DATA BUOY CO-OPERATION PANEL

TWENTY-SIXTH SESSION

Oban (Scotland), United Kingdom
27-30 September 2010

FINAL REPORT

JCOMM Meeting Report No. 79

WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

DATA BUOY CO-OPERATION PANEL

TWENTY-SIXTH SESSION

Oban (Scotland), United Kingdom
27-30 September 2010

FINAL REPORT

JCOMM Meeting Report No. 79

NOTES

WMO AND IOC DISCLAIMERS

WMO Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

WMO Regulation 43

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent, and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

Chair, Publications Board
World Meteorological Organization (WMO)
7 bis, avenue de la Paix
P.O. Box No. 2300
CH-1211 Geneva 2, Switzerland

Tel.: +(41 22) 730 84 03
Fax: +(41 22) 730 80 40
E-mail: Publications@wmo.int

IOC (OF UNESCO) DISCLAIMER

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariats of UNESCO and IOC concerning the legal status of any country or territory, or its authorities, or concerning the delimitation of the frontiers of any country or territory.

C O N T E N T S

Note: The following information is provided in the accompanying CD-ROM:

- Full report by the Technical Coordinator;
- Reports by the Task Teams;
- National reports;
- Full reports by the Action Groups;
- Data Management Centre reports;
- The current status and development of satellite communications;
- GTS status report;
- DBCP Implementation Strategy;
- Other financial and administrative papers;
- DBCP Technical Document list, including available electronic versions.

EXECUTIVE SUMMARY

The twenty-sixth session of the Data Buoy Co-operation Panel (DBCP-XXVI) was held in Oban (Scotland), United Kingdom, from 27 to 30 September 2010, at the kind invitation of the Scottish Association for Marine Science (SAMS).

A technical and scientific workshop was organized during the first day of the session. Twenty-three presentations were delivered under the themes of technology developments, operational practices, applications of collected data, integration of in-situ/satellite observations, and observing/ data management practices (traceability to standards). Approximately eighty participants attended the meetings.

The Chairperson, vice-Chairpersons and the DBCP Technical Coordinator, reported on their respective activities on behalf of the Panel, during the last intersessional periods. The Panel acknowledged Ms Hester Viola's decision not to continue with UNESCO as of July 2010. A contract was established with WMO for the period 16 August – 18 October 2010 to permit continuity of her contribution as DBCP's Technical Coordinator to the present Panel's Session. The Panel endorsed the recruitment process, under UNESCO, for a new Technical Coordinator and noted that there would be a gap during the period October to December 2010 until the new Technical Coordinator is actually recruited and on post. The Panel concurred with the list of high priority tasks, as proposed by Ms Viola, for the new Technical Coordinator.

Reports were provided by the Executive Board, the DBCP Task Teams, the Action Groups and the Pilot Projects, and decisions were taken according to their recommendations.

The Panel reviewed the JCOMM Observations Programme Area high priority activities for this Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) intersessional period as agreed upon at the third JCOMM Session (Marrakech, Morocco, November 2009), discussed their implications for the Panel, and made relevant decisions in this regard.

The Panel reviewed the status of drifting and moored buoy programmes. The global drifting buoy array has been very consistent and even, although the northern Indian Ocean has begun to be quite sparse, and the north Western Pacific is still not filled. The total number of drifting buoys has been maintained well above 1250 and about half of those are measuring Air Pressure. The Panel noted with appreciation that the Southern Ocean Buoy Programme (SOBP) is now approaching its goals of 300 barometer drifters operated South of 40S with a peak of 217 units reached in March 2009. As of July 2010 the number of Indian Ocean Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA) sites implemented stands at 27 (59% complete).

Noting the successful outcome of the first "DBCP In-Region Western Indian Ocean Capacity Building Workshop", held in Cape Town, South Africa, in April 2010, the Panel agreed to organize and convene a second workshop (in Mauritius, in Spring 2011) and to commit resources from its Trust Fund to support this activity.

The Panel concurred with the proposal to establish a "Joint DBCP/GHRSST[1] Pilot Project to Upgrade Elements of the Global Drifting Buoy Fleet to Allow the Reporting of Higher Resolution SST and Position" as a means to enhance integration of *in situ* and satellite data and better understand the requirements of satellite products for SST data.

1 : GHRSST : Group for High Resolution Sea Surface Temperature

The Panel reviewed its website, the monitoring tools provided by the JCOMM *in situ* Observations Programme Support Centre (JCOMMOPS), and the status of DBCP Technical Documents. In particular, DBCP Technical Document entitled "Guide to Data Quality Control Tests to Perform by a GTS Processing Center" which has been finalized. A new document entitled “Draft document of Sea Surface Salinity Quality Control processes for potential use on Data Buoy observations” has been submitted to the Panel for comments.

The Panel reviewed the status of buoy data timeliness, and was very pleased with the improvements in the Central Pacific and the Indian Ocean, but encouraged Collecte Localisation Satellites (CLS) to consider how it could improve the situation in the southern Atlantic or Western Pacific.

The Panel discussed the issue of vandalism on data buoys, noted the recommendations made by both the WMO and IOC Executive Councils in this regard, and agreed to finalize a report on the issue for submission to the upcoming WMO Congress in 2011. The Panel established a small working group to provide continuity of attention to this important issue, and to provide a focal point for follow-up action by the Panel. The working group will also be a channel for further information requests, following the release of the vandalism report.

The Panel concurred with the legacy recommendations from the draft Project Report of the JCOMM Pilot Project for the WMO Integrated Global Observing System (WIGOS), in particular regarding the establishment of an international forum of satellite data telecommunication users within International Organizations such as WMO, IOC and the Food and Agriculture Organization (FAO). The proposed forum should address remote data communication requirements for automatic environmental observing systems coordinated through partner organizations. It should also address system deficiencies, negotiate tariffs and consider potential improvements of the rendered services with all relevant operators of satellite data telecommunications systems.

The Panel recalled the importance of collecting instrument/platform metadata for marine climatology purposes, as well as JCOMM-III recommendations regarding the management of rigs and platforms metadata; and discussions resulting from the third Session of the JCOMM Expert Team on Marine Climatology (ETMC). The Panel proposed that the DBCP eventually takes over full responsibility for all types of Rigs and Platforms taking meteorological and/or oceanographic measurements, and for all related aspects, and to submit that proposal to the forthcoming JCOMM Management Committee meeting (Paris, France, 16-19 November 2010). The Task Team on Moored Buoys has made good progress in defining the content and structure of metadata reporting requirements for moored buoys. Further efforts will be made in this regard by the Task Team in conjunction with the new Tropical Moored Buoys Implementation Panel (TIP) Technical Coordination Group.

The Panel noted the recommendations from the WMO-BIPM [2] Workshop on Measurement Challenges for Global Observation Systems for Climate Change Monitoring: Traceability, Stability and Uncertainty (Geneva, Switzerland, 30 March - 1 April 2010) and agreed to address its recommendations.

The Panel recognized the considerable importance of the developing Global Framework for Climate Services (GFCS) to WMO and UNESCO/IOC, and to their Members/Member States, as well as the potential role of JCOMM in climate services. The Panel therefore agreed to follow the future developments of the GFCS closely and to consider how GFCS observational data requirements can be met through the use of data buoys as part of the DBCP Implementation Strategy.

2 : BIPM : Bureau International des Poids et Mesures (http://www.bipm.org/)

The Panel updated its operating principles and approved them. It also updated its Implementation Strategy, taking into account the WMO and IOC Strategic Planning, the development of the WIGOS, and the GFCS.

The Panel discussed DBCP Trust Fund contributions, future commitments and budget related matters. The Panel agreed on its budget for the next year with the clear understanding that any budgetary figures attributed should be regarded as upper limits. Because of increased DBCP activities, the Panel invited its members not currently contributing to the Trust Fund to discuss nationally whether a contribution could be made in the future; and also took the opportunity to invite contributing members to consider increasing their contributions.

The Panel re-elected Mr Al Wallace (Canada) as its Chairperson, Mr Johan Stander (South Africa) as Vice-chairperson for the Southern Hemisphere, Mr Jean Rolland (France) as Vice-chairperson for Europe, and Dr. R. Venkatesan (India) as the Vice-chairperson for Asia. The Panel agreed to organize its twenty-seventh session at the WMO headquarters in Geneva, Switzerland, from 26 to 29 September 2011.

GENERAL SUMMARY OF THE WORK OF THE DBCP-XXVI SESSION

1 Opening and Welcome

1.1 The Chairperson of the Panel, Mr Al Wallace, opened the twenty-sixth session of the Data Buoy Co-operation Panel (DBCP) and its associated Scientific and Technical Workshop at 0900 hours on Monday, 27 September 2010, in Oban (Scotland), United Kingdom. On behalf of the Panel, Mr Wallace welcomed all participants to the session and to the workshop.

1.2 The Chairperson, in his welcoming address, noted that the United Kingdom had been a key participant in the DBCP activities since its inception in 1985 and that it had been a strong partner in deploying and using data buoys for operational purposes. Mr Wallace expressed his sincere thanks, on behalf of the Panel and all participants, to the Scottish Association for Marine Science (SAMS), and to the local organisers for hosting the session and workshop, and for providing such excellent facilities and support as well as warm hospitality. The Chair also expressed appreciation to the manufacturers and other companies who had made a financial contribution in support of the organization of the session (see ***Annex XVI*** for the list).

1.3 On behalf of the Government of the United Kingdom and of SAMS, Dr Ken Jones, Deputy Director of SAMS, welcomed participants to the meeting and to Oban. He noted that SAMS, throughout its over 100 years history, has been active in introducing new scientific and technical innovations to the field of marine science, and that continuous support has been provided to the Panel including through the work of Mr David Meldrum as Chair and as a lead for new technologies for a number of years. Dr Jones confirmed that SAMS would continue to support the Panel's activities and wished all a successful workshop and session.

1.4 On behalf of Mr Michel Jarraud, Secretary-General of the World Meteorological Organization (WMO), and Dr Wendy Watson-Wright, Executive Secretary of the Intergovernmental Oceanographic Commission (IOC), the Secretariat representatives also welcomed participants to the workshop and to the DBCP session and conveyed their sincere appreciation to Dr Ken Jones for hosting the session and for the continuous support given to the Panel's activities, and also to Mr David Meldrum and SAMS staff for the excellent organization and support proviced for the session. The Secretariat representative concluded by assuring the continued commitment of WMO and IOC to support and strengthen the work of DBCP through the Observations Programme Area of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM).

2 Scientific and Technical Workshop

2.1 Under this agenda item, the Panel briefly reviewed the results of the preceding scientific and technical workshop. The workshop opened at 1015 hours on Monday, 27 October 2010 in the William Speirs Bruce lecture theatre, Oban, United Kingdom and ended on the same day at 1800 hours. The themes of the workshop covered technology developments, operational practices, applications of collected data, integration of in-situ/satellite observations and observing/data management practices (traceability to standards). Twenty-three presentations were delivered to approximately eighty participants; each presentation covering one of the five themed areas given below:

2.1.1 The first theme covered Technological Demands and Developments for data buoys. The following presentations were made:

(1) Scottish Association for Marine Science described their study of a tidal race, located in the Scottish Gulf of Corryvreckan, using mini-drifters using Global Positioning System (GPS), Global System for Mobile Communications (GSM) and Iridium modems.

(2) NOAA's Atlantic Oceanographic and Meteorological Laboratory described their evaluations of changes in packaging, activation and shipping methods.

(3) Liquid robotics briefed their Wave Glider autonomous unmanned maritime vehicle and presented results from operational tests.

(4) marine Hydrophysical Institute presented results of evaluations of Iridium and Argos-3 satellite communication systems, new GPS receivers and real-time clocks, and ice meteorological markers.

(5) AXYS Technologies described their Wind Sentinel™ buoy that can monitor wind profiles from the near sea surface to upwards of 300 meters.

(6) Clearwater Instrumentation presented results using Iridium's Router-Based Unrestricted Digital Interworking Connectivity Solution (RUDICS) that showed an efficient and affordable high volume data telemetry.

(7) Christian Michelsen Research (CMR) described their SailBuoy designed for oceanographic and meteorological measurements, and the results from observations from several sea trials in the North Sea.

2.1.2 The second theme covered Operational Practice and Enhancements for data buoys. The following presentations were made:

(8) The UK Met Office described their operational Forecasting Ocean Assimilation Model (FOAM) (FOAM) and Sea Surface Temperature (SST) analysis (OSTA) systems, and the use of drifter data for assimilation and assessment with these systems.

(9) JouBeh Technologies briefed their Iridium satellite value added reseller that provides environmental data collection.

(10) Scotia Weather Services discussed their real-time services for the provision of meteorological data.

(11) The Republic of Korea Hydrographic and Oceanographic Administration described their Korea Ocean Gate Array – an array of ocean observation buoys located in the south most part of the Korean jurisdiction.

(12) CLS America briefed the upgrades to the Argos Real-Time antenna network and their efforts to optimize the data return from all satellites.

(13) Clearwater Instrumentation discussed their Argos-3 experiences with drifter data quality and management.

2.1.3 The third theme covered Applications of Collected Data. The following presentations were made:

(14) NOAA[3] Atlantic Oceanographic and Meteorological Laboratory discussed the Global Drifter Program's (GDP) assessment of drogue presence with the implementation of tether strain complemented by the adjustment to Technocean's submergence sensors – allowing them to notice that "drogue on" had dropped dramatically. – NOAA AOML also presented the results from the drifter comparison studies and showed how drifter manufactures collected observations throughout the year.

3 : NOAA : National Oceanic and Atmospheric Administration (USA)

(15) AOML reported on the evaluation of Argos-3 performance, location classes, and quantity of fixes per day compared to Argos-2;

(16) IOUSP presented results from the Brazilian national program to improve knowledge of the oceanic circulation of the South Atlantic ocean by analyzing the lagrangian trajectories.

(17) NOAA's Climate Program Office discussed the 2010 partnerships that supported the Global Earth Observation System of Systems (GEOSS) applications.

(18) Scripps Institution of Oceanography described their burn release drifters used off the coast of northern California in April 2010.

2.1.4 The fourth theme covered the Integration of In-Situ and Satellite Observations. The following presentations were made:

(19) The Group for High Resolution Sea Surface Temperature (GHRSST) Project Office highlighted their special interest in drifting buoy measurements and stressed the need for higher resolution (and more accurate) observations by drifters and floats.

(20) The Met Office Hadley Centre have investigated the long-term stability of Sea Surface Temperature (SST) measurements made by drifting buoys and showed that some buoys exhibit offsets or sensor drifter, suggesting these buoys should be removed from those used in determining the bias of satellite driven SST measurements.

2.1.5 The fifth theme covered Observing and Data Management Practices – traceability to standards. The following presentations were made:

(21) The NOAA National Data Buoy Center (NDBC) described their efforts to refresh the Tropical Atmosphere Ocean Array (TAO) 55 operational moored buoys located in the equatorial Pacific Ocean.

(22) RDSEA International and First Institute of Oceanography discussed their TAO hybrid that has been deployed in the Indian Ocean.

(23) NDBC stressed the need for proper data management to meet the requirements of the Global Ocean Observing System.

2.2 The Panel expressed its appreciation to the workshop co-chairpersons, Bill Burnett (USA) and David Meldrum (Scotland) for their excellent work in organizing and chairing the workshop. As in previous years, all 23 presentations will be published in a DBCP Technical Document series, on CD-ROM, and will also be available on the DBCP website. The authors were invited to submit their papers via e-mail or CD-ROM to the Workshop Chairperson, via electronic format (MS Office compatible format only), by 30 November 2010 **(action, S&T workshop authors, 30 November 2010)**.

2.3 The Panel noted with appreciation that Dr Burnett would continue to act as the Workshop Co-chairperson for 2011. The Panel also welcomed the offer from Jean Rolland (France) to act as Co-chairperson for the Workshop and assist with its organization from a regional perspective **(action, W. Burnett & J. Rolland, DBCP-XXVII)**.

3 Opening of the Session

3.1 Adoption of the agenda

3.1.1 Following the Workshop, the Twenty-sixth Session of the Data Buoy Cooperation Panel (DBCP) was opened by the Panel Chairperson, Mr Al Wallace, at 09:30 hours, on Tuesday 28

September 2010, in the conference room of SAMS (William Speirs Bruce Lecture Theatre). The Chairperson welcomed participants to the session and once more thanked the SAMS for hosting it and providing excellent facilities.

3.1.2 The Panel adopted its agenda, as reproduced in ***Annex I***.

3.2 Working arrangements

3.2.1 The Panel decided on its working hours and other arrangements for conducting the session. The Joint Secretariat then introduced the documentation in accordance with the provisional agenda.

3.2.2 The list of participants to the session is reproduced in ***Annex II***.

4 Reports by the Chairperson, Vice Chairpersons and the Executive Board

4.1 Report by the Chairperson of the DBCP

4.1.1 The DBCP Chairperson, Mr Al Wallace (Canada), reported on his activities during the last intersessional period.

4.1.2 Mr Wallace reported that during his first year as Chairperson, the learning curve was significant, and he expressed his appreciation for the excellent support and work done by the Secretariat and by the Technical Coordinator. During the year, the Chairperson did not undertake any missions specific to the work of the Panel, nor did he incur into any direct costs.

4.1.3 He reported that he did attend JCOMM III in Marrakech, Morocco in November 2009 as one of the representatives of the Canadian national delegation, and at the same time, represented the DBCP during discussions, particularly during the Observations Programme Area session. The Panel supported the Western Indian Ocean Capacity Building Workshop in Capetown, South, Africa in April and Sydney Thurston who led an excellent effort will provide a more detailed report. David Meldrum, past Chairperson for the DBCP, represented the Panel at a GHRSST workshop in Lima, Peru and will provide a report.

4.1.4 In late spring, the Panel's Technical Coordinator, Ms Hester Viola, indicated that she would not be pursuing continuing employment as she had decided to return to Australia for personal reasons. The Chair recognized the tremendous work and valuable contributions made by Ms Viola during her tenure as Technical Coordinator and wished her well in her future endeavours. The recruitment process to hire a replacement Technical Coordinator is underway, and we hope to finalize this in the early fall. The Chair expressed his thanks to Ms Boram Lee (IOC) for leading this process, and to Mr Etienne Charpentier (WMO) for his excellent advice.

4.1.5 The Chair noted that the Executive Board conducted most of the necessary Panel business electronically, and without difficulty and he thanked his Vice-Chairs for their diligence, and the Secretariat for facilitating the decision making.

4.2 Report by the vice-Chairpersons of the DBCP

Report by the vice-Chairperson for Europe

4.2.1 The DBCP vice-Chairperson for Europe, Mr Jean Rolland (France) reported on his activities during the last intersessional period. His activities were mainly conducted through the

Executive Board in providing guidance to actions and budget issues within the recommendations established at DBCP-XXV. Mr Rolland pursues a proactive role in developing links with GHRSST and Iridium PP activities.

4.2.2 Fourty five drifters were equipped to report SST with a resolution of 0.01K and an accuracy of 0.05K to meet GHRSST requirements. The data would be reported in BUFR[4] code on to the GTS. Thirty drifters were upgraded to Iridium (with DBCP funds) to be used in the Indian Ocean.

Report by the vice-Chairperson for Asia

4.2.3 The Panel noted that the vice-Chairperson for Asia, Mr V. Rajendran (India) left his position part way through the intersessional period. Consequently no report was provided. The Panel considered selecting a new vice-chairperson for Asia (agenda item 14).

Report by the vice-Chairperson for the Southern Hemisphere

4.2.4 The DBCP vice-Chairperson for the Southern Hemisphere, Mr Ken Jarrott (Australia) reported on his activities during the last intersessional period, which mostly focused on his role as Chair of the International Tsunameter Partnership (ITP) as well as on ensuring the ITP's integration with the Panel's activities.

4.2.5 Mr Jarrott informed the Session that this would be his last Panel meeting due to a change of responsibilities for him nationally, and requested the Panel to consider electing a new vice-chair for the Southern Hemisphere (agenda item 14).

4.3 Report by the Executive Board

4.3.1 The DBCP Chairperson, Mr Al Wallace (Canada), reported on the activities of the DBCP Executive Board during the last intersessional period. In line with the DBCP Operating Principles, and the guidelines for DBCP Trust Fund expenditures, the Executive Board has been consulted and had to make a number of decisions on behalf of the Panel, regarding expenditures not originally planned or entirely covered as part of the budget that was agreed upon by the Panel at its 25th Session, including:

- Agreement to establish a contract with the UNDP in Mauritius for having The Agulhas and Somali Current Large Marine Ecosystems (ASCLME) taking care of the costs associated to the organization of the DBCP Capacity Building workshop in Cape Town, South Africa in April 2010. Expenditure up to USD50k from the DBCP Trust Fund was authorized in this regard.
- Agreement to commit up to USD11.8k from the DBCP Trust Fund to permit the evaluation of five Marlin Yug drifters as part of the GDP inter-comparison of SVP (Surface Velocity Programme) drifters; a contract was established with SAMS (UK) in this regard.
- Agreement to establish a WMO Special Service Agreement (SSA) with Ms Hester Viola for an amount of $13.8k for her to act as Technical Coordinator of the DBCP for the period 16 August to 18 October 2010 after the end of her contract with the UNESCO on 30 June 2010, in order to ensure continuity of the main tasks and duties of the Technical Coordinator's post.
- Agreement to support half of the cost of Mr Etienne Charpentier's forced stay in Washington DC (due to flight disruptions resulting from the volcanic eruption in Iceland)

4 : FM 94 BUFR GTS format: Binary Universal Form for Representation of meteorological data

following his mission to New Orleans, 13-15 April 2010. While stranded in Washington and for the period covered by the DBCP (i.e. 20 -23 April 2010) Mr Charpentier made good use of his time by meeting with NOAA officials (both the NOAA Office of Climate Observation – OCO – and the National Weather Service – NWS); visiting Service Argos; and organizing a 1-hour teleconference with the kind offer of NOAA/OCO facilities, in order to deliver a Lecture to the Cape Town Capacity Building Workshop on "Buoy programme design, management, and implementation."

- Agreement to support Mr David Meldrum's mission for him to attend the 11th meeting of the GHRSST International Science Team, held in Lima, Peru, 21-25th June 2010, on behalf of the Panel to discuss integration of satellite and in situ data as well as moving forward regarding the DBCP proposal to establish a Pilot Project for high resolution SST from drifters in collaboration with GHRSST.

4.3.2 These activities were further discussed under the relevant agenda items. The Panel endorsed these actions and expenditures and thanked the Executive Board for its efficient work on its behalf during the intersessional period.

5 Report by the Technical Coordinator

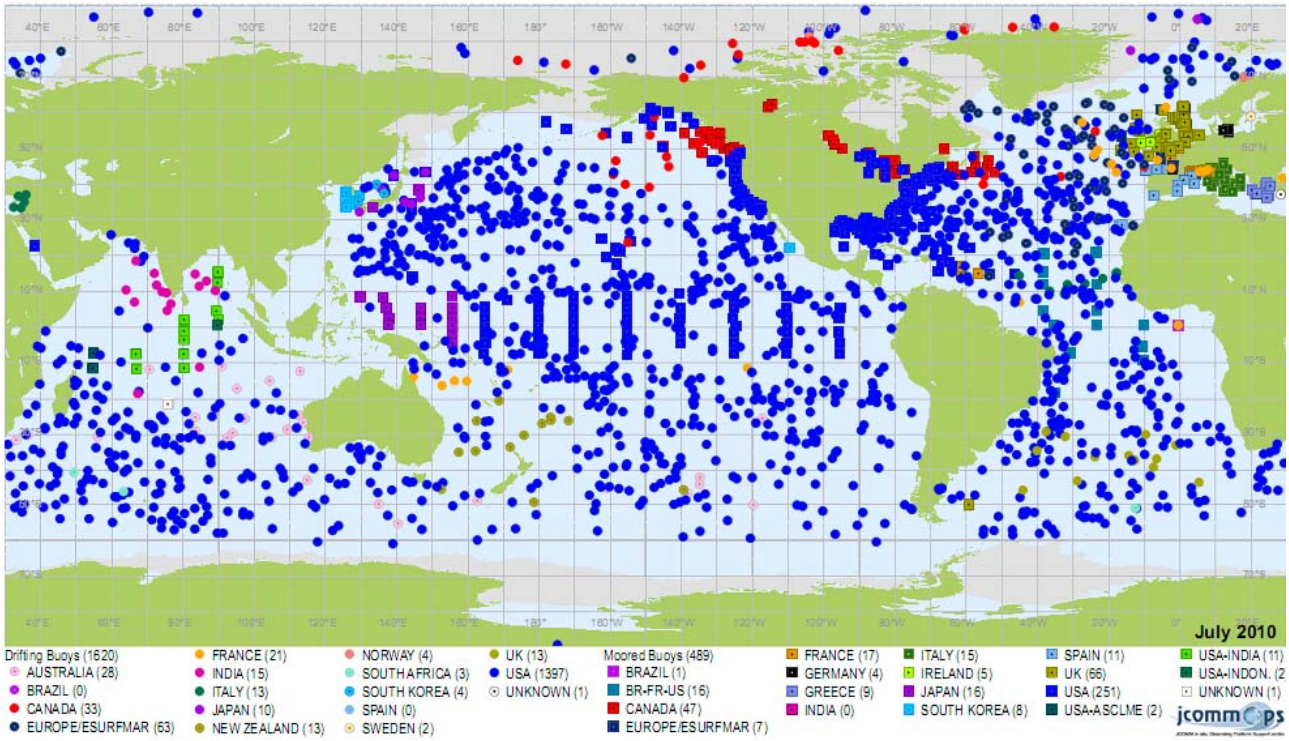
5.1 During the period 1 September 2009 to 31 August 2010, Ms Hester Viola worked as the Technical Coordinator (TC) of the Data Buoy Cooperation Panel (DBCP). Ms Viola was based at the CLS, Toulouse, France, and was employed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) up until July 2010, after which point she was employed via a short-term contract with the World Meteorological Organization (WMO). On average, the TC spends about one third of the time on matters related to the Ocean Sustained Interdisciplinary Timeseries Environment Observation System (OceanSITES); about 5% on JCOMM and JCOMM *in situ* Observations Programme Support Centre (JCOMMOPS) issues; and about 5% working with the Argo Technical Coordinator. The remainder of time is spent on other DBCP-related matters.

5.2 During the referred period, Ms Viola's tasks and responsibilities, related to DBCP, included:

- Assisting the Panel with technical and programmatic issues;
- Maintaining metadata in the JCOMMOPS database;
- Producing monthly maps;
- Tracking status of action items from previous DBCP sessions;
- Maintaining and updating websites (DBCP and OceanSITES);
- Maintaining mailing lists, contact details and user groups on DBCP, JCOMMOPS, OceanSITES and JCOMM websites;
- Monitoring Global Telecommunication System (GTS) (new data and delays) and Quality-Control Relay traffic;
- Seeking new deployment opportunities and communicating them to buoy operators;
- Producing reports and maps, as required, as well as a monthly report on work undertaken;
- Providing support to Pilot Projects and Action Groups;
- Assisting with the JCOMMOPS - information system operations and maintenance (database,metadata uploads and reporting). Designing the new tables for the JCOMMOPS database along with other JCOMMOPS staff members;

- Preparing for and attending meetings; and
- Providing support to the OceanSITES Steering Team and Data Management Teams.

5.3 Ms Hester Viola outlined the status of the data buoy network, noting that the total number of buoys globally was stable in the last year. The spread across the globe has been very consistent and even, although the northern Indian Ocean has begun to be quite sparse and the north Western Pacific is still not filled. The total number of drifting buoys has been maintained well above 1250 and about half of those are measuring Air Pressure.



Map 1: DBCP monthly status by country for July 2010. (Data Buoys reporting on the GTS via Météo-France)

5.4 Ms Viola then reported that amongst the drifting and moored buoys reporting on the GTS in BUOY[5] (or BUFR) message format, the following variables were measured in June 2010. There was a slight fluctuation in the number of drifting buoys reporting Air Pressure globally this year, with a peak of 697 in May 2010.

Variable	Any	Air P	P Tend.	SST	Air T	Hum.	Wind	Waves	Sub/T
Drifting Buoys	1588	674	632	1452	21	0	4	5	35
Moorings	444	269	233	324	326	197	310	284	88

Table 1. Drifting and Moored buoys – variables being reported on the GTS

5.5 During the discussion it was noted that a number of fixed installations are currently being counted as moored buoys and it was agreed that these need to be correctly identified as either Rigs or Platforms, using metadata provided by operators.

5 : BUOY: FM 18 BUOY GTS format: Report of a buoy observation

5.6 The Panel noted with appreciation that the Southern Ocean Buoy Programme (SOBP) is now approaching its goals of 300 barometer drifters operated South of 40S with a peak of 217 units reached in March 2009. The Technical Coordinator reported that 146 SVP-Bs (Surface Velocity Programme, Barometer drifters) have been deployed as part of the SOBP in the last intersessional period, which is close to the anticipated 190 units.

5.7 The TC discussed her work during the intersessional period, highlighting certain key tasks completed during the year. Updates to the website and technical documents were completed for the intersessional period. She then highlighted some of the action items she focused on, which would be discussed further under agenda item 9.

5.8 The TC reminded the Panel of the different tools for checking buoy data quality and reporting issues with data quality. She informed the Panel that her report included a detailed description of the status and progress of the Panel's work for the last year, a written assessment of the buoy data quality for the last year and a full list of activities undertaken each month in support of the Panel, its Task Teams and Action groups. Some future plans were presented and the Panel was invited to comment on priority tasks for the Technical Coordinator's Workplan.

5.9 Ms Viola noted that she would leave the post of Technical Coordinator on 30 September 2010. She thanked the Panel for its support and excellent teamwork over the last four and a half years. She highlighted that it was pleasing that the recruitment of the Technical Coordinator position had already commenced and that the post was now a permanent UNESCO position.

5.10 Amongst lessons learned, the Technical Coordinator explained that it was important for the Panel to prioritize the TC tasks and provide for realistic due dates for each of the tasks. This exercise should be made in conjunction with the Panel Chair and the Secretariat.

5.11 In addition to the workplan that already exists, routine tasks, and support for Action Groups and Task Teams, plus working on OceanSITES, the Panel concurred with the following high priority tasks proposed by Ms Viola for the new Technical Coordinator that will be recruited in her replacement:

- Working with JCOMMOPS colleagues to improve the design and functionality of the JCOMMOPS website and other web products such as:
  - the QIR tool, to integrate all of JCOMMOPS Quality Control (QC) feedback into one web page;
  - Adapting the Google Earth products created for the Argo program to present Buoy metadata and trajectories.
- Adding extra metadata fields to GTS Data Flows, continue to assist with JCOMM-wide reviews of BUFR templates along with the JCOMM Task Team on Table Driven Codes.
  - Working with the JCOMM Task Team on Table-Driven Codes and Panel members to incorporate appropriate Buoy Metadata into the BUFR Templates for Drifting and Moored buoys.
- Designing new products to track deployment plans and assist with creating new deployment opportunities within JCOMM
- Finalizing integration of OceanSITES data/metadata into JCOMMOPS database

- Ensuring that routine network status can be reported in maps (with monthly, quarterly and live Google Earth views) and web products in coordination with the Global data assembly centres (GDACs)

- Assisting in the standardization and documentation of instrument practices.

5.12 **The meeting decided on the following action items**:

(i) DBCP to include drifter data in “The Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and in Delayed Mode” as requested by the the Data Management Coordination Group (DMCG) at its Fourth Session in April 2010 (Action 45 (ref. 7.1.1.1 (ii)) (***action;TT-DM; October 2010*****);**

(ii) Adopted the last version of the new DBCP Technical Document 37 - entitled "Guide to Buoy Data Quality Control Tests to Perform in Real Time by a GTS Data Processing Centre";

(iii) Concerning Quality Control of Salinity Data, once the DBCP has ascertained which processes apply to drifting and moored buoys, the appropriate tests and procedures can be added to DBCP Technical documents which already exist (***action; TT-IBP; DBCP-27***);

(iv) Once recruited, the new Technical Coordinator to address the priority tasks agreed upon by the Panel under paragraph 5.11 above (***action; new TC; DBCP-27***).

6 Report by the Task Teams

6.1 Task Team on Data Management (TT-DM)

6.1.1 Ms Mayra Pazos (USA), Chairperson of the Task Team on Data Management (TT-DM) reported on the progress during the intersessional period.

6.1.2 The Panel noted that the lack of standardization in Argos data formats raised last year is still an issue for both processing in real time (GTS) and decoding and processing data in delayed mode. The TT-DM Team encourages manufacturers to promote standard formats using the DBCP-M2 concept, one single observation per message. It is recommended that in cases where additional data are needed in the message, that the message shows the “standard” data in the front portion of the message and the user-specific data behind it.

6.1.3 There is a need to make Numerical Weather Prediction (NWP) and Ocean model outputs available to buoy operators (i) for checking data quality before releasing them to the GTS, and (ii) for checking data that had been removed from the GTS, to assess if it had improved over time and could be disseminated on the GTS again. Meteo-France has developed some internal tools to make these comparisons but Technical problems avoid making these tools available on the web.

6.1.4 The Panel reminded its members about the WMO IDs being extended to 7 digits for BUFR data streams and to make sure the rules on 7-digit WMO ids are taken into account as appropriate (see DBCP-25 report). The Panel supported the changes proposed by Météo-France with its QC tools to address the new 7-digit WMO numbers. At the same time, the Panel thanked Météo-France for the changes it made to its tools to reflect the fact that some buoys are still using 5-digit ID numbers. The Panel requested the Task Team on Data Management to lead and discuss the issue of re-using WMO numbers with the Task Teams on Instrument Best Practices and Drifter

Technology Development (TT-IBP) and on Moored Buoys (TT-MB), and present a proposal at the next Panel's Session (***action; TT-DM; DBCP-27***). See also agenda item 9.8.

6.1.5 **The Panel then agreed on the following action items:**

- Promote standardization of data transmission formats using DBCP-M2[6] concept (***action; TT-DM; ongoing***);
- Assist Pierre Blouch and Jon Turton in preparing a methodology to compare non-GTS buoy data with NWP/Ocean models, open to anyone via the web. (Continuation of DBCP-25/ Action 8.8.2) (***action; TT-DM; DBCP-27***);
- Review the DM Cookbook (The Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and in Delayed Mode) (***action; TT-DM; DBCP-27***);
- Review and finalize the SSS QC document (***action; TT-DM; DBCP-27***);
- The team should continue, with the support of the Technical Coordinator, to assess the adoption of BUFR by GTS nodes and ensure that all data that is expected is definitely received at modeling and archiving centers (especially the Integrated Science Data Management – ISDM –, the US National Oceanographic Data Center – NODC – and the European Centre for Medium-Range Weather Forecasts – ECMWF) by reviewing the differences between BUFR and BUOY messages received at each center (***action; TT-DM & TC; DBCP-27***);
- Assist in reviewing the Buoy template for BUFR, which will be updated in 2010-2011 to include new requirements for observations, as well as the additional metadata identified as critical (***action; TT-DM; DBCP-27***).

6.1.6 The Panel discussed the collection of metadata from Rigs and Platforms, and deferred decisions in this regard to agenda item 11.2.

6.1.7 The Panel thanked Ms Pazos and members of the Task Team for their efforts. It was agreed that Ms Mayra Pazos would continue as chairperson of the Task Team for the intersessional period. The full report of the Task Team is included in the CD-ROM publication of the Session's Final Report.

6.2 Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBPD)

6.2.1 Dr Bill Burnett (USA), Chairperson of the Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBP) reported on the progress during the intersessional period.

6.2.2 The Panel noted with appreciation the following activities of the Task Team:

- Improvement of DBCP documentation related to standards (DBCP TD No. 3, 4, and 37, and OceanSITES QC for biochemical datasets);
- Discussions with the GHRSST regarding enhancing QC feedback mechanisms, and initiating a DBCP-GHRSST Pilot Project designed to address the satellite community needs for drifter data; adaptation of data collection format to permit the transmission of high resolution SST data from drifters (i.e. 0.01K), and plans for using higher accuracy a

6 : DBCP-M2 is a format recommended by the DBCP for the collection of buoy data through Argos (see http://www.jcommops.org/dbcp/fmt-dbcp-m2.html)

sensors (0.05K) on the Surface Marine programme of the Network of European Meteorological Services, EUMETNET[7] (E-SURFMAR) units;

- Further evaluation and improvement of drogue sensors by the GDP, including through the use of tether strain system;
- Excellent performances of the Iridium telemetry used by some members (France, E-SURFMAR, Canada, Ukraine, UK, South Africa), especially in terms of data timeliness, and the initiation of operational deployments of drifters using this technology;
- Evaluation of the Argos-3 technology (New Zealand, Ukraine in collaboration with France);
- The use of lithium batteries in the polar regions and the Southern Hemisphere to significantly increase life-time (Canada, UK);
- The use of sonic anemometers and the development of specific algorithms for the measurement of wind speed (Canada);
- Efforts by members to better assess their networks, maintain information about sensor calibration, and enhance traceability to standards (e.g. Station Sensor Management System - SSMS - by Canada);
- Implementation of an Ocean Sensor Calibration Laboratory at NDBC to calibrate conductivity sensors and sub-surface temperature sensors;
- The establishment of a Regional Marine Instrument Centre (RMIC) for the WMO Regional Association IV at the NDBC, in Mississippi, USA;
- The deployment of SVP-BS drifters with barometers and salinity sensors to validate and calibrate SMOS[8] satellite salinity measurements (France);
- The deployment of SVP-BTC drifters with 80m thermistor strings in the Black Sea and the Bay of Biscay (France/Ukraine);
- Evaluation of the SVP-B mini drifter (Ukraine, GDP);
- Efforts to create and evaluate in-situ mini meteorological markers in polar regions on the basis of SVP-B drifters (Ukraine, Japan).

6.2.3 The Panel noted that the iQuam website[9] to monitor quality for in-situ sea surface temperature was a useful online monitoring tool.

6.2.4 The Task Team on Instrument Best Practices recommended that members of the Panel insist on calibration certificates from instrument manufacturers. They further recommended and encourage panel members to start systems for record keeping of instrument calibration, replacement and validation that fall within recommended specifications of the International Organization for Standardization (ISO). The Panel concurred with these recommendations.

6.2.5 The Panel invited the Task Team to address the following issues (***action; TT-IBP; DBCP-27***):

- Collecting high resolution SST measurements (in liaison with the GHRSST);
- Increasing the life time of drogues;
- Enhancing the quality of surface pressure data;

7 : EUMETNET: Network of European Meteorological Services
8 : Soil Moisture and Ocean Salinity mission
9 : http://www.star.nesdis.noaa.gov/sod/sst/iquam/

- Addressing the environmental impact of drifters (e.g. estimating the impact of lithium batteries), and how it could be reduced or justified; feasibility of using appropriate stickers on buoys to facilitate their recovery;
- Using solar cells on drifters and encouraging the manufacturers to investigate making developments in this regard.

6.2.6 **The Panel then agreed on the following action items:**

- The Task Team to identify authors who are willing to provide the updates to DBCP related standards document as listed on the DBCP website[10] (***action; TT-IBP; Dec 2010***).
- The DBCP Technical Coordinator to submit historical DBCP documents to NOAA for imaging through the Climate Database Modernization Programme (CDMP) (***action; TC; Feb 2011***);
- To include appropriate QC procedures for salinity as provided by DBCP members into DBCP TD No. 37 (Guide to Data Quality Control Tests to Perform by a GTS Processing Center) (***action; TC; DBCP-27***).

6.2.7 The Panel thanked Bill Burnett and the members of the Task Team for their hard work during the intersessional period, and for providing the input for this report. It was agreed that Dr Burnett would continue as chairperson of the Task Team for the intersessional period. The full report of the Task Team is included in the CD-ROM publication of the Session's Final Report.

6.3 Task Team on Moored Buoys (TT-MB)

6.3.1 Mr Jon Turton (United Kingdom), Chairperson of the Task Team on Moored Buoys reported on the progress during the intersessional period.

6.3.2 The Panel noted with appreciation that the Task Team has been working pro-actively on defining the comprehensive metadata on moored buoy systems, that needs to be collected. The details of the metadata needing to be collected were refined (i) by having consistency with agreed OceanSITES metadata, (ii) by defining Meta-T categories (which indicates whether the information should be distributed with the observation report), (iii) through better specification of sampling/reporting times. Further, a metadata validity record is included thus enabling a new metadata record to be specified when details (e.g. sensors) change. Version 5.a. of the draft metadata specification was circulated in early July 2010 with the aim of a final iteration to agree an initial specification. Environment Canada and UK Met Office have subsequently compiled much of the metadata that would be required (via an Excel spreadsheet and convertible to csv format).

6.3.3 The Panel endorsed the latest version of the metadata content specifications as version 1 noting that further evolutions will be made. The Panel also agreed that using a spreadsheet for the collection of the metadata – while useful in some cases – may not be practical for all operators and recommended that other formats such as NetCDF[11] be investigated (***action; TT-MB; DBCP-27***). Nevertheless, the Panel invited its members to collaborate with JCOMMOPS, possibly using the spreadsheet or other appropriate format for the submission of moored buoy metadata, and work with the manufacturers on the best way to collect the information for commercial moored buoy systems (***action; members; DBCP-27***). The Panel also requested JCOMMOPS to develop a web interface and file upload (***action; JCOMMOPS; DBCP-27***).

10 : http://www.jcommops.org/dbcp/community/standards
11 : NetCDF: Network Common Data Format (http://www.unidata.ucar.edu/software/netcdf/)

JCOMMOPS was also requested to regularly forward collected metadata to the ODAS Metadata Service (ODASMS, China) (***action; JCOMMOPS; ongoing***).

6.3.4 The Panel recalled the importance of traceability of observations to standards and SI units, and in particular of establishing a proper certification process and procedures for the calibration. Recording the history of calibration and providing calibration certificates was particularly important. The Panel further requested its members to promote the importance of recording nationally relevant metadata until an agreed process could be set up **(Recommendation)**. The Panel also requested the TT-MB to address this issue in liaison with Johan Stander (South Africa) and the TT-IBP, and investigate what calibration information should be collected internationally and recorded in the ODASMS (***action; TT-MB; DBCP-27***).

6.3.5 The Panel also noted the recommendations from the fourth Session of the Data Management Coordination Group, Ostend, Belgium, 8-9 April 2010 regarding the DBCP taking responsibility for metadata from automated rigs and platforms. This issue is discussed under agenda item 11.2.

6.3.6 The Panel also noted with appreciation that the Task Team had substantially reviewed and proposed updates to Section 4.3 (*Moored Buoys*) of WMO Publication No. 8 (*Guide to Meteorological Instruments and Methods of Observation*), Part II (*Observing Systems*), Chapter 4 (*Marine Observations*).

6.3.7 The Panel reviewed the latest technical developments and performances with regard to moored buoys:

- Environment Canada (47 units) using the Watchman100 “payload” provided by AXYS Technologies Inc. Canada is working at enhancing satellite telemetry through SatLink2 GOES transmitters and increasing reliability of antennas. Canada has also deployed 2 Datawell MarkIII wave rider buoys in support of the JCOMM Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET) and equipped two other buoys with a TRIAXYS sensor;
- NOAA’s enhancement of the tropical Moored Buoy Array (shore data processing, website, data logger, iridium data collection, subsurface conductivity/ temperature (CT) sensors, and the compass for measurement of wind direction). Refreshed buoy systems have been designed, fabricated, integrated, deployed and tested. Intercomparisons will continue to be made for the new design;
- Some Autonomous Temperature Line Acquisition System (ATLAS) moorings in the Indian Ocean Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA) have been modified to inhibit vandals from boarding the buoy. While proving successful at keeping moorings in place (3 of 4 moorings deployed have been recovered and 2 are presently operating) and producing sustained subsurface measurements, an adequate method of inhibiting vandalism upon surface met sensors has not yet been found;
- The NOAA/NWS National Data Buoy Center is implementing an Ocean Sensor Calibration Laboratory to calibrate conductivity sensors and sub-surface temperature sensors (see also agenda item 6.2);
- The United Kingdom is using both Iridium and Data Collection Platform (DCP) data telecommunication, and investigating using high data rate digital Meteosat DCPs in the future;
- The United Kingdom is now using dual Gill Windsonic anemometers on all new replacement buoy deployments;

- The United Kingdom is operating a Triaxys wave system on the K5 buoy, and plans to introduce this system on other buoys. Recommendations from the PP-WET with regard to the transmission of the “first-5 parameter” will be implemented.
- A new OceanSITES buoy (WMO#62442, PAP) was deployed by the UK and is based on the K-series design modified to accommodate sub-surface data retrieval and transmission.

6.3.8 The Panel requested the Team to continue to follow up on these developments.

6.3.9 It was agreed that Mr Turton would continue as chairperson of the Task Team for the intersessional period. The full report of the Task Team is included in the CD-ROM publication of the Session Final Report.

6.3.10 The Panel thanked Mr Turton and members of the Task Team for their efforts and the progress made with regard to the metadata collection issue.

6.4 Task Team on Capacity-Building (TT-CB)

6.4.1 Mr Sidney Thurston (USA), Chairperson of the Task Team on Capacity Building reported on the progress during the intersessional period. In particular, he provided comprehensive information on the preparation and outcome of the first In-region Capacity Building workshop for countries of the Western Indian Ocean region, held in Cape Town, South Africa, 19-23 April 2010.

6.4.2 The Panel agreed that the Panel’s efforts for capacity building has been successful in terms of bringing regions’ capabilities together, reaching out to the community that applies the observing data and information (e.g. ocean modelling), and sharing resources. The Panel also noted that the collaboration with the global and regional programmes should sustain, such as with the Ocean Data and Information Network for Africa (ODINAfrica) and The Agulhas and Somali Current Large Marine Ecosystems (ASCLME).

6.4.3 **After discussion, the Panel agreed with the following action items:**

- To organize and convene the 2nd "DBCP In-Region Western Indian Ocean Capacity Building Workshop", in the Spring 2011, in Mauritius. The workshop would be co-organized by DBCP, the Mauritius Oceanography Institute (MOI), the NOAA Office of Climate Observation (OCO), the African Monitoring of the Environment for Sustainable Development (AMESD), Mauritius Meteorological Services, and the ASCLME. The goals for the workshop are detailed in ***Annex XII*** (***action; TT-CB and Secretariat; Spring 2011***).
- To continue to build the Observation Development Team (ODT) and Modelling Development Team (MDT) with Met/Ocean Institutes in the Western Indian Ocean Region, in preparing a programme for the 2nd DBCP in-region workshop (***action; TT-CB; DBCP-27***).

6.4.4 The Panel noted with appreciation the offer by India to collaborate in the preparation of the workshop in Mauritius next year, and to host a third workshop in 2012.

6.4.5 The Panel thanked Mr Thurston and members of the Task Team for their efforts. The full report of the Task Team will be included in the CD-ROM that will be distributed with the Session final report. It was agreed that Dr Thurston would continue as chairperson of the Task Team for the intersessional period.

7 Reports by the Action Groups

7.0 Under this agenda item, the Panel was presented with reports by its action groups. Summaries of the Action Groups reports are provided in ***Annex IV***. The full reports of the Action Groups will be reproduced in the Panel's Annual Report.

7.1 Surface Marine programme of the Network of European Meteorological Services, EUMETNET (E-SURFMAR)

7.1.1 The Chairperson of the E-SURFMAR Data Buoy Technical Advisory Group (DB-TAG), Jon Turton (United Kingdom) reported on the activities of the Surface Marine programme of the Network of European Meteorological Services, EUMETNET (E-SURFMAR) during the last intersessional period.

7.1.2 Plans for 2011 are to maintain a network of 100 drifting buoys, and the 4 reference moored buoys in operation. The drifting buoys will be deployed from various locations (i.e.: Canada, Iceland, France, Norway, UK, USA, etc.) in the Atlantic Ocean. The drifters from GDP upgraded with barometers will be deployed by vessels plying from USA to Iceland and from USA to Europe. Within the allocated budget more than 100 buoys (including 30 upgrades) will be deployed in the E-SURFMAR areas of interest in the coming twelve months. New deployment routes will be investigated.

7.1.3 E-SURFMAR will continue to deploy buoys in the Arctic Ocean in support of the International Arctic Buoy Programme (IABP). The main challenge with the ice buoys is their ability to survive after being released from frozen ice.

7.1.4 The Panel noted that at present, Cabo Silleiro (transmission through Inmarsat) is the only EUMETNET Composite Observing System (EUCOS) moored buoy which reports directional wave spectra onto the GTS. Spectral data from K5 (transmission through Iridium) are still experimental. Lion moored buoy (transmission through Meteosat) reports omni-directional spectra and M6 (transmission through Meteosat) is only reporting mean wave height and period. It is expected that a modified version of the system developed by the UK Met Office for K5 will also be installed on the Lion buoy with similar capability on M6 in due course.

7.1.5 Regarding instrument practices, the Panel noted with appreciation that a draft technical document on E-SURFMAR moored buoys is under review. It is hoped to have a finalized document for the next DB-TAG meeting in May 2011.

7.1.6 The Panel noted the results of the Observing System Experiment (OSE) that has been carried out by ECMWF on surface marine data for EUCOS. The study showed a clear positive impact of buoy data, strongest at 1000hPa but lasting up to 500hPa. The impact is stronger and lasts longer when no GPS Radio Occultation (GPSRO) data are used. The present density of additional buoys –compared to the situation before E-SURFMAR started- has a visible but moderate impact in terms of forecasts scores. The impact on storms Klaus and Xynthia was slightly positive for 24 h forecasts but remarkable for 48 h and 96 h.

7.2 Global Drifter Programme (GDP)

7.2.1 The GDP Chairperson, Dr Rick Lumpkin (USA) reported on the activities of the Global Drifter Programme (GDP) during the last intersessional period.

7.2.2 Plans for 2011 are (i) to maintain the array at approximately 1250 drifters, deploying 1000 Drifters in the period between October 2010 and September 2011; (ii) to continue to evaluate the array evolution, drogue presence and drogue lifetime, as well as drogue presence for historical

data; (iii) to continue to update the quality-controlled interpolated database; (iv) to develop QC procedures and begin incorporating salinity data into data stream; (v) to continue participation in Iridium and Argos 3 pilot projects, including full incorporation of Iridium drifters in the GDP data stream; and (vi) to conduct AOML Data Buoy (ADB) study of SVPB drifters.

7.2.3 The Panel recalled that deployment of drifters relies almost entirely on Ships of Opportunity and Research Vessels but noted that expanding cooperation with the Argo Programme for the deployment of instruments on a chartering basis is something that can be investigated (see also discussion under agenda item 11.2).

7.3 International Arctic Buoy Programme (IABP)

7.3.1 Mr Ed Hudson (Canada) reported on the activities of the International Arctic Buoy Programme (IABP) during the last intersessional period on behalf of its Chairperson, Ms Christine Best (Canada).

7.3.2 The Panel noted that IABP participants are addressing the following challenges: (i) increasing areas of First-Year Ice and Open Water during summer, and (ii) deploying buoys in the Eurasian Arctic which is data sparse. Plans are to deploy buoys ranging from SVP's providing surface air pressure to buoys providing air pressure and air temperature, to Ice Mass Balance buoys (IMB), and Oceanographic profiling buoys measuring temperature and salinity at great depths and buoys that measure atmospheric air components such as ozone.

7.3.3 The Panel recognized that the IABP was facing a number of challenges including (i) sustaining the array due to increasing areas of First-Year Ice and Open Water during the summer and the lack of deployments in the Eurasian sector of the Arctic Basin; (ii) realizing GTS distribution of the data for some of the buoys; and (iii) obtaining data that did not get onto the GTS originally. Efforts are being made to have that data entered into the GTS and IABP archives

7.3.4 The Panel noted that the IPAB Coordinator, Dr Christian Haas (Canada) is now also the IABP Vice-Chair and can therefore provide a link between these two polar Programmes.

7.4 International Buoy Programme for the Indian Ocean (IBPIO)

7.4.1 The Chairperson of the IBPIO, Mr Graeme Ball (Australia) reported on the activities of the International Buoy Programme for the Indian Ocean (IBPIO) during the last intersessional period.

7.4.2 Plans for 2011 are to maintain a network of more than 150 drifters in the Indian Ocean; maintain the existing moored buoy arrays, and ramp up to 34 buoys in the RAMA array. The National Institute of Ocean Technology (NIOT, India) will establish a network of 12 deep sea buoys, 5 in the Arabian Sea and 7 in the Bay of Bengal.

7.4.3 IBPIO participants are regularly encouraged to maintain their contributions of buoys, or to fund barometers to equip SVP drifters provided by GDP. Météo-France, the Australian Bureau of Meteorology (BOM), the South African Weather Service (SAWS), regularly fund barometer upgrades in the Indian Ocean. More than 250 drifters are planned to be deployed during the next intersessional period, of which 45 will be equipped to transmit through Iridium (action by BOM, GDP, Météo-France and DBCP). Efforts are aimed at filling data gaps in the tropical regions, primarily during the Tropical Cyclone season. See agenda item 7.9 for details about RAM implementation.

7.4.4 The IBPIO acknowledged the work that CLS is planning for 2010 and 2011 to improve the timeliness of data originating from drifting buoys in the Indian Ocean (this issue has been raised at several past DBCP meetings). To further improve data timeliness, the Panel endorsed the recommendations from the IBPIO that CLS investigate the possibility of installing a third new station over the southern parts of the Indian Ocean to further improve data timeliness across the entire basin (***action; JTA & CLS; JTA-30***). The IBPIO is willing to assist CLS in identifying a suitable position.

7.5 WCRP-SCAR International Programme for Antarctic Buoys (IPAB)

7.5.1 The Panel reviewed a written report submitted by Christian Haas (IPAB Coordinator, Canada) on the activities of the WCRP[12]-SCAR[13] International Programme for Antarctic Buoys (IPAB) during the last intersessional period.

7.5.2 The Panel noted that there were no deployments performed on sea ice in the 2009/2010 season, although numerous SVPs were deployed in open water by the Meteorological Services of South Africa, Australia and New Zealand. SVPs will continue to be deployed in the open water zone between December 2010 and March 2011.

7.5.3 In addition, 22 buoys will be deployed on ice during two research cruises in the Southern Pacific. IPAB encourages its participants to transmit their data to the GTS, and the IPAB coordinator is offering support in this regard. 20 prototype ice mass balance buoys will be deployed by SAMS and the British Antarctic Survey (BAS, UK) in the Bellingshausen Sea in November 2010. These buoys include GPS and thermistor chains through the snow and ice. Two standard Cold Regions Research and Engineering Laboratory (CRREL, USA) ice mass balance buoys will be deployed by the University of Texas (San Antonio) in the Bellingshausen and Amundsen Seas in November/December 2010. These buoys include GPS and thermistor chains through the snow and ice, as well as sonic rangefinders to measure changes of snow and ice thickness. Other nations' research cruises are generally available for opportunistic buoy deployments, however, cruise tracks are generally not favourable of sustained deployments on ice floes with a good chance of survival through the summer.

7.5.4 The Panel stressed that it was important that Panel members be regularly informed on the IPAB status and plans, and expressed some concerns about the lack of communication with the Programme. The Panel invited its Chairperson, Mr Al Wallace (Canada) to establish contacts with the Coordinator, and other sponsors such as WCRP and SCAR and seek enhanced communication for the future (***action; A. Wallace; DBCP-27***). The Panel also requested Johan Stander (South Africa) and Graeme Ball (Australia) to review the IPAB operating principles and possibly make recommendations to IPAB for their updating (***action; J. Stander & G. Ball; end 2010***).

7.6 International South Atlantic Buoy Programme (ISABP)

7.6.1 The ISABP Coordinator, Ms Mayra Pazos (USA), reported on the activities of the International South Atlantic Buoy Programme (ISABP) during the last intersessional period on behalf of its Chairperson, Mr Ariel Troisi (Argentina).

7.6.2 Plans for 2011 are to continue (i) to address observational gap areas specially in the Gulf of Guinea and Angola Basin; (ii) to pursue the recommendation to conduct studies and evaluate the impact of drifter pressure data and SST on the skills of numerical weather forecasting

12 : WCRP : World Climate Research Programme
13 : SCAR : Scientific Committee on Antarctic Research

models for the region; and (iii) to increase the number of SVPB in the region. The Panel noted that EUCOS has conducted sensititvity studies which showed some positive impact of surface pressure observations on NWP skills over Europe. The results of the E-SURFMAR study lead to the decision of maintaining the deployments of drifters in the North Atlantic Ocean at its current level.

7.6.3 The Panel noted with appreciation that (i) the US Navy will continue its African Partnership Station program and will carry out more deployments in the area; and (ii) the South Africa Weather Service is now actively finding deployment opportunities as well as increasing the Voluntary Observing Ship (VOS) fleet, therefore they expect to be able to arrange for more deployments. It is expected that the Polarstern will be returning to the Atlantic sector in the 2010/2011 austral summer season. Argentina can now receive donations of instruments without paying any taxes, and will continue to deploy drifters in the area. There is also a center in Puerto Madryn (south of Argentina) that is very interested in participating in the program by deploying instruments. The Uruguay Oceanography, Hydrology and Meteorology Service, which recently joined ISABP agreed to provide deployment opportunities in 2011.

7.6.4 The GDP deployment plans for the South Atlantic from June 1, 2010 – May 31, 2012 are as follows:

Region	***SVPs***	***SVPBs***
Tropical Atlantic (20^0S – 30^0N)	335	2514
Extra Tropical Atlantic (40^0S – 20^0S)	25	75
Southern Atlantic (60^0S – 40^0S)	0	225

7.7 DBCP-PICES North Pacific Data Buoy Advisory Panel (NPDBAP)

7.7.1 Mr Shaun Dolk (USA), Technical Coordinator of the NPDBAP reported on the activities of the DBCP-PICES[15] North Pacific Data Buoy Advisory Panel during the last intersessional period.

7.7.2 The goal for 2011 is to reach 100 drifter deployments, of which, at least 70 drifters shall be barometer equipped. Both the Global Drifter Program and Environment Canada will continue to utilize ships of opportunity for drifter deployments, while also looking for new possibilities within the Coast Guard.

7.7.3 The Panel noted with appreciation that through the tremendous help of the IABP Coordinator, Mr Ignatius Rigor (USA), a collaboration with the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) has been established, which allows for drifter deployments on Japanese vessels.

7.8 OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES)

7.8.1 The Co-chairperson of the OceanSITES Science Team, Dr Robert Weller reported on the activities of the OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES[16]) during the last intersessional period.

14 : upgraded by the Brazilian Navy
15 : PICES: a North Pacific Marine Science Organization (http://www.pices.int)
16 : http://www.oceansites.org/

7.8.2 The Data Management Team agreed on an update to the OceanSITES data format, which is now being implemented by the current data providers. Data is flowing from most of the participants in the original OceanSITES Steering Team, and in some cases it is starting to include biogeochemical data (e.g. for the European Ocean Observatory Network – EuroSITES[17]). Efforts were made in getting the data from there into the OceanSITES system.

7.8.3 Dr Weller reported on the challenges facing OceanSITES, including in particular ensuring sustained support for long time series stations, without a framework for getting long-term support for sites.

7.8.4 The project office activities for OceanSITES continued to be carried out by Hester Viola together with some IT support, but she is leaving, and the funding for the project office is uncertain. The OceanSITES wished to thank Hester Viola for her support in the last two years. The Panel agreed to continue the collaboration with the OceanSITES under similar conditions once the new Technical Coordinator will be recruited, and invited the OceanSITES to increase its contribution to the DBCP Trust Fund (***action; OceanSITES; DBCP-27***).

7.8.5 OceanSITES also needs to communicate on the impact of sustained ocean time series. Outreach, collaborations, and interfacing with other communities e.g. OceanOBS'09, Climate Variability and Predictability (CLIVAR), Global Synthesis and Observations Panel (GSOP), took place in various ways. Discussions are underway whether OceanSITES could be a home for a global boundary current observing system.

7.8.6 The notion of a common back-bone, i.e. providing the same multidisciplinary observations at the same depths at a key subset of sites, is growing and needs to be matured. OceanSITES is now advocating a minimum set of sensors to be operated on some selected sites of the Array in order to maximize the global impact of collected data for all disciplines. At this point, the minimum set includes the following:

- Meteorological sensors
- Surface T/S and thermistors for mixed-layer depth resolution
- 0-1500m T/S sensors for dynamic height and transport estimates
- Near-surface currents, minimum one at 15m
- Surface pCO_2 for flux calculations
- Dissolved O_2 at 5 depths for productivity and gas exchange estimates (with PCO_2)
- Nitrate at 2 depths for mechanisms of forcing/limitation
- Downwelling radiometer at 20-30m and at surface for total biomass estimates

7.8.7 The OceanSITES is planning to choose 10 to 20 sites that can be enhanced by adding some or all of the sensors proposed.

7.9 Tropical Moored Buoys Implementation Panel (TIP)

7.9.1 Dr Mike McPhaden (USA), Chair of the TIP, reported on the activities of the Tropical Moored Buoys Implementation Panel (TIP) during the last intersessional period.

7.9.2 As of July 2010 the number of Indian Ocean Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA) sites implemented stands at 27 (59%

17 : http://www.eurosites.info/

complete). Five sites which were first occupied in the past year include: US ATLAS moorings at 12S 67E (September 2009), 4°S 67°E (September 2009), and 12°S 81°E (May 2010); a Japanese m-TRITON[18] mooring at 8°S 95°E (November 2009); and a Chinese surface mooring at 8°S 100°E (February 2010). With sufficient ship time and security arrangements the number of RAMA moorings may reach 34, or 74% completion of the IOP planned array, by June 2011.

7.9.3 The number of sea days necessary to fully maintain the RAMA array when complete is estimated to be at least 200 days per year. Formal bilateral agreements have either been approved or are under development between NOAA and agencies of the various partner countries to help complete and sustain the array. To facilitate and coordinate resources that may be applied to the Indian Ocean Observing System (IndOOS), an IndOOS Resource Forum was established in 2009. The Forum held its first meeting on July 14, 2010, in Perth, Australia.

7.9.4 Plans for 2011 include maintaining the TAO/TRITON array with 72 operational units (8 cruises), the PIRATA with 18 units (3 cruises), and increase number of RAMA sites deployed up to 34 (9 cruises).

7.9.5 RAMA implementation and maintenance will continue in the coming year. A Memorandum of Understanding (MOUs) between the US and Indian or Indonesia will provide 90 or more sea days annually to support US sites. JAMSTEC will maintain 4 RAMA sites on a Research Vessel (RV) Mirai cruise in January 2011. China intends to maintain their surface and subsurface mooring with annual cruises of about 15 days from Indonesian research vessels. By June 2011 the number of RAMA moorings may reach 74% completion of the IOP planned array.

7.9.6 The Panel noted with concern that damage to buoys and theft of instrumentation continues to be a problem, especially at sites near areas of intense fishing activity such as the eastern equatorial Pacific, the Gulf of Guinea and equatorial Indian Ocean. Some Autonomous Temperature Line Acquisition System (ATLAS) moorings in RAMA have been modified to inhibit vandals from boarding the buoy. While proving successful at keeping moorings in place (3 of 4 moorings were recovered and 2 are presently operating) and producing sustained subsurface measurements, an adequate method of inhibiting vandalism upon surface met sensors has not yet been found.

7.9.7 Acts of piracy in the Indian basin, while primarily occurring off the Somali coast, have become more common farther offshore. Security concerns have resulted in the cancelation of 2 RAMA cruises in the past year. To address these concerns, The Agulhas and Somali Current Large Marine Ecosystems (ASCLME) has arranged for a Seychelles Coast Guard escort on an October 2010 cruise while in the Seychelles Exclusive Economic Zone (EEZ). A security zone, defined by Lloyds of London, extends to other sites in the western portion of RAMA. Adequate solutions, such as that provided by ASCLME, will have to be provided before implementation can proceed in these areas.

7.9.8 The NOAA Pacific Marine Environmental Laboratory (PMEL) is developing a replacement for the ATLAS system which will comprise more commercially available components, provide higher temporal resolution data in real time, and inhibit the theft of surface electronics. The NOAA National Data Buoy Center (NDBC) is working on a similar effort for the TAO array. Under the terms of an International Agreement between the US and Indonesia, this system will support both RAMA and the Indonesian Global Ocean Observing System (InaGOOS). First prototype deployments will be made in the coming year.

7.9.9 The Panel noted that the last meeting of the TIP (Oban, Scotland, United Kingdom, 26 September 2010), recommended establishing a tropical moored buoy technical coordination group with Paul Freitag (NOAA/PMEL, USA) as lead coordinator. The TIP meeting also proposed a plan

Triangle Trans-Ocean buoy network Triangle Trans-Ocean buoy network

for the Array expansion (similar to what has been done for the PIRATA array) and invited interested groups to submit proposals to the TIP Scientific Steering Group (TIP-SSG) addressing issues such as scientific rationale, technical feasibility, system compatibility, and data policy. Successful projects will be commissioned for a three year pilot phase, and successful pilot leads permanently included into the TIP array.

7.10 International Tsunameter Partnership (ITP)

7.10.1 Mr Ken Jarrott (Australia) reported on the activities of the International Tsunameter Partnership (ITP) during the last intersessional period. The ITP is addressing issues such as Tsunameter development and manufacturing, operating and sustaining the arrays, coastal and deep ocean network establishment, timely data exchange to agreed or common data standards, and Data Management and data / metadata repositories.

7.10.2 The next challenge for the ITP is sustaining at national and regional scale. Plans for 2011 include: (i) getting all technology and products to mature state, addressing best practice exchanges to reveal improvement and innovation targets, developing inter-comparison and system qualification practices; (ii) promoting sustainable and healthy global supply chains; (iii) further developing appropriate data exchange; (iv) working at improving engagement of the Warning Centres in acceptance of data exchange, and data interpretation; (v) developing data and metadata repositories and visualisation tools; (vi) looking at near-field tsunami detection systems; (vii) refining the vandalism and sustainability responses; (viii) developing communal collaboration facilities (e.g. web based); (ix) engaging with new countries and Tsunami Warning System; (x) working at relationships with other groups and governance transitions; and (xi) new leadership appointments.

7.10.3 The Panel noted with appreciation that the ITP has been working on enhancing the real-time data exchange, including the use of BUFR in some cases (e.g. Australia, India).

7.10.4 The Panel also noted that vandalism remained a serious concern and invited the ITP to work collaboratively with the Panel in finding solutions.

7.10.5 The Panel agreed that it would be beneficial to develop synergies amongst disciplines for the development and implementation of multi-purpose moored buoys.

8 Pilot Projects

8.1 Drifter Iridium Pilot Project

8.1.1 Iridium Pilot Project (IPP). The IPP had been instigated by the Panel in 2007 to evaluate the effectiveness of the Iridium satellite communications system for the transmission of drifter data, and had intended to deploy 50 or more Iridium equipped SVPBs through a programme of Iridium upgrades for drifters already being procured by buoy operators. In fact, nearly 200 platforms had been deployed during the three-year deployment phase of the project, half funded by the IPP, and half through E-SURFMAR. On any given day during the last two years of the project, roughly 80 Iridium SVPBs were active and transmitting hourly data via the GTS. The deployment phase of the IPP is now complete, apart from a final deployment of 30 Météo France platforms, which will be deployed in the Indian Ocean during the next intersessional period. In this context, the Panel thanked CLS for their continuous efforts to improve the Argos Local User Terminal (LUT) network and address the blind orbit issues that affected these areas. The Panel also approved the expenditure of its funds to pay for the airtime of the surviving IPP drifters.

8.1.2 As regards timeliness, the Panel noted with approval that insertion of Iridium data onto the GTS normally occurred within 10 minutes of the buoy transmission, and that less than one minute of that delay was due to latency in the Iridium satellite system. It also noted that E-SURFMAR had already conducted its own analysis of the effectiveness of Iridium for buoy data, and that all E-SURFMAR operational SVPB deployments were now Iridium-equipped.

8.1.3 The IPP has now entered its analysis phase and a full report will be presented to the next session. A preliminary analysis of cost-effectiveness had indicated that lifetime costs of an Iridium drifter were likely to be approximately half the cost of an Argos drifter for those users not benefiting from Argos bulk purchase schemes. As regards geographical distribution of IPP drifters, the Panel was disappointed that a true global coverage had not been achieved, but noted with satisfaction that Iridium drifters had been deployed by the UK Met Office in the stormy waters of the Southern Ocean and had performed well. The Panel was also pleased to hear that all five SVPB manufacturers were now offering Iridium-equipped drifters.

8.1.4 The Panel recalled that DBCP TD No. 37 provides DBCP recommendations on quality control tests to perform in real time by a data processing centre inserting buoy data onto the GTS, and urged companies and DBCP members processing Iridium buoy data to follow these recommendations.

8.1.5 Finally, the Panel, in thanking the IPP participants for their valuable efforts, agreed that the collective experience gained from the IPP should be recorded in a best-practice guide for the use of Iridium in drifters, and asked the IPP steering team to investigate means for the production of such a guide (***action; IPP; DBCP-27***).

8.1.6 The full report on the Iridium Pilot Project is provided in ***Annex X.***

8.2 Pilot Project for the evaluation of Argos-3 technology

8.2.1 Dr Luca Centurioni (USA) reported on the development and current status of the Argos-3 pilot project implementation. Developments are being conducted in collaboration with the manufacturers (Pacific Gyre, Clearwater, MetOcean, and Marlin-Yug). The Panel noted that some MetOcean units had been deployed with limited success due to early failures of communication with the pressure sensors. There are plans underway to deploy new units all with barometers. Some PMT/system evaluations were done at CLS. Most of such compiled statistics have been presented for the first batch of Argos-3 drifters by AOML, and AOML will continue to compile new statistics for the new batches ***(Mayra Pazos).***

8.2.2 The Panel agreed that it is crucial to have an independent assessment of the new Argos-3 technology through the Pilot Project Steering Team. The Panel thanked the Steering team for its efforts; agreed that the evaluation of the Argos-3 technology should continue; that the Pilot Project be kept alive; and requested the Steering team to continue its evaluation and report on its findings at the next Panel Session (***action; Argos-3 PP; DBCP-27***).

8.2.3 The Panel agreed to use the DBCP Trust Fund up to USD 5,000 in support of the Pilot Project (essentially for the shipping of drifters).

8.2.4 The full report on the Argos-3 Pilot Project is provided in ***Annex XI***.

8.3 Pilot Project on Wave Measurement from Drifters (PP-WMD)

8.3.1 The Pilot Project on Wave Measurement from Drifters (PP-WMD) saw little tangible progress during the intersessional period owing to the pressure of other work on project

participants. However the Panel noted that a number of relevant papers had recently appeared in the scientific literature, and that this work by other parties would better inform the PP-WMD as to how best to proceed with a practical implementation of wave-spectral measurements from drifters. In noting that this was a rapidly developing field of research, it urged the project chair to conduct a full desk study of the new literature, to contact the main players in the field and to propose an action plan for consideration by the Executive Board and by the Panel at its next session (***action; D. Meldrum; DBCP-27***).

8.4 Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET)

8.4.1 Mr Val Swail (Canada) reported on the development and current status of the Pilot Project on wave measurement evaluation and test from moored buoys. The full report is included as a presentation in the CD-ROM for the DBCP-XXVI meeting report.

8.4.2. Mr Swail reported that the PP-WET Steering Committee (SC) held the second meeting of the PP Steering Team (27 February 2010, Portland, United States), at which the work plan and schedule presented to DBCP-XXV were reviewed and updated as appropriate; the latest version is given in ***Annex XV***, and is available at the pilot project website[19].

8.4.3 Mr Swail also noted that a special session on wave measurement and a side meeting had been organized as part of the Eleventh International Workshop on Wave Hindcasting and Forecasting[20] (October 2009, Halifax, Canada) to further develop guidelines and participation in the Pilot Project .

8.4.4 The Panel expressed its appreciation to several national agencies and international programmes for their participation in the intercomparison projects, and in the development of metadata bases in coordination with the Task Team on Moored Buoys. In particular, the Panel welcomed the contribution from Canada in providing financial support for the Coastal Data Information Program (CDIP) at the Scripps Institution of Oceanography (San Diego, USA), in setting up the intercomparison methodology, website and metadata criteria, and in carrying out individual intercomparisons. The Panel encouraged its member countries to participate in the intercomparison activities that are being led by this pilot project (**recommendation**).

8.4.5 The Panel noted that the first two directional waverider buoy deployments had been made by Canada, one on the east coast co-located with a 6m NOMAD[21], and one on the west coast co-located with a 3m discus, both with a standard strapdown accelerometer and a TriAxys directional sensor. The initial comparison data are displayed on the intercomparison website.

8.4.6 The Panel recognized that the pilot project would contribute to JCOMM in developing standards and best practices, as well as to the relevant WIGOS exercise, and encouraged the co-chairs and Steering Committee (SC) members to actively outreach these relevant activities with the progress in the inter-comparison exercise (**recommendation**).

8.4.7 The Panel agreed that this pilot project was progressing well, and decided to retain its financial support from the trust fund for another year (see Agenda Item 12.4). The Panel thanked the PP-WET SC co-chairs, Mr Val Swail and Dr. Robert Jensen, and SC members for their work to make progress.

19 : http://www.jcomm.info/wet
20 : http://www.waveworkshop.org
21 : A 6m boat-shaped buoy

8.4.8 **The meeting made the following recommendations:**

(i.) Continue to support the Pilot Project for the next year;

(ii.) Encourage the co-chairs and SC members to contribute the results of the intercomparison exercise to JCOMM and WIGOS in developing standards and best practice;

(iii.) Encourage its member countries to participate in the Pilot Project intercomparison activities.

8.4.9 **The meeting decided on the following action item**:

(i.) A third meeting of the Steering Committee will be organized in early 2011 (***action; PP-WET co-chairs & Secretariat; ASAP***).

8.4.10 The Panel noted that Norway and India have done some inter-comparison work of wave data from buoys, and invited those countries to post the evaluation report, if/when available, through the web (***action; Norway & NIOT; Dec 2010***) and provide links to the PP-WET Chair. The Panel also invited its members to contact the Chairperson of the PP-WET in case they are undertaking wave observation and evaluation activities (***action; members; ASAP***).

9 Issues for the Panel

9.1 Integration of in situ and satellite observations

9.1.1 Under this agenda item, Mr David Meldrum updated the Panel on negotiations with the Group for High Resolution Sea Surface Temperature (GHRSST) towards the creation of a joint pilot project for equipping 50 drifters with improved SST sensors. The Panel had noted from presentations made during its Scientific and Technical Workshop that drifter SST was vital to the satellite community for the validation of remotely sensed SST, and that the accuracy and resolution of drifter SST was seen as being the limiting factor in improving the quality of satellite SST retrievals. Mr Meldrum had engaged in a close dialogue with the GHRSST steering team and they had together produced a draft proposal for Pilot Project on High Resolution SST (HRSST). The proposal can be found on the JCOMM website[22]. Essentially the proposal sought $20k over three years from the Panel and $80k over the same timescale from the GHRSST community to upgrade at least 50 drifters with Iridium, GPS and HRSST. Deployment areas had yet to be decided, but the Panel asked Mr Meldrum to proceed with the establishment of a joint DBCP-GHRSST steering team to draw up a work plan and agree an evaluation methodology (***action; D. Meldrum; ASAP***), in the recognition that High Resolution SST, if proved beneficial, might in due course become a standard feature of the operational drifter fleet. The Panel also approved the allocation of $20k over three years, subject to approval of the work plan by the Executive Board during the intersessional period.

9.1.2 Noting the additional work required in terms of collecting additional metadata before deployment of the buoys, the Panel requested JCOMMOPS to collaborate with the Pilot Project Steering Team and assist in setting up appropriate arrangements in this regard (***action; JCOMMOPS; DBCP-27***). The Panel stressed that it was important to undertake good calibration and post-calibration for drifters deployed in this context.

9.1.3 In concluding this agenda item, the Panel noted that this project was a good example of how it should seek to engage and work with other elements of the observation community with a

22 : http://www.jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=6044

view to improving the quality, quantity and timeliness of ocean observations, and thanked Mr Meldrum for his efforts in this regard,

9.2 Information Exchange

9.2.1 Website

9.2.1.1 The Technical Coordinator, Ms Hester Viola, reported on website developments during the last intersessional period. The Panel was reminded of the official address for the DBCP website[23]. However, it was noted that it is also possible to access the site using another address[24] within the JCOMMOPS website.

9.2.1.2 The Panel noted that in early 2010, the new version of the website was published through the URL noted above[23]. The Panel also noted the following:

- The draft URL[25] will redirect to the official one[23] for the next year.
- The draft files under the draft URL[25] will be deleted in coming days, so please do not refer to those in future.
- The search engine may continue to refer to the draft site[25] for a few weeks until it updates automatically with the location of the current web pages.
- Many sections of the site will continue to evolve and any additional information can easily be added, so please send through additions or modifications.

9.2.1.3 The Technical Coordinator also reviewed all DBCP and OceanSITES web pages to find broken links and correct them.

9.2.1.4 JCOMMOPS maintained content on the Observations Programme Area on the JCOMM website[26] for the DBCP and OceanSITES. This included documents for BUFR for the JCOMM Task Team on Table Driven Code forms. Regarding the VOS and Expendable BathyThermograph (XBT) templates, the Technical Coordinator discussed the update to the BUFR template for XBT with WMO and sent out notifications to the community that it had been updated officially (and put news articles on the JCOMMOPS/SOOP websites[27]).

9.2.1.5 The Panel thanked the Technical Coordinator for these useful developments.

9.2.2 News

9.2.2.1 The Technical Coordinator informed the Panel on “New items” posted on the JCOMMOPS website posted during the last inter-sessional period, including:

- *“Recruiting DBCP/OceanSITES Technical Coordinator (Assistant Programme Specialist)”* (published 15/06/2010)
- *“DBCP Scientific and Technical Workshop”* (published 01/06/2010)
- *“Iridium Pilot Project buoy reaches two years of age”* (published 11/05/2010)
- *“New Draft DBCP Technical Document (No.37)”* (published 28/04/2010)

23 : http://www.jcommops.org/DBCP/
24 : http://dbcp.jcommops.org
25 : www.jcommops.org/dbcp/dbcp_new/
26 : http://www.jcomm.info
27 : http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/news?prog=SOOP

- *"South African Weather Service Drifting Buoy - Path and re-deployment story"* (published 04/11/2009). Sent out the story about Drifter 14550 that travelled from the Indian Ocean to the Cape of South Africa and was re-deployed.
- *"DBCP Website UPDATED"* (published 23/10/2009)
- *"South African Weather Service Article about drifting buoys"* (published 04/09/2009)

9.2.3 DBCP Publications

9.2.3.1 Revisions to DBCP Publications:

9.2.3.1.1 The Technical Coordinator informed the Panel about recent revisions to DBCP Publications and materials, including:

- Updated list of GTS bulletin Headers[28] used for buoys based on the JCOMMOPS database (information provided by the Integrated Science Data Management (ISDM) and CLS);
- Finalized Technical Document (DBCP #37) entitled "Guide to Data Quality Control Tests to Perform by a GTS Processing Center" with assistance from the DBCP Task Team on Data Management;
- Updated DBCP Technical Document #3 - "Guide to Data Collection and Location Services Using Argos" as requested by the DBCP to WMO (this has been reviewed by CLS and the Panel).

9.2.3.2 New Documents

9.2.3.2.1 The Technical Coordinator then reported on the publication of new DBCP Technical Documents, and JCOMM Meeting[29] and Technical Reports[30] of interest to the Panel, including:

- TD #38: Annual Report for 2009 (available on CD-ROM and via ftp[31]);
- TD #37: Guide to buoy data quality control tests to perform in real-time by a GTS data processing centre (soon available via ftp[31]);
- TD #36: Presentations at the DBCP Scientific and Technical Workshop, Paris, France, 28 September 2009 (available on CD-ROM and via ftp[31]).

9.2.3.3 *Information Products*

9.2.3.3.1 The Technical Coordinator provided the following details about new information products of interest to the Panel, made available through JCOMMOPS:

- Updated the website with inputs from members and for current meeting and document information. Changes included:
  - Added Search by WMO Identification Number (ID) text box to the front page
  - Added a general search tool for the whole site (using Google Custom search)
  - Added a dynamic chart to show the growth of the Buoy network on to the relevant JCOMMOPS product[32].

28 : http://www.jcommops.org/dbcp/doc/List%20of%20GTS%20bulletin%20headers%20for%20buoy%20data.pdf
29 : http://www.wmo.int/pages/prog/amp/mmop/meeting_reports.html
30 : http://www.wmo.int/pages/prog/amp/mmop/jcomm_reports.html
31 : http://www.wmo.int/pages/prog/amp/mmop/dbcp_reports.html
32 : http://dbcp.jcommops.org/network/status.html

- Uploaded additional content on JCOMMOPS Best Practices web page[33]. The Panel is encouraged to provide any additional documentation that applies to the areas under consideration that is relevant for the DBCP or JCOMM as a whole. This is an ongoing task and the assistance of the TT-IBP was sought.
- Drafted a new document entitled "Draft document of Sea Surface Salinity Quality Control processes for potential use on Data Buoy observations"[34] and sent it out to the Task Teams on DM and IBP for review. This document is submitted to the Panel for comment.
- Provided the JCOMM DM Cookbook (The Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and In Delayed Mode) to the Task Team on Data Management for review.
- Published new Iridium format proposed by Météo France[35]. Put links to all current formats on the front page.
- Finalized the OceanObs09 Community White Paper for JCOMMOPS with Mathieu Belbeoch and assisted with the Metadata White Paper with Derrick Snowden.
- Provided inputs to the CLS Argos Forum Publication (Argos 30th edition)
- Maintained the email communication lists for DBCP and OceanSITES. Added to the photo albums for both programs.
- Provided inputs to the JCOMM newsletter issue number 6.
- Created some Conference materials, i.e.
  - Poster for GHRSST meeting[36]
  - Provided inputs to the Global Ocean Observing System (GOOS) Project Office for a display for Oceanology 2010 and the GOOS Scientific Steering committee (GSSC) in London.

9.2.3.3.2 The Technical Coordinator provided the following details about revised information products of interest to the Panel, made available through JCOMMOPS:

- Updated the OceanSITES Data Policy and Access documents based on inputs from Data Management Team
- Photos:
  - Updated the DBCP Picasa photo album[37] with captions and additional photos (of platforms and Panel meetings). Provided link on the website.
  - Updated the Picasa photo album for OceanSITES[38]
- Email lists and communications:
  - Added a new list for the OceanSITES Executive Committee and added a group on the JCOMM website[26]
  - Maintained DBCP and OceanSITES email communications lists.
  - Updated the list of Manufacturers on the DBCP website (for Envirtech and Techworks Marine)

33 : http://www.jcommops.org/dbcp/bestpractice.html
34 : http://jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=5656
35 : http://www.jcommops.org/dbcp/iridium-pp/findings
36 : http://www.jcommops.org/FTPRoot/DBCP/meetings/2010/GHRSST/DBCP_GHRSST_2010.pdf
37 : http://picasaweb.google.com/JCOMMOPS/DBCP
38 : http://picasaweb.google.com/JCOMMOPS/OceanSITES

9.2.3.4 *Scanning and preservation of past DBCP reports*

9.2.3.4.1 The Panel noted that on request from NOAA National Climatic Data Center (NCDC) and WMO, the Technical Coordinator had prepared a summary and approximate page count of archives of 29 different documents to *possibly* be scanned (13 DBCP Session/Meeting Reports, 2 Additional Meeting reports, 13 Technical Documents - one with a small supplement) by NOAA through its Climate Database Modernization Programme (CDMP). The Panel agreed that it would be useful to preserve those documents electronically.

9.2.3.4.2 **The meeting decided on the following action items**:

(i.) The Panel requested the Technical Coordinator to lend the identified documents to NOAA for imaging through the NOAA Climate Database Modernization Programme (CDMP) (***action; Technical Coordinator; DBCP-27***);

(ii.) Review content of the DBCP web page on best practices[33]. The Panel is encouraged to provide any additional documentation that applies to the areas under consideration that is relevant for the DBCP or JCOMM as a whole. **(*action; Panel Members; DBCP-27*)**

(iii.) A new document entitled “Draft document of Sea Surface Salinity Quality Control processes for potential use on Data Buoy observations”[34] is submitted to the Panel for comment. **(*action; Panel Members; March 2011*)**.

9.3 Deployment opportunities and strategies

9.3.1 The Technical Coordinator reported on her activities and developments in JCOMMOPS regarding deployment opportunities. Gaps in the DBCP network remain and are in similar areas to last year. According to the JCOMMOPS monthly maps and the NOAA Quarterly Equivalent Buoy Density maps for 2010 and 2009, the Indian, Southern and Pacific Oceans have fewer gaps than the previous year. For the Drifting Buoy network, the Southern Ocean and Arctic Ocean are identified as areas where deployment opportunities are still needed, as well as the far north Pacific and the west of the African continent.

9.3.2 The TC had requested deployment opportunity information via the monthly e-mail to the DBCP community and from individual logistics managers. The response had been good this year. She also sent out deployment opportunity information via the monthly e-mail. These opportunities were presented again for the benefit of the Panel.

9.3.3 She presented a table indicating the number of drifting buoys available in Global Drifter Programme warehouses, provided in case new or current Panel members are able to assist in deploying some buoys in their regions.

9.3.4 She then introduced some new initiatives which JCOMMOPS was pursuing in order to improve the exchange of deployment opportunities in the form of Cruise metadata. She explained that JCOMMOPS is working with the coordinators of both the SeaDataNet International Research Cruise database maintained on behalf of the Partnership for Observation of the Global Oceans (POGO) and the CLIVAR and Carbon Hydrographic Data Office (CCHDO*)* within the Scripps Institution of Oceanography (SIO - San Diego, USA). The Pan-European infrastructure for Ocean & Marine Data Management (SeaDataNet) and the CCHDO both store upcoming and past cruise details, which could be used and supplemented more effectively by JCOMMOPS.

9.3.5 The Argo Technical Coordinator, Mathieu Belbeoch, then described a unique new opportunity with the *Lady Amber,* out of South Africa, which could become a dedicated vessel for deploying Argo Floats and Drifting Buoys. In the future, this ship would go wherever necessary

(except in areas of high piracy risk), including in high latitudes, with a deployment capacity of 30-40 units/month.

9.3.6 The Panel was asked to consider how the *Lady Amber* could be used on a cost-sharing basis with the Argo programme to enhance deployment opportunities in the southern Indian and Atlantic Oceans, or further afield. The Panel delayed discussion on this issue to agenda item 11.2.

9.3.7 The GDP agreed to provide a table of inventories at its various warehouses to the Technical Coordinator before the month of June each year, so that it can be presented to the Panel at each DBCP Session, and therefore assist Panel members in identifying how they can assist with the deployments. *(**action; GDP; June 2011**);*

9.3.8 The Netherlands offered to investigate whether storage and ships of opportunity could be offered for the deployment of GDP drifters (***action; F. Grooters; end 2010***).

9.3.9 South Africa offered to investigate how its new Research Vessel could be used for the deployment of drifters, and to report on opportunities through JCOMMOPS once available (***action; J. Stander; DBCP-27***).

9.3.10 The NOAA/National Data Buoy Center (NDBC) continues to offer support to deploy drifters during their annual Pacific Ocean DART (Deep-ocean Assessment and Reporting of Tsunami) restoration service. Panel members are invited to contact NDBC to coordinate deployments by December of each year.

9.3.11 The Panel invited the National Focal Points (NFP) for buoy programmes to check the JCOMM list of NFP for logistic facilities[39] and submit changes to the Secretariat (***action; NFP; ongoing***). The Panel requested JCOMMOPS to work at creating and maintaining a corresponding electronic mailing list (***action; JCOMMOPS; ASAP***).

9.4 GTS delays

9.4.1 The Technical coordinator presented an overview of the pattern of delays for the last year.

The TC reported that she produced JCOMMOPS monthly maps focusing on delays and placed them on the DBCP website. They show that during the last 12 months, the delays in the Central Indian and Pacific Oceans seem to have improved slightly, with nearly all drifting buoys in the Indian Ocean now transmitting within 120 minutes. The delays in the Atlantic remained unchanged, though a small improvement can be seen over recent months in the Central Atlantic. She then discussed the differences between Iridium and Argo-3 pilot project buoys. The Panel agreed that more Argos-3 data must be collected before being in a position to derive conclusions.

9.4.2 At the last session of the DBCP and IBPIO, the issue of the delays experienced in the Indian Ocean was raised with CLS. In response, the TC outlined the response to this by CLS, which had addressed the Indian Ocean delays with Argos antenna upgrades and a new High Resolution Picture Transmissions (HRPT) antenna in Muscat, Oman, in cooperation with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

9.4.3 The Panel was very pleased with the expected improvements in the Central Pacific and the Indian Ocean, but noted that the upgrades were unlikely to improve the situation in the southern Atlantic or Western Pacific very much and encouraged CLS to consider this in the future.

39 : http://www.jcomm.info/index.php?option=com_oe&task=viewGroupRecord&groupID=155

9.4.4 **The meeting made the following recommendation**:

9..4.4.1 The Panel was very pleased with the expected improvements in the Central Pacific and the Indian Ocean, but encouraged CLS to consider how it could improve the situation in the southern Atlantic or Western Pacific in the future; ***(Recommendation; CLS; DBCP-27)***

9.5 Vandalism

9.5.1 The Panel recalled the IOC Resolution XXV-13 (2009) that requested the Panel (particularly the ITP) for a global assessment of the scope and impact of vandalism in order to formulate strategies to reduce its incidence and consequence. Subsequently, the Panel at its twenty-fifth session (2009) decided to collaborate with the ITP to contribute to a global assessment of the scope and impact of vandalism, for submission to the intergovernmental IOC-WMO-UNEP Committee for GOOS (I-GOOS) and the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG).

9.5.2 The Panel also recalled that the WMO Executive Council at it its sixty-second session (2010) *expressed its concern about the significant occurrence of intentional or unintentional damage to platforms used for ocean observation and marine scientific research, such as moored buoys essential for climate monitoring and storm surge and tsunameters and tide gauges necessary for tsunami early warning.* The Panel noted the request by WMO Executive Council for a report on vandalism – that were to be submitted to the I-GOOS and TOWS-WG – be made available to the WMO Sixteenth Congress (Cg-XVI) in 2011, to further encourage and support action from Members on the problem.

9.5.3 Mr. Ken Jarrott, who had led this work, reported that input from several countries were being consolidated to finalize the report, for the consideration by the Panel including the ITP. The Panel agreed that this report should be submitted to and reviewed by members of the Panel as soon as possible, and submitted to WMO and IOC for their governing body meetings in 2011. The Panel requested Ken Jarrott to coordinate this effort with other Panel members with the aim to have the review starting in October 2010 and finalized in December 2010 for submission **(*action; Ken Jarrott; Oct 2010*)**.

9.5.4 The Panel agreed that collaborations need to be developed with the International Hydrographic Organization (IHO) and the International Maritime Organization (IMO) and requested the WMO Secretariat to assist in this regard and to report at the next Panel Session (***action; WMO Secretariat; DBCP-27***).

9.5.5 The Panel then reviewed actions undertaken by countries for preventing vandalism on data buoys (e.g., advertisement of data buoy use and education, vandalism-proof designs). It reaffirmed the importance of sharing experience and information on anti-vandalism measures, as well as sharing of the public education, on the importance of met-ocean observations. Suggested advocacy and education activities included a documentary 1-minute film featuring on the importance of buoys for global community, possibly to be telecasted just before the weather forecast on prime time of various TV channels.

9.5.6 Dr R. Venkatesan (India) informed the Panel of India's efforts against vandalism through the Surface Moored Ocean Observation Programme. Since its establishment in 1997, it has faced many challenges, including a complete stripping of the first buoy system within 2 days of its launch. He reported that India have been making efforts to educate the fishing communities by conducting meetings with coastal communities, notification in Navigational charts through the National Hydrographic Office, informing Port authorities, surveillance through Indian Coast Guard, distributing handouts in vernacular languages on the importance of data buoys for marine forecasting and the country's need for climate observations. In spite of a collaborative and

intensive campaign with the Indian Coast Guard and Department of Fisheries, the problem persists for coastal buoys and tsunameters in deep sea data buoys. Dr Venkatesan noted that, with dwindling fisheries resources and recent technological development enabling far and wide fishing activities, vandalism has extended beyond the national initiatives to the regional and global level.

9.5.7 The Panel was advised of the potential sensitivity of publicly released information and images on vandalism, with their negative connotations for an incurred public cost, or impact on national tsunami warning services, for example. Without a contextual understanding of network redundancies, data use or service consequences, distorted interpretations can be formed from individual pieces of information. These could potentially distract attention from the positive contributions of the networks affected by vandalism. An example was cited of a proposed publication where images of damaged stations appeared to be the prominent and favoured visual images.

9.5.8 The Panel, after deliberation, agreed to establish a small working group (with limited lifetime) on vandalism, and comprised of Ross Hibbins (Australia), Shannon McArthur (USA), Mike McPhaden (USA), K. Premkumar (India), R. Venkatesan (India), and Robert Weller (USA). The working group would provide continuity of attention to this important issue, and would provide a focal point for follow-up action by the Panel. It would also be a channel for further information requests, following the release of the vandalism report. The Panel thanked Mr Shannon McArthur (USA) for volunteering to lead this working group (***action; S. McArthur; DBCP-27***).

9.5.9 See also paragraphs *11.3.6* and *11.3.9*.

9.6 Metadata

9.6.1 The Technical Coordinator reported on various activities dealing with metadata. In terms of the JCOMMOPS database, inputs are taken from platform operators and telecommunications providers either upon deployment or as a regular (monthly) status reports, from those responsible for Buoy operations. The TC again thanked those Moored Buoy operators who were already reporting such metadata and encouraged the others to use similar methods as well. She detailed some examples of websites that were useful for JCOMMOPS currently, and encouraged each organization to consider also creating a similar web page to report deployments over time, where feasible.

9.6.2 Operators of Iridium platforms have continued to actively report metadata to each other and JCOMMOPS upon deployment, which was valuable and should continue beyond the life of the Iridium Pilot Project.

9.6.3 The overall framework for making improvements to the metadata management for all JCOMM observing systems is being considered by the Meta-T Pilot Project, chaired by Mr Derrick Snowden. The TC remains involved in the Meta-T Pilot Project and broader JCOMM Metadata management initiatives. On behalf of Derrick Snowden, she outlined some of the activities of the Meta-T pilot project and other JCOMM groups in the area of metadata management. A key strategy recommended by Meta-T is to include as much metadata as is practically available at the time of GTS encoding in the BUFR templates. Therefore, of primary importance to the overall management and distribution of data and metadata, is the design of BUFR templates.

9.6.4 She explained that the Task Team on Moored buoys has made good progress in defining the content and structure of metadata reporting requirements (as an extension to the ODAS metadata standard) for moored buoys, which, when implemented will further enhance the metadata holdings at JCOMMOPS.

9.6.5 The TC explained that the BUFR templates for buoy data were yet to be updated, as the JCOMM Task Team on Table Driven Codes (TT-TDC) had focused on the XBT and VOS templates. Work is underway to update the VOS template for BUFR. She made the Panel aware that it is expected that Moored Buoys would no longer send data to the GTS using the SHIP[40]-like format. Instead BUFR template for Moored Buoy data should be developed to suite the need of the DBCP and OceanSITES, with leadership from the JCOMM TT-TDC.

9.6.6 **The meeting made the following recommendations**:

(i) Deployment metadata: JCOMMOPS would like to recommend that all buoy operators provide a website or web accessible Comma Separated Values (CSV) files of deployment information (as provided to the Iridium PP team) for all buoys similar to AOML, NDBC and Canada (examples provided in the report) as well as continuing email notifications as necessary. JCOMMOPS can in turn feed information from those websites into the JCOMMOPS database of metadata.

(ii) Operators of Iridium platforms have continued to actively report metadata to each other upon deployment, which was valuable and should continue beyond the life of the Iridium Pilot Project .

(iii) DBCP has only just begun to develop a new BUFR template for drifting and moored buoy data. To make progress on this, a clear strategy for collaborating with the JCOMM TT-TDC in future, is necessary.

(iv) Close cooperation between OceanSITES and the rest of the DBCP Moored Buoy community is recommended when considering metadata content and standards.

(v) JCOMMOPS will provide recommendation to moored buoy operators on the required content as well as possible formats (i.e CSV, Extensible Markup Language – XML – etc.) for more effective and consistent exchange of deployments (***action; JCOMMOPS; DBCP-27***).

9.6.7 **The meeting decided on the following action items**:

- JCOMMOPS is requested to provide recommendation for the format and content of the deployment details (***action; TC; October 2010***).
- The Meta-T categories: Panel members are invited to review the categories defined by the Task Team on Moored buoys, and to forward comments to Bill Burnett and Jon Turton ***(action; Panel members; March 2010)***
- The Panel is invited to participate actively in the JCOMM Task Team to work more closely on the development of BUFR templates for marine platforms. ***(action; Panel members; DBCP-27)***

9.6.8 The new TIP Technical Coordination Group was also invited to address the issue of providing moored buoy metadata through website(s), and make recommendations in this regard (***action; TIP; ASAP***).

9.6.9 The Panel agreed that the NetCDF file for OceanSITES metadata could be used as an example for submitting and recording moored buoy metadata. The Panel requested the TT-MB to address this issue in conjunction with the new TIP Coordination Group once established with a view to present a proposal at the next Panel Session (***action; TT-MB; DBCP-27***).

9.6.10 The Panel invited centres -other than Argos- processing buoy data for GTS distribution purposes to routinely and operationally provide JCOMMOPS with buoy deployment and daily

40 : FM-13 SHIP GTS format: Report of surface observation from a sea station

location information in order to assist JCOMMOPS in feeding its database and undertaking its monitoring activities (***action; GTS data processing centres; DBCP-27***). Environment Canada and AOML agreed to provide assistance in this regard.

9.7 Technological developments in support of user requirements

9.7.1 The Panel briefly discussed the need to conduct technology developments in support of user requirements, and concurred that the TT-IBP, and the Pilot Projects were fully occupied at this time on a number of related aspects (e.g. wave observations, high resolution SST, reliability of drogue and barometer sensors, new satellite data telecommunication techniques such as Iridium and Argos-3). It therefore delayed decisions on further developments to the next Panel Session.

9.8 Other issues to be discussed, as proposed by the Task Teams

9.8.1 *Use of a 7-digit WMO ID*

9.8.1.1 The Panel recalled the discussion, under agenda item 6.1, regarding the 7-digit WMO ID numbers which are now being used for the GTS distribution of some moored buoy data in BUFR. Following a recommendation from the Task Team on Moored Buoys, the Panel strongly recommended that the same WMO ID should be retained with no limitation in time in principle for a given moored buoy location irrespective of instrument and hardware changes (***recommendations***). The Panel also recommended that the 7-digit WMO IDs allocated to drifters should, as much as practicable, not be reallocated (***recommendations***).

9.8.1.2 The Panel requested the Technical Coordinator to check with operational users of BUFR reports whether there is any discrepancy between the BUOY and BUFR reports received by those centres and whether any changes need to be made in the reporting of BUFR messages in order to fix any possible problem and properly complete the migration of GTS distribution of buoy data to BUFR in 2012 (***action; TC; DBCP-27***).

9.8.1.3 Regarding the use of GTS Bulletin Headers for BUFR reports, the Panel noted the changes made in recent years to the GTS Manual Table, table C6, and urged Panel members to make sure that the bulletin headers used are consistent with the current regulations. The Panel noted that most data providers use the Header “IOBaii” rather than “IOZXii”. Météo France has suggested using the “ii” to designate the deployment Program or Agency. The Panel requested the TT-DM to address this issue with the view to make a recommendation at the next Panel Session (***action; TT-DM; DBCP-27***).

10 Information Reports

10.1 Argo

10.1.1 The Technical Coordinator, Mathieu Belbeoch (JCOMMOPS), presented a report on Argo, on behalf of the Argo Steering Team. The Panel noted that 3200 floats are operating worldwide but only 2700 floats meet the requirements of the original Argo design (60N/60S, no marginal seas). The number of floats is still short of requirements in the southern hemisphere.

10.1.2 The Panel noted that the deployment rate was resuming after a challenging year. Argo has developed a scoring system to rate deployments plans according to the array density and float age, in order to encourage deployment managers to keep in mind the 3°x3° target. The system was also used by the manufacturers to help prioritize the delivery of instruments last year while CTs were needing to be replaced.

10.1.3 The Panel noted that 90% of Argo profiles reach the GTS within 24 hours of collection and that efforts will have to be made to keep the same delay with GDACs data distribution (today ~48h). It also noted the progress made to process the backlog of the profiles in delayed-mode.

10.1.4 The profiling float technology is still improving and new generations of instruments are gradually being implemented. Use of two-way telecommunication systems or bio-optical-geochemical sensors are also tested, and plans for “deep floats” are being initiated.

10.1.5 The Panel noted that Argo had a strong showing at OceanObs’09 where the majority of the other white papers referred to Argo and offered a variety of suggestions around Argo’s future.

10.1.6 Argo is continuing its analysis on the effects of the pressure bias within Argo with the goal of recovering as much data as possible.

10.1.7 Work has been achieved on the Google Earth Argo products.

10.1.8 The panel welcomed the idea of developing further the synergies between Argo and the DBCP regarding the Platform donor programmes.

10.2 Buoy data management centres

10.2.1 The Panel reviewed the report of the IOC International Oceanographic Data and Information Exchange (IODE) Responsible National Oceanographic Data Centre (RNODC) for drifting buoys (RNODC/DB), operated by the Integrated Science Data Management (ISDM, formerly MEDS) of Canada. Mr Joe Linguanti, on behalf of Mr Bruce Bradshaw, ISDM presented the report.

10.2.2 The Panel then reviewed the report of the JCOMM Specialized Oceanographic Centre (SOC) for drifting buoys, operated by Météo-France, presented by Mr Jean Rolland.

10.2.3 The Panel expressed appreciation to ISDM (Canada) and Météo France for their reports and the quality of their products. The full reports are provided in Appendices A and B and will be included in the CD-ROM that will be distributed with the Session final report. The Panel invited the users of these products to provide feedback to ISDM and Météo France respectively, and propose further improvements if needed (***action; members; ongoing***).

10.2.4 As noted at the previous DBCP Session, the two respective IODE and JCOMM centres are completely separate but provide similar functions. The Panel noted the following outcome of the fourth session of the JCOMM Data Management Coordination Group (DMCG-IV, Ostend, Belgium, 8-9 April 2010) regarding this issue:

(i.) DMCG-IV considered that the status of IODE Responsible National Oceanographic Data Centres (RNODCs), JCOMM Specialized Oceanography Data Centres (SOCs), and the VOSClim Real Time Monitoring Centre (RTMC) should be addressed. It would be beneficial to develop a proposal for integrating them into a single system of dedicated centres contributing to the IODE Ocean Data Portal (ODP), and with specialized functions (archive, QC, monitoring, etc.). DMCG-IV agreed that feedback from those centres was needed – tentatively by September 2010 – before initiating a proposal, and requested the IOC Secretariat to contact the RNODCs.

(ii.) DMCG-IV requested S. Woodruff to contact the VOS Climate Project (VOSClim) Real-Time Monitoring Centre (RTMC) and seek feedback from them by September 2010. It requested The WMO Secretariat to contact the SOCs. Greg Reed was also requested to contact the ISDM, and discuss what tasks they are still carrying on as RNODC/DB.

Based on the feedback, it will be possible to identify those centres with historical function to be connected to ODP, and those centres carrying other activities (e.g. QC, monitoring). DMCG-IV requested that the feedback information be submitted to the DMCG Chairperson; and the Chairperson to convene an *ad hoc* task group to address the issue and possibly make a proposal. The *ad hoc* task Group should make a proposal by the end of 2010 so that IODE elements can be addressed at IODE-XXI. The *ad hoc* Task Group will be tasked to draft a Recommendation for JCOMM-IV, including ToR of such centres, plus background information.

10.2.5 The Panel agreed with these developments and invited the SOC/DB, and the RNODC/DB to collaborate in those developments as appropriate (***action; SOC/DB & RNODC/DB; end 2010***). The Panel noted that the list of functions of the SOC/DB and RNODC/DB had been documented as part of the materials submitted to the DBCP-25. The Panel requested the Secretariat to provide these documents to the DMCG Coordinator as soon as possible (***action; Secretariat; ASAP***).

10.3 Argos operations and developments

10.3.1 Bill Woodward (USA) reported on the status of Argos operations. The two global ground stations at Gilmore Creek and Wallops Island continued to deliver STIP[41] data from NOAA-15, NOAA-16, NOAA-17, and NOAA-18 throughout the past year and from NOAA-19 since mid-2009. TIP or real-time data are delivered to CLS &/CLS America on reception now from 60 stations around the globe. The Meteorological Operational satellite (METOP) METOP-A Data Collection System (DCS) data was acquired and relayed via the internet to CLS & CLS America (CLSA) and to all Argos users during 2009. Blind orbits from NOAA-18 & 19 from the METOP antenna in Svalbard are also being collected and distributed. The two global centers, Toulouse and Largo, processed approximately 1100+ playback and real-time datasets per day and the two centers continue to be fully redundant with an average of 1-3 backups per month. The main communications link to distribute processed data to users and to receive datasets from regional stations continues to be the internet. The number of operating Argos platforms continues to increase with more than 10,400 platforms (up from 10,000 in 2008) seen on average per day and more than 20,000 active platforms (up from 18,000 in 2008) per month in 2009. The amount of data from the NOAA satellites and METOP-A that is available within one hour is now between 60% and 70%.

10.3.2 Michel Guigue (France) presented recent system developments in the different components of the Argos system. These include, in particular, the introduction of a machine-to-machine Argos web service interface and availability of XML and Keyhole Markup Language (KML) formatted data, initialization of the Argos-3 PMT location, implementing the 6-digit ID capability, and implementing the full BUFR format to distribute the data onto the GTS. Particularly important new developments are, i) the New location processing technique based on Kalman filtering and ii) a very ambitious real-time antenna upgrade project now being implemented. No more image locations and better location accuracy are the main improvements expected with the new version of the Argos location processing. The antenna upgrade project will include upgrading the antenna capability (to collect data from all satellites carrying Argos, to provide antenna availability of ~95%, and mean time for data retrieval of ~18 minutes) of 16 – 18 existing stations and installing 2 new antennas. Delay times to receive buoy data of importance to the DBCP will be reduced significantly with the improved network.

10.3.3 Yann Bernard (France) presented an overview of the CLS Argos-GTS processing capability including improvements in the average delivery times of GTS bulletins. CLS is monitoring 24/7 its GTS processing system with surveillance on the processing modules, the quality of the

41 : STIP : Stored Tiros Information Processing

data and on the system performance (time to process the data, number and size of bulletins). A GTS monitoring tool now operationally computes daily the following statistics: i) number of GTS platforms (with a WMO id) processed; ii) number of observations processed; and iii) average disposition time (observation time –time inserted onto the GTS). An average decrease of 20 min in CLS Argos-GTS processing time have been accomplished by tuning and resizing the GTS database as well as applying optimum management of settings on the GTS processing templates particularly on observation time computing. Also the GTS bulletin delivery times specifically for the northern Indian Ocean have been decreased to an average of 80 – 85 mins. Finally, beginning in September CLS has begun to prepare GTS Bulletin delivery time statistics specifically for WMO regions.

10.3.4 The Panel thanked CLS for addressing pro-actively the data timeliness issue, and for proposing effective solutions.

10.3.5 The Panel designated Luca Centirioni (USA), and Rick Lumpkin (USA) to take responsibility of collecting requirements and evaluating the new Argos Kalman filter location in close collaboration with CLS (***action; R. Lumpkin & L. Centurioni; DBCP-27***).

10.3.6 The Panel noted with appreciation the new monitoring tools that are now routinely provided by CLS, including regarding data timeliness in specific WMO areas. The Panel invited CLS to provide the data to JCOMMOPS, and requested JCOMMOPS to make the information available via its website (***action; JCOMMOPS; DBCP-27***).

10.4 Iridium operations and developments

10.4.1 The Panel recalled that these aspects had been described in some detail by Mr Paul Hill during the Scientific and Technical Workshop. Essentially Iridium, initially conceived as a truly global mobile phone system, was proving to be an extremely effective real-time data communications channel. Its 66-satellite constellation assured global coverage and round-the-clock availability, and plans were now well advanced to launch new higher-performance satellites to replenish the existing constellation. The year had also seen the launch of the extremely small 9602 Short Burst Data (SBD) modem, measuring only 4.5 x 5 x 1.3 cm.

10.4.2 Data collection, processing and GTS insertion was now being undertaken by a number of agencies. This was potentially an area of concern for the Panel, which recalled how similar practices with Argos data collection and multiple GTS insertion had been a major problem for it in its early days. While the Panel felt that the problems with multiple agencies was likely to be much less of a problem than it had been for Argos, it nonetheless noted that its Technical Coordinator was not able to monitor each link in the Iridium-GTS chain in the way that was possible for the Argos-GTS chain. As such access had been critical to the Panel's success in improving and managing buoy data, and the good reputation that such data now enjoyed, it was anxious to implement similar arrangements for data originating through Iridium.

10.4.3 Essentially CLS provided a 'one-stop shop' for Argos data, including the purchase of airtime, the management of platform sensor transfer functions, the conversion of raw data to physical units, first level quality control, GTS formatting and insertion. Mr David Meldrum proposed that a similar capability should be sought from Iridium resellers, and asked that the Panel consider publishing an Invitation To Tender (ITT) for an integrated Iridium-GTS service. The Panel requested Mr Meldrum to set up a small task group to address the issue and make a proposal to the Panel at its next Session (***action; D. Meldrum; DBCP-27***).

10.5 Additional reports, as required

10.5.1 There was no further report to discuss under this agenda item.

11 Organizational Issues

11.1 Recruitment of the Technical Coordinator

11.1.1 The Panel received a report by the IOC Secretariat on the progress in establishing a fixed-term position for the DBCP Technical Coordinator. The Panel recalled its request for the parent organizations, reiterated at its 25th session (2009), to ensure the long-term and stable employment, as far as the Panel's funding allows. In January 2010, the IOC finalized the process within UNESCO to establish a fixed-term position for the Technical Coordinator – supported by the DBCP Trust Fund – to replace the appointment for a UNESCO Appointment of Limited Duration (ALD). The UNESCO Human Resources immediately started the recruitment process, and the vacancy notice was finally issued in June 2010.

11.1.2 The Panel then recalled that Ms Hester Viola submitted her letter of resignation from the position of Technical Coordinator, dispatched in April 2010. Subsequently, the employment contract for Ms Viola finished as expected by 30 June 2010, and the ongoing recruitment for a fixed-term post was regarded as an open process with no consideration for an (internal) incumbent.

11.1.3 Considering the lengthy process for the official UN recruitment, and to minimize the gap in technical support during the new recruitment process, the DBCP Executive Board (on behalf of the Panel) decided to offer Ms Viola a Special Service Agreement" (SSA) by WMO for the period of 16 August – 16 October 2010.

11.1.4 With regard to the recruitment, the Panel noted that the overall process is following the rules and procedures for UNESCO staff recruitment. The progress until September 2010 was noted as following:

- Recruitment notice was issued in mid-June 2010 following discussions with the DBCP Chairperson and the Secretariat (para 11.1.1);
- By the due date 10 August 2010, 158 applications were received.
- UNESCO Human Resources conducted the preliminarily analysis by the end of August, based on the qualification/condition noted in the vacancy notice, including degree(s) in relevant area, work experience, and age (i.e. applicants over 55 years old were dropped at this stage). 52 applications were submitted to the UNESCO Pre-selection Committee.
- The Pre-selection Committee, on 6 September 2010, reviewed these 52 applications, the in order to draw a long-list for the consideration by the Evaluation Committee. Following the rules and guidelines, the Committee was composed by the direct supervisor to the concerned position (head of section, IOC Ocean Observations and Services), additional members of IOC, and a staff member from another sector of UNESCO. Conditions for the analysis were similar to the previous step, with emphasis on identifying an outstanding group of applicants. Finally, a list of 17 candidates were submitted to the Evaluation Committee.
- In the meantime, IOC Secretariat prepared for the work of Evaluation Committee, which will decide on the short list for final interview, and make a recommendation for selection to UNESCO. Following the regulation, the Evaluation Committee will be led by the direct supervisor (head of section, IOC Ocean Observations and Services) and comprise a staff member of another sector of UNESCO, a staff member who is knowledgeable of

the work of the incumbent. It is possible to have (an) external member(s) in the Evaluation Committee, therefore the IOC Secretariat has made an arrangement to include the representatives of the Panel and the WMO as members of the Evaluation Committee. The Evaluation Committee will conduct its work during October, targeting that the final decision be made by the end of October / early November 2010.

11.1.5 The Panel expressed its appreciation to the IOC for efforts made on the Panel's behalf. The Panel emphasized that the evaluation and final recommendation should take into account the Panel's requirements which defines the duties and responsibilities of the position, therefore it was critical that the Panel and the partner organization (WMO) be involved in the evaluation.

11.1.6 As a regular process, the Panel reviewed the arrangements for overall supervision, guidance, training, evaluation and promotion of the Technical Coordinator in line with the existing Terms of Reference as decided by the Parent Organization through JCOMM (see DBCP Operating Principles for details), both for the present and in the future. The Panel's decisions in this regard were included in the revised DBCP Operating Principles (agenda item 12.2).

11.1.7 The Panel recognized that the new arrangements were a very significant step forward for the DBCP and its Technical Coordinator. It also noted that securing sufficient funds at the DBCP Trust Funds, particularly these within the IOC (approximately USD 200,000 / year), is critical to secure this TC position at IOC, and urged all Panel Members to continue to make their budgetary contribution to the Trust Fund in a timely manner (***action; Panel members; ongoing***). The Panel also requested the WMO Secretariat to facilitate the transfer of sufficient funds to the IOC in case the amount of funds available in the DBCP Trust Fund at the IOC be insufficient (***action; WMO Secretariat; DBCP-27***).

11.1.8 With regard to training the new Technical Coordinator to be recruited, the Panel invited Mr Belbeoch (JCOMMOPS) and Mr David Meldrum (UK, former Technical Coordinator) to assist in the process. The Panel also invited the WMO Secretariat to consider allowing Mr Etienne Charpentier (former Technical Coordinator) to spend some limited time in providing guidance to the new Technical Coordinator. Should Ms Hester Viola be available, arrangements for her to participate in the training will be considered.

11.2 JCOMM activities, including JCOMMOPS

JCOMM Activities in General

11.2.1 The Secretariat reported briefly on activities under or associated with JCOMM that had taken place since DBCP-XXV, and were of direct interest to the Panel. Several meetings had taken place during the intersessional period, involving JCOMM Panels and Programmes, as well as other relevant bodies.

11.2.2 The Panel noted in particular the recommendations from the third Session of JCOMM (JCOMM-III, Marrakech, Morocco, 4-11 November 2009), including priority activities for this JCOMM intersessional period. The Panel agreed to carry out activities contributing to those priority activities in the following way:

(a) Sustain the global drifter array, and addition of barometers on all newly deployed drifters;

(b) Review WMO and IOC Publications that relate to instrument practices, including financial support for the recruitment of a consultant to undertake the task;

(c) Continue supporting Pilot Projects on wave measurements and validations, through PP-WET and PP-WMD;

(d) Continue exploring the optimal ways for data telecommunication services, through Iridium and Argos-3 Pilot Projects;

(e) Continue capacity building activities, including budgetary and expert supports;

(f) Build closer link with space agencies through JCOMMOPS with a view to achieve better integration between in situ and satellite observations and data products;

(g) Contribute to the completion of the JCOMM Cookbook for the submission of ocean data in real time and delayed mode. The Panel requested the Task Team on Data Management to provide information on drifter data for inclusion in the Oceanographers' Cookbook on how to distribute ocean data in real-time and delayed mode (***action; TT DM; ASAP***). This was discussed under agenda items 5.11 and 6.1.5, with Panel's decisions.

11.2.3 The Panel was pleased to note strong support of Members / Member States expressed at the JCOMM-III for the Panel's new initiatives and modus operandi to achieve its goals, including evaluation/validation of observations, exploring various communication technologies, developing Pilot Projects, and contributing to capacity building. On specific issues of interest to the DBCP, the Panel noted and acknowledged the following recommendations from JCOMM-III:

- JCOMM-III urged Members/Member States to make use of the DBCP barometer upgrade scheme implemented through the Global Drifter Programme (GDP) and supported by the United States.
- JCOMM-III urged the DBCP to continue its efforts to improve data timeliness. It also urged Members/Member States to collaborate with the DBCP by making Local User Terminal data available through Service Argos. Noting that data delivery from some stored Argos datasets continued to be subject to serious delay, JCOMM-III invited the US to assist in the resolving of the blind orbit issue due to a non-optimal geographic distribution of global ground stations for the NOAA polar orbiters that carry the Argos payload.
- JCOMM-III urged Members/Member States to commit resources to the DBCP Trust Fund of WMO and UNESCO/IOC to ensure the essential DBCP Technical Coordinator's position, and allow full support of the DBCP work programme.
- JCOMM-III requested the DBCP and the Expert Team on Wind Waves and Storm Surges (ETWS) to address the establishment of a network of moored wave measuring buoys to cover, in particular, data sparse ocean areas where storms are generated and propagated. It urged Members/Member States, especially those that have island territories under their jurisdiction, to consider installing such equipment and exchanging the data obtained through the GTS.

11.2.4 The Panel recalled the importance of collecting instrument/platform metadata for marine climatology purposes, and JCOMM-III recommendations regarding the management of rigs and platforms metadata, and resulting discussions at the third JCOMM Expert Team on Marine Climatology (ETMC) Session. Data from rigs and platforms may be difficult or impossible to identify in GTS data (and thus in climate databases such as ICOADS[42]), and the characterization of those data is hampered by the absence of an organized collection of their metadata (e.g. possibly through extensions to WMO Pub. 47 - *International List of Selected, Supplementary and Auxiliary Ships*). Better data (and metadata) management mechanisms appear needed within JCOMM (potentially involving DBCP and/or the JCOMM Ship Observations Team – SOT). The observing and reporting practices (and metadata requirements) for manual rig/platform observations are similar to those of VOS (and Pub. 47). Because these issues are crosscutting, ETMC-III invited the Management Committee to consider including rigs and platforms as part of the SOT Terms of

42 : ICOADS: International Comprehensive Ocean-Atmosphere Data Set

Reference. Meanwhile, the Team requested the ETMC Chairperson to contact the SOT Chairperson to renew discussion of these issues seeking an agreement acceptable to both groups. The Panel discussed the DMCG-IV recommendation that Rigs and Platforms could be divided into two categories:

- Those manned platforms making visual observations according to practices consistent with VOS observations. These could be treated as ships, managed by the SOT, and their metadata recorded through WMO No. 47.
- Those automated stations making observations according to practices consistent with moored buoy observations. These could be treated as buoys and managed by the DBCP, and their metadata collected by JCOMMOPS and archived by the ODAS Metadata Service (ODASMS, China).

11.2.5 After discussions with the SOT Chairperson, Mr Graeme Ball, the Panel agreed that the solution proposed by the DMCG might become difficult to implement practically, and proposed that the DBCP eventually takes over full responsibility for all types of Rigs and Platform making meteorological and/or oceanographic measurements, and for all related aspects (e.g. instrument practices, data collection, data processing, quality control and real-time distribution, metadata collection). The Panel agreed to submit this recommendation to the 8th Session of the JCOMM Management Committee (Paris, France, November 2010) and noted that the Terms of Reference for the Panel and its Technical Coordinator would have to be revised by JCOMM accordingly and a new dedicated DBCP Task Team will have be set up in due course (***action; MAN-8; Nov 2010***).

11.2.6 The Panel recalled the Extreme-Wave Database developed in collaboration with the DBCP, the SOT, ETMC, and the ETWS of the JCOMM Services and Forecasting Systems Programme Area (SFSPA), and now operated by the US National Oceanographic Data Centre (NODC). The Panel agreed that buoy data relevant to the database should be submitted by Panel Members as appropriate.

11.2.7 The Panel recalled that the Technical Coordinator is participating in the DMPA Task Team on Table Driven codes (TT-TDC). The Panel noted with appreciation that collaboration between the SOT, the DBCP, and the DMPA Task Team on Table Driven Codes has been quite effective on GTS coding issues, and changes proposed to the XBT/XCTD, and VOS BUFR templates. Regarding the BUFR template for buoy data, including for directional and non directional wave data. The Panel noted that the TT-TDC was now looking at BUFR common sequences that are needed to report oceanographic and meteorological information from marine platforms, including required metadata. The Panel invited the ETWS, the PP-WET and the DBCP Pilot Project on Wave Measurement from Drifters (PP-WMD) to liaise with the TT-TDC in the view to provide appropriate input regarding wave property data, directional (or partial directional) and non-directional spectral wave data (by frequency, and wavenumber) and make sure that related requirements are properly considered in relevant common sequences and BUFR templates (***action; ETWS, PP-WET, PP-WMD; ASAP***).

11.2.8 The Panel noted that the WMO Commission for Basic Systems (CBS) has recommended that the observation practice elements of the Manual on Codes be identified and passed to the CBS Open Programme Area Group (OPAG) on the Integrated Global Observing System (OPAG-IOS) for inclusion in observing standards documentation. The Panel requested the Task Team on Data Management to look at those buoy related practices elements, identify appropriate publication(s) to which the identified observation practices should be relocated, and make recommendations to the CBS as appropriate (***action; TT-DM; Sep 2011***).

11.2.9 The Panel noted that at its fourth Session, Ostend, Belgium, 8-9 April 2010, the Data Management coordination Group (DMCG), agreed that it would be useful to address the integration of the JCOMM Specialized Oceanography Centres (SOCs), the IODE Responsible National

Oceanographic Data Centres (RNDOCs), and the VOSClim Real Time Monitoring Centre (RTMC), and proposed an evaluation of their functions in the view to possibly propose a plan in the future for their integration under JCOMM. The integration of in situ/satellite/model field data management, including match-up databases (e.g. ICOADS) was also discussed and better collaboration with the satellite community proposed. The Panel also noted that informal discussions took place in this regard between the SOC/DB and the RNODC/DB, and encouraged the two centres to take an active role in the DMCG discussions regarding this integration process (***action; SOC/DB & RNODC/DB, DBCP-27***).

JCOMM in situ Observations Programme Support Centre (JCOMMOPS)

11.2.10 M. Belbeoch presented an update on the JCOMMOPS activities and challenges. The Panel took note of the progress in the development of the Centre and of the fact that JCOMMOPS was in a transitional period affecting medium term developments and services.

11.2.11 Mr Belbeoch presented a proposal for the establishment of a Cruise Technical Coordinator position at JCOMMOPS to act as an international focal point on ship cruises opportunities in support of global ocean observations (including research vessels and ships of opportunity), and provide assistance to ocean observing platform operators for the identification of appropriate opportunities. The Panel acknowledged the lack of information (data and metadata) about research vessels and ship of opportunity cruises, and about planned cruises in particular, as well as the potential benefit to Panel members for the deployment of drifters and the servicing of moored buoys in the high seas. The Panel therefore encouraged JCOMMOPS to pursue this effort, in collaboration with Shaun Dolk (USA), refine the proposal, taking into account similar ongoing activities under way for possible collaboration, and distribute it shortly to Panel members for further review (***action; JCOMMOPS; 31/10/2010***). The Panel invited its members to review the proposal in detail and provide feedback to the Executive Board and JCOMMOPS in this regard (***action; Panel Members, End 2010***). Based on the received feedback, and assuming positive responses, the Panel requested the Executive Board to address the funding for such a position and make proposals at the next Panel Session (***action; DBCP EB, Oct. 2011***).

11.2.12 Regarding the current contributions to the DBCP/OceanSITES and Argo/SOT Technical Coordinator's positions, and JCOMMOPS as a whole, the Panel encouraged the SOT and OceanSITES to increase their contributions in order for these programmes to be appropriately supported (***action; SOT/OceanSITES chairs, DBCP-27***).

11.2.13 The Panel acknowledged that the coming year will be challenging to JCOMMOPS because of the departure of Ms Hester Viola from the position of Technical Coordinator of the DBCP and OceanSITES, and therefore from JCOMMOPS. The Panel thanked JCOMMOPS for its efforts to operate the centre in a very effective way with the limited amount of resources at its disposal. The Panel also agreed that the new Technical Coordinator, once recruited, will have to be involved in the further development of JCOMMOPS.

11.2.14 The IOC Secretariat reported on the issue of JCOMMOPS hosting agreement. The IOC Executive Council at its 43th session (2010) endorsed the decision by JCOMM-III that France (IFREMER and CLS) would continue to host JCOMMOPS in Toulouse, and invited France, through its national institution, to consider increasing its support to JCOMMOPS through review and revision of the host agreement. In terms of the related organizational requirements, the IOC follows the "Guidelines on the Establishment of Decentralized Offices" that was adopted at its 22nd Assembly (2003, through Resolution XXII-1). Considering the goals, objectives and nature of JCOMMOPS day-to-day work against the definitions in the Guidelines, the JCOMMOPS may be defined as an IOC Programme Office (or for the least, an IOC Project Office). It was noted that the current arrangement for JCOMMOPS (IOC-CLS agreement) does not meet the minimum requirements for hosting an office of IOC, therefore a new MoU between IOC and France was required. It was requested that the IOC Secretariat, in cooperation with WMO Secretariat, conduct

discussions with France on how the national contribution from the host country would meet the required level of the IOC Guidelines. Discussions should also include the role of the half-time Scientific Advisor for JCOMMOPS (contribution by IFREMER), and his communication with IOC, WMO, and sponsoring programmes such as DBCP and Argo.

11.2.15 **The meeting made the following recommendations**:

(i) That the JCOMM Management Committee considers reviewing the Terms of Reference of the DBCP in order for the Panel to also address issues relevant to rigs and platforms making automated observations;

(ii) Considering the importance of instrument/platform metadata for marine climatology purposes in particular, the Panel urged its members to collect, record, and make buoy instrument/platform metadata available via JCOMMOPS;

(iii) The Panel invited its members to contribute to the JCOMM Extreme Wave database by submitting information on extreme wave events to the US National Oceanographic Data Center (NODC);

(iv) The Panel urged its members to make use of the DBCP barometer upgrade scheme implemented through the Global Drifter Programme (GDP) and supported by the United States for all newly deployed drifters, including those deployed in tropical regions;

(v) The Panel recommended to the Argos Joint Tariff Agreement to consider the DBCP requirements for timely data as a high priority and develop the new regional network of Local User Terminals in the view to minimize data availability delays in all ocean regions, including the South Atlantic, Ocean, and South East Pacific Oceans;

(vi) The Panel agreed to develop further the JCOMMOPS proposal for the establishment of a Cruise Technical Coordinator position at JCOMMOPS to act as an international focal point on ship cruises opportunities in support of global ocean observations.

11.3 Report on decisions of WMO and IOC governing bodies

Forty-Third Session of the IOC Executive Council

11.3.1 The IOC Secretariat representative reported on outcomes on decisions made at the Forty-Third Session of the IOC Executive Council, 8-16 June 2010, Paris, France, which were related to the work of JCOMM and of the DBCP. The decisions and recommendations from JCOMM-III (Marrakesh, Morocco, November 2009) were endorsed by the IOC-EC (IOC Resolution EC-XLIII.5).

11.3.2 The Panel noted with consent that the IOC Executive Council stressed the importance of the sustained in situ global ocean observing system for climate as well as the continuity of remote sensing observations, and of the decadal planning after the OceanObs'09.

11.3.3 The IOC Executive Council recognized the value of JCOMM's work on setting standards and procedures, including on data management in collaboration with the IODE. It also noted new standard-setting initiatives for ocean observations, such as WMO–IOC Regional Marine Instrument Centres (RMIC). The Executive Council noted with appreciation China's offer to host a RMIC for the Asia-Pacific region in Tianjin at its National Centre of Ocean Standards and Metrology (NCOSM).

11.3.4 The JCOMM Review was again discussed at the Executive Council, while endorsing the Recommendation by the JCOMM-III. The Member States, in response to the Joint Circular Letter from IOC and WMO, the Member States agreed to consider their participation. The process is to

start as soon as some extra-budgetary contributions or initial phase is guaranteed, and the results should be reported to the governing bodies of IOC and WMO.

11.3.5 The IOC Executive Council noted the ongoing development of a Global Framework for Climate Services (GFCS) catalysed by the World Climate Conference 3 (WCC-3[43], Geneva, Switzerland, 31 August–4 September 2009), led by WMO with broad interagency participation. The Executive Council emphasized the role of IOC in this process, given the importance of ocean processes in climate.

11.3.6 The Executive Council of the IOC noted with appreciation that JCOMM has extended its efforts to the issue of natural disaster management in coastal zones and in open ocean. On re related note, the Member States recalled its request for the Panel (particularly the ITP) on a global assessment of the scope and impact of vandalism, and on a formulation of strategies that collectively could reduce its incidence and consequence. The Member States urged the Panel, in coordination with the Intergovernmental Coordination Group (ICG) for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), to provide the I-GOOS and TOWS-WG with a report on these issues as soon as possible (see also paragraph *11.3.9* below, and agenda *item 9.5*).

11.3.7 At the Joint IOC–WMO Officers meeting (UNESCO, Paris, 27 January 2010), it was agreed to consider a new overarching Memorandum of Understanding between IOC and WMO in order to adapt the collaborative framework to the status and to facilitate the ongoing and planned activities. The existing memoranda are now under review, accordingly.

Sixty-Second Session of the WMO Executive Council

11.3.8 The WMO Secretariat representative reported on the outcome of the sixty-second WMO Executive Council (EC-LXII, Geneva, Switzerland, 8-18 June 2010). In particular, the Council recalled the outcome of the third Session of JCOMM (Marrakech, Morocco, 4-11 November 2009), and noted with appreciation a number of highlights of the Session. Of interest to the Panel, these included in particular (i) the role of JCOMM regarding progress achieved in the last 10 years concerning the development of the initial global ocean observing system in support of climate requirements (i.e. from 30% to 61% completion in 10 years); (ii) JCOMM Capacity Building activities some of which focusing on ocean data buoy technology measurements; and (iii) JCOMM's contribution to the WIS and WIGOS and the JCOMM Pilot Project for WIGOS. EC-LXII recorded its decisions on the recommendations of JCOMM-III in WMO EC Resolution 4 (EC-LXII).

11.3.9 The Panel noted that the EC-LXII had discussed the issue of vandalism on data buoys and had noted the initiative by the Panel, at its Twenty-fifth Session, to collaborate with the ITP to contribute to a global assessment of the scope and impact of vandalism, and a formulation of strategies that collectively could reduce its incidence and consequence. The EC-LXII has requested the Panel to finalize its report on vandalism and make it available to the WMO Sixteenth Congress (Cg-XVI). See also paragraph *11.3.6* above, and agenda *item 9.5*.

11.3.10 The Panel noted that any resources possibly made available via the WMO VCP by developed countries in support of the Partnership for New GEOSS Applications (PANGEA) Capacity Building workshops could complement resources also made available by the Panel in this regard through its Trust Fund. The Panel invited its members to discuss the issue nationally in the view promote the commitments of WMO Members to PANGEA activities through the VCP (***action; DBCP members; ongoing***).

43 : http://www.wmo.int/wcc3

Global Framework for Climate Services (GFCS)

11.3.11 The Panel recalled that the Global Framework for Climate Services (GFCS) initiated by WCC-3[43] was seeking to integrate climate observations, research, assessments and predictions in order to generate information and services required for factoring climate variability and change into socio-economic decision-making. This should in turn permit to boost climate adaptation, which is intended to bridge the gap between climate information providers and users.

11.3.12 The Panel recognized the considerable importance of the GFCS to WMO and UNESCO/IOC, and to their Members/Member States, as well as the potential role for JCOMM in climate services. The Panel therefore agreed to follow the future developments of the GFCS closely and to address GFCS observational data requirements that can be met through the use of data buoys as part of the DBCP Implementation Strategy. It requested the DBCP Chairperson to make sure this is taken into account in the next version of the Strategy (***action; Chairperson; DBCP-27***).

11.3.13 **The meeting made the following recommendations**:

(i.) The Panel agreed that it should continue to be involved in Capacity Building activities, including through the provision of funding from its Trust Fund;

(ii.) The Panel agreed that it should continue to contribute to the development of WIGOS by providing assistance, as required, on (i) instrument standards and practices issues, (ii) data and instrument/platform metadata exchange, and (iii) quality management issues.

11.4 Report on GOOS/OOPC activities

11.4.1 Under this agenda item, the Panel heard a brief report from Mr David Meldrum on the activities of the Task Team that had been established at OceanObs'09 in Venice to propose a framework for the expansion of the ocean observing networks to develop a sustained global capability for the measurement and reporting of new 'Essential Ocean Variables' (EOVs), including biological and biogeochemical parameters. The framework should in addition take account of emerging societal pressures and new user communities. The Task Team had now concluded its deliberations and was in the process of drawing up its final report. Essentially the framework proposed would follow rather closely the working procedures and processes that are currently implemented within JCOMM, and the DBCP model was seen as good way to progressively engage and integrate other observing programmes and systems. The Panel agreed to play a role in this process as required.

11.4.2 The Panel thanked Mr Meldrum for his report and asked to be kept informed of future developments and opportunities for assisting other observing groups (***action; D. Meldrum; ongoing***).

11.5 WMO Integrated Global Observing Systems (WIGOS)

11.5.1 The Secretariat reported on recent developments with regard to the WMO Integrated Global Observing System (WIGOS), and particularly the status of the following documents developed by the WMO Executive Council Working Group on WIGOS and WIS (EC-WIGOS/WIS), and available from the WMO website[44].

- The WIGOS Concept of Operations (CONOPS);

44 : http://www.wmo.int/pages/prog/www/wigos/index_en.html

- The WIGOS Test of Concept Development and Implementation Plan (WDIP);
- The WIGOS Development and Implementation Strategy (WDIS);
- The WIGOS Imperative document.

11.5.2 The Panel noted that as part of the strategy proposed in the WDIS, the WIGOS Implementation Phase (2012-2015) builds on lessons learned from the Test of Concept Phase (2007-2011), and lays the groundwork for the Operational Phase (from 2016 onward).

11.5.3 The Panel recalled the decision at DBCP-25 to assist financially the JCOMM Pilot Project for WIGOS in the review of WMO and IOC Publications regarding instrument practices related to buoy measurements. Following agreement by the DBCP Task Team on Instrument Brest Practices and Drifter Technology Developments (TT-IBP), Mr David Meldrum (UK) has been recruited as a consultant to undertake this review thanks to funding provided by the DBCP and the WMO Secretariat at a level of USD 10,000 each. Details about this review and the Terms of Reference of the consultant are provided in ***Annex XIII***.

11.5.4 The Panel also noted the successful outcome of the JCOMM Marine Instrumentation workshop for the Regional Association IV (Bay St Louis, USA, 13-15 April 2010) organized and hosted at the US National Data Buoy Centre. The goal of the meeting was to prove concept for WMO-IOC Regional Marine Instrument Centres (RMICs) following recommendations from the JCOMM Pilot Project for WIGOS and Recommendation 1 (JCOMM-III), Establishment of RMICs, including Terms of Reference, capabilities and corresponding functions, as well as a mechanism for formal WMO and UNESCO/IOC designation of an RMIC. The aim is to facilitate adherence of observational data, metadata, and processed observational products to higher level standards for instruments and methods of observation, by providing: (1) facilities for the calibration and maintenance of marine instruments and the monitoring of instrument performance; and (2) assistance for instrument inter-comparisons, as well as appropriate training facilities.

11.5.5 The Panel noted with appreciation the plans to establish RMICs in China and Morocco, including organization of marine metrology workshops in those countries before JCOMM-IV. The Panel thanked USA, China, and Morocco for their contributions to enhance standardization and traceability of ocean measurements to standards, and encouraged DBCP members from these respective regions to participate at the workshops once organized (***action; Members; ongoing***).

11.5.6 The Panel noted with appreciation that the *"DBCP Guide to buoy data quality control tests to perform in real time by a GTS data processing centre"* has been reviewed and endorsed by the Task Team on Data Management, and published as DBCP Technical Document No. 37.

11.5.7 The Panel concurred with the legacy recommendations from the draft Project Report of the JCOMM Pilot Project for WIGOS, and noted that these will be submitted to the third meeting of the Joint Steering Group, Ostend, Belgium, 1-3 November 2010. The proposed recommendations are included in Appendix D of the DBCP-26 preparatory document for this agenda item (Doc 11.5). Of particular interest to the Panel, the meeting noted that the JCOMM Pilot Project recommendations regarding establishing an international forum of satellite data telecommunication users was passed to the fifth Session of the WMO Commission for Basic Systems (CBS) Expert Team on Requirements and Implementation of Automatic Weather Stations (ET-AWS) and the sixth Session of the CBS Implementation/Coordination Team on the Integrated Observing System (ICT/IOS), Geneva, Switzerland, 28 June – 2 July 2010. The ICT-IOS particularly recommended the Secretariat to approach partner organizations such as IOC and FAO in the view to expand the scope of the Argos Joint Tariff Agreement (JTA) to address remote data communication requirements for automatic environment observing systems coordinated through WMO and those partner organization, system deficiencies, negotiate tariffs and potential improvements of the rendered services with all relevant operators of satellite data telecommunications systems. The Panel concurred with these recommendations (***recommendation***) and noted that this issue will

also be presented and discussed at the forthcoming JTA Session (Oban, UK, 1-2 October 2010), and the next extraordinary session of the CBS (Namibia, 17-24 November 2010). Background information in this regard is provided in ***Annex XIV***.

11.5.8 The Panel noted the recommendations from the WMO-BIPM Workshop on Measurement Challenges for Global Observation Systems for Climate Change Monitoring: Traceability, Stability and Uncertainty (Geneva, Switzerland, 30 March - 1 April 2010) and agreed with the following recommendations:

(i.) Inter-comparisons of drifting-buoy measurements for different manufacturers should be regularly performed in order to assess and improve measurement accuracy (***recommendation***);

(ii.) More systematic calibration of the instruments should be performed, traceable to IS, and documented. More stringent requirements on the accuracy of drifting-buoy measurements are needed. Accuracy claims should be validated (***recommendation***);

(iii.) Post-calibration of drifter SST sensors should be performed as much as practicable (see the presentation "Examining the long term stability of SST measurements made by drifting buoys (R.O. Smith, J.J. Kennedy, N. Rayner)" made at the DBCP Scientific and Technical workshop).

11.5.9 The Panel invited AOML to make the GDP inter-comparison reports available on the web and links included in the JCOMMOPS website (***action; R. Lumpkin & JCOMMOPS; ongoing***).

11.5.10 The Panel requested the new Pilot Project on HRSST to address the recommendations from the WMO-BIPM workshop (***action; PP-HRSST; DBCP-27***).

11.6 Financial reports

11.6.1 The Meeting noted with satisfaction the positive and secure cash balance of funds totaling USD 443,883 as of 31 December 2009, as shown in Table 4 of the financial reports included with the DBCP Annual Report for 2009 (DBCP TD. No. 38[45]).

11.6.2 The budget items are those from Annex VI of the DBCP Operating Principles. In 2009, USD 2,875 was charged to the New Technical Evaluation line item for upgrading, activation and transmission cost for the 27 drifters as part of the DBCP Iridium Pilot Project.

11.6.3 The IOC Interim Statement for the period 1 January – 31 July 2010 is provided in ***Annex VI***. It shows a positive balance of USD 166,674 as of 31 July 2010. During this period, contribution was received from NOAA on the IOC accounts for DBCP and SOT. It should be noted that the CLS contribution of USD 10,000 for JTA is brought under a special and protected IOC account, the Statement for which will be included in the IOC Annual Report.

11.6.4 The WMO Interim Statement for the period 1 January – 31 July 2010 is shown in ***Annex VI***. It shows a positive balance of USD 323,500. USD 35,548 corresponding to expenditures for the Iridium Pilot Project (USD 15,750 plus USD 8,038), and the evaluation of five Marlin Yug drifters by the GDP (USD 11,760) was charged as reimbursement to SAMS to the line item New Technical Evaluation.

11.6.5 The WMO Interim Statement also shows USD 13,800 for consultancy, covering a SSA with the Technical Coordinator to continue working for the DBCP after the end of her contract with UNESCO, end of July (as agreed by the DBCP Executive Board). The WMO Interim Statement

45 : ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/Dbcp38-ANN-2009/index.html

however shows USD 38,800 for Consultancy since USD 15,000 for the JTA Chair is included and USD 10,000 was issued to a SSA in order to review WMO and IOC Publications (as agreed at DBCP-25). These USD 15,000 and USD 10,000 can be found under the line items "JTA (Chair, EC, Secr)" and "Outreach and Publications" in ***Annex VIII***, Table 2 respectively.

11.6.6 As agreed in DBCP-25, CLS has contributed USD 55,000 to the WMO part of the DBCP Trust Fund in order to support JTA activities (USD 15,000 to support the JTA Chairman, USD 30,000 for the JTA Executive Committee and support to ROC participation in the meetings of the JTA, and USD 10,000 for WMO Secretariat Support). For clarity, all JTA-related expenses are brought under the one line item JTA (Chair, EC, Secr.). In the interim period, USD 9,948 was charged to the JTA EC/Secretariat budget and USD 1,823 was charged to the ROC support budget (total of USD 11.771). Details of the JTA budget for the Interim Period 2010 and its (current) effect on the CLS contribution to the JTA budget for 2011 can be found in ***Annex VIII***, Table 3. In the Final Statement for 2010, the remaining part of the CLS contribution to the JTA activities will be carried over as income to the JTA line item. CLS has agreed to contribute then to this line item with an amount resulting into the agreed full budget of USD 55,000 (WMO column) for JTA.

11.6.7 The IOC Interim Statement and the WMO Interim Statement are included in the Interim Statement of Accounts for the DBCP/SOT Trust Fund, as given in ***Annex VI***. It should be noted that, in order to compare the current expenditure level with the budget, this Interim Statement shows the actual expenditure with the budgeted amounts as decided at DBCP-XXV (2009).

11.6.8 The Summary of the Interim Accounts for 2010 of the DBCP/SOT Trust Fund, with no detailed budget lines, is given in ***Annex VIII***, Table 1. The balance/carry over is also related to the current situation, where payment for several obligations budgeted for are not yet realized until the end of 2010.

11.6.9 At DBCP-XXII (Annex VII, DBCP-XIII Final Report) a Table of National Contributions was approved and updated at the following DBCP Sessions. A draft table of contributions for 2011 is proposed in ***Annex VII***.

11.6.10 The Panel thanked the Secretariat for providing timely and valuable financial information to Frank Grooters.

11.6.11 **The meeting made the following recommendations:**

- Recognizing that the exchange rate between the US dollar and the Euro is continuing to effect the DBCP budget, the Panel encourages the Members once more to consider contributing to the DBCP/SOT Trust Fund in Euros (***recommendation***);
- Panel members should pay their contributions in a timely fashion (***recommendation***);
- Panel members not contributing to the Trust Fund are invited to discuss nationally whether a contribution could be made in the future (***recommendation***);
- Panel members contributing to the Trust Fund are invited to investigate nationally whether their contribution could be increased (***recommendation***).

11.6.12 **The Meeting decided on the following action items:**

- The Executive Board, authorized by the Panel, and taking in account the decisions and recommendations made at the twenty-sixth session of the DBCP, will set a plan for the 2011 and 2012 expenditure. The Executive Board will liaise with Mr Frank Grooters for updating the interim financial report with the most accurate and actual information (***action; DBCP EB; 31 Jan. 2011***).

- The joint Secretariats and Mr Grooters to work together to distribute the final statement for 2010 to the DBCP Executive Board as soon as the IOC and WMO Final Statement of accounts for the year 2010 are finalized, and to the Panel members as part of the DBCP Annual report for 2010 (***action; Secretariat & F. Grooters; 1 March 2011***).
- The Panel nominated again Frank Grooters to act as its financial advisor according to the DBCP operating principles.

12 Report and Recommendations from the Executive Session

12.0 Report from the Executive Board Session

12.0.1 The DBCP Executive Board (EB) convened during the evening of 28 September 2010 to discuss a number of issues that had arisen during the plenary session and to make recommendations to the Panel for its consideration. The full report of the EB is attached as ***Annex V***.

12.0.2 The Panel concurred with the Executive Board recommendations as detailed in ***Annex V***, including on the proposed expenditures and budget for the next intersessional period, and agreed on the following:

- Manufacturers are invited to nominate one of their group to attend Executive Board meetings as an observer (***action; manufacturers; DBCP-27***);
- To address the issue of new contributions, the Secretariat was asked by the Panel to write to a number of countries (Brazil, China, Republic of Korea, Japan, etc.) and request funding (***action; Secretariat; end 2010***).

12.1 DBCP implementation strategies

12.1.1 As had become the custom at previous sessions, the Panel did not enter into discussion of its Implementation Strategy, but noted that the document was continuously updated by the Chair and Secretariats. The Chair asked the Panel to review the document made available via the web[46] and to forward any comments to the Chairperson and the Secretariat by the end of November 2010 (***action; Members; 30 November 2010***).

12.1.2 Recalling the draft DBCP Data Policy discussed at DBCP-XXV, the Technical Coordinator presented a revised version of the DBCP Data Policy that took into account comments received from Panel members during the last intersessional period. The Panel agreed with the text and requested the Secretariat to include it in Annex III of the DBCP Operating Principles.

12.1.3 The Panel recommended that requirements for traceability to standards, and instrument calibration should be included in the Implementation Strategy, and invited Panel members to provide input to the Chair and the Secretariat in this regard (***action; Panel members; 30 Nov 2010***).

12.2 DBCP Operating Principles

12.2.1 The Panel reviewed its operating principles and approved them. The new operating principles are attached as ***Annex III***. These particularly include the new approved DBCP data policy.

46 : http://www.jcommops.org/doc/DBCP/DBCP_Impl_Strategy.pdf

12.2.2 The Panel recalled the dynamic nature of the document and invited its members to provide the Chairperson with comments by the end of the year (***action; members; 30 November 2010***).

12.3 Review of action items from the previous DBCP Session

12.3.1 The Technical Coordinator presented the action plan from the twenty-fifth DBCP Session (Paris, France, September 2009). The tables presented focused on actions and recommendations that were still underway. The plan also included some outstanding actions from previous Panel sessions. The key items were discussed during the session. Completed actions were not included in the tables presented. The Panel should be aware that all actions are collated in the MS Excel file at the end of each DBCP session.

12.4 Workplans and priority for the Panel and the Technical Coordinator

12.4.1 As in previous years, the Panel reviewed and updated the overall work plan for itself and the Technical Coordinator for the coming intersessional period. These work plans are given in ***Annex XIII***. Noting that the Technical Coordinator's position will be partly vacant during the period, the Panel invited Ms Hester Viola to propose a prioritization of the tasks of the Technical Coordinator based on her understanding of the Panel's requirements, and to submit it for review and approval to the Chairperson through the Executive Board **(*action; H. Viola; ASAP*)**. Some priority activities are already proposed under agenda item 10.5.

12.4.2 During the overall session, the Panel discussed and agreed on its priorities for the next intersessional period. These are reflected in the DBCP budget (***Annex VIII***) as well as in its workplan.

13 National Reports

13.1 The Panel received reports on current and planned buoy programmes from Australia, Brazil, Canada, Chile, France, Germany, India, Ireland, Japan, the Republic of Korea, Netherlands, New Zealand, Oman, South Africa, United Kingdom, Ukraine, and the United States of America. As usual, these written reports, as well as others submitted to the Secretariat before 30 November 2010, would be published in the Panel's Annual Report **(*action; Secretariat; Early-2011*)**.

13.2 The Panel invited its members who had not submitted National Reports to submit their input to the Secretariat before the end of the year (***action; members; 31 December 2010***).

14 Election of the Chairperson and Vice Chairperson

14.1 The Panel re-elected Mr Al Wallace (Environment Canada) as its Chairperson, to serve until the end of the next Panel session.

14.2 The Panel noted that its current Vice-Chairperson for the Southern Hemisphere, Mr Ken Jarrott (Australia) stepped down from that position. The Panel elected Mr Johan Stander (South Africa) as its Vice-chairperson for the Southern Hemisphere to serve until the end of the next Panel session.

14.3 The Panel re-elected Mr Jean Rolland (Météo France) to serve as Vice-chairperson for Europe, for the same period.

14.4 The Panel noted that its current Vice-Chairperson for Asia has left the NIOT (India) and could no longer hold that position. The Panel elected Dr. R. Venkatesan (India) as its Vice-chairperson for Asia, for the same period.

15 Adoption of the Session Report

15.1 The Panel reviewed and adopted the draft session report prepared by the Secretariat.

16 Dates and Place for the Next Session

16.1 The Panel recalled its agreement – reflected in the DBCP Operating Principles – at DBCP-XXIII to hold DBCP sessions either in Paris or Geneva every other year as of its twenty-fifth session. The Panel agreed to organize next year's Session in Geneva, Switzerland, at the WMO Headquarters. Tentative dates for the session were agreed to be scheduled from 26 to 29 September 2011, ensuring minimum duplication with schedules for events of other JCOMM and related programmes.

16.2 The Panel invited members to make offers for hosting the 28th DBCP Session preferably in the Southern Hemisphere in September or October 2012 (***action; members; DBCP-27***).

17 Closure of the Session

17.1 In closing the session, the Chairperson Mr Al Wallace once again thanked the Scottish Association for Marine Science (SAMS, United Kingdom), and especially Dr Ken Jones, and Mr David Meldrum, for the warmth of their welcome, and the excellent facilities, support and hospitality that they had provided for the meeting, all of which had contributed substantially to its success.

17.2 Mr Wallace also thanked the participants, the Technical Coordinator, the Executive Board, the Task Team Chairpersons, the Action Groups and the Secretariats for their active and positive contributions to the meeting and to the work of the Panel.

17.3 The twenty-sixth session of the Data Buoy Cooperation Panel closed at 16:45 on Thursday, 30 September 2010.

ANNEX I

AGENDA

1 Opening and Welcome

2 Scientific and Technical Workshop

3 Opening of the Session

- 3.1 Adoption of the agenda
- 3.2 Working arrangements

4 Reports by the Chairperson, Vice Chairpersons, and the Executive Board

5 Report by the Technical Coordinator

6 Report by the Task Teams

- 6.1 Task Team on Data Management (TT-DM)
- 6.2 Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBPD)
- 6.3 Task Team on Moored Buoys (TT-MB)
- 6.4 Task Team on Capacity-Building (TT-CB)

7 Reports by the Action Groups

- 7.1 Surface Marine programme of the Network of European Meteorological Services, EUMETNET (E-SURFMAR)
- 7.2 Global Drifter Programme (GDP)
- 7.3 International Arctic Buoy Programme (IABP)
- 7.4 International Buoy Programme for the Indian Ocean (IBPIO)
- 7.5 WCRP-SCAR International Programme for Antarctic Buoys (IPAB)
- 7.6 International South Atlantic Buoy Programme (ISABP)
- 7.7 DBCP-PICES North Pacific Data Buoy Advisory Panel (NPDBAP)
- 7.8 OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES)
- 7.9 Tropical Moored Buoys Implementation Panel (TIP)
- 7.10 International Tsunameter Partnership (ITP)

8 Pilot Projects

- 8.1 Drifter Iridium Pilot Project
- 8.2 Pilot Project for the evaluation of Argos-3 technology
- 8.3 Pilot Project on Wave Measurement from Drifters (PP-WMD)
- 8.4 Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET)

9 Issues for the Panel

- 9.1 Integration of *in situ* and satellite observations
- 9.2 Information Exchange
- 9.3 Deployment opportunities and strategies
- 9.4 GTS delays
- 9.5 Vandalism

9.6 Metadata
9.7 Technological developments in support of user requirements
9.8 Other issues to be discussed, as proposed by the Task Teams

10 Information Reports

10.1 Argo
10.2 Buoy data management centres
10.3 Argos operations and developments
10.4 Iridium operations and developments
10.5 Additional reports, as required

11 Organizational Issues

11.1 Recruitment of the Technical Coordinator
11.2 JCOMM activities, including JCOMMOPS
11.3 Report on decisions of WMO and IOC governing bodies
11.4 Report on GOOS/OOPC activities
11.5 WMO Integrated Global Observing Systems (WIGOS)
11.6 Financial reports

12 Report and Recommendations from the Executive Session

12.1 DBCP implementation strategies
12.2 DBCP Operating Principles
12.3 Review of action items from the previous DBCP Session
12.4 Workplans and priority for the Panel and the Technical Coordinator

13 National Reports

14 Election of the Chairperson and Vice Chairperson

15 Adoption of the Session Report

16 Dates and Place for the Next Session

17 Closure of the Session

ANNEX II

LIST OF PARTICIPANTS

PARTICIPANTS FROM MEMBER STATES (MAIN SESSION AND WORKSHOP)	
Dr Songkran AGSORN Director Meteorological Observations Bureau Thai Meteorological Department 4353 Sukangkok, Bangna Bangkok 10260 Thailand Email: tmd_inter@tmd.go.th	Dr Hamad Bin Mohammad ALGHILANI Marine Ecology Expert Marine Science and Fisheries Centre Oman Tel: Email: asadalaqidah@gmail.com
Kentaro ANDO Research Scientist Research Institute for Global Change Japan Marine Science and Technology Centre 2-15 Natsushima-cho Yokosuka 237-0061 Japan Tel: +81-46-867-9462 Fax: +81-46-867-9835 Email: andouk@jamstec.go.jp	Mr Graeme BALL Manager, Marine Operations Group Bureau of Meteorology 700 Collins Street Docklands GPO Box 1289 Melbourne VIC 3001 Australia Tel: +61-3 9669 4203 Fax: +61-3 9669 4168 Email: g.ball@bom.gov.au
Dr Ed BLOCKLEY Ocean Modelling Scientist Met Office FitzRoy Road Exeter Devon EX1 3PB United Kingdom Email: ed.blockley@metoffice.gov.uk	Dr Bill BURNETT NOAA National Data Buoy Center 1100 Balch Blvd. Stennis Space Center MS 39529 United States Tel: +1 228 688 4766 Fax: +1 228 688 1364 Email: bill.burnett@noaa.gov
Sonia CAVALCANTE Lieutenant Commander Navy Hydrographic Center Brazilian Navy Brazil Tel: +55 21 26 22 6277 Fax: +55 21 2189 3226 Email: sonia@chm.mar.mil.br	Dr Luca CENTURIONI Scripps Institution of Oceanography 9500 Gilman Drive La Jolla CA 92093-0213 United States Tel: +1 858 534 6182 Email: lcenturioni@ucsd.edu

Mr Rick COLE RDSEA International, Inc. 104 32nd Ave. St Pete Beach FL 33706 United States Tel: +1 727 385 3834 Fax: +1 727 553 1189 Email: rickcole@rdsea.com	Dr Gary CORLETT Research Fellow Earth Observation Science Space Research Centre University of Leicester University Road Leicester LE1 7RH United Kingdom Tel: +44 116 252 5240 Email: gkc1@leicester.ac.uk
Dr Richard CROUT 1100 Balch Blvd. Stennis Space Center, MS 39529 United States Tel: +1 228-688-1021 Fax: +1 228-688-3153 Email: richard.crout@noaa.gov	Fraser CUNNINGHAM Observations Data Analyst Met Office Edinburgh United Kingdom Email: fraser.cunningham@metoffice.gov.uk
Dr Ridwan DJAMALUDDIN Director BPPT 1st Bld, 18th floor, JLN. MH Thamrin 8 Jakarta 10340 Indonesia Tel: +62-21-3168800 Fax: +62-21-3108149 Email: ridwan@ceo.bppt.go.id	Mr Shaun R DOLK Manager, Drifter Operation Center NOAA/Atlantic Oceanographic and Meteorological Laboratory 4301 Rickenbacker Cswy. Miami Florida 33149 United States Tel: +1 305 361 4546 Fax: +1 305 361 4439 Email: Shaun.Dolk@noaa.gov
Mingmei DONG National Marine Data & Information Service,SOA No.93 Liuwei Road Hedong District Tianjin China Tel: +86 22 24010834 Fax: +86 22 24011096 Email: Mingmei_Dong@mail.nmdis.gov.cn	James A. DUKE NAVOCEANO Current Ops Officer PM Drifting Buoy Program Naval Meteorology and Oceanography Command Stennis Space Center MS 1002 Balch Blvd MS 39522 United States Tel: +1 (228) 688-5725 Email: james.a.duke@navy.mil

Cap. Walter FLORES SERVAT Jefe del Departemento de Oceanografia Dirección de Hidrografía y Navegación Av. Gamarra 500 - Chucuito Callao Peru Tel: +511 613 6751, Extension: 6460 Email: wflores@dhn.mil.pe	Mr Djoko HARTOYO Project Manager for Indonesian Tsunmi Buoy BPPT 1st Bld 18th floor JLN. MH Thamrin 8 Jakarta 10340 Indonesia Tel: +62-21-3168800 Fax: +62213108149 Email: djoko@webmail.bppt.go.id
Mr Jamel HATTOUR Student and Researcher Tunisia	Kai HERKLOTZ Head of section Marine Networks BSH, Bernhard-Nocht-Str. 78 20359 Hamburg Germany Tel: +49-40-3190-3230 Fax: +49-40-3190-5000 Email: kai.herklotz@bsh.de
Mr Ross HIBBINS Supervisor, Instrument Engineering 700 Collins St, Docklands PO Box 1289 Melbourne Victoria 3008 Australia Tel: +61 (03) 9669 4640 Fax: +61 (03) 9669 4168 Email: R.Hibbins@bom.gov.au	Mr Edward HUDSON #200, 4999 - 98 Avenue Edmonton T6B 2X3 Alberta Canada Email: Edward.Hudson@EC.gc.ca
Dr Muna HUSAIN Professor Environment Public Authority Al Surrah P.O.Box 221 45703 Kuwait Kuwait Tel: +96566339456 Fax: +96525220543 Email: mhusain@epa.org.kw	Mr Ken JARROTT *DBCP vice-Chairperson for the Southern Hemisphere* Head, Business Process and Projects Section Bureau of Meteorology 700 Collins Street, Docklands GPO Box 1289 Melbourne VIC 3001 Australia Tel: + 61 3 9669 4163 Fax: + 61 3 9669 4168 Email: k.jarrott@bom.gov.au

Dr Dongchull JEON P.I. of POSEIDON Project/KORDI 1270 Sadong Sangnoku Ansan Republic of Korea Tel: :+82 31 400 6124 Fax: +82 31 408 5829 Email: dcjeon@kordi.re.kr	Dr Wattana KANBUA Marine Meteorological Center Thai Meteorological Department 4353 Sukhumvit Road, Bangna Bangkok 10260 Thailand Tel: +66 2 3994561 Fax: +66 2 3669375 Email: watt_kan@hotmail.com
Sahib KHALILOV Deputy director National Hydrometeorological Department Ministry of Ecology and Natural Resources 50 Heydar Aliyev ave. AZ1154 Baku Azerbaijan Tel: +99412 5678806 Fax: +99412 5671708 Email: s_khalilov@yahoo.com	Prof Byung-Gul LEE Dept. Of Civil Engineering College Of Ocean Sciences Jeju National University Jeju 690-756 Republic of Korea Tel: +81-64-754-3455 Fax: +81-64-725-2519 Email: leebg@jejunu.ac.kr
Mr Kwan-Chang LIM Assistant Director Korea Hydrographic and Oceanographic Administration 195 Seohae-ro Jung-gu INCHEON 400-800 Republic of Korea Tel: + 82 32 880 0442 Fax: +82 32 885 3905 Email: kclim00@korea.kr	Mr Joe LINGUANTI Department of Fisheries and Oceans Canada PO Box 6000 9860 W. Saanich Road Sidney, BC V8L 4B2 Canada Tel: +1 250 363 6586 Fax: +1 250 363 6746 Email: Joe.Linguanti@dfo-mpo.gc.ca
Mr Eric R LOCKLEAR 1315 East-West Highway, Room 12107, SSMC 3 Silver Spring MD 20910-5603 United States Tel: +1 301 734 1236 Fax: +1 301 713 0518 Email: eric.locklear@noaa.gov	Rick LUMPKIN NOAA Office of Oceanic and Atmospheric Research 4301 Rickenbacker Causeway Miami FL 33149 United States Tel: +1 305 361 4513 Fax: +1 305 361 4412 Email: rick.lumpkin@noaa.gov
Dr Sang-Jin LYU Deputy Director, Marine Meteorology Division Korea Meteorological Administration 45 Gisangchung-gil Dongjak-gu Seoul 156-720 Republic of Korea Tel: + 82 2 2181 0743 Email: sjlyu@korea.kr	Mr Chris MARSHALL Manager of Marine Networks 4905 Dufferin Street Toronto, Ontario M3H 5T4 Canada Tel: +1 416 739 4468 Fax: +1 416 739 4261 Email: Chris.Marshall@ec.gc.ca

Shannon MCARTHUR 1007 Balch Blvd Stennis Space Center MS 39529 United States Tel: +1 228 688 2830 Fax: +1228 688 1364 Email: shannon.mcarthur@noaa.gov	Dr Michael MCPHADEN *Chair, Tropical Moored Buoy Implementation Panel (TIP)* NOAA/PMEL Bldg. 3, Bin C15700 7600 Sandpoint Way N.E. Seattle WA 98115 United States Tel: +1 206 526 6783 Fax: +1 206 526 6744 Email: michael.j.mcphaden@noaa.gov
Mr Christian MEINIG Leader, Engineering Development NOAA Fisheries' National Marine Fisheries Service Alaska Fisheries Science Center 7600 Sand Point Way N.E. Seattle WA 98115-0070 United States Tel: +1 206 526 6149 Fax: +1 206 526 6744 Email: Christian.Meinig@noaa.gov	Mr David MELDRUM Leader of Technology Development Scottish Association for Marine Science Scottish Marine Institute Oban, Scotland PA37 1QA United Kingdom Tel: +44 1631 559 273 Fax: +44 1631 559 001 Email: dtm@sams.ac.uk
Christopher MERCHANT Crew Building Kings Buildings Edinburgh EH9 3JN United Kingdom Tel: +44-131-650-5097 Email: c.merchant@ed.ac.uk	Chun Lin NING China Tel: +86 532 88960702 Email: clning@fio.org.cn
Ms Mayra PAZOS NOAA Atlantic Oceanographic and Meteorological Laboratory 4301 Richenbacker Causeway Miami FL 33149-1039 United States Tel: (305)361-4422 Fax: +1 (305) 361-4412 Email: mayra.pazos@noaa.gov	Mr Jean ROLLAND Météo-France, CMM 13 rue du Chatellier CS 12804 29228 BREST Cedex 2 France Tel: +33 2 98 22 18 53 Fax: +33 2 98 22 18 49 Email: jean.rolland@meteo.fr
Prof Olga SATO University of São Paulo Praça do Oceanográfico, 191 São Paulo 05508-120 SP Brazil Tel: + 55-11-3091-6575 Fax: 55-11-3091-6610 Email: olga.sato@usp.br	Mr Johan STANDER Regional Manager P O Box 21 Cape Town International Airport 7525 South Africa Tel: +27 (0) 21 934 0836 Fax: +27 (0) 21 934 4590 Email: johan.stander@weathersa.co.za

Moon-Sik SUK Republic of Korea Tel: (82 31) 400 61 00 Fax: (82 31) 408 58 29 Email: msuk@kordi.re.kr	Zhaobin SUN Meteorological Observation Center No.46,Zhongguancun Nandajie Haidian District Beijing China Tel: +86 01058995861 Fax: +86 01058995846 Email: sunzhaobinedu@163.com
Mr Val SWAIL Chief, Climate Data and Analysis Section Environment Canada 4905 Dufferin Street Toronto, Ontario, M3H 5T4 Canada Tel: +1 (416) 739 4347 Fax: +1 (416) 739 5700 Email: Val.Swail@ec.gc.ca	Dr Sidney W. THURSTON International Coordinator NOAA - Climate Program Office 1100 Wayne Ave., Suite 1200 Silver Spring MD 20910 United States Tel: +1 301 427 2459 Fax: +1 301 427 0033 Email: sidney.thurston@noaa.gov
Mr Jon TURTON Marine Observations Met Office FitzRoy Road Exeter, Devon EX1 3PB United Kingdom Tel: +44 1392 886647 Fax: +44 1392 885681 Email: jon.turton@metoffice.gov.uk	Mr Erik VALDES Research Associate, NOAA Global Drifter Program United States Tel: +1 305 361 4547 Fax: +1 305 361 4439 Email: erik.valdes@noaa.gov
Dr R. VENKATESAN Group Head-Ocean Observation Systems National Institute Of Ocean Technology Pallikaranai Velachery - Tambaram Road Chennai 600100 India India Email: dr.r.venkatesan@gmail.com	Mr Al WALLACE DBCP Chairperson 201-401 Burrard Street VANCOUVER, BC, V6C 3S5 Canada Tel: +1 604 664 9090 Fax: +1 604 664 9004 Email: al.wallace@ec.gc.ca
Dr. Robert WELLER Senior Scientist WHOI Clark 204a MS 29 Woods Hole MA 02543 United States Tel: +1 508 289-2508 Fax: +1 508 457-2163 Email: rweller@whoi.edu	Mr Joon-Yong YANG Researcher Republic of Korea Tel: + 82 51 720 2231 Email: yangjy@nfrdi.go.kr

Ishihara YASUHISA 2-15, Natsushima Yokosuka Kanagawa Japan Tel: +86 46 867 9874 Fax: +81 46 867 9885 Email: ishiharay@jamstec.go.jp	Choonki YOU Vice Director Society of Ieodo Research Yeodo Manhatan Buiding 707 Seoul City Republic of Korea Email: choonki@jejunu.ac.kr

INTERNATIONAL ORGANIZATIONS / PROGRAMMES

Mr Mathieu BELBEOCH Argo Technical Coordinator, Argo Information Centre, JCOMMOPS JCOMMOPS 8-10 rue Hermès Parc Technologique du Canal 31520 RAMONVILLE SAINT AGNE France Tel: +33 5 61 39 47 30 Fax: +33 5 61 75 10 14 Email: belbeoch@jcommops.org	Mr Etienne CHARPENTIER Scientific Officer Observing and Information Systems Department World Meteorological Organization 7bis, av. de la Paix Case Postale 2300 1211 Genève 2 Switzerland Tel: +41 22 730 82 23 Fax: +41 22 730 81 28 Email: ECharpentier@wmo.int
Mr Frank GROOTERS Chair, Argos Joint Tariff Agreement (JTA) Royal Netherlands Meteorological Institute Postbus 201 NL-3730AE De Bilt Netherlands Tel: +31 30 220 6691 Fax: +31 30 221 1195 Email: frank.grooters@knmi.nl	Dr Boram LEE Programme Specialist Intergovernmental Oceanographic Commission of UNESCO 1 rue Miollis 75732 Paris cedex 15 France Tel: +33 1 45 68 39 88 Fax: +33 1 45 68 58 12 Email: b.lee@unesco.org
Ms Hester VIOLA DBCP Technical coordinator and OceanSITES Project Office JCOMMOPS 8-10 rue Hermès Parc Technologique du Canal 31520 RAMONVILLE SAINT AGNE France Tel: +33 5 61 39 47 82 Fax: +33 5 61 75 10 14 Email: support@jcommops.org	

OTHERS	
Mr Frode S. BERGE Managing Director Fugro OCEANOR Ltd. Pir-Senteret N-7462 Trondheim Norway Tel: +47 73545213 Email: f.berge@oceanor.com	Mr Yann BERNARD technical manager Collecte et Localisation par Satellite (CLS/Service Argos) Parc Technologique du Canal 8-10, rue Hermès, 31520 RAMONVILLE SAINT AGNE France Tel: +33 (0)5 61 39 39 09 Fax: +33 (0)5 61 39 47 97 Email: ybernard@cls.fr
Mr Mark BLASECKIE Technical Field Services AXYS Technologies Inc. 2045 Mills Road West Sidney, BC, V8L 5X2 Canada Tel: +1 250 655 5853 Fax: +1 250 655 5856 Email: mblaseckie@axys.com	Anne Marie BREONCE Head of Department Sciences Collecte et Localisation par Satellite (CLS/Service Argos) Parc Technologique du Canal 8-10, rue Hermès, 31520 RAMONVILLE SAINT AGNE France Tel: +33 5 61 39 47 21 Fax: +33 5 61 39 47 97 Email: abreonce@cls.fr
Ms Emily DANIEL Marketing Manager MetOcean Data Systems Canada 21 Thornhill Drive Dartmouth, NS, B3B 1R9 Canada Tel: +1 (902) 468 2505, Ext. 247 Fax: +1 (902) 468 4442 Email: emily@metocean.com	Mr Michel GUIGUE Geopositioning and Data Collection Mission Manager Collecte et Localisation par Satellite 8-10 rue Hermès 31520 RAMONVILLE SAINT AGNE France Tel: +33 5 61 39 47 79 Fax: +33 5 61 39 47 97 Email: mguigue@cls.fr
Mr. Paul HILL JOUBEH Technologies 21 Thornhill Dr. Dartmouth, NS B3B 1R9 Canada Tel: +1 (902) 405-4428 Fax: +1 (902)405-4438 Email: paul@joubeh.com	Isaac HORN 304 Pleasant st. Watertown, MA 02127 United States Tel: +1 617 924 2708 Fax: +1 617 924 2724 Email: ihorn@clearsat.us

Fabienne JACQ Director, CLS Data Collection & Location Dpt Collecte et Localisation par Satellite 8-10 rue Hermès 31520 RAMONVILLE SAINT AGNE France Tel: +33 5.61.39.47.64 Fax: +33 5 61 39 47 97 Email: fjacq@cls.fr	Mr Robert LAWSON Vice President / Director International Tsunami Buoy Program 4025 Hancock Street San Diego California 92110 United States Tel: 1-858-826-1166 Fax: 1-858-826-1521 Email: lawsonra@saic.com
Atle LOHRMAN Nortek AS Vangkroken 2 1351 Rud Norway Tel: +47 67174541 Email: inquiry@nortek-as.com	Mac MACLEOD President, Scotia Weather Services Inc. 192 Wyse Road, Suite 8 Dartmouth, NS B3A 1M9 Canada Tel: +1 (902) 468 3866 Fax: +1 (902) 225 5747 Email: mmacleod@scotiaweather.com
Justin MANLEY Director Scientific Business Liquid Robotics 1901 Embarcadero Rd Suite 106 Palo Alto CA 94303 United States Tel: +1-781-336-9680 Email: Justin.manley@liquidr.com	Dr Sergey MOTYZHEV Chief Scientist / Director Marine Hydrophysical Institute NAS of Ukraine / Marlin-Yug, 2, Kapitanskaya St. Sevastopol 99011 Ukraine Tel: +380 692 540450 Fax: +380 692 540450 Email: motyzhev@marlin-yug.com
Mr David MURPHY R & D Manager Sea-Bird Electronics 13431 NE 20th St. Bellevue WA, 98005 United States Tel: 425-644-3226 Email: dmurphy@seabird.com	Ms Seema OWEN Controller CLS America 1441 McCormick Drive, Suite 1050 Largo MD 20774 United States Tel: +1 240 492 1902 Fax: +1 301 925 8995 Email: sowen@clsamerica.com
David PEDDIE Dept. Manager / Scientist Christian Michelsen Research AS P.O.Box 6031 NO-5892 Bergen Norway Tel: +47 55 57 42 63 Email: david.peddie@cmr.no	Torstein PEDERSEN Nortek AS Vangkroken 2 1351 Rud Norway Tel: +47 6717454 Fax: +47 67136770 Email: torstein@nortek-as.com

Mr K. PREMKUMAR CEO Win Marine Consultancy Services B11, Abhinav Gardens 34, Velachery Rd., Saidapet Chennai 60001 India Tel: +91 94440 55316 Fax: + 91 891 6667609 Email: premkumark51@gmail.com	Mr Gary WILLIAMS Clearwater Instrumentation, Inc, 304 Pleasant St. Watertown MA 02472 United States Tel: +1 617-924-2708 Fax: +1 617-924-2724 Email: wgwill@clearsat.net
Mr William WOODWARD President, CLS America 1441 McCormick Drive Suite 1050 Largo MD 20774 United States Tel: +1 240 492 1901 Fax: +1 301 925 8995 Email: bwoodward@clsamerica.com	

ANNEX III

OPERATING PRINCIPLES OF THE DATA BUOY CO-OPERATION PANEL (DBCP)

(as approved at DBCP-XXVI)

1. INTRODUCTION

1.1 The Data Buoy Co-operation Panel (DBCP) is a subsidiary body of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM). The World Meteorological Organization (WMO) and Intergovernmental Oceanographic Commission of UNESCO (IOC) jointly sponsor the JCOMM, in order to undertake international / intergovernmental coordination of marine observational networks for which both organizations are mandated.

1.2 The DBCP was established in 1985 by WMO Resolution 10 (EC-XXXVII) and IOC Resolution EC-XIX.7. In 1993, the governing bodies of IOC and WMO agreed to change the name of the Panel to the Data Buoy Co-operation Panel (DBCP) with extended terms of reference, so that the Panel may provide international coordination required for both drifters and moored buoy programmes, which support major WMO and IOC programmes (IOC Resolution XVII-6 and WMO Resolution 9 (EC-XLV)). As the JCOMM was established in 1999, the Panel became a part of the JCOMM Observations Programme Area (Resolution 4 (EC-LII)). The Terms of Reference of the DBCP are reproduced in *Appendix I*.

1.3 The DBCP addresses the requirements and needs for real-time or archival data from buoys, both drifting and moored, coordinates buoy deployments worldwide, maintenance and collection of data from instrumented oceanographic and meteorological drifting buoys and moored buoys on the high seas. The Panel provides a forum for the exchange of technical and related information on buoy technology, communications systems and the applications of buoy data, to both operations and research.

1.4 The Panel coordinates its activities with related regional and global programmes of WMO and IOC, such as the World Weather Watch (WWW), the Global Ocean Observing Systems (GOOS) and the ICSU / WMO / IOC / UNEP Global Climate Observing System (GCOS) and the ICSU / WMO / IOC World Climate Research Programme (WCRP), and serve their needs for the data buoy technology and the implementation of data buoy networks.

1.5 The Panel adheres to a data policy approved by itself at DBCP Sessions. The DBCP Data Policy is reproduced in *Appendix IX*.

2. PANEL MEMBERS AND PARTICIPANTS

2.1 The Terms of Reference for the DBCP are decided by the WMO and IOC Executive Bodies through proposition by JCOMM; the Panel is reporting to JCOMM and serves the needs of WMO and IOC Programmes. In this context, WMO and IOC Members / Member States designate National Focal Points for buoy programmes who become full Panel members. This is done by means of a letter from the Permanent Representative of a country with WMO to the WMO Secretary-General or by the IOC Action Addressee to the Executive Secretary of IOC. The lists of National Focal Points for buoy programmes are maintained by the WMO and IOC Secretariats, and published on the JCOMM website.

2.2 Participants in the DBCP activities can be operational agencies, meteorological and oceanographic institutes, research agencies, data centres, governmental and non-governmental organizations, and commercial services interested in the global oceans who actively contribute to

the aims of the Panel. Individuals with an interest in data buoy activities are also welcome to attend as observers.

3. KEY DBCP PERSONNEL, THE EXECUTIVE BOARD AND TECHNICAL CO-ORDINATOR

3.1 The Panel elects a Chairperson and Vice-chairpersons at the end of its regular sessions with geographical representation from: (i) Asia; (ii) Europe; (iii) North America; and (iv) the Southern Hemisphere. Elections will be decided by a simple majority if a quorum of Panel members is present. A quorum will consist of six Panel members. If a quorum is not present at the regular meeting, elections will be by unanimous vote.

3.2 The elected Chairperson leads the DBCP during the next intersessional period within principles and financial limits defined by the Panel, and Chairpersons the next Panel Session. The Chairperson is supported by the WMO-IOC Joint Secretariat and the DBCP Executive Board, which is responsible for the day-to-day management of the Programme within the guidelines set at the regular meeting of Panel members. The Terms of Reference of the Executive Board are provided in *Appendix IV* to this document.

3.3 The Panel recruits a full-time Technical Co-ordinator whose position is fully financed by voluntary contributions from Panel members or other contributors. The Technical Co-ordinator acts as the focal point for the Programme and carries out the directives of the Panel, as appropriate, during the intersessional period. Upon the Panel's decision, the Technical Co-ordinator works for other related programmes to assist their implementation. Tasks and duties of the Technical Co-ordinator are detailed under section 11 of this document, and the Terms of Reference of the Technical Co-ordinator are given in *Appendix II*.

3.4 By the decision at the 24th session, the Technical Co-ordinator works a third of his/her time on the OceanSITES Project Office support.

3.5 The Technical Co-ordinator would be requested to inform the Chairperson and the Secretariat of his / her wish, or otherwise, to continue to work as Technical Co-ordinator of the Panel for the period 1 June "Y+1" to 31 May "Y+2". Should that information be a wish to continue, the Panel in turn would agree to retain him/her as Technical Co-ordinator, subject to the availability of funds, and subject to his / her specific contract limitations with his / her relay employer.

3.6 In case the Technical Co-ordinator wished to quit the position, he/she would be required to inform the Panel as soon as possible, and in any case preferably six months in advance, to assist in the recruitment and training of his / her successor, in order to ensure as full continuity as possible in the work of the Panel's Technical Co-ordinator.

3.7 The current contact details for key DBCP personnel are listed in *Appendix X*.

4. TASK TEAMS

4.1 Task Teams can be established to work proactively on key issues identified by the Panel, in order to ensure that the Workplan is duly implemented during the intersessional period. The Chairperson(s) of (a) Task Team(s) is / are appointed by the Panel. The Team(s) will report to the Panel on their activities at its regular sessions. The Terms of Reference and Membership of the current Task Teams are provided in *Appendix V*.

4.2 From time to time, the Panel may decide to establish and fund Pilot Projects of limited duration to evaluate new technologies or procedures that might enhance its capabilities.

5. ACTION GROUPS

5.1 The implementation of buoy deployments is coordinated at the regional level through global, regional, or specialized Action Groups. The definition of an Action Group is given in *Appendix III*.

6. IMPLEMENTATION STRATEGY

6.1 The Panel defines its Implementation Strategy and review it at its regular meetings. The Implementation Strategy is defined in such a way that it is consistent with the WMO and IOC Strategic plans.

7. WORKPLAN

7.1 The Panel established and reviews the overall Workplan for itself and the Technical Co-ordinator at its regular sessions, for the coming intersessional period.

7.2 The DBCP Chairperson and the Executive Board may update the Technical Co-ordinator's Workplan during the intersessional period, as appropriate, and report on such changes at the next Panel Session.

8. FUNDING

8.1 The DBCP is self-sustaining, by contributions of equipment, services (such as communications, deployment, archiving, and scientific or technical advice), and coordination. The contributions include monetary contribution to secure employment and activities of the Technical Co-ordinator, through IOC and WMO.

8.2 Monetary contributions - on a voluntary basis - are made by Panel members to the DBCP Trust Fund at WMO and/or IOC, as appropriate. The Terms of Reference of the DBCP Trust Fund at WMO are given in *Appendix VII*. The Trust Fund at IOC follows the Financial Regulations of the IOC Special Account that are reproduced in *Appendix VIII* (Decisions in 157th Executive Board of UNESCO). The IOC Regulations follow the General rules and regulations of UNESCO on Trust Funds, which correspond to those of WMO, in principle.

8.3 The Panel can establish budget lines to implement the DBCP activities, based on its agreed Workplan. The current DBCP budget line items are provided in *Appendix VI*.

8.4 Through the present arrangement, the Technical Co-ordinator is recruited by IOC, and the employment and activities of the Technical Co-ordinator depend on the DBCP Trust Fund in IOC and in WMO - the salary and logistical support are paid within the DBCP Trust Fund in IOC, whereas the expenses incurred for the TC's activities are executed within the DBCP Trust Fund in WMO.

8.5 Timely contribution from Panel members is critical to secure the TC employment contract, considering the yearly cycle of the administration within WMO and IOC. Panel members are encouraged to ensure that their contributions are made in good time.

8.6 The logistics for the DBCP Technical Co-ordinator are currently provided by the CLS (France), of which the terms and cost are defined by a MOU between the IOC and CLS on the logistic support for JCOMMOPS – where the Technical Co-ordinator belongs to. The annual cost is paid to the CLS from the DBCP Trust Fund in IOC. All actual expenses incurred by the host for the logistic support of JCOMMOPS, in excess of the amount of the contract signed with IOC to that effect, is considered as a contribution by the host to the work of the Panel.

8.7 The WMO and IOC Secretariats provide finalized financial statements of account on an annual basis to the Panel in early Year+1 as soon as the organizations' fiscal year accounting is

finalized. The Panel also reviews its financial situation at regular Panel sessions, with interim statements of the budget provided by the WMO and IOC Secretariats.

8.8 The Panel may appoint a Panel Member as finance advisor to act on its behalf of and to work with the WMO-IOC Joint Secretariat to produce a consistent, comprehensive and comprehensible set of annualized accounting reports to be presented to the Panel and its Executive Board at their regular meetings (see *Appendix X* for currently appointed person).

9. ORGANIZATION AND CONDUCT OF THE DBCP SESSIONS

9.1 In odd years, the regular session of the DBCP will be held at either the WMO or IOC Headquarters, based on the agreement and decision by the Panel and the WMO-IOC Joint Secretariat, in order to lessen travel duties of the Secretariats and to provide opportunities for extended participation of other WMO or IOC officers in the session for wide range of information exchange and cooperation.

9.2 In even years, the regular session of the DBCP will be held at an external location, upon a suitable offer for hosting sessions. This is to advocate and support the Panel's activities in regional and national levels, and to encourage regional / national staff at all levels to actively participate in the work of the Panel, in particular through presentations to the Scientific and Technical Workshop and other networking opportunities.

9.3 The agenda and timetable of the regular session will be drawn up by the Panel Chairperson, in consultation with the Executive Board, other Panel members and the Joint WMO-IOC Secretariat. In principle, the Panel discussion at the regular session is to be completed within 2.5 days. In order to ensure efficiency of the session as well as the comprehensive review and exchange of information, some parallel sessions and focused discussion may be introduced, as required. The Panel will strive to reach decisions by consensus only; no voting should in principle take place. All decisions and relevant discussion will be recorded in the session report, which will be approved by the Panel before it disperses.

10. INFORMATION EXCHANGE AND REPORTING

10.1 The Technical Co-ordinator maintains a website on behalf of the Panel. The URL for the website is: http://www.jcommops.org/dbcp/.

10.2 The Technical Co-ordinator also maintains mailing lists for the Panel. The names of the mailing lists, their objectives, and membership are detailed on the DBCP website.

10.3 The Panel may produce and update the DBCP brochure. The contents, means of publication and distribution, and funding mechanisms for related activities are to be agreed by the Panel at its regular sessions.

10.4 The Panel members who represent DBCP at various events are to use a standard Powerpoint presentation template. The template is developed and maintained by the Technical Co-ordinator, and available from the DBCP website.

10.5 The Technical Co-ordinator also maintains a document describing the Panel's achievements since its establishment.

10.6 The Panel maintains series of DBCP Technical Publications that are issued by the WMO Secretariat. These publications can be with the form of paper copy, CD-ROM, DVD-ROM, or be web-based only. The list of current DBCP Publications is available at the DBCP website. The actual costs of editing, publishing, and distributing the DBCP Publications are being recuperated from the DBCP Trust Fund.

10.7 At its regular sessions, the Panel receives reports on activities during the intersessional period, from:

- the Executive Board;
- the Technical Co-ordinator;
- the Action Groups (annual basis), and
- the Member Countries (annual).

The annual reports by Action Groups and the Member Countries are also to be included in the DBCP Annual Report.

10.8 The Panel's regular session report and Annual Report will be consolidated into a single mailing, structured as follows:

a. A 2-page covering letter containing important information for decision makers, including:
   - Executive summary of the Panel's achievements, activities and aspirations for the current year; and
   - Table of national contributions.

b. A slimmed-down paper hard copy report containing information that needs to be referenced (and possibly annotated) rather frequently and quickly. This would essentially replace the existing session final report. The material in this report would include the following:

   - Executive summary of the Panel's achievements, activities and aspirations for the current year;
   - The final report of the regular session (i.e., the usual final report without the annexes);
   - Agenda;
   - List of participants;
   - Operating Principles of the Panel (this document, as updated and agreed at the annual session);
   - Summaries of the Action Group reports;
   - Executive Board report;
   - Finalised annual financial accounts, including the table of national contributions and budget for the following year;
   - If necessary, selected buoy and GTS statistics (showing trends in numbers, quality, delays, plus a few maps);
   - List of Actions and Workplan, and;
   - List of Acronyms.

c. A CD-ROM containing the entire above, plus a complete set of meetings, and all other annexes generally attached to the two reports includes:

   - A full report by the Technical Co-ordinator;
   - National reports;
   - Full reports by the Action Groups;
   - Data Management Centre reports;
   - The current status and development of satellite communications (CLS/Argos, Iridium, etc);
   - GTS report;
   - National Focal Point list;
   - Contracts;
   - Other financial and administrative papers; and
   - Technical Document list, including available electronic versions.

d. All of the above information will be available on-line via the JCOMMOPS website.

10.9 During the intersessional period, the Technical Co-ordinator provides for synthetic quarterly reports on his/her activities and the status of his/her Workplan's implementation to the DBCP Executive Board.

10.10 The Technical Co-ordinator produces monthly maps and statistical graphics on a monthly basis regarding the status of buoy programmes. This information is posted on the DBCP website and issued through the appropriate mailing lists.

10.11 Written reports to the Panel session will adhere to a format that will make clear to the Panel, by means of an Executive Summary, those issues that require discussion and decision. Similarly, presentations to the session will presume that written reports have been read by the Panel, and will concentrate solely on those issues, which require an action or decision by the Panel. Report presenters will submit a summary of their report and the ensuing discussion and actions to the secretariat for inclusion in the draft final report of the session.

11. ROUTINE TASKS OF THE TECHNICAL CO-ORDINATOR

The following routine tasks of the Technical Co-ordinator (TC) comply with his/her Terms of Reference (*Appendix II*).

11.1 The Technical Co-ordinator acts as a clearing house for information on all aspects of buoy data use; he/she maintains DBCP and JCOMMOPS websites as appropriate.

11.2 The Technical Co-ordinator monitors the status of the global drifting and moored buoy networks in terms of: (i) spatial density; (ii) accuracy of the measurements; (iii) real-time data distribution and data timeliness; and (iv) buoy lifetime. The TC identifies gaps in the system, and makes recommendations to the Panel as appropriate. He/she also regularly provides information on instrument performances to the WMO Database as part of the CBS Rolling Review of Requirements (RRR).

11.3 Through direct contacts with programme managers, Principal Investigators, and buoy operators, the Technical Co-ordinator advertises the DBCP Programme, encourage use of buoy data, and active participation of new participants. The TC regularly contacts buoy programme managers of existing and new programmes in order to: (i) invite them, and possibly convince them, if useful, to authorise GTS distribution of their buoy data; (ii) offer technical assistance for that purpose if needed; (iii) collect information on buoy programmes, and the deployed buoys, including metadata; and (iv) collect information in buoy deployment opportunities for use by other buoy operators. Programme Managers may also directly contact the Technical Co-ordinator for receiving assistance with regard to the GTS distribution of their buoy data.

11.4 The Technical Co-ordinator provides information and assists as appropriate buoy data users for accessing data and platform/instrument metadata.

11.5 The Technical Co-ordinator also participates actively in buoy quality monitoring as defined in the DBCP Quality Control Guidelines (details on the DBCP website[1]). In particular, The TC monitors the dedicated mailing list, and information posted on the dedicated web page, reviews the buoy monitoring statistics, and provides feedback to buoy operators regarding the quality of their buoy data as appropriate and recommends action for those buoys reporting erroneous data. He/she assists in the resolution of specific technical problems regarding the GTS distribution of the data as appropriate (obtaining WMO numbers, looking at technical files, calibration curves, looking at data losses, etc.).

1 : http://www.jcommops.org/dbcp/2qgd.html

11.6 The Technical Co-ordinator works closely with centres responsible for the collection, location, data processing, and real-time GTS distribution of the buoy data for: (i) monitoring the system and identifying possible problems; (ii) making sure these problems are corrected; and (iii) providing technical assistance as appropriate.

11.7 Upon request, the Technical Co-ordinators also provides the WMO and IOC Secretariats with status maps, statistical information and graphs, and documentation.

11.8 The Technical Co-ordinator maintains the DBCP list of buoy manufacturers and provides it on the DBCP website.

11.9 The Technical Co-ordinator liaises with the DBCP Action Group coordinators and prepares reports on DBCP activities for the regular meetings of the Action Groups. The TC represents the Panel or the Action Groups at relevant technical meetings, both inside and outside WMO and IOC, as required.

11.10 The Technical Co-ordinator assists the Chairperson and the Secretariats in the preparation of the DBCP Session, including the preparation of specific technical preparatory documents and presentations.

12. REVIEW OF THE MANAGEMENT STRUCTURE AND OPERATING PRINCIPLES

12.1 The Panel reviews and updates its management structure, and operating principles at its regular sessions. This includes, in particular, the appropriate appendices of the DBCP operating principles, i.e., definition of an Action Group, Terms of Reference of the Executive Board, budget lines, and Terms of Reference of the DBCP Trust Fund at WMO and IOC.

APPENDIX I

Terms of Reference of the Data Buoy Co-operation Panel (Approved by WMO Resolution 4(EC-LXII) and UNESCO/IOC Resolution XVII-6)

The Data Buoy Co-operation Panel shall:

Consider the expressed needs of the international meteorological and oceanographic communities for real-time or archival data from ocean-data buoys on the high seas and request action from its members, the Technical Co-ordinator or Action Groups to meet these needs;

1. Co-ordinate activity on existing programmes so as to optimize the provision and timely receipt of good quality data from them;

2. Propose, organize and implement, through the co-ordination of national contributions, the expansion of existing programmes or the creation of new ones to supply such data;

3. Support and organize as appropriate such Action Groups as may be necessary to implement the deployment of data gathering buoys to meet the expressed needs of oceanographic and meteorological programmes such as WWW, WCRP, GOOS and GCOS;

4. Encourage the initiation of national contributions to data buoy programmes from countries which do not make them;

5. Promote the insertion of all available and appropriate buoy data into the Global Telecommunication System;

6. Promote the exchange of information on data buoy activities and encourage the development and transfer of appropriate technology;

7. Ensure that other bodies actively involved in buoy use are informed of the workings of the Panel and encourage, as appropriate, their participation in the Panel deliberations;

8. Make and regularly review arrangements to secure the services of a Technical Co-ordinator with the terms of reference given in Part B;

9. Report formally to the Joint WMO / IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), and participate in and contribute to an integrated global operational ocean observing system, implemented and co-ordinated through JCOMM; and

10. Submit annually to the Executive Councils of the WMO and the IOC, to JCOMM and to other appropriate bodies of WMO and IOC, a report that shall include summaries of the existing and planned buoy deployments and data flow.

APPENDIX II

Terms of Reference for the Technical Co-ordinator of the DBCP (Approved by WMO Resolution 4 (WMO EC-LXII) and UNESCO/IOC Resolution XVII-6)

The Technical Co-ordinator of the Data Buoy Co-operation Panel shall:

1. Under the direction of the Data Buoy Co-operation Panel take all possible steps within the competence of the Panel to assist in the successful achievement of its aims;

2. Assist in the development, implementation, and management of quality control procedures for data buoy systems;

3. Assist in setting up suitable arrangements for notifying the appropriate user communities of changes in the functional status of operational buoys;

4. Assist in the standardization of buoy data formats, sensor accuracy, etc.;

5. Assist when requested with the development of cooperative arrangements for buoy deployment;

6. Assist in the clarification and resolution of issues between Service Argos and buoy operators;

7. Assist in promoting the insertion of all available and appropriate buoy data into the Global Telecommunications System;

8. Supply information about buoy developments and applications to the WMO and IOC Secretariats and assist the Data Buoy Co-operation Panel to promote an international dialogue between oceanographers and meteorologists;

9. Coordinate and monitor the flow of buoy data into appropriate permanent archives.

APPENDIX III

Definition of a DBCP Action Group
(as approved at DBCP-X)

1. A DBCP Action Group is an independent self-funded body that maintains, as a significant element of its responsibilities, an observational buoy programme providing meteorological and oceanographic data for real-time and / or research purposes in support of the World Weather Watch (WWW), the World Climate Research Programme (WCRP), the Global Climate Observing System (GCOS), and the Global Ocean Observing System (GOOS), and other relevant WMO and IOC programmes.

2. Action Groups of the DBCP shall support the aims and objectives of the DBCP - as set out in the Terms of Reference of the DBCP - particularly with respect to:

   - Provision of good quality and timely data to users;
   - Insertion of real-time (or near real-time) data into the GTS;
   - Exchange of information on data buoy activities and development and transfer of appropriate technology.

3. An Action Group may be regional or national in nature provided that its programme benefits a regional or international community.

4. To be adopted as an Action Group of the DBCP, the Terms of Reference or operating principles of the body or programme shall be submitted to a session of the DBCP for formal approval. Once approved these shall be lodged with the Secretariats of WMO and IOC.

5. The DBCP shall support the activities of its adopted action groups especially through the assistance of its key personnel (technical co-ordinator and the Secretariats of WMO and IOC) as far as resources allow.

6. Action Groups of the DBCP shall submit annual reports of their activities to the Chairperson of the DBCP.

APPENDIX IV

Terms of Reference of the DBCP Executive Board
(as approved at DBCP-XXVI)

The DBCP Executive Board shall:

1. Seek guidance from the Panel at its regular sessions regarding specific issues to be addressed by the Executive Board and the Tasks Teams during the intersessional period;
2. Act promptly to deal with any administrative, financial and planning issues and opportunities that might arise, within the guidelines established and reviewed regularly by the Panel;
3. Authorise the Chairperson to commit any expenditure necessary for the resolution of these issues and the promotion of the Panel's aims and objectives, up to the maximum amounts that might be agreed in advance by the Panel at its regular session;
4. Review the DBCP Implementation Strategy to ensure that it is kept up-to-date and complies with ongoing activities and users' requirements;
5. Set working priorities for the Technical Co-ordinator according to the DBCP recommendations at its regular sessions, and provide further guidance during the DBCP intersessional period;
6. Confer primarily regularly by e-mail, and exploit opportunities afforded by attendance at other meetings (e.g., the JCOMM OCG meeting) for face-to-face meetings;
7. Conduct meetings annually, following an agenda drawn up by the DBCP Chairperson;
8. Consult with Panel members and the Chairpersons of the DBCP Task Teams during the intersessional period if required;
9. Report its activities to the DBCP at its regular Session, and throughout the intersessional period as appropriate.

Membership:
The following individuals are members of the DBCP Executive Board:

- DBCP Chairperson, or his / her appointed deputy (Executive Board Chairperson)
- DBCP Vice-chairpersons
- DBCP member (appointed by the Chairperson)[1]
- DBCP Technical Co-ordinator (*ex officio*)
- Representative of the IOC Secretariat (*ex officio*)[2]
- Representative of the WMO Secretariat (*ex officio*)[3]
- Representative of the Manufacturers (*ex officio*)[4]

Note 1: A quorum of the Board should consist of at least three members, and must include the Chairperson or his / her appointed deputy.
Note 2: Any Panel Member may attend DBCP annual Executive Board meetings as an observer, subject to the availability of adequate meeting room space. If required, the Chairperson of the DBCP Executive Board will make a final decision as to which observers may attend, and may also invite other persons to attend at his / her discretion.
Note 3: The term for the members of the Executive Board is for one year during the inter-sessional period. They shall be eligible for re-election in their respective capacities, but would serve in principle for no more than 4 terms.

1 : Mr Sidney Thurston (USA) has been appointed by the current DBCP Chairperson, Mr Al Wallace to serve in the Executive Board
2 : Currently Dr Boram Lee
3 : Currently Mr Etienne Charpentier
4 : TDB (Manufacturers to discuss between themselves and nominate a representative)

APPENDIX V

TERMS OF REFERENCE OF THE DBCP TASK TEAMS

TERM OF REFERENCE OF THE TASK TEAM ON DATA MANAGEMENT
(as adopted at DBCP-XXIV)

The DBCP Task Team on Data Management shall:

1. Receive and review reports from the Data Management Centres specializing in buoy data, i.e., (i) the Météo-France SOC / DB, and (ii) the ISDM, Canada RNODC / DB; reconcile any overlaps with emphasis on differences;

2. Liaise with the DBCP Task Team on Quality Management for compiling table driven coding requirements for data buoy observations, for all relevant applications, and submit them in a consolidated way to the DMPA Task Team on Table Driven Codes;

3. Address issues to do with real-time distribution of data, including GTS issues, timeliness and methods to improve data / flows;

4. Address issues relating to delayed-mode distribution and archiving of the data;

5. Seek input from data users on which instrumental metadata is most important and how it is best managed and coordinate these activities with the JCOMM Meta-T Project;

6. Review all relevant JCOMM Publications, to make sure they are kept up-to-date and comply with Quality Management terminology;

7. Follow-up with regard to the development of the WIGOS Pilot Project for JCOMM and make sure that the developments proposed by the Task Team are consistent with the WIGOS and WIS requirements;

8. Make recommendations to the DBCP Executive Board or the DBCP for addressing the issues above; and

9. Report to the DBCP Executive Board and the DBCP at its biennial Sessions.

Membership:

The membership is open to all Panel members. The Chairperson, appointed by the Panel, has selected the following team members:

Ms Mayra Pazos (TT Chairperson and GDP representative);
Mr Yann Bernard (CLS data manager);
Mr. Pierre Blouch (France);
Mr Bruce Bradshaw (RNODC representative);
Dr Bill Burnett (NDBC data manager);
Ms Emily Daniel (MetOcean);
Mr Jean Rolland (SOC representative);
Mr Johan Stander (SAWS);
DBCP Technical Co-ordinator (*ex officio*).

TERMS OF REFERENCE OF THETASK TEAM ON INSTRUMENT BEST PRACTICES & DRIFTER TECHNOLOGY DEVELOPMENTS
(as adopted at DBCP-XXIV)

Note: The DBCP Evaluation Group is being merged into this Task Team.

The DBCP Task Team on Instrument Best Practices & Drifter Technology Developments shall:

Instrument Best Practices and Quality Management

1. When required by the DBCP, evaluate quality of buoy data produced by specific types of buoys, as well as functioning, efficiency;

2. Review existing practices for automatic real-time buoy data quality control, and delayed-mode buoy data quality control, and possibly suggest design changes for improvement (sensors, hardware, software, data formats) in liaison with the Task Team on technological developments;

3. Address instrument evaluation issues; suggest specific tests and / or evaluation deployments in different sea conditions to DBCP members in order to evaluate buoy quality as described in (1) above;

4. Share experience and results of evaluation with the DBCP and other interested parties;

5. Review and recommend Best Practices; work on specific technical issues in order to facilitate standardization and liaise with the other DBCP Task Teams as appropriate (e.g., DBCP recommended Argos message formats); and

6. Define specific criteria for evaluation purposes (e.g. ocean areas, definition of acceptable quality data, e.g., early failures, lifetimes, delays, accuracies, resolutions, etc.);

Drifter technology developments

7. Investigate developments in the fields of sensor technology, on-board processing, buoy hardware, hull design, energy generation and storage in order to better meet user requirements in terms of the range, reliability and quality of observed parameters and their cost-effectiveness;

8. Regularly review and document operational and upcoming satellite telemetry systems in terms of their ability to address user requirements such as bandwidth, timeliness, availability, geographical coverage, reliability, service quality, technical support, energy consumption and cost;, and make specific recommendations to the communications service providers on required / desired enhancements;

9. Review operational platform location systems, and whether they meet the user requirements;

10. Propose to the DBCP and its Executive Board any evaluation activities and pilot projects that it deems beneficial to data buoy operators;

11. Propose recommendations, both upon request and unsolicited, to the Argos Joint Tariff Agreement. Such recommendations shall be passed via the DBCP Executive Board or the DBCP as appropriate; and

12. Evaluate, test, and promote buoy designs that are resistant to vandalism;

General

13. Review all relevant JCOMM Publications to make sure they are kept up to date, comply with Quality Management terminology, and adhere to the WMO Quality Management Framework (QMF);

14. Provide the DBCP Executive Board and the DBCP, both upon request and unsolicited, with technical advice needed for addressing the issues above; and

15. Submit reports to the DBCP Executive Board and to the DBCP at its annual session that describe intersessional activities and propose a Workplan for the next intersessional period.

Membership:

The membership is open to all Panel members. The Chairperson, appointed by the Panel, has selected the following team members:

- Dr Bill Burnett, NDBC (TT Chairperson);
- Mr Pierre Blouch, Météo-France;
- Ms Emily Daniel, MetOcean;
- Mr Shaun Dolk, NOAA / AOML;
- Ms Julie Fletcher, MSNZ;
- Mr Paul Freitag, NOAA / PMEL;
- Mr Frank Grooters, KNMI;
- Mr Michel Guigue, CLS;
- Mr Robert Jenson, USACE;
- Mr Chris Marshall, Environment Canada;
- Mr David Meldrum, SAMS;
- Mr Sergey Motyzhev, Marlin Yug;
- Mr Peter Niiler, SIO;
- Ms Mayra Pazos, NOAA / AOML;
- Mr Steve Piotrowicz, NOAA; and
- Dr M Ravichandran, INCOIS
- Dr. Tim Richardson, Liquid Robotics
- Mr Jean Rolland, Météo-France;
- Mr Andy Sybrandy, Pacific Gyre;
- Mr Jon Turton, UK Met Office;
- Mr Bill Woodward, CLS America;
- Technical Co-ordinator, DBCP.

TERM OF REFERENCE OF THE TASK TEAM ON MOORED BUOYS
(as adopted at DBCP-XXIV)

The DBCP Task Team on Moored Buoys shall:

1. Review and document operational moored buoy systems and their underlying requirements;

2. Liaise with the different communities deploying moorings, including TIP, OceanSITES, seabed observatories, as well as national moored buoy programmes (coastal and global), and promote the development of multi-disciplinary mooring systems;

3. Liaise with the GOOS Scientific Steering Committee (GSSC) and its technical sub-panel for Integrated Coastal Observations (PICO) to facilitate synergy between advances in GOOS implementation and the development of operational capabilities, in particular, for sustained coastal observations, analysis and related services by using mooring systems;

4. Liaise with the JCOMM Expert Team on Wind Waves and Storm Surges (ETWS) regarding the need for in situ wave observations;

5. Compile information on opportunities for the deployment and / or servicing of moored buoys;

6. Monitor technological developments for moored data buoys and liaise with the Task Team on Technological Developments on satellite data telecommunication aspects;

7. Review all relevant WMO and IOC Publications on Instrument Best Practices (e.g., JCOMM, CIMO) to make sure they are kept up to date, address WIGOS issues, and comply with Quality Management terminology;

8. Provide the DBCP Executive Board or the DBCP with technical advice needed for developing moored buoy programmes, including the issues above; and

9. Report to the DBCP Executive Board and the DBCP at its biennial Sessions, with periodically updated Workplans supporting implementation.

Membership:

The membership is open to all Panel members. The Chairperson, appointed by the Panel, has selected the following team members:

- Mr Jon Turton, UK Met Office (TT Chairperson);
- Dr Bill Burnett, NOAA / NDBC;
- Mr Richard L. Crout, NOAA / NDBC;
- Mr Paul Freitag, NOAA / PMEL;
- Dr Robert Jensen, USACE;
- Mr Chris Marshall, Environment Caada;
- Mr Chris Meinig, NOAA / PMEL;
- Mr Ariel Troisi, SHN;
- Mr Al Wallace, MSC, and;
- Dr Uwe Send, SIO.

TERMS OF REFERENCE FOR THE DBCP TASK TEAM ON CAPACITY-BUILDING
(as adopted at DBCP-XXIV)

The DBCP Task Team on Capacity-Building shall:

1. Initiate, plan and coordinate the implementation of the Training and Capacity-Building work programme including, in particular, the regular Training Course on Buoy Programme Implementation and Data Management;

2. Keep under review existing training material (paper and electronic) and advise on updating as well as for the development of new material;

3. Review and assess national, regional, and global requirements for capacity-building and develop / improve programmes as appropriate;

4. Liaise with other capacity-building programmes in relevant areas to develop and implement integrated activities, to explore potential synergies and opportunities for efficiently using resources available; liaise in particular with the JCOMM cross-cutting Team on Capacity-Building;

5. Endeavour to mobilize the resources required for DBCP capacity-building, including those needed for the implementation of the Training Courses;

6. Make recommendations to the DBCP Executive Board and / or the DBCP for addressing the issues above; and

7. Report to the DBCP Executive Board and the DBCP at its biennial Sessions.

Membership:

The membership is open to all Panel members. The Chairperson, appointed by the Panel, has selected the following team members:

- Dr Sidney Thurston, NOAA / OCO (TT Chairperson);
- DBCP Chairperson;
- DBCP Executive Board members;
- DBCP Vice-chairpersons (or their respective deputies);
- DBCP Technical Co-ordinator;
- Mr Ali Mafimbo (Kenya);
- Dr G. Latha (India);
- Johan Stander (South Africa);
- Lucy Scott (South Africa);
- Byung-Gul Lee (Republic of Korea);
- Kwan-Chang Lim (Republic of Korea);
- Representative of the IOC Secretariat; and
- Representative of the WMO Secretariat.

APPENDIX VI

Current DBCP budget line items
(as approved at DBCP-XXIII)

The DBCP budget includes the following line items:

1. Contract for the Technical Co-ordinator[1];
2. JCOMMOPS logistical support[2];
3. Travel of DBCP Chairperson[3];
4. Travel for the Technical Co-ordinator[3];
5. Travel of DBCP Representatives[3];
6. Bank charge and support cost[4];
7. Outreach and publication activities[5];
8. JCOMMOPS Data/Development[6];
9. JCOMMOPS information system migration[7];
10. SOT (travel for the Technical Coordinator and/or Representatives);
11. Provision for termination / transition of the Technical Co-ordinator after 2010;
12. Technical developments and evaluations[8];
13. Implementation support to address regional system deficiencies;[9]
14. Capacity-Building[10];
15. Collaborative Arrangements[11];
16. JTA[12], including Chairperson's contract, Executive Board, and Secretariat support;
17. Contingency.

1: Includes the salary and benefits;
2: Expenses shared with the Argo Information Centre (AIC). This includes office space and use of furniture, personal computer, licenses for basic office software, secretarial support, telephone, Internet and e-mail access, and miscellaneous office supplies;
3: Missions on behalf of the Panel;
4: Bank charges and service charges from the WMO and IOC for supporting the DBCP Trust Fund;
5: DBCP and JCOMMOPS brochures and DBCP Publications;
6: Hardware and software, and host IT support for developing, running, and maintaining the JCOMMOPS Information System;
7: Provision for the migration of the JCOMMOPS Information System;
8: For example, the DBCP Iridium Pilot Project;
9 : For example, improving data timeliness in areas where system weaknesses are identified;
10: Support for DBCP-related training courses: travel of trainers and / or trainees; training materials;
11: Support for collaborative arrangements with other international programmes, between Panel Members, or with private companies for the provision of coordination functions, or the deployment and / or operations of instruments; and
12: This expenditure is balanced by an equivalent contribution of the JTA to the DBCP Trust Fund.

APPENDIX VII

Terms of Reference for the DBCP Trust Fund at WMO

(as adopted at DBCP-XXIV and further agreed by way of exchange of letters between the WMO Secretary General[1] and the DBCP Chairperson[2])

1. The purpose of the DBCP Fund is to support the activities of the Data Buoy Co-operation Panel (DBCP);

2. The DBCP Fund is a Trust Fund within the provisions of Articles 9.7[3], 9.8[4] and 9.9[5] of the WMO Financial Regulations (Resolution 37, Cg-XV);

3. The Fund shall be managed by WMO under its applicable rules and procedures, according to an annual budget adopted by the DBCP at its regular Sessions and any other directions provided by the DBCP;

4. The budget will be constructed according to a format agreed by the Panel, in which all income and expenditures will be identified in general articles and specific chapters. The format of the budget may be revised by the Panel as necessary. The budget may take note of other monies and resources made available for support of the DBCP activities, but which are not included as part of the Fund. Only those monies placed in the Fund, however, shall be subject to these terms of reference. The DBCP will provide WMO with details of the share to be borne by participating Members and contributors for invoicing purposes;

5. The DBCP Executive Board, under its Terms of Reference, may authorise in writing through its Chairperson the WMO Secretariat to commit any expenditure necessary for the resolution of these issues and the promotion of the Panel's aims and objectives, as long as these are consistent with the DBCP Operating Principles agreed by the Panel at its previous session;

6. The unit of account shall be the United States dollar. When commitments are made, the appropriate funds will be converted, as necessary, to the currency of commitment in at least the amount of the commitment;

7. The income of the Fund will include:

(i) Annual contributions from participating Members / Member States;

(ii) Funds deposited for specific purposes, hereafter referred to as deposits;

(iii) Other contributions from third parties;

(iv) Interest on investments as may be made by the Secretary-General in accordance with the provisions of Financial Regulation 12.26 (Resolution 37, Cg-XV); and

(v) Miscellaneous income.

1: Letter 11106-08/OBS/WIGOS/OSD/MAR/DBCP-ADM from Michel Jarraud dated 15 December 2008

2: Letter from David Meldrum dated 5 January 2009

3: 9.7: Trust funds, reserve and special accounts may be established by the Secretary-General and shall be reported to the Executive Council.

4: 9.8: The purpose and limits of each trust fund, reserve and special account shall be clearly defined by the Executive Council. Unless otherwise provided by the Congress, such funds and accounts shall be administered in accordance with the present Financial Regulations.

5: 9.9: Income derived from investments of trust funds, reserve and special accounts shall be credited as provided in the provisions applicable to such funds or accounts or at the request of the donors at any time. In other circumstances, Regulation 10.1 shall apply.

6: 12.2: The Secretary-General may make long-term investments of moneys standing to the credit of trust funds, reserve and special accounts, except as may be otherwise provided by the appropriate authority in respect of each such fund or account and having regard to the particular requirements as to the liquidity of funds in each case.

8. The Fund will be used as agreed by the DBCP to:

(i) Finance technical and operational support services for the DBCP, including in particular for supporting its Technical Co-ordinator salary, benefits, logistical support, and missions; DBCP capacity-building activities; data buoy Technical Evaluation and DBCP Pilot Projects; consultancy and missions of experts acting on behalf of the Panel; practical arrangements for the deployment or servicing of buoys; promotion and exchange of information about the Panel activities;

(ii) Finance the share of the DBCP in supporting the activities of JCOMMOPS and the Observing Programme Support Centre (OPSC) as agreed by the Panel at its regular sessions;

(iii) Provide support to the Argos Joint Tariff Agreement within the resources set aside by the DBCP under these activities;

(iv) Assist in the establishment and operation of data buoy programmes;

(v) Meet appropriate administrative costs incurred by WMO in providing support to DBCP activities;

(vi) Meet other administrative costs including such items as meetings and consultants;

(vii) Purchase specified goods or services; and

(viii) Support other activities required to meet the basic goal of the DBCP Panel;

9. Authority for the disbursement of funds, in respect of contracts and agreements properly concluded, is delegated to the Chairman of the DBCP. The Chairperson of the DBCP will request in writing the Secretary-General of WMO, or his representative, to disburse the funds;

10. Where required by their internal regulations, individual contributors to the DBCP Fund may wish to negotiate additional conditions governing the application, conditions of deposit and disbursement of funds. Such additional conditions shall not inhibit the efficient and proper use of the Fund nor modify the intent of the Fund. They shall require the acceptance in writing by the Chairperson of the DBCP and the Secretary-General of WMO or his representative;

11. The Fund shall be maintained on a continuous basis and amounts standing to the credit of the Fund at the end of any WMO biennial period shall remain in the Fund for use in the subsequent period;

12. Upon liquidation of the Fund for any reason, the DBCP shall make provision for the payment of unliquidated obligations and estimated expenses of winding-up business. It shall then arrange for repayment - to the extent that funds are available and according to the depositors instructions - of deposits for which no equipment or services have been received;

13. At the closure of the Fund:

(i) Any remaining surplus after (12) above, shall be distributed among the then DBCP Members in proportion to their total contributions and deposits paid by them to the DBCP Fund; and

(ii) Any remaining deficit, including provision for the payment of unliquidated obligations and estimated expenses of winding-up business, shall be met by the DBCP Members in an equitable way, to be decided upon by the DBCP.

14. The Fund will be terminated not later than one year after the formal termination of the DBCP;

15. All funds credited to the DBCP Fund shall be subject to these terms of reference and to the Terms of Reference of the DBCP; and

16. Any revision or amendment to the present Terms of Reference is subject to a decision of the DBCP and the agreement of WMO.

APPENDIX VIII

Financial Regulations applicable to the Intergovernmental Oceanographic Commission (IOC)

(Excerpt from the Decisions by 157th Executive Board of the UNESCO)

Article 1 - Creation of a Special Account of UNESCO

1.1 In accordance with Article 6, paragraph 6, of the Financial Regulations of UNESCO, there is hereby created a Special Account for the Intergovernmental Oceanographic Commission, hereinafter referred to as IOC.

1.2 The following Regulations shall govern the operation of this Special Account.

Article 2 - Financial period

The financial period shall correspond to that of UNESCO.

Article 3 - Income

3.1 As provided in its Statutes, the income of IOC shall consist of:

(a) funds appropriated for this purpose by the General Conference of UNESCO;

(b) voluntary contributions from States, international agencies and organizations, as well as other entities allocated to it for purposes consistent with the policies, programmes and activities of UNESCO and IOC;

(c) such subventions, endowments, gifts and bequests as are allocated to it for purposes consistent with the policies, programmes and activities of UNESCO and IOC;

(d) fees collected in respect of the execution of projects entrusted to IOC, from the sale of publications, or from other particular activities; and

(e) miscellaneous income.

3.2 The Executive Secretary of IOC, hereinafter referred to as the Secretary, may accept income as set forth in Article 3.1 on behalf of IOC, provided that, in any case which would involve IOC in an additional financial liability, the Secretary shall obtain the prior approval of the IOC Executive Council and the consent of the Executive Board of UNESCO.

3.3 The Secretary shall report to the IOC Assembly and the IOC Executive Council on any subventions, contributions, grants, gifts or bequests accepted.

Article 4 - Budget

4.1 The Secretary shall prepare, in a form to be determined by the IOC Assembly, a biennial programme and budget and shall submit it to the IOC Assembly for approval.

4.2 The appropriations voted in the budget shall constitute an authorization to the Secretary to incur obligations and to make expenditures for the purposes for which the appropriations are voted and up to the amounts so voted.

4.3 The Secretary is authorized to transfer funds between activities under the same appropriation line. The Secretary may be authorized by the IOC Assembly to transfer funds, when necessary, between appropriation lines within the limits established by the Appropriation Resolution voted by the IOC Assembly and shall report to the IOC Executive Council on all such transfers.

4.4 The Secretary is required to maintain obligations and expenditures within the level of the actual resources that become available to the General Account mentioned in Article 5.1 below.

4.5 Appropriations shall remain available for obligation during the financial period to which they relate.

4.6 The Secretary shall make allotments and any modifications thereon, within the limits of the Appropriation Resolution, which shall be communicated, in writing, to the officials authorized to incur obligations and make payments.

4.7 Appropriations shall remain available for 12 months following the end of the financial period to which they relate to the extent that they are required to discharge obligations for goods supplied and services rendered in the financial period and to liquidate any other outstanding legal obligations of the financial period.

4.8 At the end of the 12-month period provided for in Article 4.7 above, the then remaining unspent balance of obligations retained shall revert to the General Account mentioned in Article 5.1 below.

Article 5 - The General Account

5.1 There shall be established a General Account, to which shall be credited the income of IOC as described in Article 3 above and which shall be used to finance the approved budget of IOC.

5.2 The balance remaining in this General Account shall be carried forward from one financial period to the next.

5.3 The uses to which this balance may be put shall be determined by the IOC Assembly.

Article 6 - Trust Funds, Reserve and Subsidiary Special Accounts

6.1 In addition to a Working Capital Fund, the Secretary shall establish a Reserve Fund to cover end-of-service indemnities and other related liabilities; the Fund shall be reported to the IOC Assembly at the time of the budget approval.

6.2 Trust Funds, Subsidiary Special Accounts and any other Reserve Accounts may be established by the Secretary, who shall report to the IOC Assembly and the IOC Executive Council.

6.3 The Secretary may, when necessary, in connection with the purpose of a Trust Fund, Reserve or Subsidiary Special Account, prepare special financial regulations to govern the operations of these funds or accounts and shall report thereon to the IOC Assembly and the IOC Executive Council. Unless otherwise provided these funds and accounts shall be administered in accordance with these Financial Regulations.

Article 7 - Accounts

7.1 The UNESCO Comptroller shall maintain such accounting records as are necessary and shall prepare, for submission to the IOC Assembly and the IOC Executive Council, the biennial accounts showing, for the financial period to which they relate:

(a) the income and expenditure of all funds;

(b) the budgetary situation including:

(i) original appropriations;

(ii) the appropriations as modified by any transfers;

(iii) the amounts charged against these appropriations;

(c) the assets and liabilities of IOC.

7.2 The Secretary shall also give such other information as may be appropriate to indicate the current financial position of IOC.

7.3 The biennial accounts of IOC shall be presented in dollars of the United States of America. Accounting records, may, however, be kept in such currency or currencies as the Secretary may deem necessary.

7.4 Appropriate separate accounts shall be maintained for all Trust Funds, Reserve and Subsidiary Special Accounts.

Article 8 - External audit

The audited accounts of IOC, which constitute an integral part of the statement of the financial position of UNESCO, and the report of the External Auditor of UNESCO on IOC, shall be submitted to the IOC Assembly for approval.

Article 9 - General provision

Unless otherwise provided in these Regulations this Special Account shall be administered in accordance with the Financial Regulations of UNESCO.

APPENDIX IX

DBCP DATA POLICY

(as adopted at DBCP-XXV)

Data access policy

The DBCP encourages timely, free and unrestricted access to data. Real time data sharing is achieved via the Global Telecommunications System[1] of WMO. DBCP also cooperate with data contributors to ensure that data can be accepted into and be used through the NODC and WDC network of the IOC/IODE as long-term repositories for oceanographic data and associated metadata.

At present, all of the archiving agencies and many of the operational and research bodies make provision for the release of drifter data to scientific and other customers. In particular, many data are available via the web, either in the form of track plots or as datasets. In many cases, the policies relating to the release and use of these data are not immediately clear. The Panel is seeking clarification from these agencies, and from its action groups, with a view to developing a coordinated data access policy for drifter data within the letter and the spirit of the WMO data exchange policy defined in WMO Congress Resolution 40 (Cg-XII) and the IOC oceanographic data exchange policy defined in IOC Assembly Resolution XXII-6.

Data archiving

Drifter data inserted on the GTS are routinely archived by ISDM, the IODE Responsible National Oceanographic Data Centres (RNODC) for Drifting Buoys. The AOML DAC archives all data from the GDP, and any other drifter data that are made available to it. The Panel and its action groups will actively encourage all buoy operators to forward their data to one or other of these responsible global archives.

Instrumental Metadata

There has been an increasing demand for instrumental metadata in recent years to serve a number of applications - and climate studies in particular. The DBCP has established its own metadata collection system at JCOMMOPS and is participating in the water temperature metadata Pilot Project (META-T).

Quality control

Quality control procedures are in place to ensure the usefulness of real time data and also of data archives. A well-defined feedback mechanism is required to control real time data (see the DBCP QC Guidelines[2]).

More information :

- WMO data policy Resolution 40[3]
- IOC Oceanographic Data Exchange Policy [4]
- CLIVAR data policy[5]

---

1 : http://www.jcommops.org/DBCP/1gtsinfo.html
2 : http://www.jcommops.org/dbcp/2qgd.html
3 : http://www.wmo.int/pages/prog/www/ois/Operational_Information/AdditionalDataProducts/02_Resolution%2040.pdf
4 : http://www.ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=338
5 : http://www.clivar.org/data/data_policy.php

APPENDIX X

Current key DBCP personnel
(as elected / appointed at DBCP-XXVI)

NORTH AMERICA
Mr Al WALLACE *(Chairperson)*
Director
Weather and Environmental Operations
201-401 Burrard Street
VANCOUVER, BC V6C 3S5
Canada
Tel.: +1 604 664 9090
Fax: +1 604 664 9004
E-mail: al.wallace@ec.gc.ca

ASIA
Dr R. VENKATESAN *(Vice-Chairperson)*
Group Head-Ocean Observation Systems
National Institute of Ocean Technology
Pallikaranai
Velachery - Tambaram Road
CHENNAI 600100
India
Email: dr.r.venkatesan@gmail.com

EUROPE
Mr Jean Rolland *(Vice-Chairperson)*
Météo-France
Centre de Météorologie Marine (CMM)
13 rue du Chatellier
BP 90411
29604 BREST
France
Tel: +33 2 98 22 18 53
Fax: +33 2 98 22 18 49
Email: jean.rolland@meteo.fr

SOUTHERN HEMISPHERE
Mr Johan STANDER (Vice-Chairperson)
Regional Manager
P O Box 21
Cape Town International Airport,
CAPE TOWN 7525
South Africa
Tel: +27 21 934 0836
Fax: +27 21 934 4590
Email: johan.stander@weathersa.co.za

TECHNICAL CO-ORDINATOR
JCOMMOPS
8-10 rue Hermès
Parc Technologique du Canal
F-31520 RAMONVILLE SAINT AGNE
France
Tel.: +33 5 61 39 47 82
Fax: +33 5 61 75 10 14
E-mail: support@jcommops.org

FINANCE ADVISOR
Mr A. T: Frank GROOTERS
Consultant,
Royal Netherlands Meteorological Institute
Wilhelminalaan 10, Postbus 201
3730 AE DE BILT
The Netherlands
Tel.: +31 30 220 6691
Fax: +31 30 221 1195
E-mail: frank.grooters@knmi.nl

IOC SECRETARIAT
Dr Boram LEE
Operational Observations and Services
Intergovernmental Oceanographic
Commission (IOC)/ UNESCO
1, rue Miollis
75732 PARIS CEDEX 15
France
Tel.: +33 1 45 68 39 88
Fax: +33 1 45 68 58 12
E-mail: b.lee@unesco.org

WMO SECRETARIAT
Mr Etienne CHARPENTIER
Observing Systems Division
Observing and Information Systems Department
World Meteorological Organization
7 bis, avenue de la Paix
Case postale No. 2300
CH-1211 GENEVE 2
Switzerland
Tel.: +41 22 730 8223
Fax: +41 22 730 8128
E-mail: ECharpentier@wmo.int

ANNEX IV

ACTION GROUP SUMMARIES

1. EUCOS SURFACE MARINE PROGRAMME OF THE NETWORK OF EUROPEAN METEOROLOGICAL SERVICES (E-SURFMAR)

Area of interest: Ocean areas potentially affecting NWP over European countries. This covers the North Atlantic Ocean North of 10°N and the Mediterranean Sea (90°N-10°N; 70°W - 40°E).

Targeted horizontal resolution: 250 km x 250 km, 150 drifting buoys, 4 moorings

Variables measured: Drifting buoys: Air pressure, wind, air temperature and SST
Moorings: air pressure, wind, air temperature, SST, waves (directional spectra), relative humidity and SSS

Manager, E-SURFMAR: Mr Pierre Blouch, Météo-France

Chairperson, Data Buoy Technical Advisory Group (DB-TAG):

Mr Jon Turton, UK Met Office

Data Buoy Manager: Mr Jean Rolland, Météo-France

Website: http://esurfmar.meteo.fr

Meetings: DB-TAG meets once a year (May)

Status (September 2010):

2. GLOBAL DRIFTER PROGRAMME (GDP)

Area of interest:	The global ocean
Targeted horizontal resolution:	5 degree x 5 degree (1250 units)
Variables measured:	Basic: surface velocity, SST; other: surface pressure, wind, salinity and sub-surface temperature profiles
Directors:	Mr Rick Lumpkin, NOAA / AOML, USA Mr Peter Niiler, SIO, USA
Data Assembly Center Manager:	Ms Mayra Pazos, NOAA / AOML, USA
Operations Manager:	Mr Shaun Dolk, NOAA / AOML, USA
Website:	http://www.aoml.noaa.gov/phod/dac/gdp.html
Meetings:	As the need arises
Status (August 2010):	

3. INTERNATIONAL ARCTIC BUOY PROGRAMME (IABP)

Area of Interest:	Central Arctic Ocean and its marginal seas, excepting Exclusive Economic Zones, where agreements of the Coastal States have not been obtained
Variables measured:	Basic variables: atmospheric pressure and air temperature Other variables: atmospheric pressure tendency, wind speed and direction, snow, and sea-ice properties, as well as sub-surface oceanographic characteristics
Targeted horizontal resolution:	250 km x 250 km
Chairperson:	Ms Christine Best, Meteorological Services Canada (MSC)
Coordinator:	Mr Ignatius Rigor, University of Washington, USA
Website:	http://iabp.apl.washington.edu/
Meetings:	Annual meetings in spring/early summer of the Northern Hemisphere

Status (September 2010):

4. INTERNATIONAL BUOY PROGRAMME FOR THE INDIAN OCEAN (IBPIO)

Area of Interest:	Indian Ocean North of 55°S and between 25°E and 120°E
Targeted horizontal resolution:	500 km x 500 km
Variables measured:	Drifting buoys: Air pressure, wind, air temperature and SST Moorings: air pressure, wind, air temperature, SST, waves, relative humidity and SSS
Chairperson:	Mr Graeme Ball, BOM, Australia
Vice-chairperson:	Mr Shaun Dolk, NOAA/AOML, USA
Coordinator:	Mr Jean Rolland, Météo-France
Website:	http://www.shom.fr/meteo/ibpio
Meetings:	Annual meetings in conjunction with DBCP meetings
Status (September 2010):	

5. WCRP-SCAR INTERNATIONAL PROGRAMME FOR ANTARCTIC BUOYS (IPAB)

Area of interest:	South of 55°S and that region of the Southern Ocean and Antarctic marginal seas within the maximum seasonal sea-ice extent
Targeted horizontal resolution:	500 km x 500 km
Variables measured:	Basic variables: Buoy position, atmospheric pressure and SST Other variables: air temperature, ice and / or snow temperature, atmospheric pressure tendency, wind, snow and sea-ice properties and oceanographic variables
Chairperson:	Mr Shuki Ushio, NIPR, Japan
Coordinator:	Mr Christian Haas, University of Alberta, Canada
Website:	http://www.ipab.aq/
Meetings:	Biennial meetings

The IPAB was established in 1994 became an Action Group of the Panel in October 1994.

6. INTERNATIONAL SOUTH ATLANTIC BUOY PROGRAMME (ISABP)

Area of Interest:	South Atlantic Ocean north of 55S plus Tropical Atlantic Ocean.
Targeted horizontal resolution:	5° x 5°
Variables measured:	Air pressure, SST, sea-surface velocity
Chairperson:	Ariel Troisi, SHN, Argentina
Coordinator:	Ms Mayra Pazos, AOML-NOAA, USA and Ms Lithakazi Mkatshwa, SAWS, South Africa
Website:	http://www.jcommops.org/dbcp/isabp/index.html
Meetings:	Meetings every each year, normally in May-July
Status (September 2010):	

7. DBCP-PICES NORTH PACIFIC DATA BUOY ADVISORY PANEL (NPDBAP)

Area of Interest:	North Pacific Ocean and marginal seas generally north of 30°N
Targeted horizontal resolution:	5° x 5°
Variables measured:	Air Pressure, SST, sea-surface velocity
Co-chairpersons:	NE Pacific: Al Wallace, MSC, Canada NW Pacific: To be proposed by PICES
Coordinator:	Mr Shaun Dolk, NOAA / AOML, USA
Website:	http://npdbap.noaa.gov/
Meetings:	Yearly meetings usually held in conjunction with DBCP meetings.

Status (September 2010):

8. TROPICAL MOORED BUOYS IMPLEMENTATION PANEL (TIP)

Area of interest:	The tropical ocean regions as part of an integrated approach to observing the climate system to address the research needs of CLIVAR and the operational strategies of GOOS and GCOS. Pacific Ocean: 8°N to 8°S; Atlantic Ocean: 20°N to 10°S; Indian Ocean: 15°N to 25°S.
Targeted horizontal resolution:	Tropical Pacific Ocean: 76 moorings ; Tropical Atlantic Ocean: 18 moorings ; Tropical Indian Ocean: 47 moorings
Variables measured:	Surface: wind, air temperature, relative humidity, SST and SSS on all surface moorings. Air pressure, precipitation, short wave radiation, long wave radiation on some surface moorings. Sub-surface: temperature profiles down to 500m on all surface moorings; Salinity profiles down to 120m on some surface moorings; Current velocity on some moorings.
Chairperson:	Mr Mike McPhaden, PMEL, USA
Coordinator:	Mr Paul Freitag, PMEL, USA
Website:	http://www.pmel.noaa.gov/tao/proj_over/tip/newpanel.html
TAO / TRITON:	
PIRATA:	
RAMA:	

9. THE OCEAN SUSTAINED INTERDISCIPLINARY TIMESERIES ENVIRONMENT OBSERVATION SYSTEM (OceanSITES)

Area of interest:	The global ocean
Targeted horizontal resolution:	89 reference stations
Variables measured:	Conductivity, salinity, water temperature, air relative humidity, air temperature, air pressure, wind, precipitations, radiation, water pressure, depth, currents, fluxes, dissolved oxygen, fluorescence, pCO2
Co-chairpersons, Steering Team:	Mr Bob Weller, WHOI, USA Mr Uwe Send, SIO, USA
Technical Co-ordinator:	Ms Hester Viola (Project Office)
GDACs:	IFREMER (France) and NOAA / NDBC (USA)
Website:	http://www.oceansites.org/
Status (September 2010):	

10. THE INTERNATIONAL TSUNAMETER PARTNERSHIP

Name of Action Group	**International Tsunameter Partnership (ITP)**
Date of report	27 Sep 2010
Overview and main requirements addressed	The International Tsunameter Partnership was established under the auspices of the IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (IGC/IOTWS). Its purpose is to support the establishment, effectiveness and on-going viability and enhancement of tsunami detection and warning systems using deep ocean monitoring stations (tsunameters). Its members are active in areas of tsunameter system development and qualification for moored and cabled systems; observation network establishment; data exchange and operational practices. Sustainability, including vandalism responses, will become an important focus.
Area of interest	All ocean basis or seas that are tsunami-vulnerable, with tsunami warning centres. There is a natural concentration on the Indian Ocean region because of the extent of new observation networks and the diversity of tsunameter product types in the IO and nearby east Asian seas.
Type of platform and variables measured	Moored Buoys: Sea Level (ocean column height): with some platforms also reporting met parameters and sub-surface parameters (product dependent) Cabled Systems: Sea `Level (ocean column height) plus wide variety of node-dependent ocean, seismic and biogeochemical parameters.
Targeted horizontal resolution	Not applicable – purpose-designed networks matched to threat sources and warning requirements
Chairperson/Managers	Chair: Ken Jarrott, Australian Bureau of Meteorology Vice Chair: Ridwan Djamaluddin – BPPT - Indonesia
Coordinator	Not applicable
Participants	Australia, Germany, India, Indonesia, Malaysia, USA, China, Republic of Korea, Thailand, with suppliers (USA, Italy, UK, Norway, and national R&D agencies). Expansion to new national network operators (Russia, Oman, Cyprus) to be welcomed in coming year.
Data centre(s)	National operator agencies for buoys with restricted national data distribution. NOAA – NDBC for Pacific Ocean, Caribbean and SW Atlantic DART ™ stations.
Website	NDBC website www.ndbc.noaa.go for the large network of DART ™ and DART-derivative products with global GTS data distribution. National warning centre websites where applicable.

Meetings	ITP meets once a year, recently in conjunction with DBCP. ITP-5: Paris, Sep 2009; Informal meeting Banda Aceh, Indonesia, Apr 2010; ITP-6: Oban, Scotland, 1-2 Oct 2010
Current status (mid-2010)	54 tsunameters are operational across all ocean basins. The majority are in the Pacific Ocean, with12 in the Indian Ocean region.
Summary of plans for 2011	6 new stations planned in Indian Ocean and east Asian seas (apart from restoration of stations at previously established sites). Global data exchange from non-DART platforms implemented. Sustaining activity for global networks across all basins ~ 80-90 sites

ANNEX V

REPORT FROM THE EXECUTIVE BOARD MEETING

(Oban, United Kingdom, 28 October 2010)

1. The executive board of the Data Buoy Cooperation Panel met at SAMS on Tuesday, September 28, 2010. In attendance were Al Wallace (Chairperson and Vice-Chairperson for North America), Ken Jarrott (Vice-Chairperson for the Southern Hemisphere), Jean Rolland (Vice-Chairperson for Europe), Sydney Thurston (member at large), Frank Grooters (Finance Advisor) , Etienne Charpentier (Secretariat – WMO), Boram Lee (Secretariat – IOC) and Hester Viola (Technical Coordinator).

2. The Board considered a number of items including representation from manufacturers, succession planning for Board members, recruitment of the technical coordinator, and budget items.

3. Representation from manufacturers

The Board believes that the input from manufacturers is valuable. Consequently, an invitation is issued to manufacturers to nominate one of their group to attend Executive Board meetings as an observer.

4. Succession Planning for Executive Board

In order to enable continued operation of the Board, and appropriate geographic representation, the Board and the Secretariat develop a list of candidates proposed for election. To ensure that the process is open and transparent, the Secretariat will both propose candidates and solicit additional nominations.

For this year, the Vice-Chair for Asia is vacant, and Ken Jarrott has indicated that he will not seek another term as Vice-Chair for the Southern Hemisphere. The other Board members have indicated that they are willing to continue, should they be elected by the Panel.

5. Open and transparent

The Secretariat noted the following candidates have indicated their willingness to stand for election:

Jean Rolland	Vice-Chairperson for Europe
Dr. Venkatesan	Vice-Chairperson for Asia
Mr. Johan Stander	Vice-Chairperson for the Southern Hemisphere
Mr. Al Wallace	Chairperson, and Vice-Chairperson for North America

At the meeting of the Panel, the Secretariat will invite members to propose other candidates to the Secretariat in advance of the elections.

6. Recruitment of the Technical Coordinator

The IOC Secretariat reported on the staffing process for the new coordinator. To establish and classify the position took a substantial period of time, but the position has been advertised, and the application closed. Of the 158 initial applications, the IOC process has filtered to a list of 17 candidates for the next stage. The selection board will consists of Etienne, David Meldrum, Boram and a representative from IOC human resources. It is hoped that the short list of 4 candidates will be compiled in early October with the interviews to be held shortly thereafter. It is hoped to have a new technical coordinator hired and in place before Christmas.

7. Budget

Frank Grooters reviewed the state of the Trust Fund, including available funds, current expenditures and proposed allocations. He noted that the trust fund had adequate funding for this financial year, but that there would need to be some adjustments between line items. It was pointed out that the trust fund needed stable funding and costs were increasing so there was a need to seek both increased contributions from DBCP members and to seek contributions from other countries that participate in Panel activities. The budget proposal for this financial year and the next two was endorsed. The following proposals were supported:

Line item	***Maximum expenditure***	***Comment***
Second Western Indian Ocean Capacity Building workshop	$ 25K	
Regional DBCP meeting in Asia	$ 20K	Proposal to be made by Venkat to the EB
SVP Inter-comparison for the 5 manufacturers	$ 12K	
PP Iridium	$ 2K	Telecommunications expense
PP Argos-3	$ 5K	Buoy shipping
PP WET plus PP-WMD	$ 10K	2 attendees
PP HRSST proposed	$ 7K	$7k per year over 3 years to support calibration & post-calibration activities
Support for Iridium upgrades in poor timeliness areas	$ 5K	10 buoys in South Pacific
Review and updating of WMO and IOC Publications	$ 0K	
Missions of the chair and other DBCP representatives to meetings of interest	$ 24K	12k plus 12k
JCOMMOPS IT support and GIS upgrade – maximum	$ 22K	and the year after

8. To address the issue of new contributions, the Secretariat was asked by the Panel to write to a number of countries (Brazil, China, Republic of Korea, Japan, etc.) and request funding.

9. The meeting then concluded.

ANNEX VI

INTERIM STATEMENTS OF ACCOUNT

TABLE 1: IOC STATEMENT OF ACCOUNT FOR THE PERIOD OF 1 JANUARY 2010 ~ 31 JULY 2010

UNESCO

BFM/FRA 7/ 469

26 August 2010

To: IOC
(Attn: Ksenia Yvinec)

From: Chief Accountant

Subject: **IOC Special Account 193DBC2000**

As requested, please find attached a Financial Report as at 31 July 2010 for the above-mentioned fund.

John Haigh

Cc: BFM/PRG
SC/AO

United Nations
Educational, Scientific and
Cultural Organization

193DBC2000

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

DBCP/SOOP Technical Coordinator: Salary, Missions and Other Costs

(Statement of Account from 1 January 2010 to 31 July 2010)

(Expressed in US Dollars)

Cash Balance Brought Forward as at 1 January 2010			**131,480.52**
Funds Received from:	NOAA		105,000.00
Deduct:			
Disbursements			
Salary of Ms Hester Viola:		1/2010 - 6/2010	46,995.79
Sub-contract :	Logistical Support		16,464.27
Programme Support Costs			6,346.02
Cash balance as at 31 July 2010			**166,674.44**
Unliquidated Obligations			3,477.10
Funds available as at 31 July 2010			**163,197.34**

Note: The IOC Statement for the period 1 January 2009 to 31 December 2009 can be found in the DBCP Annual Report for 2009.

TABLE 2: WMO INTERIM STATEMENT OF ACCOUNT FOR THE PERIOD 1 JANUARY 2010 TO 31 AUGUST 2010

World Meteorological Organization
Organisation météorologique mondiale

Secrétariat
7 bis, avenue de la Paix – Case postale 2300 – CH 1211 Genève 2 – Suisse
Tél.: +41 (0) 22 730 81 11 – Fax: +41 (0) 22 730 81 81
wmo@wmo.int – www.wmo.int

TEMPS • CLIMAT • EAU
WEATHER • CLIMATE • WATER

DATA BUOY CO-OPERATION PANEL

Interim Statement of income and expenditure
For the period 1 January to 31 July 2010
Amounts in United States dollars

1. Balance brought forward , 1 January 2010				333,109
2. Income:				
2.1 Contributions received				163,788
3. Total available funds during reporting period				496,897
4. Expenditure				
	Actual	Obligations/ Requisitions	Total	
4.1 Direct project costs				
4.1.1 Other consultancy services	-	38,800	38,800	
4.1.2 Travel of staff to other WMO meetings	1,747	1,244	2,991	
4.1.3 Travel - other representatives ad hoc travel	22,714	6,654	29,368	
4.1.4 Travel - other representatives to attend other WMO meetings	1,823	-	1,823	
4.1.5 Ad hoc travel of staff to attend non-WMO meetings	3,321	-	3,321	
4.1.6 Other specialised services (JCOMMOPS-IS; Iridium Pilot Proj SAMS)	3,339	15,750	19,089	
4.1.7 DBCP CB Workshop (Cape Town, 19-23 April 2010)	-	43,000	43,000	
4.1.8 Miscellaneous servivces (SAMS)	8,038	11,760	19,798	
4.1.9 Total direct costs	40,982	117,208	158,190	
4.2 Indirect project costs				
4.2.1 Support costs at 3%	1,229	3,516	4,745	
4.2.2 Bank charges	104	-	104	
4.2.3 Exchange differences	10,358	-	10,358	
4.2.4 Total indirect costs	11,691	3,516	15,207	
4.3 Total project expenditure	52,673	120,724		173,397
5. Balance of fund at 31 July 2010				**323,500**

Contributions received

Canada	47,307
CLS /Service Argos, France	55,000
France -CNRM Meteo France	53,981
India	3,000
South Africa	4,500
Total	163,788

Certified correct:

Luckson Ngwira
Chief, Finance Division
20 August 2010

Notes:

The WMO Statement for the period 1 January 2009 to 31 December 2009 can be found in the DBCP Annual report for 2009.

ANNEX VII

TABLE OF NATIONAL CONTRIBUTIONS FOR 2011

Budget / Country	JCOMMOPS	DBCP	OceanSITES	SOT	JTA	COMMENT
Australia	EUR 11,700		USD 5,000			JCOMMOPS: including DBCP and SOT
Canada	CAD 25,000					JCOMMOPS, including DBCP and SOT
CLS					USD 65,000	USD 15,00 for JTA Chairperson USD 30,000 for the JTA-Executive Committee[1] USD 10,000 for the IOC Secretariat (paid directly to IOC) USD 10,000 for the WMO Secretariat
E-SURFMAR		EUR 40,000				Belgium, Croatia, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom
Germany				EUR 3,600		Support to SOOP
India		EUR 2,200				
New Zealand	Eur 1,800					JCOMMOPS, including DBCP and SOT
South Africa		EUR 3,600				
USA		USD 80,000		USD 25,000		Contribution made to IOC

1 : Unspent JTA EC contribution from the previous year are deduced from this amount.

ANNEX VIII

BUDGET FOR THE NEXT YEAR

(finalized interim accounts based on WMO and IOC statements in Annex VI, and planned income / expenditures for the remainder of the year, 2010 and 2011)

TABLE 1

INTERIM BUDGET 2010 BASED ON WMO and IOC ACCOUNTING FOR 2008-2010 IN USD as at 31 July 2010

	Actual			Actual			Actual			Budget			Budget		
Item	**2008 Receipts**	**Obligations**	**Balance at 31 Dec.**	**2009 Receipts**	**Obligations**	**Balance at 31 Dec.**	**2010 Receipts**	**Obligations**	**Balance at 31 Jul**	**2011 Receipts**	**Obligations**	**Balance at 31 Dec.**	**2012 Receipts**	**Obligations**	**Balance at 31 Dec.**
DBCP															
Carried over	431,261			411,300			464,590			490,175			377,735		
Contributions	159,189			220,439			268,788			288,560			288,560		
Adjustment	13,295			7,984			-10,358								
Expenditure															
Technical Coordination		93,747			95,418			46,996			100,000			100,000	
TC Relocation											10,000				
Consultancy								13,800							
JTA (Chair, EC, Secretariat)		15,263			15,824			26,771			65,000			65,000	
Travel DBCP		33,737			34,157			20,766			43,000			43,000	
Travel SOT[§]					2,330						20,000			20,000	
Bank Charges/Support Cost		1,921			11,305			11,195			12,500			12,500	
IOC															
Marine Programme															
JCOMMOPS		20,807			16,010			19,803			68,500			58,500	
Outreach and Publications								10,000			2,000			2,000	
Iridium Upgrades S. Pacific								0			5,000			5,000	
New Technical Evaluation		25,004			2,875			35,548			36,000			30,000	
Capacity Building		1,966						47,966			25,000			25,000	
Contingency											44,000			50,000	
Collaborative Arrangements					-2,786						20,000			20,000	
Total DBCP	**603,745**	**192,445**		**639,723**	**175,133**		**723,020**	**232,845**		**778,735**	**451,000**		**666,295**	**431,000**	
Unliquidated obligations		31,606			20,708			3,477							
Balance of DBCP Trust Fund			**379,694**			**443,882**			**486,698**			**327,735**			**235,295**
Contingency												***50,000***			***50,000***
Carried over			**411,300**			**464,590**			**490,175**			**377,735**			**285,295**

Rough estimation

Rough estimation

based on Final Statement as at 31 December 2009 and decisions at DBCP-26

TABLE 2

Interim Statement for the 2010 DBCP Trust Fund: Income and Expenditure in USD
(based on WMO and IOC Finance Information as at 31 July 2010)

	Final Statement 1 January-31 Dec 2009				Interim Statement 1 January-31 July 2010				Estimated budget		Estimated budget	
	Jan-Dec 2009		Estimated budget		Jan-July		Estimated budget		Jan-Dec 2011		Jan-Dec 2012	
DBCP	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC
Receipts												
Brought Forward	261,418	149,882	115,519	249,695	333,109	131,481	74,729	229,695	939	209,695	-89,851	188,195
Contributions (listed below)	115,439	105,000	133,710	105,000	163,788	115,000	173,710	115,000	173,710	115,000	173,710	115,000
Adjustment	7,984				-10,358							
Total Receipts	**384,841**	**254,882**	**249,229**	**354,695**	**486,539**	**246,481**	**248,439**	**344,695**	**174,649**	**324,695**	**83,859**	**303,195**
Expenditure/Oblig'ns												
Consultancy					13,800							
JTA (Chair, EC, Secr)	15,824		15,000		26,771	10,000	55,000	10,000	55,000	10,000	55,000	10,000
Tech Coordination		95,418		100,000		46,996		100,000		100,000		100,000
TC Relocation							5,000		10,000			
JCOMMOPS logistic supp		16,010		15,000		16,464		15,000		16,500		16,500
IOC			0				0		0		0	
Marine Programme												
Travel/Missions												
Tech Coordinator		2,210	20,000		9,734		20,000		20,000		20,000	
DBCP Chairman	13,487		21,000		11,032		21,000		21,000		21,000	
DBCP Representatives	18,460		2,000				2,000		2,000		2,000	
Bank Charges/SuppCost/Other	1,542	9,763	2,500	10,000	4,849	6,346	2,500	10,000	2,500	10,000	2,500	10,000
Projects & Activities												
Outreach and Publications			2,000		10,000		10,000		2,000		2,000	
JCOMMOPS Data Devt			7,000				7,000		22,000		12,000	
JCOMMOPS IS migration					3,339		30,000		30,000		30,000	
SOT	2,330		0	0			20,000		20,000		20,000	
Iridium upgrades S. Pacific							0		5,000		5,000	
New Technical Evaluation	2,875		50,000		30,000		30,000		36,000		30,000	
Capacity Building	-2,786		25,000		25,000		25,000		25,000		25,000	
Contingency*			30,000	20,000	28,514		30,000	20,000	24,000	20,000	30,000	20,000
Collaborative Arrangement			30,000				20,000		20,000		20,000	
Total Expenditure	**51,732**	**123,401**	**204,500**	**145,000**	**163,039**	**79,806**	**277,500**	**155,000**	**294,500**	**156,500**	**274,500**	**156,500**
Unliquidated Obligations		*20,708*				*3,477*						
Balance of Fund	**333,109**	**110,773**	**44,729**	**209,695**	**323,500**	**163,198**	**-29,061**	**189,695**	**-119,851**	**168,195**	**-190,641**	**146,695**
Contingency carry over			**30,000**	**20,000**			**30,000**	**20,000**	**30,000**	**20,000**	**30,000**	**20,000**
Carried over	**333,109**	**131,481**	**74,729**	**229,695**	**323,500**	**166,675**	**939**	**209,695**	**-89,851**	**188,195**	**-160,641**	**166,695**
Contributions												
CLS/Argos Inc												
Australia # 1	21,567		21,350				21,350		21,350		21,350	
Canada $	19,085		24,250		47,307		24,250		24,250		24,250	
CLS	15,825		15,000		55,000	10,000	55,000	10,000	55,000	10,000	55,000	10,000
E-SURFMAR *	51,151		58,000		53,981		58,000		58,000		58,000	
France(incl E-SURFMAR)*												
Germany #	5,100		5,000				5,000		5,000		5,000	
Greece												
Iceland												
India #			3,000		3,000		3,000		3,000		3,000	
Ireland												
Japan												
Netherlands												
New Zealand $ 1	2,711		2,610				2,610		2,610		2,610	
Norway												
South Africa #			4,500		4,500		4,500		4,500		4,500	
United Kingdom												
United States of America		105,000		105,000		105,000		105,000		105,000		105,000
WMO												
Total	**115,439**	**105,000**	**133,710**	**105,000**	**163,788**	**115,000**	**173,710**	**115,000**	**173,710**	**115,000**	**173,710**	**115,000**
	1=including 2010 contr.		E				E		E		E	

E=Estimate

* Contingency for overspending
Nw. Techn. Evaluation ($5548)
Cap. Building ($22966)

TABLE 2

TABLE 3

ARGOS JOINT TARIFF AGREEMENT (JTA) EXECUTIVE COMMITTEE BUDGET

JTA Budget for 2010 (as of 22/11/2010)

	2010		2011		
	Contributions	**Spent**	**Brought forward**	**Contributions**	**Budget**
JTA Chair	15000	15000	0	15000	15000
JTA Executive Committtee	30000	9948	20052	9948	30000
WMO Secretariat	10000	10000	0	10000	10000
IOC Secretariat	10000	10000	0	10000	10000
TOTAL	**65000**	**44948**	**20052**	**44948**	**65000**

JTA EC expenditures:

Mission J. Stander, Sydney, 04/2010	4273
Mission E. Charpentier, Sydney, 04/2010	3321
Mission J. Stander, Oban, 10/2010	2563
TOTAL	**10157**

WMO Secretariat expenditures:

Mission, G. Reed, IPET-DMI, 04/2010	1823
TOTAL	**1823**

ANNEX IX

STATUS REPORTS AND MAPS
(as of August 2010)

1. DBCP Status and highlights (as of August 2010)

1.1 Present status of the buoy network.

- For drifting buoys, there was a peak of over 1600 operational buoys on the GTS this June and a peak in the number of Barometer buoys in May which demonstrates a growth in the network and the strong commitment to maintaining the network.

Country	Drifting Buoys	Drifting Buoys on GTS
AUSTRALIA	35	28
BERMUDA	1	0
BRAZIL	4	0
CANADA	39	29
EUROPE	64	63
FRANCE	43	18
INDIA	28	15
ITALY	45	13
JAPAN	11	7
NEW ZEALAND	17	13
NORWAY	4	4
SOUTH AFRICA	4	3
SOUTH KOREA	4	2
SPAIN	7	0
UK	17	13
USA	1736	1382
Total	**2059**	**1588 (=77%)**

Table 1: Drifting Buoys (mostly reporting via Argos) and those on the GTS by country for July 2010

Country	Moored Buoys	Moored Buoys on GTS
AUSTRALIA	5	0
BR-FR-US	15	15
BRAZIL	1	1
CANADA	50	40
EUROPE	7	7
FINLAND	1	0
FRANCE	19	16
GERMANY	12	1
IRELAND	7	5
ITALY	15	14
JAPAN	26	14
PERU	1	0
SOUTH KOREA	7	7
SPAIN	21	11
UK	77	64
US-ASCLME	2	2
USA	319	234
USA-IN	10	9
USA-INDO	3	2
Total	**598**	**444 = (74%)**

Table 2: Moored Buoys reporting via Argos and those on the GTS by Country for July 2010.
N.B New Zealand 'Mooring' = stationary drifting buoy.

Year	Operational drifting buoys at JCOMMOPS	On GTS	% on GTS
July 1991	718	264	36.8%
July 1992	1162	474	40.8%
August 1993	1269	548	43.2%
September 1994	1246	587	47.1%
September 1995	1429	631	44.2 %
September 1996	1180	638	54.1%
September 1997	1159	581	50.1%
August 1998	1230	543	44.1%
July 1999	1270	728	57.3%
July 2000	1385	807	58.3%
July 2001	1338	763	57%
July 2002	919	459	49.9%
August 2003	1436	752	52.3%
July 2004	1727	950	55%
June 2005	2396	1157	48%
August 2006	2218	1237	55%
August 2007	2026	1295	64%
July 2008	2069	1377	66%
July 2009	2032	1405	69%
July 2010	2059	1588	77%

Table 3. Evolution of GTS Buoy data percentage

1.2 Amongst the drifting and moored buoys reporting on the GTS in BUOY message formats; the following variables were measured in June 2010. There was a bit of fluctuation in the number of drifting buoys reporting Air Pressure globally this year, with a peak of 697 in May 2010.

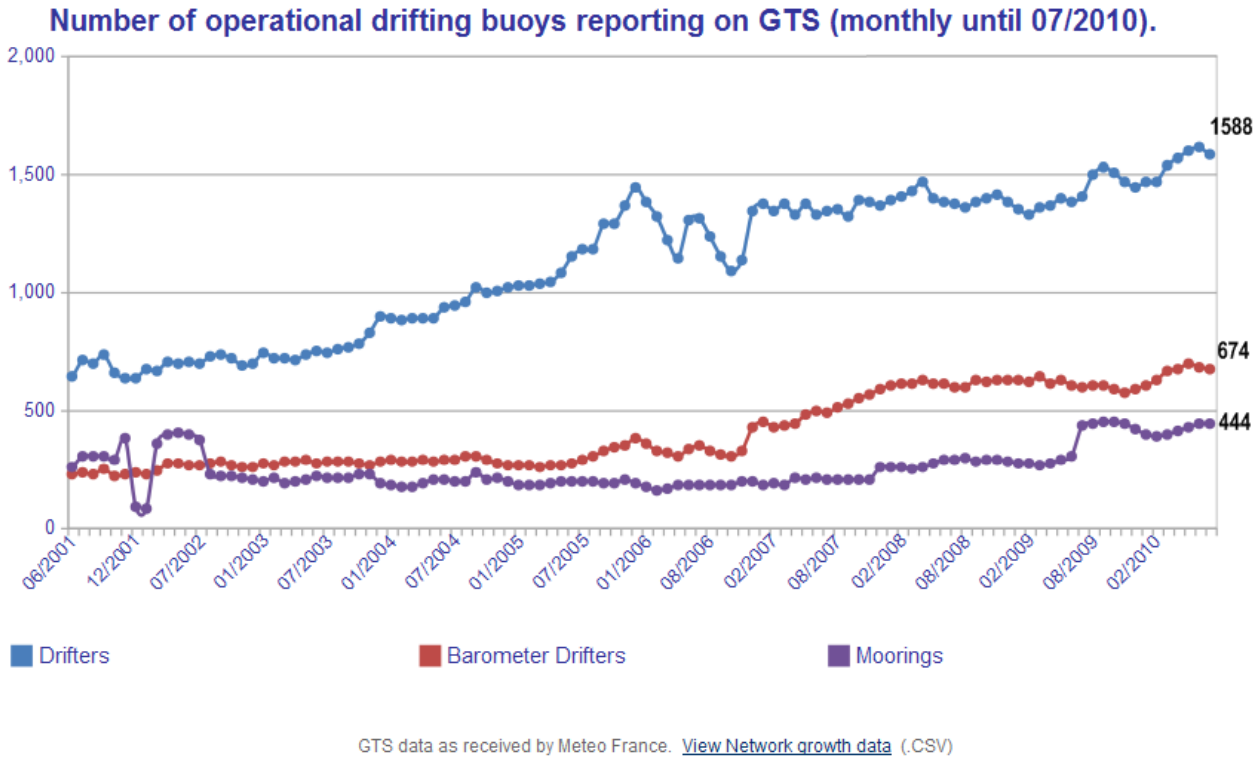
Variable	Any	Air P	P Tend.	SST	Air T	Hum.	Wind	Waves	Sub/T
Drifting Buoys	1588	674	632	1452	21	0	4	5	35
Moorings	444	269	233	324	326	197	310	284	88

Table 4. Drifting and Moored buoys – variables being reported on the GTS

1.3 The JCOMM Observations Coordination Group's Implementation Goals, is to eventually equip at least 700 drifting buoys with barometers outside of the tropics. This goal was not quite achieved this year. This July the number in the higher latitudes (above 30 degrees N/S) was ~513, compared with 470 last July. Deployment opportunities are a limiting factor in achieving the 700 requested by the JCOMM OCG.

1.4 The Global Drifter Center, supported by NOAA, continues to offer the Barometer upgrade opportunity for standard SVP drifters for ~$1000 per unit (see the following URL for details: http://www.jcommops.org/dbcp/svpb_upgrade.html).

1.5 Graph 1 shows the number of operational drifting buoys over the last 19 years, which increased from 2009-10 and well above the desired number of 1250.

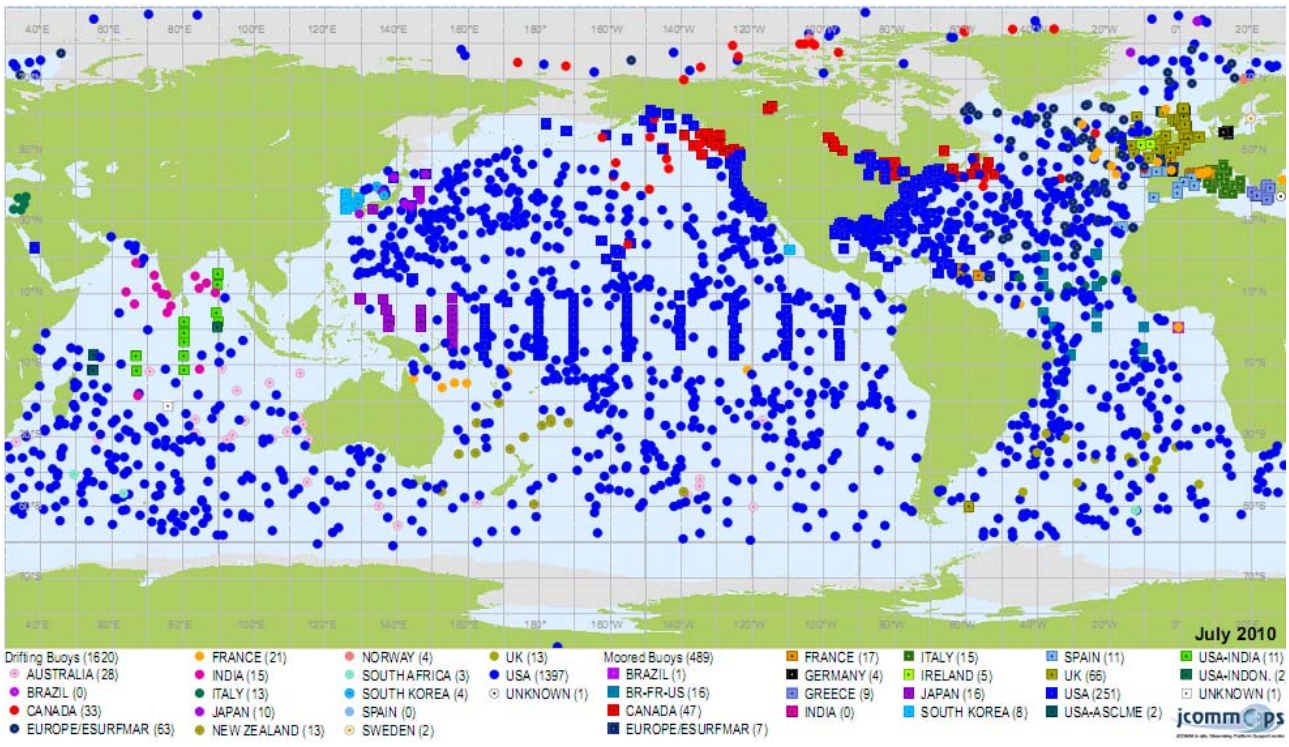


Graph 1: Monthly evolution of the number of operational drifting buoys reporting on GTS from January 2001 to July 2010 and those reporting air pressures. Operational Moored buoys are also included. (Data derived by statistics computed from GTS in situ marine data provided by Météo-France).

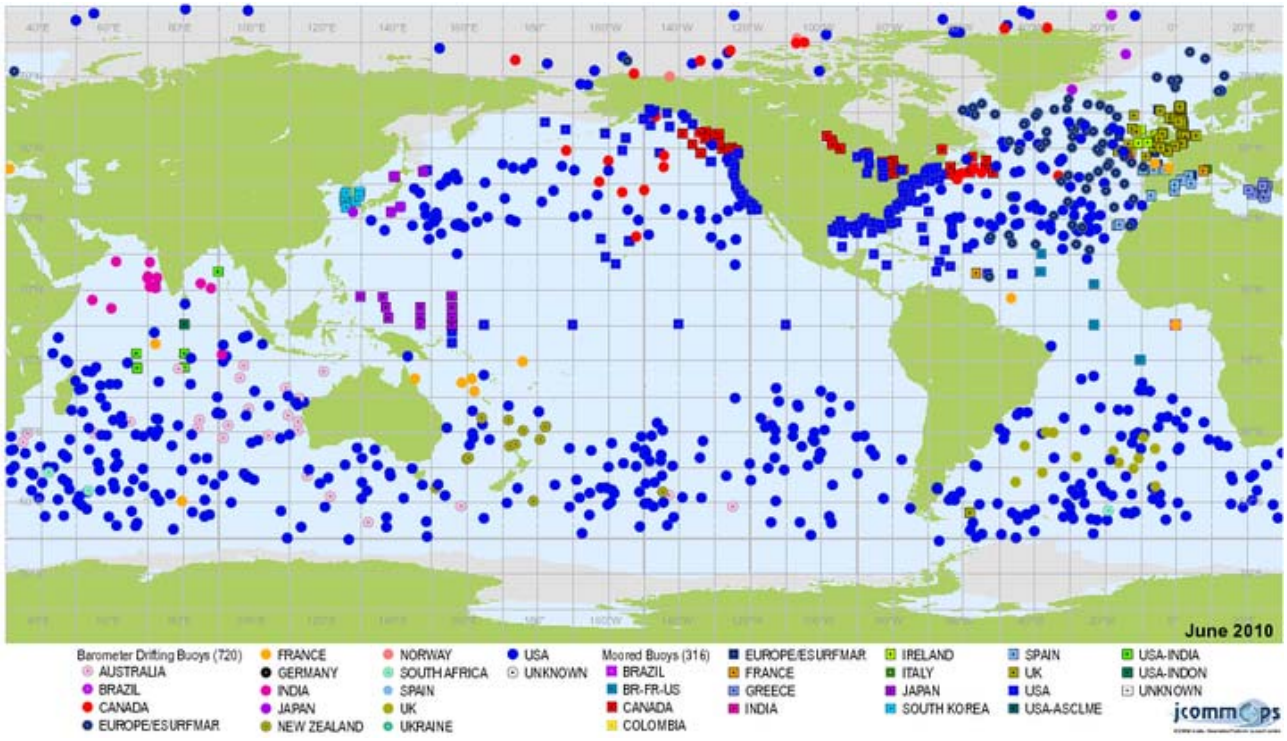
1.6 Graph 1 demonstrates that the number of drifting buoys has been maintained well above 1250 and about half of those measuring Air Pressure. The number of Barometer buoys had grown steadily throughout the intersessional period, though in the last three months that has leveled off a little. Last year the total percentage of Barometer buoys began decreasing in August (dipping at 39%) which was a concern. This year however the percentage has increased again and while it is not back to the levels seen early 2009 (~47%), it has remained at 43-44% for most of 2010. There has been a significant increase in number of Barometer buoys in the southern Indian Ocean. Good progress was made in the period 2005-2010 regarding the evolution in percentage of Barometer Buoys. During the inter-sessional period, an interactive version of Graph 1 was added to the DBCP website[1]. It is updated each month by JCOMMOPS. An equivalent text file is also available on the website.

1.7 Map 1 shows the buoy status at the end of July 2010. The spread of drifters has remained good throughout the inter-sessional period, although the northern Indian has begun to be quite sparse and the north Western Pacific is still not filled. Fortunately, the RAMA moored buoy array in the Indian Ocean has filled in many of the gaps and provided cruises for deployment of drifters, however the continuity of data is adversely impacted by vandalism and difficulties replacing platforms. Again this year, the spread across the Arctic region is better than it had been in the past. For the gulf of Guinea, many drifters were deployed in this region in the last year, however they appear to be moving away from the African continent currently. Many of the buoys deployed in this region last year (with help from the US Navy) were beached or failed.

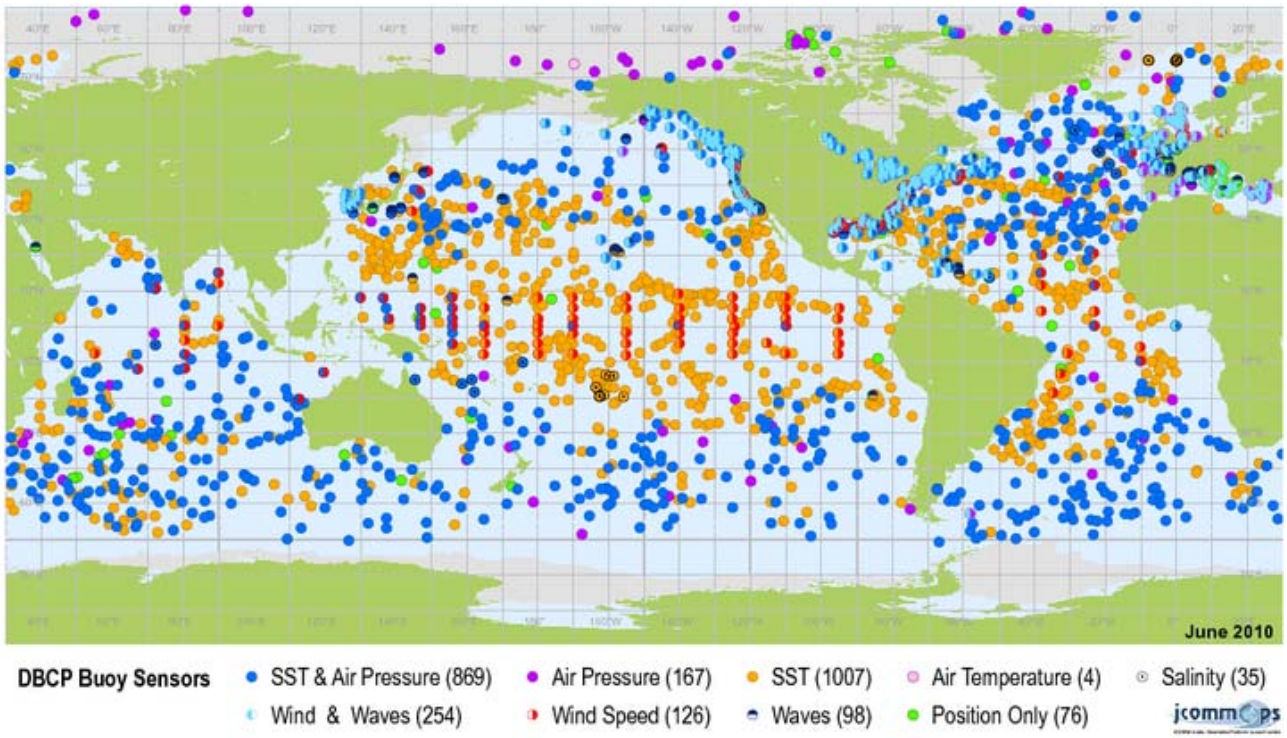
1 http://dbcp.jcommops.org/network/status.html#main-bottom



Map 1: DBCP monthly status by country for July 2010. (Data Buoys reporting on the GTS via Météo-France)



Map 2: DBCP Barometer Buoy monthly status by country for June 2010. (Data Buoys reporting Pressure measurements on the GTS via Météo-France)



Map 3: Drifting and moored buoys reporting SST, Air Pressure, Waves and Wind in June 2010. (Data Buoys reporting on the GTS via Météo-France)

2 Platforms in the Southern Ocean –Air Pressure

2.1 The Southern Ocean Buoy Programme, as part of the DBCP Implementation Strategy, aims to have 300 operational drifting buoys with barometers distributed across the Seas south of 40°S. Currently, the number of operational barometer buoys is around 195, which is the highest July value ever. The total Number of buoys passing through the region at some point during the year was 314. It is clear from Map 3 (above) that a vast majority (80%) of buoys south of 40°S are recording air pressure.

- During the Inter-sessional period the number went up to a peak of 217 in March 2010 and stayed around that until May, which was approaching the goal of 300.

Month	Total number of Barometer buoys
AUG 2009	157
SEP 2009	150
OCT 2009	142
NOV 2009	145
DEC 2009	153
JAN 2010	166
FEB 2010	189
MAR 2010	217
APR 2010	210
MAY 2010	209
JUN 2010	202
JUL 2010	195

Table 5. Number of Barometer buoys in the Southern Ocean each month for the year to July 2010.

- The main participants were: NOAA / AOML, and University of Delaware United States of America; Bureau of Meteorology (BOM), Australia; Dunstaffnage Marine Laboratory, UK & Met Office, United Kingdom; Météo-France and CLS; New Zealand Meteorological Service; and South African Weather Service.

2.2 Plans from last year

- The deployment plans last year were for at least 180 buoys with Barometers (including 36 upgrades) to be deployed south of 40°S. The actual deployments totalled ~ 146 SVPBs, as notified to JCOMMOPS, and were as follows:

  - USA (Inc barometer upgrades) : 126
  - Australia: 54
  - UK: 7
  - New Zealand: 4
  - France: 2 (Argos-3 buoys)

2.3 Plans for next year

- Possible deployment ships are as follows:
  - SA Agulhas
  - Marion Dufresne
  - Marion and Gough Island supply vessels, Fishing vessels on Tristan Da Cunha.
  - British Antarctic Survey ships (LM Gould, E Shackleton)
  - Polarstern - this Antarctic summer season traveling from Bremerhaven to Wellington New Zealand, to Antarctica and back again
  - Along AX-18 (Buenos Aires-Cape Town) by NOAA,
  - Along IX-28 to Antarctica
  - NOAA research vessels

Country	Buoys purchased or planned	Additional upgrades	Total
Australia	5	5	10
France (*)	0	30	30
Germany	0	0	0
New Zealand	10		10
South Africa	18	25	43
UK	8	0	8 *
USA	~140	-	140
Total	**188**	**60**	**241**

Table 6: SOBP Proposed Commitments for the period August 2010 to July 2011 One buoy from last year*

- The deployment plans for GDP are as follows, though the availability of deployment opportunities impact these plans during the year:

  - Southern Indian Ocean:
    - 30 SVPB's (along with Meteo France)
  - Southern Pacific Ocean:
    - 30 SVPB's (along with the MS NZ)
    - 15 SVPB's (aboard the LM Gould)
  - Southern Atlantic Ocean:
    - 10 SVPB's (along with Argentina Navy)
    - 25 SVPB's (along with SAWS)
  - Drake Passage:
    - 25-40 SVPB's (with NOAA Fisheries)

3 Map Products

3.1 Dynamic maps:

Monthly:

- Maintained monthly dynamic map: http://w4.jcommops.org/WebSite/DBCP
- Google Earth Monthy DBCP Map: http://www.jcommops.org/FTPRoot/DBCP/status/DBCP.KMZ
- JCOMMOPS Maintains a dynamic map of all JCOMM observing systems : http://w4.jcommops.org/WebSite/JCOMM

Daily:

- Maintained daily dynamic map (drifter trajectories): http://w4.jcommops.org/WebSite/DBCP_RT
- Google Earth Daily DBCP MAP http://www.jcommops.org/FTPRoot/DBCP/status/dbcp_daily.kmz

3.2 Static maps:

- **DBCP**

The DBCP maps produced by the Technical Coordinator were consolidated into one web page, for maps going back to the start of 2007. http://www.jcommops.org/dbcp/dbcpmaps.html,

PDF and PNG Files are also accessible directly from:
http://www.jcommops.org/FTPRoot/DBCP/Maps/2010/ which includes:

- Buoys by Country
- Barometer Drifting Buoys by Country
- SST, Barometer, Wind and Wave Buoys (All Sensors)
- GTS Delays
- Iridium and Argos-3 Buoys by Country

- **JCOMM**

PDF and PNG Files are accessible directly from
http://www.jcommops.org/FTPRoot/JCOMM/Maps/

- All in situ marine observations:
  http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM_FMT
- Sub-surface salinity and temperature profiles (now included in a single map):
  http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM_SZ
- All Floats, Drifting and Moored Buoys:
  http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=BUOYS
- All Floats, Drifting and Moored Buoys - Polar areas:
  http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=BUOYS_POLES

- **OceanSITES**

PDF and PNG Files are also directly accessible from:
http://www.jcommops.org/FTPRoot/OceanSITES/maps/, which includes:

- OceanSITES platforms sharing data on the GTS (Produced Monthly): e.g.
  http://www.jcommops.org/FTPRoot/OceanSITES/maps/2010/201006-OCEANSITES-GTS.png
- OceanSITES platforms sharing data on the Global Data Assembly Centres (Produced Quarterly): e.g.
  http://www.jcommops.org/FTPRoot/OceanSITES/maps/2010/201005-OCEANSITES-GDAC-blueocean.png
- All active and current sites:
  http://www.jcommops.org/FTPRoot/OceanSITES/maps/200908_CURRENT.pdf
- Google Earth File:
  http://www.jcommops.org/FTPRoot/OceanSITES/status/200908_oceansites_locations.kmz
- All planned and discontinued sites:
  http://www.jcommops.org/FTPRoot/OceanSITES/maps/200908_VISION.pdf

ANNEX X

DBCP IRIDIUM PILOT PROJECT UPDATE

(October 2010)

The Iridium Pilot Project (IPP) was instigated by the Panel in 2007 to evaluate the effectiveness of the Iridium satellite communications system for the transmission of drifter data, and was intended to deploy 50 or more Iridium equipped SVPBs through a programme of Iridium upgrades for drifters already being procured by buoy operators. In fact, nearly 200 platforms have been deployed during the three-year deployment phase of the project, half funded by the IPP, and half through voluntary contributions by ESURFMAR, who have now moved entirely to the use of Iridium in their drifter procurements.

On any given day during the last two years of the project, roughly 80 Iridium SVPBs were active and transmitting hourly data via the GTS (see Figure 1). The deployment phase of the IPP is now complete, apart from a final deployment of 30 IPP-upgraded Météo France platforms. These will be targeted at those areas (Indian Ocean, S Atlantic and S Pacific) which have traditionally suffered from poor timeliness through the Argos system, despite continuing efforts by CLS to improve the LUT network and address the blind orbit issues that affect these areas.

Data timeliness continues to be highly satisfactory, with insertion of Iridium data onto the GTS normally occurring within 10 minutes of the buoy transmission, compared with median delays of approximately one hour with Argos (Figure 2). In fact, less than one minute of the delay can be attributed to latency in the Iridium satellite system.

Buoy lifetime has been satisfactory (median life 374 days for non-GPS drifters), and is expected to continue to improve as better energy management schemes are implemented (Figure 3). As regards geographical distribution of IPP drifters, a true global coverage has unfortunately not been achieved. Nonetheless, many drifters have been deployed in the stormy waters of the Southern Ocean and have performed well, and all five SVPB manufacturers are now offering Iridium-equipped drifters.

The IPP has now entered its analysis and a full report will be presented to the next session. A preliminary analysis of cost-effectiveness has indicated that lifetime costs of an Iridium drifter are likely to be approximately half the cost of an Argos drifter for those users not benefiting from Argos bulk purchase schemes (Figure 4).

In order to record the collective experience gained from the IPP, a best-practice guide for the use of Iridium in drifters will be drawn up by the IPP steering team. Multiple agencies now insert Iridium data on to the GTS. So far this has not apparently caused any problems to the end users, but it is an area of concern to the IPP that will hopefully continue to be monitored by the DBCP.

http://www.jcommops.org/dbcp/iridium-pp

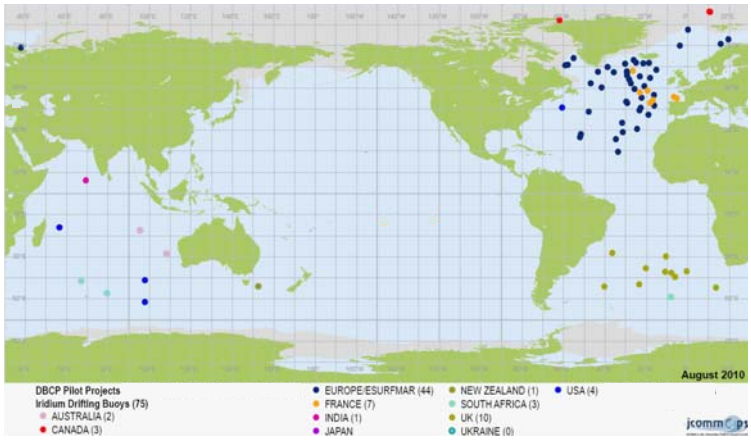


Figure 1. Iridium SVPB distribution in August 2010.

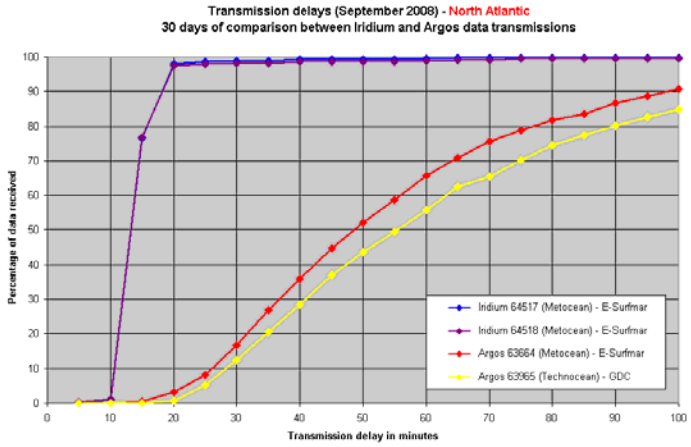


Figure 2. GTS transmission delays for Iridium and Argos SVPBs.

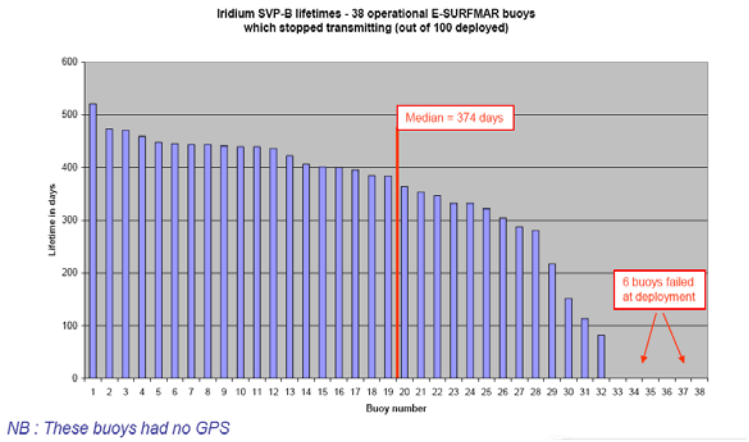


Figure 3. Lifetimes of Iridium drifters deployed by E-SURFMAR.

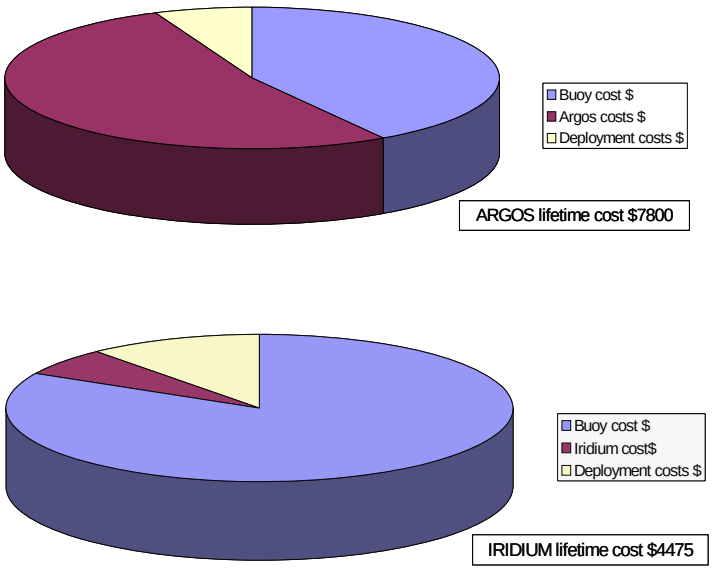


Figure 4. A whole-life cost comparison for European Argos and Iridium SVP-Bs

ANNEX XI

PROGRESS REPORT ON THE PILOT PROJECT FOR THE EVALUATION OF ARGOS-3 TECHNOLOGY

Technology development and deployments

Michel Guigue (CLS) kept in contact with, and visited, most of the manufacturers of Argos 3 drifters during 2010.

Pacific Gyre: They seem to have achieved a stable Argos 3 SVP-B system. Ten units will soon be available for deployment;

Clearwater: the attempt to build Argos 3 SVP-BG was unsuccessful. However, the ten newly produced SVP-B models passed the dry test and are now performing well after the antenna was replaced with a different and inexpensive model. Five drifters have been shipped to be deployed in the Pacific Ocean (coordinated by Shaun Dolk, AOML) and the remaining five should be deployed in the North Atlantic (ESURFMAR region). For this latter deployment we seeking the assistance of Météo France.

MetOcean: the seven drifters deployed in '09 stopped sending sensors data after 2 weeks. A problem at the controller level was identified. The manufacturer's suggested workaround consists of rebooting the system after failed communication with the PMT. However, a more elegant solution is being sought, but not yet available as of May 2010. The deployed PMTs were still working as of May 2010 and producing accurate fixes. No new order for Argos-3 units has been placed.

Marlin-Yug: ten SVP-B's were produced and passed the dry test. Two units were deployed in the Black Sea. Two were sent to Dr. Pierre Poulain to be deployed in the Mediterranean Sea. The remaining six units were shipped to Dr. Julie Fletcher, to be deployed in the waters around New Zealand.

Data analysis and evaluation

Some PPT/system evaluations were done at CLS. Most of such compiled statistics are in the process of being verified by AOML (Mayra Pazos). **The Argos-3 steering team recognizes it is crucial to have an independent assessment of the new Argos-3 technology and remains committed to such objective.**

Miscellaneous

CLS used two-way communication at transmitter level to change the output power and increase the number of good messages with correct observations in the eastern Mediterranean off Sicily/Tunisia and Libya. An auto-tuning routine at PMT firmware level is being considered for Argos 3 and will most likely be implemented for Argos 4.

CLS is implementing a new filtering method (a Kalman filter , based on previous fixes, velocity model and actual Doppler frequency measurements) for localization which will produce a cleaner and more accurate position dataset.

ANNEX XII

GOALS FOR THE SECOND DBCP IN-REGION WESTERN INDIAN OCEAN CAPACITY BUILDING WORKSHOP
(Mauritius, Spring 2011)

- Continue to Build Capacity Within Regional Institutes to Apply New Indian Ocean Observing System (IndOOS) Data, such as from RAMA and others, for Enhanced Predictive Capability for the Region,

- Demonstrate the Crucial Role of Ocean Observations for Understanding and Predicting Regional Weather, Ocean and climate,

- Continue to Build In-Region Modelling Development Teams (MDT) and Observation Development Teams (ODT), including for the implementation of buoy programmes,

- Demonstrate the Societal and Economic Benefits of Delivering Enhanced Ocean Observing System Data for Better Informed Decisions,

- Learn practical implementation aspects for the deployment of operational data buoys at sea, the collection of buoy data, and related data management,

- Learn Practical Application of Regional Models for Addressing Impacts from Climate Change in the Coastal and Marine Environment,

- Become Familiar with Tools for Identifying and Accessing Operational Data Streams for Model Assimilation,

- Validate Model Products from Indian Ocean Observations,

- Coordinate Regional Institutes for Increasing Western Indian Ocean Observations,

ANNEX XIII

DBCP REVIEW OF WMO AND IOC PUBLICATIONS

Background

The JCOMM Pilot Project for WIGOS identified documenting and integrating instrument best practices and related standards as one of its key deliverable. The goal is to permit provision of consistent, coherent, and traceable ocean data through interoperable data exchange systems to address the requirements of WMO and IOC programmes. Significant achievements have been already been realized including updating of the marine chapter of the WMO Guide to Meteorological Instruments and Methods of Observation (WMO No. 8), and the production of a catalogue on JCOMM best practices and standards.

At its second meeting, the joint Steering Group for the IODE Ocean Data Portal (ODP) and the JCOMM Pilot Project for WIGOS (Ostend, Belgium, 15-16 October 2009) noted that Technical Publications are not always up to date or there is room for achieving better compatibility between WMO and IOC standards, or even higher level standards (e.g. through ISO). The meeting therefore proposed a strategy for the review of the WMO and IOC Technical Publications in light of the Pilot Project developments. The meeting agreed that the following Publications required substantial review and/or updating; and should be made consistent with each other:

- IOC Manual and Guides No. 4, Guide to Oceanographic and Marine Meteorological Instruments and Observing Practices[1]
- IOC Manual and Guides No. 26, Manual of Quality Control Procedures for Validation of Oceanographic Data[2]
- WMO No. 8, Guide to Meteorological Instruments and Methods of Observations (CIMO Guide)[3];
- WMO No. 544, WMO Manual on the Global Observing System (GOS)[4];
- WMO No. 488, WMO Guide to the Global Observing System (GOS)[5];

In addition, the JCOMM Pilot Project for WIGOS has also identified the following publication of interest to the DBCP:

- IOC Manuals and guides No. 18, User guide for the exchange of measured wave data[6];

The role of the DBCP

At its 24th Session (Cape Town, South Africa, 13-16 October 2008), the DBCP had approved a WMO request for the Panel to undertake the updating of a number of WMO Manuals and Guides. Nonetheless, at its 25th Session (Paris, France, 28 September – 1 October 2009), no volunteers had yet come forward, and the Executive Board felt that the Panel needed to become more proactive in discharging this action. The Panel noted the need to review and update the Publications listed above from a marine/ocean observations perspective in order to make them consistent to each other and reflect latest technological progress.

1 : http://unesdoc.unesco.org/images/0005/000599/059947eo.pdf
2 : http://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=874
3 : http://www.wmo.int/pages/prog/www/IMOP/publications/CIMO-Guide/CIMO_Guide-7th_Edition-2008.html
4 : http://www.wmo.int/pages/prog/www/OSY/Manuals_GOS.html
5 : ftp://ftp.wmo.int/Documents/MediaPublic/Publications/WMO488_GOSguide/488_Guide_2007.pdf
6 : http://www.ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=866

DBCP-25 recommended that the chair of the Task Team for Instrument Best Practices and Drifter Technology Developments (Mr W Burnett) take responsibility for identifying suitable authors, and, if needs be, to use Panel funds up to a maximum of USD 10,000 to pay for the hire of a suitably qualified consultant. It further recommended that these funds should only be called upon only if matched funding from other sources could be identified. WMO is offering to provide equivalent funding as a contribution from the JCOMM Pilot Project for WIGOS.

The DBCP Task Teams on Instrument Best Practices and Drifter Technology Developments (TT-IBP) has proposed the Terms of Reference (ToR) for the consultant as detailed in the Annex, and Mr David Meldrum has been selected for undertaking the tasks.

Annex (to Annex XIII)

Terms of Reference for the DBCP consultant to review WMO and IOC Publications

In consultation with the DBCP Task Teams on Instrument Best Practices and Drifter Technology Developments (TT-IBP), and Moored Buoys (TT-MB), the consultant shall review the following WMO and IOC Publications, and suggest revisions to those Publications, or a strategy for their updating as proposed below. In his/her review, the consultant shall:

1. Make sure that the proposed changes are consistent with the strategy proposed by the JCOMM Pilot Project for WIGOS (Final report, meeting of the Joint Steering Group for the ODP and the JCOMM Pilot Project for WIGOS, Ostend, Belgium, 15-16 October 2009, Annex VI), and the mandates of WMO and IOC are respected;
2. Take into account the state of the art of DBCP network management and instrument best practices for drifting and moored buoys;
3. Avoid duplication, and make sure appropriate cross-references are made between WMO and IOC Publications;
4. Make proposals for the further review of the Publications if needed;
5. Report to the twenty-sixth session of the DBCP and submit the proposed changes for endorsement.

The Publications to be reviewed are divided in two groups and include the following:

(a) Publications for which the consultant should propose specific changes:

- IOC Manual and Guides No. 26
- WMO No. 8
- WMO No. 544
- WMO No. 488

(b) Publications for which the consultant should propose a strategy for updating them, and make specific recommendations regarding how particular chapters should be updated:

- IOC Manual and Guides No. 4
- IOC Manuals and Guides No. 18

ANNEX XIV

BACKGROUND INFORMATION ON THE NEED TO ESTABLISH AN INTERNATIONAL FORUM OF USERS OF SATELLITE DATA TELECOMMUNICATION SYSTEMS FOR ENVIRONMENTAL USE

The Argos Joint Tariff Agreement (JTA) was established in 1981 (WMO EC-XXXIII) to be an effective, constructive and cooperative organizing and negotiating mechanism contributing significantly to the stability of the Argos data collection and location system and its globally expanded applications. In February 1984 (IOC EC-XVII) the Intergovernmental Oceanographic Commission of UNESCO (IOC) agreed to co-sponsor the JTA with the WMO. The objective of this cooperative effort was to provide fair, cost-effective and simple procedures for users of the system. Programmes eligible for the preferential tariff under this agreement were limited to those funded by the government and/or non-profit agencies. Issues such as user requirements, improvements of the space-based Argos platform, and surface-based system data processing capabilities are also discussed through the JTA.

Since its establishment in 1985, the WMO-IOC Data Buoy Cooperation Panel (DBCP) has been closely associated to the JTA and has been influential in promoting the WMO and IOC requirements for buoy data collection, location, data processing, and distribution onto the Global Telecommunication System (GTS) of the WMO. Thanks to the DBCP action, the following Argos related activities could be achieved in the best interest of DBCP users: (i) development of a dedicated data processing system of Argos collected data for their conversion into geo-physical units, automatic quality control, encoding into appropriate WMO codes, and insertion onto the GTS; (ii) implementation of a global network of regional Argos receiving stations in order to improve data timeliness; (iii) Argos system improvements that take into account DBCP requirements for higher data rate telecommunication, and downlink capability (including an DBCP Argos-3 Pilot Project); (iv) automatic collection of instrument/platform metadata by the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) *in situ* Observing Programme Support Centre (JCOMMOPS); and (v) publication of DBCP Technical Documents on the use of the Argos system (DBCP TD No. 3) and related GTS data processing and quality control (DBCP TD No. 2).

However, in recent years, with the advent of new satellite data telecommunication systems that better address user requirements in a cost effective way, the Argos system is no longer in a *de facto* monopolistic situation for the collection and location of drifting buoy data. Pilot activities have also been initiated by JCOMM to evaluate the use of other systems such as Iridium. This new situation has lead the JCOMM Pilot Project for the WMO Integrated Global Observing System (WIGOS) to promote the establishment of an international forum of users of satellite data telecommunication systems, with a wide user base reaching out beyond the operators of ocean observing systems, to address tariff negotiations, user requirements, and make recommendations on deficiencies and gaps related to the use of such systems. Through this type of forum, it is expected to reduce satellite data telecommunication costs for the transmission of observations from observational platforms to data processing centres on land, and better address user requirements for high temporal and vertical resolution data, and improved timelines.

This issue was presented to the fifth Session of the WMO Commission for Basic Systems (CBS) Expert Team on Requirements and Implementation of Automatic Weather Stations (ET-AWS) at its fifth Session, Geneva, 22-25 June 2010. ET-AWS considered the needs of member countries for communication of real-time data from Automatic Weather Stations (AWS), recognised the existing JCOMM arrangement in negotiating Tariff Agreements with ARGOS, and noted the recommendation from the JCOMM Pilot Project for WIGOS to work towards establishing an international forum of users of satellite data telecommunication systems. ET-AWS also recognized that there would be benefit in having a strong user base covering multiple applications to address system deficiencies, negotiate tariff and potential improvements of the rendered services with the operators of satellite data telecommunication systems.

The sixth Session of the CBS Implementation/Coordination Team on the Integrated Observing System (ICT/IOS), Geneva, Switzerland, 28 June – 2 July 2010, therefore recommended the Secretariat to approach partner organizations such as IOC and FAO in the view to expand the scope of the Argos Joint Tariff Agreement (JTA) to address remote data communication requirements for automatic environment observing systems coordinated through WMO and those partner organization, system deficiencies, negotiate tariffs and potential improvements of the rendered services with all relevant operators of satellite data telecommunications systems.

This issue will also be presented and discussed at the next extraordinary session of the CBS, Namibia, 17-24 November 2010.

ANNEX XV

WORKPLAN OF THE PILOT PROJECT ON WAVE MEASUREMENT EVALUATION AND TEST FROM MOORED BUOYS (PP-WET)

The Pilot Project will run for an initial two-year period from November 2008 and will report to the DBCP on progress at its annual sessions. The Steering Team will guide the Pilot Project through the following actions:

Year 1 -

1. Expand and extend the relevant parts of the US experience from the IOOS Wave Plan test and evaluation activities to an international context within JCOMM;
2. Develop or adapt, as necessary, test and evaluation standards and the methodology for the inter-comparisons for both directional and non-directional data;
3. Establish protocols for field tests of wave measurement systems, including:
    - how the first set of system tests will be conducted, and;
    - how results will be presented;
4. Document metadata relevant to each intercomparison carried out under the Pilot Project, to be posted with each intercomparison results;
5. Develop metadata list for existing wave measurement systems, as contribution to existing marine metadata projects (e.g. ODAS, IODE, WIS, Meta-T PP, DBCP Task Team on Moored Buoys);
6. Develop or adapt as necessary standard wave quality control guidelines;
7. Contribute, as appropriate, to the JCOMM Standards and Best Practice Guides;
8. Present results to DBCP-XXV and other scientific fora.

Year 2 -

1. Coordinate intercomparisons of wave measurements from different platforms, on an opportunistic basis;
2. Develop a plan for a continuous testing and evaluation program;
3. Identify approaches to evaluating the performance (e.g comparisons to a currently accepted technology/approach) of current operational and pre-operational (including nautical and HF radar, ADCP, GPS sensors, and ASIS buoys) *in situ* and remote sensing technologies;
4. Investigate the possibility of an alternative testing site if an ocean platform, were to be available through an industry partnership agreement; the evaluation framework would remain the same irrespective of the actual site;
5. Contribute to training material to educate users about how to deploy and operate wave sensors appropriately;
6. Decide if a case can be made to continue the pilot project for a further year and investigate follow-on mechanisms;
7. Contribute, as appropriate, to the JCOMM Standards and Best Practice Guides;
8. Present results to DBCP-XXVI and other scientific fora.

ANNEX XVI

LIST OF COMPANIES WHO SPONSORED THE SESSION

Approximately 80 delegates from more than 20 countries attended the annual session of the Data Buoy Co-operation Panel (DBCP), being hosted at the Scottish Association for Marine Science (SAMS) from 25 September to 02 October. The DBCP came into existence in 1985, as weather forecasting agencies round the world moved away from ship observations towards small free-drifting data buoys, and encountered a whole new suite of problems concerning satellite communications and data quality, quantity and timeliness. Established under the auspices of the World Meteorological Organization and the Intergovernmental Commission of UNESCO, the DBCP receives funding from a number of countries and employs a Technical Coordinator, based within the French Space Agency at Toulouse. The first holder of the post was David Meldrum, who took leave of absence from SAMS for two years in the late 1980s. 25 years on, the DBCP is proud to coordinate the deployment and monitoring of more than 1300 drifting platforms, as well as a large number of deep-ocean moored buoys. These platforms are now used routinely by meteorological, oceanographic and climate agencies world-wide as part of the global environmental observing system. Other activities include the evaluation of new sensors, platforms and satellite communications systems that will eventually form part of the marine observing system of the future.

The meeting at SAMS is the first in Scotland. The following manufacturers and companies have sponsored the organization of this DBCP Session:

- The Scottish Association for Marine Science (SAMS)
- AXYS Technologies Inc
- Christian Michelsen Research (CMR)
- Clearwater Instrumentation, Inc.
- Fugro OCEANOR AS
- JouBeh Technologies, Inc.
- Liquid Robotics, Inc.
- MetOcean Data Systems Limited
- Nortek AS
- Oban Distillery
- Pacific Gyre, Inc.
- RDSEA International
- SAIC, Inc.
- Sea-Bird Electronics, Inc.
- Technocean
- The United Kingdom Met Office

For further information go to www.jcommops.org/dbcp

ANNEX XVII

ACTION LIST / WORKPLAN

DBCP WORKPLAN FOR THE NEXT INTERSESSIONAL PERIOD (2011)

-1- IMPLEMENTATION & TECHNICAL WORKPLAN

(ongoing actions from this and past Panel Sessions; actions arising from this Panel Session are indicated in bold)

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
1	ToR DBCP-23	3.3.8	To identify sources of buoy data not currently reported on the GTS and determine reason for non-availability, (particularly for the Arctic Buoys IABP).	TC, CLS	Panel members, Secretariat	Chair and Panel for information	Continuous	Ongoing
2	ToR		To coordinate operations of DBCP QC guidelines.	TC	Panel members, Data Quality centres	Panel	Continuous	Ongoing
3	ToR		To follow up and possibly assist in implementing requirements expressed by the buoy users within the Argos system.	CLS	TC	Panel, meeting on JTA	Continuous	Ongoing
4	ToR		To support, as required, existing DBCP action groups, and provide assistance on request to other internationally coordinated buoy programme developments.	TC, Secretariat	Chair	Panel	Continuous	Ongoing
5	DBCP-20		To coordinate with IOP implementing strategy for the Indian Ocean Observing System as far as data buoys are concerned.	IBPIO	Chair, TC, Secretariat	Panel	Continuous	Ongoing
6	DBCP-23	8.1.2	To encourage other centres to act as PMOC and existing centres to invest more resources in the implementation of QC guidelines	Panel members	TC	Panel	Continuous	Ongoing

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
7	DBCP-23 DBCP-22	7.2.4 and 8.6.1.1 8.6.1.13	To provide information on deployment opportunities – annual reports, action group annual planning, ship schedules, national plans, national contact points etc	Panel members, Task Team on Capacity Building	TC	JCOMMOPS, Panel	Continuous	Ongoing
8	DBCP-22	8.6.1.1 and 9.3.2	To check the DBCP list of National Focal Points for logistical facilities and report discrepancies, changes, or additions to the WMO Secretariat.	Panel members	WMO Secretariat	WMO Secretariat	Continuous	Ongoing
9	DBCP-23 DBCP-16	4.2.4	To produce a table of national commitments in the Southern Ocean. To seek additional commitments for barometer upgrades, and deployment opportunities in the Southern Ocean to achieve a level of 300 buoys south of 40S.	TC	Panel members	Panel	Continuous	Ongoing
10	DBCP-21		To routinely provide the list of moorings reporting in SHIP or BUOY format	Panel members	TC	Panel	2013	
11	DBCP-17		To enhance buoy safety through improved design (refer recommendations) and keep the Panel informed about related changes.	Manufacturers, Panel members	Panel members, TC	Panel	Continuous	Ongoing
12	ToR		To maintain summary of requirements for buoy data to meet expressed needs of the international meteorological and oceanographic communities.	TC	Panel members, Secretariat	Chair for presentation to the Panel	Continuous	Ongoing
13	DBCP-23	4.3.6	To develop and keep up to date standardized training materials in parallel with the organization of training programmes	TT/CB	Secretariat	Ongoing	Continuous	Ongoing
14	DBCP-22	7.2.3	To provide info/materials for DBCP/JCOMMOPS websites (news, brochure)	Interested Panel members	TC	Panel	Continuous	Ongoing
15	DBCP-19		To maintain close links with SOT members so that support on deployment opportunities can be obtained from the SOOP and VOS Panels of SOT.	Chair	TC	Panel	Continuous	Ongoing

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
16	DBCP-24 DBCP-23 DBCP-21	10.5.6 and 6.14 8.6.4.5	Buoy operators to provide metadata to JCOMMOPS; Manufacturers to collaborate with buoy operators and JCOMMOPS and submit the instrument/platform metadata using the recommended mechanisms; Both to comply with buoy metadata collection scheme	Buoy operators, manufacturers	TC	Panel	Continuous	Ongoing
17	DBCP-23	8.6.4.7	To continue to actively participate in the Meta-T Pilot Project	TC		Panel	Continuous	Ongoing
18	ToR DBCP-23	 8.4.2.4	To maintain a catalogue of existing ongoing ocean data buoy programmes	TC	Panel members, Secretariat	Chair and Panel for information	Continuous	Ongoing
19	DBCP-21		To provide input on buoy models for JCOMMOPS database	Manufacturers	TC	Panel	Continuous	Ongoing
20	DBCP-21		To review best practices prior to drifter purchase for safety, and GTS data processing purposes	Panel members	Evaluation group, TC	Panel	Continuous	Ongoing
21	DBCP-21		To provide Service Argos with list of most used buoy models and formats they operate.	Manufacturers	TC	Service Argos	Before deployment	Ongoing
22	DBCP-22	8.3.17	To participate in Argos-3 test programme	TC, Panel members, Manufacturers	CLS	Panel/next Panel session	DBCP-27	
23	DBCP-23	8.6.1.10	To provide information to panel members or on its website, about where inventories of buoys are held, to aid in deployment planning.	GDP		Panel/next Panel session	Continuous	Ongoing
24	DBCP 23 DBCP-22	8.5.1.8 and 8.5.1.9 8.5.3	To implement JCOMMOPS work-plan – particularly with respect to Deployment opportunities.	TC/DBCP, TC/Argo	JCOMM	Panel/next Panel session	Continuous	Ongoing
25	DBCP-22	8.6.5.2	To design deployment packages for safe deployments from 20m height from 25 knots ships	Manufacturers	Evaluation Group	Panel/next Panel session	DBCP-26	

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
26	DBCP-23	8.6.5.4	Liaise with the IOCCP and prepare a report of pCO2 measurement from drifters.	Task Team on Technology developments	IOCCP	Panel/Next session	DBCP-26	
27	DBCP-23	8.4.2.4	To continue review of satellite data telecommunications systems – particularly supporting the DBCP Iridium Pilot Project	D Meldrum, TC	Panel members	Panel	Continuous	Ongoing
28	DBCP-24	12.1.13	to address user requirements and particular observing systems deficiencies as expressed in the JCOMM Statement of Guidance for Ocean Applications	Panel members		Panel	Continuous	Ongoing
29	DBCP-25 DBCP-24	10.2.5 12.1.14	to contribute to feeding the JCOMM database extreme wave events when such events are observed by data buoys and are recorded by Panel Members	Panel members	NODC	Panel	Continuous	Ongoing
30	DBCP-24	12.6.8.4	to follow the best practices and standards eventually proposed under WIGOS, and in particular, to provide the buoy platform / instrument metadata to JCOMMOPS, META-T servers, and the ODASMS as appropriate	Panel members	TC, Secretariat	Panel	Continuous	Ongoing
31	DBCP-23	8.4.2.2	To share experiences regarding usage of various satellite communications systems for buoy data and participate in the DBCP Iridium pilot project	Panel members	Chair, TC	Chair	Continuous	Ongoing
32	DBCP-23	8.4.1.10	To notify of all deployments of Iridium Drifters via a dedicated mailing list (iridium-pp@jcommops.org) and eventually via a notification web page on the JCOMMOPS web	Participants in Iridium PP	TC	JCOMMOPS	Continuous	Ongoing
33	DBCP-24	10.5.3	Work with Panel members and with ET / DRC to define requirements for metadata as part of the BUFR template for buoy data, and to propose new template	TC			Mid-2009	Not completed
34	DBCP-24	12.1.2	Seek information from Panel members on data buoy-related instrument Best Practices, calibration procedures, and standards for inclusion in the *JCOMM Catalogue of Best Practices and Standards*	TC			End 2008	Commenced

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
35	DBCP-24	12.5.5	Investigate developing an easy-to-calculate global statistic that reports the status of the array, also taking into account drifter distribution targets	TT IBPD			DBCP-27	
36	DBCP-25 DBCP-24	10.2.4 12.1.5	The Panel requested its Technical Co-ordinator to continue participating in reviewing the "Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and In Delayed Mode"	TC	NDBC	JCOMM DMCG	Continuous	Ongoing
37	DBCP-25	7.3.7	Progress with its work on Wave Drifter tests as quickly as possible, and to interact with other groups, such as ESA, who were pursuing initiatives to improve the quality of in situ data in support of cal/val activities for a number of Essential Climate Variables (ECVs)	David Meldrum and PP-WMD SC			ASAP	
38	DBCP-25	8.6.3	To review of the buoy template for buoy data (for additional metadata and to cater to different platforms, and pilot projects e.g. waves) and propose creation of additional template(s) if required	TC	JCOMM TT-TDCF		Continuous	Ongoing
39	**DBCP-26**	5.12 (i)	to include drifter data in "The Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and In Delayed Mode" cookbook From DMCG April 2010. Action 45 (ref. 7.1.1.1 (ii))	TT-DM	Secretariat	Panel	Oct-10	
40	**DBCP-26**	5.12 (iii)	to add the appropriate tests and procedures regarding Quality Control of Salinity Data to the DBCP Technical documents which already exist	TT-IBP	TC; Secretariat	Panel	DBCP-27	
41	**DBCP-26**	6.1.4	to lead and discuss the issue of re-using WMO numbers with the Task Teams on Instrument Best Practices and Drifter Technology Development (TT-IBP) and Moored Buoys (TT-MB), and present a proposal at the next Panel Session	TT-DM	TC; Secretariat	Panel	DBCP-27	
42	**DBCP-26**	6.1.5 (1)	to promote standardization of data transmission formats using DBCP-M2 concept	TT-DM	TC	Panel	ongoing	

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
43	**DBCP-26**	6.1.5 (2)	to assist Pierre Blouch and Jon Turton in preparing a methodology to compare non-GTS buoy data with NWP/Ocean models, open to anyone via the web. (Continuation of DBCP-25 Action 8.8.2)	TT-DM	TC	Panel	DBCP-27	
44	**DBCP-26**	6.1.5 (3)	to review the Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and In Delayed Mode)	TT-DM	Secretariat	DMCG Chair; Panel	DBCP-27	
45	**DBCP-26**	6.1.5 (4)	to Review the SSS QC document and finalize it	TT-DM	Secretariat	Panel	DBCP-27	
46	**DBCP-26**	6.1.5 (5)	to assess the adoption of BUFR by GTS nodes and ensure that all data that is expected is definitely received at modeling and archiving centers (especially ISDM, NODC and ECMWF) by reviewing the differences between BUFR and BUOY messages received at each center	TT-DM and TC	Secretariat	Panel	DBCP-27	
47	**DBCP-26**	6.1.5 (6)	to assist in reviewing the Buoy template for BUFR, which will be updated in 2010-11 to include new requirements for observations, as well as the additional metadata identified as critical	TT-DM	TC	Panel	DBCP-27	
48	**DBCP-26**	6.2.5	to address a number of issues (HRSST, life time of drogues, quality of pressure data, environmental impact of drifters, Using solar cells on drifters)	TT-IBP	TC; Panel members	Panel	DBCP-27	
49	**DBCP-26**	6.3.3	to investigate using other formats such as NetCDF for the collection of moored buoy metadata	TT-MB	TC	Panel	DBCP-27	
50	**DBCP-26**	6.3.3	to collaborate with JCOMMOPS, possibly using the spreadsheet or other appropriate format for the submission of moored buoy metadata, and work with the manufacturers on the best way to collect the information for commercial moored buoy systems	Panel members	JCOMMOPS; Manufacturers	Panel	DBCP-27	
51	**DBCP-26**	6.3.3	to develop a web interface and file upload	JCOMMOPS		Panel	DBCP-27	

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
52	**DBCP-26**	6.3.3	to regularly forward collected metadata to the ODAS Metadata Service (ODASMS, China)	JCOMMOPS	Secretariat	ODASMS; Panel	ongoing	
53	**DBCP-26**	6.3.4	in liaison with Johan Stander (South Africa) and the TT-IBP, to address the issue of developing a proper certification process, and procedures for the calibration, and investigate what calibration information should be collected internationally and recorded in the ODASMS	TT-MB	TT-IBP; J. Stander	Panel	DBCP-27	
54	**DBCP-26**	6.4.3 (2)	to continue to build the Observation Development Team (ODT) and Modelling Development Team (MDT) with Met/Ocean Institutes in the Western Indian Ocean Region, in preparing a programme for the 2nd DBCP in-region workshop	TT-CB	Secretariat	Panel	DBCP-27	
55	**DBCP-26** DBCP-24	7.4.4 8.4(iv)	to investigate the possibility of installing a third new station over the southern parts of the Indian Ocean to further improve data timeliness across the entire basin	JTA and CLS		Panel	JTA-30	
56	**DBCP-26**	8.1.5	to investigate means for the production of a best-practice guide for the use of Iridium in drifters based on the the collective experience gained from the Iridium PP	Iridium PP	TC	Panel	DBCP-27	
57	**DBCP-26**	8.2.2	to continue its evaluation of the Argos-3 technology and report on its findings at the next Panel Session	Argos-3 PP	TC	Panel	DBCP-27	
58	**DBCP-26**	8.3.1	to conduct a full desk study of the new literature on wave-spectral measurements, to contact the main players in the field and to propose an action plan for consideration by the Executive Board and by the Panel at its next session	D. Meldrum		EB; Panel	DBCP-27	
59	**DBCP-26**	8.4.10	to contact the Chairperson of the PP-WET in case they are undertaking wave observation and evaluation 22activities	Panel members	TC	PP-WET Chair	ASAP	

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
60	**DBCP-26**	9.1.2	to collaborate with the HRSST Pilot Project Steering Team and assist in setting up appropriate arrangements regarding the collection of required metadata	JCOMMOPS	TC	Panel	DBCP-27	
61	**DBCP-26**	9.2.3.4.2 (iii)	to review and comment the new draft document "Draft document of Sea Surface Salinity Quality Control processes for potential use on Data Buoy observations"	Panel members	TC	Panel	Mar-11	
62	**DBCP-26**	9.5.3	to coordinate the finalization of the Vandalism report with other Panel members in the view to have the review starting in October 2010 and finalized in December 2010 for submission to WMO Congress	K. Jarrott	S. McArthur	Secretariat; Panel	Oct-10	
63	**DBCP-26**	9.5.8	to lead the working group on vandalism	S. McArthur		Panel	DBCP-27	
64	**DBCP-26**	9.6.6 (v)	to provide recommendation to moored buoy operators on the required content as well as possible formats (i.e csv, XML etc.) for more effective and consistent exchange of deployments	JCOMMOPS	TT-MB	Panel	DBCP-27	
65	**DBCP-26**	9.6.7 (1)	to provide recommendation for the format and content of the deployment details	TC	TT-MB	Panel	Oct-10	
66	**DBCP-26**	9.6.7 (2)	to review the categories defined by the Task Team on Moored buoys, and to forward comments to Bill Burnett and Jon Turton	Panel members	TT MB	W. Burnett; J. Turton	Mar-10	
67	**DBCP-26**	9.6.7 (3)	to participate actively in the JCOMM Task Team to work more closely on the development of BUFR templates for marine platforms.	Panel members	DMPA TT-TDC	Panel	DBCP-27	
68	**DBCP-26**	9.6.8	to address the issue of providing moored buoy metadata through website(s), and make recommendations in this regard	TIP	JCOMMOPS	Panel	ASAP	

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
69	**DBCP-26**	9.6.9	in conjunction with the new TIP Coordination Group once established, to address the issue of using the NetCDF file for OceanSITES metadata as an example for submitting and recording moored buoy metadata, in the view to present a proposal at the next Panel Session	TT-MB	TC	Panel	DBCP-27	
70	**DBCP-26**	9.6.10	to assist JCOMMOPS in feeding its database and undertaking its monitoring activities by routinely and operationally providing JCOMMOPS with buoy deployment and daily location information	GTS data processing centres	TC	JCOMMOPS	DBCP-27	
71	**DBCP-26**	9.8.2	to check with operational users of BUFR reports whether there are any discrepancy between the BUOY and BUFR reports received by those centres and whether any changes need to be made in the reporting of BUFR messages in the view to fix any possible problem and properly complete the migration of GTS distribution of buoy data to BUFR in 2012	TC	Panel members	Panel	DBCP-27	
72	**DBCP-26**	9.8.3	to address the issue of GTS Bulletin Headers for BUFR reports in the view to make a recommendation at the next Panel Session	TT-DM	TC	Panel	DBCP-27	
73	**DBCP-26**	10.2.3	the users of the RNODC/DB and SOC/DB products to provide feedback to ISDM and Météo France respectively, and propose further improvements if needed	Panel members		ISDM and Météo France	ongoing	
74	**DBCP-26**	10.3.5	to take responsibility of collecting requirements and evaluating the new Argos Kalman filter location in close collaboration with CLS	R. Lumpkin and L. Centurioni	CLS	Panel	DBCP-27	

No.	*Reference*	*Item*	**ACTION LIST/WORKPLAN** *1- Implementation and Technical Workplan*	*Who*	*Supported by*	*Reporting to*	*When*	*Status*
75	**DBCP-26**	11.2.7	to liaise with the TT-TDC in the view to provide appropriate input regarding wave property data, directional (or partial directional) and non-directional spectral wave data (by frequency, and wavenumber) and make sure that related requirements are properly considered in relevant common sequences and BUFR templates	ETWS, PP-WET, PP-WMD	TT-TDC	Panel	ASAP	
76	**DBCP-26**	11.2.8	to look at those buoy related practices elements, identify appropriate publication(s) to which the identified observation practices should be relocated, and make recommendations to the CBS as appropriate	TT-DM	D. Meldrum; Secretariat	Panel	Sep-11	
77	**DBCP-26**	11.2.11	to pursue this effort, in collaboration with Shaun Dolk (USA), refine the Cruise Technical Coordinator position at JCOMMOPS proposal, taking into account similar ongoing activities under way for possible collaboration, and to distribute it shortly to Panel members for further review	JCOMMOPS	S. Dolk	EB ;Panel	31/10/2010	
78	**DBCP-26**	11.4.2	to keep the Panel informed of future developments and opportunities regarding the OceanOBS'09 Task Team activities for assisting other observing groups	D. Meldrum	Secretariat	Panel	ongoing	
79	**DBCP-26**	11.5.9	to make the GDP inter-comparison reports available on the web and links included in the JCOMMOPS website	R. Lumpkin and JCOMMOPS		Panel	ongoing	
80	**DBCP-26**	11.5.10	to address the recommendations from the WMO-BIPM workshop	PP-HRSST	Secretariat	Panel	DBCP-27	

-2- ADMINISTRATIVE WORKPLAN

(ongoing actions from this and past panel sessions; actions arising from this Panel Session are indicated in bold)

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
1	ToR		To maintain a list of national contact points for the DBCP and within other relevant bodies with potential for involvement in DBCP activities.	Secretariat	Panel members	Chair and Panel for information	Continuous	Ongoing
2	DBCP-21		To identify necessary funding to allow for expansion of JCOMMOPS and AIC staffing and resources.	Secretariat, Panel members	JCOMM/OCG	Panel	Next Panel session	
3	DBCP-21		To actively communicate with national coordination for GEO to fully inform on the Panel's activities and capabilities in this regard.	Panel members		Panel	Continuous	Ongoing
4	DBCP-22	10.1.8 and 10.1.10	To prepare and distribute revised budget estimates for the following year, and final financial statement	Finance Advisor	Secretariat, Chair	Panel	March each year	Ongoing
5	DBCP-22	10.1.10	To prepare interim statement of the budget for the next DBCP session	Finance Advisor	Secretariat	Panel	July each year	Ongoing
6	DBCP-22	10.3.1	To inform chairman of her wish or otherwise to continue to work as TC/DBCP	TC		Chair/	End of each contract	Ongoing
7	DBCP-22	11.1	To make recommendations to the following JTA Session	Chair		JTA, Panel	JTA Session	Ongoing
8	DBCP-22	2.2.1.2 (xii) and 4.3.3 and 4.3.5	To organize Capacity Building activities (training workshops, training materials, identifying lecturers)	TT CB	Secretariat	Panel	Next Panel session	Ongoing
9	DBCP-22	10.3	Continue the arrangements (including finance) to secure the services of a technical coordinator.	Chair	Secretariat	Secretariat	Continuous	Ongoing
10	DBCP-22	10.4	Review programme and establish working priorities of the technical coordinator.	Executive Board	Panel members	Panel	Next Panel session	

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
11	DBCP-23	6.8	To organize scientific and technical workshop at the next Panel session (identify 2nd co-chair from the host country if required) including CD-ROM inputs	Workshop Chair	Secretariat	Panel	Next Panel session	Ongoing
12	DBCP-23	6.7	Compile a CD-ROM of scientific and technical workshop at the last Panel Session	Chair, Secretariat	TC	Executive councils of WMO and IOC/	End of each year	Ongoing
13	DBCP-23 DBCP-22	6.7 7.2.12	To consolidate and publish the Panel's session report (web only) and Annual Report (CD-ROM and web)	Chair, Secretariat	TC	Executive councils of WMO and IOC/	End of each year	Ongoing
14	DBCP-25 DBCP-23 DBCP-22	11.1.1 4.2.5 and 4.3.10 4.4.1 and 4.2.3	To finalise updates to the DBCP implementation strategy (DBCP TD 15) including reference to the Capacity Building efforts being undertaken by the Panel – feedback sought by members	Chair	Panel members	Panel	End of each year	Ongoing
15	DBCP-22	4.3.6	To investigate on possible cooperation with relevant Capacity Building programmes in WMO and IOC	Secretariat	Chair	Panel/next Panel session	DBCP-23	Ongoing
16	DBCP-24	10.7.3	Investigate participating in the Association of Hydro-Meteorological Equipment Industry (HMEI - http://www.hydrometeoindustry.org/) as a way to be represented at JCOMM meetings	Manufacturers			Continuous	Ongoing
17	DBCP-24	12.6.7.2	Lead the DBCP efforts regarding instrument Best Practices in close liaison with the JCOMM Focal Point on CIMO matters (Dr Teng) and the Technical Co-ordinator, as well as with the TT IBPD and Panel members	Dr Bill Burnett			Continuous	Ongoing
18	DBCP-25	12.1	Annual National Reports, as well as others submitted to the Secretariat before 30 November, would be published in the Panel's Annual Report .	Panel members	Secretariat	Secretariat	30 Nov. each year	

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
19	DBCP-25	10.6.7	Liaise with Mr Frank Grooters for updating the interim financial report with the most accurate and current information.	Executive Board	F Grooters		End of each year	Ongoing
20	DBCP-25	10.6.7	The joint Secretariats and the DBCP financial advisor to work together to distribute the final statement for the previous year to the Panel members as soon as the IOC and WMO Final Statement of accounts for that year are finalized.	Secretariat	F Grooters	Panel members	Jan. each year	Ongoing
21	DBCP-25	11.6.2	The Panel recalled the dynamic nature of the DBCP Operating Principles document and invited its members to provide the Chairperson with comments by the end of the year	Panel members	Chair	Panel	End of each year	Ongoing
22	DBCP-25	11.6.2	Collate Updates to the DBCP Operating Principles document	Chair	Secretariat	Chair	End of each year	Ongoing
23	**DBCP-26**	2.7	to submit their papers via e-mail or CD-ROM to the Workshop Chairperson, via electronic format (MS Office compatible format only)	SandT workshop authors	Secretariat	Chairperson	30-Nov-10	
24	**DBCP-26**	2.8	to organize the 2011 SandT Workshop	W. Burnett and J. Rolland	Secretariat	Panel	DBCP-XXVII	
25	**DBCP-26**	5.12 (iv)	to address the priority tasks agreed upon by the Panel under paragraph 5.8	new TC	Chair; Secretariat	Chair; Panel	DBCP-27	
26	**DBCP-26**	6.2.6 (1)	to identify authors who are willing to provide the updates to DBCP related standards document as listed on the DBCP website	TT-IBP	TC; Secretariat	Panel	Dec-10	
27	**DBCP-26**	6.2.6 (2) and 9.2.3.4.2 (i)	to submit historical DBCP documents to NOAA for imaging through the Climate Database Modernization Programme (CDMP)	TC	Secretariat; NOAA	Panel	Feb-11	

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
28	**DBCP-26**	6.2.6 (3)	to include appropriate QC procedures for salinity as provided by DBCP members into DBCP TD No. 37 (Guide to Data Quality Control Tests to Perform by a GTS Processing Center)	TC	Secretariat	Panel	DBCP-27	
29	**DBCP-26**	6.4.3 (1)	to organize and convene the 2nd "DBCP In-Region Western Indian Ocean Capacity Building Workshop", Spring 2011, Mauritius	TT-CB and Secretariat	TC	EB; Panel	Spring 2011	
30	**DBCP-26**	7.5.4	to establish contacts with the IPAB Coordinator, and other sponsors such as WCRP and SCAR and seek enhanced communication for the future	A. Wallace	Secretariat; TC	Panel	DBCP-27	
31	**DBCP-26**	7.5.4	to review the IPAB operating principles and possibly make recommendations to IPAB for their updating	J. Stander and G. Ball	Secretariat	Panel	end 2010	
32	**DBCP-26**	8.4.9 (i)	to organize a third meeting of the PP-WET Steering Team in early 2011	PP-WET co-chairs and Secretariat	TC	Panel	ASAP	
33	**DBCP-26**	8.4.10	to post the evaluation reports on inter-comparison work of wave data from buoys, if/when available, through the web, and provide links to the PP-WET Chair	Norway and NIOT	TC	PP-WET Chair	Dec-10	
34	**DBCP-26**	9.1.1	to proceed with the establishment of a joint DBCP-GHRSST steering team to draw up a work plan and agree an evaluation methodology	D. Meldrum	EB; Secretariat	Chair; Panel	ASAP	
35	**DBCP-26**	9.2.3.4.2 (ii)	to provide any additional documentation that applies to the imaging of documents through the CDMP and that is relevant for the DBCP or JCOMM as a whole.	Panel members	Secretariat	Secretariat	DBCP-27	

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
36	**DBCP-26**	9.3.7	to provide a table of inventories at its various warehouses to the Technical Coordinator before June each year, so that it can be presented to the Panel at each DBCP Session, and therefore assist Panel members of identifying how they can assist with the deployments.	R. Lumpkin	Panel members	TC	Jun-11	
37	**DBCP-26**	9.3.8	to investigate whether storage and ships of opportunity could be offered for the deployment of GDP drifters	F. Grooters		GDP; JCOMMOPS	end 2010	
38	**DBCP-26**	9.3.9	to investigate how its new Research Vessel could be used for the deployment of drifters, and to report on opportunities through JCOMMOPS once available	J. Stander		JCOMMOPS	DBCP-27	
39	**DBCP-26**	9.3.11	to check the JCOMM list of NFP for logistic facilities and submit changes to the Secretariat	NFP	Secretariat	Secretariat	ongoing	
40	**DBCP-26**	9.3.11	to work at creating and maintaining a corresponding electronic mailing list	JCOMMOPS	Secretariat	Secretariat	ASAP	
41	**DBCP-26**	9.5.4	to assist on developing collaborations with the IHO and the IMO, and to report at the next Panel Session	WMO Secretariat		Panel	DBCP-27	
42	**DBCP-26** DBCP-25 DBCP-24 DBCP-23	10.2.5, 11.2.9 9.2.4 11.2.5 7.1.5	to collaborate in the integration of SOC/DB and RNODC/DB into a single system of dedicated centres contributing to the ODP, and with specialized functions (archive, QC, monitoring, etc.)	SOC/DB and RNODC/DB	Secretariat	DMCG Chair; Panel	end 2010	
43	**DBCP-26**	10.2.5	to provide the DBCP-25 preparatory documents listing the functions of the SOC/DB and RNODC/DB to the DMCG Coordinator as soon as possible	Secretariat		DMCG Chair	ASAP	
44	**DBCP-26**	10.3.6	to make the information from CLS on the new monitoring tools available via its website	JCOMMOPS	CLS	Panel	DBCP-27	

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
45	**DBCP-26**	10.4.3	to set up a small task group to address the issue of GTS data processing and make a proposal to the Panel at its next Session	D. Meldrum	TC; Panel members	Panel	DBCP-27	
46	**DBCP-26**	11.1.7	to facilitate the transfer of sufficient funds to the IOC in case the amount of funds available in the DBCP Trust Fund at the IOC is insufficient	WMO Secretariat		Panel	DBCP-27	
47	**DBCP-26**	11.2.5	to submit the DBCP recommendation on Rigs and Platforms to MAN-8 inviting it to suggest changes to the DBCP ToR accordingly	MAN-8	Secretariat	MAN	Nov-10	
48	**DBCP-26**	11.2.11	to review the proposal for a Cruise Technical Coordinator position at JCOMMOPS in detail and provide feedback to the Executive Board and JCOMMOPS in this regard	Panel members	EB; Secretariat	Panel	End 2010	
49	**DBCP-26**	11.2.11	to address the funding for a Cruise Technical Coordinator position at JCOMMOPS and make proposals at the next Panel Session	EB	EB; Secretariat	Panel	Oct. 2011	
50	**DBCP-26**	11.3.12	to make sure GFCS requirements are taken into account in the next version of the DBCP Implementation Strategy	Chairperson	Secretariat	Panel	DBCP-27	
51	**DBCP-26**	11.5.5	DBCP members from RA-I and the Asia Pacific Region to participate at the RMIC workshops once organized	Panel members	Secretariat	Panel	ongoing	
52	**DBCP-26**	11.6.12 (1)	to liaise with Mr Frank Grooters for updating the interim financial report with the most accurate and actual information	EB	Secretariat	Panel	31 Jan. 2011	
53	**DBCP-26**	11.6.12 (2)	to work together to distribute the final statement for 2010 to the DBCP Executive Board as soon as the IOC and WMO Final Statement of accounts for the year 2010 are finalized, and to the Panel members as part of the DBCP Annual report for 2010	Secretariat and F. Grooters		Panel	01-Mar-11	

No.	Reference	Item	ACTION LIST/WORKPLAN *2- Administrative Workplan*	Who	Supported by	Reporting to	When	Status
54	**DBCP-26** DBCP-25	12.0.2 (1) 11.1.2	to nominate one of their group to attend Executive Board meetings as an observer	Manufacturers	HMEI	Panel	DBCP-27	
55	**DBCP-26**	12.0.2 (2)	to write to a number of countries (Brazil, China, Republic of Korea, Japan, etc.) and request funding	Secretariat		Panel	end 2010	
56	**DBCP-26**	12.1.1	to review the DBCP Implementation Strategy and to forward any comments to the Chairperson and the Secretariat by the end of November 2010	Panel members	Secretariat	Chair; Panel	30-Nov-10	
57	**DBCP-26**	12.1.3	to include requirements for traceability to standards, and instrument calibration in the Implementation Strategy, and to provide input to the Chair and the Secretariat	Panel members	Secretariat	Chair; Panel	30-Nov-10	
58	**DBCP-26**	12.2.2	to provide the Chairperson with comments on the DBCP Operating Principles by the end of the year	Panel members	Secretariat	Chair; Panel	30-Nov-10	
59	**DBCP-26**	12.4.1	to propose a prioritization of the tasks of the Technical Coordinator based on her understanding of the Panel's requirements, and to submit it for review and approval to the Chairperson through the Executive Board	H. Viola	Secretariat	Chair; EB	ASAP	
60	**DBCP-26**	13.1	to publish the national reports in the Panel's Annual Report	Secretariat	Panel members	Panel	Early-2011	
61	**DBCP-26**	13.2	to submit their national reports to the Secretariat before the end of the year	Panel members	Secretariat	Panel	31-Dec-10	

3- RECOMMENDATIONS

(ongoing recommendations from this and past panel sessions; recommendations arising from this Panel Session are indicated in bold)

Capacity Building

No.	*Ref.*	*Recommendation*	*By*
1	**DBCP-26 / 11.3.13 (i)**	The Panel agreed that it should continue to be involved in Capacity Building activities, including through the provision of funding from its Trust Fund;	Panel
2	**DBCP-26 11.3.10**	to discuss the issue nationally in the view promote the commitments of WMO Members to PANGEA activities through the VCP	Panel members

Data Exchange

No.	*Ref.*	*Recommendation*	*By*
3	**DBCP-26 / 9.6.6 (iii)**	DBCP has only just begun to develop a new BUFR template for drifting and moored buoy data. To make progress on this, a clear strategy for collaborating with the JCOMM TT-TDC in future, is necessary.	TT-DM
4	**DBCP-26 / 9.8.1**	The Panel strongly recommended that the same WMO ID should be retained with no limitation in time in principle for a given moored buoy location irrespective of instrument and hardware changes. The Panel also recommended that 7-digit WMO IDs allocated to drifters should as much as practicable not be reallocated.	Panel members
5	**DBCP-26 / 11.2.15 (iii)**	The Panel invited its members to contribute to the JCOMM Extreme Wave database by submitting information on extreme wave events to the US National Oceanographic Data Center (NODC);	Panel members
6	**DBCP-26 / 6.3**	to consider reporting as much OceanSITEs buoy data as possible in real-time through the GTS	OceanSITEs

Finances

No.	*Ref.*	*Recommendation*	*By*
7	**DBCP-26 / 11.6.11 (1)**	Recognizing that the exchange rate between the US dollar and the Euro is continuing to effect the DBCP budget, the Panel encourages the Members once more to consider contributing to the DBCP/SOOP Trust Fund in Euros	Panel members
8	**DBCP-26 / 11.6.11 (2) & 11.1.7**	Panel members should pay their contributions in a timely fashion	Panel members
9	**DBCP-26 / 11.6.11 (3)** **DBCP-25 / 10.6.7**	Panel members not contributing to the Trust Fund are invited to discuss nationally whether a contribution could be made in the future	Panel members
10	**DBCP-26 / 11.6.11 (4)** DBCP-25 / 10.6.7	Panel members contributing to the Trust Fund are invited to investigate nationally whether their contribution could be increased	Panel members
11	**DBCP-26 7.8.3 & 11.2.12**	to increase its contribution to the DBCP Trust Fund	OceanSITEs, SOT-

Implementation

No.	*Ref.*	*Recommendation*	*By*
12	**DBCP-26 / 11.2.15 (iv)** DBCP-25 / 6.3	The Panel urged its members to make use of the DBCP barometer upgrade scheme implemented through the Global Drifter Programme (GDP) and supported by the United States for all newly deployed drifters, including those deployed in tropical regions;	Panel members
13	**DBCP-26 / 11.2.15 (vi)**	The Panel agreed to develop further the JCOMMOPS proposal for the establishment of a Cruise Technical Coordinator position at JCOMMOPS to act as an international focal point on ship cruises opportunities in support of global ocean observations.	Panel
14	DBCP-25 / 6.3	Research programmes (e.g. DAMOCLES) to put real-time and/or near-real-time data on GTS to address spatial gap in Russian sector of the Arctic regio.	Arctic Research Programs
15	DBCP-23 / 2.2.1.3 (xxiii) & 2.2.2.7	Encourage cooperation with OceanSITES and the Tsunameter network at a national level	Panel members

Instrument practices/Calibration

No.	*Ref.*	*Recommendation*	*By*
16	**DBCP-26 / 6.3.4**	The Panel recalled the importance of traceability of observations to standards and SI units, and in particular of establishing a proper certification process and procedures for the calibration. Recording the history of calibration and providing calibration certificates was particularly important. The Panel further requested its members to promote the importance of recording nationally relevant metadata until an agreed process could be set up	Panel members
17	**DBCP-26 / 11.5.8 (2)**	More systematic calibration of the instruments should be performed, traceable to IS, and documented. More stringent requirements on the accuracy of drifting-buoy measurements are needed. Accuracy claims should be validated.	Panel members
18	**DBCP-26 / 11.5.8 (3)**	Post-calibration of drifter SST sensors should be performed as much as practicable (see the presentation “Examining the long term stability of SST measurements made by drifting buoys (R.O. Smith, J.J. Kennedy, N. Rayner)” made at the DBCP Scientific and Technical workshop).	Panel members

Instrument practices/Intercomparisons

No.	*Ref.*	*Recommendation*	*By*
19	**DBCP-26 / 8.4.4** **DBCP-26 / 8.4.8 (iii)**	The Panel encouraged its member countries to participate in the intercomparison activities that being led by the PP-WET pilot project	Panel members
20	**DBCP-26 / 8.4.6**	The Panel recognized that the pilot project would contribute to JCOMM in developing standards and best practice, as well as to the relevant WIGOS exercise, and encouraged the co-chairs and SC members to actively outreach these relevant activities with the progress in the inter-comparison exercise	PP-WET
21	**DBCP-26 / 8.4.8 (i)**	Continue to support the PP-WET Pilot Project for the next year;	PP-WET
22	**DBCP-26 / 8.4.8 (ii)**	Encourage the co-chairs and SC members to contribute the results of the intercomparison exercise to JCOMM and WIGOS in developing standards and best practice;	PP-WET
23	**DBCP-26 / 11.5.8 (1)** DBCP-25 / 5.2.3 & 6.3	Inter-comparisons of drifting-buoy measurements for different manufacturers should be regularly performed in order to assess and improve measurement accuracy. The Panel noted the usefulness of the drogue sensor evaluation for the SVP buoys, which was conducted by the NOAA/AOML, and recommended to continue this valuable exercise with extended involvement of all currently operating buoy manufacturers	AOML

24	DBCP-25 / 7.4.6	The Panel encouraged the co-chairs and SC members to actively share outcomes of these relevant activities and progress in intercomparison exercises with the JCOMM Community	PP WET Chair

Instrument practices/Metadata

No.	***Ref.***	***Recommendation***	***By***
25	**DBCP-26 / 9.6.6 (i)**	JCOMMOPS would like to recommend that all buoy operators provide a website or web accessible CSV files of deployment information (as provided to the Iridium PP team) for all buoys similar to AOML, NDBC and Canada (examples provided in the report) as well as continuing email notifications as necessary. JCOMMOPS can in turn feed information from those websites into the JCOMMOPS database of metadata.	Panel members
26	**DBCP-26 / 9.6.6 (iv)**	Close cooperation between OceanSITES and the rest of the DBCP Moored Buoy community is recommended when considering metadata content and standards.	OceanSITEs & Panel members
27	**DBCP-26 / 9.6.6 (v)**	JCOMMOPS will provide recommendation to moored buoy operators on the required content as well as possible formats (i.e csv, XML etc.) for more effective and consistent exchange of deployments	JCOMMOPS
28	**DBCP-26 / 11.2.15 (i)**	That the JCOMM Management Committee considers reviewing the Terms of Reference of the DBCP in order for the Panel to also address issues relevant to rigs and platforms making automated observations;	MAN
29	**DBCP-26 / 11.2.15 (ii)**	Considering the importance of instrument/platform metadata for marine climatology purposes in particular, the Panel urged its members to collect, record, and make buoy instrument/platform metadata available via JCOMMOPS;	Panel members
30	**DBCP-26 / 11.3.13 (ii)**	The Panel agreed that it should continue to contribute to the development of WIGOS by providing assistance, as required, on (i) instrument standards and practices issues, (ii) data and instrument/platform metadata exchange, and (iii) quality management issues.	Panel

Satellite data telecommunication

No.	***Ref.***	***Recommendation***	***By***
31	**DBCP-26 / 9.4.4**	The Panel was very pleased in the expected improvements in the Central Pacific and the Indian Ocean, but encouraged CLS to consider how it could improve the situation in the southern Atlantic or Western Pacific future	CLS

32	**DBCP-26 / 9.6.6 (ii)**	Operators of Iridium platforms have continued to actively report metadata to each other upon deployment, which was valuable and should continue beyond the life of the Iridium Pilot Project.	Iridium operators
33	**DBCP-26 / 11.2.15 (v)**	The Panel recommended to the Argos Joint Tariff Agreement to consider the DBCP requirements for timely data as a high priority and develop the new regional network of Local User Terminals in the view to minimize data availability delays in all ocean regions, including the South Atlantic, Ocean, and South East Pacific Oceans;	JTA
34	**DBCP-26 / 11.5.7**	The Panel concurred with the legacy recommendations from the draft Project Report of the JCOMM Pilot Project for WIGOS, in particular regarding establishing an international forum of satellite data telecommunication users in the view to expand the scope of the Argos Joint Tariff Agreement (JTA) to address remote data communication requirements for automatic environment observing systems coordinated through WMO and those partner organization, system deficiencies, negotiate tariffs and potential improvements of the rendered services with all relevant operators of satellite data telecommunications systems.	JTA, CBS
35	DBCP-25 / 6.3	to deploy more Iridium drifters in the Indian Ocean region and other areas where the delay of data delivery is particularly an issue.	DBCP members

Technology development, Pilot Projects

No.	***Ref.***	***Recommendation***	***By***
36	DBCP-25 / 5.2.4	Panel agreed that it should be engaged in the future development of wave glider and invited Liquid Robotics to continue participating in future sessions and discussion	TT IBP
37	DBCP-25 / 7.1.8, 8.7.3	The notification of all Pilot Project buoy deployments (Iridium, Argos-3, waves, HRSST etc) must be completed by the buoy operator, as soon as possible after the deployment.	Pilot Project Team members and Buoy Operators
38	DBCP-25 / 7.4.3	The Panel encouraged its member countries to participate in the wave measurement intercomparison activities which was led by this pilot project.	DBCP members
39	DBCP-25 / 8.7.3	The Panel noted there was a need to flag HRSST and other high-performance sensors appropriately within platform metadata which would require a deployment notification to be sent to JCOMMOPS, as with other Pilot Projects	DBCP members

ANNEX XVIII

ACRONYM LIST

ABE-LOS	IOC Advisory Body on the Law of the Sea
ACCESS	African Centre for Climate and Earth System Science
ADB	AOML Data Buoy
ADOS	Autonomous Drifting Ocean Station
AG	DBCP Action Groups
AIC	Argo Information Center
ALD	UNESCO Appointment of Limited Duration
AOML	NOAA Atlantic Oceanographic and Meteorological Laboratory (USA)
AP	Air Pressure
Argo	Argo Profiling Float Pilot Project
ASCLME	The Agulhas and Somali Current Large Marine Ecosystems
AST	Argo Steering Team
ATLAS	Autonomous Temperature Line Acquisition System
BAS	British Antarctic Survey
BOM	Bureau of Meteorology (Australia)
BUFR	FM 94 BUFR GTS format: Binary Universal Form for Representation of meteorological data
BUOY	FM 18 BUOY GTS format: Report of a buoy observation
CB	Capacity-Building
CBS	Commission for Basic Systems (WMO)
CCHDO	CLIVAR and Carbon Hydrographic Data Office
CCl	Commission for Climatology (CCl)
CDIP	Coastal Data Information Program
CDMP	Climate Database Modernization Programme (USA)
Cg	Congress (WMO)
CIMO	Commission on Instruments and Methods of Observation (WMO)
CLIVAR	Climate Variability and Predictability (WCRP)
CLS	Collecte Localisation Satellites (France)
CMR	Christian Michelsen Research (Norway)
CONOPS	WIGOS Concept of Operations
CRREL	Cold Regions Research and Engineering Laboratory (USA)
CSV	Comma Separated Values format
DAR	Data Discovery, Access and Retrieval service (WMO WIS)
DART	Deep-ocean Assessment and Reporting of Tsunami (buoy)
DB	Data Buoy
DBCP	Data Buoy Co-operation Panel (WMO-IOC)
DB-TAG	E-SURFMAR Data Buoy Technical Advisory Group
DCP	Data Collection Platform
DCPC	Data Collection and Production Centres (WMO WIS)
DCS	Data Collection System
DMCG	Data Management Coordination Group (JCOMM)
DMPA	Data Management Programme Area (DMPA)
EB	DBCP Executive Board
EBD	Equivalent Buoy Density
EC	Executive Council
ECMWF	European Centre for Medium-Range Weather Forecasts
EEZ	Exclusive Economic Zone
EOV	Essential Ocean Variable
ER	Expected Result
E-SURFMAR	Surface Marine programme of the Network of European Meteorological Services, EUMETNET

ET/AWS	CBS / IOS Expert Team on Requirements for Data from Automatic Weather Stations (WMO)
ETCCDI	joint CLIVAR / CCl / JCOMM Expert Team on Climate Detection and Indices
ET/DRC	CBS Expert Team on Data Representation and Codes (WMO)
ET/EGOS	CBS / IOS Expert Team on the Evolution of the Global Observing System (WMO)
ETDMP	Expert Team on Data Management Practices (JCOMM)
ETMC	Expert Team on Marine Climatology (JCOMM)
ETSI	Expert Team on Sea Ice (JCOMM)
ETWS	Expert Team on Wind Waves and Storm Surge (JCOMM)
EUCOS	EUMETNET Composite Observing System
EUMETNET	Network of European Meteorological Services
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EuroSITES	European integrated network of open ocean multidisciplinary observatories
FAD	Fish Aggregation Device
FAO	Food and Agriculture Organization
FG	First Guess Field
FOAM	Forecasting Ocean Assimilation Model (United Kingdom)
GCC	Global Collecting Centre (of MCSS)
GCOS	Global Climate Observing System
GDAC	Global Data Assembly / Acquisition Centre
GDP	Global Drifter Programme
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GFCS	Global Framework for Climate Services
GHRSST	GODAE High-Resolution SST Pilot Project
GIS	Geographical Information System
GISC	Global Information System Centres (WMO WIS)
GLOSS	Global Sea-level Observing System (JCOMM)
GODAE	Global Ocean Data Assimilation Experiment (GOOS)
GOOS	Global Ocean Observing System (IOC, WMO, UNEP, ICSU)
GOS	Global Observing System (WMO)
GPS	Global Positioning System
GPSRO	GPS Radio Occultation
GSOP	CLIVAR Global Synthesis and Observations Panel
GSM	Global System for Mobile Communications
GSSC	GOOS Scientific Steering Committee
GTS	Global Telecommunication System (WWW)
HMEI	Association of Hydro-Meteorological Equipment Industry
HRPT	High Resolution Picture Transmissions
HRSST	DBCP/GHRSST High Resolution SST Pilot Project
IABP	International Arctic Buoy Programme
IBPIO	International Buoy Programme for the Indian Ocean
ICG	Intergovernmental Coordination Group
ICG/IOTWS	ICG for the Indian Ocean Tsunami Warning and Mitigation System (IOC)
ICOADS	International Comprehensive Ocean-Atmosphere Data Set (USA)
ICSU	International Council for Science
ICT-IOS	CBS Implementation / Coordination Team on the Integrated Observing System
ICTT-QMF	Inter Commission Task Team on Quality Management Framework
ID	Identification Number
IGDDS	Integrated Global Data Dissemination Service (satellite)
I-GOOS	Intergovernmental IOC-WMO-UNEP Committee for GOOS
IHO	International Hydrographic Organization
IMB	Ice Mass Balance
IMEI	International Mobile Equipment Identity
IMO	International Maritime Organization
InaGOOS	Indonesian Global Ocean Observing System

IndOOS	Indian Ocean Observing System
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCCP	International Ocean Carbon Coordination Project
IODE	International Oceanographic Data and Information Exchange (IOC)
IPAB	WCRP-SCAR International Programme for Antarctic Buoys
IPP	Iridium Pilot Project
IPY	International Polar Year (2007-2008)
ISABP	International South Atlantic Buoy Programme
ISDM	Integrated Science Data Management (formerly MEDS, Canada)
ISO	International Organization for Standardization
IT	Information Technology
ITP	International Tsunameter Partnership
ITT	Invitation To Tender
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMM-III	Third Session of JCOMM (Marrakech, Morocco, 4-11 November 2009)
JCOMMOPS	JCOMM *in situ* Observations Programme Support Centre
JTA	Joint Tariff Agreement (Argos)
KML	Keyhole Markup Language
LOI	Letters of Intent
LUT	Local User Terminal (Argos)
MAN	JCOMM Management Committee
MCSS	Marine Climatological Summaries Scheme
MDT	Modelling Development Team
MEDS	Marine Environmental Data Service (Canada, now ISDM)
META-T	Water Temperature instrument/platform Metadata Pilot Project (JCOMM)
METOP	Meteorological Operational satellites of the EUMETSAT Polar System (EPS)
MOFS	Met-Ocean Forecasts and Services
MOI	Mauritius Oceanography Institute
MOU	Memorandum of Understanding
MSC	Meteorological Services of Canada
NAVOCEANO	Naval Oceanographic Office (USA)
NC	National Centres (WMO WIS)
NCDC	NOAA National Climatic Data Center (USA)
NCEP	NOAA National Center for Environmental Prediction (USA)
NCOSM	National Centre of Ocean Standards and Metrology (China)
NDBC	NOAA National Data Buoy Center (USA)
NESDIS	NOAA National Environmental Satellite Data and Information Service (USA)
NFP	National Focal Point
NIOT	National Institute of Ocean Technology (India)
NMDIS	National Marine Data and Information Service (China)
NMHS	National Meteorological and Hydrological Service
NOAA	National Oceanic and Atmospheric Administration (USA)
NODC	National Oceanographic Data Centre
NPDBAP	DBCP-PICES North Pacific Data Buoy Advisory Panel
NPOESS	National Polar-orbiting Operational Environmental Satellite System (USA)
NSF	National Science Foundation (USA)
NWP	Numerical Weather Prediction
NWS	NOAA National Weather Service (USA)
OceanSITES	OCEAN Sustained Interdisciplinary Timeseries Environment observation System
OCG	Observations Coordination Group (JCOMM)
OCO	NOAA Office of Climate Observation (USA)
ODAS	Ocean Data Acquisition Systems
ODASMS	ODAS Metadata Service (operated by China on behalf of JCOMM)
ODINAFRICA	Ocean Data and Information Network for Africa (IODE)

ODP	Ocean Data Portal (IODE)
ODT	Observation Development Team
OGP	Oil and Gas Producers
OOPC	Ocean Observations Panel for Climate (GCOS-GOOS-WCRP)
OPA	Observations Programme Area (JCOMM)
OPAG	Open Programme Area Group
OPAG-IOS	CBS OPAG on the Integrated Global Observing System
OPSC	Observing Programme Support Centre
OPSCOM	Argos Operations Committee
OSE	Observing System Experiment
OSMC	NOAA Observing System Monitoring Center (USA)
PA	Programme Area (JCOMM)
PANGEA	Partnerships for New GEOSS Applications
PGC	Principal GTS Co-ordinator (DBCP)
PICES	North Pacific Marine Science Organization
PICO	Panel for Integrated Coastal Observations
PIRATA	Pilot Research Moored Array in the Tropical Atlantic
PMEL	NOAA Pacific Marine Environmental Laboratory (USA)
PMO	Port Meteorological Officer
PMOC	Principal Meteorological or Oceanographic Centres responsible for quality control of buoy data (DBCP)
PMT	Platform Messaging Transceivers
POGO	Partnership for Observation of the Global Oceans
PP-WMD	Pilot Project on Wave Measurement from Drifters
PP-WET	JCOMM Pilot Project on Wave measurement Evaluation and Test from moored buoys
PTT	Platform Transmitter Terminal (Argos)
QA	Quality Assurance
QC	Quality Control
QMF	WMO Quality Management Framework
QMS	Quality Management Systems
RAMA	Indian Ocean Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction
RMIC	WMO-IOC Regional Marine Instrument Centre
RMS	Root Mean Square
RNODC	Responsible Oceanographic Data Centre (IODE)
RNODC/DB	RNODC for Drifting Buoys
RRR	Rolling Review of Requirements
RTMC	VOSClim Real-Time Monitoring Centre
RUDICS	Iridium Router-Based Unrestricted Digital Interworking Connectivity Solution
RV	Research Vessel
SADC	South African Development Community
SAMS	Scottish Association for Marine Science
SAT	Site Acceptance Test
SAWS	South African Weather Service
SBD	Short Burst Data (Iridium)
SC	Steering Committee
SCAR	Scientific Committee on Antarctic Research
SCG	Services Coordination Group (JCOMM)
SeaDataNET	Pan-European infrastructure for Ocean & Marine Data Management
SFSPA	JCOMM Services and Forecasting Systems Programme Area
SIA	Seasonal to Inter-annual Forecast
SIO	Scripps Institution of Oceanography (University of California, USA)
SLP	Sea Level Pressure
SMOS	Soil Moisture and Ocean Salinity mission
SOBP	Southern Ocean Buoy Programme
SOC	Specialized Oceanographic Centre (JCOMM)

SoG	Statements of Guidance
SOOP	Ship-Of-Opportunity Programme
SOOPIP	SOOP Implementation Panel (JCOMM)
SOT	Ship Observations Team (JCOMM)
SPA	JCOMM Services Programme Area (now SFSPA)
SSA	WMO Special Service Agreement
SSG	Scientific Steering Group
SST	Sea-Surface Temperature
STIP	Stored Tiros Information Processing
SVP	Surface Velocity Programme (of TOGA and WOCE, replaced by GDP) drifter
SVP-B	SVP barometer drifter
SVP-BS	SVP drifter with salinity
SVP-BTC	SVP drifter with temperatures in depth
SVP-BW	SVP Barometer and Wind at a drifter
TAO	Tropical Atmosphere Ocean Array
TC	Technical Co-ordinator
TD	Technical Document
TIP	Tiros Information Processing
TIP	Tropical Moored Buoys Implementation Panel
TOGA	Tropical Atmosphere and Global Ocean programme
TOWS-WG	Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems
TRITON	Triangle Trans-Ocean buoy network
TT	Task Team
TT-CB	DBCP Task Team on Capacity-Building
TT-DM	DBCP Task Team on Data Management
TT-MB	DBCP Task Team on Moored Buoys
TT-IBP	DBCP Task Team on Instrument Best Practices & Drifter Technology Developments (merged the TT-QM & TT-TD)
TT-QM	DBCP Task Team on Quality Management (now merged into TT-IBPD)
TT-TD	DBCP Task Team on Technological Development (now merged into TT-IBPD)
TT-TDC	DMPA Task Team on Table Driven Codes
UN	United Nations
UNESCO	UN Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
URL	Uniform Resource Locator
USA	United States of America
USD	United States Dollar
VAR	Value Added Reseller
VOS	Voluntary Observing Ship (JCOMM)
VOSClim	VOS Climate Project
WCRP	World Climate Research Programme
WCC-3	World Climate Conference 3
WDIP	WIGOS Test of Concept Development and Implementation Plan
WDIS	WIGOS Development and Implementation Strategy
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization (UN)
WOCE	World Ocean Circulation Experiment
WWW	World Weather Watch (WMO)
XBT	Expendable BathyThermograph
WML	Extensible Markup Language