DATA BUOY COOPERATION PANEL
Twenty-ninth Session

Paris, France
23-27 September 2013

JCOMM Meeting Report No. 106

World Meteorological Organization
Weather · Climate · Water

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

NOTES

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).

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WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

DATA BUOY CO-OPERATION PANEL

TWENTY-NINTH SESSION

Paris, France
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FINAL REPORT

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C O N T E N T S

Note: The following documentation is provided on the DBCP-29 web site, http://www.jcomm.info/DBCP-29:

- 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.

DBCP-29, IOC-UNESCO Headquarters, Paris France

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EXECUTIVE SUMMARY

The twenty-ninth session of the Data Buoy Co-operation Panel (DBCP-29) was held in the UNESCO Annex building in Paris France, from 23 – 27 September, 2013.

During the technical and scientific workshop organized during the first day of the session, 21 presentations were delivered on a wide range of topics of concern to the DBCP. Developments in the technologies of Drifting Buoys, including technical issues concerned with the longevity of the buoys were reported. Approximately 70 participants from 19 countries attended the meetings. The Panel concurred with the five recommendations made by the workshop and adopted them.

The Chairperson, vice-Chairpersons and the DBCP Technical Coordinator (TC), reported on their respective activities on behalf of the Panel during the last intersessional periods.

The Panel appreciated the activity in the Asian region, particularly the advances of the RAMA array that is now 70% complete. The Panel noted the challenges for maintaining the global moored and drifter arrays in face of vandalism and decreasing deployment opportunities.

The Panel noted that the operational status of the data buoy network has improved over past few months, but current number of drifters reporting on the GTS remains a concern to the community, with Southern Ocean Buoy Programme operating well below the DBCP Implementation Strategy goal. The TAO array is also of particular concern, operating at 36% of its planned capacity.

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

During the DBCP Session 27, the Panel had noted with concern studies that had indicated that estimates of drogue loss events since the late 1990s had in many cases been underestimated and that lifetimes of Drifters had fallen far below the 450 day half-life goal. Inter-sessional work on the issue by the TT-IBPD resulted in many useful Panel recommendations to buoy operators and manufacturers, such as the need for hardened battery packs and better drogue attachment techniques.

The Panel noted progress made by TT-Moored Buoys on new BUFR templates and made recommendations to buoy operators to submit metadata to JCOMMOPS.

The Panel noted the continuing success of the DBCP In-Region workshops held in 2012-13 and endorsed future support for either DBCP's "Fifth In-Region Capacity Building Workshop for the Western Indian Ocean" (WIO-5) or 2) the "First Pacific Islands Workshop on Ocean Observations and Data Applications" (PI-1). The Panel also advised the TT-CD to seek mechanisms to improve coordination of capacity building efforts with other programmes including coordination with preparations for the 2nd International Indian Ocean Expedition.

The Panel advised the Global Drifter Programme Action Group to investigate organizing a science workshop to address drifter water following characteristics, and use of drifter velocity in ocean assimilating models.

The Panel expressed its concerns about the state of the TAO array and its data availability. The Panel considers this a significant issue and urges its member countries to emphasize the issues at the highest level of responsible agencies.

The Panel noted with satisfaction the steps taken by the International Tsunameter Partnership to build communication links with the IOC's Intergovernmental Coordination Group for

Tsunami and other Coastal Hazards Warning Systems. The ITP was also urged to define performance indicators for tsunameters and disseminate with tsunameter metadata and data.

The Panel strongly supported the PP- Sea Level Pressure action to complete the BAMS paper on Evaluation of the Impact of Sea level Atmospheric Pressure Data over the Ocean from Drifting Buoys on Numerical Weather Prediction, and to continue plans for further OSE studies.

The Panel agreed that the PP- Wave Measurement Evaluation and Testing was progressing well, with evaluation data routinely added to the intercomparison web site. It is expected that the pilot project will contribute to JCOMM in developing standards and best practices and other inter-comparison exercises.

The PP- for High Resolution SST drifters reported on the proven feasibility and utility of HRSST-2 systems. The Panel continues to seek funding from the satellite community, the main beneficiary of this technology, and encourages manufacturers to add HRSST to future engineering plans for drifters and to review the potential costs of the upgrade.

The Panel noted the valuable contributions of the JCOMMOPS Ship Coordinator hired in February 2013. The position was created as a focal point for ship-related issues across all programs supported by JCOMMOPS, providing dedicated support of ship based observing systems, and developing partnerships and chartering services with the sailing community and shipping industry to increase deployment opportunities for the DBCP community. The Panel acknowledged the importance of developing procedures for the collection of information from operators who are looking for a deployment, retrieval or other opportunities. The Panel will consider the feasibility of coordinating deployment missions at JCOMMOPS on a cost-sharing basis with other ocean observing programmes.

The DBCP Technical Coordinator reported that data timeliness maps are posted on the DBCP web site, and showed that 50% of the drifting buoys reported to the GTS in less than 60 minutes and 87% reported in less than 120 minutes. The Panel noted that the Argos Real-Time Antenna Upgrade Project is expected to improve data timeliness with the addition, in late 2014, of sites at Ascension Island and Easter Island.

The Panel recognized that vandalism on data buoys continues to be a significant global menace to ocean observation systems. Information reported to the DBCP Working Group on Vandalism catalogued 95 vandalism events from six countries/programmes during the last intersessional period. The Panel strongly felt the need to sensitize this issue through a major educational awareness programme, in line with UN General Assembly and WMO Congress and IOC Assembly resolutions. The Panel urged the Working Group on Vandalism to develop measures and strategies to help mitigate the damage to ocean observing systems using a multiple-approach (hardware design, education, and law enforcement) in coordination with local authorities and international organizations, including FAO Fisheries Management and Regulatory Bodies.

The Panel recognized the importance of maintaining good metadata concerning plans and deployment information for drifting and moored buoys and encouraged all buoy operators to provide this information.

The Panel received updates on the Argos and Iridium satellite data telecommunication systems. The Panel invited its members to review the various systems, and noted that the ad hoc International forum of users of satellite data telecommunication systems will provide an efficient mechanism for receiving such useful information.

The Panel took note of the development of the JCOMM *in-situ* Observations Programmes Support Centre (JCOMMOPS) and noted that it was finishing a long transition period through

which it has established itself as an effective and integral component of the data buoy coordination mechanism.

The Panel anticipates a new generation of Web Services to be provided by JCOMMOPS which will integrate and display ocean observation systems and deployment information enabling a new Information System and Monitoring centre. The Panel asked its members to cooperate with this project by systematically communicating deployment and cruise plans to JCOMMOPS.

The Panel was briefed on activities of the JCOMM which impact the DBCP. The JCOMM-Management Committee and Observation Coordination Group meetings emphasized a need to establish consistent evaluation and reporting metrics to combine information across observation systems to aid coordination of implementation requirements as needed by OOPC reviews and the WMO Rolling Review of Requirements.

The Panel noted the progress in migration to Table Driven Codes, in particular the BUFR templates for drifting and moored buoy data which are accepted for validation.

The Panel welcomed the move of JCOMMOPS to Brest and the support offered by CLS and Ifremer for the new office. The Panel reviewed and concurred with the Secretariat's plan for recruitment of the new Technical Coordinator and was assured that continuity of the work and training of this important position can be facilitated.

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. In view of the increasing DBCP activities especially Capacity Building and the expenses due to securing the position of the Technical Coordinator, the Panel invited its members not currently contributing to the Trust Fund to discuss nationally whether a contribution could be made in the future. It also took the opportunity to invite contributing members to consider increasing their contributions. The Panel recognizes the value of in-kind contributions and will continue to highlight these.

The Panel re-elected Mr Al Wallace (Canada) as its Chairperson, Dr J. Turton as Vice-chairperson for Europe and Dr R Venkatesan (India) as the Vice-chairperson for Asia. The Panel elected Mr Graeme Ball (Australia) as Vice-chairperson for the Southern Hemisphere. Mr Johan Stander of South Africa was thanked for his contributions as the previous Vice-Chair for Southern Hemisphere. The Panel thanked the delegation of China for the offer, on behalf of SOA, to host the thirtieth session of the DBCP in China in October 2014.

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GENERAL SUMMARY OF THE WORK OF THE DBCP-29 SESSION

1 OPENING AND WELCOME OF THE DBCP SESSION

1.1 The Chairperson of the Panel, Mr Al Wallace, opened the Twenty-ninth DBCP Session, and Scientific and Technical Workshop with DBCP-29 at 0845 hours on Monday, 23 September 2013, at the UNESCO Headquarters, Miollis Annex Salle 13 in Paris, France.

1.2 On behalf of the Panel, Mr Wallace welcomed all participants to the session and to the workshop, and expressed his appreciation for the commitment of the Panel Members. He then thanked the IOC of UNESCO for hosting the session and workshop and the WMO Secretariat for their continuing support.

1.3 Dr Mitrasen Bhikajee, Deputy Executive Secretary of the Intergovernmental Oceanographic Commission of UNESCO, welcomed the participants to UNESCO and Paris, on behalf of IOC Executive Secretary, Wendy Watson-Wright. He thanked the participants for their activities on behalf of the world's ocean observation systems, and emphasized that this work would not be possible without their selfless volunteer actions. In these times of thin budgets for the IOC and indeed the world financial crises, we must all increase our commitment to maintaining and sustaining the impressive success of the Data Buoy Cooperation Panel. The value of the Drifting Buoy Network to modern oceanography remains high, and serves as a platform for sharing technology and knowledge between the Member States of the IOC.

1.4 On behalf of the GOOS Steering Committee and GOOS Project Office, Dr Albert Fischer, IOC Secretariat, thanked the DBCP-29 welcomed the participants to UNESCO. The GOOS programme has recently been revitalized with new management methods and an expanded mission. The new GOOS will begin to embrace more biogeochemical and ecosystem observation systems. But he reminded the session that the GOOS first priority is to build on existing systems and preserve the programmes which have been the core of GOOS successes for so many years. He 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).

1.5 On behalf of Mr Michel Jarraud, Secretary-General of the World Meteorological Organization (WMO), the Secretariat representatives welcomed participants to the workshop and to the DBCP. He warmly thanked the Intergovernmental Oceanographic Commission (IOC) for hosting the event. He recalled that Met-ocean applications provide the means to prevent, mitigate, and adapt to the impacts of ocean phenomena, weather, and climate on the environment and human activities in coastal regions and beyond. While useful to realize socio-economic benefits, Met-ocean applications rely heavily on in situ and satellite meteorological and oceanographic observations. The DBCP plays a crucial role within JCOMM for providing the buoy observation component of the WMO Integrated Global Observing System (WIGOS) implementation effort, including surface drifters, tropical moorings, and coastal meteorological and oceanographic buoys. The Panel provides an international coordination mechanism for addressing the required standardization, harmonization, and optimization of data buoy observation implementation and operations serving the needs of WMO and IOC Members applications.

1.6 The WMO Secretariat representative also recalled that the Global Framework for Climate Services (GFCS) that is now developing is also increasing the demand for high quality, documented, and traceable observations of known uncertainty, not only for current observations of newly deployed instruments but also for historical data. He reminded the participants that the WMO Executive Council has updated (at EC-65) the WIGOS Framework Implementation Plan (WIP), which includes ten Key Activity Areas, which the Panel is invited to address during this Session.

1.7 The WMO Secretariat representative concluded by assuring the continued commitment of WMO 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).

1.8 The local organizer for the session outlined various local arrangements. The session agreed its hours of work and other logistic arrangements. The Secretariat introduced the session documentation.

1.9 Mr Wallace then introduced the co-chairs for the Scientific and Technical Workshop, Mr Johan Stander (South Africa) and Mr Jean Rolland (France), to lead that session.

2 SCIENTIFIC AND TECHNICAL WORKSHOP

2.1 The Scientific and Technical workshop of DBCP-29 was held Monday Sept. 23, 2013 at the IOC/UNESCO Headquarters, Paris. The themes of the 2013 workshop were chosen to allow broad participation by DBCP members and in-depth discussion of individual research results. The theme of the Workshop was "Buoy Science and Technology" encompassing the broad areas of:

- Technical Development
- Operational Enhancements
- Marine Forecast and Disaster Risk Reduction (DRR)
- Research Applications

2.2 Mr Johan Stander (Johan.Stander@weathersa.co.za) and Mr Jean Rolland co-chaired the workshop, twenty eight requests were received, while twenty-one presentations were delivered to approximately 70 participants. The following presentations were made:

1) Status And Performance Of Metocean Iridium Drifting Buoys *(B Petolas)*
2) Optimizing Argos PMT Settings For Drifting Buoys *(M Guigue)*
3) Investigation of Recent Reduced Life Spans of GDP Drifters *(A Sybrandy)*
4) Evaluating Drifter And Drogue Lifetimes For Various Manufacturers *(E Valdes)*
5) Partnerships And Capacity Building *(S Thurston)*
6) The Ekman Current Observed From Drifters In The Northeast Pacific *(D Lee)*
7) A Wind Profiling Platform For Offshore Wind Measurements And Assessment *(M Blaseckie)*
8) 2013 SVP Drifter Developments At SIO *(L Braasch)*
9) The Response Of The Surface Circulation Of The Arabian Sea To Monsoonal Forcing *(V Hormann)*
10) A New Global Surface Current Climatology, With Application To The Hawaiian Island Region *(R Lumpkin)*
11) Development And Mooring Of A Brazilian Prototype Of The TAO/PIRATA Atlas Buoy *(E Campos)*
12) Capacity Of HRSST-2 Buoys To Measure SST With A High Degree Of Accuracy *(P Blouch)*
13) Identifying Drifter Deployment Values Based On Key Factors That Affect Drifter Lifetimes *(S Dolk)*
14) Wave Measurement Comparisons From Moored Buoys And Light Vessels *(J Turton)*
15) Drifting Characteristics Of SVP Drifters In The North Atlantic Subtropical Gyre *(G Reverdin)*
16) Establishing The Canadian Arctic Buoy Array (CABA) - Early Assessment Of Impact On Numerical Weather Prediction MSLP And Ice Forecasts *(C Marshall)*
17) New Observations Of Subsurface Thermal Saline And Current Structure For The Arabian Sea From Omni Buoys *(R Venkatesan)*
18) Tracking Of Mesoscale Eddies Across The Southern Mozambique Channel Using

Argo Float Technology *(T Morris)*
19) CTD Profiling On A Surface Mooring In The Upper 500m For ENSO Observations *(C Meinig)*
20) Features of GPS use on Argos-2 and Iridium telemetry equipped drifters *(S Motyzhev)*
21) Challenges with Iridium 9602 Modems *(Andy Sybrandy)*

2.3 The Panel briefly reviewed the results and recommendations arising from the workshop. The Panel concurred with the recommendations proposed by the workshop, and adopted them:

Rec. 1 Continue the on-going comparison between the various manufactures by year for drifter and drogue lifetime. ***(action; AOML; on-going)***.
Rec. 2 Distribute the autonomous surface vehicle data on the GTS using appropriate WMO code (by owners of the gliders); identify proper GTS bulletin headers, and BUFR template ***(action; Jon Turton to lead for DBCP;DBCP-30)***
Rec. 3 Expand the request to manufacturers to find cost effective means to meet technical specifications, with special emphasis on HRSST. (action; Manufactures; on-going)
Rec. 4 Manufacturers to carefully review the integrity of drifter battery packs and to minimize impact of vibration. Consideration should be given to the overall management of the energy budget managing the transmitters: ***(action; manufacturers; on-going*)**
Rec. 5 By noting that The HRSST data are being used for the validation of satellite products; the panel is inviting that user community to contribute to the funding of the future upgrade of HRSST capability. ***(action; Panel members; on-going)***

2.4 Great appreciation was expressed for the new NOAA/AOML developed tool that targets high value deployment locations (and eliminate areas of high risk) with a recommendation that

Rec. 6 JCOMMOPS integrate GDP Drifter Deployment Value tools with a developing database on cruises (research and commercial) to increase spatial data coverage, prevent overlapping efforts and maximize drifters lifetimes. ***(action; JCOMMOPS and AOML; on-going)***

Action 1. Generate a link in JCOMMOPS website for regional drifter deployment organizers to input proposed deployment locations. ***(action; JCOMMOPS; ASAP)***

2.5 The Panel thanked all presenters and the co-chairs for the successful workshop. As in previous years, all 21 presentations will be published in a DBCP Technical Document series, as well as be made available on the DBCP website.

Rec. 7 All 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 2013 **(*action; S&T workshop authors; 30 November 2013*)**.

2.6 The panel voiced its approval for continuation of the Scientific and Technical Workshops at future DBCP sessions. Mr Stander accepted the panel's request toto organize and chair the workshop for DBCP-30 in 2014. The meeting noted the offer from China for Prof. Aina Wu (China) to co-chair the workshop:

Action 2. Organize and chair DBCP-30 Scientific and Technical Workshop ***(action; J. Stander; DBCP-30)***

3 OPENING OF THE DBCP BUSINESS SESSION

3.1 Adoption of the agenda

3.1.1 Following the S&T Workshop on Sept. 23, and side meetings of the DBCP Task Teams, Pilot Projects and some Action Groups on Sept. 24, the Twenty-ninth Session of the Data Buoy Cooperation Panel (DBCP-29) was opened by the Panel Chairperson, Mr Al Wallace, at 0900 Wednesday Sept. 25, 2013. The Chair once again welcomed the participants to the session and thanked the hosts for the local meeting arrangements.

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 working language of the session was English only. The joint IOC/WMO Secretariat introduced the documentation in accordance with the provisional agenda. The session was intended to be paperless, and thus all documentation was made available on-line: http://www.jcomm.info/DBCP29Docs

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, reported on the activities and work of the Panel during the last intersessional period. The Chairperson noted that the panel continued to deliver on its mission and objectives while facing some challenges, yet making progress. The Chair recognized the work of the Panel in working cooperatively to operating this vital observing component for the global oceans.

4.1.2 The Executive Board of the DBCP is distributed widely around the world (India, South Africa, Europe and North America), but with the help of the WMO and IOC Secretariat, and the Panel's Technical Coordinator, communications, information and decisions are made efficiently and effectively. The Chair expressed his appreciation for the strong support provided by the team.

4.1.3 The Chair recalled that the objective for the drifting buoy array is 1250 platforms distributed globally with one buoy in each 5 degree by 5 degree grid. There is a complementary objective to increase the number of buoys reporting barometric pressure from the current 50% to having this element reported by the full network. There are a number of challenges associated with these goals. It has proven difficult to maintain the number of drifting buoys in the global array at the target of 1250. More problematic is meeting the goal of have the operating buoys geographically distributed. Gaps in the array continue to exist in a number of oceans. Drifting buoy lifetimes have decreased in recent years, falling short of the required 450 days. Progress is being made on improving the timeliness of observations being distributed on the GTS. It is expected that improvements in telecommunications technologies will provide further enhancements. The Chair noted that Panel members are addressing these issues on an ongoing basis, and continue to populate the global array with new deployments of drifting buoys.

4.1.4 The Secretariat and Executive Board are working with partners to explore options to recruit and staff the position of Technical Coordinator. The Chair thanked Ms. Kelly Stroker for excellent work over the past year in continuing to meet the needs of Panel and its members. The success of her efforts is even more remarkable given her relocation from France to the United States. JCOMMOPS was successful in staffing a Ship Logistics Coordinator during the past year. The Panel welcomes Mr. Martin Kramp into this position and commits to supporting his efforts.

4.1.5 The Chair recognized the dedicated efforts of the action groups, the task teams and the pilot projects. The dedication, enthusiasm and perseverance of these panel members promote and sustain the work of the Panel and contribute significantly to our overall success. The action groups address regional issues, and seek solutions to deployment and other challenges such as vandalism. The task teams are creative, innovative and solution oriented. It is through their efforts that problems with the networks and observing systems (e.g. buoy lifetimes, drogue loss) will be resolved and sustainable procedures and practices implemented. The Chair recognized the achievements of the Capacity Building Task Team in delivering three workshops. He thanked the host countries (India, Tanzania, and China), and their meteorological/oceanographic institutions for their assistance in the successfully hosting these vital and necessary workshops. The pilot projects will take the Panel in new directions and ensure its relevance through working in areas such as high resolution SST, wave measurement from drifting buoys, and impacts of buoy SLP observations on NWP.

4.2 Reports by the vice-Chairpersons of the DBCP

4.2.1 **Report by the vice-Chairperson for Europe:** The DBCP vice-Chairperson for Europe, Mr Jon Turton (UK) reported on his activities during the last inter-sessional period. These included activities (reported under item 6.3) as lead on the Task Team on Moored Buoys and in connection with the E-SURFMAR Data Buoy Expert Team. Specifically, he provided the JCOMMOPS report to E-SURFMAR as the DBCP-TC was unable to attend the E-SURFMAR DB-ET meeting in June. Other activities were mainly conducted through the Executive Board in providing guidance to actions and issues arising at, and since DBCP-28.

4.2.3 **Report by the vice-Chairperson for Asia:** The DBCP vice-Chairperson for Asia, Dr. R. Venkatesan (India), reported on his activities during the last inter-sessional period. The activities in Asia are progressing well with countries China, India, Japan and Korea, in addition to NOAA, contributing to ocean data collection in this region and making data available in GTS. During the intervening period the following meetings were organised successfully: (1) Third JCOMM Marine Instrumentation Workshop For The Asia Pacific Region, (2) DBCP Regional workshop on Best Practices for Instruments and Methods of Ocean Observation, (3) Second International Symposium on Boundary Current Dynamics: Its connection with open-ocean, coastal processes, biophysical interactions and responses to global climate change, Lijiang, Yunnan, China and (4) CLIVAR/IOC -GOOS INDIAN OCEAN PANEL meeting China (5) WCRP/CLIVAR Second International Symposium on Boundary Current dynamics, China. India has participated in DBCP workshop WIO-4 in Zanzibar Tanzania. There is good interaction through such meetings on sharing of expertise and knowledge and healthy cross country correspondences could be observed. Documents, such as a Training Manual with compilation of information submitted by Industry delegates, were released. During the DBCP workshop in India, for the first time, a successful exercise was accomplished to have Industry – User Interaction with the aim to discuss on the Science behind the development of Instruments. This new model could be adopted in other regions. Further Data Buoy Cooperation Panel and Second North Pacific Ocean and Marginal Seas (NPOMS-2) Typhoon Capacity Building Workshop is scheduled to be held in Hangzhou China from 22 to 24 October 2013.

4.2.4 NOAA PMEL reported that new RAMA sites were implemented in the past year. The array is now 70% complete. PMEL and NDBC will host technical training sessions for 3 NIOT Engineers in August 2013.Vandalism of data buoys continues to impact data return. The occurrence of piracy in the western Indian Ocean and Arabian Sea has diminished substantially in the past year. Despite this, Lloyds of London has not reduced the extent of their Exclusion Zone. Security guards are still deployed on MoES cruises into the region and South Africa's refusal to operate their research vessel within the Exclusion Zone resulted in the failure to maintain one mooring site this year.

4.2.5 **Report by the vice-Chairperson for the Southern Hemisphere:** The DBCP vice-Chairperson for the Southern Hemisphere, Mr Johann Stander (South Africa), reported on his activities during the last inter-sessional period. His activities were mainly conducted through the Executive Board in providing guidance to actions and issues within the recommendations established at DBCP-28.

4.2.6 The vice chair expressed sincere appreciation and gratitude towards fellow EB members for the support and relaxed working environment of the last year.

4.2.6 bis The vice chair reported that he will not be actively involved in DBCP matters after this session as responsibilities as JCOMM co-chair, are just taking too much time. However, he is extremely excited about the fact that the person who will be taking over as South African representative is a very young, bright and enthusiastic researcher who will add value to the DBCP. The vice chair thanked Etienne Charpentier, Boram lee, David Meldrum, Al Wallace, Bill Woodward, Jean Rolland, Sidney Thurston and Graeme Ball who have provided a lot of support and assistance over the years and who have taught him the trades of DBCP.

4.2.7 During the intersession period Johan Stander undertook a lot of missions however only one related to the DBCP and this was the very successful Capacity Building workshop held in Tanzania.

4.2.8 Mr Stander presented further the IPAD and IABP activities to the WMO EC-PORS and will report again on these panels to EC-PORS in February next year.

4.3 Challenges by region

- All regions continue to be challenged by maintenance of the global drifter array, addressing gaps in the drifting buoy network, and finding and maintaining sustainable deployment opportunities.
- Globally the major challenges faced are piracy and vandalism of surface buoys.
- A number of technical issues such as buoy lifetimes and drogue were discussed.
- The North Atlantic has an abundance of drifters reporting so we should collectively consider if there is a better management strategy.
- Timeliness of buoy observations reaching the GTS continues to be an issue, particularly in parts of the southern hemisphere.

5 REPORT BY THE TECHNICAL COORDINATOR

5.1 During the period 1 September 2012 to 31 August 2013, Ms. Kelly Stroker worked as Technical Coordinator (TC DBCP) of the Data Buoy Cooperation Panel (DBCP). For part of the year (Sept 1- Dec 31, 2012) Ms. Stroker worked in Toulouse, France, at CLS, and was employed by the World Meteorological Organization (WMO). The remainder of the year Ms. Stroker worked from the United States on contract to WMO. On average, the TC DBCP spends 70% of her time on DBCP-related matters and 30% of her time for OceanSITES Project Office.

5.2 The TC DBCP reminded the panel that in Jan, 2013 she returned to the US and has been working remotely for most of the intersessional period. The panel should begin the process for hiring a replacement to be stationed in Brest where JCOMMOPS will relocate in 2014. More details on the relocation are in the JCOMMOPS Management report (DBCP-29 11.2).

5.3 During the previous year, Ms. Stroker's time was spent on the following:

- Travelling to meet with various DBCP Members, Action Groups, and Teams
- Producing monthly maps and GTS timeliness reports
- User assistance as needed
- Assisting Panel members with technical and programmatic issues
- Maintaining metadata in the JCOMMOPS database
- Updating and maintaining DBCP and OceanSITES websites
- Maintaining mailing lists, contact details and user groups on DBCP, JCOMMOPS, and OceanSITES website (including coordination with JCOMM site)
- Monitoring the Quality-Control Relay traffic
- Investigating deployment opportunities
- Tracking all buoy deployments, and mooring maintenance/installations
- JCOMMOPS – reviewing database design, metadata loading and reporting
- Preparing for and attending meetings
- Preparing meeting reports and documents

5.4 The TC DBCP outlined the current status of the data buoy network. During the past 12 months, the average number of drifting buoys reporting onto the GTS was 1168 per month and 453 moored buoys. During the months of Aug-Nov, 2012, we saw an increase in the drifting buoy array (from 1221 to 1292) and then in November we saw a sharp decline going down to 1030 in April. While we have seen the number of operational drifters go up in the past couple of months, this statistic is of great concern to the community. The current number of operational drifters on the GTS for July, 2013 was 1155, with about 40% of those reporting atmospheric pressure. For the moored buoys, we have seen this number drop as well. The TAO array, in particular, has experienced a drop in numbers over the past year and in July, 2013 is currently operating at 36%

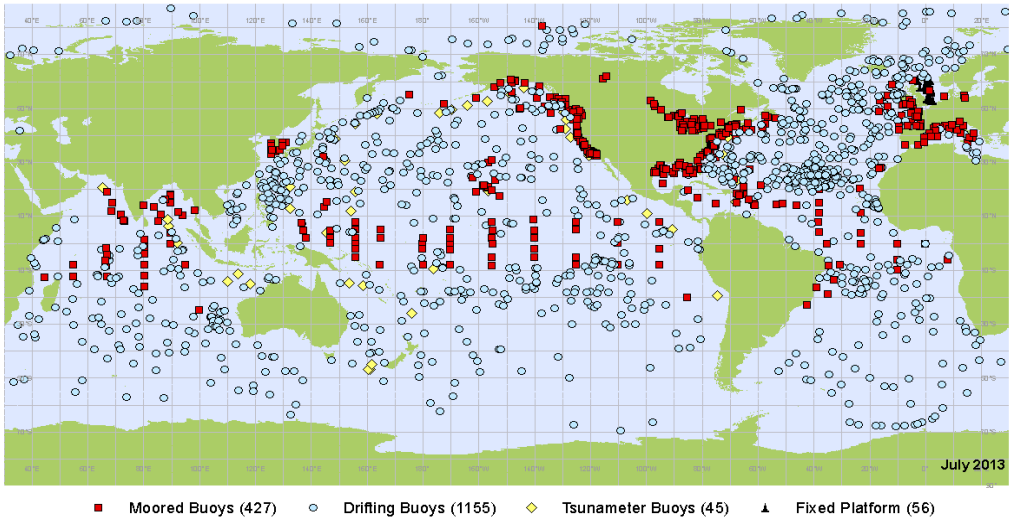


Figure 1 - Status of the Operational Buoy Array, July 2013

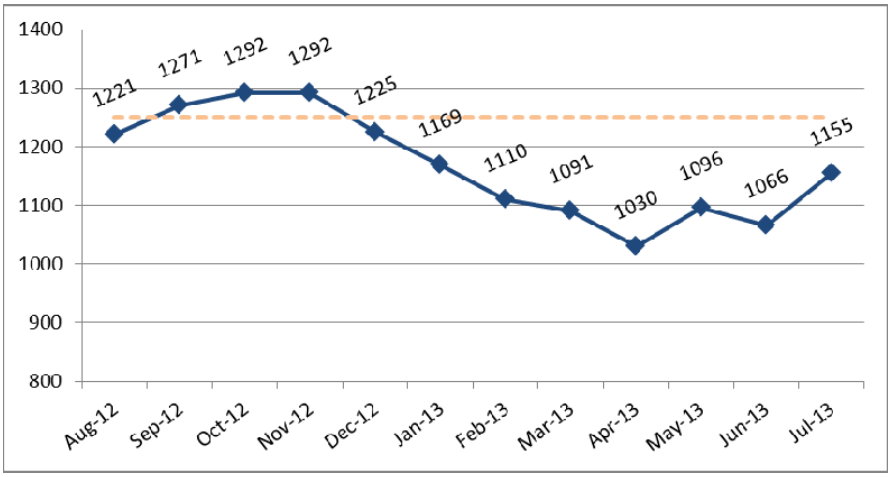


Figure 2 - Number of operational drifting buoys during the last intersessional period showing the steep decline from Nov-Apr.

5.5 The Technical Coordinator reported that among the drifting and moored buoys reporting on the GTS in BUOY (or BUFR) format, the following variables were measured in July 2013.

Variable	Any	Air P	P Tend	SST	Air T	Hum	Wind	Waves	Sub/T
Drifting Buoys	1118	420	394	945	16	3	0	6	62
Moorings	412	227	168	309	270	137	263	259	58

5.6 During the last intersessional period, the TC DBCP looked more closely at deployments by country as the Global Drifter Program relies very heavily on its global partnerships to maintain the array. It was found that while the US ships are responsible for deploying around 50% of the array, the remainder of the drifting buoys were deployed by 21 different countries. At the time of writing this document, the deployments during the last year are still being investigated. The TC DBCP is working with the GDP and all Action Groups to try to better compile this metric

5.7 The TC DBCP reminded the panel that during previous intersessional period the Deep-Ocean Assessment and Reporting of Tsunami (DART) Buoys had been added to the JCOMMOPS database. The locations of these buoys are included on the monthly maps and in the reporting. The data for these buoys does not come through the normal GTS chains and is not collected by Météo-France or the Integrated Science Data Management (ISDM, Canada). Information on the status of the tsunami buoys is received monthly from NDBC. An automated process for receiving this information is recommended and the TC DBCP will explore this option with NDBC.

5.8 The TC DBCP reported on the status of the TAO refresh buoy array and the GTS header issue that was raised during DBCP-28. At present 29 TAO Buoys in the Pacific have been refreshed to use Iridium communication and these buoys are reporting under the GTS Header of “SXPA01 KWNB”. This format does not follow the WMO specifications for bulletin headers and thus the data are not processed at Météo-France. The GTS header should be modified to follow WMO specifications as the entire TAO array has plans to be refreshed by 2014.

5.9 The Southern Ocean Buoy Programme (SOBP), as part of the DBCP Implementation Strategy, aims to have 300 operational drifting buoys with barometers distributed across the Seas south of 40°S. The situation in the Southern Ocean is rather dire. During July 2013, there were only 89 drifters in the Southern Ocean and only 67 of these were barometer drifters. DBCP members should look for deployment opportunities in the Southern Ocean.

5.10 The Panel agreed with the Barometer Drifter deployment plans for the period August 2013 to July 2014 as reflected in the table below.

Country	Planned	Additional Upgrades	Total	Comment
Australia	5		5	
France		30	30	
Germany	0		0	
New Zealand	10		10	- 4 MetOcean Iridium SVP-B - 1 Marlin-Yug Argos SVP-B - 5 Marlin-Yug Iridium SVP-B
South Africa	20		20	- 8 Gough Sept 2013 - 10 Sanae Dec-Feb 2013/14 - 2 Marion April 2014
UK	5		5	
USA	158		158	- 20 SVPB deployments south of NZ - 30 SVPB deployments near 55S,155W (in conjunction with KISOT) - 30 SVPB deployments throughout the Southern Ocean (aboard Barcelona World Race) - 28 SVPB deployments in the Drake Passage (PI Christian Reiss) - 20 SVPB deployments in the Drake Passage (2 per mo. in conduction with US Antarctic Program) - 10 SVPB deployments in South Atlantic (in conduction with SAWS) - 20 SVPB deployments in the South Atlantic (in conjunction with the Brazilian Navy)
Total	**198**	**30**	228	

Table 1 - Barometer Drifter deployment plans for the period August 2013 to July 2014 as agreed at DBCP-29.

5.11 The Technical Coordinator showed a map of drifting buoy density for July, 2013. This map simply shows the number of drifters operating in a 5x5 degree grid and does not yet take into account important factors such as age of drifter, drogue, barometer, etc. The TC DBCP recommended the panel to review the map and make suggestions on what would be useful to report on. She will then work with the GDP on these products.

5.12 The TC DBCP reported on the different numbers from the GDP and the JCOMMOPS database. At least once per year the operational drifting buoy information collected at the GDP is compared with that at JCOMMOPS. In June, there were 168 drifters in the JCOMMOPS database that were not included in the GDP deployment log. The differences were found to be the following:

- Buoys as part of the IABP program (these should be categorized differently in the JCOMMOPS database)
- Some research funded iridium buoys (e.g. Norway IMR)
- Time frame of reporting. JCOMMOPS looks at drifting buoys active during the entire month whereas the GDP produces a snap shot of buoys for that each week.
- Other iridium drifters whose deployment details are not getting in the GDP database

5.13 The panel recommended that due to the limited duration of the current Technical Coordinator's contract, that she prepare a detailed document of tasks and products that she is responsible for. The TC DBCP will spend some time putting this together so that the new TC DBCP has a clearer picture of what is expected.

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

Rec. 8 The panel recommended for the manufacturers to provide information to JCOMMOPS on models, formats, and shipments;

Rec. 9 The panel recommended it's members to continue providing Iridium deployment information to the Technical Coordinator in the agreed upon format;

Rec. 10 The panel recommended that the current TC put together a detail of her tasks and responsibilities for her incumbent;

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

Action 3. The TC DBCP to work with the Global Drifter Program and other Action Groups on creating a map of deployments by country/program ***(action; TC, members; July 2014)***;

Action 4. The TC DBCP to work with NDBC on an automated process for receiving tsunameter information. ***(action; TC DBCP, NDBC; July 2014)***;

Action 5. The Panel requested the Technical Coordinator DBCP to work with Iridium VARs to obtain drifting buoy metadata (***action; TC DBCP; DBCP-30***);

Action 6. The GTS header should be modified to follow WMO specifications as the entire TAO array has plans to be refreshed by 2014. (***action; NDBC; ASAP***);

Action 7. DBCP members should look for deployment opportunities in the Southern Ocean (***action; DBCP Members; ASAP***).

5.16 The Panel recognized that it is difficult to identify the buoys, whose data are not distributed on the GTS, and which are reporting through other systems than Argos.

Rec. 11 The Technical Coordinator to continue working with the satellite data telecommunication providers in order to better identify the operators of such buoys in the view (i) to better reflect the status of the buoy networks, whether they report on the GTS or not, and (ii) to convince the buoy operators to allow GTS distribution of their data, and provide technical assistance if needed (***action; TC DBCP; ongoing***).

Rec. 12 Buoy operators are urged to make sure that the data are distributed on the GTS (***action; Panel members; ongoing***).

6 REPORT BY THE TASK TEAMS

6.1 Task Team on Data Management (TT-DM)

6.1.1 Mr Pierre Blouch (France), on behalf of Mrs Mayra Pazos (USA), Chairperson of the Task Team on Data Management (TT-DM), reported on the progress during the intersessional period. The Task Team promoted discussion between its members, revised the recommendations proposed last year to assess actions taken, and proposed new recommendations.

6.1.2 The meeting agreed on the following actions:

Action 8. The conversion to use 7-digits numbers instead of the 5-digit numbers must continue until all cross-reference lists are changed. ***(action; TT-DM; DBCP-30)***

Action 9. Move forward to complete, review and publish the document “An Oceanographer’s Marine Meteorologist’s Cookbook for submitting Data in Real Time and In Delayed Mode ***(action; TT-DM; DBCP-30)***

Action 10. SOC Meteo-France and GDAC-DB_ISDM continue to work toward the implementation of a routine procedure to compare GTS Bulletin Headers between the two centers. ***(action TT-DM; DBCP-30)***

6.1.3 The Panel thanked Mr Blouch, Ms Pazos and members of the Task Team for their efforts. It was agreed that Ms Pazos would continue as chairperson of the Task Team for the intersessional period. The full report of the Task Team is provided in Appendix A of DBCP-29 preparatory document No. 6.1.

6.1.4 The Panel agreed with the proposed changes to the Terms of Reference (ToR) of the Task Team. The new ToR are reflected in ***Annex IV, Appendix V***.

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

6.2.1 Dr Luca Centurioni (USA), Co-chairperson of the Task Team on Instrument Best Practices & Drifter Technology Developments (TT-IBPD), reported on the Team’s activities during the last intersessional period. During DBPC Session 27, the Panel noted with concern that recent studies had indicated that estimates of drogue loss events since the late 1990s had in many cases been underestimated. The Panel noted the need for a detailed evaluation of the issues surrounding drogue loss and drogue loss detection, and this was carried out by the Global Drifter Program (GDP) over the inter-sessional period. During DBCP Sessions 27 and 28, the Panel noted with

concern that drifter lifetimes have dropped below the goal of a half-life of 450 days. Mr Centurioni presented an evaluation and recommendations to improve these problems.

Rec. 13 The Panel recommended the buoy operators and manufacturers to take into account the findings (***Annex XI***) of the Task Team for future deployments (***action; buoy operators & manufacturers; ongoing***).

The Panel agreed with the following priorities for the next intersessional period for the Task Team:

- Report on the field testing of the new battery pack configuration
- Fixing the drogue loss issue

Rec. 14 The Panel requested the TT to investigate with the manufacturers how/whether drifters could/should eventually be ISO certified (***action; TT; DBCP-30***).

6.2.2 The Panel thanked Dr Centurioni and members of the Task Team for the comprehensive report.

6.2.3 The Panel formally elected Dr Luca Centurioni (USA) and Dr Rick Lumpkin (USA) to co-Chair the Task Team during the next intersessional period. The full report of the Task Team is provided in Appendix A of DBCP-29 preparatory document No. 6.2.

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 the progress made on the new BUFR templates for moored and drifting buoys and that the WMO Inter Programme Expert Team on Data Reporting Maintenance and Monitoring (IPET-DRMM) had now approved these (with a few changes) for validation. This will involve (at least) two centres for each format in encoding and decoding the BUFR messages. The Panel encouraged those centres who issue data to GTS: e.g. Meteo-France and CLS-Argos for drifter data and NDBC, UKMO and Environment Canada for moored buoy data, to take part in the validation process, noting the deadline to cease using the old codes by November 2014.

6.3.3 The Panel noted that there was still no agreed NetCDF for submitting metadata to JCOMMOPS or a system at JCOMMOPS for making these metadata widely available. The Task Team on Moored Buoys had discussed the use of simpler formats and suggested tagged pairs and XML as alternatives for submitting the metadata – this was agreed by the Panel. The Met Office and Environment Canada, who have both compiled some of their metadata, undertook to document the format and submit some metadata to JCOMMOPS by the end of the year. This would then allow DBCP-TC to start to build a system to make these data available via JCOMMOPS, and other moored buoy operators to begin submitting their metadata.

6.3.4 The Panel noted the various technical developments on moored buoy systems, reported both during the Technical Workshop and the National Reports.

6.3.5 The Panel thanked Mr Turton and members of the Task Team for their efforts in maintaining and improving their moored buoy networks and continuing to exchange their data, and for the inputs provided in its report. It was agreed that Mr Turton would continue as chairperson of the Task Team for the inter-sessional period. The full report of the Task Team is provided in Appendix A of DBCP-29 doc. 6.3.

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

Rec. 15 Centres issuing moored buoy and drifting buoy data to GTS to start using the new templates (in parallel with the old alphanumeric WMO codes) as soon as possible, once the templates have been officially validated: ***(action; Centres; ASAP)***

Rec. 16 CLS to implement the new BUFR templates for drifting and moored buoys in their data processing system once the templates have been officially validated. ***(action; CLS; ASAP)***

Rec. 17 Moored buoy operators to start submitting metadata to JCOMMOPS in either the agreed (Tagged Pairs or XML or NetCDF) formats. ***(action; buoy operators; ASAP)***

Rec. 18 TC DBCP to develop a system for making the metadata available via the JCOMMOPS web site***. (action; TC DBCP; ASAP)***

Rec. 19 The Panel urged its members to improve the level of data sharing of moored buoys ***(action; Panel members; ongoing)***.

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

6.4.1 Mr Sid 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: 1) The outcomes of the Fourth “In-region Capacity Building Workshop for Countries of the Western Indian Ocean Region” (WIO-4), Zanzibar, Tanzania; 29 April – 3 May 2013, 2) Preparations underway for the Second Capacity Building Workshop for the “North Pacific Ocean and Marginal Seas” (NPOMS-2), Hangzhou China 22-24 October 2013 and 3) Key results of the “Regional Workshop on Best Practices for Instruments and Methods of Ocean Observation” (Asia-1), Chennai India 19-21 November 2012. (See Appendix A of DBCP-29 doc. 6.4).

6.4.2 The TT-CB chair reported on recently arranged workshop activities for 2014-15. Tentatively these workshops are being developed:

- April/May 2014: WIO-5, South Africa, DBCP Co-Hosts Agulhas Somali Current Large Marine Ecosystems Program (ASCLME), NOAA
- October 2015: NPOMS-3 in Japan, DBCP Co-Hosts Japan Disaster Prevention Research Institute (DPRI), NOAA
- 2015: Asia-2 in India, DBCP Co-Hosts NIOT, and Other Partners

6.4.2 After discussion, the Panel agreed with the following action items and recommendations:

Action 11. To convene the Third "DBCP In-Region North Pacific Ocean and Marginal Seas Capacity Building Workshop" (NPOMS-3), October 2014, Okinawa, Japan (TBC). The goals for the workshop are detailed in ***Annex XIII (action; TT-CB; Autumn 2014)*****;**

Rec. 20 To continue to build Observation Development Team (ODT) and Modelling Development Team (MDT) with Met/Ocean Institutes around the world ***(action; TT-CB; continuous);***

Action 12. To Assemble a Team to explore recent advances in Information and Communication Technology (ICT) to help facilitate more effective DBCP TT-CB Outreach and Capacity Building Activities on a larger scale ***(action; TT-CB; NPOMS-2);***

Rec. 21 To Enhance Coordination and Cooperation between TT-CB and WMO Regional Associations ***(action; TT-CB; DBCP-30)*****;**

Action 13. To endorse and provide coordination support, through TT-CB, in 2014 for the organization of either; 1) the DBCP's "Fifth In-Region Capacity Building Workshop for the Western Indian Ocean" (WIO-5) or 2) the "First Pacific Islands Workshop on Ocean Observations and Data Applications" (PI-1). The South West Pacific Region is fertile ground for capacity building, particularly in ocean issues. The Region has good networks and there is a lot of interest in building the human capacity to digest and understand data from the ocean and climate observing systems**.** ***(action; TT-CB; DBCP-30)*****;**

Rec. 22 To emphasize that the regional activities should create synergies and avoid duplication, at all cost, therefore requested to develop specialized activities that meet the interest of the respective regions, preferably with the identified resources within the regions. To ensure this and for smooth coordination among regional activities, the Panel decided to invite the leaders of the regional workshop organization would become members of the TT-CB. ***(action; TT-CB; continuous*****)**.

6.4.3 As a result of the TT-DB workshop on Tuesday the Panel was also advised to recommend:

Rec. 23 To build stronger links to the JCOMM services (SFPA), observations (OPA), Data Management, ***(action; TT-CB; continuous)***

Rec. 24 To coordinate Preparations with 2nd International Indian Ocean Expedition, ***(action; TT-CB; continuous)***

Rec. 25 To connect with IODE for ICT Advances, ***(action; TT-CB; continuous)***

Rec. 26 To coordinate with WMO Capacity Development Strategy toward Sustainable Development and Climate Change ***(action; TT-CB; continuous)***

Rec. 27 To develop Indicators (Metrics) of Workshop Success, ***(action; TT-CB; continuous)***

Rec. 28 To coordinate with RMICs to avoid Duplications of Effort. ***(action; TT-CB; continuous)***

Rec. 29 To establish North Pacific Ocean and Marginal Seas (NPOMS-1) Website on JCOMM Website. ***(action; TT-CB; ASAP)***

6.4.4 It was agreed that Dr Thurston would continue as chairperson of the Task Team for the inter-sessional period. The full report of the Task Team is provided in Appendix A of DBCP-29 doc. 6.4.

7 REPORTS BY THE ACTION GROUPS

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

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

7.1.1 The EUMETNET Data Buoy Expert Team (DB-ET), Chairperson, Mr Jon Turton, reported on the activities of E-SURFMAR during the last intersessional period.

7.2 Global Drifter Programme (GDP)

7.2.1 The Global Drifter Programme Chairperson, Dr Rick Lumpkin, reported on the activities of the GDP during the last intersessional period. The chair congratulated the programme for the achievement of deploying 1513 drifters last year and their work to return the network to the 1250 level. The Panel invited the

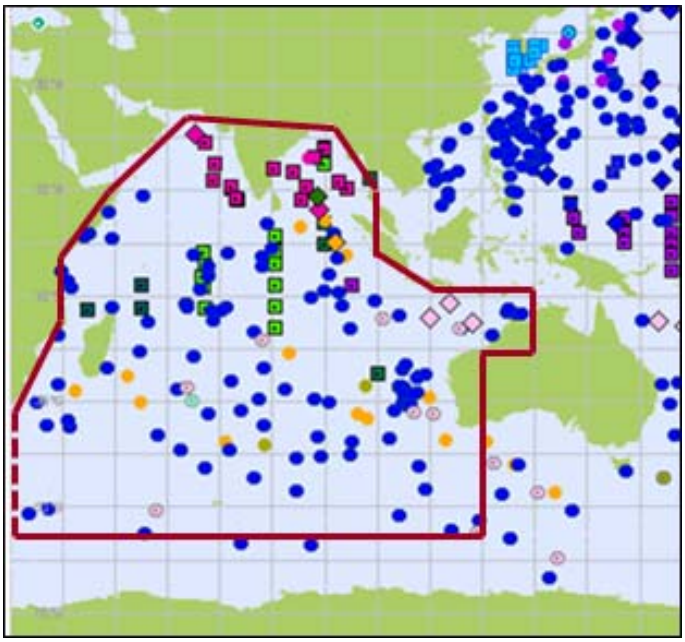
Rec. 30 GDP to investigate the value of organizing a science workshop to address drifter water following characteristics, and use of drifter velocity in ocean assimilating models (***action; R. Lumpkin; DBCP-30***).

7.3 International Arctic Buoy Programme (IABP)

7.3.1 IABP Coordinator Dr Ignatius Rigor (USA), on behalf of Christine Best, International Arctic Buoy Programme Chairperson, reported on the activities of the IABP during the last intersessional period. Session acknowledged the IABP's successful partnership with academic communities helping to deploy buoys and put the data on the GTS. The Panel also noted the efforts of the IABP to reduce the data gap in the Eurasian sector of the Arctic Ocean through collaborations with IABP members with interest in this region.

7.4 International Buoy Programme for the Indian Ocean (IBPIO)

7.4.1 The International Buoy Programme for the Indian Ocean Chairperson, Mr Graeme Ball (Australia), reported on the activities of the IBPIO during the last intersessional period. The meeting (1) approved a recommendation from IBPIO-16 to change the eastern boundary of the IBPIO area to the north of Australia from 120E to 130E to include the Indonesian through flow area, and (2) requested the IBPIO Programme Committee to amend its Operating Principles for the revised area of responsibility.



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

7.5.1 Dr Ignatius Rigor (USA) presented a report on the recent activities of the WCRP-SCAR International Programme for Antarctic Buoys (IPAB) on behalf of the Chair of the Programme, Dr Petra Heil (Australia).

7.5.2 The Panel recalled the Operating principles of the IPAB ought to be changed according to previous DBCP recommendations (area of interest of IPAB).

7.5.3 The Panel noted with appreciation the contribution of South Africa for deployment opportunities.

Action 14. Pass the IPAB requirements for satellite data telecommunication to the *ad hoc* Satcom Forum and EC-PORS (***action; J. Stander; ASAP***).

7.6 International South Atlantic Buoy Programme (ISABP)

7.6.1 Rick Lumpkin, (USA) reported on behalf of Myra Pasos (USA) and ISABP Chairperson, Mr Ariel Troisi (Argentina) on the activities of the International South Atlantic Buoy Programme (ISABP) during the last intersessional period.

7.6.2 The Panel noted that Sankjie du Toit (South Africa) has been appointed as ISABP Coordinator.for the Eastern sector of the ISABP area of interest, and Ms Pazos for the Western sector.

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

7.7.1 The North Pacific Data Buoy Advisory Panel Technical Coordinator, Mr Shaun Dolk (USA), reported on the activities of the NPDBAP during the last intersessional period.

The panel noted that Chris Marshall (Canada) has been appointed to NPDBAP chairman, previously held by Al Wallace:

7.8 OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES)

7.8.1 Dr Richard Lampitt (United Kingdom) reported on the activities of the OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES) during the last intersessional period. The Panel noted good progress with regard to the deep ocean strategy.

Action 15. DBCP Community (OS TC) should work toward increasing the OceanSITES data contributed to the GTS. ***(action; OceanSITES Technical Coordinator; ongoing)***

Action 16. The Ship Logistics Technical Coordinator is tasked to document OceanSITES deployment and servicing cruises with a view to increasing cooperation with DBCP deployment needs ***(action; TC DBCP and Ship Coordinator; ongoing)***

7.9 Tropical Moored Buoys Implementation Panel (TIP)

7.9.1 The Tropical Moored Buoys Implementation Panel (TIP) member Chris Meinig (USA), on behalf TIP Coordinator Paul Freitag (USA) who contributed the written report, reported on the activities of the TIP during the last intersessional period.

7.9.2 The Panel expressed it concerns about the limited ship support for the equatorial mooring arrays, the state of the TAO array and data availability. The Panel noted the difficulty of maintaining these sustained observation programmes.

Action 17. The DBCP should inform the countries responsible for TAO support of the DBCP's concern, at the highest level of responsible agencies. ***(action; Secretariat and EB; ASAP)***

7.10 International Tsunameter Partnership (ITP).

7.10.1 The International Tsunameter Partnership Chairperson, Dr Venkatesan reported on the activities ITP during the last intersessional period. With regard to the link with the Tsunami Monitoring Intergovernmental Coordination Groups (ICGs), the Panel invited the ITP to consider the following (subject to agreement of the ICGs):

Action 18. Eleven Actions from this Meeting for ITP ***(action; ITP; DBCP-30)***

1. The meeting noted the involvement and growth in membership and addition of information from last meeting.
2. The meeting appreciated the countries for providing data on GTS or through NDBC in real time mode and encourage all countries that deploy tsunameters to do so.
3. Tsunameter Instruments Standards document is prepared in draft form and will be a DBCP publication and urged members to give their comments.
4. To pursue the efforts on Data Quality, functionality and tsunameter siting from tsunameters and will finalise these in consultation with tsunami warning centres.
5. The meeting recorded the new technological prototype deployment of a near field tsunametry which is more relevant to societal need and opined to pursue the activity.
6. The committee is appreciative of positive development on the new initiative to utilize submarine cables under the joint initiative of ITU/WMO/IOC and to work on reviewing the functional engineering specification once drafted.
7. Safety will be given a priority and suggested to incorporate best practices on safety and distribute as needed.
8. The meeting agreed to evolve methodology to archive in national data centres the high resolution data from instrument flash memory which is very valuable for sea-level rise, satellite altimetry and ocean bottom temperature.
9. To build communication links with ICG Intergovernmental Coordination Group for Tsunami and other Coastal Hazards Warning Systems.
10. The committee is concerned about the incidences of vandalism reported and urged countries to provide data on vandalism of tsunami buoys as per DBCP format in the country report.
11. To sensitize the issue of vandalism and to evolve working mechanism with UN agencies Food and Agriculture (FAO) and International Maritime Organization (IMO) London to safe guard the buoys

Action 19. ITP Terms of reference recommended by the ITP ***(action; ITP; DBCP-30)***

Rec. 31 ITP to nominate one expert of the group to each of the ICG's Working Groups whose Terms of Reference include matters related to observing systems, to contribute to the work of the ICGs in the area of tsunameters and keep a link with the work of ITP; ***(action; ITP; ASAP)***

Rec. 32 ITP takes prompt and urgent action to define performance indicators for tsunameters and put in place real time indicators in websites collecting and publishing tsunameter metadata and data. ***(action; ITP; ASAP)***

7.10.2 The Panel agreed that there was no opportunity or need to establish or accept new Action Groups of the Panel at this point.

8 PILOT PROJECTS

8.1 Pilot Project on the impact of SLP from drifters on NWP

8.1.1 Dr Luca Centurioni (USA), Chairperson of DBCP Pilot Project on the Impact of Sea Level Pressure Observations from Drifters on Numerical Weather Prediction (NWP) (PP-SLP). reported on recent developments of the project. The two-year pilot project has objectives to (i) quantify the impact of Sea Level Atmospheric Pressure (SLP) data from the existing Surface Velocity Programme (SVP) Barometer drifter (SVPB) network on Numerical Weather Prediction (NWP); and (ii) provide a scientific/operational rationale for designing the temporal and spatial resolution, as well as the optimal geographical distribution of the SVPB array, taking into account all sources of data (e.g. moorings, ships).

8.1.2 A scientific paper describing the outcomes of the DBCP workshop on the Evaluation of the Impact of Sea Level Atmospheric Pressure (SLP) Data Over the Ocean from Drifting Buoys on Numerical Weather Prediction (NWP), Sedona, Arizona, USA, 21 May 2012, is being prepared.

8.1.3 Dr. Luca Centurioni requested three bids from ECMWF, MeteoFrance, and the UK Met Office to contract impact studies and OSEs to:

- Plan a series of impact studies and OSE with Dr. Luca Centurioni of the Scripps Institution of Oceanography;
- Investigate the correct norm to use for impact studies of the air pressure data from drifters
- Run forecast sensitivity studies;
- Run OSE specific for drifters to simulate various “thinning” scenarios;
- Consult with Dr. Centurioni on the scientific interpretation of the results;
- Work with Dr. Centurioni to publish the findings in a peer-reviewed journal;

8.1.4 Only two of the three agencies sent a proposal. The proposal from ECMWF to WMO was recommended for funding. To date, no funds have been released in support of this project. It is recommended that WMO releases the funds at soon as possible.

8.1.5 The Panel strongly supported the following actions, and tasked the Pilot Project Chair to lead these actions and report on the outcome at the next Panel Session

Action 20. To compile and submit the BAMS paper before the end of 2013 and use pilot funds to pay for the publications fees; (***action; L. Centurioni; DBCP-30, Dec. 31 2013***)

Action 21. To invite colleagues from the Naval Postgraduate schools in Monterey (California) to join the discussion; (***action; L. Centurioni; DBCP-30***):

8.1.6 The Panel also agreed to commit funds from its Trust Fund to increase the number of barometer upgrades deployed in the Southern Hemisphere Buoy Programme (SOBP) up to 20 additional units in support of the PP-SLP.

8.2 DBCP/ETWS Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET)

8.2.1 Mr Val Swail (Canada) reported on the development and current status of the joint DBCP-ETWCH *(JCOMM Expert Team on Waves and Coastal Hazard Forecasting Systems)* Pilot Project on wave measurement evaluation and test from moored and drifting buoys (PP-WET). The full report is provided in Appendix A of DBCP-29 doc. 8.2.

8.2.2 Mr Swail noted that Dr Robert Jensen, PP-WET Co-Chair, had made a presentation on the Pilot Project to the WISE2013 meeting, April 21-25, 2013, College Park, Maryland, USA. Dr Jensen emphasized the importance of understanding the wave measurements which formed the

basis for calibration and validation of modelling systems in wave forecasting agencies. He encouraged the modelling community to promote the wave measurement evaluation activities within their respective countries.

8.2.3 Mr. Swail also noted that a special session on wave measurement (Session A) was to be held as part of the 13th International Workshop on Wave Hindcasting and Forecasting (October 27-November 1, 2013, Banff, Canada) to present evaluation results to the scientific community and further develop guidelines and participation in the Pilot Project (http://www.waveworkshop.org). A Pilot Project meeting has been scheduled for the day prior to the Workshop for Pilot Project members attending the workshop as well as any other interested people, to review progress and future plans.

8.2.4 Mr Swail reported that the past year had been a difficult one for many national agencies, due to issues of funding, personnel, logistics and ship time, which had significantly hampered progress in the Pilot Project, particularly for the deployment of new wave buoys. In spite of this, the Panel reported some progress, and expressed its appreciation to several national agencies (Canada, US, Korea, India, Norway, United Kingdom) and international programmes for their participation in the intercomparison projects. In particular, the Panel welcomed the continued contribution from Canada in providing financial support for the Coastal Data Information Program (CDIP) at the Scripps Institution of Oceanography, in setting up the intercomparison methodology, web site and metadata criteria, and in carrying out individual intercomparisons. The Panel encouraged its member countries to participate in the intercomparison activities led by this pilot project, and encouraged WMO-IOC Regional Marine Instrument Centres (RMIC) who have wave measurement responsibilities to take a more active role in the project. The 3rd JCOMM Marine Instrument Workshop for the Asia-Pacific Region, 22 - 25 July 2013, Tianjin, China was noted as an excellent example.

8.2.5 Mr Swail noted a meeting of the DBCP-ETWCH Pilot Project on Wave measurement Evaluation and Test (PP-WET) will be held Saturday, October 26, 2013 in Banff, Alberta, Canada, in conjunction with the 13th International Workshop on Wave Hindcasting and Forecasting (www.waveworkshop.org). The objectives of the meeting will be to review the international activities to date, including preliminary analysis of the results of co-deployments, and to discuss the next steps for the activity. There will be a session at the Wave Workshop devoted to presentation of the results of the intercomparisons to date.

8.2.6 The Panel noted that evaluation results continue to be routinely added to the intercomparison web site http://www.jcomm.info/wet in near real time, if **spectral** data are routinely transmitted via satellite; if data must be retrieved from logging systems on the platforms, the analysis may be delayed by a year or more. Additional intercomparisons will be added to the web site once the information has been retrieved from the data storage systems on the buoys.

8.2.7 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 Pilot Project members to actively outreach these relevant activities with the progress in the inter-comparison exercise.

8.2.8 The Panel agreed that this pilot project was still progressing well, and decided to retain the project in its current form for another year, with no additional financial support. The revised work plan for the project, given in ***Annex XII***, is also available at the pilot project website. The Panel thanked the PP-WET co-chairs, Mr Val Swail and Dr. Robert Jensen, and Pilot Project members for their work to make progress.

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

Rec. 33 Reinforce the importance of understanding critical measurement biases to agencies

responsible for wave data (**action; all DBCP members; ongoing)**

Rec. 34 Encourage RMIC RA-IV (and other RMICs with wave component) to play a key role in the Pilot Project ***(action; PP-WET; ongoing)***

Rec. 35 Inform user groups – modellers, forecasters, climate – of findings and impacts on their activities – CLIMAR-4, 13th Waves, WISE. ***(action; PP-WET; ongoing)***

Rec. 36 Investigate linkages between the JCOMM inter-comparison activities and PP-WET (co-Chairs to contact the JCOMM leader on intercomparison activities, Dr Jingli Sun and discuss how PP-WET experience can feed into the current JCOMM draft proposal. ***(action; PP-WET co-Chairs; ASAP)***

Rec. 37 The future plans and membership of the Pilot Project will be reviewed in October 2013, at the special meeting preceding the Wave Workshop, including a possible follow up technical workshop on results to date ***(action; PP-WET co-chairs, Secretariat; October, 2013)***

Action 22. Guidelines on the best practices for measurement of reliable, high-quality spectral wave measurements, including directional spectra, will be developed, possibly as an outcome of the technical workshop ***(action; PP-WET co-chairs; DBCP-30)***.

8.3 DBCP/GHRSST Pilot Project for High Resolution SST (PP-HRSST)

8.3.1 Mr David Meldrum presented the joint Pilot Project for High Resolution SST (PP-HRSST) between the DBCP and the Group for High Resolution Sea Surface Temperature (GHRSST). The project had been established two years previously as a result of a dialogue between the Panel and GHRSST to improve the accuracy and resolution of drifter SST. GHRSST regarded drifter SST as vital for satellite SST product validation, but further progress with algorithm improvement was ultimately hampered by the accuracy and resolution of the *in situ* measurements. In part this was due to inadequate drifter SST accuracy, in part imposed by the resolution limit of 0.1C imposed by the traditional alphanumeric GTS codes.

8.3.2 In addition, the validation process required a close matchup in both space and time between hourly drifter and unevenly-spaced satellite observations. This suggested the implementation of Iridium + GPS solutions, and indeed all deployments of HRSST drifters to date had followed that route.

8.3.3 The GHRSST requirement of 0.05C accuracy and 0.01C resolution had been approached in two different ways:

i) Use of a conventional temperature sensor, with 0.01C resolution (but not accuracy) in the drifter message and in the data inserted onto the GTS, the so-called HRSST-1 drifters;

ii) Implementation of a new digital-output sensor module, calibrated to better than 0.05C, and again reporting with a resolution of 0.01C, the HRSST-2 drifters.

To date approximately 450 HRSST-1 and 30 HRSST-2 drifters had been deployed, mainly in the North Atlantic. All GTS reports were of necessity made in BUFR code. The incremental cost of the HRSST-2 sensor module, approx. USD1000, was a key factor in limiting its deployments and, indeed, no further purchases of this variant were being planned by EUMETNET.

8.3.4 The Panel took note of the following feedback from the GHRSST community:

i) Early analyses had shown that HRSST drifters exhibited a warm bias of approx. 0.2C which was not shown in the non-HRSST population;

ii) The number of reports reaching GHRSST databases had fallen compared to 2012;

iii) Analyses had been hampered following the failure of ENVISAT and the retirement of key GHRSST members.

8.3.5 With regard to the first point, the Panel urged the Pilot Project Steering Group (PP-SG) to work closely with GHRSST in resuming the analysis effort so that the value or otherwise of HRSST drifters might be established prior to any further commitment of Panel resources.

8.3.6 Two possible explanations were suggested for the second point: the inability of some centres to decode the BUFR reports and/or their inability to handle the new 7-digit WMO IDs. The Panel asked its TC DBCP, aided by the PP-SG chair, to further investigate the data loss and to suggest solutions.

8.3.7 Given that the Panel might in due course wish the entire drifter fleet to be HRSST capable, and that the incremental cost of this capability should be as small as possible, it suggested that the manufacturing community be approached to define a price for implementing the HRSST specification.

8.3.8 With regard to funding the roll-out of HRSST drifters, the Panel noted with appreciation the considerable effort and expenditure already committed by E-SURFMAR. The Panel was again disappointed that no funds had been forthcoming from the satellite community, and that a draft proposal to ESA had been rejected. Nonetheless, the Panel requested the PP-SG to continue its efforts in this regard so that the value of *in situ* HRSST measurements might be properly evaluated.

Action 23. the Pilot Project Steering Group (PP-SG) to work closely with GHRSST in resuming the analysis effort so that the value or otherwise of HRSST drifters might be established prior to any further commitment of Panel resources ***(action; D. Meldrum; ASAP)***.

Action 24. TC DBCP, aided by the PP-SG chair, to further investigate the data loss and to suggest solutions ***(action; TC DBCP and D. Meldrum; ongoing)***.

Action 25. The manufacturing community to be approached to define a price for implementing the HRSST specification ***(action; D. Meldrum; ongoing)***.

Action 26. Request the PP-SG to continue its efforts to obtain funding from the satellite community so that the value of *in situ* HRSST measurements might be properly evaluated ***(action; PP-SG; ongoing)***.

Action 27. GHRSST group is not reading the 7 digit WMO BUFR id. TC DBCP to work to resolve this. ***(action; Technical Coordinator; ongoing)***

Rec. 38 Encourage manufacturers to add HRSST to future engineering plans for drifters. ***(action; PP-HRSST; ongoing)***

Action 28. A more thorough review of the potential costs to upgrade the HRSST for manufacturers. ***(action; PP-HRSST; ongoing)***

9 ISSUES FOR THE PANEL

9.1 Information Exchange

9.1.1 Websites

9.1.1.1 The Technical Coordinator reported on website developments during the last intersessional period. The Panel was reminded of the official address for the DBCP website[1].

9.1.1.2 It was noted that JCOMMOPS also normally maintains some JCOMM Observations Programme Area content on the JCOMM web site[2] for the DBCP and OceanSITES.

9.1.1.3 The Technical Coordinator reported that the following has been achieved:

- Reviewed the content of the DBCP and OceanSITES web pages to fix broken links and outdated content;
- Migrated content for the NPDBAP Action Group to JCOMMOPS. New website with updated content can be found at: http://dbcp.jcommops.org/npdbap/.

9.1.1.4 The Panel invited its members to review the content of the DBCP web page on best practices[3] and to provide feedback to the Technical Coordinator as appropriate. ***(action; Panel members; DBCP-29)***.

9.1.2 News

9.1.2.1 The Technical Coordinator informed the Panel on "News items" posted on the JCOMMOPS website[4] during the intersessional period, including:

- Navy Deploys Scripps Global Drifter Buoys (published 25/06/2013)
- O-Buoy - Network of Arctic Ocean Chemical Sensors (published 21/01/2013)
- 28th Session of the Data Buoy Cooperation Panel (published 10/10/2012)
- 1000 Days for Iridium SVPB/RTC/GPS drifter (published 28/08/2012)

9.1.2.2 The Panel invited its members to submit news items for posting on the website. The Technical Coordinator would like to update this monthly at a minimum and will send an announcement to the DBCP email list.

9.1.3 DBCP Publications

9.1.3.1 The Technical Coordinator reported on new or updated DBCP Technical Documents, and JCOMM Meeting and Technical Reports of interest to the Panel. The following ones of interest to the DBCP have been published during the last intersessional period:

- Updates to the DBCP Implementation Strategy – DBCP Technical Document #15[5]
- DBCP-28 Scientific and Technical Workshop Proceedings – DBCP Technical Document #43[6]
- Updated DBCP Operating Principles[7]
- Update Data Buoy Operations Safety Document[8]

1: http://www.jcommops.org/DBCP/ - the following alias can also be used: http://dbcp.jcommops.org
2: http://www.jcomm.info
3: http://www.jcommops.org/dbcp/bestpractice.html
4: http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/news?prog=DBCP
5: http://www.jcommops.org/doc/DBCP/DBCP_Impl_Strategy.pdf
6: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/Dbcp43-Workshop-2011/index.html
7 : http://www.jcommops.org/FTPRoot/DBCP/meetings/2012/dbcp/DBCP-Operating-Principles-2012.pdf
8 : http://www.jcommops.org/dbcp/doc/buoyDeployments/BuoySafety.pdf

9.1.4 Information Products

9.1.4.1 The Technical Coordinator provided details about new or updated information products of interest to the Panel and provided through JCOMMOPS:

- Added the Quarterly NOAA Equivalent Buoy Density Maps to the DBCP Website[9]
- OceanSITES Data Management and Steering Team Reports[10]
- Photos:
    - Added photos to the DBCP Picasa photo album[11]
    - Added photos to the OceanSITES Picasa photo album[12]
- Email lists and communications:
    - Maintained email lists relevant to DBCP and OceanSITES

9.1.5 Scanning and preservation of past DBCP reports

9.1.5.1 The Panel noted that the 29 DBCP documents (13 early DBCP Session/Meeting Reports, 2 Additional Meeting reports, 13 DBCP Technical Documents) shipped to NOAA for imaging through the NOAA Climate Database Modernization Programme (CDMP) for preservation purposes, were scanned this past year and are available for download.

Action 29. The Panel requested JCOMMOPS to move forward with the new website design changes and send users a beta design for testing as soon as possible (***action; JCOMMOPS; DBCP-30***);

9.2 Deployment opportunities and strategies

9.2.1 The JCOMMOPS Ship Coordinator, Mr. Martin Kramp, presented on the activities and developments in JCOMMOPS regarding deployment opportunities and highlighted several items that may be of interest to the panel. The full report is provided in Appendix A of DBCP-29 doc. 8.3.

9.2.2 The Panel noted that Martin Kramp joined JCOMMOPS as Ship Coordinator in February 2013. This new position was created as a focal point for ship-related issues across all programs supported by JCOMMOPS and was possible thanks to the support of JCOMMOPS's host CLS. The position is funded by JCOMMOPS, DBCP, SOT and GO-SHIP. JCOMMOPS is now finally well resourced to provide dedicated and integrated support for all ship-based activities.

9.2.3 In addition to dedicated support of ship based observing systems, as international and technical coordinator, the new Ship Coordinator is developing partnerships and chartering services set up by JCOMMOPS with the sailing community and shipping industry. Mr. Kramp restated the importance of providing deployment opportunities and plans to the DBCP community. JCOMMOPS has been doing this on an ad-hoc basis for a number of years.

9.2.4 The panel agreed that this activity is of growing importance, because of less and less available traditional deployment and retrieval opportunities, due to substantial budget cuts for research cruises, or due to new security rules in freight shipping.

9.2.5 The panel acknowledged the strong potential in operations, communication and education of this activity. This is particularly true for the partnerships JCOMMOPS recently concluded with

9: http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=EBD
10: http://www.oceansites.org/meetings/index.html
11: http://picasaweb.google.com/JCOMMOPS/DBCP
12: http://picasaweb.google.com/JCOMMOPS/OceanSITES

NGOs such as “Voiles sans Frontières”, or the Barcelona World Race, OceanoScientific Programme and Blue Planet Odyssey, and above all for the cooperation initialized already in 2011 with Lady Amber.

9.2.6 During the last intersessional period Mr. Kramp developed procedures for the collection of information from operators who are looking for a deployment, retrieval or other opportunity on the one side, and the collection of cruise information from ships on the other side.

9.2.7 To move forward quickly, requests and notices are in a first step based on pdf forms with several checkboxes and predefined text fields, but on the long run, this data acquisition and distribution will work through a user-friendly online-tool at JCOMMOPS, where all information are compiled and matched.

9.2.8 If no volunteer vessels are available, or for substantial operations, JCOMMOPS can now provide solutions with chartered vessels in all sea areas, in cooperation with the maritime operator ProLarge. The panel noted that ProLarge is involved in the construction of an innovative type of fast multirole vessel (OE43), which could also establish deployment missions in zones subject to piracy constraints.

9.2.9 For requests received since the arrival of the ship coordinator, solutions were proposed to operators in the US, France and Germany (AOML, SCRIPPS, LOCEAN/CNRS, SHOM, Hamburg University). As part of the SIDERI project (EuroArgo), BSH asked JCOMMOPS to continuously provide propositions for wide-spread deployment solutions, including chartered vessels.

9.2.10 With regard to deployment costs per unit by chartered vessels, Mr. Kramp recalled that the lifetime costs of the instruments must be consulted, including not only the purchase of the instrument, but also shipping and in particular airtime.

9.2.11 The Panel thanked JCOMMOPS for initiating these opportunities and acknowledged the success of the chartered vessel Lady Amber, having deployed again 16 drifters for the GDP and 28 Argo floats during the last intersessional period. The cruise was funded by Argo (60 k€) and DBCP (8 k€). Lady Amber has now sailed more than 80,000 km in the service of ocean observing systems.

9.2.12 The panel also acknowledged the commitment in educational and communication matters of the ship, which has reached the reputation of an ambassador vessel for the OOS community (in particular in Mauritius, under the patronage of the Education Ministry. Video link: http://www.jcommops.org/FTPRoot/LadyAmber/).

9.2.13 Mr. Kramp reported that the ship has been evaluated by ProLarge in August 2013. Coordinated by JCOMMOPS, it will now be chartered by ProLarge, and crew, ship and in particular payload will be properly insured. Mr. Kramp insisted that no other ship could deploy so many insured instruments at such a low price on routes threatened by the absence of commercial or scientific shipping, but that this cost-effective opportunity is likely to disappear if the OOS community will not order further missions by the end of 2013.

9.2.14 To join forces, JCOMMOPS proposed a cross-panel Lady Amber mission from South Africa to first Brazil, then Uruguay and finally back to South Africa in early 2014, based on common needs from the DBCP, Argo and SOT (in particular SOOP line AX18) programmes. 1/3 of the cruise could probably be funded through JCOMMOPS budget, but the success of such a mission depends on a clear commitment from the concerned panels.

9.2.15 The session greeted these innovations with great interest. The Session emphasized that existing ship opportunities, that are coordinated through Port Meteorological Officers, or through the research ship community, must be actively pursued.

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

Rec. 39 The Panel will consider the feasibility of coordinating deployment missions at JCOMMOPS on a cost-sharing basis with other ocean observing programmes to enhance deployment opportunities in areas without vessels operating free of charge. In particular the panel agreed to investigate the possibilities of co-funding the 2014 Lady Amber cruise proposed by JCOMMOPS. ***(action; DBCP Panel; ASAP)***

Rec. 40 The Panel will consider if funding issues for deployments could be overcome by buying less instruments, but deploying them in vital positions with chartered vessels, for a more balanced global array. ***(action; DBCP Panel; ongoing)***

Rec. 41 The Panel encouraged JCOMMOPS to continue with the development of innovative deployment and retrieval solutions, in particular with the maritime operator ProLarge, and sailing and industry communities. ***(action; DBCP Panel; ongoing)***

Rec. 42 The Panel stressed that the Port Meteorological Officer (PMO) network is an excellent asset to assist with deployment opportunities, and invited the SOT Coordinator to establish links with the PMOs in the view to make the best use as possible of their services (***action; SOT TC; ongoing***).

Rec. 43 The Panel stressed that the Research Vessels also ought to be better used for the deployment of drifters, and encouraged Panel members, and the Ship Coordinator to investigate and make the best use of the opportunities. ***(action; DBCP Panel; ongoing)***

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

Action 30. The DBCP community was urged to provide metadata on planned deployments as requested by JCOMMOPS. ***(action; Panel members; ongoing)***

Action 31. The GDP communicate with the ship logistics coordinator on possible drifter availability. ***(action; DBCP SC, GDP; ongoing)***

Action 32. Panel members should communicate deployment opportunities and needs to JCOMMOPS, and use the forms created by the Ship Coordinator. ***(action; Panel members; ongoing)***

9.3 Data timeliness

9.3.1 The Technical Coordinator presented an overview of the pattern of delays in reception of satellite data for the last year. She reported that she produced JCOMMOPS monthly maps focusing on delays. These maps are posted on the DBCP Website and show that during the year, about ½ the drifting buoys reported to the GTS in less than 60 minutes and 87% reported in less than 120 minutes. More information is provided in Appendix B of DBCP-29 doc. 8.3.

9.3.2 The Panel is reminded that just prior to the previous DBCP session, the moored buoys were removed from the timeliness reports. There still has not been a proper way decided to represent the moored buoys in a timeliness map and this task should be focused on during the next intersessional period.

9.3.3 At the previous DBCP session, the panel recommended to continue to deploy Iridium drifting buoys in areas where delays are greater than 120 minutes. During the last year, 292 Iridium drifting buoys were deployed and less than 8% of those deployed in the last year were deployed in areas of long delays.

9.3.4 During the last intersessional period several dozen drifting buoys were deployed in the North Atlantic as part of the SPURS Project (Salinity Processes in the Upper Ocean Regional Study). The data sampling scheme for many of these buoys was intentionally designed to collect multiple observations over time, to store them and then to transmit them at a later time. Consequently, rather than unrealistically biasing the maps the decision was made to not include these buoys in the JCOMMOPS Timeliness maps.

9.3.5 The Panel noted that the Argos Real-Time Antenna Upgrade Project is in progress and is expected to be completed in late 2014 with the addition of sites at Ascension Island. Easter Island will follow. The last Mean Data Disposal Map in Appendix B of DBCP-29 doc. 8.3 illustrates the projected global disposal times when the project is completed.

9.3.6 As recommended during DBCP-28, JCOMMOPS and CLS have performed regular assessments of the global buoy timeliness maps and the Argos Data Mean Disposal Time Maps. These maps are in general agreement on the areas where timeliness is of the biggest concern (e.g. South Atlantic and South Pacific).

9.3.7 JouBeh Technologies reported that the normal processing time of drifting buoy messages is 20 minutes. Joubeh reported that on April 15th 2013, their system was migrated to the Amazon Cloud service in an effort to improve system performance. During the following 4 month period, the frequency of transmissions was reduced from 12 transmissions per hour to 3 per hour but as of August 23, 2013, the transmission time has been reset to 12 times per hour. It should also be noted that although the system at Joubeh has the capacity to process BUFR reports, none were received during this time.

9.3.8 The meeting made the following recommendations:

Rec. 44 To separate the moored buoy subsurface delays from the surface data delays and find a solution to best represent the timeliness of the moored array ***(action; TC DBCP; DBCP-29)***.

Rec. 45 JCOMMOPS to continue to compare Argos mean disposal maps and timeliness maps (***action; JCOMMOPS; DBCP-30***);

Rec. 46 Panel members to continue to deploy Iridium drifting buoys in areas where delays are greater than 120 minutes (***action; Panel members; ongoing***); and

Rec. 47 The DBCP TC to continue to work with Iridium VAR providers to receive delay information (***action; JCOMMOPS; DBCP-30***).

9.3.9 Regarding the deployment of Iridium drifters in poor timeliness area (South Pacific ocean), the Panel noted that this activity planned in the 2013 budget has not been realized yet.

9.4 Vandalism

9.4.1 The DBCP Working Group on Vandalism Chairman, Dr. Venkatesan, presented on the work in line with resolutions of WMO and UNESCO IOC and the report on “Ocean Data Buoy

Vandalism - Incidence, Impact and Responses“, DBCP Technical Document No. 41, and followed in particular nine recommendations from the report as reproduced in Appendix A of DBCP-29 doc. 8.2.

9.4.2 During the last intersessional period, the working group circulated a form for reporting incidents of vandalism on data buoys (Appendix C of DBCP-29 doc. 8.2) to member countries. Six countries/programs reported 95 vandalism events during the last intersessional period ranging from cut mooring lines, damaged sensors to complete removal of instruments resulting in thousands of lost days of data.

9.4.3 Dr. Vankatesan also presented on workshops and societal awareness campaigns that were held where vandalism was discussed. One such meeting was a regional workshop on “Best Practices for Instruments and Methods of Ocean Observation” held at NIOT, Chennai, India and the importance of protection of buoys was discussed and several actions taken. DBCP, WMO, UNESCO-IOC and ESSO NIOT of Ministry of Earth Sciences supported the workshop wherein safe guarding of buoys was discussed with participation from 12 countries and industry. There is a regional working mechanism in place to share information on buoys at Sea. The awareness campaign highlighted the ill effects of fishermen’s general tendency of taking any objects floating at sea out of curiosity and sheer fascination during their routine fishing operations. There may be data collection buoys, direction showing equipment, etc. that are being deployed or submerged at sea for various scientific, safety and directional purposes.

9.4.4 Demonstrating the importance of Regional bodies, the FAO, Bay of Bengal Programme - Inter Governmental Organization and Bay of Bengal Large Marine Ecosystem of FAO (BOBLME) have collaborated together with DBCP and Government of India to educate fishermen through their member countries.

9.4.5 The Panel recognized that vandalism on data buoys is a global menace and concurred with the recommendations of the working group on vandalism, and which discussed the loss of instruments Mooring and Buoy and cost for reinstallation of mooring, ship time availability and associated cost involved. It was strongly felt the need to sensitize this issue through a major educational awareness programme, in line with UN General Assembly and WMO Congress and IOC Assembly resolutions.

Action 33. The Panel agreed that the following action plan would be implemented by TT-ITP (action; TT-ITP; DBCP-30):

- Continue to work improvisation of design of the ocean observing platform to make more fool-proof design and incorporate other mechanisms to monitor and prevent disturbance to buoy systems at Sea.
- Relook at the present networks and their operations to re locate if possible.
- Suggest to sensitize issue as major threat for coastal hazard warning such as cyclones, typhoons and tsunami etc.
- Urge IOC and WMO to initiate dialogue with FAO and IMO to evolve a working group mechanism to address this issue of vandalism exclusively to evolve comprehensive strategy
- Share experience and network optimisation through DBCP International Tsunami Partnership (ITP) and Tsunami Warning Centres
- Encourage nations to continue efforts on the issue of marine platform vandalism and develop, harmonize, and coordinate statutes to protect ocean observing systems.
- Through FAO associate with Fisheries Management and Regulatory Bodies to develop measures and strategies to help mitigate the damage to ocean observing systems.

- Urge countries to provide information on vandalism through country report to maintain records about vandalism
- Encourage States party to the Law of the Sea Convention to use this legal instrument to promote protection of ocean observing networks.
- Recommend a Pilot project to design print and distribute in global campaign on education and outreach to both emphasize the importance of ocean observing systems and how everyone can help protect these systems from vandalism and negligent damage.
- Capacity Building workshops should include a “Vandalsm” agenda item.
- A multiple-approach (hardware design, engineering, education, law enforcement, workshop through international organizations, including fisheries and Tuna commissions, local authorities, etc.) is recommended to most effectively address the problem.

9.5 Metadata

9.5.1 The Technical Coordinator reported on various activities dealing with metadata during the last intersessional period. In terms of the JCOMMOPS database, inputs are taken regularly from platform operators and telecommunication providers either on deployment or as a status report. The TC DBCP thanked the Moored Buoy operators that are providing regular updates to metadata and encouraged others to use similar methods. She outlined some examples of websites or email notifications that are useful for JCOMMOPS and discussed the importance of this information.

9.5.2 The Technical Coordinator emphasized the importance of receiving plans of deployments and defined a few metadata fields that would be necessary to have in the JCOMMOPS database. She thanked those operators that are regularly supplying JCOMMOPS with deployment plans and encouraged others to do so. Storing this information and displaying it for the community would be valuable for all operators.

9.5.3 Operators of Iridium platforms have continued to actively report metadata to each other and JCOMMOPS upon deployment even beyond the Iridium Pilot Project. The TC DBCP reported that JCOMMOPS is in communication with Iridium VAR providers to create a metadata feed similar to the situation with the Argos system. The TC DBCP has started to receive QA Reports in an email from Scotia Weather that is the beginning of such reports.

9.5.4 The Panel noted that within the larger framework of Global Earth Observing System of Systems (GEOSS), the method for collecting and disseminating metadata has been defined. An important element of metadata dissemination is to follow a standard format. JCOMMOPS stores all metadata in a database and the delivery and format of this metadata can be customized through style sheets or webservices to the end user. JCOMMOPS will work with the NOAA OSMC on defining ISO metadata for Argo and DBCP programs.

9.5.5 Significant progress was made by the TT-MB and the TT-DM over the intersessional period on defining BUFR templates on drifting and moored buoys. The JCOMM TT-TDC has a new chair, Dr. David Berry, and Dr. Berry has pushed the templates to the IPET-DRMM who have now approved them for validation. A call for volunteers to validate was announced and this process will soon be underway. Once accepted for operational use, users are expected to begin using these templates.

9.5.7 The DBCP Terms of Reference has been modified to include monitoring of data and metadata from rigs and platforms reporting surface marine meteorological and oceanographic data. (See also DBCP-doc 11.2)

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

Rec. 48 The Panel encouraged all buoy operators to provide a website of plans and deployment information for drifting and moored buoys similar to AOML, NDBC, and Canada as well as continuing e-mail notifications as necessary. ***(action; Panel members; ongoing)***

Rec. 49 The Panel recognized the value of metadata and requested operators of Iridium platforms to provide this information to the TC DBCP. ***(action; Panel members; ongoing)***

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

Action 34. Provide JCOMMOPS with planned deployment metadata in the format specified ***(action; Panel members; ASAP)***

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

9.6.1 The was no further issue to discuss at this point.

10 INFORMATION REPORTS

10.1 Argo

10.1.1 Jon Turton presented on behalf of the Argo Steering Team, the Argo Data Management Team and the Argo technical coordinator. The panel noted that while the core mission targets are being met in most regions, a few areas remain undersampled. The Argo community is working to source deployment opportunities for these and other areas and encourages DBCP to assist in coordinating the use of ships for deployments. For some regions leasing shiptime is the only option and Argo seeks partnerships with other programs in this activity.

10.1.2 Argo is in active discussions with the community to evolve its original core design and sampling to meet increasing needs and exploit technological advances. Pilots continue in the sea ice zone, near surface sampling, chemical and optical sensors and in special areas with enhanced array density. A possible future 'Global Argo' might involve over 4000 active floats.

10.1.3 Argo's use of and commitment to the JCOMMOPS Centre remains high. It applauds the appointment of a Ships Coordinator and encourages other programs to support this position and the centre into the future.

10.1.4 International coordination of Argo has just received a major boost through the appointment of Dr. Howard Freeland (recently retired from Department of Fisheries and Oceans, Canada) as a part-time Argo Director.

10.2 Buoy data management centres

10.2.1 The Panel reviewed a written report on the activities 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.

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 (France).

Amongst other things, panel reviewed the products offered by SOC, including time evolution of data reports and data availability in tabular and charted forms.

10.2.3 The Panel thanked both centres for their reports. The full reports are provided in Appendices A and B of DBCP-29 preparatory document 10.2 .

10.2.4 The Panel noted with appreciation that per JCOMM-4 recommendation the two centres are taking steps for being integrated into the new Marine Climate Data System (MCDS) to undertake both the functions of Data Acquisition Centres (DACs) and Global Data Assembly Centres (GDACs).

10.3 Argos operations and developments

10.3.1 Mr. Bill Woodward (CLS America) and Mr. Michel Guigue (CLS Toulouse) presented reports on Argos operations and system improvements during 2012-2013. The *Report on Argos 2012- 2013 Operations and System Improvements* is provided in Appendix A of DBCP-29 doc. 10.3. The Panel recalled that Argos is a global satellite-based location and data collection system dedicated to studying and protecting our planet's environment. CLS, is the operator of the Argos system on behalf of NOAA, CNES, EUMETSAT and ISRO, and continues to maintain and improve an operational service for all Argos users, especially for the meteorology and ocean community at a >98% level of availability.

10.3.2 Operational highlights from the last 12 months include the launch of METOP-B (Sept. 2012) and SARAL (Feb. 2013), a major BUFR format upgrade (Sept 2012), availability of observations via the Argos Web services. These actions combined with substantial progress in implementing the Real-time Antenna Upgrade Project all continue to improve the global timeliness for data collected using the Argos system. CLS also noted the continuing request from the DBCP to explore the possibility of including Easter Island in the southeast Pacific as a candidate upgrade site in the CLS Real-Time Antenna Upgrade Project and reported that positive discussions have already taken place between CLS and WMO (RARS Program) about possible collaborative efforts to install and operate a Real-Time downlink antenna at Easter Island. Funding is now being sought to support this effort. CLS continues to provide the GTS processing for all DBCP Argos equipped drifters and moored buoys in compliance with WMO and DBCP TT-DM recommendations. The CLS GTS processing system as well as the quality of the data and the entire Argos system performance is monitored 24/7.

10.3.3 It was explained that a total of 7 Argos instruments are now onboard four NOAA POES (15, 16, 18 & 19), two EUMETSAT spacecrafts (METOP-A and METOP-B) and one ISRO satellite called SARAL. Update of the existing Argos ground segment has been accomplished last year in order to take into account the new generation of Argos-4 instrument that are planned to begin flying in the 2017 time frame aboard a “Polar Free-Flyer” (PFF) satellite scheduled to be launched by NASA. Qualification and validation of the ground segment is underway which will lead to operational status. An "Argos chipset" project has been implemented to design, manufacture and test a prototype of a miniaturized and low-cost ARGOS-3/4 transceiver that will enable two way communications with minimize power consumption. The project is expected to be completed in late 2014.

10.3.4 The Panel acknowledged the efforts and progress of CLS in improving the regional receiving antenna network and in addressing the timeliness issue which has been of great concern to DBCP.

10.4 Iridium operations and developments

10.4.1 Under this agenda item, Mr D Meldrum reviewed the current status and future plans for the Iridium 2-way satellite communications system, which was finding increasing favour within many parts of the data buoy and environmental observation community for reasons of continuous availability, data timeliness, ease of implementation, future availability and cost.

10.4.2 The current 66-satellite constellation remained complete, had not deteriorated in any way over the last 12 months, and the number of in-orbit spares remained at six. Overall, the constellation was in a much healthier state than had been predicted some years ago, and was expected (as a result of a number of independent studies) to remain fully operational beyond the commencement of the rollout of the replacement constellation in 2015. In financial terms, revenue continued to grow, and data services, such as Short Burst Data (SBD) service used by buoy operators, were enjoying a huge increase in traffic compared with some years ago.

10.4.3 The replenishment constellation, called Iridium NEXT, was fully funded and under detailed design by prime contractors Thales. The rollout schedule, involving launching nine satellites at a time on board the new Falcon vehicle, had not changed over the last 12 months, and appeared to be on track. The new constellation was promised to be fully backwards compatible with the current constellation, although some transitional difficulties could be expected. NEXT would additionally offer higher bandwidth services, and the possibility to embark third party payloads. A new company, AIREON, had earmarked some of this payload space to develop a truly global aviation monitoring and control service.

10.4.4 Iridium was also engaged with many partners in the development of new products and services, and had seen the recent successful rollout of its 128 kbps broadband product, OpenPort. This was increasingly being used by shipping companies to provide broadband services to their vessels in preference to Inmarsat and other VSAT services. Of particular interest to the environmental observation community were new and smaller modems, such as the 9603, and the proposed new modem chipset, which would offer the potential to build highly integrated and miniaturised sensor/communication packages. In due course, these would be exploited by many observational communities, including animal trackers.

10.4.5 Nonetheless, the Panel noted that the 2-way architecture of Iridium of necessity dictated that the platform engage in a dialogue, lasting several seconds, with the constellation as a preamble to data transfer. This could adversely affect communication success in situations of signal disruption, as might be encountered in rough seas and by marine mammals. In such situations, 1-way systems such as Argos-2 and Argos-3 in ‘pseudo-ack’ mode might be preferable. There had also been some message delay issues caused by a firmware bug within certain models of the 9602 SBD modem, but these had now been resolved.

10.4.6 The Panel also noted that for many users the costs of operating Iridium platforms was apparently much less than for Argos counterparts, although Iridium service is not licensed in all countries. However, Iridium did not offer an equivalent of the Argos service, which included a number of value-added functions, including conversion of raw data to physical units, both real-time and delayed mode QC, GTS formatting and insertion, archiving, and open access to all parts of this chain by the JCOMMOPS TCs. As a result, many operators had created their own ‘back-office’ services and took care of their own GTS insertion using their existing infrastructure. The Panel was concerned that the existence of multiple data processing centres could potentially affect data integrity and uniformity, particularly for climate applications, and restricted the TC’s ability to monitor all parts of the data chain. Nor was this user community currently in any position to exert influence over future Iridium pricing policy: a situation that diverged from the current Argos JTA arrangements.

10.4.7 The meeting thanked Mr Meldrum for his impartial and informative presentation, and asked that he report again to the next session of the Panel

Action 35. Report on Satellite Communication issues to DBCP-30 ***(action; D. Meldrum; DBCP-30).***

10.4.8 The Panel invited its members to review the various satellite data telecommunication systems for the collection of buoy data, and related service providers available on the market, as there are substantial differences in terms of capabilities and cost.

10.4.9 The Panel also noted that the ad hoc International forum of users of satellite data telecommunication systems will take place in Paris from 3 to 4 October 2013. It was noted that Panel members are welcome to attend the event, and thereby receive useful information on such systems.

10.5 Additional reports, as required

10.5.1 No additional reports were contributed to the session.

11 ORGANIZATIONAL ISSUES

11.1 JCOMMOPS Activities

11.1.1 The Technical Coordinator, M. Belbeoch, presented an update on the JCOMM *in-situ* Observations Programmes Support Centre. The Panel took note of the development of the Centre and noted that it was finishing a long transition period.

11.1.2 The Panel noted that a new office will be soon (early 2015) inaugurated in Brest, with 5 permanent staff, a new set of products and services, a clarified governance, and increased means.

11.1.3 TC DBCP recalled that JCOMMOPS follows the direction of international panels and programme steering teams. It is a component of the international coordination mechanism, which aims on behalf of JCOMM and GOOS to assist in the implementation of a number of different types of *in situ* observing systems included in the DBCP, Argo, SOT, OceanSITES and recently GO-SHIP observations programmes.

11.1.4 JCOMMOPS provides three levels of services to the observing networks: *Basic, Core and Advanced*. Each level of services involves specific deliverables, manpower allocation, and permits as well to the panels to target a 3 steps progression in the support to provide to the program.

11.1.5 A clear evaluation of the performance of JCOMMOPS for each panel its serves, and for the synergetic outcomes, is anticipated through its clarified governance.

11.1.6 The Panel was invited to comment on the interpretation of JCOMMOPS ToR, aiming:

- To develop **synergies** between observing systems, by developing integrated products and services and sharing work experience on a day to day basis;
- To assist in the **planning**, **implementation** and **operations** of the observing systems, by developing appropriate management tools, services, and **deployment missions** and **opportunities**
- **To monitor** and **evaluate** the performance of the networks, by developing appropriate metrics, reporting and monitoring tools, and by ensuring their routine and rigorous production;
- To encourage **cooperation** between communities and member states, research/operational, meteorology/oceanography, physical/biogeochemical oceanography, and assisting new

comers to participate in the programmes (guidance on rules, donor programme concept);
- To encourage and facilitate **data sharing** , by e.g. developing products that monitor the data flow, assessing the differences between the operations at sea and the data available to users;
- To assist in **data exchange and distribution** through the Internet and the WMO Information System (WIS), and in particular onto the Global Telecommunication System (GTS), by providing information on standards and best practices to platform operators, by proposing technical solutions to get the data distributed;
- To relay users' **feedback on data quality** to platform operators
- To encourage **harmonisation** of data and instrumentation related practices, with active participation in Data management Teams
- To provide **technical assistance** and **user support worldwide** with reactive assistance to anyone within the community but also outside.
- To assist all **ocean industry partners** to develop their services and meet the programmes requirements
- To act as a **clearing house** and **focal point** for all aspects of the program ensuring programmes visibility, promotion, etc...

11.1.7 TC DBCP mentioned that the efficiency of JCOMMOPS is depending on i) the efficiency of each of its components and ii) of the fuelling of cross programmes activities and services integration.

11.1.8 The Panel noted that JCOMMOPS, following recommendations by JCOMM and JCOMM-OCG in particular, recruited two new staffs in 2013, within such integrated perspective to develop its Information System and Services and its capacity to assist the Panels in their operations

11.1.9 The Panel noted the key achievements of the JCOMMOPS Centre over the last decade:

- A recognized essential component of global observing systems
- Day to day assistance to all partners, including industry
- Innovative Information System and web based services.
- Rigorous metadata quality control and management, and real-time tracking of networks (instrument registration/labeling)
- Technical expertise on codes, data systems, instrumentation, telecommunications systems.
- Expertise on international and intergovernmental issues. Operating a notification and warning system for Argo floats which might drift in member States Exclusive Economic Zones, as per IOC/UNESCO Resolutions XX-6 and XLI-4.
- Design of uniform and authoritative status maps, core metrics for network performance monitoring; regular publication of observing system status reports and bulletins.
- Development of international cooperation (donor programmes).
- Development of ship time capacity (chartering, partnerships) and operational capacities to assist in filling networks gaps.
- Assistance to educational and outreach activities

11.1.10 JCOMMOPS recalls the importance of the monitoring and **"registration" of all platforms and cruises, from their planning phase to the end of missions**. Necessary procedures are being developed for each programme so that all metadata area channelled in time and routinely to JCOMMOPS. The DBCP needs to cooperate further with its Technical Coordinator to make that happen, as done for Argo, and SOT/ GOSHIP are progressing with the new Coordinator setting up appropriate procedures.

11.1.11 Beyond the number of regular deliverables provided by the TCs and the infrastructure to the different panels, the TC DBCP highlighted a number of recent achievements.

11.1.12 A new version of the Maritime Zone Warning System is available for implementers that wish to inform coastal states of profiling floats approaching their maritime zones. It allows more control for float owners to notify or not some floats (e.g. case of disputed claims).

11.1.13 A number of new products for G-Earth are available, including a set of layers for the DBCP (being finalized), and a query tool to display any Argo observations from a spatial/temporal query.

11.1.14 The production phase of the development of the new generation of Web Services has started. While the architecture and engine were set up in the last couple of years, the visible part of the iceberg is finally being developed.
To speed up the productivity, JCOMMOPS has partnered with an IT company specialized in GIS developments (ArxIT) and subcontracted some elements.
JCOMMOPS is also partnering with ESRI and the ESRI/Ocean initiative in particular.
A “proof of concept prototype”, available on-line, was presented to the Panel.

11.1.15 This new web based software will feature:

- Integration (across programmes) – use of themes
- Dashboard and widgets style
- Platforms, ships, observations search
- Saving platforms and observations samples, and widgets (“my dashboard”)
- Variable oriented
- Automatic report generation from the dashboard

The whole JCOMMOPS team will be focusing on this activity in the next 6 months.

11.1.16 The panel noted the JCOMMOPS achievements in developing a global service for deployment/retrieval/servicing of instruments (agenda item 9.2). With a dedicated coordinator in place, and a number of partnerships becoming operational, such activity is taking off.

11.1.17 JCOMMOPS summarized finally a number of projects and plans:

- Development of a new Information System for a monitoring centre, using latest web and GIS technologies (dashboard control panel).
- More efficient production of services and deliverables, on a regular and flexible basis, for a very varied user community
- Set up of global cruise information centre
- Development of new partnerships with industry and sailing community
- Development of a global strategy for deployment/maintenance/retrieval of instruments, and related ship time services
- Extension of its domain of expertise to regional, coastal, and multi disciplinary observing systems (gliders, GLOSS, marine mammals, polar systems, etc) – to draft ToR. Funding sources identified (“Regional Coordinator” position
- Satellite coordinator activity to be funded (ToR drafted) – identify funding sources

11.1.18 JCOMMOPS will continue to seek its own instruments (floats, drifters, etc) through partnerships development (e.g. manufacturers) or sponsoring (with e.g. industry and sailing races), in order to promote further the JCOMM networks, develop training material and simply fill gaps in the arrays.

11.1.19 JCOMMOPS is now optimistic in serving the JCOMM/GOOS component, with a team close to be complete, successful experiments, and foundations of the infrastructure strengthened. A decade of enhanced integrated services is now in sight.

11.1.20 JCOMMOPS thanked the Panel for its continuous support, and patience with regard to the development of the structure.

11.1.21 The Panel congratulated the JCOMMOPS team for its achievements and creativity, despite the difficulties and the complex context, and encouraged the team to round a new cap providing together a stronger support to each of its programmes.

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

Action 36. Panel Members, to systematically communicate deployment and cruise plans to JCOMMOPS ***(action; by platform operators; ASAP)***;

Action 37. JCOMMOPS to clarify its workplan, deliverables, and gather feedback from the Panel ***(action; by JCOMMOPS; DBCP 30)***;

11.2 JCOMM & JCOMMOPS

11.2 JCOMM Activities

11.2.1 The Secretariat reported briefly on activities under or associated with JCOMM that had taken place since DBCP-28, and were of direct interest to the Panel.

Outcome of MAN-10

11.2.2 The Panel recalled that the tenth Session of the JCOMM Management Committee (MAN-10) was held in Paris from 7 to 10 May 2013. MAN-10 agreed with the need for consistent evaluation and reporting metrics, and further suggested that observing system simulation experiments (OSSEs) should be developed in collaboration with the scientific community, such as GODAE OceanView, to allow for the evaluation of the cost and benefits of the observing system as a whole and as its components, for the growing range of uses of a primarily research-funded system. MAN-10 recommended maintaining the good links between OPA and GOOS, and recognized the importance of fostering dialogue between implementers and the operational community expressing requirements through the WMO Rolling Review of Requirements (RRR). Regarding GOOS's expansion into non-physical parameters and future biogeochemical or ecosystems services, MAN-10 stressed that the OCG's provision of reliable and timely real-time data would underpin the development and provision of such services.

11.2.3 It was also noted that MAN-10 has requested the DBCP and SOT Task Teams on instrument practices to link to the WMO Commission for Instruments and Method of Observations (CIMO) for surface-based and the Commission for Basic Systems (CBS) for satellite observations. The Panel therefore requested the

Rec. 50 TT-IBP to link to WMO CIMO and CBS for satellite observations (***action; TT-IBP; ongoing***).

11.2.4 The Panel further noted that MAN-10 has recommended supporting existing and initiating new CD activities for the Pacific Ocean to improve involvement of the Pacific Island Countries in the implementation of the observing system.

11.2.5 The Panel recalled its agreed response, included in the DBCP Implementation Strategy, at the previous DBCP Session regarding the JCOMM priority activities for the Observations (OPA)

and Data Management (DMPA) Programme Areas of JCOMM for the period 2012 t0 2016 (see final report of DBCP-28, section 11.2). The Panel agreed that this response remained valid.

Action 38. The Panel agreed that the DBCP Task Team on Capacity Building should establish connections with the Argo Capacity Building activities for countries with interest in ocean observations from the Pacific Ocean including PI-GOOS (***action; TT-CB; DBCP-30***).

Outcome of OCG-5

11.2.6 The Panel was briefed about the outcome of the fifth Session of the JCOMM Observations Coordination Group (OCG-5), which was held in Silver Spring, USA, from 5 to 7 September 2013. The Panel noted that with OOPC, the OCG is working to define system-wide requirements and a consistent reporting mechanism to combine the information across the observing platforms. The global system has just started to decrease after maintaining about 62% complete for several years, as measured against the implementation targets. Estimates showed that by September 2013 less than 50% of the tropical Pacific TAO array would be reporting data in real time, due to lack of ship time for servicing. An OOPC-sponsored review of the tropical Pacific observing system for all requirements will help to address this problem.

Third JCOMM Marine Instrumentation Workshop for the Asia Pacific region

11.2.7 The third JCOMM Marine Instrument Workshop for the Asia Pacific Region focusing on wave observations was held in Tianjin, China, from 22 to 25 July 2013. The objectives of the Workshop were (i) to enhance the Members/Member States capability with regard to wave buoy operations; (ii) to facilitate the calibration and maintenance of marine instruments (wave buoy in particular); and (iii) to improve the data quality control of marine observations. The following training was provided:

- ✓ Best practices in operating and handing calibration of wave buoys;
- ✓ Training on calibration and troubleshooting techniques;
- ✓ Hands on operation and calibration of wave buoys;
- ✓ Information sharing and networking among the countries within and outside the region;
- ✓ Training on data quality control of marine observation;
- ✓ Training and discussion on the methods and procedures of international salinity inter-comparisons.

Further details on the RMIC/AP workshop are found in Appendix C of DBCP-29 Doc. 4.

Migration to Table Driven Codes

11.2.8 The Panel noted the outcome of the first meeting of the Inter Programme Expert Team on Data Representation Maintenance and Monitoring (IPET-DRMM), which was held in Tokyo, Japan, from 1 to 5 July 2013. JCOMM was represented at the meeting by the Chair of the JCOMM Task Team on Table Driven Codes (TT-TDC), Dr David Berry (United Kingdom). In particular, the BUFR templates for drifting and moored buoy data have been submitted to the IPET-DRMM and accepted for validation (see Appendices A, B, and C).

JCOMM in situ Observations Programme Support Centre (JCOMMOPS)

JCOMMOPS Budget

11.2.9 The Panel reviewed JCOMMOPS budget management proposal (DBCP-29 Doc. 11.2 Appendix D), and acknowledged the complication of its structure, which has increased in recent years.

11.2.10 The Panel agreed that budget reporting for management purposes should be much simpler. It concurred with the OCG proposal for a structure that clearly labels each panel's contribution to JCOMMOPS with tracking of the country or organization that made the contribution on the income side, and identifies by panel the funds spent on salary and travel specific to the panel, and common costs including common IT staff, rent, infrastructure (software, licenses, etc.), activities, and overhead (taken by IOC and WMO on the funds they manage).

11.2.11 The Panel nevertheless recognized that the work to provide a unified look at this combined budget is still underway and is an ongoing action from OCG-5 (5-7 September 2013, Silver Spring MD, USA). OCG-5 identified that the breakdown of panel contributions by nation/organization and the overall balance for each panel annually were needed The Panel asked the Executive Board

Action 39. EB to review the structure of the JCOMMOPS combined budget and make suggestions (***action; DBCP-EB; ASAP***).

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11.2.12 The Panel also noted with appreciation that the host institution (CLS) provides significant in kind support, through a salary cost for IT support that is below the full economic cost, and through reductions in the cost of infrastructure and administration (no overhead is charged on contributions to CLS).

Programme contributions

11.2.13 With regard to panel contributions to the infrastructure, the Panel welcomed the increased support from OceanSITES to JCOMMOPS in 2012. Noting that some SOT financial contributions are made to the DBCP Trust Fund, the Panel agreed that such contributions should be targeted to SOT activities and JCOMMOPS with the SOT Chair's approval. GO-SHIP is encouraged to continue the effort initiated with its contribution in 2012.

JCOMMOPS Management

11.2.14 The Panel recalled that JCOMMOPS, while under the overall authority of JCOMM, has a consensual governance model made up of the JCOMM Observations Programme Area (OPA) Coordinator, representatives of each of the panels working with JCOMMOPS (DBCP, Argo, SOT, OceanSITES, and GO-SHIP), the host country/institutions (France: Ifremer/Coriolis and CLS), and the IOC and WMO secretariats—the 'JCOMMOPS Roundtable'.

11.2.15 The Panel noted that in order to provide advice to JCOMMOPS on priorities while keeping the reporting overhead low, OCG-5 agreed that the 'JCOMMOPS Roundtable' meet by teleconference on a fixed schedule every six months. In particular,

Rec. 51 the Panel Chair in consultation with the Executive Board will be requested to review the JCOMMOPS workplan and possibly propose to change emphasis in priorities if needed **(*action; DBCP Chair; DBCP-30*)**.

Transition Strategy for JCOMMOPS in Brest

11.2.16 The Panel recalled that for historical reasons dealing with the satellite communications from ocean buoys, the DBCP coordinator was originally hosted by CLS (first in Toulouse, France, then Largo, USA, and then in Toulouse again). JCOMMOPS grew out of the co-location of the DBCP and Argo Technical Coordinators, and the hosting arrangement was confirmed in 2005 by the JCOMM Management Committee after a process opening bidding for host offers, with the addition of IFREMER/CORIOLIS representing France as co-host with CLS.

11.2.17 The Panel recognized that the requirement for close association with a satellite data telecommunication provider have weaken, and that there are substantial benefits to be gains from enhancing the links with agencies and institutes involved with the deployment at sea and the operations of ocean observing instruments.

11.2.18 After a set of informal discussions within JCOMMOPS governance and French partners, meetings between JCOMMOPS and Brest key contacts, JCOMMOPS prepared actively in 2012/2013 for a potential move to Brest. The goal was to settle the centre in an ocean pole to develop further activities with its community and gain resources by fostering local politics assistance and interest.

11.2.19 A proposal was negotiated with Brest partners including CLS, Ifremer and Coriolis agencies, Science Park (Technopole), and elected people representing the 3 concerned entities: extended city (Brest Metropole Océane), department (Finistère) and region (Bretagne). The final proposal was prepared, distributed to deciders and JCOMMOPS presented the project to the elected people (August 2013). They all welcome the establishment of JCOMMOPS in Brest and agreed to fund the activities of the centre at the level requested. CLS reiterated its support to JCOMMOPS in this context and Ifremer committed to host the office.

11.2.20 At OCG-5, the panels investing in JCOMMOPS requested a quantitative analysis of the positive and negative aspects of the proposed move to Brest, and the potential risks and mitigation strategies. This report has been furnished to the DBCP Executive Board.

11.2.21 On the basis of the information reviewed, and the recommendation from the Executive Board, the **Panel concurred with the move of JCOMMOPS to Brest**.

Staff considerations

11.2.22 The Panel reviewed and concurred with the proposal from the Secretariat for the recruitment of the new Technical Coordinator following the current incumbent's resignation in the near future. In particular, the Panel decided the following actions:

Action 40. The Executive Board is tasked to update the recruitment notice in liaison with the Secretariat (***action; DBCP-EB; ASAP***);

Action 41. The new DBCP/OceanSITEs Technical Coordination should be located in Brest, co-located with JCOMMOPS for a target recruitment in early 2014 (***action; DBCP-EB; ASAP***);

Action 42. The post should be opened as an IOC of UNESCO Project Appointment at the P2/P3 level (***action; Secretariat; ASAP***);

Action 43. The evaluation panel should be comprised of: IOC secretariat (A. Fischer), WMO secretariat (E. Charpentier), DBCP (A. Wallace), OceanSITES (R. Weller and/or U. Send), JCOMMOPS (M. Belbeoch), and OCG (C. Clark) (***action; Secretariats; ASAP***);

Action 44. Once recruited, WMO is requested to accept the position as a 'secondment' and to take over financial and administrative responsibility, while IOC/UNESCO will continue to handle matters related to the host country (France), such as residence permits (***action; WMO Secr.; ASAP***);

Action 45. The Panel requested the Secretariat to issue the vacancy notice accordingly, and coordinate the recruitment process (***action; Secr.; ASAP***).

11.2.23 The Panel **agreed that it will be important to avoid a break in service and ensure training of a new TC DBCP by keeping Kelly Stroker under contract for a significant period of overlap with the new TC DBCP**.

11.2.24 The Panel discussed the "JCOMMOPS lead" concept, encouraged Team spirit in each of the key managerial functions of JCOMMOPS[13], and recognized that the undertaking of such tasks may require more than a1/3 of a Technical Coordinator's time, and are covered de facto by M. Belbeoch. The more experience is gained by the TCs and IT staff, the more these functions can be shared amongst the TCs, and relieve the pressure on the senior TC DBCP. The Panel noted that the proposed reporting structure to the 'JCOMMOPS Roundtable' will clarify the synergy of the team in place.

Action 46. The Panel invited GCOS to recognize the contribution of the coastal moored buoy networks for climate monitoring purposes **(*action; IOC Secretariat; ASAP*)**.

11.3 Report on decisions of WMO and IOC governing bodies

11.3.1 Twenty-seventh Session of the IOC Assembly

11.3.1.1 The IOC Secretariat representative reported on the proceedings of the Twenty-seventh IOC Assembly (IOC-XXVII, Paris, France, 26 June – 5 July 2013). The Panel noted that the IOC-XXVII was concerned with the fiscal difficulties of continuing programmes in face of the significant reduction of Regular Programme funding from UNESCO. Development plans for GOOS Panels and elective support meetings for working groups are expected to be impacted. IOC member states supported the concept of GOOS, JCOMM and IODE and their continued participation in operational oceanography, however tangible support from additional member state contributions were not offered.

Rec. 52 The DBCP is encouraged to interact with their IOC Member State delegations to emphasize the importance of IOC coordination activities to work of this Panel. **(*action; Panel members; ongoing*)**

11.3.2 Sixty-fifth Session of the WMO Executive Council

11.3.2.1 The WMO Secretariat representative reported on the outcome of the sixty-fifth Session of the WMO Executive Council (WMO EC-65, Geneva, Switzerland, 15-23 May 2013). In particular, the Panel noted the following decisions of EC-65 and recommended

Rec. 53 Panel members to take the following decisions of EC-65 into account when developing their activities in support of the Panel ***(action; Panel members; ongoing):***

- The Council adopted the updated version of the WIGOS Implementation Plan (WIP); see item 11.5 for details;
- The Council, recalling Recommendation 6 (CBS-15) - Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP), urged Members, in collaboration with partner organizations and identified agents in the EGOS-IP, to address the 115 actions listed in the Plan;
- The Council acknowledged that the JCOMM contribution to WIGOS implementation is realized essentially through the JCOMM Observations Programme Area Implementation

13 Strategy and long term vision; relationship with secretariats, in particular IOC; relationship with CLS (budget management, negotiations for staff, infrastructure needs, licences); Partnerships , subcontracting (negotiations, specifications); Technical expertise (system architecture, products design, problems resolution, vision); Student and staff recruitment; TC welcome, training, team work; IT staff training and management; Related documents, reporting, presentations, etc; Interim TC minimal work; ship-time related activities (until ship coordinator arrive).

Goals (OPA-IG), and requested Members to support implementation of marine observing systems in line with the OPA-IG, and to provide voluntary contributions to support the JCOMM in situ Observations Programme Support Centre (JCOMMOPS). It further urged Members to assure data-flow to end-users, including real-time distribution of marine meteorological and ocean data using the required and appropriate standards and formats.

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11.3.2.2 The Panel noted with appreciation that the end to end Marine Meteorology and Oceanography Programme (MMOP) of WMO, was referenced as a Strategic Priority by WMO at EC-65 (EC-65:d04-8-1-REV1-STRATEGIC-PLAN-2016-2019) held in Geneva , perhaps for the first time ever. This action can regarded as a recognition of the continued excellent work provided by JCOMM volunteers which include the operations programme area and, in particular, the DBCP.

11.4 User Requirements

11.4.1 GCOS / GOOS / WCRP Ocean Observing Panel for Climate (OOPC)

11.4.1.1 The IOC Secretariat representative reported that the requirements for observations requested of the DBCP remain the GCOS Implementation Plan goal of even spatial coverage of 1250 drifting buoys equipped with ocean temperature sensors (5x5° grid) (GCOS-92, updated in 2010 in GCOS-138).

11.4.1.2 The GCOS-GOOS-WCRP Ocean Observations Panel for Climate, at its 16th meeting (Silver Spring MD, USA, 3-5 September 2013), outlined a plan for evaluations of the observing system focused on different themes. The OOPC is tentatively planning a review of Upper Ocean Thermal observations in 2014, which would require strong input from the DBCP. In the GOOS Framework for Ocean Observing, requirements for observations are set balancing feasibility vs. impact on a wide range of uses for observations. The feasibility of observations is where observing networks such as the DBCP should have the strongest input in the evaluation process.

11.4.1.3 To support this goal, the Fifth meeting of the JCOMM Observations Coordination Group (Silver Spring MD, USA, 5-7 September 2013) suggested that the DBCP prepare an analysis of the spatial coverage of surface buoys that it has been able to achieve historically, to highlight areas that are difficult to cover for logistical or physical reasons, and to analyze if these coverage challenges have varied over time.

Rec. 54 DBCP to consider analysis of spatial coverage of surface buoys through time, as an aid to OOPC upper ocean thermal observation system feasibility planning. ***(potential action; DBCP Panel; if accepted)***

11.4.2 WMO Rolling Review of Requirements update

11.4.2.1 The WMO Secretariat representative reported to the Panel that the new version of the Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP[14]), which is responding to the Vision of the Global Observing System in 2025[15], has been approved by the WMO Executive Council per Recommendation from the fifteenth Session of the Commission for Basic Systems (CBS), Jakarta, Indonesia, 10-15 September 2012.

11.4.2.2 The Panel recalled the discussion under agenda item 8.2 regarding the evaluation of the impact of Sea Level Atmospheric Pressure (SLP) data over the ocean from drifting buoys on Numerical Weather Prediction (NWP), and that plans are underway to have an impact study

14: The current EGOS-IP corresponding to the Vision of the GOS in 2025 is available from the WMO website at: http://www.wmo.int/pages/prog/www/OSY/Publications/EGOS-IP-2025/EGOS-IP-2025-en.pdf
15: http://www.wmo.int/pages/prog/www/OSY/WorkingStructure/documents/CBS-2009_Vision-GOS-2025.pdf

undertaken by ECMWF on the issue. The Panel will review the results from this impact study at its next Session.

11.4.2.3 The Panel recalled the recommendations to its members made at the previous DBCP Session regarding the planning of their national buoy programme activities (see Appendix of DBCP-29 doc. 11.4). The Panel agreed that these recommendations remain valid.

11.5 WMO Integrated Global Observing Systems (WIGOS)

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11.5.1 The WMO Secretariat reported on the recent developments with regard to the implementation of the WMO Integrated Global Observing System (WIGOS). The Panel noted that the WIGOS framework Implementation Plan (WIP) has been updated (see website[16]) by the Sixty-Fifth Session of the WMO Executive Council (Geneva, Switzerland, 15-23 May 2013). It noted JCOMM's contribution to the ten WIGOS framework implementation Key Activity Areas (KAAs) (Appendix A of DBCP-29 doc. 11.5), and proposed the following DBCP response:

WIP KAA No.	***WIP Key Activity Area (KAA)***	***Proposed DBCP response***
1	Management of WIGOS implementation	• DBCP Executive Board and Technical Coordinator to provide DBCP input to the ICG-WIGOS and its Task Teams through the JCOMM representatives in those groups.
2	Collaboration with the WMO co-sponsored observing systems & international partner organizations & programmes	• Strong collaboration established between WMO and IOC for the DBCP since 1985
3	Design, planning & optimized evolution	• See agenda item 11.4 • DBCP Contribution to JCOMM OPA Implementation Goals for the surface drifters (1250 units) and the tropical moored buoys (125 units)
4	Observing System operation & maintenance	• DBCP to continue contributing to JCOMMOPS • DBCP to contribute to the Satcom Forum • DBCP to continue pilot activities (PP-HRSST, PP-WET)
5	Quality Management	• Keeping DBCP TD No. 37 up to date (Guide to buoy data QC tests to perform in real time by a GTS data processing centre) • Continue operating the DBCP QC guidelines • Promoting quality information feedback mechanisms between ocean in situ & satellite observation communities through the DBCP Pilot Project on HRSST • DBCP TT-IBP to continue evaluating performance of buoy data
6	Standardization, system interoperability & data compatibility	• To consider migrating some of the DBCP ongoing activities of the DBCP Implementation Strategy to the WIGOS Technical Regulations
7	WIGOS Operational Information Resource (WIR[17])	• Buoy operators to make sure that buoy metadata are made available via JCOMMOPS on a routine basis.
8	Data & metadata management, delivery & archival	• Buoy operators to make sure that buoy metadata are made available via JCOMMOPS on a routine basis.
9	Capacity development	• DBCP to continue supporting Capacity Building activities
10	Communications & outreach	• DBCP to continue to be informed about WIGOS implementation at regular DBCP sessions.

16 http://www.wmo.int/pages/prog/www/wigos/documents/Principal_Docs/WIP_en_v.2.0_APP_EC-65_en.doc
17 http://www.wmo.int/wigos/wir

11.5.2 The Panel recalled its response made at DBCP-27 and re-iterated at DBCP-28 to the legacy recommendations of the JCOMM Pilot Project for WIGOS, which provided an excellent contribution of the Panel to WIGOS implementation (see DBCP-27 final report[18], paragraph 11.5.3).

International forum of Users of Satellite Data Telecommunication

11.5.3 The Panel noted that an ad hoc International Forum of users of satellite data telecommunication systems (Satcom Forum[19]) was planned in Paris, from 3 to 4 October 2013. . The Panel acknowledged the importance of this initiative for the Panel's activities, and invited its members to follow up as needed.

11.6 Financial reports

11.6.1 The Meeting noted with satisfaction the positive and secure cash balance of funds totaling USD 391,673 as of 31 December 2012, as shown in ***Table 1 Annex IX***.

11.6.2 The Panel noted that In 2012, USD 43,000 (***Table 1 Annex IX***) was charged to the Capacity Building line item (USD 23,000 as LoA to KMD for WIO-3, 16-20 April 2012 and USD 20,000 in support to the Regional Workshop on Best Practices for Methods of Ocean Observation, Asia-1, 19-21 November 2012, Chennai, India). USD 22,097 was charged to the Iridium Project, contracted to SAMS-SRSL.

11.6.3 At DBCP-28 the EB had invited DBCP members to consider contributions in kind, to be considered as an additional contribution to the work of the Panel.

11.6.4 The meeting noted with satisfaction that India, BOBLME and sponsors had contributed approximately an additional US$ 62,000 for logistical expenses and representation as its contribution in kind to the Asia-1 Workshop in Chennai. The Panel also noted with satisfaction that Members/Member States had contributed in kind to support capacity building workshops.

11.6.5 The IOC Interim Statement for the period 1 January – 31 July 2013 is provided in ***Annex VII***. It shows a small positive balance of USD 26 as of 31 July 2012. During this period, no contribution was received yet from NOAA as the contribution is now made to WMO.

11.6.6 The WMO DBCP Trust Fund Interim Statement for the period 1 January–31 July 2013 is shown in ***Annex VII***. It shows a positive balance of USD 421,156.

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 ***Table 2 Annex IX***. 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-28.

11.6.8 The review of the DBCP Accounts as at 31 July 2013 and estimates for the years 2014 and 2015 is given in ***Table 2 Annex IX***. The Panel noted the JTA budget managed within the DBCP/SOT Trust Fund (***Table 3 Annex IX***), including the CLS contribution made on behalf of the JTA, and the expenditures for the JTA chairman, the JTA Executive Committee, and the Secretariat, and acknowledged that it did not impact the DBCP/SOT budget.

18 http://www.jcomm.info/components/com_oe/oe.php?task=download&id=14982&version=1.0&lang=1&format=1
19 http://www.jcomm.info/SatCom1

11.6.9 The Panel noted with appreciation the provisional table of contributions for 2014 as detailed in ***Annex VIII***. The Panel thanked contributing Panel members for their commitments.

11.6.10 The Panel recalled that expenditures from the DBCP/SOT Trust Fund are largely in Euros. Recognizing that the exchange rate between the US dollar and the Euro is affecting more and more the DBCP budget in a negative way, the Panel urged the Members once more to consider contributing to the DBCP/SOT Trust Fund in Euros (***recommendation OP/r7***). The Panel noted with appreciation that several Panel Members have already been paying their contribution in Euros in the last four years.

Rec. 55 Members requested to consider contributing to DBCP/SOT Trust Fund in Euros ***(action; Panel Members; ongoing)***

11.6.11 As was done at DBCP-28, the Panel again urged its members to pay their contributions in a timely fashion (***recommendation OP/r8***). In the view of the increasing DBCP activities, especially in Capacity Building, and pilot activities, and considering the need to secure the position of the Technical Coordinator, the Panel invited its members not contributing to the Trust Fund to discuss nationally whether a contribution could be made in the future (***recommendation OP/r9***).The Panel also invited members already contributing to the Trust Fund to investigate nationally whether their contribution could be increased (***recommendation OP/r10***).

Rec. 56 Members requested to pay contributions in timely fashion ***(action; Panel Members; ongoing)***

Rec. 57 Members invited to discuss nationally increasing their voluntary contributions ***(action; Panel Members; on-going)***

11.6.12 The DBCP EB had recommended to include Statement of Accounts of the JCOMM Trust Fund into the DBCP Statement of Accounts resulting in the joint presentation of the two Trust Funds, with the acknowledgement that the JCOMM budget did not impact the DBCP budget.

11.6.13 Until however the necessary clarification on details of the contributions and expenditure of the JCOMM Trust Fund will be available, the WMO 2012 Statement of Income and Expenditure and the WMO 2013 Interim Statement of Income and Expenditure for the JCOMM Trust Fund are presented for information only in ***Annex VII***.

11.6.13bis The Session discussed EB recommendations for line item expenditures for 2014. The Panel discussed the advisability of funding operations through budget items supporting satellite communication charges for Iridium buoys deployed as part of a pilot project, and direct funding of deployment costs incurred by the sailing vessel, Lady Amber. The Panel advised against including budget for these, but encouraged the members to seek funding for these activities.

11.6.14 The Panel approved its budget for 2014 (maximal expenditures) as detailed in ***Table 1 Annex IX***. The Executive Board, authorized by the Panel, and taking in account the decisions and recommendations made at the 28th Session of the DBCP, will set a plan for the 2014 actual expenditures. The Executive Board will liaise with Mr Frank Grooters for updating the interim financial report with the most accurate and actual information (***action OP/a35; DBCP-EB; 31 Jan. 2014***).

Action 47. Executive Board to liaise with Financial officer to update interim financial ***report (action; DBCP-EB; 31 Jan. 2014)***

11.6.15 The Panel requested the joint Secretariats and Mr Grooters to work together to distribute the final statement for the year 2013 to the Panel members as soon as the IOC and WMO Final

Statement of Accounts for the year 2013 are finalized (***action OP/a36; Secretariat & F. Grooters; 1 Mar. 2014***).

Action 48. Distribute final financial statement for the year 2013 to the Panel members ***(action; Secretariat & F. Grooters; 1 Mar. 2014)***

11.6.16 The Panel nominated, again, Frank Grooters (The Netherlands) to act as its financial advisor according to the DBCP operating principles, and thanked Mr Grooters for his comprehensive financial report, and the Secretariat for providing timely and valuable financial information to Mr Grooters.

12 REPORT AND RECOMMENDATIONS FROM THE EXECUTIVE SESSION

12.0.1 The Chair reported on the outcome of the Executive Board Session (EB) that was convened during the evening of 25 September 2013 to discuss a number of issues that had arisen during the plenary session and to make recommendations to the Panel for its consideration.

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

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 Chair and Secretariats, essentially to take into account the outcome and recommendations from the fourth Session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM, Yeosu, Republic of Korea, 23-31 May 2012), Fifth meeting of the JCOMM Observations Coordination Group (Silver Spring MD, USA, 5-7 September 2013), the sixty-fifth Session of the WMO Executive Council (WMO EC-65, Geneva, Switzerland, 15-23 May, and the Twenty-seventh IOC Assembly (IOC-XXVII, Paris, France, 26 June – 5 July 2013).

Action 49. The Chair asked the Panel to review the document (available from the web) and to forward any comments to the Chairperson by the end of November 2013 ***(action; Members; 30 Nov. 2013)***.

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 IV***.

12.2.2 The Panel recalled the dynamic nature of the document and invited its:

Action 50. DBCP members to provide the Chairperson with comments by the end of the year (***action; members; 31 December 2013***).

12.3 Review of action items from the previous DBCP Session

12.3.1 The Technical Coordinator presented the action plan from the twenty-eighth DBCP Session, Freemantle Australia, October 2012. 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. The Panel should be aware that all actions are collated in the MS Excel file at the end of each DBCP session.

12.3.2 The ongoing actions, and the set of recommendations are entered into the Operating Principles as an Annex.

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 III***. The Panel invited the Chair, in liaison with the Executive Board and the Secretariat, to revise the list of prioritized tasks for the Technical Coordinator as agreed at the previous Session, and discuss execution details with Ms Stroker (***action; Chair; ASAP***). The Panel requested the Technical Coordinator to then undertake the tasks as proposed by the Chair and to report at the next Panel Session **(*action; TC DBCP; ASAP*)**. In particular, the Panel agreed that addressing the drogue loss and buoy life-time issues should be regarded as a priority activity for the Technical Coordinator.

Action 51. Examine and revise and prioritized tasks of Technical Coordinator DBCP ***(action; Chair, EB, TC DBCP; ASAP)***

Action 52. Undertake TC tasks and report at next session ***(action: TC DBCP; on going, DBCP-30)***

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 IX***) as well as in its workplan (***Annex III***).

13 NATIONAL REPORTS

13..1 Mr Chris Marshall (Canada) chaired the National Reports Session. The Panel received written reports on current and planned buoy programmes from Australia, Brazil, Canada, Chile, China, Ecuador, Finland, France, Germany, India, Iran, Ireland, Japan, New Zealand, Republic of Korea, Saudi Arabia, South Africa, Sweden, Ukraine, the United Kingdom, and the United States of America. As usual, these written reports, as well as others submitted to the Secretariat before 31 December 2013, would be published in the Panel's Annual Report. Oral presentations were made during the Session on national activities by the following countries: Australia, Brazil, Canada, China, India, New Zealand, Ukraine, United Kingdom, and the USA.

The Panel noted that China has deployed about 200 surface drifting buoys, and a dozen or more moored buoys. While congratulating China for this contribution to global ocean observations, and noting the potential value of the data from these buoys for WMO and IOC Applications, the Panel also noted that the data are not currently being distributed worldwide in real-time to end users. The Panel therefore requested the Secretariat to approach China in the view to invite China to consider making efforts (i) to allow the distribution of the marine meteorological and oceanographic data they are collecting onto the GTS, and (ii) to make the metadata and technical specifications of the corresponding observing platforms and instruments available to JCOMMOPS (***action; Secretariat; DBCP-29***).

13.2 The Panel invited:

Action 53. The Secretariat to approach China in the view to invite China to consider making efforts (i) to allow the distribution of the marine meteorological and oceanographic data they are collecting onto the GTS, and (ii) to make the metadata and technical

specifications of the corresponding observing platforms and instruments available to JCOMMOPS (***action; Secretariat; DBCP-30***)

Action 54. DBCP members who had not submitted National Reports to submit their input to the Secretariat before the end of the year ***(action; members; 31 Dec. 2013)***.

Action 55. Publish National Reports with Panel's Annual Report **(*action; Secretariat; Early-2014*)**.

14 ELECTION OF THE CHAIRPERSON AND VICE-CHAIRPERSON

14.1 The Panel recalled that according to its Operating Principles, the term for the members of the Executive Board is for one year during the intersessional period. They shall be eligible for re-election in their respective capacities, but would serve in principle for no more than 4 terms.

14.2 The Panel further recalled that the current core members of the Executive Board included:
Mr Al Wallace (Canada), first elected at DBCP-25, October 2009;
Mr Johan Stander (South Africa), first elected at DBCP-26, Sept. 2010;
Dr R. Venkatesan (India), first elected at DBCP-26, Sept. 2010;
Dr Sid Thurston (USA), appointed by Mr Wallace to serve in the Executive Board in 2010.
Dr Jonathan Turton (UK), first elected at DBCP-27, October 2012.

14.3 The Panel re-elected Mr Wallace as its Chairperson, to serve for a fifth term until the end of the next Panel session.

14.4 The Panel reelected Dr Venkatesan to serve for his Fourth term as Vice-chairperson for Asia, and Dr Turton to serve for his Second term as Vice-chairperson of Europe, until the end of the next Panel Session.

14.5 The Panel noted that Mr Stander had proposed to step down from the position of vice-chair for the Southern Hemisphere. The Panel elected Mr Graeme Ball (Australia) for as vice-chair for the Southern Hemisphere.

15 ADOPTION OF THE SESSION REPORT

15.1 The Panel reviewed and adopted the draft session report prepared by the Secretariat. The list of action items arising from this Session is provided in ***Annex III***.

16 DATES AND PLACE FOR THE NEXT SESSION

16.1 The Chair introduced the question of the date and place for the next DBCP session. The delegation of China on behalf of SOA offered to host the DBCP-30 in China in October 2014. The Panel thanked China for their generous offer and gratefully accepted the proposal. Tentative dates for the session were agreed to be scheduled provisionally from 13 – 17 October or 27 to 31 October 2014, ensuring minimum duplication with schedules for events of other JCOMM and related programmes.

17 CLOSURE OF THE SESSION

17.1 The Chairperson Mr Wallace, expressed his appreciation to the staff of IOC for providing facilities, support and hospitality for the meeting. He also highlighted the devotion and dedicated work on behalf of the DBCP of the Secretariat, the Executive Board, the Technical Coordinator, the Chairs of the Action Groups, Task Teams, and Pilot Project Steering Groups, national

representatives, manufacturers and all participants. The volunteer, and sometimes paid, work is the basis for the DBCP and success of the data buoy community.

17.2 The twenty-ninth session of the Data Buoy Co-operation Panel closed on Friday, 27 September 2013 at 1530.

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ANNEX I

AGENDA
PROVISIONAL AGENDA

1 Opening and Welcome of the DBCP Session

2 Scientific and Technical Workshop

3 Opening of the DBCP Business 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 Reports 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 Pilot Project on the impact of SLP from drifters on NWP
- 8.2 DBCP/ETWS Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET)
- 8.3 DBCP/GHRSST Pilot Project for High Resolution SST (PP-HRSST)

9 Issues for the Panel

- 9.1 Information Exchange
- 9.2 Deployment opportunities and strategies
- 9.3 Data timeliness
- 9.4 Vandalism

9.5 Metadata
9.6 Technological developments in support of user requirements
9.7 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 JCOMMOPS activities
11.2 JCOMM activities
11.3 Report on decisions of WMO and IOC governing bodies
11.4 User requirements
11.5 WMO Integrated Global Observing Systems (WIGOS)
11.6 Financial reports

12 Report and Recommendations from the Executive Session

12.1 DBCP implementation strategy
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

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ANNEX III

ACTION LIST / WORKPLAN

DBCP WORKPLAN FOR THE NEXT INTERSESSIONAL PERIOD (2014)

(Ongoing actions as well as Recommendations from this and past Panel Sessions are now included in the Operating Principles)

No.	*Ref item*	*Action item*	*Who*	*Supported by*	*Reporting to*	*Deadline*
Action 1.	2	Generate a link in JCOMMOPS website for regional drifter deployment organizers to input proposed deployment locations.	JCOMMOPS	TC	Panel	ASAP
Action 2.	2	Organize and chair DBCP-30 Scientific and Technical Workshop	J. Stander	Secretariat	Panel	DBCP-30
Action 3.	5	The TC DBCP to work with the Global Drifter Program and other Action Groups on creating a map of deployments by country/program	TC, members	GDP	Panel	July 2014
Action 4.	5	The TC DBCP to work with NDBC on an automated process for receiving tsunameter information.	TC DBCP, NDBC		Panel	July 2014
Action 5.	5	The Panel requested the Technical Coordinator DBCP to work with Iridium VARs to obtain drifting buoy metadata	TC DBCP	VARS	Panel	DBCP-30
Action 6.	5	The GTS header should be modified to follow WMO specifications as the entire TAO array has plans to be refreshed by 2014.	NDBC	TC	Panel	ASAP
Action 7.	5	DBCP members should look for deployment opportunities in the Southern Ocean	DBCP Members	TC	Panel	ASAP
Action 8.	6.1	The conversion to use 7-digits numbers instead of the 5-digit numbers must continue until all cross-reference lists are changed.	TT-DM	TC	Panel	DBCP-30
Action 9.	6.1	Move forward to complete, review and publish the document “An Oceanographer’s Marine Meteorologist’s Cookbook for submitting Data in Real Time and In Delayed Mode	TT-DM	Secretariat	Panel	DBCP-30

No.	Ref item	Action item	Who	Supported by	Reporting to	Deadline
Action 10.	6.1	SOC Meteo-France and GDAC-DB_ISDM continue to work toward the implementation of a routine procedure to compare GTS Bulletin Headers between the two centers. TT-DM	DBCP-30	TC	Panel	12
Action 11.	6.4	To convene the Third "DBCP In-Region North Pacific Ocean and Marginal Seas Capacity Building Workshop" (NPOMS-3), October 2014, Okinawa, Japan (TBC). The goals for the workshop are detailed in Appendix C of DBCP-29 doc. 6.4	TT-CB	Secretariat	Panel	Autumn 2014
Action 12.	6.4	To Assemble a Team to explore recent advances in Information and Communication Technology (ICT) to help facilitate more effective DBCP TT-CB Outreach and Capacity Building Activities on a larger scale	TT-CB	Secretariat	Panel	NPOMS-2
Action 13.	6.4	To endorse and provide coordination support, through TT-CB, in 2014 for the organization of either 1) the DBCP's "Fifth In-Region Capacity Building Workshop for the Western Indian Ocean" (WIO-5) or 2) the "First Pacific Islands Workshop on Ocean Observations and Data Applications" (PI-1). The South West Pacific Region is fertile ground for capacity building, particularly in ocean issues. The Region has good networks and there is a lot of interest in building the human capacity to digest and understand data from the ocean and climate observing systems.	TT-CB	Secretariat	Panel	DBCP-30
Action 14.	7.5	Pass the IPAB requirements for satellite data telecommunication to the ad hoc Satcom Forum and EC-PORS	J. Stander	TC	SATCOM, ET-PORS	ASAP
Action 15.	7.8	DBCP Community (OS TC) should work toward increasing the OceanSITES data contributed to the GTS.	OceanSITES Technical Coordinator	Panel Members	Panel	ongoing

No.	Ref item	Action item	Who	Supported by	Reporting to	Deadline
Action 16.	7.8	The Ship Logistics Technical Coordinator is tasked to document OceanSITES deployment and servicing cruises with a view to increasing cooperation with DBCP deployment needs	TC DBCP and Ship Coordinator	Panel Members	Panel	ongoing
Action 17.	7.9	The DBCP should inform the countries responsible for TAO support of the DBCP's concern, at the highest level of responsible agencies.	Secretariat and EB	Panel Members	Panel	ASAP
Action 18.	7.10	Eleven Actions from this Meeting for ITP	ITP	TC	Panel	DBCP-30
Action 19.	7.10	ITP Terms of reference recommended by the ITP	ITP	Secretariat	Panel	DBCP-30
Action 20.	8.1	To compile and submit the BAMS paper before the end of 2013 and use pilot funds to pay for the publications fees	L. Centurioni	Secretariat	Panel	DBCP-30, Dec. 31 2013
Action 21.	8.1	To invite colleagues from the Naval Postgraduate schools in Monterey (California) to join the discussion	L. Centurioni	Secretariat	Panel	DBCP-30
Action 22.	8.2	Guidelines on the best practices for measurement of reliable, high-quality spectral wave measurements, including directional spectra, will be developed, possibly as an outcome of the technical workshop	PP-WET co-chairs	TC	Panel	DBCP-30
Action 23.	8.3	the Pilot Project Steering Group (PP-SG) to work closely with GHRSST in resuming the analysis effort so that the value or otherwise of HRSST drifters might be established prior to any further commitment of Panel resources	D. Meldrum	GHRSST	Panel	ASAP
Action 24.	8.3	TC DBCP, aided by the PP-SG chair, to further investigate the data loss and to suggest solutions	TC DBCP and D. Meldrum	Panel Members	Panel	ongoing
Action 25.	8.3	The manufacturing community to be approached to define a price for implementing the HRSST specification	D. Meldrum	Manufacturers	Manufacturers	ongoing
Action 26.	8.3	Request the PP-SG to continue its efforts to obtain funding from the satellite community so that the value of in situ HRSST measurements might be properly evaluated	PP-SG	Chair EB	Panel	ongoing
Action 27.	8.3	GHRSST group is not reading the 7 digit WMO BUFR id. TC DBCP to work to resolve this.	Technical Coordinator	GHRSST	Panel	ongoing
Action 28.	8.3	A more thorough review of the potential costs to upgrade the HRSST for manufacturers.	PP-HRSST	Manufacturers	Panel	ongoing

No.	Ref item	Action item	Who	Supported by	Reporting to	Deadline
Action 29bis	9.1.1	The Panel invited its members to review the content of the DBCP web page on best practices and to provide feedback to the Technical Coordinator as appropriate	Panel Members	Secretariat	TC	DBCP-30
Action 29.	9.1.5	The Panel requested JCOMMOPS to move forward with the new website design changes and send users a beta design for testing as soon as possible	JCOMMOPS	Panel Members	Panel	DBCP-30
Action 30.	9.2	The DBCP community was urged to provide metadata on planned deployments as requested by JCOMMOPS.	Panel members	TC	Panel	ongoing
Action 31.	9.2	The GDP communicate with the ship logistics coordinator on possible drifter availability.	DBCP SC, GDP	TC	Panel	ongoing
Action 32.	9.2	Panel members should communicate deployment opportunities and needs to JCOMMOPS, and use the forms created by the Ship Coordinator.	Panel members	JCOMMOPS	Panel	ongoing
Action 33.	9.4	The Panel agreed that the following action plan would be implemented by TT-ITP	TT-ITP	Secretariat	Panel	DBCP-30
Action 34.	9.5	Provide JCOMMOPS with planned deployment metadata in the format specified	Panel members	TC	Panel	ASAP
Action 35.	10.4	Report on Satellite Communication issues to DBCP-30	D. Meldrum	SATCOM	Panel	DBCP-30
Action 36.	11.1	Panel Members, to systematically communicate deployment and cruise plans to JCOMMOPS	by platform operators	JCOMMOPS	Panel	ASAP
Action 37.	11.1	JCOMMOPS to clarify its workplan, deliverables, and gather feedback from the Panel	by JCOMMOPS	Panel Members	Panel	DBCP 30
Action 38.	11.2	The Panel agreed that the DBCP Task Team on Capacity Building should establish connections with the Argo Capacity Building activities for countries with interest in ocean observations from the Pacific Ocean including PI-GOOS	TT-CB	Panel Members	Panel	DBCP-30
Action 39.	11.2	EB to review the structure of the JCOMMOPS combined budget and make suggestions	DBCP-EB	Secretariat	Panel	ASAP

No.	Ref item	Action item	Who	Supported by	Reporting to	Deadline
Action 40.	11.2	The Executive Board is tasked to update the recruitment notice in liaison with the Secretariat	DBCP-EB	Secretariat	Panel	ASAP
Action 41.	11.2	The new DBCP/OceanSITEs Technical Coordination should be located in Brest, co-located with JCOMMOPS for a target recruitment in early 2014	DBCP-EB	Secretariat	Panel	ASAP
Action 42.	11.2	The post should be opened as an IOC of UNESCO Project Appointment at the P2/P3 level	Secretariat	Secretariat	Panel	ASAP
Action 43.	11.2	The evaluation panel should be comprised of: IOC secretariat (A. Fischer), WMO secretariat (E. Charpentier), DBCP (A. Wallace), OceanSITES (R. Weller and/or U. Send), JCOMMOPS (M. Belbeoch), and OCG (C. Clark)	Secretariats	Secretariat	Panel	ASAP
Action 44.	11.2	Once recruited, WMO is requested to accept the position as a 'secondment' and to take over financial and administrative responsibility, while IOC/UNESCO will continue to handle matters related to the host country (France), such as residence permits	WMO Secr.	Secretariat	Panel	ASAP
Action 45.	11.2	The Panel requested the Secretariat to issue the vacancy notice accordingly, and coordinate the recruitment process	Secr.	Secretariat	Panel	ASAP
Action 46.	11.2	The Panel invited GCOS to recognize the contribution of the coastal moored buoy networks for climate monitoring purposes	IOC Secretariat	GCOS	Panel	ASAP
Action 47.	11.6	Executive Board to liaise with Financial officer to update interim financial report	DBCP-EB	Secretariat	DBCP-EB	31 Jan. 2014
Action 48.	11.6	Distribute final financial statement for the year 2013 to the Panel members	Secretariat & F. Grooters	Secretariat	DBCP-EB	1 Mar. 2014
Action 49.	12.1	The Chair asked the Panel to review the document (available from the web) and to forward any comments to the Chairperson by the end of November 2013	Members	Chair EB	DBCP-EB	30 Nov. 2013
Action 50.	12.2	DBCP members to provide the Chairperson with comments by the end of the year	members	Chair EB	DBCP-EB	31 December 2013

No.	Ref item	Action item	Who	Supported by	Reporting to	Deadline
Action 51.	12.4	Examine and revise and prioritized tasks of Technical Coordinator DBCP	Chair, EB, TC DBCP	Secretariat	DBCP-EB	ASAP
Action 52.	12.4	Undertake TC tasks and report at next session	TC DBCP	Panel Members	Panel	ongoing, DBCP-30
Action 53.	13	The Secretariat to approach China in the view to invite China to consider making efforts (i) to allow the distribution of the marine meteorological and oceanographic data they are collecting onto the GTS, and (ii) to make the metadata and technical specifications of the corresponding observing platforms and instruments available to JCOMMOPS	Secretariat	China	Panel	DBCP-30
Action 54.	13	DBCP members who had not submitted National Reports to submit their input to the Secretariat before the end of the year	members	Secretariat	Panel	31 Dec. 2013
Action 55.	13	Publish National Reports with Panel's Annual Report	Secretariat	Panel Members	Panel	Early-2014

No.	Ref item	Recommendation	Who	Deadline
Rec. 1	2	Continue the on-going comparison between the various manufactures by year for drifter and drogue lifetime.	AOML	on-going
Rec. 2	2	Distribute the autonomous surface vehicle data on the GTS using appropriate WMO code (by owners of the gliders, identify proper GTS bulletin headers, and BUFR template	Jon Turton to lead for DBCP	DBCP-30
Rec. 3	2	Expand the request to manufacturers to find cost effective means to meet technical specifications, with special emphasis on HRSST.	Manufactures	ongoing
Rec. 4	2	Manufacturers to carefully review the integrity of drifter battery packs and to minimize impact of vibration. Consideration should be given to the overall management of the energy budget managing the transmitters:	manufacturers	ongoing

No.	*Ref item*	*Recommendation*	*Who*	*Deadline*
Rec. 5	2	By noting that The HRSST data are being used for the validation of satellite products, the panel is inviting that user community to contribute to the funding of the future upgrade of HRSST capability.	Panel members	ongoing
Rec. 6	2	JCOMMOPS integrate GDP Drifter Deployment Value tools with a developing database on cruises (research and commercial) to increase spatial data coverage, prevent overlapping efforts and maximize drifters lifetimes.	JCOMMOPS and AOML	ongoing
Rec. 7	2	All 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 2013	S&T workshop authors	30 November 2013
Rec. 8	5	The panel recommended for the manufacturers to provide information to JCOMMOPS on models, formats, and shipments	Manufacturers	ongoing
Rec. 9	5	The panel recommended it's members to continue providing Iridium deployment information to the Technical Coordinator in the agreed upon format	Panel Members	on-going
Rec. 10	5	The panel recommended that the current TC put together a detail of her tasks and responsibilities for her incumbent	TC DBCP	Dec. 31 2013
Rec. 11	5	The Technical Coordinator to continue working with the satellite data telecommunication providers in order to better identify the operators of such buoys in the view (i) to better reflect the status of the buoy networks, whether they report on the GTS or not, and (ii) to convince the buoy operators to allow GTS distribution of their data, and provide technical assistance if needed	TC DBCP	ongoing
Rec. 12	5	Buoy operators are urged to make sure that the data are distributed on the GTS	Panel members	ongoing
Rec. 13	6.2	The Panel recommended the buoy operators and manufacturers to take into account the findings (Annex xxx) of the Task Team for future deployments	buoy operators & manufacturers	ongoing

No.	Ref item	Recommendation	Who	Deadline
Rec. 14	6.2	The Panel requested the TT to investigate with the manufacturers how/whether drifters could/should eventually be ISO certified	TT	DBCP-30
Rec. 15	6.3	Centres issuing moored buoy and drifting buoy data to GTS to start using the new templates (in parallel with the old alphanumeric WMO codes) as soon as possible, once the templates have been officially validated:	Centres	ASAP
Rec. 16	6.3	CLS to implement the new BUFR templates for drifting and moored buoys in their data processing system once the templates have been officially validated.	CLS	ASAP
Rec. 17	6.3	Moored buoy operators to start submitting metadata to JCOMMOPS in either the agreed (Tagged Pairs or XML or NetCDF) formats.	buoy operators	ASAP
Rec. 18	6.3	TC DBCP to develop a system for making the metadata available via the JCOMMOPS web site.(action	TC DBCP	ASAP
Rec. 19	6.3	The Panel urged its members to improve the level of data sharing of moored buoys	Panel members	ongoing
Rec. 20	6.4	To continue to build Observation Development Team (ODT) and Modelling Development Team (MDT) with Met/Ocean Institutes around the world	TT-CB	continuous
Rec. 21	6.4	To Enhance Coordination and Cooperation between TT-CB and WMO Regional Associations	TT-CB	DBCP-30
Rec. 22	6.4	To emphasize that the regional activities should create synergies and avoid duplication, at all cost, therefore requested to develop specialized activities that meet the interest of the respective regions, preferably with the identified resources within the regions. To ensure this and for smooth coordination among regional activities, the Panel decided to invite the leaders of the regional workshop organization would become members of the TT-CB.	TT-CB	continuous
Rec. 23	6.4	To build stronger links to the JCOMM services (SFPA), observations (OPA), Data Management,	TT-CB	continuous

No.	Ref item	Recommendation	Who	Deadline
Rec. 24	6.4	To coordinate Preparations with 2nd International Indian Ocean Expedition,	TT-CB	continuous
Rec. 25	6.4	To connect with IODE for ICT Advances,	TT-CB	continuous
Rec. 26	6.4	To coordinate with WMO Capacity Development Strategy toward Sustainable Development and Climate Change(action	TT-CB	continuous
Rec. 27	6.4	To develop Indicators (Metrics) of Workshop Success,	TT-CB	continuous
Rec. 28	6.4	To coordinate with RMICs to avoid Duplications of Effort.	TT-CB	continuous
Rec. 29	6.4	To establish North Pacific Ocean and Marginal Seas (NPOMS-1) Website on JCOMM Website.	TT-CB	ASAP
Rec. 30	7.2	GDP to investigate the value of organizing a science workshop to address drifter water following characteristics, and use of drifter velocity in ocean assimilating models	R. Lumpkin	DBCP-30
Rec. 31	7.10	ITP to nominate one expert of the group to each of the ICG's Working Groups whose Terms of Reference include matters related to observing systems, to contribute to the work of the ICGs in the area of tsunameters and keep a link with the work of ITP	ITP	ASAP
Rec. 32	7.10	ITP takes prompt and urgent action to define performance indicators for tsunameters and put in place real time indicators in websites collecting and publishing tsunameter metadata and data.	ITP	ASAP
Rec. 33	8.2	Reinforce the importance of understanding critical measurement biases to agencies responsible for wave data	all DBCP members	ongoing
Rec. 34	8.2	Encourage RMIC RA-IV (and other RMICs with wave component) to play a key role in the Pilot Project	PP-WET	ongoing
Rec. 35	8.2	Inform user groups – modellers, forecasters, climate – of findings and impacts on their activities – CLIMAR-4, 13th Waves, WISE.	PP-WET	ongoing

No.	Ref item	Recommendation	Who	Deadline
Rec. 36	8.2	Investigate linkages between the JCOMM inter-comparison activities and PP-WET (co-Chairs to contact the JCOMM leader on intercomparison activities, Dr Jingli Sun and discuss how PP-WET experience can feed into the current JCOMM draft proposal.	PP-WET co-Chairs	ASAP
Rec. 37	8.2	The future plans and membership of the Pilot Project will be reviewed in October 2013, at the special meeting preceding the Wave Workshop, including a possible follow up technical workshop on results to date	PP-WET co-chairs, Secretariat	October, 2013
Rec. 38	8.3	Encourage manufacturers to add HRSST to future engineering plans for drifters.	PP-HRSST	ongoing
Rec. 39	9.2	The Panel will consider the feasibility of coordinating deployment missions at JCOMMOPS on a cost-sharing basis with other ocean observing programmes to enhance deployment opportunities in areas without vessels operating free of charge. In particular the panel agreed to investigate the possibilities of co-funding the 2014 Lady Amber cruise proposed by JCOMMOPS.	DBCP Panel	ASAP
Rec. 40	9.2	The Panel will consider if funding issues for deployments could be overcome by buying less instruments, but deploying them in vital positions with chartered vessels, for a more balanced global array.	DBCP Panel	ongoing
Rec. 41	9.2	The Panel encouraged JCOMMOPS to continue with the development of innovative deployment and retrieval solutions, in particular with the maritime operator ProLarge, and sailing and industry communities.	DBCP Panel	ongoing
Rec. 42	9.2	The Panel stressed that the Port Meteorological Officer (PMO) network is an excellent asset to assist with deployment opportunities, and invited the SOT Coordinator to establish links with the PMOs in the view to make the best use as possible of their services	SOT TC	ongoing

No.	Ref item	Recommendation	Who	Deadline
Rec. 43	9.2	The Panel stressed that the Research Vessels also ought to be better used for the deployment of drifters, and encouraged Panel members, and the Ship Coordinator to investigate and make the best use of the opportunities.	DBCP Panel	ongoing
Rec. 44	9.3	To separate the moored buoy subsurface delays from the surface data delays and find a solution to best represent the timeliness of the moored array	TC DBCP	DBCP-29
Rec. 45	9.3	JCOMMOPS to continue to compare Argos mean disposal maps and timeliness maps	JCOMMOPS	DBCP-30
Rec. 46	9.3	Panel members to continue to deploy Iridium drifting buoys in areas where delays are greater than 120 minutes	Panel members	ongoing
Rec. 47	9.3	The DBCP TC to continue to work with Iridium VAR providers to receive delay information	JCOMMOPS	DBCP-30
Rec. 48	9.5	The Panel encouraged all buoy operators to provide a website of plans and deployment information for drifting and moored buoys similar to AOML, NDBC, and Canada as well as continuing e-mail notifications as necessary.	Panel members	ongoing
Rec. 49	9.5	The Panel recognized the value of metadata and requested operators of Iridium platforms to provide this information to the TC DBCP.	Panel members	ongoing
Rec. 50	11.2	TT-IBP to link to WMO CIMO and CBS for satellite observations	TT-IBP	ongoing
Rec. 51	11.2	the Panel Chair in consultation with the Executive Board will be requested to review the JCOMMOPS workplan and possibly propose to change emphasis in priorities if needed	DBCP Chair	DBCP-30
Rec. 52	11.3.1	The DBCP is encouraged to interact with their IOC Member State delegations to emphasize the importance of IOC coordination activities to work of this Panel.	Panel members	ongoing
Rec. 53	11.3.2	Panel members to take the decisions of EC-65 into account when developing their activities in support of the Panel	Panel members	ongoing

No.	*Ref item*	*Recommendation*	*Who*	*Deadline*
Rec. 54	11.4.1	DBCP to consider analysis of spatial coverage of surface buoys through time, as an aid to OOPC upper ocean thermal observation system feasibility planning. (potential action	DBCP Panel	if accepted
Rec. 55	11.6	Members requested to consider contributing to DBCP/SOT Trust Fund in Euros	Panel Members	ongoing
Rec. 56	11.6	Members requested to pay contributions in timely fashion	Panel Members	ongoing
Rec. 57	11.6	Members invited to discuss nationally increasing their voluntary contributions	Panel Members	ongoing

ANNEX IV

OPERATING PRINCIPLES OF THE
DATA BUOY CO-OPERATION PANEL (DBCP)
(as adopted by DBCP-29)

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 becamea 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 / MemberStates 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.

2.3 Following the outcome of last DBCP Session, a number of ongoing tasks and activities have been identified by the Panel for its members to undertake. They are to:

1. submit their national reports to the Secretariat before the end of the year (input submitted before 30 November to be published in the Panel's Annual Report;

2. take the recommendations from the IOC XXVII Assembly and the WMO 16th Congress and WMO EC-65 into account when developing their activities in support of the Panel;

3. address user requirements and particular observing systems deficiencies as expressed in the JCOMM Statement of Guidance for Ocean Applications;

4. review the DBCP Implementation Strategy document at http://www.jcommops.org/doc/DBCP/DBCP_Impl_Strategy.pdf and to forward any comments to the Chairperson by the end of November each year;

5. continue their budgetary contribution to the Trust Fund in Timely manner;

6. comply with the WMO Quality Management Framework (QMF) and quality management principles;

7. make use of the barometer drifter upgrade scheme (see http://www.jcommops.org/dbcp/platforms/barometer.html) by purchasing barometers for GDP-funded SVP drifters and negotiating their deployment positions with AOML;

8. provide GDP/AOML with manufacture dates for all buoys built within the last 5 years, as well as with barometer/SLP data;

9. provide instrument/platform metadata regarding the buoys they deploy to JCOMMOPS, using the recommended mechanisms (paying particular attention to SST and SSS data); to comply with buoy metadata collection scheme;

10. notify of all deployments of Iridium Drifters via the dedicated mailing list (iridium-pp@jcommops.org) and eventually via a notification web page on the JCOMMOPS web;

11. provide information on deployment opportunities to JCOMMOPS (preferably through a national website similar to AOML, NDBC and Canada) for all buoys, as well as to continue e-mail notifications as necessary – annual reports, action group annual planning, ship schedules, national plans, national contact points etc. Panel members also subscribe on the list and systematically post their deployment opportunities on the ships@jcommops.org mailing list as well;

12. provide info/materials for DBCP/JCOMMOPS websites (news, brochure);

13. actively communicate with national coordination for GEO to fully inform on the Panel's activities and capabilities in this;

14. start systems for record keeping for instrument calibration, replacement and validation that conform to ISO recommended specifications;

15. review best practices prior to drifter purchase for safety, and GTS data processing purposes;

16. follow the best practices and standards eventually proposed under WIGOS, and in

particular, to provide the buoy platform / instrument metadata to JCOMMOPS, and the ODAS metadata service as appropriate;

17. use the WMO-IOC Regional Marine Instrument Centres (RMIC) facilities as appropriate, and participate at future workshops;

18. encourage other centres to act as Principal Meteorological and Oceanographic Centre Responsible for Quality Control of Buoy Data (PMOC) and existing centres to invest more resources in the implementation of DBCP Quality Control (QC) guidelines;

19. contribute to feeding the JCOMM database extreme wave events when such events are observed by data buoys and are recorded by Panel Members.

2.4 Similarly, the buoy and equipment manufacturers have been invited to participate on an ongoing basis to DBCP activities as following. They:

1. collaborate with buoy operators and JCOMMOPS and submit through JCOMMOPS the instrument/platform metadata, including description of buoy models, using the recommended mechanisms (paying particular attention to SST and SSS data); to comply with buoy metadata collection scheme. JCOMMOPS to negotiate metadata formats on ad hoc basis;

2. provide Service Argos with list of most used buoy models and formats they operate;

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;

4. enhance buoy safety through improved design (refer recommendations) and keep the Panel informed about related changes.

2.5 The ongoing actions for Panel members and DBCP activity participants are reflected in *Appendix XI*.

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 Chair within one month after each session is reviewing programme, prioritising tasks, establishing working priorities and discussing execution details of the technical coordinator as agreed at the previous Session.

3.8 The Technical Coordinator shall then undertake the tasks as proposed by the Chair and, report at the next Panel Session.

3.9 The Chair will also finalise updates to the DBCP implementation strategy including reference to the CapacityBuilding efforts being undertaken by the Panel and seeking feedback from Panel members.

3.10 The Chair will maintain close links with members of the Ship Observations Team (SOT) so that support on deployment opportunities can be obtained from the Ship of Opportunity Programme (SOOP) Implementation Panel (SOOPIP) and the Voluntary Observing Ship (VOS) Panel (VOSP) of the SOT.

3.11 The secretariat is maintaining a list of national contact points for the DBCP and within other relevant bodies with potential for involvement in DBCP activities.

3.12 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 Chairs and Co-Chairs of the Task Teams should not be in a situation of conflict of interest. The Terms of Reference and Membership of the current Task Teams are provided in *Appendix V*.

4.2 From timetotime, 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.

7.3 Ongoing actions and recommendations from the Panel, as agreed upon at previous DBCP Session are listed in *Appendix XI*.

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 reports organizationally . 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 WMO Secretariat shall facilitate the transfer of sufficient funds from the DBCP Trust Fund at the WMO to the DBCP Trust Fund at the IOC if needed to pay all related expenses from the IOC.

8.9 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).

8.10 The joint Secretariats and the DBCP financial advisor will work together to prepare and distribute the final statement of the DBCP/SOT Trust Fund for the previous year to the Panel members as soon as the IOC and WMO Final Statement of Accounts for that year are finalized. On the basis of the IOC and WMO Final Statements and the advice of the DBCP Executive Board, the financial advisor will also prepare a revised budget estimate for the following 2 years. The IOC and WMO Final Statements and the final statement for the DBCP/SOT Trust Fund are then included in the DBCP Annual report.

8.11 The DBCP financial advisor will request IOC and WMO to provide an Interim Statement of Accounts over the period 1 January-31 July for the preparation by the Secretariat and the Financial Advisor of an interim statement of the DBCP/SOT Trust Fund, to be presented to the DBCP members at the following DBCP Session.

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 3 days. In order to ensure efficiency of the session as well as the comprehensive review and exchange of information, some parallel or side 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://dbcp.jcommops.org/ .

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).

10.8 The annual reports by Action Groups and the Member Countries are also to be included in the DBCP Annual Report. Members who had not submitted written National Reports for the year YYYY at the regular Panel Sessions shall submit their input to the Secretariat before the end of the year YYYY. The Annual Report shall be provided by the Secretariat during the year following the year of the report.

10.9 The Panel's regular session report shall be provided by the secretariat within 3 months after the last day of the session and 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;
   -

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.

10.10 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.

10.11 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.

10.12 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.

10.13 The National Focal Point shall annually check the DBCP list of National Focal Points for logistical facilities and report discrepancies, changes, or additions to the WMO Secretariat.

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 identifies sources of buoy data not currently reported on the GTS and determines thereason for non-availability, (particularly for the Arctic Buoys IABP).The TC regularly contacts buoy programme managers of existing and new programmes in order to: (i) promote data exchange and GTS distribution of the data in real-tine, (ii) invite them, and possibly convince them, if useful, to authorise GTS distribution of their buoy data; (iii) offer technical assistance for that purpose if needed; (iv) collect information on buoy programmes, and the deployed buoys, including metadata; and (v) 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.).

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.

11.11 The Technical Co-ordinator undertakes the tasks as proposed by the Chair during the intersessional period as a matter of priority as prioritised and reports at the next Panel Session.

11.12 The Technical Co-ordinator supports, as required, existing DBCP action groups, and provides assistance on request to other internationally coordinated buoy programme developments.

11.13 The Technical Co-ordinator coordinates with the Indian Ocean Panel (IOP) implementing strategy for the Indian Ocean Observing System as far as data buoys are concerned.

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

11.14 The Technical Co-ordinator produces on a yearly basis prior to Panel Session, a table of national commitments in the Southern Ocean, and seeks additional commitments for barometer upgrades, and deployment opportunities in the Southern Ocean to achieve a level of 300 buoys south of 40S.

11.15 The Technical Co-ordinator maintains a catalogue of existing ongoing ocean data buoy programmes, and provides information to Panel members or on its website, about where inventories of buoys are held, to aid in deployment planning.

11.16 The Technical Co-ordinator implements the JCOMMOPS work-plan – particularly with respect to Deployment opportunities.

11.17 The Technical Co-ordinator maintains a summary of requirements for buoy data to meet expressed needs of the international meteorological and oceanographic communities.

11.18 The Technical Co-ordinator coordinates the operations of DBCP Quality Control guidelines.

11.19 The Technical Co-ordinator to collect statistics and information on actual vandalism occurrences, and maintain relevant information on the DBCP website.

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.

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APPENDIX I

Terms of Reference of the Data Buoy Co-operation Panel

(as approved by the JCOMM Co-Presidents on behalf of the Commission, 24 July 2012, per Resolution 3 (JCOMM-4))

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, as well as rigs and platforms reporting surface marine meteorological and oceanographic data 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 and metadata 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, GCOS, GFCS, WIS, and WIGOS;

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

5. Promote data exchange, including the insertion of all available and relevant platform data and metadata into the Global Telecommunication System, and the submission of data and metadata to the appropriate archives;

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

(as approved by the JCOMM Co-Presidents on behalf of the Commission, 24 July 2012, per Resolution 3 (JCOMM-4))

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 relevant observing platforms;

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

4. Assist in the standardization of relevant observing platform 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~~ relevant observing platforms operators;

7. Assist in promoting the insertion of all available and relevant observing platform 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 relevant observing platform data into appropriate permanent archives.

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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.

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APPENDIX IV

Terms of Reference of the DBCP Executive Board
(as approved at DBCP-28)

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. Considering the dynamic nature of the DBCP Operating Principles, in consultation with Panel members, assist the Chairperson in proposing updates to these principles on a annual basis;
6. Assist the Chairperson with regard to continuing the arrangements (including finance) to secure the services of a technical coordinator;
7. 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;
8. Assist the Chairperson, and liaise with the Financial Advisor for updating the interim financial report with the most accurate and current information by end of each year;
9. 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;
10. Conduct meetings annually, following an agenda drawn up by the DBCP Chairperson;
11. Consult with Panel members and the Chairpersons of the DBCP Task Teams during the intersessional period if required;
12. 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)[2]
- DBCP Technical Co-ordinator (*ex officio*)
- Representative of the IOC Secretariat (*ex officio*)[3]
- Representative of the WMO Secretariat (*ex officio*)[4]
- Representative of the Manufacturers (*ex officio*)[5]

Note 1: A quorum of the Board should consist of at least three members, and must include the Chairperson or his / her appointed deputy.

2 : Mr Sidney Thurston (USA) has been appointed by the current DBCP Chairperson, Mr Al Wallace to serve in the Executive Board
3 : Currently Mr David Meldrum
4 : Currently Mr Etienne Charpentier
5 : Nominated on rotating basis by the Panel. Currently Mr Andy Sybrandy (Pacific Gyre, USA)

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.

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APPENDIX V

TERMS OF REFERENCE OF THE DBCP TASK TEAMS

TERMS OF REFERENCE OF THE TASK TEAM ON DATA MANAGEMENT

(as adopted at DBCP-29)

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 Meteo-France SOC/DB, and (ii) the ISDM, Canada RNODC/DB; reconcile any overlaps with emphasis on differences.

2. Take the lead on managing 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 coordinated.

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.

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

Membership:

The membership is open to all Panel members. The Chairperson[6], appointed by the Panel, has selected the following team members:

1. Mayra Pazos (TT Chairperson and GDP representative)
2. Yann Bernard (CLS Technical Manager)
3. Pierre Blouch (E-SURFMAR Service Manager, Eumetnet)
4. Bruce Bradshaw (RNODC representative)
5. Tony Chedrawy (Metocean)
6. Basanta Kumar Jena (Scientist,NIOT, India)
7. Jean Rolland (SOC representative)
8. Johan Stander (SA Weather Service)
9. Jon Turton (UK Met Office)
10. Jeff Wingenroth (Data Buoy Instrumentation)
11. Kelly Stroker (DBCP Technical Coordinator, *exofficio*)

6 The Chair and Co-Chair of the Task Team should not be in a situation of conflict of interest.

Comment [E1]: Tom, in the old Tor there were bookmarks which have now been deleted altogether.
The problem is that these bookmarks were used in Appendix XI for making reference to them. Hence those references now appear as "0" in Appendix XI.
The bookmarks therefore need to be reinserted here where appropriate, and new ones added if needed (in which case some references may have to be added in Appendix XI). For information, these bookmarks were named as following:

DBCP_OP_Apx5_DM_Buoy_Data_Reception
DBCP_OP_Apx5_DM_Buoy_Energy
DBCP_OP_Apx5_DM_DBCP_M2
DBCP_OP_Apx5_DM_GTS_Monitor
DBCP_OP_Apx5_DM_Iridium_Notif
DBCP_OP_Apx5_DM_JTA
DBCP_OP_Apx5_DM_Metadata
DBCP_OP_Apx5_DM_Satcom_Experience
DBCP_OP_Apx5_DM_Satcom_Review
DBCP_OP_Apx5_DM_WIS_ODP

TERMS OF REFERENCE OF THETASK TEAM ON INSTRUMENT BEST PRACTICES & DRIFTER TECHNOLOGY DEVELOPMENTS
(as adopted at DBCP-28)

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

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

On 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.);

7. Comply with the requirements of the WMO Quality Management Framework (QMF) and quality management principles;

On drifter technology developments

8. 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;

9. 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;

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

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

12. 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

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

General

14. 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);

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

16. 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[7], appointed by the Panel, has selected the following team members:

Dr Luca Centurioni, SIO (TT co-Chairperson)	Dr Rick Lumpkin, AOML (TT co-Chairperson)
Mr Andy Sybrandy, Pacific Gyre	
Mr Pierre Blouch, Météo-France	Ms Emily Daniel, MetOcean
Mr Shaun Dolk, NOAA / AOML	
Mr Paul Freitag, NOAA / PMEL	Mr Frank Grooters, KNMI
Mr Michel Guigue, CLS	Mr Robert Jensen, USACE
Mr Chris Marshall, Environment Canada	Mr David Meldrum, SAMS
Mr Sergey Motyzhev, Marlin Yug	
Ms Mayra Pazos, NOAA / AOML	Mr Steve Piotrowicz, NOAA
Dr M Ravichandran, INCOIS	Dr. Tim Richardson, Liquid Robotics
Mr Jean Rolland, Météo-France	Mr Jon Turton, UK Met Office
Mr R. Venkatesan, NIOT, India	Mr Bill Woodward, CLS America
Mr David Murphy, Sea-Bird Electronics, USA	Technical Co-ordinator, DBCP

The Co-chairperson is representing the manufacturers and is selected on a rotating basis.

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7 The Chair and Co-Chair of the Task Team should not be in a situation of conflict of interest. Manufacturer representative may be accepted as Vice-Chair of the Task Team provided that the major drifter manufacturers agree.

TERM OF REFERENCE OF THE TASK TEAM ON MOORED BUOYS
(as adopted at DBCP-24)

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[8], appointed by the Panel, has selected the following team members:

Mr Jon Turton, UK Met Office (TT Chairperson); (TT Vice-Chairperson – to be appointed)

Dr Robert Jensen, USACE	Mr Paul Freitag, NOAA / PMEL
Mr Chris Meinig, NOAA / PMEL	Mr Chris Marshall, Environment Canada
Mr R. Venkatesan, NIOT, India	Mr Ariel Troisi, SHN
Dr Uwe Send, SIO	Mr Al Wallace, MSC

8 The Chair and Co-Chair of the Task Team should not be in a situation of conflict of interest.

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TERMS OF REFERENCE FOR THE DBCP TASK TEAM ON CAPACITY-BUILDING
(as adopted at DBCP-28)

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, Training Course on Buoy Programme Implementation and/or Data Management; coordinate production of relevant training materials, and identify lecturers;

2. In parallel with the organization of training programmes, keep under review existing training material (paper and electronic) and advise on updating and developing new DBCP standard material in this regard; and investigate ways to add training material from all capacity building activities to IOC/IODE OceanTeacher;

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;

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

8. Consider inviting mariners and shipping companies to the DBCPCapacityBuilding workshops as a way to advertise the ocean observation activities and seek their support;

9. Make sure the data buoy vandalism aspects are being addressed as part of its activities;

10. Investigate on possible cooperation with relevant CapacityBuilding programmes in WMO and IOC.

Membership:

The membership is open to all Panel members. The Chairperson[9], appointed by the Panel, has selected the following team members:

Dr Sidney THURSTON, NOAA/OCO (TT-CB Chairperson) DBCP Executive Board members, including DBCP Chairperson, Vice-chairpersons (or their respective Deputies)	Dr. R. Venkatesan, NIOT/India (TT-CB Vice-Chairperson) DBCP Technical Coordinator
Hamad Mohammed AL GHEILANI (Oman) Rick LUMPKIN (USA)	Mathieu BELBEOCH (JCOMMOPS) Walter FLORES SERVAT (Peru)

9 The Chair and Co-Chair of the Task Team should not be in a situation of conflict of interest.

Djoko HARTOYO (Indonesia)
Byung-Gul LEE (Republic of Korea)

David MELDRUM (UK)
Louise WICKS (Australia)
Representative of the IOC Secretariat
Juliet HERMES (South Africa)

Dr G. LATHA (India)
Kwan-Chang LIM (Republic of Korea)
John MUNGAI (Kenya)
Lucy SCOTT (South Africa)
Jean ROLLAND (France)
Representative of the WMO Secretariat
Santjie du TOIT (South Africa)

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APPENDIX VI

Current DBCP budget line items
(as approved at DBCP-29)

The DBCP budget includes the following line items:

1. Contract for the DBCP Technical Co-ordinator[10];
2. Provision for termination / transition of the Technical Co-ordinator;
3. JTA[11], including Chairperson's contract, Executive Board, and Secretariat support;
4. Consultancy;
5. JCOMMOPS logistical support[12];
6. JCOMMOPS Data/Development[13];
7. JCOMMOPS information system migration[14];
8. SOT[15];
9. SOT Ship Coordinator's position[16];
10. Travel of DBCP Chairperson[17];
11. Travel for the DBCP Technical Co-ordinator[17];
12. Travel of DBCP Representatives[17];
13. Travel for the ship coordinator's position[18];
14. Technical developments and evaluations[19];
15. Implementation support to address regional system deficiencies;[20]
16. Outreach and publication activities[21];
17. Capacity-Building[22];
18. Collaborative Arrangements[23];
19. Bank charge and support cost[24];
20. Contingency.

10: Includes the salary and benefits;
11: This expenditure is balanced by an equivalent contribution of the JTA to the DBCP Trust Fund.
12: 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;
13: Hardware and software, and host IT support for developing, running, and maintaining the JCOMMOPS Information System;
14: Provision for the migration of the JCOMMOPS Information System;
15: Expenditure in support of the JCOMM Ship Observations Team (SOT) activities to be decided by the SOT Chairperson;
16: Includes the salary and benefits;
17: Missions on behalf of the Panel;
18: Expenses to be decided by the OPE Chair in consultation with the chairs of programmes contributing to JCOMMOPS;
19: For example, the DBCP Iridium Pilot Project;
20 : For example, improving data timeliness in areas where system weaknesses are identified, Iridium, SLP;
21: DBCP and JCOMMOPS brochures and DBCP Publications;
22: Support for DBCP-related training courses: travel of trainers and / or trainees; training materials;
23: 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
24: Bank charges and service charges from the WMO and IOC for supporting the DBCP Trust Fund;

APPENDIX VII

Draft Terms of Reference for the DBCP Trust Fund at WMO

(as adopted at DBCP-28 and further agreed by way of exchange of letters between the WMO Secretary General[25] and the DBCP Chairperson[26])

Comment [E2]: Footnotes to be updated in due course after DBCP-28

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[27], 9.8[28] and 9.9[29] 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 Chairperson may authorize in writing the WMO Secretariat 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, as long as these are consistent with the DBCP Operating Principles. The Chairperson may also authorize to commit any expenditure exceeding these maximum amounts, or unplanned DBCP expenditures with the approval from the DBCP Executive Board, under its Terms of Reference;

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 / MemberStates;

   (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 12.2[30] (Resolution 37, Cg-XV); and

   (v) Miscellaneous income.

25: Letter 11106-08/OBS/WIGOS/OSD/MAR/DBCP-ADM from Michel Jarraud dated 15 December 2008
26: Letter from David Meldrum dated 5 January 2009
27: 9.7: Trust funds, reserve and special accounts may be established by the Secretary-General and shall be reported to the Executive Council.
28: 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.
29: 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.
30: 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.

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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, mayaccept income as set forth in Article 3.1 on behalf of IOC, provided that, in anycase which would involve IOC in an additional financial liability, the Secretaryshall obtain the prior approval of the IOC Executive Council and the consent ofthe 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.

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APPENDIX IX

DBCP DATA POLICY

(as adopted at DBCP-25)

Data access policy

1. The DBCP encourages timely, free and unrestricted access to data. Real time data sharing is achieved via the Global Telecommunications System[31] 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.
2.
3. 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.
4.

Data archiving

5. 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.
6.

Instrumental Metadata

7.
8. 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 contribution to the Marine Climate Data System (MCDS).
9.

Quality control

10.
11. 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[32]).

More information :

- WMO data policy Resolution 40[33]
- IOC Oceanographic Data Exchange Policy[34]
- CLIVAR data policy[35]

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

APPENDIX X

Current key DBCP personnel

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36 Elected at DBCP-28, Fremantle, Australia, 2-6 October 2012
37 Appointed on 29 August 2011
38 Elected at DBCP-26, Oban, United Kingdom, 27-30 Sept. 2010
39 Appointed at DBCP-24, Cape Town, south Africa, 13-16 Oct. 2008
40Elected at DBCP-29, Paris, France, 23-27 Sept. 2013

APPENDIX XI

ONGOING ACTIONS AND RECOMMENDATIONS FROM THE PANEL

-1- DBCP ONGOING ACTIONS

(ongoing actions from past Panel Sessions)

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
		ADMINISTRATIVE				
1	OP/10.13 D22/8.6.1.1, D22/9.3.2	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
2	OP/3.5, 3.6 D22/10.3.1	To inform chairman of his/her wish or otherwise to continue to work as TC/DBCP.	TC		Chair	End of each contract
3	OP/Apx4(6) D22/10.3	Continue the arrangements (including finance) to secure the services of a technical coordinator..	Chair	Secretariat	Secretariat	Continuous
4	OP/10.9 D23/6.7.; D22/7.2.12	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 & IOC	End of each year
5	OP/10.8 D27/13.1	to publish the written national report reports, as well as others submitted to the Secretariat before 30 November of year YYYY, in the Panel's Annual Report for YYYY	Secretariat		Panel	Early YYYY+1
6	OP/10.8 D27/13.2	Members who had not submitted National Reports for the year YYYY to submit their input to the Secretariat before the end of the year YYYY	Panel members		Panel	31 Dec. YYYY
7	OP/Apx4(5) D25/11.6.2, D26/12.2.2, D27/12.2.2	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	Chair, Panel	End of each year
8	D25/11.6.2	Collate Updates to the DBCP Operating Principles document.	Chair	Secretariat	Chair	End of each year
9	OP/10.13 D26/9.3.11	to check the JCOMM list of NFP for logistic facilities and submit changes to the Secretariat .	NFP	Secretariat	Secretariat	ongoing
10	OP/3.7 D22/10.4, D27/12.4.1	To review programme and establish working priorities of the technical coordinator. (DBCP-27: to revise the list of prioritized tasks for the Technical Coordinator as agreed at the previous Session, and discuss	Chair	EB, Panel members	Panel	asap after Panel Session

60 Ref item: reference to paragraph number of DBCP Operating Principles (OP/Apx4/CB(6) = Operating Principles, Appendix IV, Capacity Building part, item 6), and/or DBCP Session final reports as appropriate (e.g. D22/8.6.1.1 = Para 8.6.1.1 of DBCP-22 Final Report).

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
		execution details with the Technical Coordinator)				
11	OP/3.8 OP/10.11 D29/12.4 D27/5.6, D27/12.4.2 D26/5.12 (iv),	to undertake the tasks as proposed by the Chair and to report at the next Panel Session (DBCP-27: to address during the next intersessional period as a matter of priority the high priority activities identified at DBCP-26)	TC	Panel members, EB, Secretariat	Panel	asap/ongoing
		CAPACITY BUILDING				
12	OP/Apx5/CB(22) D27/6.4.2 (viii) D23/4.3.6,	To develop and keep up to date standardized training materials in parallel with the organization of training programmes. To investigate ways to add training material from all capacity building activities to IOC/IODE OceanTeacher.	TT-CB	Secretariat	Panel	Next Panel Session
13	OP/Apx5/CB(8) D27/9.2.8	to consider inviting mariners and shipping companies to the DBCP Capacity Building workshops as a way to advertise the ocean observation activities and seek their support	TT-CB	Secretariat	Panel	DBCP-28
14	OP/Apx5/CB(1) D29/6.4 D22/2.2.1.2 (xii); D22/4.3.3; D22/4.3.5	To organize Capacity Building activities (training workshops, training materials, identifying lecturers) in coordination with regional activities.	TT-CB	Secretariat	Panel	Next Panel session
15	OP/Apx5/CB(10) D29/6.4 D22/4.3.6	To investigate on possible cooperation with relevant Capacity Building programmes in WMO and IOC.	Secretariat	Chair	Panel	Next Panel session
15bis	D29/6.4	To build Observation Development Team (ODT) and Modelling Development Team (MDT) with Met/Ocean Institutes around the world	TT-CB			
		DATA COLLECTION				
16	OP/Apx5/DM ToR	To follow up and possibly assist in implementing requirements expressed by the buoy users within the Argos system.	CLS	TC	Panel, JTA meeting	Continuous
17	OP/Apx5/DM D23/8.4.2.4	To continue review of satellite data telecommunications systems – including the Iridium system.	D. Meldrum, TC	Panel members	Panel	Continuous
18	OP/Apx5/DM D23/8.4.2.2	To share experiences regarding usage of various satellite communications systems for buoy data, including Iridium.	Panel members	Chair & TC	Chair	Continuous
19	OP/2.3(10) D23/8.4.1.10	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 IPP	TC	JCOMMOPS	Continuous
20	OP/Apx5/DM D26/6.1.5 (1)	to promote standardization of data transmission formats using DBCP-M2 concept . DBCP-27: TTDM has continued to encourage manufacturers to use standard DBCP-M2 formats and to add	TT-DM	TC	Panel	ongoing

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
		additional data if necessary as requested by buoy owners at the end of the existing data format.				
21	OP/Apx5/DM D27/4.2.2.3	to provide special attention to buoy data reception	INMARSAT		Panel members	ongoing
22	OP/Apx5/DM D27/8.1.7 (ii)	to continue seeking improvements in Iridium buoy energy efficiency through the implementation of improved power management schemes and the latest low-power GPS receivers.	Buoy Manufacturers		Panel members	ongoing
23	OP/Apx5/DM D27/9.5.9 (ii)	the operators of Iridium drifters to continue to actively report metadata to each other upon deployment beyond the life of the Iridium Pilot Project	Panel members	TC	Panel	ongoing
24	OP/Apx5/DM D22/11.1	To make recommendations to the following JTA Session.	Chair		JTA, Panel	JTA Session
		DATA EXCHANGE				
25	OP/11.3 D29/5 D23/3.3.8	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 & Panel for information	Continuous
26	OP/2.3(19) D25/10.2.5; D24/12.1.14 .	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
27	OP/Apx5/DM D27/6.1.2 (iv)	to monitor GTS bulletin headers used for GTS distribution of buoy data, reconcile the differences found, and publish the list on the JCOMMOBS website and Meteo-France QC tools	Météo France & ISDM, JCOMMOPS		Panel	ongoing
28	OP/11.3 D29/6.3 D27/7.3.5	to promote data exchange and GTS distribution of the data in real-time for drifting and moored buoys	Panel Members	TC	Panel	ongoing
		METADATA				
29	OP/2.3 (9) OP/2.4(1) D29/5 D27/11.5.3 (ii), D26/6.3.3, D24/10.5.6; D23/6.14; D21/8.6.4.5.	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 (paying particular attention to SST and SSS data); both to comply with buoy metadata collection scheme. DBCP-27: JCOMMOPS to negotiate metadata formats on ad hoc basis	Buoy operators & manufacturers	TC	Panel	Continuous
30	OP/2.3(16) D26/6.3.3	to regularly forward collected metadata to the ODAS metadata service (China) .	JCOMMOPS	Secretariat & China	Panel	Ongoing
31	OP/2.3(8) D27/6.2.4	to provide GDP/AOML with manufacture dates for all buoys built within the last 5 years.	Manufacturers	AOML	Panel	ongoing
32	OP/2.3(8) D27/6.2.4	to provide barometer/SLP data to the GDP/AOML	Met. Services	TC	Panel	ongoing

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
33	D27/6.2.4	to incorporate manufacture date and barometer death date into the GDP (AOML) metadata and make it available online (including creating additional columns in the GDP metadata)	AOML		Panel	ongoing
34	OP/Apx5/DM D27/11.5.3 (vi)	to make sure that discovery metadata about buoy observational data-sets are properly compiled and made available through the Ocean Data Portal (ODP) and the WMO Information System (WIS) using the required ISO-19115 profiles	Panel members	TC, Secretariat	Panel	ongoing
		FINANCES				
35	OP/Apx4(8) D27/11.6.10, D26/11.6.12 (1), D25/10.6.7	Liaise with the Financial Advisor for updating the interim financial report with the most accurate and current information..	EB	Financial Advisor		End of each year
36	OP/8.10 D27/11.6.11, D26/11.6.12 (2), D25/10.6.7	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. Statements to be included in the DBCP Annual report.	Secretariat	Financial Advisor	Panel members	Jan. each year
37	OP/2.3(5) D29/11.6 D27/11.1.3	to continue and possibly increase their budgetary contribution to the Trust Fund in timely manner, and when possible, in Euros.	Panel members			continuous
38	OP/8.8 D27/11.6.14, D26/11.1.7	to facilitate the transfer of sufficient funds from the DBCP Trust Fund at the WMO to the DBCP Trust Fund at the IOC if needed to permit covering all related expenses from the IOC	WMO Secretariat			When needed
39	OP/8.11 D22/10.1.8; D22/10.1.10	to request IOC and WMO to provide an Interim Statement of Accounts over the period 1 January-31 July	Finance Advisor	Secretariat & Chair	Panel	March each year
40	OP/8.11 D22/10.1.10	To prepare an interim statement of the DBCP/SOT Trust Fund, to be presented to the DBCP members at the following DBCP Session	Secretariat and Finance Advisor		Panel	July each year
		IMPLEMENTATION				
41	OP/2.3(7) D27/5.10	to make use of the barometer drifter upgrade scheme (see http://www.jcommops.org/dbcp/platforms/barometer.html) by purchasing barometers for GDP-funded SVP drifters and negotiating their deployment positions with AOML	Panel members	AOML	Panel	ongoing
42	OP/2.3(2) D29/11.3.2 D27/11.3.1; D27/11.3.2.1	to take the recommendations from recent IOC and WMO governing body meetings into account when developing their activities in support of the Panel	Panel members	Secretariat, TC	Panel	ongoing
		IMPLEMENTATION STRATEGY				
43	OP/3.9	To finalise updates to the DBCP implementation strategy (DBCP	Chair	Panel	Panel	End of each

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
	D25/11.1.1. 4.2.5; D23/4.3.10. 4.4.1; D22/4.2.3.	TD 15) including reference to the Capacity Building efforts being undertaken by the Panel – feedback sought by members .		members		year
44	OP/2.3(4) D27/12.1.1, D26/12.1.1	to review the DBCP Implementation Strategy document at http://www.jcommops.org/doc/DBCP/DBCP_Impl_Strategy.pdf and to forward any comments to the Chairperson by the end of November each year	Panel members	Secretariat	Chair & Panel	Nov. each year
		IMPLEMENTATION / ACTION GROUPS				
45	OP/11.12 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
46	OP/11.13 D20	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
47	OP/11.14 D23/;4.2.4; D16	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
		IMPLEMENTATION / LOGISTICS				
48	OP/2.3(11) D29/2, 7.8, 9.2 D27/9.2.3, D27/9.5.9, (i)D23/7.2.4; D23/8.6.1.1; D22/8.6.1.13	To provide information on deployment opportunities to JCOMMOPS for all buoys and cruises, as well as to continue e-mail notifications as necessary – annual reports, action group annual planning, ship schedules, national plans, national contact points etc. To subscribe on the list and systematically post their deployment opportunities on the ships@jcommops.org mailing list as well	Panel members & TT-CB	TC	JCOMMOPS & Panel	Continuous
49	OP/3.10 D19	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
50	D29/9.2 D23/8.6.1.10	To provide information to Panel members or on its website, about where inventories of buoys are held, to aid in deployment planning.	GDP		Next Panel session	Continuous
51	OP/11.16 D29/9.2 D26/11.2.11, D23/8.5.1.8; D22/8.5.1.9.; D22/8.5.3.	To implement JCOMMOPS work-plan – particularly with respect to Deployment opportunities.	TC & TC/Argo	JCOMM	Next Panel session	Continuous
52	D26/9.3.7	to provide a table of inventories at its various warehouses to the Technical Coordinator before June each year, so that it can be	R. Lumpkin	Panel members	TC	June each year

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
		presented to the Panel at each DBCP Session, and therefore assist Panel members of identifying how they can assist with the deployments.				
		MONITORING				
53	OP/3.11 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 & Panel for information	Continuous
54	OP/11.15 D23/8.4.2.4	To maintain a catalogue of existing ongoing ocean data buoy programmes.	TC	Panel members & Secretariat	Chair & Panel for information	Continuous
55	OP/2.4(1) D21	To provide input on buoy models for JCOMMOPS database.	Manufacturers	TC	Panel	Continuous
56	OP/2.4(2) D21	To provide Service Argos with list of most used buoy models and formats they operate.	Manufacturers	TC	Service Argos	Before deployment
		REQUIREMENTS				
57	OP/11.17 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
58	OP/2.3(3) D24/12.1.13	to address user requirements and particular observing systems deficiencies as expressed in the JCOMM Statement of Guidance for Ocean Applications.	Panel members		Panel	Continuous
		INFORMATION EXCHANGE				
59	OP/2.3(12) D29/8.2 D22/7.2.3	To provide info/materials for DBCP/JCOMMOPS websites (news, brochure), including findings with impacts on activities of DBCP user-groups (modellers, forecasters).	Panel members	TC	Panel	Continuous
60	OP/2.3(13) D29/11.3.1 D21	To actively communicate through member state delegations to IOC, WMO and GEO to emphasize the importance of coordination activities to the DBCP Panel activities.	Panel members		Panel	Continuous
61	OP/9.2 D23/6.7	Compile a CD-ROM of scientific and technical workshop at the last Panel Session.	Chair & Secretariat	TC	Executive councils of WMO & IOC	End of each year
62	OP/2.3(113) D26/13.2, D25/12.1	To submit their national reports to the Secretariat before the end of the year (input submitted before 30 November to be published in the Panel's Annual Report).	Panel members	Secretariat	Secretariat	30 Nov. each year
63	OP/9.2 D27/2.2, D26/2.7	to submit their papers via e-mail or CD-ROM to the Workshop Chairperson, via electronic format (MS Office compatible format only) .	S&T workshop authors	Secretariat	Chairperson	30-Nov each year
64	D26/6.2.6 (1)	to identify authors who are willing to provide the updates to DBCP	TT-IBP	TC &	Panel	Continuous

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
		related standards document as listed on the DBCP website.		Secretariat		
		INSTRUMENT PRACTICES				
65	OP/2.3(14) D27/6.2.3	to start systems for record keeping for instrument calibration, replacement and validation that conform to ISO recommended specifications	Panel members	TT-IBP	Panel	ongoing
66	OP/2.3(15) D21	To review best practices prior to drifter purchase for safety, and GTS data processing purposes.	Panel members	TT-IBP & TC	Panel	Continuous
67	OP/2.3(16) D24/12.6.8.4	to follow the best practices and standards eventually proposed under WIGOS, and in particular, to provide the buoy platform / instrument metadata to JCOMMOPS, and the ODASmetadata service (China) as appropriate.	Panel members	TC & Secretariat	Panel	Continuous
68	D29/6.2	to address the instrument best practices recommendations from TT-IBPD.	Manufacturers	Secretariat	Panel	ongoing
69	OP/2.3(17) D27/11.5.3 (iv), D26/11.5.5	to use the RMIC facilities as appropriate, and participate at future workshops	Panel members	Secretariat	Panel	ongoing
70	OP/2.4(3) D27/11.5.3 (v), D24/10.7.3	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		Panel	Continuous
		QUALITY MANAGEMENT				
71	OP/2.3(6) D27/11.5.3 (vii)	to comply with the WMO Quality Management Framework (QMF) and quality management principles	Panel members	Secretariat	Panel	ongoing
		QUALITY MANAGEMENT / INSTRUMENT EVALUATION				
72	OP/Apx5/IBP (1)(7) D26/6.2.5 D29/2	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	Ongoing
		QUALITY MANAGEMENT / INTERCOMPARISONS				
73	D29/8.2 D27/8.4.10	Reinforce the importance of critical measurement biases to agencies responsible for wave data and to assist the PP-WET Pilot Project and activities (by existing RMICs with wave capability, and particularly the RMIC for RA-IV)	Existing RMICs and Panel Members		Panel	ongoing
		QUALITY MANAGEMENT / QUALITY CONTROL				
74	OP/11.18 ToR	To coordinate operations of DBCP QC guidelines..	TC	Panel members & Data Quality centres	Panel	Continuous
75	OP/2.3(18) D23/8.1.2	To encourage other centres to act as PMOC and existing centres	Panel members	TC	Panel	Continuous

No	*Ref item*[60]	*Action Item*	*Who*	*Supported by*	*Reporting to*	*When*
		to invest more resources in the implementation of QC guidelines.				
		SAFETY / VANDALISM / SECURITY				
76	OP/2.4(4) D17	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
77	OP/11.19 D27/9.4.11	to collect statistics and information on actual vandalism occurrences, and maintain relevant information on the DBCP website	TC		Panel	ongoing
78	OP/Apx5/CB(9) D27/9.4.12	to make sure the data buoy vandalism aspects are being addressed as part of its activities	TT-CB		Panel	ongoing
		TECHNOLOGY DEVELOPMENT				

2- 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-27 / 6.1.4, DBCP-26 / 9.8.1	To keep the same WMO number for a mooring's position as long as moorings are maintained at that position. In case a mooring ceases to be maintained at a given position, the WMO number should not be re-used for another location. 7-digit WMO numbers for drifters or for moorings should not be reallocated, until available numbers are exhausted, which is not expected to happen in the foreseeable future.	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-29 / 7.8 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-27 / 11.6.8 DBCP-26 / 11.6.11 (1)	to consider contributing to the DBCP/SOOP Trust Fund in Euros.	Panel members
8	DBCP-27 / 11.6.9 DBCP-26 / 11.6.11 (2) & 11.1.7	Panel members should pay their contributions in a timely fashion.	Panel members
9	DBCP-27 / 11.6.9 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.	Non contributing Panel members
10	DBCP-27 / 11.6.9 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.	Contributing 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-29 / 9.2 DBCP-27 / 9.2.9	To consider innovative deployment and retrieval solutions, including offering awards to ships which are actively contributing deployment opportunities as a way to further encourage their participation as well at the participation of others.	Panel members JCOMMOPS
13	DBCP-27 / 9.4.2	To address the recommendations on data buoy vandalism from the DBCP Technical Document No. 41[61] –	Panel members

61: http://www.jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=7150

		"Ocean Data Buoy Vandalism - Incidence, Impact and Responses" (these recommendations are also reproduced in DBCP-27/Annex XIV).	
14	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
15	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
16	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 region.	Arctic Research Programs
17	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***
18	DBCP-27 / 6.2.3 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 from instrument manufacturers was particularly important. To start systems for record keeping for instrument calibration, replacement and validation that conform to ISO recommended specifications.	Panel members
19	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
20	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***
21	DBCP-27 / 8.4.4 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
22	DBCP-27 / 8.4.6 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
23	DBCP-26 / 8.4.8 (i)	Continue to support the PP-WET Pilot Project for the next year.	PP-WET

24	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
25	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
26	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***
27	DBCP-29 / 9.2, 9.5 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
28	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
29	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
30	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
31	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
32	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***
33	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
34	DBCP-29 / 9.5	Operators of Iridium platforms have continued to actively report metadata to each other upon deployment,	Panel Members,

	DBCP-26 / 9.6.6 (ii)	which was valuable and should continue to report to DBCP TC, beyond the life of the Iridium Pilot Project.	Iridium operators
35	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
36	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
37	DBCP-29 / 9.3 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
37bis	DBCP-29 / 5, 9.5	To work with satellite data telecommunication providers in the view (i) to identify status of the buoy networks and whether they report on GTS; (ii) to allow GTS distribution of data and provide technical assistance as needed.(iii) link to WMO CIMO and CBS	TC DBCP

TECHNOLOGY DEVELOPMENT, PILOT PROJECTS			
No.	***Ref.***	***Recommendation***	***By***
38	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
39	DBCP-29 / 5 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
40	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
4	DBCP-25 / 8.7.3	The Panel 1noted 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
41b	DBCP-29/2, 8.3	Encourage manufactures to plan to add HRSST in cost effective manner to future drifter designs.	Manufacturers, DBCP Members

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ANNEX V

ACTION GROUP SUMMARIES

1. GLOBAL DRIFTER PROGRAMME (GDP)

(Report submitted by Rick Lumpkin, NOAA/AOML, USA)

Name of Action Group	**Global Drifter Program GDP**
Date of report	15 August 2013
Overview and main requirements addressed	Global Drifter Program (GDP). Goals: 1. Maintain a global 5x5° array of 1250 satellite-tracked surface drifting buoys to meet the need for an accurate and globally dense set of in-situ observations of mixed layer currents, sea surface temperature, atmospheric pressure, winds and salinity; and 2. Provide a data processing system for scientific use of these data. These data support short-term (seasonal to interannual) climate predictions as well as climate research and monitoring.
Area of interest	Global ocean
Type of platform and variables measured	Lagrangian drifters measuring surface velocity, SST; some drifters also measure sea level pressure, wind, salinity, and/or sub-surface temperature profiles
Targeted horizontal resolution	5 degree x 5 degree (1250 units)
Chairperson/Managers	Dr Rick Lumpkin, NOAA/AOML, USA Dr Luca Centurioni, SIO/CIMEC, USA
Coordinator	Operations Manager: Mr Shaun Dolk, NOAA/AOML, USA
Participants	Numerous national and international institutions
Data centre(s)	GDP Data Assembly Center (DAC) – Manager: Ms Mayra Pazos, NOAA/AOML, USA
Website	http://www.aoml.noaa.gov/phod/dac/
Meetings *(meetings held in 2012/2013; and planned in 2013/2014)*	None other than DBCP.
Current status summary *(mid-2013)*	Annual size of array was 994 drifters. Current size as of 5 August 2013 is 1013 drifters.
Summary of plans for 2014	Restore array to ~1250 drifters; begin incorporating salinity data into data stream.

2. TROPICAL MOORED BUOY IMPLEMENTATION PANEL (TIP)

(Report submitted by Paul Freitag, NOAA/PMEL, USA)

Name of Action Group	**The Tropical Moored Buoy Implementation Panel TIP**
Date of report	31 July 2013
Overview and main requirements addressed	The Tropical Moored Buoys Implementation Panel (TIP) oversees the design and implementation of the following components: • The Tropical Atmosphere Ocean / Triangle Trans-Ocean Buoy Network (TAO / TRITON), a central component of the ENSO Observing System, deployed specifically for research and forecasting of El Niño and La Niña; • The Prediction and Research Moored Array in the Tropical Atlantic (PIRATA) • The Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA)
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.
Type of platform and variables measured	Tropical moorings with surface meteorological and sub-surface oceanographic sensors measuring: 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-750m on all surface moorings. Salinity profiles as deep as 750m on some surface moorings. Current velocity on some moorings. Also, biogeochemical measurements, including CO_2 and O_2 on select moorings. A few moorings also have specialized instruments to measure turbulence dissipation. Subsurface ADCP moorings measuring velocity profiles in the upper few hundred meters. Some have additional single point current meters at deeper levels.
Targeted horizontal resolution	Tropical Pacific Ocean: 72 moorings ; Tropical Atlantic Ocean: 19 moorings ; Tropical Indian Ocean: 46 moorings
Chairperson/Managers	Dr. Mike McPhaden, PMEL, USA, Chairman Dr. Kentaro Ando, JAMSTEC, Japan, Vice-Chairman
Coordinator	Mr H. Paul Freitag, PMEL, USA
Participants	TAO/TRITON: NOAA National Data Buoy Center (NDBC),NOAA Pacific Marine Environmental Laboratory (PMEL), Japan Agency for Marine-Earth Science and Technology (*JAMSTEC)* PIRATA: NOAA PMEL, NOAA Atlantic Marine Oceanographic Laboratory (AOML), L'Institut de recherche pour le développement (IRD), Meteo-France, Instituto Nacional de Pesquisas Espaciais (INPE), Diretoria de Hidrografia e Navegacao (DHN**)**

	RAMA: NOAA PMEL, JAMSTEC, Indian National Center for Ocean Information Services (INCOIS), National Institute of Oceanography (NIO), Agency for the Assessment and Application of Technology (BPPT), Ministry of Marine Affairs and Fisheries (KKP), First Institute of Oceanography (FIO), Agulhas and Somali Current Large Marine Ecosystems (ASCLME), University of Tasmania and the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia.
Data centre(s)	PMEL, NDBC,JAMSTEC, NIO
Website	http://www.pmel.noaa.gov/tao/global/global.html
Meetings *(meetings held in 2012/2013; and planned in 2013/2014)*	• PIRATA-17/TACE/TAV 10-14 September 2012, Kiel, Germany • CLIVAR/GOOS Indian Ocean Panel 9th Session 15-20 October, 2012, Capetown, South Africa • TIP Workshop, 23-24 October, 2012, Jakarta, Indonesia • CLIVAR/GOOS Indian Ocean Panel 10th Session 8-12 July, 2013, Li Jang, China • PIRATA-18/TAV 22-25 October 2013, Venice, Italy • Tropical Pacific Observing System Review, January 2014, location TBN
Current status summary *(July 2013)*	TAO/TRITON: 45 of 67 surface moorings reporting. PIRATA: 18 of 18 surface moorings reporting. RAMA: 18 of 26 surface moorings reporting.
Summary of plans for 2014	TAO/TRITON: Maintain 72 mooring array. PIRATA: Maintain 18 mooring array RAMA: Maintain 32 sites and add 2 more sites.

3. EUCOS SURFACE MARINE PROGRAMME (E-SURFMAR)

(Report submitted by Jean Rolland, Météo France)

Name of Action Group	**Operational Service of the Network of European Meteorological Services, EUMETNET (E-SURFMAR)**
Date of report	31 July 2013
Overview and main requirements addressed	The EUMETNET operational service E-SURFMAR is an optional programme involving 19 out of the 29 EUMETNET members, who fund the activity on a GNI basis. Its main objectives are to coordinate, optimise and progressively integrate the European meteorological services activities for surface observations over the sea – including drifting and moored buoys, and voluntary observing ships. E-SURFMAR is responsible for coordination of buoy activities carried out by the European meteorological services, and the programme supports a Data Buoy Manager (DBM) to manage these activities. The DBM is supported and advised by the E-SURFMAR Expert Team-Data Buoy (ET-DB). E-SURFMAR ET-DB is an action group of the DBCP.
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).
Type of platform and variables measured	Drifting buoys: air pressure, SST, (wind) Moored buoys: air pressure, wind, air temperature, SST, waves (directional spectra), relative humidity.
Targeted horizontal resolution	250 km x 250 km, >100 drifting buoys, 4 moored buoys for satellite calibration/validation.
Chairperson/Managers	Manager E-SURFMAR: Mr Pierre Blouch, Météo-France Chairperson, Expert Team-Data Buoy (ET-DB): Mr Jon Turton, UK Met Office
Coordinator	Data buoy Manager: Mr Jean Rolland, Météo-France
Participants	Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, The Netherlands, Norway, Portugal, Serbia, Spain, Sweden, Switzerland, and the United Kingdom.
Data centre(s)	Météo-France as SOC ISDM (Canada) as RNODC/DB
Website	http://www.eumetnet.eu/, http://esurfmar.meteo.fr (restricted working area web site for E-SURFMAR participants)
Meetings	ET-DB meets once a year. ET-DB10 Oslo 12-13 June 2013
Current status (mid-2013)	113 E-SURFMAR drifting buoys in operation (86 Iridium, 25 Iridium upgrades +1 Argos upgrade + 1 ICEB) + 44 others reporting AP. 4 E-SURFMAR supported moored buoys in operation, plus a further 40 others operated by members.
Summary of plans for 2014	Maintain a network of 100 drifting buoys, and the 4 reference moored buoys in operation.

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

(Report submitted by Jean Rolland, Météo France)

Name of Action Group	**International Buoy Programme for the Indian Ocean IBPIO**
Date of report	31 July 2013
Overview and main requirements addressed	The International Buoy Programme for the Indian Ocean (IBPIO) was formally established at a meeting in La Reunion in 1996. The primary objective of the IBPIO is to establish and maintain a network of platforms in the Indian Ocean to provide meteorological and oceanographic data for both real time and research purposes. More specifically, the IBPIO supports the World Weather Watch Programme (WWW); the Global Climate Observing System (GCOS); the World Climate Research Programme (WCRP); the Global Ocean Observing System (GOOS); tropical cyclone forecast and monitoring; as well as the research activities of the participating institutions. The programme is self-sustaining, supported by voluntary contributions from the participants in the form of equipment and services (such as communications, deployment, storage, archiving, co-ordination...).
Area of interest	Indian Ocean North of 55°S and between 25°E and 120°E
Type of platform and variables measured	Drifting buoys: Air pressure, SST, (wind) Moorings: air pressure, wind, air temperature, SST, waves, relative humidity, SSS, current…
Targeted horizontal resolution	500 km x 500 km
Chairperson/Managers	Mr Graeme Ball, BoM, Australia
Coordinator	Mr Jean Rolland, Météo-France
Participants	Australia (ABOM), France (Météo-France), India (NIO, NIOT, INCOIS), Kenya (KMD), South Africa (SAWS), Mozambique (EMU); USA (GDP, Navoceano), TIP (Tropical Moored Buoy Implementation Panel).
Data centre(s)	ISDM (Canada) as RNODC/DB, Météo-France as SOC AOML, NOAA/PMEL
Website	http://www.shom.fr/meteo/ibpio
Meetings	Annual meetings in conjunction with DBCP meetings. IBPIO 16 in Paris (France) in September 2013
Current status (mid-2013)	90 drifters (71 with Air Pressure) 43 moored buoys (31 for RAMA 67% of the planned 46 site array)
Summary of plans for 2014	To reach a network of 150 drifters. Maintain the moored buoy arrays.

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

(Report submitted by Shaun Dolk, NOAA/AOML, USA)

Name of Action Group	**DBCP-PICES North Pacific Data Buoy Advisory Panel (NPDBAP)**
Date of report	31 July 2013
Overview and main requirements addressed	The goals of the NPDBAP are to deploy 60 SVPB drifters a year, and maintain 75 active buoys in the region.
Area of interest	North Pacific Ocean and marginal seas generally north of 30°N
Type of platform and variables measured	Lagrangian drifters measuring sea level pressure, SST, and sea-surface velocity
Targeted horizontal resolution	5° x 5°
Chairperson/Managers	Co-Chairperson for the NE Pacific: Chris Marshall, MSC, Canada Co-Chairperson for the NW Pacific: Position vacant and to be proposed by PICES
Coordinator	Mr Shaun Dolk, NOAA / AOML
Participants	Al Wallace, Chris Marshall, Joe Linguanti, Ignatius Rigor, and Shaun Dolk
Data centre(s)	Drifter Data Assembly Centre (DAC) Integrated Science Data Management (ISDM), Canada
Website	http://npdbap.noaa.gov/
Meetings *(meetings held in 2011/2012; and planned in 2012/2013)*	Yearly meetings usually held in conjunction with DBCP meetings. Next meeting planned 24 September, 2013 in Paris, France
Current status summary *(mid-2012)*	From 01 August 2012 to 31 July 2013, 122 drifters were deployed in the North Pacific Ocean. Of the 122 drifter deployments, 78 units were equipped with barometer sensors and the remaining 44 drifters were standard SVP type drifters.
Summary of plans for 2013	The goal for 2014 is to deploy 100 drifters, from which, 60 drifters will be equipped with barometer sensors.

6. INTERNATIONAL ARCTIC BUOY PROGRAMME (IABP)

(Report submitted by Ignatius Rigor, Polar Science Center, University of Washington, USA)

Name of Action Group	**International Arctic Buoy Programme IABP**
Date of report	11 September 2013
Overview and main requirements addressed	Participants of the IABP continue to work together to maintain a network of drifting buoys on the ice of the Arctic Basin to provide meteorological and oceanographic data for real-time operational requirements and research purposes including support to the World Climate Research Programme (WCRP) and the World Weather Watch (WWW) Programme.
Area of interest	Central Arctic Ocean and its marginal seas, excepting Exclusive Economic Zones, where agreements of the Coastal States have not been obtained
Type of platform and variables measured	Buoys on ice and/or in water measuring: Basic meteorological variables such as atmospheric air pressure and air temperature. Other variables such as: atmospheric pressure tendency, air chemistry (e.g. ozone), snow and sea-ice properties, as well as sub-surface oceanographic characteristics (e.g. temperature and salinity)
Targeted horizontal resolution	250 km x 250 km
Chairperson/Managers	Chairperson: Christine Best, Meteorological Service Canada
Coordinator	Ignatius Rigor, Polar Science Center, University of Washington, USA
Participants	Participants range from Science Institutions to Universities to Government Agencies. http://iabp.apl.washington.edu/overview_participants.html Participant contributions are shown on this site http://iabp.apl.washington.edu/overview_contributions.html
Data centre(s)	
Website	http://iabp.apl.washington.edu/
Meetings *(meetings held in 2012/2013; and planned in 2013/2014)*	Annual meetings spring or early summer in the Northern Hemisphere. 23rd Annual Meeting of the International Arctic Buoy Programme [IABP], hosted by the US Naval Academy in Annapolis, Maryland, in , 11 – 12 July 2013. We are tentatively planning to have our next meeting at the Alfred Wegener Institute in Bremerhaven, Germany in May, 2014.
Current status summary *(mid-2013)*	Eighty buoys were reporting, 59 of which have barometers, and/or surface temperatures sensors (Fig. 1).
Summary of plans for 2014	Summer is the primary deployment season in the Arctic. Participants will deploy 70+ buoys ranging from: SVP's providing

	surface air pressure, buoys providing air pressure and air temperature, Ice Mass Balance buoys, Oceanographic Profiling buoys measuring temperature and salinity to great depths and buoys that measure atmospheric air components such as ozone. Plans for future years will be similar.

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

(Report submitted by Christian Haas, Canada)

Name of Action Group	
Date of report	Sept 10, 2013
Overview and main requirements addressed	The Participants of the WCRP/SCAR International Programme for Antarctic Buoys (IPAB) work together to maintain a network of drifting buoys in the Southern Ocean, in particular over sea ice, to provide meteorological and oceanographic data for real-time operational requirements and research purposes. The IPAB was established in 1994 and became an Action Group of the Panel in October 1994.
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.
Type of platform and variables measured	Ice buoys measuring the following: 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
Targeted horizontal resolution	500 km x 500 km
Chairperson/Managers	Dr Petra Heil, AAD and ACE CRC, Hobart, Australia
Coordinator	Dr Christian Haas, York University, Toronto, Canada; Dr. Ignatius Rigor, University of Washington, Seattle, USA
Participants	- Alfred Wegener Institut, Germany - Australian Antarctic Division, Australia - Bureau of Meteorology, Australia - British Antarctic Survey, UK - Finnish Institute for Marine Research, Finland - GI, University of Alaska Fairbanks, USA - IARC, University of Alaska Fairbanks, USA - National Ice Center, USA - National Snow and Ice Data Center NSIDC, USA - ISDM/MEDS, Dept. of Fisheries and Ocean, Canada - Meteorological Service NZ LTD, New Zealand - Norwegian Polar Institute, Norway - Polar Science Center, Univ. of Washington, USA - National Institute of Polar Research, Japan - JAMSTEC, Japan - Programma Nazionale di Ricerche in Antartide, Italy - DAMTP, UK - SAMS, UK - York University, Toronto, Canada - CLS/Service Argos, France - South African Weather Service, South Africa - Meteorological Office, UK - CRREL, USA
Data centre(s)	Alfred Wegener Institute for Polar and Marine Research, Germany: http://www.pangaea.de/search?q=ipab National Snow and Ice Data Center NSIDC, USA: http://nsidc.org/data/docs/daac/nsidc0084_ipab_antarctic_buoys.gd.html

Website	http://www.ipab.aq/
Meetings *(meetings held in 2012/2013; and planned in 2013/2014)*	IPAB participants reported during the annual meeting of the International Arctic Buoy Programme in Annapolis, MD, on July 19 & 20, 2013. The next IPAB meeting is planned to coincide with the IGS sea ice symposium in Hobart, Tasmania, in 2014. http://seaice.acecrc.org.au/igs2014/
Current status summary *(mid-2013)*	IPAB activities have significantly increased in 2012 and 2013, with the deployment of 10 buoys in the northern and >40 in the southern Weddell Sea, 23 in the Ross, Amundsen, and Bellingshausen Seas, and >10 off the coasts of East Antarctica. These include several new buoy types developed for acquisition of additional atmospheric, ice, and ocean data. The Meteorological Services of South Africa, Australia, and New Zealand continue to operationally deploy numerous SVP's in the Southern Ocean, primarily north of the sea ice edge.
Summary of plans for 2014	Main deployments will be during the German icebreaker cruises to the southern Weddell Sea in late 2013, and during USIPAB cruise to Ross/Amundsen Sea in January/February 2014.

8. INTERNATIONAL SOUTH ATLANTIC BUOY PROGRAMME (ISABP)

(report submitted by Mayra Pazos, NOAA/AOML, USA)

Name of Action Group	**International South Atlantic Buoy Program ISABP**
Date of report	31 July 2013
Overview and main requirements addressed	The main objective of ISABP is to establish and maintain a network of platforms in the Tropical and South Atlantic Ocean in order to provide meteorological and oceanographic data for both real-time and research purposes. The task includes support to the World Weather Watch Programme (WWW), the Global Climate Observing System (GCOS), the World Climate Research Programme (WCRP), and the Global Ocean Observing System (GOOS), as well as to the research activities of participating institutions.
Area of interest	South Atlantic Ocean north of 55S plus Tropical Atlantic Ocean up to 20N
Type of platform and variables measured	Lagrangian drifters measuring sea level pressure, SST, salinity and sea-surface velocity
Targeted horizontal resolution	5 degrees x 5 degrees
Chairperson/Managers	Mr Ariel Troisi, SHN, Argentina
Coordinator	Mayra Pazos, AOML-NOAA, USA Johan Stander, SAWS, South Africa
Participants	
Data centre(s)	Historical drifter data are assembled, quality controlled at AOML, Miami, then sent to ISDM for archival and further distribution. Real time data is also archived at ISDM
Website	http://www.jcommops.org/dbcp/isabp/index.html http://www.oceatlan.org/isabp/en/index.html
Meetings *(meetings held in 2012/2013; and planned in 2013/2014)*	Meetings are held every other year, normally in May-July. Last meeting,ISABP- 13 took place in Buenos Aires, Argentina, on April 19, 2010
Current status summary *(mid-2013)*	As of August 12, 2013, there were a total of 109 drifters in the South Atlantic region, (65 SVP, 44 SVPB).
Summary of plans for 2014	Continue to address observational gap areas specially, in the Gulf of Guinea and Angola Basin; pursue recommendation of conducting studies and evaluate the impact of drifter pressure data and SST on the skills of numerical weather forecasting models for the region; increase number of SVPB in the region.

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

(Report submitted by Ms Kelly Stroker, OceanSITEs Coordinator, JCOMMOPS)

Name of Action Group	**OceanSITES**
Date of report	15 August 2013
Overview and main requirements addressed	OceanSITES is a worldwide system of long-term, deepwater reference stations measuring dozens of variables and monitoring the full depth of the ocean, from air-sea interactions down to 5,000 meters.
Area of interest	Global
Type of platform and variables measured	Deep-water reference stations
Targeted horizontal resolution	Key and representative sites covering the global ocean
Chairperson/Managers	Uwe Send, SIO Bob Weller, WHOI
Coordinator	Kelly Stroker, Project Office
Participants	Executive Committee, Steering Team Members, and Data Management Team Members
Data centre(s)	2 Global Data Assembly Centers IFREMER Coriolis (FTP). ftp://ftp.ifremer.fr/ifremer/oceansites/ US NDBC (FTP). ftp://data.ndbc.noaa.gov/data/oceansites/
Website	www.oceansites.org
Meetings *(2013)*	**2013** 9th Steering Committee and 6th Data Management Team Meetings in Seoul, Korea May 27-30, 2013 http://www.oceansites.org/meetings/index.html
Current status summary *(August-2013)*	The OceanSITES Network consists of over 177 reference sites in the deep-ocean with 51 of these sites transmitting data in real-time to a local or regional data centre (Figure 1). One of the main goals of OceanSITES is to share data in a common NetCDFformat. The format specifications have been developed by the OceanSITES Data Management Team (DMT) and currently over 30% of these sites are submitting data to one of the Global Data Assembly Centers (GDAC) in this format. At the December, 2011 La Jolla OceanSITES meeting, it was decided to make use of the many existing OceanSITES platforms in deep water to make an "instant" contribution towards the gap in deep-ocean observations as identified at OceanObs09. OceanSITES moorings over 50 sites around the world already carry deep temperature/salinity (T/S) sensors. OceanSITES members had a goal to deploy another 50, which requires 50 sensors for the initial deployments and another 50 for swapping

	out and calibrations (Figure 2). OceanSITES PIs have pledged to add such sensors to their existing moorings and as of May, 2013 another 14 sensors were installed with an additional 17 planned in the coming year. In addition to the sensor contribution by PIs, OceanSITES has a pool of matching sensor for the swap-outs via donations from institutions, agencies and companies. In 2013, the OceanSITES site catalog was fully ingested into the JCOMMOPS database allowing for easier updates and version control.
Summary of plans for 2013-2014	In 2013, OceanSITES held a meeting in Seoul, Korea. The OceanSITES Executive Committee will continue to meet regularly as will the Data Management Team. Several new documents will be published to assist user's of OceanSITES data and possible new contributors: 1) an updated User's Manual (name changed to Data Reference Manual), 2) a new document entitled "How to Become an OceanSITES Member", 3) a new document entitled "How to work with the GDACs", 4) a new document entitled "How to Access OceanSITES Data". Updates to the OceanSITES website by the Project Office. Finalization of concrete metrics for OceanSITES which the executive committee has been working. The 3 disciplines will have small teams to write White papers 1) Air sea flux 2) Physical time-series (ocean circulation, deep changes) 3) Biogeochemical and ecosystem Formalization of the processes and procedures for managing the deep ocean temperature/salinity program, and establishment of the next set of sites to be instrumented. Review and finalization of new products and indicators. Publish the updated *Minimalist OceanSITES Interdisciplinary Network (MOIN)* document (backbone network of minimalist identical multi-disciplinary sites) and hold a MOIN Workshop in early 2014 Work closely with other communities and attend meetings when appropriate. For example, • Hydrophone sites – LIDO • Ocean Tracking network • Deep Ocean initiative • INDEEP- Intern Network for scientific investigation of Deep sea ecosystems • Ocean Acidification, IOCCP Increase data holdings at the OceanSITES GDACs Finalization of OceanSITES data archive with NOAA's National Oceanographic Data Center (NODC). Formal archive to be

	functioning in early 2014. Participation in the Partnership for the Observation of the Global Ocean (POGO) meeting in Hobart in January and presenting a proposal for OceanSITES and POGO to play a role in working toward interoperability of sustained time series observing efforts in the ocean.

10. INTERNATIONAL TSUNAMETER PARTNERSHIP (ITP)

(Report submitted by Richard Crout, NOAA/NDBC, USA)

Name of Action Group	**International Tsunameter Partnership ITP**
Date of report	15 August 2013
Overview and main requirements addressed	Latest activity since last reporting (DBCP-28) -- status of tsunameters (appendix A); issues/enhancements to data sharing, technological developments, challenges, miscellaneous
Area of interest	Progress in partnerships, new technology
Type of platform and variables measured	Surface expressions (buoys and autonomous vehicles) and deep ocean water level recording devices
Targeted horizontal resolution	Terms of reference for ITP, to involve new partners, Safety guidelines
Chairperson/Managers	Dr. Venkatesan; Mr. Stephen G. Cucullu
Coordinator	Kelly Stroker
Participants	DBCP Representatives
Data centre(s)	Various
Website	http://www.jcomm.info/index.php?option=com_oe&task=viewEventDocs&eventID=1299
Meetings *(meetings held in 2012/2013; and planned in 2013/2014)*	Meeting of International Tsunameter Partnership (ITP) Fremantle, Australia October 3, 2012 Ninth International Tsunameter Partnership (ITP) meeting is scheduled on 24 September at IOC Paris as part of DBCP 29 session Planned: September 19 - 22 National Tsunami Hazard Mitigation Program (NOAA internal)
Current status summary *(mid-2013)*	Refer to Appendix A
Summary of plans for 2014	Refer to Section 2

ANNEX VI

REPORT FROM THE EXECUTIVE BOARD MEETING
(Paris, France, 25 September 2013)

Participants:

DBCP EB members:

- Al Wallace (Chair)
- Johan Stander (vice-Chair, SH)
- R. Venkatesan (vice-Chair Asia)
- Jon Turton (vice-Chair, Europe)
- Sid Thurston (chair, TT-CB)
- Etienne Charpentier (WMO Secr.)
- Tom Gross (IOC Secr.)
- Albert Fischer (IOC Secr.)
- Kelly Stroker (TC DBCP)
- Andy Sybrandy (Pacific Gyre, representing the manufacturers)

Other invited participants:

- Frank Grooters (financial advisor)
- Candyce Clark (USA, representing OCG, and USA)
- Richard Lampitt (UK, representing OceanSITEs)
- Graeme Ball (SOT Chair)

1. Membership

The EB first consider membership of the executive, and concurred with the current membership as reflected above.

2. Succession planning for the Chair, and vice-Chairs

The EB understands the need for succession planning. The EB is inviting younger people to be involved in the work of the Panel.

Mr Johan Stander is stepping down from the position of vice-Chair for the Southern Hemisphere. The EB concurred with the nomination of Mr Graeme Ball for that position.

The EB noted that if re-elected, Al Wallace would agree to continue for a fifth term. The EB agreed that it was critical to assure some continuity during this period (new TC, relocation of JCOMMOPS to Brest, etc.).

Sid Thurston accepted to continue to be a member of the EB.

3. Panel Session format

The EB agreed that the Science and Technical workshop is effective.

The day for side meetings of the Task Team, Pilot Projects, and Action Groups is also effective although the level of overlap between the different meetings could be adjusted. Some Action Group meetings could be shorten to 1.5h in order to reduce the level of overlap.

The Secretariat is invited to make a proposal to the EB for the next Panel Session.

4. Technical Coordinator's position

The EB agreed that the support from Kelly Stroker from the USA (i.e. remotely of JCOMMOPS in Toulouse) has been effective.

Nevertheless, the EB agreed (item 5 below) that the JCOMMOPS staff should be based at the same location, and based on rationale presented by the OCG and the Secretariat concurred with the plan to move JCOMMOPS from Toulouse, France to Brest, France. This will imply recruiting a new Technical Coordinator within 6 months.

The EB recommended to extend the contract of Kelly Stroker for another nine month without discontinuity of service, and to seek an exception to the WMO Secretariat about the rules of Special Service Agreements (SSAs) to allow for that extension. This will allow to also assure some overlap with the new Technical Coordinator, once recruited, in order for Ms Stroker to provide the required training to the new incumbent, and assure overall continuity of service for the TC DBCP position.

The EB recommended that support letters for that exception to be issued by the DBCP Chair, OCG Chair, JCOMM Co-President, and Executive Secretary of IOC needed.

The EB requested the Secretariat to send a copy of the Job description and required profile for the new DBCP/OceanSITEs Technical Coordinator to the EB and the OceanSITEs co-Chair for comments (with tight deadline for feedback). Post should be announced through the WMO, IOC, JCOMM websites, and various JCOMM OPA mailing lists.

5. JCOMMOPS relocation

The EB discussed the proposal to move JCOMMOPS to Brest, and took the following into account:

- Recommendations of the JCOMMOPS roundtable
- Recommendations of the OCG-5
- Risk analysis conducted by the Secretariat
- Commitment of IFREMER and Brest local authorities
- Potential benefits of moving to Brest
- Costs (e.g. relocation of Argo TC)

After discussion, the EB agreed unanimously that the move to Brest would be beneficial, and to make that recommendation to the Panel.

6. DBCP Budget and contributions

6.1 Status of the Trust Fund

The Board reviewed the status of the Trust Fund and agreed that it was healthy.
It was noted that there has been an increase in expenditures in recent years.

Some funds will have to be transferred to the IOC (25k for the move, and 3 months of salary).
Some contributions could be made directly to the IOC in order to avoid double overhead cost.

An interim review after 9 months of the DBCP budget could be useful.

6.2 Contributions for next year and beyond

- US contribution to the DBCP is going to the JCOMM Trust Fund at WMO
- US contribution to OceanSITEs is going thorugh CLS
- Seeking additional DBCP contributions
- In kind contributions to be recognized (e.g. DBCP Session hosting costs, etc.)
- Johan Stander to approach the WMO President and discuss a strategy for seeking new contributions.

6.2 Proposed maximum expenditures for next year

The EB reviewed the budget and directed expenditure reductions in a number of areas. The EB recommends supporting a number of initiatives in the coming intersessional period as detailed in the table below.

Expense	***Maximum expenditure***	***Comment***
Regional DBCP meeting in Asia (NPOMS-3)	20,000	Negotiate with developed countries of the region in order to decrease DBCP commitment
DBCP-WIO-5 (April 2014)	10 000	
SVP Inter-comparison	7,000	
PP-SLP (OSE, one off)	45,000	In case expenditure is not realized in 2013
Iridium air time	15,000	Reimbursement to SAMS of past air time of PP-Iridium drifters they paid. SAMS to provide a report
Ship Coordinator's position (DBCP)	20,000	(DBCP TF)
Ship Coordinator's position (SOT)	60 000	(JCOMM TF)
Ship Coordinator's missions (SOT)	15 000	(JCOMM TF)
Missions of the chair and other DBCP representatives at meetings of interest	20,000	
Logistics contract with CLS for JCOMMOPS (to be paid via WMO as of 2012) – Cooperation agreement to be made with CLS).	18,000	Euro 13 750 (to be negotiated)
Support of missions of the Argo Technical Coordinator	15,000	One year only (as recognition to the role of the Argo TC to JCOMMOPS, and to the transition provided when there was no DBCP TC)
Support to missions of the Technical Coordinator	30,000	
SSA Contract for the Technical Coordinator (ad hoc)	150,000	
Hiring cost for the new Technical Coordinator	40,000	
Surface Velocity science workshop	20 000	
Barometer upgrades in the Southern Ocean (SOBP) for the PP-SLP	TBD	
TC DBCP Post Announcement in Journals	1 000	
Interviews of the new TC DBCP	0	To be done via teleconference
Ship time (deployments from Lady Amber	(in kind)	Members invited to use Lady Amber opportunity as in kind contribution to JCOMMOPS

7. Implementation Strategy

Members are encouraged to review the strategy.

8. Working priorities for the Technical Coordinator

Same procedure as last year is proposed for discussing the work priorities of the TC DBCP.

The EB recognized that the TC is spending 30% of her time on OceanSITEs.

9. Other issues

- Project proposal in support of DBCP to be made as part of the GFCS Project Compendium (Johan to lead in consultation with C Clark, S. Thurston, K. Stroker).
- Evaluation of the ship coordinator's position success should be made.

ANNEX VII

INTERIM STATEMENTS OF ACCOUNT

IOC INTERIM STATEMENT OF ACCOUNT FOR THE PERIOD 1 JANUARY TO 31 JULY 2013

United Nations
Educational, Scientific and
Cultural Organization

Memo
BFM/FRA/2013/145
21 August 2013

To: ADG/IOC

From: BFM/FAS/FRA

Subject: **IOC Special Account - 193DBC2000**

As requested, please find enclosed a Financial Report as at 31 July 2013 for the above-mentioned fund.

Ebrima Sarr

cc: BFM/BMR
BSP/CFS

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 2013 to 31 July 2013)

(Expressed in US Dollars)

Cash Balance Brought Forward as at 1 January 2013	**7,907.47**
Deduct:	
Disbursements	
Salary costs	-
Statutory Travel on appointment and removal	7,165.15
IOC Logistical support JCOMMOPS	-
Programme Support Costs	716.52
Cash balance as at 31 July 2013	**25.80**
Unliquidated Obligations	-
Funds available as at 31 July 2013	**25.80**

WMO INTERIM STATEMENT OF ACCOUNT FOR THE PERIOD 1 JANUARY TO 31 JULY 2013

World Meteorological Organization
Organisation météorologique mondiale

Secrétariat
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DATA BUOY CO-OPERATION PANEL

Interim Statement of income and expenditure
For the period 1 January to 31 July 2013
Amounts in United States dollars

1. Balance brought forward , 1 January 2013			383,765
1.1 Add credit due to cancellation of prior year accrual of consultancy services			6,189
1.2 Adjusted balance, 1 January 2013			389,954
2. Income:			
2.1 Contributions[a/]			107,967
3. Total available funds during reporting period			497,921
4. Expenditure[b/]			
4.1 Direct project costs			
4.1.1 Travel - other representatives to attend other WMO meetings	41,487		
4.1.2 Travel - other representatives ad hoc travel	2,390		
4.1.3 Travel of staff to other WMO meetings	1,723		
4.1.4 JCOMM TR54 CD Rom - Internal Printing January to April 2013	346		
4.1.5 CLS 2013 Logistical Support (EUR 13,750)	17,927		
4.1.6 Total direct costs		63,873	
4.2 Indirect project costs			
4.2.1 Support costs at 3%	1,916		
4.2.2 Bank charges	205		
4.2.3 Unrealized loss on currency exchange	10,771		
4.2.4 Total indirect costs		12,892	
4.3 Total project expenditure			76,765
5. Balance of fund at 31 July 2013			**421,156**

[a/]

Contributions	
Australia	15,517
CLS	32,748
South Africa	5,427
Meteo France	54,274
Total contributions	107,967

[b/] Excluding obligations of USD46,195 (USD 11,195 relating to travel and USD 35,000 financial support advanced to CLS for the position of Ship Logistics Coordinator)

Luckson Ngwira
Chief, Finance Division
30 August 2013

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DATA BUOY CO-OPERATION PANEL

Statement of income and expenditure
For the period 1 January to 31 December 2012
Amounts in United States dollars

1. Balance brought forward , 1 January 2012		592,303
2. Income:		
2.1 Contributions	72,710	
2.2 Unrealized gain on exchange	9,917	
2.3 Total income		82,627
3. Total available funds during reporting period		674,930
4. Expenditure*		
4.1 Direct project costs		
4.1.1 Individual consultants	15,000	
4.1.2 Travel and per diem of experts	9,540	
4.1.3 Travel - other representatives to attend other WMO meetings	34,517	
4.1.4 Travel of staff to other WMO meetings	7,050	
4.1.5 LoA WMO KMD for Third IOC/WMO/DBCP Workshop, 16-20 April 2012	23,000	
4.1.6 Support to Argos-3 Pilot (drifters shipment)	7,066	
4.1.7 CLS New software licenses for JCOMMOPS Centre	30,000	
4.1.8 SAMS-SRSL (drifting buoys, iridium transmitters, iridium telecom)	22,097	
4.1.9 JCOMMOPS Logistical support to DBCP	11,964	
4.1.10 JCOMMOPS Logistical support to SOT	5,893	
4.1.11 Support to PP-SLP support	5,173	
4.1.12 Support to DBCP Workshop in Chennai	20,000	
4.1.13 Transfer to IOC for employment of DBCP Tech coordinator	90,000	
4.1.14 Publications (CD Rom for DBCP Annual Reports)	1,030	
4.1.15 Total direct costs	282,330	
4.2 Indirect project costs		
4.2.1 Support costs at 3%	8,470	
4.2.2 Bank charges	365	
4.2.3 Total indirect costs	8,835	
4.3 Total project expenditure		291,165
5. Balance of fund at 31 December 2012		**383,765**

*Excluding obligation of USD 35,000 financial support advanced to CLS for the position of Ship Logistics Coordinator; position not yet filled in 2012

Contributions

Australia	14,534
Australia (for OceanSITEs)	5,150
CLS	34,028
Germany	4,663
India	5,026
New Zealand	4,658
South Africa	4,651
Total contributions	72,710

Luckson Ngwira
Chief, Finance Division
8 March 2013

World Meteorological Organization
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Trust Fund for JCOMM support

Interim Statement of income and expenditure
For the period 1 January to 31 July 2013
(amounts expressed in Swiss francs)

1. Balance brought forward, 1 January 2013		223,624
2. Income		
2.1 Contributions		
2.1.1 Contribution of USD 386,000 (in CHF actual amount received on 1 July 2013) from Woods Hole Oceanographic Institute (WHOI), United States	364,770	
2.1.2 Transfer on 4 July 2013 to Global Ocean Observation Coordination Activities, OOPC consultant salary (USD 87,000)	(82,215)	
2.1.3 Transfer from WMO General Fund to cover support costs charges	5,293	
2.1.4 Total contributions		287,848
2.2 Interest		84
3. Total available funds during reporting period		511,556
4. Expenditure*		
4.1 Direct project costs		
4.1.1 Salaries	39,286	
4.1.2 Post adjusment	25,410	
4.1.3 Contribution to pension fund	12,224	
4.1.4 Contribution to medical insurance plan	1,341	
4.1.5 Consultants	48,831	
4.1.6 Total direct costs	127,092	
4.2 Indirect project costs		
4.2.1 Support costs at 5%	6,355	
4.2.2 Differences in exchange	(6,260)	
4.2.3 Total indirect costs	95	
4.3 Total expenditure		127,187
5. Balance of fund at 31 July 2013		384,369

*Excluding obligations totalling CHF 92,948

Certified correct:

Luckson Ngwira
Chief, Finance Division
30 August 2013

World Meteorological Organization
Organisation météorologique mondiale

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Trust Fund for JCOMM support
Statement of income and expenditure
For the period 1 January to 31 December 2012
(amounts expressed in Swiss francs)

1. Income			
1.1 Contributions			
1.1.1	Contribution from Woods Hole Oceanographic Institute (WHOI), United States (USD 478,000)	457,446	
1.1.2	Transfer to Global Ocean Observation Coordination Activities, OOPC consultant salary (USD 180,000)	(167,400)	
1.1.3	Total contributions		290,046
1.2 Interest			447
2. Total available funds during reporting period			290,493
3. Expenditure			
3.1 Direct project costs			
3.1.1	Salaries	28,624	
3.1.2	Post adjusment	17,383	
3.1.3	Contribution to pension fund	8,695	
3.1.4	Contributon to medical insurance plan	788	
3.1.5	Total direct costs	55,490	
3.2 Indirect project costs			
3.2.1	Support costs at 5%	2,775	
3.2.2	Differences in exchange	8,604	
3.2.3	Total indirect costs	11,379	
3.3 Total expenditure			66,869
4. Balance of fund at 31 December 2012			**223,624**

Luckson Ngwira
Chief, Finance Division
11 April 2013

ANNEX VIII

TABLE OF NATIONAL CONTRIBUTIONS FOR 2014

Budget / Country	JCOMMOPS	DBCP	OceanSITES	SOT	JTA	COMMENT
Australia	EUR 11,700		USD 5,000			JCOMMOPS: including DBCP and SOT
Canada	CAD 27,500					JCOMMOPS, including DBCP and SOT
CLS					USD 65,000	USD 15,000 for JTA Chairperson USD 30,000 for the JTA-Executive Committee 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 SOT
India		USD 5,000				
New Zealand	Eur 1,800					JCOMMOPS, including DBCP and SOT
South Africa		EUR 4,000				
USA		USD 115,000	(USD 30,000)	USD 80,000		Contribution to DBCP TC and SOT made to WMO as of 2012

ANNEX IX

BUDGET FOR THE NEXT YEAR

TABLE 1 – SUMMARY

Interim Statement for the 2013 DBCP Trust Fund, based on WMO and IOC Financial Information as at 31 July 2013 (budgets for 2014 and 2015 updated accordingly)

Summary [Budget 2014 Amended at DBCP-29]

	Actual			Actual			Actual			Budget			Budget	
	2011			2012			2013			2014			2015	
DBCP+JCOMM	**Receipts**	**Obligations**	**Balance at 31 Dec**	**Receipts**	**Obligations**	**Balance at 31 Dec**	**Receipts**	**Obligations**	**Balance at 31 July**	**Receipts**	**Obligations**	**Balance at 31 Dec**	**Receipts**	**Obligations**
Carried over from previous year	502,326			690,374			391,673			421,181			8,658	
Contributions	410,615			72,710			107,966			289,477			289,477	
Adjustments	4,687			9,917			6,189							
Expenditure														
TC Contract (DBCP TF)		75,603			81,967						81,000			120,000
TC Transition		19,675			90,000			7,165			1,000			
JTA (Chair, EC, Secr. Support)		24,056			24,616						65,000			65,000
Salary JCOMM											190,000			
Consultancy		10,894												
JCOMMOPS (incl. Log. Supp. SOT)		19,451			47,857			17,927			30,500			22,500
SOT		13,415									15,000			30,000
SOT Ship Coordinator (DBCP share)											20,000			20,000
SOT Ship Coordinator (SOT share)											60,000			-
Travel DBCP		25,543			39,920			45,600			75,000			30,000
Techn. Development/Evaluations					7,066						7,000			15,000
Ocean Observation Awareness											10,000			
SLP Pilot					6,744						75,000			32,500
Iridium (incl. upgrades)					22,097						15,000			10,000
Outreach and Publications					1,030			346			1,000			1,000
Capacity Building		19,394			43,000						30,000			25,000
Collaborative Arrangements											14,000			10,000
Bank Charges/Supp. Cost/Other		14,575			17,031			13,609			12,500			12,500
Contingency		4,648						44,000			24,000			44,000
Total DBCP	**917,628**	**227,254**		**773,001**	**381,328**		**505,828**	**128,647**		**710,658**	**726,000**		**298,135**	**437,500**
Unliquidated Obligations					7,857									
Balance of DBCP Trust Fund			**690,374**			**391,673**			**377,181**			**-15,342**		
Contingency carry over									44,000			24,000		
Carried over			**690,374**			**391,673**			**421,181**			**8,658**		
											Rough estimation			Rough estimation

Effected by JCOMM TF in 2012 Annual Report

TABLE 2 – REVIEW OF THE DBCP ACCOUNTS AS AT 31 JULY 2013 AND ESTIMATES FOR THE YEARS 2014 AND 2015

	Final Statement 1 January - 31 December 2011				Final Statement 1 January - 31 December 2012				Interim Statement 1 January - 31 July 2013				Estimated Budget		Estimated budget	
	Jan - Dec		Estimated budget		Jan - Dec		Estimated budget		Jan - July		Estimated budget		Jan - Dec 2014		Jan - Dec 2015	
DBCP	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC
Receipts																
Brought Forward	371,771	130,555	592,303	98,071	592,303	98,071	552,513	128,071	383,765	7,908	383,765	7,908	421,155	26	**27,632**	**-18,974**
Contributions	320,615	90,000	173,710	115,000	72,710		279,477	10,000	107,966		369,477	10,000	239,477	50,000	279,477	50,000
Adjustment JCOMM TF																
Adjustment DBCP TF	4,687				9,917				6,189							
Total Receipts	**697,073**	**220,555**	**766,013**	**213,071**	**674,930**	**98,071**	**831,990**	**138,071**	**497,920**	**7,908**	**753,242**	**17,908**	**660,632**	**50,026**	**307,109**	**31,026**
Expenditure/Oblig'ns																
TC Contract		75,603		40,000		81,967		120,000				120,000	81,000			120,000
TC Transition		19,675	20,000		90,000					7,165			1,000			
JTA (Chair, EC, Secr.)	24,056		55,000	10,000	24,616		55,000	10,000			55,000	10,000	55,000	10,000	55,000	10,000
Salary (JCOMM TF)					-								150,000	40,000		
Consultancy JCOMM																
Consultancy DBCP	10,894			10,000												
JCOMMOPS Logistical Supp.		16,071		15,000	8,928			10,000	17,927			10,000	18,000	-		10,000
JCOMMOPS Logistical Supp. SOT					8,929			5,000				5,000		5,000		5,000
JCOMMOPS Data/Development			5,000				7,500				7,500		7,500		7,500	
JCOMMOPS IS Migration	3,380		30,000		30,000											
SOT	13,415		20,000				30,000				30,000		15,000		30,000	
Ship Coordinator's position (DBCP share)							20,000				20,000		20,000		20,000	
Ship Coordinator's position (SOT share)													60,000			
Travel TC			5,000		15,430		20,000		16,549		20,000		30,000		20,000	
Travel DBCP Representatives	25,543		23,000		24,490		10,000		29,051		10,000		45,000		10,000	
Techn. Development/Evaluations			12,000		7,066		53,000				15,000		7,000		15,000	
PP Ocean Observation Awareness													10,000			
SLP Pilot					6,744		32,500				32,500		75,000		32,500	
Iridium (incl. upgrades)			15,000		22,097		10,000				10,000		15,000		10,000	
Outreach and Publication			1,000		1,030		1,000		346		1,000		1,000		1,000	
Capacity Building	19,394		25,000		43,000		45,000				25,000		30,000		25,000	
Collaborative Arrangements							10,000				10,000		10,000	4,000	10,000	
Bank Charges/Supp. Cost JCOMM TF					-											
Bank Charges/Supp. Cost DBCP TF	3,440	11,135	2,500	10,000	8,835	8,196	2,500	10,000	12,892	717	2,500	10,000	2,500	10,000	2,500	10,000
Contingency	4,648		24,000	20,000			24,000	20,000			24,000	20,000	24,000	-	24,000	20,000
Total Expenditure	**104,770**	**122,484**	**237,500**	**105,000**	**291,165**	**90,163**	**320,500**	**175,000**	**76,765**	**7,882**	**262,500**	**175,000**	**657,000**	**69,000**	**262,500**	**175,000**
Unliquidated Obligations						7,857										
Balance of Fund	**592,303**	**98,071**	**528,513**	**108,071**	**383,765**	**7,908**	**511,490**	**-36,929**	**421,155**	**26**	**490,742**	**-157,092**	**3,632**	**-18,974**	**44,609**	**-143,974**
Contingency Carry Over			24,000	20,000			24,000	20,000			24,000	20,000	24,000	-	24,000	20,000
Carried Over	**592,303**	**98,071**	**552,513**	**128,071**	**383,765**	**7,908**	**535,490**	**-16,929**	**421,155**	**26**	**514,742**	**-137,092**	**27,632**	**-18,974**	**68,609**	**-123,974**
Contributions																
Australia	20,525		21,350		19,684		21,124		15,517		21,124		21,124		21,124	
Canada	136,187		24,250				27,905				27,905		27,905		27,905	
CLS	35,269		55,000	10,000	34,028		55,000	10,000	32,748		55,000	10,000	55,000	10,000	55,000	10,000
E-SURFMAR	108,278		58,000				54,611		54,274		54,611		54,611		54,611	
Germany	4,925		5,000		4,663		4,915				4,915		4,915		4,915	
India	5,941		3,000		5,026		3,004				3,004		3,004		3,004	
New Zealand			2,610		4,658		2,457				2,457		2,457		2,457	
Ukraine	196															
South Africa	4,905		4,500		4,651		5,461		5,427		5,461		5,461		5,461	
USA (JCOMM TF)							105,000				195,000		65,000		105,000	
USA (DBCP TF)				105,000												
WMO		90,000												40,000		
Special Contributions	4,389															
Total	**320,615**	**90,000**	**173,710**	**115,000**	**72,710**	**-**	**279,477**	**10,000**	**107,966**		**369,477**	**10,000**	**239,477**	**50,000**	**279,477**	**10,000**
E=Estimate	All travel (exept TC) under one item as per DBCP-27		E		Australia: USD 5150 for OceanSITEs Project Office		E				E		E		E	
Exchange rate as per 31 July 2013 for JCOMM TF in WMO Financial Information:					Effected by JCOMM TF in 2012 Annual Rreport		Asia CB Workshop									
USD 1 = CHF 0.9435 (mean value from WMO Financial Information for JCOMM TF)							Satcom Forum Workshop									

ANNEX IX *(Continued)*

TABLE 3 – ARGOS JOINT TARIFF AGREEMENT (JTA) EXECUTIVE COMMITTEE BUDGET

Argos Joint Tariff Agreement (JTA) budget within DBCP Trust Fund
(as of 9 Sept. 2013, estimates in blue)

Year	Item	Income & Expenditure	1 CHF	Income & Expenditure	Income & Expenditure for JTA	JTA balance	Income & expenditure for WMO	WMO balance	Comment
		CHF	*USD*	*USD*	*USD*	*USD*	*USD*	*USD*	
2010	**Initial JTA balance**					***0***		**0**	
	CLS Contribution to DBCP TF at WMO (2010)			55,000.00	45,000	45,000	10,000	10,000	
	Mission, J. Stander, JTA-EC, Sydney, 04/2010			-4,273.00	-4,273	40,727	0	10,000	
	Mission, E. Charpentier, JTA-EC, Sydney, 04/2010			-3,321.00	-3,321	37,406	0	10,000	
	Mission, J. Stander, JTA-30, Oban, 10/2010			-2,402.00	-2,402	35,004	0	10,000	
	Mission, Greg Reed, IPET-DMI, 4/2010			-1,823.00	0	35,004	-1,823	8,177	
	Frank Grooters JTA contract (SSA), 10/2010			-15,437.00	-15,437	19,567	0	8,177	
2011	**CLS Contribution to DBCP TF at WMO (2011)**			**35,269.00**	**25,269**	**44,836**	**10,000**	**18,177**	
	Mission, J. Stander, JTA-EC, Miami, 4/2011			-1,224.00	-1,224	43,612	0	18,177	
	Mission, D. Meldrum, RMIC2, Tianjin, 7/2011			-3,247.00	0	43,612	-3,247	14,930	
	Mission, S. Issara, RMIC2, Tianjin, 7/2011			-3,829.00	0	43,612	-3,829	11,101	
	Mission J. Trinanes, IPET/DRC, Melbourne, 9/2011			-1,638.00	0	43,612	-1,638	9,463	
	Mission ROC Botswana, JTA-31, Geneva, 9/2011			-4,051.00	-4,051	39,561	0	9,463	
	Mission J.Stander, JTA-31, Geneva, 9/2011			-3,781.00	-3,781	35,780	0	9,463	
	Frank Grooters JTA contract (SSA), 10/2011			-15,000.00	-15,000	20,780	0	9,463	
	Mission, E. Charpentier, Toulouse, 12/2011			-2,178.00	0	20,780	-2,178	7,285	
2012	**CLS Contribution to DBCP TF at WMO (2012)**			**34,028.00**	**24,028**	**44,808**	**10,000**	**17,285**	
	Mission J. Stander, JTA-EC, Toulouse, 4/2012			-3,080.25	-3,080	41,728	0	17,285	
	Mission E. Charpentier, JTA-EC, Toulouse, 4/2012	-2216	1.06045	-2,349.96	-1,175	40,553	-1,175	16,110	50% JTA support (Satcom - JTA-EC)
	Mission J. Stander, JTA-32, Fremantle, 10/2012	-3113	1.06045	-3,301.18	-3,301	37,252	0	16,110	
	Frank Grooters JTA contract (SSA), 10/2012			-15,000.00	-15,000	22,252	0	16,110	
2013	**CLS Contribution to DBCP TF at WMO (2013)**			**32,748.00**	**22,748**	**45,000**	**10,000**	**26,110**	
	IODE-22 (S. Woodruff, G. Rosenhagen)			-2,357.00	0	45,000	-2,357	23,753	
	JTA-EC 2013, Annapolis (J. Stander, T. Gross)			-2,379.00	0	45,000	-2,379	21,374	
	RMIC workshop for RA-I, Casablanca, 2013			-10,000.00	0	45,000	-10,000	11,374	
	Frank Grooters JTA contract (SSA), 10/2013			-15,000.00	-15,000	30,000	0	11,374	
	Satcom forum			-10,000.00	0	30,000	-10,000	1,374	
	JTA-33 (J. Stander, J. Linguanti)			-3,342.00	-3,342	26,658	0	1,374	
2014	**CLS Contribution to DBCP TF at WMO (2014)**			**28,342.41**	**18,342**	**45,000**	**10,000**	**11,374**	

ANNEX X

TERMS OF REFERENCE OF TASK TEAM FOR DATA MANAGEMENT (TT-DM) (UPDATED: DBCP-29, SEPT. 2013)

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 Meteo-France SOC/DB, and (ii) the ISDM, Canada RNODC/DB; reconcile any overlaps with emphasis on differences.

2. Take the lead on managing 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 coordinated.

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.

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

Membership:

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

12. Mayra Pazos (TT Chairperson and GDP representative)
13. Yann Bernard (CLS Technical Manager)
14. Pierre Blouch (E-SURFMAR Service Manager, Eumetnet)
15. Bruce Bradshaw (RNODC representative)
16. Tony Chedrawy (Metocean)
17. Basanta Kumar Jena (Scientist,NIOT, India)
18. Jean Rolland (SOC representative)
19. Johan Stander (SA Weather Service)
20. Kelly Stroker (DBCP Technical Coordinator)
21. Jon Turton (UK Met Office)
22. Jeff Wingenroth (Data Buoy Instrumentation)

ANNEX XI

RECOMMENDATIONS OF TASK TEAM ON INSTRUMENT BEST PRACTICES AND DRIFTER TECHNOLOGY DEVELOPMENT

Luca Centurioni, SIO, USA and Rick Lumpkin, NOAA/AOML, USA

1) Full report to DBCP was submitted in summer (DBCP-29 Doc. 6.2).

2) AOML stats are the starting point of GDP QC procedures, followed-up by other tools such as real-time statistics and performance evaluations of suspect/re-designed units.

3) Inter-sessional period spent on identifying the most prominent failure modes of the drifters
- Focus on the assembly and fitting of battery packs into drifters.
- Focus also onto power consumption of electronics and sensor suite.
- A number of engineering investigations were performed including assessing damage occurring after rough shipping and handling, recovery of grounded units, mooring of drifter's buoys off the Scripps Pier and running complete systems on the bench (benchmarks), extensive testing and tuning of GPS management and PMT A3 management.

4) It was determined to focus on battery pack integrity over drogue retention (higher priority).

5) Recommendation 1): Given that a 56Ah pack has enough power to meet the drifter's lifetime requirement (over 450 days), industry should make optimal choices of individual batteries and implement proper assembly solutions of the packs so that they can resist drop impact from 30 ft (10 m) and impact/vibration in rough seas/storms. Doubling battery pack, unless required by higher sensor's consumption is not best practice.

6) Recommendation 2): Careful evaluation of the power requirements of the electronics and sensor suite is also critical. Lower sampling frequency of sensors as applicable (e.g. strain gauge).

7) Modifications of drifters to Iridium/GPS and upgrades to barometers should be discussed and approved with the owner of the drifters.

8) Manufacturers should be consulted by the TT members but should not be part of the task team (conflict of interest).

9) Luca Centurioni and Rick Lumpkin are proposed to continue co-chairing the effort for the next inter-sessional period.

10) Outlook for the next inter-sessional period will be on drogue retention.

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ANNEX XII

WORKPLAN (OCTOBER 2013 TO SEPTEMBER 2014) OF THE DBCP PILOT PROJECT ON WAVE MEASUREMENT EVALUATION AND TEST FROM MOORED BUOYS (PP-WET)

1. Coordinate intercomparisons of wave measurements from different platforms, on an opportunistic basis;

2. Publish intercomparison results and updated status reports on Pilot Project web site;

3. Develop a plan for a continuous testing and evaluation program;

4. Promote widely the pilot project goals and objectives, and results, to encourage enhanced participation and additional partners, including investigation of an alternative testing site on an ocean platform, and greater involvement of Regional Marine Instrumentation Centres (RMIC);

5. Contribute to training material to educate users about how to deploy and operate wave sensors appropriately;

6. Contribute, as appropriate, to the JCOMM Standards and Best Practice Guides, including a recommended approach to making reliable, high-quality spectral wave measurements, including directional spectra;

7. Decide whether to continue the pilot project for a further year and investigate follow-on mechanisms;

8. Present results to DBCP-30 and other scientific fora.

ANNEX XIII

GOALS OF DBCP CAPACITY BUILDING WORKSHOPS

GOALS OF THE THIRD CAPACITY BUILDING WORKSHOP OF THE WMO/IOC DATA BUOY COOPERATION PANEL (DBCP) FOR THE NORTH PACIFIC OCEAN AND ITS MARGINAL SEAS (NPOMS-3)

APPLICATION OF REGIONAL OCEAN OBSERVATIONS FOR INCREASING SOCIETY'S UNDERSTANDING AND FORECASTING OF TYPHOONS

OCTOBER 2014

OKINAWA, JAPAN (TBC)

The Following Goals reflect the needs of this NPOMS-3 Workshop and of the long-term Ocean-Climate Monitoring Capacity for Regional Cyclogenesis and Forecasting:

- Review recent, on-going and planned regional programs on typhoon and its interaction with the ocean,
- Discuss new advances in our understanding of the processes and mechanisms of typhoon-ocean interaction,
- Explore the possibility of regional collaboration to improve typhoon observation and prediction,
- Demonstrate the crucial role of Western Pacific (WESTPAC) ocean observations, such as for understanding and predicting regional cyclogenesis,
- Build Regional and National Human, Institutional and Infrastructure Capacity Needed to Acquire, Process and Deliver Socio-Economic Benefits From Ocean Observations,
- Continue to Learn Practical Implementation Skills for the Deployment of Operational Data Buoys at Sea, the Collection of Buoy Data, and Related Data Management,
- Continue to Align with Objectives of the Global Framework for Climate Services (GFCS) to Deliver Ocean Data to the End-User,
- Enhance Coordination and Cooperation between the DBCP Task Team for Capacity Building (TT-CB), WMO Regional Associations (RA-II/V) and the IOC Regional Office for WESTPAC.

ACRONYM LIST

AG	DBCP Action Groups
AHRPT	Advanced High Resolution Picture Transmission
AIC	Argo Information Center
AMESD	African Monitoring of the Environment for Sustainable Development
AMCOMET	African Ministerial Conference on Meteorology
AMOC	Atlantic Meridional Overturning Circulation
AOML	NOAA Atlantic Oceanographic and Meteorological Laboratory (USA)
AP	Air Pressure
APL	University of Washington Applied Physics Laboratory (USA)
Argo	Argo Profiling Float Pilot Project
AST	Argo Steering Team
ATLAS	Autonomous Temperature Line Acquisition System
AWS	Automatic Weather Station
BOBP-IGO	Bay of Bengal Programme Inter-Governmental Organization
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)
CBS-MG	CBS Management Group
CCl	Commission for Climatology (CCl)
CDIP	Coastal Data Information Program
CDMP	Climate Database Modernization Programme (USA)
CEO	Chief Executive Officer
Cg	Congress (WMO)
CIMEC	Cooperative Institute for Marine Ecosystems and Climate (USA)
CIMO	Commission on Instruments and Methods of Observation (WMO)
CliC	Climate and Cryosphere Project (WCRP, IASC, SCAR)
CLIVAR	Climate Variability and Predictability (WCRP)
CLS	Collecte Localisation Satellites (France)
CNES	Centre National D'Etudes Spatiales (France)
CNRS	Centre National de Recherche Scientifique (France)
CONOPS	WIGOS Concept of Operations
CPO	Climate Programme Office (NOAA, USA)
CREX	FM 95–XII CREX GTS format: Character form for the REpresentation and eXchange of Data
CSIRO	Commonwealth Scientific and Industrial Research Organisation (CSIRO)
DAC	Data Assembly Centre
DAR	Data Discovery, Access and Retrieval service (WMO WIS)
DART	Deep-ocean Assessment and Reporting of Tsunami (Tsunameter)

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)
DTM	Data Management Team
EB	DBCP Executive Board
EBD	Equivalent Buoy Density
EC	Executive Council
ECMWF	European Centre for Medium-Range Weather Forecasts
EEZ	Exclusive Economic Zone
EGOS-IP	Implementation Plan for the Evolution of Global Observing Systems (WMO)
EOV	Essential Ocean Variable
ER	Expected Result
E-SURFMAR	Surface Marine programme of the Network of European Meteorological Services, EUMETNET
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)
ETWCH	Expert Team on Waves and Coastal Hazard Forecast Systems (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
FAO	Food and Agriculture Organization
FG	First Guess Field
FTP	File Transfer Protocol
GCC	Global Collecting Centre (of MCSS)
GCOS	Global Climate Observing System
GCW	Global Cryosphere Watch
GDAC	Global Data Assembly / Acquisition Centre
GDC	Global Drifter Centre
GDP	Global Drifter Programme
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GFCS	Global Framework for Climate Services
GHRSST	Group for High-Resolution SST

GIPPS	Global Integrated Polar Prediction System
GIS	Geographical Information System
GISC	Global Information System Centres (WMO WIS)
GLOBE	Global Learning and Observations to Benefit the Environment
GLOSS	Global Sea-level Observing System (JCOMM)
GOOS	Global Ocean Observing System (IOC, WMO, UNEP, ICSU)
GOS	Global Observing System (WMO)
GPS	Global Positioning System
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	High Resolution SST
IABP	International Arctic Buoy Programme
IARC	International Arctic Research Center (USA)
IASC	International Arctic Science Committee
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
ID	Identification Number
IFREMER	Research Institute for the Exploitation of the Sea (France)
I-GOOS	Intergovernmental IOC-WMO-UNEP Committee for GOOS
IMB	Ice Mass Balance
IMEI	International Mobile Equipment Identity
IMO	International Maritime Organization
IndOOS	Indian Ocean Observing System
INMARSAT	International maritime satellite private company (previously International Maritime Satellite Organization)
INSU	Institut national des sciences de l'Univers (France)
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
ICT	Information and Communication Technology
IOCCP	International Ocean Carbon Coordination Project
IODE	International Oceanographic Data and Information Exchange (IOC)
IOTWS	Indian Ocean Tsunami Warning and Mitigation System (IOC)
IPAB	WCRP-SCAR International Programme for Antarctic Buoys
IPET-DRC	Inter-Programme Expert Team on Data Representation and Codes
IPD	International Polar Decade
IPP	DBCP Iridium Pilot Project
IPY	International Polar Year (2007-2008)

ISABP	International South Atlantic Buoy Programme
ISDM	Integrated Science Data Management (formerly MEDS, Canada)
ISFET	Ion Sensitive Field Effect Transistor
ISO	International Organization for Standardization
ISRO	Space Research Organization (India)
IT	Information Technology
ITP	International Tsunameter Partnership
ITT	Invitation To Tender
IUGG	International Union of Geodesy and Geophysics
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMM-3	Third Session of JCOMM (Marrakech, Morocco, 4-11 November 2009)
JCOMMOPS	JCOMM *in situ* Observations Programme Support Centre
JTA	Joint Tariff Agreement (Argos)
KHOA	Korea Hydrographic and Oceanographic Administration
KML	Keyhole Markup Language
KORDI	Korea Ocean Research and Development Institute
LOCEAN	Laboratoire d'Océanographie et du Climat (France)
LOI	Letters of Intent
LUT	Local User Terminal (Argos)
MAN	JCOMM Management Committee
MARCDAT	International Workshop on Advances in the Use of Historical Marine Climate Data
MCDS	Marine Climate Data System (in development by JCOMM)
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)
MG	Management Group
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 (SOA, China)
NDBC	NOAA National Data Buoy Center (USA)
NESDIS	NOAA National Environmental Satellite Data and Information Service (USA)
NetCDF	Network Common Data Format
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
NMS	National Meteorological 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
OOI	Ocean Observatories Initiative (USA)
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
OPeNDAP	Open-source Project for a Network Data Access Protocol
OPSCOM	Argos Operations Committee
OSE	Observing System Experiment
OSMC	NOAA Observing System Monitoring Center (USA)
OSSE	Observing System Simulation Experiment
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
POES	Polar Orbiting Environmental Satellite
POGO	Partnership for Observation of the Global Oceans

PP-HRSST	DBCP-GHRSST Pilot Project on High Resolution SST
PP-WMD	DBCP Pilot Project on Wave Measurement from Drifters
PP-WET	DBCP-ETWCH Pilot Project on Wave measurement Evaluation and Test
PTT	Platform Transmitter Terminal (Argos)
QA	Quality Assurance
QC	Quality Control
QMF	WMO Quality Management Framework
QMS	Quality Management Systems
RA	Regional Association (WMO)
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-JCOMM)
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
SAIC	Science Applications International Corporation (USA)
SAMS	Scottish Association for Marine Science
SARAL	Satellite with ARgos and ALtika (France, India)
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
SensorML	OpenGIS® Sensor Model Language Encoding Standard
SFSPA	JCOMM Services and Forecasting Systems Programme Area
SG	Steering Group
SIA	Seasonal to Inter-annual Forecast
SIDERI	Strengthening the International Dimension of the Euro-Argo Research Infrastructure
SIO	Scripps Institution of Oceanography (University of California, USA)
SLP	Sea Level Atmospheric Pressure
SMOS	Soil Moisture and Ocean Salinity mission
SOA	State Oceanic Administration (China)
SOBP	Southern Ocean Buoy Programme
SOC	Specialized Oceanographic Centre (JCOMM)
SOC/DB	SOC for Drifting Buoys (operated by Météo France)
SOCIB	Balearic Islands Coastal Observing System
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
SSS	Sea Surface Salinity
SST	Sea-Surface Temperature
STIP	Stored Tiros Information Processing
SVP	Surface Velocity Programme (of TOGA and WOCE, replaced by GDP) drifter
SVPB	SVP barometer drifter
SVPBS	SVP drifter with salinity
SVPBTC	SVP drifter with temperatures in depth
SVPBW	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
ToR	Terms of Reference
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
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
UK	United Kingdom
UN	United Nations
UNCLOS	UN Conventions on the Law of the Sea
UNDP	United Nations Development Programme
UNESCO	UN Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	UN General Assembly
URL	Uniform Resource Locator
USA	United States of America
USD	United States Dollar
VAR	Value Added Reseller

VCP	Voluntary Cooperation Programme (WMO)
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
WESTPAC	IOC Sub-Commission for the Western Pacific
WHOI	Woods Hole Oceanographic Institution
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

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