APPENDIX D

JCOMM MEETINGS BETWEEN MARCH 2007 AND JANUARY 2010

The last ETMC intersessional period has been a busy year for JCOMM. The following JCOMM-related meetings or meetings where JCOMM has been represented have taken place during the period:

i. *Third Meeting of the Expert Team on Sea Ice (ETSI-III), Geneva, Switzerland (28-31 March 2007).* ETMC Chairperson attended the meeting, and reported on the initiation of the MCSS modernization and other ETMC linkages and activities.

ii. *Fourth Session of the Ship Observations Team (SOT-IV), Geneva, Switzerland (16-21 April 2007).* ETMC Chairperson attended the meeting, and reported on the initiation of the MCSS modernization and other ETMC linkages and activities. The SOT decided to establish an SOT Iridium Pilot Project similar to the DBCP one and to work closely with the Panel in this regard. Terms of Reference for the SOT Iridium Pilot Project Steering Team are given as Appendix;

iii. *JCOMM Observations Coordination Group (OCG), Geneva, Switzerland (23-25 April 2007).* Major topic of discussion at the meeting was the development of an Observing Programme Support Centre; User Requirement Document in support of Marine Services was presented to the Group, including requirements for wave observations.

iv. *Tenth session of the GLOSS Group of Experts (GE)[1], Paris, France (4-8 June 2007).* Thirty-three national reports, and three regional reports were provided at this meeting. Of the 290 stations in the GLOSS Core Network (GCN), 217 (75%) have provided data recently to one of the GLOSS Data Centres, which represents the participation of 69 nations. It was decided that the GE will expand its activities to include technical advice and strategic planning for water level stations intended for hazards monitoring. GLOSS GE will also explore funding opportunities to upgrade 50 GCN stations to include continuous GPS for land motion corrections. An update of the GLOSS Implementation Plan is under development and the first draft is expected to be completed by the end of 2007. More information about GLOSS is available at www.gloss-sealevel.org.

v. *DBCP/IODE/ODINAFRICA Training Course on Buoy Programme Implementation and Data Management, Ostend, Belgium[2] (11-15 June 2007).*

vi. *JCOMM Scientific and Technical Symposium on Storm Surges[3], Seoul, Republic of Korea (2-6 October 2007).*

vii. *Twenty-third Session of the Data Buoy Cooperation Panel (DBCP)[4], Jeju, Republic of Korea (15-19 October 2007).* The Panel agreed with its operating principles and proposed to establish Task Teams to deal with: (a) data management, (b) quality management, (c) technological developments, (d) capacity building, and (e) moored buoys. The Panel updated its implementation strategy. The new version included recent modifications to global requirements for buoy data in support of WMO and IOC Programmes. The review encompassed implementation aspects such as the deployment strategy, and the number of barometer drifters to be deployed worldwide,

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[1] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/J-MR-58-GLOSS-GE-X.pdf

[2] http://www.jcomm.info/index.php?option=com_oe&task=viewEventRecord&eventID=80

[3] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-TR/J-TR-44/index.htm

[4] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/JCOMM-MR-54-DBCP-23-Final.pdf

including in the tropical regions, and in the Southern Ocean (now 300 units), as well as development of appropriate technology to meet the expressed requirements. The DBCP drifter Iridium Pilot Project has formally started in July 2007 for a two-year period. The DBCP now plans to apply the Panel's experience and resources in the development of training materials for Capacity Building in developing nations on a sustained basis.

viii. *Tenth International Workshop on Wave Hindcasting and Forecasting & Coastal Hazard Assessment*[5]*, North Shore, Oahu, Hawaii, USA (11-16 November 2007).*

ix. *Sixth Session of the JCOMM Management Committee*[6] *(MAN-6) Paris, France (3-6 December 2007).* Regarding the strategic planning of WMO and IOC, the Committee agreed that JCOMM should review and align the current JCOMM work programme with the two organizations' Expected Results. Noting the rapid development of operational ocean forecasting systems and the need for information on and coordination of these systems, the Co-presidents of JCOMM, with the endorsement of the Committee, established an Expert Team on Operational Ocean Forecast Systems (ET-OOFS) in the Services Programme Area. JCOMM-II had requested a review of JCOMMOPS. MAN-6 agreed that the OPSC process provided an adequate review of JCOMMOPS as requested by JCOMM-II. A third version of the web tool Observing System Monitoring Centre (OSMC) is available on the web[7] and includes some performance monitoring of variables. The Committee agreed that use of this tool is to be widely encouraged. The Committee agreed that there was a need to develop a catalogue of JCOMM Standards and Best Practices, and recommended to engage a consultant for a month to undertake the work, which should be completed, and the catalogue published to the web, prior to JCOMM-III.

x. *The First Session of the IODE / JCOMM Forum on Oceanographic data Management and Exchange Standards, Ostend, Belgium (21-25 January 2008).* Twenty participants representing a wide spectrum of expertise in the ocean data management community attended the meeting. The goals for the meeting were to: (i) try to reach an international agreement for standards that are suitable as initial versions; (ii) identify the "best practices" that are not mature enough for acceptance yet; and (iii) define a process by which future standards could be developed, reviewed, and adopted or existing ones changed. A limited number of standards were agreed upon (e.g., time, lat. / lon.). These will then have to go through the proper channels before being accepted as such. The Meeting agreed on a plan for defining a standards accreditation and a standards development process for ocean data management under JCOMM and IODE. Additional details are available on the dedicated web site[8].

xi. *XBT Fall-Rate Equation Workshop*[9]*, Miami, Florida, USA (10-12 March 2008).* Analyses of concurrent XBT, CTD and Argo float observations indicate that there is a systematic difference in temperature profiles, which is likely due to an error in the XBT fall-rate equation. This error has introduced a warm bias in the global XBT database. This issue was discussed at the workshop, and recommendations were made. The requirements for real-time distribution of XBT metadata as a contribution to the META-T Pilot Project were also discussed. See agenda item IV-3.2.

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[5] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-TR/J-TR-44/index.htm

[6] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-TR/J-TR-44/index.htm

[7] http://www.osmc.noaa.gov/

[8] http://www.oceandatastandards.org/

[9] http://www.aoml.noaa.gov/phod/goos/meetings/2008/XBT/index.php

xii. *Third Session of the JCOMM Data Management Coordination Group[10] (DMCG-3), Ostend, Belgium (26-28 March 2008).* The Group noted the significant progress towards developing ocean data standards, TDCs, and rapid progress with the JCOMM Pilot Project for WIGOS. ETMC reported on the reorganization of work with the creation of two task teams, the TT-MOCS (Marine-meteorological and Oceanographic Climatological Summaries) and the JCOMM crosscutting TT-DMVOS (Delayed-Mode VOS data). ETMC will develop a database of extreme wave events in collaboration with ETWS, and extend the contents of the ICOADS. ETMC will also address QC issues for surface meteorology and oceanographic measurements, and continue to guide the development of the metadata pilot project for water temperature measurements (Meta-T). ETMC and ETWS are collaborating with ETSI, and the joint CLIVAR/CCl /JCOMM Expert Team on Climate Detection and Indices (ETCCDI) to develop marine climate indices. The metadata project will expand its view to include other instrumentation and variables. Similarly to ETMC, ETDMP created a task team to continue the development of the E2E technology, which will focus activities on supporting the WIGOS work. The main work of ETDMP will be re-focused on standards development through managing the standards process, and will continue until JCOMM-III as a pilot project. The JCOMM Observations Programme Area (OPA) will help to write a document, which explains how marine data can be distributed in both real-time and delayed-mode. This will contribute to a catalogue of best practices being assembled by the JCOMM Management Committee.

xiii. *Ad hoc planning meeting for the WIGOS Pilot Project for JCOMM[11], Ostend, Belgium (29 March 2008).* The meeting addressed the instrument best practices issues, recognized the need for traceability to agreed standards, and recommended establishing cooperation with the WMO Commission on Instruments and Methods of Observation (CIMO); build on its experience with regard to instrument inter-comparisons, instrument centres, etc. The various related publications available via WMO and IOC will be reviewed and updated as required. The meeting proposed to explore the establishment of one or more marine and oceanographic instrument centre(s) and reviewed the methodology proposed by CIMO for conducting instrument intercomparisons to ensure homogeneity, and compatibility of the observations. The meeting reviewed its project plan and proposed some changes. It particularly identified partners willing to pursue participation in the Pilot Project by providing data sets to the ODP and WIS, as well as potential partners. Because of the strong potential synergies between the ODP and the JCOMM Pilot Project for WIGOS, the meeting proposed to establish a joint Steering Group with balanced representation from the IOC and WMO communities.

xiv. *Meeting of the OPSC pre-evaluation Committee, Paris, France, (11 April 2008).* The meeting for the pre-evaluation of the Letters of Intent (LOI) for a future WMO-IOC Observing Programme Support Centre (OPSC) reviewed the 15 letters of intent and proposed a short list of six centres. The Evaluation Committee proposed to expand itself to include the JCOMM Co-presidents, representatives of the Observing Panels under JCOMM, as well as WIGOS and OOPC representatives. A final recommendation was expected to be provided by the end of 2008 to the Executive Secretary of IOC and Secretary-General of WMO for their final joint decision.

xv. *Third JCOMM Workshop on Advances in Marine Climatology[12] (CLIMAR-III), Gdynia, Poland (6-9 May 2008)*. The workshop showed emerging synergies with the satellite

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[10] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/JCOMM-MR-56-DMCG-3-final.pdf

[11] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/JCOMM-MR-57-WIGOS1.pdf

[12] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-TR/J-TR-45-CLIMAR-III/index.html

community (e.g., through GHRSST and WIGOS) and the need for integrated products including a proposed bias-corrected ("Climate") ICOADS. The need for sustained ocean observations was highlighted (e.g. VOS, Argo, satellite observations) but the workshop also stressed that the use of VOS data was threatened because of the decline of the VOS fleet and ship masking. The manual VOS observations are important because of the long history of such data. New technologies are emerging (e.g. AUV, autonomous ships and gliders) and sufficient overlap must be provided with the current technologies. The CLIMAR community should be working through WIS and WIGOS to ensure that the data sets that are produced are highly visible. A team is forming to draft a white paper proposal for the extension of ICOADS to handle bias corrections, and perhaps other components such as in situ and satellite climatologies and products (e.g. GHRSST). The workshop discussed the characteristics required from marine indices and proposed a list of possible indices as well as a list of doable ones.

xvi. *Meeting of the JCOMM cross-cutting Task Team on Delayed-Mode VOS data (TT-DMVOS), and the ETMC Task Team on Marine-Meteorological and Oceanographic Climatological Summaries*[13] *(TT-MOCS), Gdynia, Poland (10 May 2008).* The meeting agreed that the production of climatological summaries as part of the Marine Climatology Summaries Scheme (MCSS) did not meet the requirements of current users and a plan was initiated for its modernization. It was agreed to develop a stronger connection to the WIGOS and to seek the participation of the GCCs in the JCOMM Pilot Project for WIGOS.

xvii. *OGP/JCOMM/WCRP Workshop on Climate Change and the Offshore Industry*[14]*, Geneva, Switzerland (27-29 May 2008).* Approximately 80 participants from the science community and from the offshore industry attended the meeting. The objectives of the workshop were to: (1) gather evidence on climate change, its emerging impacts on offshore activities and review the evolving industry requirements for Met-ocean services in a changing climate; (2) identify and prioritize key areas for future research and development towards the adaptation of the offshore industry and its MetOcean services to climate change; and (3) strengthen coordination of existing and future research and development initiatives for better protection of the marine environment and increased safety and efficiency of offshore operations. A number of initiatives were discussed for future collaboration between JCOMM and OGP, including data sharing, improving standards for data collection and quality control as well as met-ocean services to address the industry requirements.

xviii. *Informal workshop of the Water Temperature Metadata Pilot Project*[15] *(META-T), Geneva, Switzerland (16-17 September 2008).* The meeting reviewed the requirements for real-time distribution of category 1 metadata for VOS, Argo, buoys, and XBTs, as well as the requirements for developing the metadata servers (category 2 metadata).

xix. *Meeting of the joint Steering group for the Ocean Data Portal and the WIGOS Pilot Project for JCOMM*[16]*, Geneva, Switzerland (18-19 September 2008).* The meeting agreed that interoperability with the WIS would be mainly achieved through: (i) ocean

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[13] http://www.jcomm.info/index.php?option=com_oe&task=viewEventRecord&eventID=344

[14] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-TR/J-TR-42-OGP_JCOMM_WCRP_workshop/index.htm

[15] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/J-MR-60-META-T2.pdf

[16] ftp://ftp.wo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/JCOMM-MR-59-ODP-WIGOS2.pdf

data centres contributing to the ODP and (ii) ODP becoming fully interoperable with the WIS. It recommended that the JCOMM Observing Panels and associated programmes address the issue of documenting their instrument best practices in light of the WIGOS developments. It discussed the establishment of marine instrument centres using CIMO as a model. The NOAA National Data Buoy Centre (NDBC) offered to investigate feasibility and to start this on a trial basis. The Meeting reviewed potential partners and data contributions. It noted that discussions had taken place since the March 2008 meeting to address some of them, namely SeaDataNet, the GHRSST-PP, and the Global Collecting Centres (GCCS). It noted with appreciation the development of a virtual constellation for the measurement of Ocean Surface Vector Wind. Thirteen potential partners were identified for providing key data sets to the Pilot Projects as key deliverables. The Meeting updated its Project Plan, reviewed the draft Implementation Plan, adopted them, and proposed a strategy for reviewing progress considering risks, and trade-offs between time to deliver the project, costs and available resource, and quality of the deliverables.

xx. Joint DBCP-ETWS Wave Observation Technology Workshop from Buoys[17], New York, USA (2-3 October 2008).

xxi. *Twenty-fourth session of the Data Buoy Cooperation Panel[18], Cape Town, Republic of South Africa (13-16 October 2008).* The format and agenda for the session was significantly re-organized and streamlined compared to previous years. The Panel substantially updated its operating principles and implementation strategy and approved them. In particular, the Panel formally adopted its Task Teams on: (i) Data Management (TT-DM); (ii) Instrument Best Practices and Drifter Technology Developments (TT-IBPD); (iii) Capacity-Building (TT-CB); and (iv) Moored Buoys (TT-MB). The Panel agreed to make efforts to better integrate its instrument Best Practices in the WIGOS context. It further recommended that the buoy manufacturers establish links with the HMEI. It engaged in building stronger synergies with the OceanSITES, and agreed that its Technical Co-ordinator could work 30% of the time for OceanSITES. It noted that the initial Iridium Pilot Project target for deploying 50 Iridium drifters had been achieved, but that the geographical distribution was not appropriate at this point. The Panel agreed to continue to upgrade scheme in 2009 and plan for an additional 40 units, on the understanding that 2010 would be dedicated to an analysis effort. The Panel agreed to establish three new Pilot Projects for (i) the evaluation of Argos-3 technology, (ii) Wave Measurement from Drifters (PP-WMD), and (iii) Wave measurement Evaluation and Test from moored buoys (PP-WET). The Panel agreed to support organization of a Capacity-Building Workshop for East and South Africa to be held during the summer of 2009.

xxii. *Seventh Session of the JCOMM Management Committee[19], Melbourne, Australia (8-12 December 2008).* The committee discussed preparations for JCOMM-III (Marrakech, Morocco, 4-11 November 2009). It decided to establish three task teams to address priority areas within both WMO and IOC on (1) Quality Management Framework; (2) Coastal Inundation; and (3) Methods for Transmission of Graphical Products to Marine Users. It endorsed the proposed alignment of the JCOMM Operating Plan with the WMO and IOC Strategic Planning in terms of deliverables and/or achievements planned for presentation to JCOMM-III. The Committee reviewed the draft table of OPA deliverables/achievements as well as the OPA work plan, and recommended future reporting of ECV-based (Essential Climate Variables)

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[17] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-TR/J-TR-47-WaveObs/index.html

[18] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/J-MR-61-DBCP-XXIV.pdf

[19] ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/JCOMM-MR/J-MR-61-DBCP-XXIV.pdf

metrics and indices for satellite and in situ data and metadata. The Committee noted the evaluation process for the WMO-IOC Observing Programme Support Centre (OPSC). The Committee agreed on a time table for producing a document named "Observing the Global Ocean for JCOMM - The Integrated Space-based and in situ Strategy" and covering the current use of space and in situ observations in existing products and services, including tables of current requirements by variable. The Committee agreed that "Data and Information Exchange Cookbook" for oceanographers and marine meteorologists would be a valuable contribution to upgrading the documentation of best practices. The Committee agreed on developing a statement of principles for JCOMM Capacity Building (CB) – to replace of an overall JCOMM CB strategy – describing the implementation mechanism, and activities to be undertaken by JCOMM in this area, including training, transfer of technology, and development of projects. The Committee reviewed JCOMM subsidiary structure and, in the light of its achievements, agreed on a broad structure to be proposed at JCOMM-III. Details on MAN-VII outcome can be found in Appendix D.

xxiii. First Session of the JCOMM/ETMSS Task Team on Maritime Safety Services[20]*, Geneva, Switzerland, 9-11 March 2009.*

xxiv. *Third Session of the JCOMM Observations Coordination Group, Paris (9-11 March 2009).* The Group reaffirmed that its priority remains on building and sustaining the current systems (including those coordinated under the SOT) to agreed standards with near-real-time data reporting, and broadening the base of national participation. The Group recommended that the SOT maintain contact with the SCOR group on volunteer ship ocean observatories to avoid overlap and duplication, and to align messages to both ship operators and the scientific communities. It asked the SOT to discuss management of Publication 47 in order to make a recommendation to JCOMM-III. It asked the SOOP to consider implementation of a stricter real-time QC for profile data. The Group reviewed the OPA implementation goals (previously known as the OPA strategic workplan), and proposed a strategy for updating the document taking into account latest developments with regard to the GCOS implementation plan and foreseen recommendations, as well as non-climate requirements arising from the CBS Rolling Review of Requirements and resulting Statements of Guidance and gap analysis. It emphasized the importance of a dialogue between implementers and potential users asking for new capabilities based on their requirements, in order to find ways forward that balance technological capability, network optimization, and funding interest. The Group discussed the JCOMM OPA metrics, and noted in particular that non-GTS data, including XBT data in the Coriolis database, should be included in metrics. The OPSC evaluation committee presented the current status of the evaluation and the Group made further recommendations in this regard in particular regarding negotiations that should be undertaken with the candidates in order to bring further benefits to the future OPSC. The Group reviewed the list of Community White Papers (CWP) that will be presented to the OceanObs'09 symposium (Venice, 21-25 September 2009).

xxv. *Fifth Session of the JCOMM Ship Observations Team, Geneva (18-22 May 2009).* A technical and scientific workshop focusing on new initiatives and / or new developments in shipboard meteorological or oceanographic instrumentation, observing practices, data management procedures, quality control and ocean products was organized during the first day of the meeting. The Team reviewed requirements for ship-based observations in support of climate applications as

[20] http://www.wmo.int/pages/prog/amp/mmop/documents/J-MR-64-MSI.pdf

expressed by GCOS and OOPC, as well as in support of non-climate applications (e.g. NWP, maritime safety). The meeting reviewed the collaboration with associated programmes (i.e. IOCCP, SAMOS, GHRSST, FerryBox, SeaKeepers, ACT, OceanScope) and discussed issues of common interest (e.g. logistical aspects, sharing of the data). The SOT Task Teams reported on their activities and made a number of recommendations to the Team addressing many issues such as Code (SAC) 41, Iridium satellite data telecommunications, Capacity Building, management of WMO Publication No. 47, platform/instrument metadata, the integration of the VOS Climate Project into the wider VOS. The number and type of fully automated shipboard weather observing systems on global VOS has increased to 270 operational AWS (AWS) systems at the end of 2008, while almost 1800 manual VOS ships are using Electronic Logbook Software. The VOS Panel reviewed the monitoring tools available to VOS programme operators, as well as the quality of VOS data and proposed actions to make sure that the VOS and VOSClim data remain of good quality. The meeting reviewed recent developments with regard to the modernization of the MCSS, as presented by the ETMC Chairperson, and received a report from the GCCs operated by the UK and Germany. The VOS Panel reviewed VOS classes, and agreed to end the Pilot phase of the VOSClim and proposed the integration of VOSClim ships into the wider VOS by creating a new class of vessels as part of the VOS Scheme. It also agreed to create a sub-class for AWS. This will require updating the WMO Technical Regulations. VOS operators are encouraged that all VOS meet the requirements of the VOSClim. The SOOPIP addressed the status of implementation, XBT transect responsibilities, coordination within the SOOP communities and with others, monitoring and data management, and the future of the SOOP network. Current work is geared towards the implementation of BUFR coding for the GTS, and review of the data transmission and data archiving arrangements. The Panel addressed questions on the accuracy of the fall rate equation for XBT probes, which are crucial for climate studies. The XBT transects are a key observing network, and are implemented at approximately 83% of the goals set by OceanObs99 recommendations. TSG transmission in real time on the GTS has grown tremendously since the last Panel session, to about 70 ships. The Team reviewed its Terms of Reference, and proposed some changes that will be proposed to the third Session of JCOMM. The next Session of the SOT is tentatively planned to be held in Perth, Australia in mid-2011.

xxvi. *OceanObs'09 conference, Venice, Italy (21-25 September 2009).* More than 600 participants from 36 countries attended the conference, with 99 Community White Papers (CWPs), and 47 Plenary Papers presented and discussed, seeking wide community consensus regarding ocean observations and related requirements. Among CWPs highly relevant to marine climatology were: “Surface In situ Datasets for Marine Climatological Applications” (Woodruff et al.) and “The Role of ICOADS in the Sustained Ocean Observing System” (Worley et al.). The Conference recognized that users require rapid access to all relevant data, free of charge, while resources needed to observe, assess and forecast global marine conditions are fragile and insufficient. As part of the conference statement, OceanObs’09 called on *all nations and governments to fully implement by 2015 the initial physical and carbon global ocean observing system originally envisioned at OceanObs’99, and refined at OceanObs'09; as well as to commit to the implementation and international coordination of systematic global biogeochemical and biological observations, guided by the outcomes of OceanObs’09, and taking into account regional variations in ecosystems. It invited governments and organizations to embrace a framework for planning and moving forward with an enhanced global sustained ocean observing system over the next decade, integrating new physical, biogeochemical, biological observations while sustaining present observations. Recommendations on this Framework, considering how to best take advantage of existing structures, will be*

developed by an post-Conference working group of limited duration. OceanObs'09 urged the ocean observing community to increase our efforts to achieve the needed level of timely data access, sensor readiness and standards, best practices, data management, uncertainty estimates, and integrated data set availability. The Conference asked governments, organizations, and the ocean observing community to increase their efforts in capacity-building and education.

xxvii. *Meeting of the JCOMM cross-cutting Task Team on Delayed-Mode VOS data (TT-DMVOS, Venice, Italy (22 September 2009).* The meeting discussed and agreed on IMMT-IV and MQCS-VI changes to be submitted to JCOMM-III. It discussed the proposed modernised data flow of marine climate data as well as a proposed higher quality control standard (HQCS). Some discussion took place on the prospects for converging IMMA and IMMT formats in the future, as well as suitable storage for both delayed-mode and real-time data for a long-term accessible archive. The meeting also discussed how the GCCs have become more proactive in data collection during 2009, and briefly reviewed progress towards a new VOS BUFR template.

xxviii. *Twenty-fifth Session of the Data Buoy Cooperation Panel (DBCP), Paris, France, 28 September – 1 October 2009.* The scientific and technical workshop (first day of the DBCP Session) covered technology developments, operational practices, applications of collected data and national practices. The Action Groups, as well as the DBCP Task Teams reported on their respective activities and made recommendations to the Panel. National reports were also presented. The Panel noted with concern the serious vandalism, particularly against PIRATA and RAMA arrays. Strategies to limit impact of vandalism include community education, technical anti-vandalism measures (e.g. "conehead" shape), and enforcement by local authorities. The Panel recognized the advantages of Iridium buoys in terms of better timeliness and lower cost per message, and suggested more Iridium drifters to be deployed in this region where the delay of data delivery is particularly an issue. Some preliminary evaluation of the ARGOS 3 buoys was performed by CLS. During the first Argos 3 steering team meeting a list of evaluation criteria was defined. It was also decided that both manufacturers and users should be involved in the evaluation process. The Panel encouraged its member countries to participate in the intercomparison activities which was led by the Pilot Project on wave measurement evaluation and test from moored buoys (PP-WET). PP-WET will collaborate in developing the metadata list for wave data collection, and contribute to JCOMM in developing standards and best practice, as well as to the relevant WIGOS exercise. A new Pilot Project on high resolution SST from drifters was proposed to address GHRSST requirements. In essence the proposal would involve the equipping of a number of drifters in a given ocean region with HRSST sensors (+/- 0.05C accuracy), GPS and Iridium communications, as a pilot project for evaluating the impact of in situ HRSST on the quality of satellite SST retrievals. The Panel supported the initiative to rationalize collection of instrument/platform metadata from moorings and requested the Task Team on Moored Buoys to bring concrete proposals forward to the next session. The DBCP agreed with the plan for organizing a Regional Capacity Building workshop for the Western Indian Ocean (WIO). The workshop will be organized in Cape Town in South Africa in April 2010. The Panel endorsed the recent developments regarding the selection process for expanding the activities of JCOMMOPS, and the evaluation of the fifteen letter of intent for hosting the future ocean Observing Programme Support Centre (OPSC). The DBCP is contributing to the WIGOS Pilot Project for JCOMM and will contribute to updating relevant WMO and IOC Publications from a marine/ocean observations perspective in order to make them consistent to each other and reflect latest technological progress. The Panel agreed that the International Tsunameter Partnership (ITP) becomes a new DBCP Action Group. The Panel reviewed the financial situation and agreed on its budget for

the forthcoming intersessional period. It elected Mr Al Wallace (Canada) as its new Chairperson.

xxix. *Second meeting of the joint Steering Group for the IODE Ocean Data Portal (ODP) and the WIGOS Pilot Project for JCOMM, Ostend, Belgium, 15-16 October 2009.* The goal of the meeting was to review the status of the WIGOS, including CONOPS, WDIP, and the Demonstration Projects, as well as the JCOMM Pilot Project itself, and to address outstanding issues, including (i) interoperability of ocean data systems with the IODE Ocean Data Portal and/or the WMO Information System (WIS), (ii) instrument practices and the review of WMO and IOC Technical Publications, (iii) quality management, and (iv) Capacity Building. The meeting achieved consensus permitted to make progress regarding a number of issues including: (i) the provision of a "Light Data Provider" function that can be used to realize interoperability of ocean data systems with the IODE Ocean Data Portal and the WMO Information System (WIS); (ii) agreement for the necessary developments for the connection of some data sets to the ODP and/or WIS before the end of 2010 (e.g. WOA, GCCs, ICOADS, HF radars, GTSPP, GHRSST, Australian IMOS); (iii) the establishment of WMO-IOC Regional Marine Instrument Centres (RMIC), and the organizing of a metrology workshop at NOAA/NDBC in early 2010 to prove concept; (iv) the production by March 2010 of a Project report, including achievements of the Pilot Project, lessons learned, benefits, and recommendations for the way foreword and the Pilot Project legacy; (v) a methodology for documenting instrument practices and updating WMO and IOC Publications (concept was proven through updating of the marine chapter of the CIMO guide); (vi) initiation of a discussion regarding the scope of marine instrument intercomparisons in cooperation with CIMO; (vii) the shaping of a JCOMM/IODE standards process for ocean data management (and acceptance of one standard to prove the concept); (viii) comprehensive analysis of strengths and weaknesses in the management of ocean observing systems; (ix) an updated Implementation Plan; and (x) preparations for the reporting to the forthcoming meeting of the Sub-Group of the EC WG WIGOS-WIS (October 2009).

xxx. *Third session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), Marrakech, Morocco, 4-11 November 2009.* The Commission reviewed the activities and recommendations from the three Programme Areas and proposed priority activities for the forthcoming intersessional period.

- The Observations Programme Area will be focusing on making progress toward its implementation goals, WIGOS integration, enhancing is situ wave observations, high data rate satellite data telecommunication, Capacity Building through PANGEA, expansion of JCOMMOPS, and finalizing the Cookbook for the submission of ocean data in real time and delayed mode. Achievements in the last 10 years regarding the development of the ocean observing systems were noted with appreciation (i.e. from 30% to about 60% completion). However, the implementation rate has significantly slowed down and is now plateauing so the Commission urged Members/Member states to commit sufficient resources in the development of GOOS following implementation goals proposed by the Observation Programme Area. The Commission recognized the essential role of JCOMMOPS for the observing system coordination, called for further expansion of JCOMMOPS, including enhance cooperation with the space agencies, and updated the JCOMMOPS Terms of Reference. Per recommendations from the WIGOS Pilot Project for JCOMM, the Commission proposed establishing WMO-IOC Regional Marine Instrument Centres (RMICs). The Commission noted the need to enhance coastal ocean
- The Data Management Programme Area will be focusing on ocean data standards and best practices, development of the Ocean Data Portal (ODP), and interoperability of ocean data systems with WIS and/or ODP, BUFR encoding and

metadata, MCSS modernization, reviewing the Data Management Plan, updating the catalogue of standards and best practices, reviewing and updating the DMPA web site, and organizing MARCDAT-III and CLIMAR-IV meetings. DMPA is cooperating with the IODE regarding the JCOMM Pilot Project for WIGOS, the Ocean Data Portal, as well as standards and best practices in ocean data management (a catalogue is now available from http://bestpractice.iode.org/). Through ETMC, the DMPA is also working towards modernization of the marine climatological summaries scheme (MCSS).

- The Services Programme Area will be focusing on developing a *Guide to Operational Ocean Forecasting*; defining operational ocean observation requirements; developing operational performance metrics to monitor operational ocean forecasts; implementing a survey on user requirements for ocean services; improving capacity in terms of technology transfer and access to existing products and services; addressing issues relating to the transition of a GODAE data service into operations; facilitating implementation of Quality Management Systems (QMSs); implementing the recommendations from the 1st JCOMM SS Symposium; supporting UNESCO pilot project on coastal hazard forecasting; supporting JCOMM/CHy Coastal Inundation Forecast Demonstration Project; facilitating the development of Storm Surge Watch Schemes (SSWS) for regions subject to tropical cyclones (see Recommendation 8.2/1); supporting WMO Severe Weather Forecasting Demonstration Project (SWFDP) with respect to wave and storm surge issues; participating in two DBCP Pilot Projects on wave measurement from buoys; expanding the Wave Forecast Verification Exchange Project in coordination with the ESA GlobWave project; improving interaction between the GMDSS Issuing Services and the AMOCs of MPERSS; keeping under review the implementation of the GMDSS and MPERSS in the Arctic and continue to support the Issuing Services and AMOCs, to reach the expected target in 2011 for the GMDSS; developing and updating guidance documents and developing guidelines and recommendations to update WMO n°471 and 558, especially for the provision of sea state and sea ice in MSI; continuing to develop the catalogue on Met-Ocean Object Classes and Attributes to define standards for ENC and e-Navigation, in collaboration with ETSI and guidance from IMO and IHO; updating sea ice standards; continuing to develop and manage technical documentation for ENC and sea ice services and information; developing sea ice climatology based on ice charts and maintaining of the Global Digital Sea Ice Data Bank (GDSIDB); contributing to the development and implementation numerical forecasting systems; and enhancing the efficiency and safety of navigation in ice infested waters by harmonizing sea ice products.
- The Commission proposed amendments to the *Manual on Marine Meteorological Services (WMO-No. 558)* and the *Guide to Marine Meteorological Services (WMO-No. 471)* to address issues such as marine climatology, maritime safety services, and marine accident emergency support.
- The Commission proposed new Terms of Reference for itself. It re-elected Peter Dexter (Australia), and elected Dr Alexander Frolov (Russian Federation) as co-Presidents. Candyce Clark (USA) was re-appointed as OPA Coordinator. Ming Ji (USA), and Sissy Iona (Greece) were appointed as SPA and DMPA Coordinators respectively. The Republic of Korea offered to host JCOMM 4 in Yeosu in 2012.

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