(Action: A first draft of the strategy document to be prepared by the co-presidents, in consultation with the Secretariat, and circulated to members of the Committee for comment, by September 2004.)**

5.6 Work Plan

5.6.1 The Committee reviewed and agreed the JCOMM work plan for the next 18 months, including subsidiary body sessions and actions identified at the present session. This work plan is given in *Annexes VI and VII*.

6. Preparation for JCOMM-II

6.1 The Committee recalled that JCOMM-II would be held in Halifax, Canada, in September 2005. Preparations and planning for JCOMM-II were therefore addressed in detail by the Committee. Specific issues included:

(i) The status and role of the Commission in formal session, as an advisory body to the Governing Bodies of WMO and IOC;
(ii) The structure of the session, including the possibility of inter-leaving relatively informal "information sessions" with the more formal decision taking sessions, in the Working Committees or in Plenary;
(iii) Advice on the major directions and issues which will form the basis for the detailed work programme for the coming intersessional period;
(iv) Agreement on the formal agenda for JCOMM-II;
(v) Review of the basic subsidiary structure for the Commission to be presented to JCOMM-II for adoption;
(vi) Consideration of possible recipients of Outstanding Service Certificates at JCOMM-II;
(vii) Review of the structure of and planning for the scientific conference scheduled for the week prior to JCOMM-II;
(viii) Review of logistics planning and timetable for the session.

6.2 The Committee agreed that the role of JCOMM in session was to provide an (in practice the only) intergovernmental technical input to and review of:

(i) The overall objectives, programmes, plans and strategies for the Commission as a whole;
(ii) A detailed work programme;
(iii) Proposals, recommendations and technical guidance and regulatory material prepared by its subsidiary bodies, prior to final approval by the Executive Councils of WMO and IOC (with associated implied commitments).

6.3 The Committee noted that, as an intergovernmental body in session, there were certain formalities which must be upheld at JCOMM-II. These included credentials for delegations, documentation and interpretation in six languages (required by WMO), procedures for decision-making and elections, etc. Normally all decisions were by consensus (as reflected in the report), though there were also procedures for voting if necessary. The adoption of the final report, resolutions and recommendations would be undertaken in plenary sessions, chaired by one or other of the co-presidents. In principle, the whole session could be done in plenary. However, experience had shown that the division of at least part of the sessional work into Committees had certain advantages: the Committee structure allowed for somewhat less formal discussion of issues and draft decisions, before revised versions of these were prepared for adoption in plenary; in addition, the Committees allowed for candidates for future office in the Commission (co-presidents, PA coordinators, etc.) to gain some exposure before the delegates as chairs or co-chairs of these Committees prior to the elections, which were normally held later in the session.

6.4 In addition, and following a suggestion by the co-presidents, the Management Committee adopted a variation on this session structure, whereby a part of each day during the first week of the session would be devoted to "information meetings", in which most or all of the reporting by the subsidiary bodies would take place. This would then allow the Committee and plenary sessions which followed to concentrate on reviewing, debating and adopting programmes, plans and decisions, rather than spending time on often lengthy reporting.

6.5 The Committee recognized that, with some 18 months to run in the current intersessional period, most proposals for consideration and decision by JCOMM-II were still under preparation by the various groups and teams, with a number of meetings still to take place.

6.6 The Committee reviewed, revised and adopted the Provisional Agenda for JCOMM-II. This is given in *Annex VIII*. The Secretariat was requested to complete the annotated provisional agenda and document plan on the basis of this agreed provisional agenda. **(Action: Secretariat to finalize the annotated provisional agenda and documentation plan)**

6.7 The Committee recalled that the present subsidiary structure for the Commission was adopted at JCOMM-I on the basis of advice from the interim Management Committee. It had undergone some minor modifications during the current intersessional period, but in general appeared to have worked reasonably well in addressing the Commission's work programme. The Committee recognized that, as always, the major implementation problems related to the availability of individual team members to implement the tasks assigned to them. The Committee reviewed this subsidiary structure, in the light of its achievements and advice from the PA Coordinators, and agreed that, with the modifications already implemented, at least for the coming intersessional period, the basic structure should remain largely unchanged. It requested the Secretariat, as before, to seek nominations by Members/Member States of experts to serve on the different teams and groups as early as possible, so that a preliminary selection of their membership could be made in advance of JCOMM-II. **(Action: Secretariat to issue JCL at the appropriate time to seek nominations)**

6.8 The Committee recalled that it had been the practice for many years within WMO Technical Commissions, adopted also by JCOMM-I, to award Outstanding Service Certificates at formal Commission sessions to selected individuals who have undertaken outstanding work in support of the Commission over many years, but who at the same time have not held high office in the Commission. Based on advice from the interim Management Committee, such certificates were awarded at JCOMM-I to Yves Tourre (France) and Sachooda Ragoonaden (Mauritius).

6.9 The Committee agreed that this tradition should be continued at JCOMM-II, and requested Committee members to consider possible nominations during the intersessional period, with a view to making a final decision at MAN-IV. **(Action: Committee members to identify possible candidates, for decision at MAN-IV)** The Committee recognized that Dr George Needler (Canada), who had passed away not long previously, had been a major force in WOCE, and subsequently in the development and implementation of GOOS and JCOMM, and agreed that this contribution should be recognized, perhaps through a special "Needler Memorial Lecture" at JCOMM-II. It requested the co-presidents and Secretariat to develop this concept, for further discussion at MAN-IV. **(Action: co-presidents to identify speaker and topic)**

6.10 Co-president Savi Narayanan to provide an update on planning for the JCOMM-II Technical Conference, which would take place in Halifax the week prior to JCOMM-II. The Committee reviewed and agreed on an outline for the conference, as well as possible members of the Programme Committee. These are given in *Annex IX*. Co-president Narayanan was requested to proceed with planning for the conference on this basis. **(Action: Savi Narayanan)**

6.11 The Committee noted that, in accord with the Memoranda of Understanding on Secretariat support and on rules and procedures for JCOMM, IOC had primary responsibility for preparations for and the conduct of JCOMM-II, with WMO maintaining responsibility for the documentation and interpretation in Arabic and Chinese, and otherwise continuing to play a major supporting role. The common procedures adopted for JCOMM would apply, but as these remained largely in line with those laid down for WMO Technical Commissions, the conduct of JCOMM-II would be little different to that of JCOMM-I. Logistics planning for the session had already begun in the Secretariat and with the local organizers. Document preparation should commence in the third quarter of 2004, and should continue at regular intervals until mid-2005. This would allow for translation and distribution to participants well in advance of the session. There would be a limited hard copy distribution of documents to registered delegates in advance of the session, and all documents would also be made available for download from either the WMO or IOC ftp server (with a link from the other).

6.12 As was the case with JCOMM-I, it was expected that the bulk of the agenda would be completed during the first week of the session (19 to 23 September 2005), with the Saturday being held in reserve in case of slippages. This would then allow the Secretariat the weekend to complete preparation of the working papers and PINKS from the first week, for consideration and adoption during the remaining three days, with the session expected to finish in the afternoon of Wednesday, 28 September 2005.

7. Formal issues

7.1 The Committee addressed a number of issues requiring formal recognition, endorsement or decision by itself which had arisen during the past year through the work of the different PAs. It endorsed the actions of the co-presidents in approving various appointments to task teams, as well as JCOMM co-sponsorship of the 8th and subsequent International Workshops on Wind Wave Hindcasting and Forecasting. The Committee strongly endorsed the actions undertaken within the Ship Observations Team with regard to the growing cost problem arising from the concentration on a small number of countries of marine data collection through Inmarsat. It requested co-president Guddal to bring this issue to the attention of the WMO Executive Council. **(Action: Johannes Guddal to bring the Inmarsat cost issue to the WMO EC)**

8. Closure

8.1 Based on the results of discussions under preceding agenda items and on the work programme to be accomplished up until JCOMM-II, the Committee agreed that a fourth session of the Management Committee was required in the lead-up to JCOMM-II. It further agreed that MAN-IV should take place in Paris in February 2005, hosted by IOC.

8.2 The Committee reviewed and approved the final report of the meeting.

8.3 In closing the meeting, the co-presidents expressed their appreciation to all participants for their very positive and valuable input to the discussions, and to the work of JCOMM in general. They noted that, although much still remained to be done in the lead-up to JCOMM-II, nevertheless there had already been very positive achievements in the consolidation of JCOMM and the implementation of its work plan. They concluded by expressing, on behalf of all participants, their appreciation to the joint Secretariat for its support, and in particular to Colin Summerhayes and Peter Dexter, for both of whom this would be the last Management Committee session in a Secretariat capacity.

8.4 The third session of the JCOMM Management Committee closed at 1330 on Saturday, 20 March 2004.

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PROVISIONAL AGENDA

1. Opening of the session

1.1 Opening
1.2 Adoption of the agenda
1.3 Working arrangements

2. Reports of co-presidents and Secretariat

3. Scientific input and requirements

3.1 Ocean Observations Panel for Climate
3.2 Coastal Ocean Observations Panel

4. Review of programme area activities

5. JCOMM Development

5.1 Specialized Oceanographic Centres (SOCs)
5.2 Communications
5.3 Relationship with other organizations and bodies
5.4 Integration issues
5.5 JCOMM Strategy Document
5.6 Work Plan

6. Preparation for JCOMM-II

7. Formal issues

8. Closure

TERMS OF REFERENCE FOR THE JCOMM SATELLITE REQUIREMENTS TASK TEAM

A Task Team should be formed to:

(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 CGMS, the WMO Space Programme, the IOC Remote Sensing Plan, CEOS, the relevant IGOS Themes, the WMO high level policy meetings, the COOP and 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.

MEMBERSHIP

Membership should include: (i) the CEOS representative on the GSC; (ii) the space representative on COOP; (iii) the space representative on OOPC; (iv) a representative of the IOC remote sensing strategy; (v) the JCOMM satellite rapporteur; (vi) others as appropriate.

The Secretariat for the group should be provided by the WMO Space Programme Office.

PROPOSAL FOR THE MERGED JCOMM CB COORDINATION GROUP – GOOS PANEL ON CB

by

Miriam Andrioli – Geoff Brundrit

VISION

To develop the capacity building needed to ensure the growth, development, sustenance and evolution of the operational marine meteorology and oceanography within the Global Ocean Observing System (GOOS), thereby improving and expanding operational marine data available to marine management and services world wide and directly contributing to the objectives of the WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM).

TERMS OF REFERENCE

1. To develop, and provide oversight for, a joint JCOMM/GOOS capacity building programme to enhance the collection, management, exchange and use of ocean data and information.
2. To implement, evaluate and advance the capacity building programme through the development of a framework, consistent with already agreed principles and guidelines, and an action plan and associated work programme.
3. Liase with other panels, expert teams, associations and alliances, and the prime bodies of JCOMM, GOOS and IODE to determine the needs of and priorities for capacity building activities related to (1) and (2).
4. Liaise with other capacity building programmes in meteorology and oceanography, and in other fields as appropriate, to identify opportunities for collaboration and more efficient and effective operation of the capacity building programme.
5. Develop mechanisms for measuring the impact and success of the capacity building programme, and a system for regular review and evaluation of the programme
6. Develop a funding resource base for the implementation of the comprehensive capacity building enterprise for JCOMM, GOOS and IODE, for activities relevant to JCOMM and GOOS.

CONSIDERATIONS FOR THE APPOINTMENT OF MEMBERS AND CHAIRS

The appointment of members of the Joint Panel should be made by the respective WMO-IOC bodies, namely JCOMM, I-GOOS and the GSC (GOOS Steering Committee) and with IODE having an advisory role related to data and information management.
The Joint Panel should contain an appropriate balance of disciplines, including marine meteorologists, physical oceanographers, chemical and biological oceanographers, and ocean and marine meteorology data and information managers.

Recognising the needs of both the WMO and the IOC, the co-Presidents of JCOMM, marine meteorology and oceanography should be equally represented in the future leadership of the Joint Panel, following the example of JCOMM in its structure and procedures. Co-Chairpersons will jointly lead the Joint Panel, be present at all meetings and chair meetings alternatively.

The membership should be globally diverse, carefully reflecting the regional interests of both JCOMM and GOOS. The Joint Panel could also benefit from the membership of experts from related WMO and IOC bodies.

In the interests of effectiveness of carrying out business, the Joint Panel should have no more than twelve members.

In the interests of maintaining continuity in programme, initial membership and chairing responsibilities should remain as close as possible to the present membership of the JCOMM CBCG and the GCBP.

FRAMEWORK OF ACTIVITIES

The Joint JCOMM/GOOS CB panel will take a distinct regional approach, following JCOMM and I-GOOS, thereby enabling developing countries to participate in, benefit from and contribute to GOOS.

The Joint Panel will aim to:

1. **Raise abilities to participate in and benefit from GOOS**, for example through fundraising for resources, guiding infrastructure development, improving communication capabilities and encouraging mutual assistance.
2. **Facilitate the creation of baseline networks in critical areas**, for example through organising regional workshops, establishing registers of needs, priorities, and assets, co-ordinating support for regional partnerships and assessing effectiveness.
3. **Facilitate the creation of regional networks,** applying the ODIN (Ocean Data and Information Network) strategy, providing equipment, training and operational support in an integrated framework linking observations, data/information management and product/service development.
4. **Develop and maintain the scientific and technical capacity required for the implementation of GOOS,** for example through facilitating education and training across key action areas**,** technology transfer such as tool boxes and start-up packs, the design of pilot projects and the establishment of regional activity centres.
5. **Raise understanding and awareness of the value of observations and their benefits,** for example through communications and media liaison, electronic and hard-copy manuals and handbooks, outreach to educational establishments, lobbying policymakers, and recognising cultural and language diversity.

The key action areas for this framework of activities are

- Infrastructure development
- Remote sensing capabilities
- In situ observations
- Models and forecasting systems
- Data and information management, exchange and delivery
- Product/service development

PROPOSAL FOR A PRIORITY LIST OF IMMEDIATE FUTURE JOINT ACTIONS

1. Establish the structure needed for an effective merger of the existing CB bodies into a fully functioning Joint JCOMM/ GOOS CB Panel.
2. Review and assess the regional requirements for capacity building, and prepare a joint consolidated and co-ordinated set of CB requirement priorities.
3. Continue collaboration with associated international capacity building programmes in related fields, such as WMO and IOC/UNESCO.
4. Move forward in specific areas of existing involvement.

(i) Finalise the development of the regional pilot projects currently underway (for example, the Western Indian Ocean Marine Applications Project) and consider how such projects might be developed in other regions.

(ii) Encourage and co-ordinate the provision of appropriate training, transfer of technology and provision of equipment (for the new modules that should be developed within OceanTeacher, for instance).

(iii) Review the Capacity Building requirements of the COOP Design Plan.

(iv) Strengthen co-operation with IODE's Ocean Data Information Networks and further integrate these into joint JCOMM/GOOS/IODE activities.

(v) Assess how the activities of the International Ocean Institute might be useful to the Joint Panel.

5. Use the proposed JCOMM/GOOS/IODE Capacity Building Jamboree 2005 to move ahead on all matters pertaining to the activities of the new Joint JCOMM/GOOS CB Panel.

OTHER CONSIDERATIONS FOR AN EFFECTIVE MERGER

The success of the new Joint GOOS/JCOMM CB Panel (JCBP) will depend upon the careful integration of the existing activities of the JCOMM Capacity Building Co-ordination Group (CBCG), the GOOS Capacity Building Panel (GCBP), with its new, extended responsibilities to I-GOOS, as well as the IODE capacity building activities for what it has to be considered that:

a) The new merged Panel should report to both JCOMM and I-GOOS.

b) Promote regional approach to CB matters. Harmonization should be ensured between the WMO Regional Associations (RAs), GOOS Regional Alliances Secretariats (GRAs), and IOC Regional Subsidiary Bodies.

JCOMM PRESENTATION
OPEN MEETING ON THE INTERNATIONAL POLAR YEAR 2007-2008

31 MARCH 2004, PARIS

What is JCOMM?

JCOMM is the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology. JCOMM coordinates, regulates and manages a fully integrated marine observing, data management and services system that uses state-of-the-art technologies and capabilities, 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 ocean observing networks managed by JCOMM in the polar regions, as elsewhere, comprise observations by a variety of different devices, including satellites, tide gauges, fixed and drifting buoys, moored arrays, subsurface floats, and oceanographic and meteorological observations from ships. The value of these individual data streams is greatly enhanced by their integration and subsequent assimilation into advanced numerical models to produce a variety of useful outputs.

The purpose of these observing systems in polar regions is twofold: (i) to provide products and services that create socio-economic benefits for the communities that live on polar coasts and in the hinterland (especially in the Arctic) and that rely on polar resources (in both the Arctic and the Antarctic); and (ii) to provide the measurements considered essential by the UN Framework Convention on Climate Change to improve understanding of the climate system and predictions of climate change. Among the products and services derived from JCOMM that bring socio-economic benefits to communities in polar regions are: (a) forecasts of weather, climate, and sea state (including waves, currents and sea ice cover); (b) information about living marine resources (especially plankton – the base of the food chain), pertinent to the fishing community; and (c) sensitivity maps and forecasts for such things as coastal erosion and the trajectories of oil spills. JCOMM data collected over the long-term from polar regions are essential to document critical changes in the environment, like the decade-long Arctic Oscillation, which affects weather and climate across the Arctic, Europe and North America, like the Circum-Antarctic Wave, which affects weather and climate in South Africa, Australia, New Zealand and South America, and like the thermohaline circulation, which affects climate globally.

JCOMM's polar ocean observing subsystems are components of the Global Ocean Observing System (GOOS), which is co-sponsored by ICSU, IOC, WMO and UNEP. At the same time they are the polar ocean components of the Global Climate Observing System (GCOS), which is also co-sponsored by ICSU. They contribute directly to the goals of the Climate Variability Programme (CLIVAR) of the World Climate Research Programme (WCRP), and indirectly to the goals of the Global Ecosystem Variability Programme (GLOBEC) of the IGBP, and to the CO2 Programme of the International Global Carbon Project. JCOMM's components also contribute to the goals of the Ocean Theme of the Integrated Global Observing System (IGOS) Partnership, which brings together ICSU, IGBP, WCRP, IGFA, UNEP, FAO, IOC, WMO, UNESCO, and the space agencies (through the Committee on Earth Observation Satellites - CEOS). Through the Ocean Theme the IGOS Partners are creating a harmonious and coordinated approach to global observations for the benefit of the wider community, so as to avoid duplication and to accomplish the integration of data streams required for all measuring components to achieve their maximum effect.

What is the Significance of the IPY for JCOMM?

The IPY is expected to lead to the establishment of observing components many of which would be continued long after the IPY, thereby contributing to observations, data management and services in polar areas. Equally, the IPY is expected to enhance understanding of how processes taking place in the polar ocean influence the circulation of the global ocean, and hence have an influence on climate in far-flung areas. The present ocean observing is especially weak in polar regions. Thus the IPY offers a unique opportunity to improve and enhance the ocean observing

systems in polar seas, so as to make their products and services more effective for local communities, and to facilitate ongoing research into long-term climate change.

Some specific requirements can be identified already. Among other things, we need vastly improved information about the temperature, salinity and other properties of the ocean's subsurface, to feed into numerical models of the ocean and climate systems. The required expansion in this information presently comes from the growing network of Argo floats collecting information about temperature and salinity from 2000m deep to the ocean surface. However, even when Argo is global these floats will not work under the sea-ice, thus leaving significant gaps in coverage in both the Arctic and the Southern Oceans. Hence, one of the key challenges for the IPY should be to develop and deploy the technology for under-ice Argo-type floats that would for the first time give a comprehensive year-round picture of circulation (i) in that part of the Southern Ocean where North Atlantic Deep Water wells up, and where Antarctic Intermediate Water and Antarctic Bottom Water form, and (ii) in the high Arctic Basin. The formation of water masses in these areas has a significant effect on ocean circulation globally, and hence on climate world-wide. Recent work by Sarmiento and others at Princeton (Nature, January 2004) shows that subsurface waters forming near the Polar Front in the Southern Ocean also influence ocean biology worldwide through their nutrient contents. Other technological solutions - like unmanned submersibles, or gliders, or fixed moorings - could also be part of an IPY programme to make observations under the ice.

Surface drifters providing information about sea surface temperature, marine meteorology, and ocean currents are important contributors to JCOMM. In polar regions they are deployed both in the water and on sea-ice. There has been substantial decline in the number of such deployments, especially in the Southern Ocean. The advent of the IPY offers an opportunity to reverse this undesirable trend. These drifting buoys are managed by the scientists working through the International Arctic Buoy Programme (IABP) and the International Programme for Antarctic Buoys (IPAB).

Climate studies call for the reactivation of existing and the establishment of new sea level measurement stations, including those in polar regions, as part of the global sea-level system (GLOSS).

Sea-ice is a unique feature of polar regions and helps to control circulation. Much more needs to be done to harmonise the collection of sea-ice coverage, thickness and properties. More also needs doing to improve the management of sea-ice data, which will include long term archiving in JCOMM's Global Digital Sea Ice Data Bank (GDSIDB), for example.

While satellite data have greatly improved the coverage of the surface ocean, in situ data are still essential to see beneath the ocean surface and through the ice, as well as to calibrate the satellite data. Continuous measurements of ocean properties from ocean instruments are also essential to provide the fine-scale time resolution needed to capture short-term events that are missed by the slow repeat times of satellites. JCOMM is established to coordinate such in situ measurements.

Models of ocean circulation depend to a large degree for their accuracy on adequate ocean bathymetry, something that is not particularly well known in most of the polar regions. There is thus a pressing need to improve polar ocean bathymetry, as a first step in improving the output of advanced numerical models of the ocean and climate. For instance, around Antarctica the mid ocean ridge and the fracture zones that cut it steer the Antarctic Circumpolar Current. To improve models of the current we need improved swath bathymetric maps of these major topographic features. Improved polar bathymetry will help to ensure improved outputs from the Global Ocean Data Assimilation Experiment (GODAE).

There are some things we need from the Southern Ocean that we probably will not get in time for the IPY - for example ocean salinity from satellites (since the launches are not until 2008), and the ocean eddy field from the proposed Wide-Swath Ocean Altimeter (with a launch after 2007). In addition, it is likely that the activities of the IPY will identify new satellite remote sensing

requirements that will influence future mission design leading to improved science and improved forecasts having socio-economic services benefits.

The net result of these and other improvements in the observing system will be improved services (including sea-ice services; marine safety services; and marine pollution response services) providing community benefits for coastal and marine populations.

How may JCOMM Contribute to Achieving the Goals of the IPY?

In addition to utilizing the various coordination groups and expert teams of JCOMM, and the associated suites of standards and documents, and network of data centres, JCOMM and GOOS can contribute to the success of the IPY in a variety of ways. The JCOMM Management Committee and the associated Scientific Steering Committees of GOOS and GCOS could review the relevant IPY proposals, establish contacts with the leading groups, and assist in promotion of these projects. Focal points can be appointed within JCOMM and GOOS to communicate with IPY mechanisms. Where there are gaps evident in the proposals JCOMM, GOOS and GCOS could identify the gaps in requirements and propose measures for addressing them.

WORK PLAN FOR THE MANAGEMENT COMMITTEE

(from MAN-I & II decisions)

#	Ref.	Action	By whom	When	Status
I.	**GENERAL**				
1	**MAN-I 2.2, MAN-II 5.5.1**	To develop criteria for project adoption and implement interim procedure	co-pres., Com. members, Secr., small team	MAN-III, continuous	To be included in strategy document
	MAN-I 5.6 (ii)	Try making budgetary savings through a rationalization of the subsidiary bodies of JCOMM, IODE and GOOS	Secr.	continuous	Underway (CB and DM)
	MAN-I 5.6 (iii)	To propose strategies for support from external funding for specific JCOMM programmes and activities.	Secr.	continuous	JCOMM trust fund established in WMO
	MAN-I 5.7	To try expanding the funding basis for all JCOMM activities including CB and JCOMMOPS	Secr.	continuous	JCOMMOPS development plan
6	**MAN-I 6.4 MAN-II 2.2.4**	To prepare for CLIMAR-II and Brussels 150; to prepare a 1-page leaflet on Brussels 150	Secr.	ASAP	Done
7	**MAN-II 3.3.1**	To ensure that scientific requirements and importance of support for Jason-2 are communicated to appropriate policy makers	Secr. with OOPC	*before June 2003*	*Done*
8	**MAN-II 5.1.3**	To prepare basic structure and input for a JCOMM Strategy Document	co-pres., Secr.	*ASAP*	*Deferred to mid-2004*
9	**MAN-II 5.2.3**	To hire (a) consultant(s) to compile available information on standards & reference materials	Secr; then consultant(s)	*ASAP*	*SOT expert group established*
II.	**OBSERVATIONS PROGRAMME AREA**				
10	**MAN-I 3.2.3.4**	To consider the need of specialized group(s) to look at both currents and waves	OCG	ASAP	Under consideration
11	**MAN-I 4.1.2 (vi)**	To ask the 5 OPA component groups to report on efforts to counter vandalism and possible "lessons learned"	OPA Coord.	continuous	DBCP actions
12	**MAN-II 3.1.5 & 4.1.1.9 (ii)**	To request GSC/OOPC to consider how to develop performance metrics; stress the need for clear statements of requirements	co-pres., OPA Coord., Secr.	*GSC-VI, OOPC next*	*Done*
13	**MAN-II 3.1.6**	To maintain close contacts with the CO2 Panel	SOT, Secr.	*SOT-II, continuous*	*Done*
14	**MAN-II 3.1.13 & 4.1.1.9 (iv)**	OCG to hold more frequent (yearly) sessions; next one back to back with OOPC	OPA Coord., Secr.	*continuous*	*Changed strategy*
15	**MAN-II 4.1.1.9 (v)**	To reinforce the need to maintain Argo funding long enough	Com. members & their agencies	*continuous*	*Argo implementation is proceeding well*
16	**MAN-II 4.1.1.9 (v)**	To bring to OOPC attention that all OPA teams have funding problems in trying to meet stated implementation targets	co-pres. & Secr.	*OOPC VIII*	*Done*

#	Ref.	Action	By whom	When	Status
17	**MAN-II 4.1.2.2**	To ensure that updated requirements for satellite data are coordinated with the Ocean Theme rolling review of requirements	Secr.	*When requirements are expressed*	*Ongoing*
18	**MAN-II 4.1.2.3**	To determine what kinds of products & services are wanted from the space community + which kind of distribution	Rap. on sat. & SPA	*ASAP*	*Changed strategy*
19	**MAN-II 4.1.2.5**	To request advisory groups & PAs to refine their requirements re. sat. data for communication to WMO database	co-pres. & Secr.	*ASAP*	*Ongoing*

III. SERVICES PROGRAMME AREA

20	**MAN-I 4.2.1 (iv)**	To prepare for MPERSS and JEB workshops in 2004	France, Y. Tourre, SPA Coord., Secr.	2003	Done - underway
21	**MAN-II 4.2.1.3**	To finalize and implement the agreed design for WMO-No. 9, Vol. D	SPA coord., WMO Secr.	*April 2003*	*Still underway*
22	**MAN-II 4.2.1.5**	To prepare prospectus for the JEB, including maintenance costing, to be addressed to relevant op. agencies, seeking support for maintenance. If necessary, to make alternative proposals	Y. Tourre, SCG & Secr.	*ASAP*	*Will not re-activate in present form*
23	**MAN-II 4.2.1.6**	To invite GSC to co-sponsor the *ad hoc* TT on Development of Ocean Services & finalize membership	co-pres., SPA coord., Secr.	*GSC-VI, then ASAP*	*Done*
24	**MAN-II 4.2.1.7**	To seek additional nominations to the TT/MPERSS and update the list of MPERSS focal points	Secr.	*ASAP*	*Underway*

IV. DATA MANAGEMENT PROGRAMME AREA

25	**MAN-II 3.1.3**	To recommend to International Time Series ST to develop data and inf. man. plan, with advice from JCOMM	Secr.	*ASAP*	*Done*
26	**MAN-II 4.3.1.5**	To develop a JCOMM Data Management Strategy	S. Narayanan, DMPA	*MAN-III*	*Deferred to mid-2004*
27	**MAN-II 4.3.1.6**	To offer to CLIVAR to collaborate on data and information management and invite CLIVAR to next meeting of the JCOMM DMCG	co-pres., Secr.	*ASAP*	*Done*
28	**MAN-II 4.3.1.10**	To distribute to all DMPA members the extensive review of action items prepared by IODE Secr.	IODE Secr.	*ASAP*	*To be done*
29	**MAN-II 4.3.1.16**	To liaise with the DMACS Chair to include a second DMACS member in the OIT Steering Team	OIT chair, Secr.	*ASAP*	*DMACS is well engaged in the activities of ETDMP and OIT*
30	**MAN-II 4.3.4.8**	To prepare quarterly progress reports for distribution to all DMPA members	DMPA coord., Secr.	*quarterly*	*Deleted*
31	**MAN-II 4.3.4.9**	To request IODE Committee to consider merging GETADE with ETDMP (or suspending GETADE)	co-pres., Secr.	*IODE-XVII*	*Done*
32	**MAN-II 4.3.4.9**	To use GETADE funds to convene yearly sessions of ETDMP	Secr.	*yearly*	*Done*
33	**MAN-II 4.3.4.10**	To assume Secr. responsibility for DMPA as a Joint JCOMM/IODE Secr.	IODE Secr.	*continuous*	*Done*

#	Ref.	Action	By whom	When	Status
34	**MAN-II 4.3.5.2**	To discharge its terms-of-reference [see report]	*ad hoc* group on SOCs	*MAN-III or before*	*To be done*

V. CAPACITY BUILDING PROGRAMME AREA

	MAN-I 4.4.2	To develop capacity building requirements & communicate to CBCG	OPA & SPA Coords.	ASAP	Changed strategy
36	**MAN-II 3.2.4**	To consider CB requir. of COOP Design Plan	CBCG, Secr.	*continuous*	*Done*
37	**MAN-II 4.4.1.5 (i)**	To pass the results of the regional CB requirements surveys to the other PA coord. and the GOOS CB Panel, to allow the preparation of a consolidated and coordinated set of CB requirement priorities	CBPA coord., Secr.	*ASAP*	*Done*
38	**MAN-II 4.4.1.5 (ii) & 4.4.2.1**	From those priorities, to develop outline project proposals & forward them to the TTR for review, input and advice on potential funding sources	CBCG, then TTR, Secr.	*When feasible, continuous*	*Underway*
39	**MAN-II 4.4.1.5 (iii)**	To coordinate development of the outline storm surge proposal for the Gulf of Guinea with ITSU & ETWS	CBCG, ETWS, Secr. with ICG/ITSU	*ASAP*	*Done*
40	**MAN-II 4.4.1.5 (iv)**	To specify what modules within OceanTeacher should be developed for JCOMM/GOOS	CBCG with GOOS CB Panel	*ASAP*	*Underway*
41	**MAN-II 4.4.1.5 (v)**	To nominate a representative on the Steering Group for OceanTeacher	CBPA coord.	*ASAP*	*Done*
42	**MAN-II 4.4.1.5 (vi)**	To establish cooperation between CBCG & ODINCARSA	CBCG with IODE	*continuous*	*Underway*
43	**MAN-II 4.4.1.5 (vii)**	To enhance coord. of requirements for WMO Regions & GOOS Regional Alliances	CBCG, Secr.	*continuous*	*Underway*
44	**MAN-II 4.4.1.5 (viii)**	To coordinate JCOMM, IODE & GOOS Africa projects prop. for CB in Africa	Secr.	*ASAP & continuous*	*Ongoing*
45	**MAN-II 4.4.1.6**	To propose to GSC the merging of the CBCG and the GOOS CB Panel	Secr.	*GSC-VI*	*Agreed*
46	**MAN-II 4.4.1.6**	If GSC agrees on above, to prepare a plan for eventual integration of the two groups	CBPA coord., Secr. with chair GOOS CB Panel	*MAN-III & GSC-VII*	*Done*
47	**MAN-II 4.4.1.7**	To pass the report of workshop on Potential Applications of Ocean Observations for the Pacific Islands to S. Ragoonaden, with a request for him to analyse and propose possible future JCOMM support	CBPA coord., Secr., S. Ragoonaden	*ASAP & before MAN-III*	*Done*

VI. COASTAL QUESTIONS

48	**MAN-I 3.2.3.3**	To make a link to the COOP Design Plan on the JCOMM web site (see # 59)	Secr.	when Plan is published	Done
49	**MAN-II 3.2.2**	To urge that the Executive Summary of the COOP Design Plan reflect the need for meteorological measurements	GPO	*ASAP*	*Done*
50	**MAN-II 3.2.3**	To interact with COOP re. operational bio-geo-chemical data management	co-pres., Secr.	*continuous*	*Ongoing*

#	Ref.	Action	By whom	When	Status
51	**MAN-II 3.2.6**	To devise ways and means of promoting integrated approach (with Met. agencies) to development of COOP Design Plan	co-pres., Secr.	*ASAP*	*Ongoing*
52	**MAN-II 3.2.7**	To recommend close linkage between IODE and COOP	Secr.	*IODE-XVII*	*Achieved*

VII. PARTNERSHIP/COMMUNICATIONS

53	**MAN-I 3.4.2 MAN-II 5.3.2**	Maintain good liaison between JCOMM and POGO, especially in the areas of observations and capacity building.	S. Narayanan, T. Knapp, Secr.	continuous	Ongoing. JCOMM worked with POGO to develop a DM strategy.
54	**MAN-II 2.1.3**	To establish links to ICES, PICES & POGO on JCOMM website (see # 59)	Secr.	*ASAP*	*Done*
55	**MAN-II 2.2.2**	To negotiate with Institutes and Secr. publication of JCOMM booklet	S. Narayanan, P. Dandin, P. Parker	*ASAP*	*Done*
56	**MAN-II 2.2.3**	To prepare & circulate modified logo	P. Dandin, Secr.	*ASAP*	*Done*
57	**MAN-II 5.4.2**	To participate in deliberations & follow up activities of the GSC communications group, to develop a communication strategy	J. Guddal, P. Dexter	*MAN-III*	*Underway*
58	**MAN-II 5.4.3**	To discuss integration of "jcomm.net" with other JCOMM related websites	small team [see report]	*MAN-III*	*Underway*
59	**MAN-II 5.4.4**	To place on each JCOMM-related home pages a graphic indicating immediately that the site relates to JCOMM activities	webmasters	*ASAP*	*Underway*

VIII. ORGANIZATIONAL/HOUSEKEEPING

60	**MAN-I 3.1.1(ii)**	To fill the remaining vacant position in ETDMP	Com. members, co-pres., Secr.	ASAP	Done
61	**MAN-II 2.2.5 MAN-I 2.3**	To combine co-pres. & Secr. reports in one document & to target the reports to specific actions and activities identified in the JCOMM work plan	co-pres., Secr.	*every MAN sessions*	*Done*
62	**MAN-II 4.0**	To provide 1 page summary of presentations for the report	PA Coords.	*every MAN sessions*	*Underway*
63	**MAN-II 5.6.1 (iii)**	To invite Ms Regina Folorunsho to become a member of MAN	co-pres., Secr.	*ASAP*	*Done*
64	**MAN-II 5.6.1 (vii)**	To arrange for revision of WMO technical guidance re. reporting by ships of original wind speed and direction	Secr.	*JCOMM-II*	*Underway*
65	**MAN-II 5.6.1 (viii)**	To designate Kenya as an interim Preparation Service for the GMDSS, subject to successful trials	SPA coord., Secr.	*JCOMM-II*	*Done*
66	**MAN-II 5.6.2**	To finalize decision of OPA coord. Replacement	W. Nowlin	*ASAP*	*Done*
67	**MAN-II 5.7.4**	To provide S. Narayanan with ideas on overall theme of JCOMM-II conference & topics for individual sessions	MAN members	*ASAP*	*Done*
68	**MAN-II 7.1**	To arrange for MAN-III	Secr., co-pres.	*last quarter 2003*	*Done*

WORK PLAN FOR THE MANAGEMENT COMMITTEE
(from MAN-III decisions)

#	Ref.	Action	By whom	When	Status
1	2.1	To establish and activate an *ad hoc* Task Team to develop the JCOMM-related component of the seventh WMO Long-Term Plan	Co-presidents Secr.	ASAP	
2	3.1.5	To prepare an initial system analysis on data availability, with evaluation and performance measures, and post to a website	Mike Johnson, Worth Nowlin	ASAP	
3	3.1.5	To request the GPO to modify the I-GOOS yearly reporting template, to separate into coastal and open-ocean domain, and including targeted question on national commitments and data availability	Secr.	ASAP	
	3.1.6	To reiterate the importance of VOS observations and of the PMOs to the national weather services	Secr.	ASAP	
	3.2.5	To request COOP to provide the Implementation Plan and a working document for JCOMM II by end 2004	Secr	ASAP	
6	3.2.5	To report to the IOC Executive Council mentioning the continuing positive interactions between COOP and JCOMM, and the willingness of JCOMM to consider taking on the responsibility for managing the data and product streams suggested by COOP as and when those systems mature.	Co-presidents	IOC-EC-XXXVII	
7	4.1.7	To contact Dr. Ralph Rayner for the presentation at Ocean Ops 04 and to advise the organizing committee of his availability	Worth Nowlin	ASAP	
8	4.1.8	To develop a proposal to be submitted to the Management Committee, for the establishment of the ad hoc Task Team on JEB	SCG	Ocean Ops 04	
9	4.1.9	To re-group and meet a Task Team on Ocean Products and Services	Task Team on Ocean Products and Services members	Ocean Ops 04	
10	4.1.9	To submit a draft strategy for the development of new ocean products and services MAN-IV	Task Team on Ocean Products and Services	MAN-VI	
11	4.2.8	To relay message to Met. Services, buoy operators, and DBCP on the possible decreased emphasis of rationalization in operational meteorological network, to global observations required by JCOMM	Secr.	ASAP	

#	Ref.	Action	By whom	When	Status
12	4.2.9	To make a proposal on possible action by JCOMM-II, for establishing a common fund for consumables under OPA	OPA coordinator, Secr.	*MAN-IV*	
13	4.2.11	To formally establish a Task Team on Satellite Data Requirements, for preparation of a position paper for the 2005 high level meeting, and undertaking other actions as required	Co-presidents, Secr	*ASAP*	
14	4.3.5	To contact DMAC for the nomination of Bob Keeley (Canada) as an ETDMP observer to US DMAC	Co-Presidents	*ASAP*	
15	4.3.10	To send the IODE review questionnaire to the WMO Secretariat for its distribution to appropriate meteorology and climatology addresses	IODE Secr.	*ASAP*	
16	4.3.12	To raise with the IODE Secr. the issue of GE-BCDMEP to closely liaise with the COOP for its second Session	Secr	*ASAP*	
17	4.3.17	To look into the issue of ADCP QC and archival, in close consultation with the JCOMM SOT	ETDMP members, with IODE	*continuous*	
18	4.3.18	To inform IODE of the proposal for the meeting plan re-arrangement, of DMCG and ETDMP 2004/2005 as required	Secr.	*ASAP*	
19	4.4.4	To routinely report to Management Committee on relevant CB activities in each PA	PA coordinators	*continuous*	
20	4.4.4	To provide the other PAs with information on relevant regional CB requirements from the regional CB surveys	CBCG coordinator	*continuous*	
21	4.4.4	To send a reminder letters to Member Countries to designate the national CB focal points for JCOMM	Secr.	*ASAP*	
22	4.4.4	To designate the rapporteurs on Marine Meteorological and Oceanographic Services as corresponding members of the new merged CB Panel	Secr.	*ASAP*	
23	4.4.5	To ensure that ODIN networks promote and establish linkages between the oceanographic and meteorological communities	Secr. With IODE	*ASAP*	
24	4.4.8	To contact experts of OceanTeacher and coordinate the provision of marine meteorology materials to IODE Secr.	Secr.	*ASAP*	
25	5.1.2	To proceed to make a preliminary assessment and set of recommendations regarding the existing SOCs	Phil Parker	*MAN-IV*	
26	5.3.5	To prepare a JCL urging Members/Member States to make sure that their governments participate in the GEO process with due recognition of JCOMM and its plans and programme, as well as to provide the appropriate information about on-going ocean observations and future plans to their GEO national representatives	Secr. With GPO	*ASAP*	
27	5.3.9	To present the Statement to the IPY Discussion Forum, on the involvement of the JCOMM as well as GOOS and GCOS	Colin Summerhayes	*IPY Discussion Forum*	
28	5.3.10	To finalize the focal points for communication with IPY mechanisms	Co-presidents	*ASAP*	

#	Ref.	Action	By whom	When	Status
29	2.4 5.4.1	To make efforts to enhance coordination and communications amongst themselves on relevant issues in the lead up to JCOMM-II	PA coordinators	*ASAP*	
30	5.5.2	To draft a JCOMM Strategy Document and circulate to members of the Committee for comment	Co-presidents, Secr.	*September 2004*	
31	6.6	To finalize the annotated provisional agenda and documentation plan for JCOMM-II	Secr.	*ASAP*	
32	6.7	To issue JCL for seeking nominations by Members/Member States of experts to serve on the different teams and groups	Secr.	*At the appropriate time*	
33	6.9	To identify possible nominations for the awards in JCOMM-II	Committee members	*MAN-IV*	
34	6.9	To identify speaker and topic for the “Needler Memorial Lecture”	co-presidents	*MAN-IV*	
35	6.10	To proceed for the JCOMM-II Technical Conference as agreed	Savi Narayanan	*ASAP*	
36	7.1	To bring the Inmarsat cost issue to the WMO EC	Johannes Guddal	*WMO EC*	

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

WORLD METEOROLOGICAL ORGANIZATION

JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY (JCOMM)

JCOMM-II/Doc. 2.2(1)
(3.III.2004)

SECOND SESSION

ITEM 2.2

HALIFAX, CANADA, 19-28 SEPTEMBER 2005

Original: ENGLISH

DRAFT PROVISIONAL AGENDA

1. OPENING OF THE SESSION

2. ORGANIZATION OF THE SESSION

2.1 Consideration of the report on credentials
2.2 Adoption of the agenda
2.3 Establishment of committees
2.4 Other organizational matters

3. REPORT BY THE CO-PRESIDENTS OF THE COMMISSION

4. SCIENTIFIC INPUT AND REQUIREMENTS

4.1 Climate research and prediction
4.2 Operational users
4.3 Coastal issues
4.4 Other

5. MARINE METEOROLOGICAL AND OCEANOGRAPHIC SERVICES

5.1 Review of the work of the component groups and expert teams
5.2 Future development of products and services
5.3 Other service issues
5.4 Formal decisions or recommendations proposed for the Commission

6. OBSERVING SYSTEMS

6.1 Review of the work of the component groups, expert teams and rapporteurs
6.21 Remote sensing
6.3 Status of the in situ observing system including enhancements since JCOMM-I and additional enhancements needed to match requirements
6.4 JCOMMOPS development
6.5 Instrument standardization and calibration
6.6 Formal decisions or recommendations proposed for the Commission

7. DATA MANAGEMENT

7.1 Review of the work of the component groups and expert teams
7.2 IODE issues
7.3 JCOMM involvement in wider WMO and IOC data management activities, IOC/WMO data policies, IOC data management strategy
7.4 Future developments in support of identified requirements
7.5 Infrastructure
7.6 OIT project and other special projects
7.7 Formal decisions or recommendations proposed for the Commission

8. CAPACITY BUILDING

8.1 Review of ongoing activities and achievements
8.2 The JCOMM and GOOS capacity building strategies, in the context of the wider WMO and IOC capacity building programmes
8.3 Proposals for specific capacity building activities in the next four years
8.4 Resources to support JCOMM capacity building
8.5 Formal decisions or recommendations proposed for the Commission

9. REVIEW OF TECHNICAL REGULATIONS OF INTEREST TO THE COMMISSION

10. GUIDES AND OTHER TECHNICAL PUBLICATIONS

11. RELATIONSHIP WITH OTHER PROGRAMMES/BODIES OF WMO AND IOC

11. GOOS and GCOS
11.2 Other joint WMO/IOC Programmes (WCRP, IPY)
11.3 Other WMO programmes
11.4 Other IOC Programmes
11.5 Natural disaster reduction

12. RELATIONSHIP WITH OTHER ORGANIZATIONS AND BODIES

12.1 UN System Agencies (including the follow-on to ACC/SOCA)
12.2 GEO, WSSD follow-up, CSD, other Conventions
12.3 The Integrated Global Observing Strategy Partnership
12.4 Non-UN System organizations and programmes
12.5 Industry and commerce

13. JCOMM PLANNING AND BUDGET

13.1 WMO Long-term plan
13.2 IOC/UNESCO medium term plan
13.3 JCOMM budget

14. JCOMM DEVELOPMENT

14.1 Subsidiary structure and establishment of groups, teams and rapporteurs
14.2 Strategy
  14.2.1 Communications and outreach
  14.2.2 Integration
  14.2.3 Strategy document
  14.2.4 System performance monitoring
14.3 Resource requirements and commitments

15. INTERSESSIONAL WORK PROGRAMME

16. REVIEW OF PREVIOUS RESOLUTIONS AND RECOMMENDATIONS OF JCOMM (INCLUDING CMM AND IGOSS) AND OF RELEVANT RESOLUTIONS OF THE GOVERNING BODIES OF WMO AND IOC

17. ELECTION OF OFFICERS

18. DATE AND PLACE OF THE THIRD SESSION

19. CLOSURE OF THE SESSION

TECHNICAL CONFERENCE AT JCOMM-II

Title: Marine meteorology and Oceanography for the 21st century

Focus:
- Recent JCOMM results (e.g. exposure of COOP implementation plan,…)
- Future science and technologies for observations (e.g. telemetry, buoys,…)
- Future services (following on from OceanOps,…)

Audience:
- Experts in the above areas
- JCOMM-II delegates
- Oceanography societies
- Private sector
- Press including specialized science press

Programme Committee:
- Allyn Clarke (ocean modelling)
- Neville Smith (ocean modelling)
- Savi Narayanan (JCOMM co-president)
- Worth Nowlin
- Andrew Clark (MTS, telecommunications)
- Miriam Andrioli, Regina Folorunsho (regional)
- Phil Parker (OceanOps04 person)
- Mary Altalo (SAIC, economics)
- Scott Glen (technology for shelf observations)
- Nathan Mantua – climate and mar ecosystems and LMR
- Gwyn Griffiths SOC engineer
- Vasily Smolianitsky – sea ice ETSI chair
- Su Jilan (China)
- Rudolph Wu (Hong Kong): biomarkers
- Philippe Dandin (meteo)

The Committee will work by email. One face-to-face meeting of an executive may be needed. These people will need to be contacted.

ACRONYMS AND OTHER ABBREVIATIONS

AST	Argo Science Team
CB	Capacity Building
CBCG	Capacity Building Coordination Group (JCOMM)
CBPA	Capacity Building Programme Area (JCOMM)
CEOS	Committee on Earth Observation Satellites
CG	Coordination Group (JCOMM)
CGMS	Coordination Group for Meteorological Satellites
CLIMAR	JCOMM Workshop on Advances in Marine Climatology
CLIVAR	Climate Variability and Predictability (WCRP)
COP	Conference of Parties (UNFCCC)
COOP	Coastal Ocean Observations Panel
CSI	Coastal Regions and Small Islands (UNESCO)
DBCP	Data Buoy Cooperation Panel (OPA)
DMAC	Data Management and Communications (IOOS)
DMCG	Data Management Coordination Group (JCOMM)
DMPA	Data Management Programme Area (JCOMM)
DORIS	Doppler Orbitography and Radiopositioning Integrated by Satellite
E2EDM	End-to-End Data Management
EOS	Earth Observation Summit
ESA	European Space Agency
ET	Expert Team
ETDMP	Expert Team on Data Management Practices (DMPA)
ETMC	Expert Team on Marine Climatology (DMPA)
ETMSS	Expert Team on Maritime Safety Services (SPA)
ETSI	Expert Team on Sea Ice (SPA)
ETWS	Expert Team on Wind Waves and Storm Surges (SPA)
EUCOS	EUMETNET Composite Observing System
EUMETNET	The Network of European Meteorological Servic
Eumetsat	European Organization for the Exploitation of Meteorological Satellites
FWIS	Future WMO Information Systen
GCN	Global Coastal Network (GOOS)
GCOS	Global Climate Observing System
GEBCDEP	Group of Experts on Biological and Chemical Data exchange Practices (IODE)
GEO	Group on Earth Observation
GEOSS	Global Earth Observation System of Systems
GETADE	Group of Experts on Technical Aspects of Data Exchange (IODE)
GLOSS	Global Sea-level Observing System
GMDSS	Global Maritime Distress and Safety System (IMO)
GODAE	Global Ocean Data Assimilation Experiment
GOOS	Global Ocean Observing System
GOS	Global Observing System (WWW)
GOSUD	Global Ocean Surface Underway Data
GPO	GOOS Project Office
GPS	Global Positioning System
GRA	GOSS Regional Alliance
GSC	GOOS Steering Committee
GTOS	Global Terrestrial Observing System
IABP	International Arctic Buoy Programme
ICES	International Commission for the Exploration of the Sea
ICG/ITSU	International Coordination Group for ITSU (IOC)
IGBP	International Geosphere-Biosphere Programme
IGCP	International Geological Correlation Programme
IGOS	Integrated Global Observing Strategy (GCOS-GOOS-GTOS+CEOS)
IGOS-P	IGOS Partnership

IGOSS	Integrated Global Ocean Services System (IOC-WMO) (*superseded by JCOMM*)
IHP	International Hydrological Programme
IICWG	International Ice Chart Working Group
IMO	International Maritime Organization (UN)
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IODE	International Oceanographic Data and Information Exchange (IOC)
IOI	International Ocean Institute
IOOS	Integrated and Sustained Ocean Observing System (USA)
IPAB	International Programme for Antarctic Buoys
IPY	International Polar Year
ITSU	International Coordination Group for the Tsunami Warning System in the Pacific
JASADAC	Joint Archive for Shipboard ADCP (University of Hawaii, WOCE-DAC)
JASON	Altimeter Satellite (TOPEX follow-on)
JCL	Joint Circular Letter
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM *in situ* Observing Platform Support Centre
JEB	JCOMM Electronic Products Bulletin
JGOFS	Joint Global Ocean Flux Study
JODC	Japan Oceanographic Data Center
MAN	Management Committee (JCOMM)
MML	Marine Mark-up Language
MPERSS	Marine Pollution Emergency Response Support System (JCOMM)
NESDIS	National Environmental Satellite Data and Information Service (USA)
NOAA	National Oceanic and Atmospheric Administration (US)
OceanObs99	The 1st International Conference for the Ocean Observing System for Climate
OCG	Observations Coordination Group (JCOMM)
ODAS	Ocean Data Acquisition Systems, Aids and Devices
ODIN	Ocean Data and Information Network (IODE)
ODINAFRICA	ODIN for Africa
ODINCINDIO	ODIN for the Central Indian Ocean Region Indian Ocean
ODINCARSA	ODIN for the Caribbean and South America
OIT	Ocean Information Technology
OOPC	Ocean Observations Panel for Climate
OPA	Observations Programme Area (JCOMM)
PA	Programme Area (JCOMM)
PICES	North Pacific Marine Science Organization (Pacific ICES)
PIRATA	Pilot Research Moored Array in the Tropical Atlantic
POGO	Partnership for Observation of the Global Oceans
RA	Regional Association (WMO)
RNODC	Responsible National Oceanographic Data Centre
ROSCOP	Report of Observations/Samples Collected by Oceanographic Programmes
SC	Steering Committee (GCOS) (GOOS)
SCG	Services Coordination Group (JCOMM)
SGXML	Study Group on the Development of Marine Data Exchange Systems using XML (ICESIOC)
SOC	Specialized Oceanographic Center (IGOSS)
SOT	Ship Observations Team (OPA)
SPA	Services Programme Area (JCOMM)
SST	Sea Surface Temperature
TIP	Tropical Moored Buoys Implementation Panel
TOPEX	Ocean Topography Experiment
TTR	Task Team on Resources (CBPA)
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNFCCC	United Nations Framework Convention on Climate Change
URL	Uniform Resource Locator
VOS	Voluntary Observing Ships (OPA)
VOSClim	VOS for Climate (OPA)
WCRP	World Climate Research Programme
WIOMAP	Western Indian Ocean Marine Applications Project
WMO	World Meteorological Organization (UN)
WOCE	World Ocean Circulation Experiment (WCRP)
WWW	World Weather Watch (WMO)
XBT	Expendable Bathy-Thermograph
XML	Extensible Markup Language