

**DATA BUOY COOPERATION PANEL
TWENTY-FIFTH SESSION**

IOC of UNESCO, Paris, France
28 September – 1 October 2009

FINAL REPORT

JCOMM Meeting Report No. 77

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NOTES

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

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

EXECUTIVE SUMMARY

The 25th session of the Data Buoy Co-operation Panel (DBCP) was held at the headquarters of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, Paris, France, from 28 September to 1 October 2009. As with previous sessions, a scientific and technical workshop was convened during the first day of the meeting, during which 22 presentations were delivered to 76 participants. In addition to papers addressing the Panel's ongoing interests in technology development, data delivery and applications, a number of presentations focussed on one of the key themes for the workshop, namely the use of wave information, the development of improved wave networks and the collection of tsunami observations..

The session then reviewed the activities of its Action Groups, including the International Tsunameter Partnership (ITP) which had been officially recognized as an Action Group at the previous session, together with the nine other global and regional buoy networks who are at the heart of the DBCP's Implementation Strategy.

The DBCP Task Teams are another means by which the strategy is put into practice, each focussing on a particular area of the Panel's interest, including data management, instrument best practices, moored buoy networks, and capacity building. Major achievements of the Panel through these Task Teams include:

- The Task Team on Data Management (TT-DM) led the efforts for the community white paper on "Data Management System for Surface Drifters" that was submitted to the OceanObs'09 (September 2009, Venice Italy).
- The Task Team on Instrument Best Practices and Drifter Technology Developments (TT-IBP), through the Global Drifter Center at NOAA/AOML, continued the drogue sensor evaluation for SVP buoys and recommended to continue this exercise on currently operating buoy types. The Panel noted that the work also contributes to the WMO Integrated Global Observing System (WIGOS) Pilot Project in updating various Technical Regulations. The Panel also recommended that USD10k of its own resources be used to allow five Marlin-Yug SVP-B drifters to be recruited to this valuable intercomparison exercise.
- The Panel supported the initiative to rationalize collection of instrument/platform metadata from moorings and requested the Task Team on Moored Buoys (TT-MB) to bring concrete proposals forward to the next session.
- A plan for a Regional Capacity Building workshop for the Western Indian Ocean (Cape Town, South Africa, April 2010) was presented by the DBCP Task Team on Capacity Building (TT-CB). The Panel approved this plan, including financial support from its Trust Fund

The Panel discussed several technical and implementation issues during the session. The advantage of Iridium buoys in terms of better timeliness and lower cost per message was generally recognized, and the Panel recommended that more Iridium drifters be deployed in those regions where data timeliness continued to be a problem for Argos-equipped drifters. In order to make prompt progress with this issue, the Panel agreed to devote USD15k of its own resources for the upgrading to Iridium of 30 SVP-Bs being procured by other agencies, provided that these buoys were deployed in the South Pacific and Indian Oceans, where data timeliness was particularly poor.

With regard to vandalism, the Panel expressed its particular concerns about the serious disruption incurred by the PIRATA and RAMA arrays. The Panel discussed various strategies to limit the impact of vandalism, including community education, anti-vandalism designs for buoys (e.g. "conehead" shape), and enforcement by local authorities.

The Panel also reviewed data management, exchange, quality assurance and monitoring issues, Best Practices and Standards, deployment opportunities and strategies. National reports were presented.

The Panel continued its efforts for technical development through pilot projects. Some preliminary evaluation of the ARGOS 3 satellite communication was conducted by the Pilot Project team, in collaboration with the CLS. The Argos 3 Pilot Project steering team defined a list of evaluation criteria, and invited both manufacturers and users to participate in the evaluation process.

The Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET), which is the joint project of DBCP and JCOMM Expert Team on Wind Waves and Storm Surges (ETWS), initiated the inter-comparisons of different in situ wave observing networks from moored buoys. This Project, while being implemented by the participating countries/programmes such as USA, Canada, and E-SURFMAR, has collaborated with TT-MB and other related programmes in developing the metadata list for wave data collection. The results would contribute to JCOMM standards and best practice, as well as to the relevant WIGOS exercise. It is expected that the new Pilot Project on Wave Measurement from Drifters (PP-WMD) would in due course complement these activities, once a practical evaluation plan had been realised.

The Panel endorsed a new Pilot Project for the measurement of High Resolution Sea Surface Temperature (HRSST) from drifters, with the objective of addressing the requirements expressed by the Group for High Resolution SST (GHRSSST). Within this Project, a number of drifters equipped with HRSST sensors ($\pm 0.05^{\circ}\text{C}$ accuracy), GPS and Iridium communications will be deployed in the test region, and the Pilot Project Team will evaluate the impact of in situ HRSST on the quality of satellite SST retrievals.

The Panel agreed that a consultant would have to be recruited to allow it to meet its obligation to update a number of WMO and IOC manuals and guides. To this end, it agreed to set aside USD10k of Panel funds, provided matched funding could be identified from other sources.

The Panel welcomed the offer of its Vice Chair from Asia, Mr V Rajendran, to host a regional DBCP mission in Asia and agreed to allocate USD10k of Panel funds for this purpose.

The Panel reviewed, updated and endorsed its Operating Principles and Implementation Strategy, taking into account the existing WMO and IOC Strategic Planning and requirements. Finally, the Panel reviewed the financial situation and agreed on its budget for the forthcoming intersessional period.

The Panel paid a special tribute to Mr. David Meldrum, outgoing Chairperson, for his dedicated service to the Panel over 6 years. The Panel elected Mr Al Wallace as its Chairperson, and Mr Jean Rolland as Vice-chairperson for Europe. The Panel re-elected Mr Ken Jarrott as Vice-chairperson for the Southern Hemisphere, and Mr V. Rajendran as the Vice-chairperson for Asia. The Panel agreed to organize its twenty-sixth session in the United Kingdom in late September 2010.

GENERAL SUMMARY OF THE WORK OF THE SESSION

1. OPENING AND WELCOME

1.1 The Chairperson of the Panel, Mr David Meldrum, opened the 25th session of the Data Buoy Co-operation Panel and its associated Scientific and Technical Workshop at 0900 hours on Monday 28 September 2009 in the headquarters of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, Paris, France. On behalf of the Panel, Mr Meldrum 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 providing excellent support for the Panel's Technical Coordinator employment and Trust Fund management.

1.2 On behalf of the Secretary-General of WMO and the Executive Secretary IOC, Dr. Keith Alverson, Head of Ocean Observations and Services section, welcomed all participants. He noted that the large participation to the session as well as the workshop was testimony to the high level of interest in the work of the Panel that coincides with the national/international priority. Dr. Alverson briefly summarized the discussion during the OceanObs'09 (21-25 September 2009) where the achievement during the last decade and the plan for the coming decade were discussed; he congratulated the remarkable achievement by the Panel in extending and sustaining the global buoy networks, and wished continuous activities of the Panel in this regard. Dr. Alverson concluded his remark by ensuring the Organizations' continuous support for the Panel.

1.3 The session was adjourned for the scientific and technical workshop, then re-opened on 29 September 2009. The Panel adopted its agenda for the session ([Annex I](#)) and decided on its working hours and other arrangements for conducting the session.

1.4 The list of participants in the session is given in [Annex II](#).

2. SCIENTIFIC AND TECHNICAL WORKSHOP

2.1 The Panel reviewed briefly the results of the scientific and technical workshop that was held on 28 September 2009 from 0910 to 1800 hours. The themes of the workshop covered technology developments, operational practices, applications of collected data and national practices. This year's workshop included two special focus areas on; 1) use of wave information and development of improved wave networks, and; 2) collection of tsunami observations. Twenty-two presentations were delivered to seventy-six participants; each presentation covering one of the themed areas.

2.2 The first theme covered Technological Demands and Developments for data buoys. (1) Météo-France provided an evaluation of Surface Velocity Program (SVP) type drifters that are reporting through Iridium. They found that the Iridium project has been very successful and that Iridium was well adapted to drifters. (2) Marlin-Yug presented results from the past year including successful testing of Iridium SVP-B and Iridium SVP-B mini prototypes. A new generation of Iridium SVP-BTC/GPS/RTC temperature-profiling drifters was developed and tested this year. (3) Pacific Gyre presented results from a prototype sonic minimet system that was deployed in 2008 and 2009. They had good comparisons with moored buoys and QSCAT observations. (4) Scripps Institution of Oceanography deployed five restrained ADOS-A drifters in the East China Sea in 2009. The platforms were able to withstand relatively strong tidal currents and obtained a number of interesting scientific observations. (5) Pacific Marine Environmental Laboratory presented results from recent climate instrumentation developments and field results. They made improvements to Indian Ocean moorings designs to make it difficult for vandals to remove sensors from the buoy, and they tested new meteorological sensors like the Vaisala WXT520 to improve meteorological observations from these buoys. (6) Liquid Robotics Inc. presented results from a wave glider which uses wave energy for propulsion and energy. The systems can collect

meteorological, oceanographic and geophysical observations. Their glider fleets have a cumulative mission time of 1906 days, with one operating for over nine months. (7) Clearwater Instrumentation Inc. provided a brief on their drifter power usage and projected battery life. They showed how the batteries are affected by the storage temperature which will impact the lifetime of the buoy. (8) In the final presentation for this theme, CLS provided a brief on the third generation of Argos-3 which offers the science community improved functionality while preserving robust and reliable data collection.

2.3 The second theme covered Operational Practice and Enhancements for data buoys. (9) NOAA's Global Drifter Program described their efforts in evaluating transmitter, drogue and SST performance for drifters deployed throughout the year. They focused on the deployment of five clusters using four SVP drifters. Most of the drifters performed well, providing sufficient SST information but still had issues with some drifter drogues and strain gauges. (10) The UK Met Office discussed their work on testing sonic anemometers on their moored buoy network. The UK Met will carry out wind tunnel calibrations but expect to deploy sonic anemometers on their buoys during the next year. (11) The Institut Pierre Simon Laplace described their assessments of accuracy for temperature and salinity measurements from sixteen (16) drifters in the North Atlantic Ocean. They showed that some drifters had spurious daily cycles when estimating conductivity and temperature. (12) A provocative presentation from the University of Edinburgh showed that drifting buoy reports of SST, extensively used in thermal remote sensing of the oceans, showed that the errors reported by drifter buoys are inhibiting improvements to satellite SST observations. If drifting buoy errors are reduced then the improvements will be used by the satellite community. (13) NOAA's National Data Buoy Center discussed impacts of vandalism to their three moored buoy networks and described how education, technology and statutory penalties could be used to mitigate these impacts. (14) NOAA's Climate Program Office described the ongoing partnerships for new GEOSS applications in the Indian Ocean. PANGEA promotes shared resources (ship time and training), training and workshops to enhance capacity building networks throughout the world. Finally, (15) Win Marine Consultancy Services showed an innovative ocean platform for fast deployment and maintenance of data buoys. These platforms are currently being used for military applications and Coast Guard services.

2.4 The third theme highlighted work in the two special focus areas. (16) France's IFREMER described the need for wave buoy data for assessing altimeter sea state measurements. Satellite altimeters, like ERS-1, measure sea state wave heights; and wave buoys are essential for calibration and validation for improvements to algorithms and future new designs. (17) CETMEF France described the French National Centre for Archiving Coastal Swell Measurements (CANDHIS) – a national network of coastal measurements that archive waves via a website and database. They also provide histograms of sea-state parameters and information on directional spectrum. (18) Scripps provided initial observations from measurements of surface waves from SVP drifters using a sideways looking ADCP. (19) Nortek AS showed how a subsurface AWAC can collect wave measurements, and presented comparisons of AWAC measurements collected by a buoy to a directional Waverider. (20) Dr. Robert Jensen of the US Army Corps of Engineers, on behalf of the Steering Committee of the DBCP-ETWS Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET), discussed wave measurement evaluation and testing, and presented the requirements for, and implementation of, a continuous wave measurement test and evaluation program for existing moored buoys and future in-situ/remotely sensed wave projects. (21) BPPT Jakarta Indonesia described the Indonesian Tsunami Buoy development program and presented the design of the Indonesian Tsunami Early Warning System. Their network obtained measurements from a number of tsunami events beginning in 2007. In the final presentation (22) the NOAA Pacific Marine Environmental Laboratory described recent tsunami forecasts using real-time tsunameter data and showed how the Easy-To-Deploy system will improve tsunami observations throughout the world.

2.5 The Panel expressed its appreciation to the Workshop co-chairpersons, Bill Burnett (USA) and Jean Rolland (France) for their excellent work in organizing and chairing the workshop. As the previous years, the presentations during the workshop would be available on the JCOMM website as well as on CD-ROM. Authors who would wish to publish their full paper were invited to

submit them via e-mail or CD-ROM to the Workshop Chairperson, in electronic form (MS Office compatible format only), by 30 October 2009 at the latest (**Recommendation, Authors, 30 Oct. 2009**).

2.6 The Panel noted with appreciation that Bill Burnett would continue to act as the Workshop co-chairperson for 2010. The Panel also welcomed Mr. David Meldrum to serve as the Workshop co-chairperson for 2010 (**Action. Bill Burnett and David Meldrum, DBCP-26**).

3. REPORTS FROM THE CHAIRPERSON, VICE-CHAIRPERSONS AND THE EXECUTIVE BOARD

3.1 Report by the Chairperson of the DBCP

3.1.1 The Chairperson reported on his activities during the last intersessional period. He undertook a number of missions (listed below) on behalf of the Panel during 2008/09.

Date	Destination	Purpose	Est cost \$
15-16 Dec 08	IOC, Paris	Meetings with PDG of CLS re future Argos JTA	1200
09-13 Mar 09	IOC, Paris	JCOMM OCG, prep of draft OceanObs09 Data Buoy CWP	2000
11-15 May 09	Scripps, La Jolla	Detailed planning for wave pilot progs (host: Julie Thomas)	2500
18-22 May 09	WMO, Geneva	Ship Observations Team, discussions with WMO Secretariat	2000
17-20 Jun 09	IOC, Paris	IOC Assembly, JCOMM succession planning, DBCP actions	1600
02-03 Jul 09	IOC, Paris	Argos JTA forward planning and discussion session	800
14-17 Sep 09	IOC, Paris	OceanObs/DBCP/JTA doc prep, TC and JCOMMOPS plans	1600
21-25 Sep 09	Venice	OceanObs09, including presentation of Data Buoy CWP	2200
26 Sep-03 Oct 09	IOC, Paris	DBCP and Argos-JTA sessions	No cost to DBCP

The missions included meetings re the future form and status of the Argos JTA and JCOMMOPS, as well as a number of short visits to IOC to plan actions and documentation for the upcoming sessions of OceanObs09, DBCP-XXV, Argos JTA and JCOMM-III. The chair also participated in science steering group meetings for the new waves pilot projects at Scripps, and as the DBCP representative to OCG-III (Paris) and SOT-V (Geneva). A Community White Paper for Data Buoys was prepared for OceanObs09 in Venice, and numerous letters written on administrative matters, as well as to NESDIS regarding the ongoing blind orbit problem.

3.1.2 The Panel noted with appreciation the chair's proactive role in developing links with possible new action groups, with GHRSSST, and with service providers such as Iridium.

3.1.3 Finally, the chair noted that he would step down at the current session, and thanked all participants, past and present, for the generous and able assistance given to him over many years in pursuit of the DBCP's objectives. He wished the Panel, the vice Chairpersons, the TC and the joint secretariat every success in fulfilling the future mission of the Panel, a responsibility which he believed they were uniquely competent to discharge.

3.2 Reports by the DBCP Vice-chairpersons

3.2.1 The Vice-chairperson for the southern Hemisphere, Mr Ken Jarrott, briefly reported on his activities on behalf of the Panel during the last intersessional period and particularly regarding his role as a liaison with the International Tsunameter Partnership (ITP). Further information in this regard is provided under agenda item 8.

3.2.2 The Vice-chairperson for North America, Mr Al Wallace, briefly reported on his activities during the last intersessional period. His activities were largely conducted through the Executive Board in providing guidance to Technical Coordinator's work and budget issues in order to implement the Panel's workplan.

3.2.3 The Vice-chairperson for Asia, Dr. V. Rajendran, reported on his activities. Major efforts was made in communicating with Asian countries in order to enhance the observation network in the Asian region. Based on the progress achieved so far, Dr. Rajendran proposed a DBCP forum on Ocean Observation Network in 2010 in India for the benefit of interested Asian countries in this endeavour. Further details were discussed during the Executive Board, which was reported under agenda item 11.

3.3 Report by the DBCP Executive Board

3.3.1 Mr David Meldrum presented a report on behalf of the Executive Board. The Executive Board welcomed two new members during the year: the recently elected vice chairperson for Asia, Dr V Rajendran ('Raju'), and Mr Etienne Charpentier, who replaced Dr Miroslav Ondras as the WMO representative. The Executive Board is presently comprised of David Meldrum (DBCP chair), Ken Jarrott (DBCP vice-chair), Al Wallace (DBCP vice-chair), Raju (DBCP vice chair), Sid Thurston (Panel member), Etienne Charpentier (WMO), Keith Alverson (IOC), and Hester Viola (DBCP Technical Coordinator).

3.3.2 The Panel noted that the Executive Board had been consulted during the last intersessional period to approve the following actions and expenditures, within the guidelines established at DBCP-XXIV:

- Missions by the DBCP chair, DBCP delegates and the JCOMMOPS TCs;
- Iridium upgrades for the DBCP Iridium Pilot Project;
- Expenditures for the Argos-3 Pilot Project;
- Approval of draft documents such as the DBCP brochure prior to their submission to the full Panel.

3.3.3 The Panel agreed with these actions and expenditures and thanked the Executive Board for its efficient work on its behalf during the intersessional period.

4. REPORT FROM THE TECHNICAL COORDINATOR

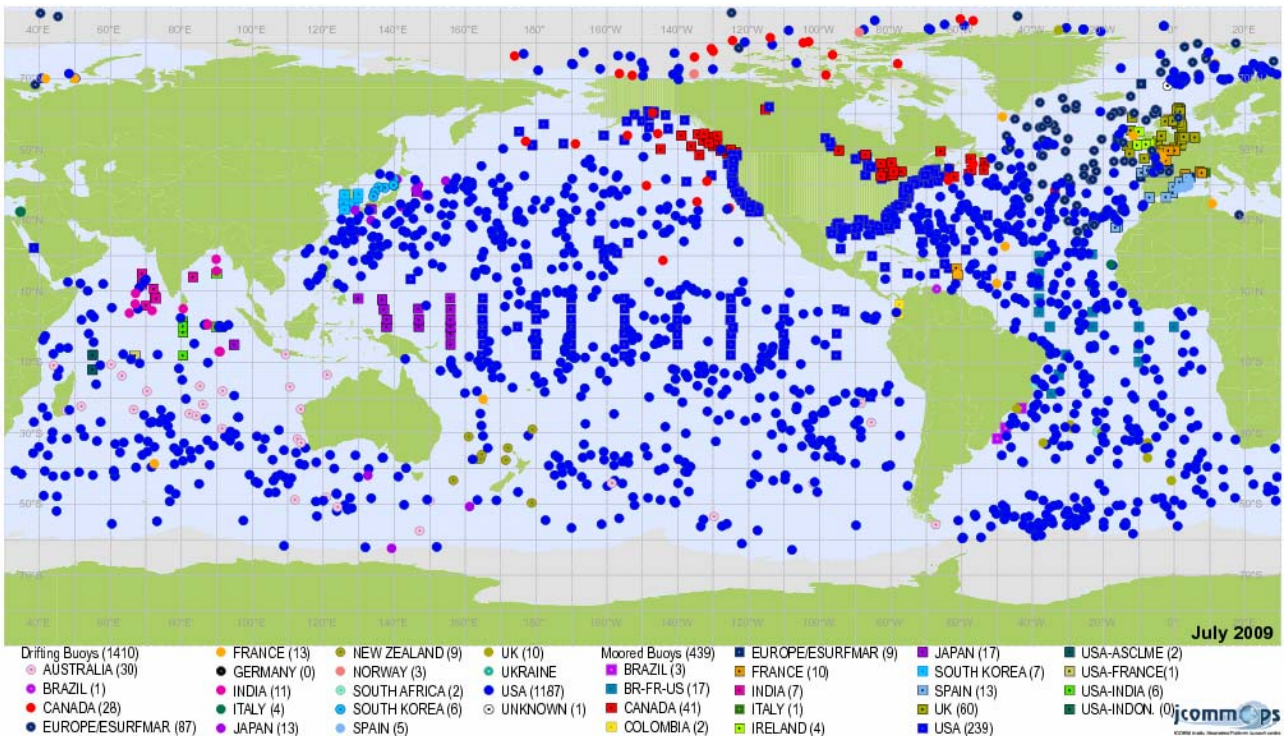
4.1 Ms Hester Viola, Technical Coordinator of the Data Buoy Cooperation Panel (DBCP), reported on her activities during the period from 1 September 2008 to 31 August 2009. She has been working as the Technical Coordinator of the Data Buoy Cooperation Panel (DBCP), as an employee of IOC of the United Nations Educational, Scientific, and Cultural Organisation (UNESCO), stationed at Toulouse, France (at CLS). Ms Viola reported that, as agreed at the previous session, she has spent one third of her time on the OceanSITES Project Office support instead of SOT.

4.2 During the previous year, Ms Viola's time (relating to DBCP) was spent in the following ways:

- User assistance;
- Working on Metadata within JCOMMOPS database;
- Producing monthly maps (including Google Earth layers);
- DBCP Iridium Pilot Project Technical Coordination;
- Looking at GTS (new data and delays) and Quality-Control Relay traffic;
- Loading monthly Buoy Monitoring statistics into the JCOMMOPS database;
- Maintaining mailing lists, contact details and user groups on DBCP, JCOMMOPS, OceanSITES and JCOMM websites;
- Seeking new deployment opportunities and communicating them to buoy operators;
- Maintaining and updating websites (DBCP and OceanSITES);
- Producing reports and maps, as required, as well as a monthly report on work

- undertaken;
- JCOMMOPS - information system operations and maintenance (database, new web server, metadata uploads and reporting);
- Preparing for and attending meetings; and
- Familiarization with OceanSITES and setting up communications mechanisms
- Preparing for the DBCP Session.

4.3 The Technical Coordinator outlined the status of the global buoy network. The total number of buoys globally was stable in the last year. The spread across the globe has been even apart from a recent sparseness in the eastern Pacific Ocean.



Map 1: DBCP monthly status by country for July 2009. (Data Buoy reporting on the GTS via Météo-France)

4.4 There was a steady growth in the number of buoys reporting Air Pressure in the last year, but a proportional decrease in percentage terms in the last 3 months. Buoy operators could consider whether it is possible to raise the proportion of SVPBs in their future budgets (to rely less on the Barometer Upgrade).

Variable	Any	Air P	P Tend.	SST	Air T	Hum.	Wind	Waves	Sub/T
Drifting Buoys	1405	600	544	1264	27	1	7	10	3
Moorings	437	284	226	339	349	197	337	297	88

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

4.5 The Technical Coordinator then discussed her work during the intersessional period, highlighting certain key tasks completed during the intersessional period. Updates to the website, brochure and technical documents were all undertaken in the intersessional period. She then highlighted some of the issues that required action by the Panel which were to be discussed further

in agenda item 9. Some future plans were presented and the Panel was invited to comment on priority tasks for the TC Workplan.

4.6 The Panel expressed its appreciation to Ms Viola for her work undertaken during the intersessional period.

5. REPORTS FROM THE TASK TEAMS

5.0 The Panel, in discussing the work of Task Teams, reviewed and revised Terms of Reference for each Task Team, which is reproduced in Appendix V of the DBCP Operating Principles ([Annex III](#)).

5.1 Task Team on Data Management

5.1.1 Ms Mayra Pazos, chairperson of the Task Team reported on the progress during the intersessional period. The full report of the Task Team is provided in the CD-ROM for the final report.

5.1.2 The Panel also appreciated the efforts made by the Task Team and other experts to submit the community white paper on “Data management System for Surface Drifters” that was submitted to the OceanObs’09 (September 2009, Venice Italy). The paper is also included in the CD-ROM for the final report, as an appendix.

5.1.3 The Panel recalled the conversion rule from 5-digit to 7-digit WMO numbers as follows:

- Numbers in the form $A_1b_w nnn$ WMO numbers are equivalent to $A_1b_w 00nnn$ WMO numbers
- In addition, in order to avoid allocating 7-digit WMO numbers to new buoys that are equivalent to 5-digit WMO numbers of existing buoys, all newly allocated 7-digit WMO numbers in the form $A_1b_w nnnnn$ have always the $nnnnn$ part ≥ 1000 (in other words the 7-digit numbers where $nnnnn < 1000$ are reserved for the 5-digit equivalence).

The rules above permits to automatically transform 5-digit WMO numbers to their equivalent 7-digit form either in the real-time data flow or archives/databases without risking conflict with other buoys using the same 7-digit form. The Panel noted that the +500 rule (i.e. adding 500 to the WMO numbers in case they are used for drifting buoys) still applies. Exact rules for WMO number allocation are detailed on the WMO web page: <http://www.wmo.int/pages/prog/amp/mmop/wmo-number-rules.html>. The Panel requested its Members to make sure the rules are well taken into account as appropriate (**Recommendation**).

5.1.4 The Panel then agreed to have Mr. Pierre Blouch (France) and Ms Emily MacPherson (MetOcean) as a new member of the Task Team.

5.1.5 The Panel thanked Ms Pazos and members of the Task Team for their efforts.

5.2 Task Team on Instrument Best Practices and Drifter Technology Developments

5.2.1 Dr William Burnett, chairperson of the Task Team reported on the progress regarding the instrument best practices and technology development. The full report of the Task Team is provided in the CD-ROM for the final report.

5.2.2 The Task Team has worked on issues related to Best Practices, including; (1) Update

NDBC's Quality Control Document; (2) Provided updates to WMO Pub 4 for Moored buoys, and; (3) Worked on OceanSITES Users Manual that includes Best Practices.

5.2.3 The Panel was pleased to note improvement and updates from measurements. It 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 currently operating buoy types (**Recommendation**). The Task Team also welcomed a review of the air pressure despiking process to improve the algorithm where possible.

5.2.4 With regard to the technical development, Dr. Burnett noted sensor development for various parameters and alternative data transmission method; including wind (Pacific Gyre), new GPS sensors (Marine-Yug), Iridium SVP-BTC temperature profiling, and Wave Glider concept (Liquid Robotics). At the recommendation of the Task Team, the Panel agreed that it should further be engaged in the future development of wave glider and invited Liquid Robotics to continue participating in future sessions and discussion (**Recommendation**). The Task Team also highlighted the exercise by Météo-France on evaluation of Iridium Short Burst Data (SBD).

5.2.5 The Panel welcomed Mr. Jon Turton as a member replacing the previous UK members. It also welcomed Dr. Robert Jensen (US Army Corps of Engineers), Mr. Michel Guigue (CLS), Mr. Tim Richardson (Liquid Robotics), and Mr. Jeffrey Wingenroth (Technocean) as new members of the Task Team.

5.2.6 The Panel noted that the work of the Task Team would contribute to the WMO Integrated Global Observing System (WIGOS) Pilot Project in updating various Technical Regulations, and thanked Dr. Burnett and members of the Task Team for their efforts.

5.3 Task Team on Moored Buoys

5.3.1 Mr Jon Turton, chairperson of the Task Team reported on the activities during the intersessional period. The full report of the Task Team is provided in the CD-ROM for the final report.

5.3.2 As agreed at DBCP-24 (October 2008, Cape Town, Republic of South Africa), the initial priority for the Task Team has been towards documenting the existing moored buoy systems operated by participants, recognizing that there was at present no collection of the relevant information (metadata) on these moored buoy systems. The first step was to agree on the list of parameters needing to be collected, and an initial list starting from the relevant parameters included in the JCOMM ODAS Metadata structure (Version 1.1) has been compiled. A number of additional parameters have subsequently been suggested (for example as needed by the PP-WET). It was planned to complete the initial list by the end of 2009, then discussions would be needed with JCOMMOPS and other related parties to investigate how best such a metadatabase might be developed, populated and maintained, in order to investigate whether resource implications for JCOMMOPS be required.

5.3.3 The Panel agreed that as a metadata scheme (based on SensorXML) has already been specified for OceanSITES, there was no need to duplicate that information within the scheme to be developed for moored buoys. The Panel recognized that the key need was to ensure that metadata from the various different types of observing systems was available to users and that JCOMMOPS could maintain some of these metadatabases, or provide links where these are maintained elsewhere.

5.3.4 The Panel supported this initiative and requested that the Task Team should bring concrete proposals forward to the next session for discussion and agreement (**Action by TT-MB, DBCP-26**).

5.3.5 Mr Turton also noted some of the other work ongoing within the Task Team and the

moored buoy community, notably involvement/liaison with the PP-WET and the various technological developments reported at the previous days Scientific and Technical Workshop including: PMEL work on a vandal resistant buoy and on a low cost (WXT520) met system; UKMO evaluation of WindSonic anemometers for use on its moored buoy network; NDBC buoy vandalism incidents, on the need for wave buoy data for altimeter sea state assessment; on the French national network of wave buoys (CANDHIS); and on tsunami buoy developments and forecasts.

5.3.6 The Panel thanked Mr. Turton and members of the Task Team for their efforts.

5.4 Task Team on Capacity Building

5.4.1 Dr Sidney Thurston, chairperson of the Task Team reported on the activities during the intersessional period. The full report of the Task Team is provided in the CD-ROM for the final report.

5.4.2 The Panel was reported on the plan for training workshop in Regional Capacity Building workshop for the Western Indian Ocean (WIO). Community needs were identified for both the Western Indian Ocean Institutions and DBCP; enhance participation in DBCP programmes and activities; address platform gaps in the Region; societal requirements that should be met by Regional institutions include enhancing accuracy of weather and climate forecasts, and new products for marine communities such as for the local fishing communities.

5.4.3 The focus areas for the Western Indian Ocean Capacity Building Workshop will be:

- Follow up of Ostend Workshop to address successes and gaps, Ostend trainees from the Region will be trainers at the Western Indian Ocean Workshop,
- Hands on computing skills on platform data extraction, quality control and interpolation,
- Data for simulation and validation of the models in the Region,
- Review of RAMA data streams with regard to improving skill of Global and Regional model requirements.

5.4.4 The Panel appreciated the offer by South African Weather Services to host the workshop in Pretoria, in April 2010. It also expressed its appreciation for the interest and support by NOAA of USA, IOC of UNESCO, and many national institutions in the Region for this initiative. The Panel requested Dr Thurston and the Task Team member to concretize the programme, to identify the lecturers, and to start the process to select trainees as soon as possible (**Action, Sidney Thurston in cooperation with the Secretariats, November 2009**)

5.4.5 The Panel welcomed Mr Ali Mafimbo (Kenya) as a new member of the Task Team.

5.4.6 The Panel thanked Dr. Thurston and members of the Task Team for their efforts.

6. REPORTS FROM THE ACTION GROUPS

6.1 Under this agenda item, the Panel was presented with reports by its action groups, including:

- (i) Surface Marine programme of the Network of European Meteorological Services, EUMETNET (E-SURFMAR) (verbal presentation by Mr Jon Turton, representing the E-SURFMAR officers);

- (ii) Global Drifter Programme (GDP) (verbal presentation by Dr Rick Lumpkin on behalf of the GDP);
- (iii) International Arctic Buoy Programme (IABP) (verbal presentation by Dr. Ignatius Rigor, representing IABP);
- (iv) International Buoy Programme for the Indian Ocean (IBPIO) (verbal presentation by Mr Graeme Ball, Chairperson of the IBPIO);
- (v) WCRP-SCAR International Programme for Antarctic Buoys (IPAB) (verbal presentation by Dr. Ignatius Rigor, representing the IPAB);
- (vi) International South Atlantic Buoy Programme (ISABP) (verbal presentation by Ms Mayra Pazos, representing the ISABP);
- (vii) DBCP-PICES North Pacific Data Buoy Advisory Panel (verbal presentation by Mr Al Wallace and Mr Shaun Dolk, Co-chairperson and technical coordinator of the NPDBAP);
- (viii) OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES) (verbal presentation by Ms Hester Viola, representing OceanSITES project office);
- (ix) Tropical Moored Buoys Implementation Panel (TIP) (verbal presentation by Mr Chris Meinig, representing the TIP).

6.2 Summaries of the presentations are reproduced in [Annex IV](#). The full reports of the action groups will be reproduced in the Panel's Annual Report.

6.3 Some comments and discussion followed the above presentations:

- (i) The Panel noted with interest the report on the AOML Data Buoy (ADB) comparison study. Acknowledging the usefulness of the drogue sensor evaluation, the Panel recommended to include SVP buoys from other manufacturer in this study (**Recommendation**). The Panel also recalled the discussion during the WMO Executive Council (2009) and urged Panel members to continue increasing the number of barometers buoys in operation.
- (ii) The IBPIO reported that a small number (4) of buoys fitted with Iridium transmitters were deployed in Indian Ocean, in support of the DBCP Iridium Pilot Project. The Panel recognized the advantages of Iridium buoys in terms of better timeliness and lower cost per message, and suggested more Iridium drifters to be deployed in this region where the delay of data delivery is particularly an issue (**Recommendation**). Météo-France offered its support in case matching fund be provided.
- (iii) The Panel noted with concern that there existed spatial gap in Russian sector of the Arctic region, due to challenging environment for deployment. Data sharing through GTS has been greatly improved, and the Panel further encouraged the research programmes (e.g. DAMOCLES) to put real-time and/or near-real-time data on GTS (**Recommendation**).
- (iv) The Technical Coordinator reported on the work of the OceanSITES project office, for which she has spent her 30% of the time. The Panel noted that, with exception of TAO/TRITON buoys, monitored data have been collected and archived in GDACS but not available on GTS. The Panel noted that sharing data on GTS would greatly increase the use/application of the data (e.g. NWP) that eventually would improve their recognition, and encourage the OceanSITES to consider this issue (**Recommendation**). The Panel was pleased to be reported on the team's exercise in establishing/maintaining site catalogue and metadata, and suggested cooperation with the Task Team on Moored Buoys.

- (v) The Panel noted with concern the serious vandalism, particularly against PIRATA and RAMA arrays. It appreciated the efforts for anti-vandalism design modification (e.g. “conehead” shape, and related initiatives to share experience and technology through public information and workshops. Related discussion is summarized under agenda item 8.5.

7. PILOT PROJECTS

7.1 Iridium Pilot Project

7.1.1 The Technical Coordinator presented the current status of the buoy network within the Iridium Pilot Project. The full report is provided in the CD-ROM for the final report.

7.1.2 There were 78 active buoys as of August 2009 (out of ~150 declared under the project). There was a peak of 87 buoys active in May 2009. The coverage of the buoys so far was presented and it was noted that there were still deployments needed in the Central and Southern Pacific and in the Central Atlantic. The updates made to the project website were then outlined (<http://www.jcommops.org/dbcp/iridium-pp/>).

7.1.3 The Technical Coordinator thanked the project participants for emailing one another to notify deployment information and said it was working well so far, to assist in managing metadata about buoys.

7.1.4 The Technical Coordinator then presented some simple statistics about lifetimes of project buoys by manufacturer.

7.1.5 She noted that the data format recommended for the project had been updated in the inter-sessional period (Version 4.0) and some extra data formats created for new buoy types. Several programs are using the CLS data processing system without issue. She explained the new services being offered by JouBeh with Iridium telecommunications. A draft of a Technical Document has been produced for organizations which plan to distribute data onto the GTS, to explain the Real-time quality control that is required.

Analysis of results and project success factors

7.1.6 At DBCP-24 (Cape Town, 2008) the panel suggested that the project participants provide more detail about the analysis required by the end of the project and the success factors for the project as a whole, in order to ensure the project goals reflect the buoy operators needs. The Goals of the project as initially expressed in 2006 were updated.

Approaches to managing Iridium information globally

7.1.7 The DBCP might consider whether it needs to set down some guidelines for those Data Centers processing Iridium data, to assist in sharing of metadata with the international community, so that the DBCP and other groups will continue to have access to useful information about platforms. This may be as simple as defining a file format for a daily/weekly report from each Centre which they could share via FTP.

7.1.8 The Panel made the following **recommendations**:

- More deployment of Iridium buoys in the data sparse area and regions where exist the GTS data timeliness issue, such as Indian Ocean and Southern Ocean. On a related discussion, the Panel appreciate the offer of deployment opportunity by New Zealand. The Panel made decisions regarding the use of its trust fund for this pilot project under agenda item 11 (Report and recommendation from the Executive Board).

- Manufacturers are requested to supply information about new Iridium IMEI numbers to JCOMMOPS either via email (iridium-pp@jcommops.org) or through the Metadata Entry tool (<http://wo.jcommops.org/cgi-bin/WebObjects/meta>) when they are testing new buoys.
- To be considered part of the project and for buoys to appear on maps and in status reports the notification of deployment must be completed by the buoy operator, as soon as possible after the deployment.
- Buoy operators are encouraged to communicate via email (iridium-pp@jcommops.org) with approximate deployment areas for all new IMEI numbers once they are manufactured (plus ships they are going on) ahead of time.
- Update the Terms of Reference to include key success factors and the analysis required in 2010.

7.1.9 The Panel thanked the participants in the project for the work.

7.2 Pilot Project for the evaluation of Argos-3 technology

7.2.1 Dr. Luca Centurioni reported on the progress of the pilot project. The full report is provided in the CD-ROM for the final report.

7.2.2 The Argos 3 message format was defined in January 2009 by team members, CLS and manufacturers. Four types of drifting buoys were considered: SVP, SVP-B (barometers), SVP-G (GPS) and SVP-BG (barometer and GPS). The format was then distributed to the five drifters manufacturers.

7.2.3 Five SVP-BG and five SVP-G were delivered by Clearwater, 10 SVP by Pacific-Gyre, 5 SVP and 5 SVP-B by Metocean and 2 SVP-B by Marlin Yug. Clearwater insisted to fit a GPS on their buoy to boost the initialization phase. When the order for the buoys was placed, Pacific Gyre was not ready to fit the barometers on the Argos-3 buoys. Therefore CLS decided to go ahead and have 10 SVP made so that the test phase could be started quickly. The GDP offered 10 extra buoys to be fitted with argos 3 PMT and barometers, provided by CLS and DBCP to compensate for the shortage of barometer drifters compared to the planned number (50).

7.2.4 At the present, 18 Argos 3 drifters have been deployed in the Mediterranean Sea, North and South Atlantic Ocean, North and Equatorial Pacific Ocean. Two buoys will be deployed in the Black Sea. NOAA, South Africa, Australia and New Zealand weather services helped with the deployments. The Panel thanked these member countries who provided deployment opportunities.

7.2.5 Some preliminary evaluation of the ARGOS 3 buoys was performed by CLS. During the first Argos 3 steering team meeting a list of evaluation criteria was defined. It was also decided that both manufacturers and users should be involved in the evaluation process. CLS asked the manufacturers to provide a concise report on the implementation of the Argos 3 PMT's

7.2.6 The Panel reaffirmed that all the drifters deployed within the pilot project should carry barometer sensors, as it was agreed at DBCP-24.

7.2.7 The Panel appreciated the offer by CLS to provide the pilot project website (<https://argos-system.cls.fr>, for registered users). The Panel also thanked Dr. Centurioni and the steering team members for their active participation in the project.

7.3 Pilot Project on Wave Measurement from Drifters

7.3.1 Mr David Meldrum, chair of the pilot project steering committee, reported on the progress of the pilot project. The full report is provided in the CD-ROM for the final report.

7.3.2 The Panel recalled that it had agreed at its previous session to support a Pilot Project for Wave Measurement from Drifters (PP-WMD) with the aims of reporting inexpensive deep ocean 2D wave spectra in support of satellite and model cal/val activities. A draft workplan and start-up funding had been agreed, and a Steering Committee (SC) appointed to make progress with the project during the intersessional period. The terms of reference for the project, the draft workplan and SC membership are available on the pilot project website: <http://www.jcomm.info/wmd>.

7.3.3 The SC had met at Scripps Institute of Oceanography in May 2009, kindly hosted by Julie Thomas, Peter Niiler and Luca Centurioni, and had discussed a number of issues. These included:

- The composition of the SC – a small number of new members was suggested;
- A review of the workplan and the assignment of tasks to individual SC members;
- The creation of new tasks deemed essential for successful progress.

7.3.4 The SC also reviewed a number of presentations made by its members on the feasibility of good quality 2D wave spectral measurements from drifters, and the ways in which these spectral data might be represented. It concluded that wave spectral measurements based on the processing of raw GPS observables such as pseudo-range and carrier phase were eminently feasible, provided that the drifter hull proved to be a good wave-follower, such as was anticipated for an un-drogued SVP hull. If this were not the case (as in the case of a drogued SVP drifter), then additional sensors, possibly expensive, would be required in order to quantify the buoy transfer function.

7.3.5 It also reached the conclusion, shared by the PP-WET SC, that the so-called 'First 5' representation of spectral components as a function of frequency band was the minimum reporting requirement to aim for. In terms of other objectives, the SC undertook to

- Investigate the communications costs associated with the 'First 5' spectral representation;
- Investigate way of minimising these costs, both by negotiating favourable rates and by examining the effects on data fidelity of compressing or truncating the spectral components;
- Submit a proposal for a session on wave measurements from buoys during the AGU Ocean Sciences meeting in Portland, Oregon in February 2010 (this had been successful);
- Present the outline of the project to the 11th International Workshop on Wave Hindcasting and Forecasting to be held in Halifax, NS, in late October 2009.

7.3.6 In terms of a practical evaluation of inexpensive GPS-based measurement techniques, the SC had not met its objectives, although plans were afoot for one if its members (Meldrum, SAMS) to acquire suitable components for the construction of a 2D arbitrary-waveform test rig for the detailed investigation of GPS techniques for 2D wave-spectral recovery. Nonetheless, a proposal for wave measurements from a drogued SVP drifter had been tabled by Dr Sergey Motychev of Marlin-Yug Ltd, and the SC had invited its members to carefully review this as-yet uncosted proposition.

7.3.7 The Panel thanked the SC for its work to date and urged it continue with its work as quickly as possible, and to interact with other groups, such as ESA, who were pursuing initiatives to improve the quality of in situ data in support of cal/val activities for a number of Essential Climate Variables (ECVs) (**Action, David Meldrum and PP-WMD SC, ASAP**).

7.4 Pilot Project on wave measurement evaluation and test from moored buoys

7.4.1 Mr Val Swail, co-chair of the pilot project steering committee, reported on the progress of the pilot project (PP-WET). The full report is provided in the CD-ROM for the final report.

7.4.2 Mr Swail reported that the PP – WET Steering Committee met at Scripps, USA in May 2009 in conjunction with the PP-WMD SC, and established the protocols for intercomparison activities, and developed a contribution to the Community White Paper on wave measurement for the OceanObs09 (September 2009, Venice, Italy). The work plan and schedule presented to DBCP-XXIV were reviewed and updated as appropriate, of which the latest version is available at the pilot project website: <http://www.jcomm.info/wet>.

7.4.3 The Panel expressed its appreciation to several national agencies and international programmes including Australia, Canada, United Kingdom and ESURFMAR, and USA for their participation in the intercomparison projects, and in the development of metadata bases in coordination with the Task Team on Moored Buoys. The Panel also welcomed the contribution from US IOOS and the Coastal Data Information Program (CDIP) at the Scripps Institution of Oceanography, in setting up the intercomparison methodology, web site and metadata criteria. The Panel encouraged its member countries to participate in the intercomparison activities which was led by this pilot project (**recommendation**).

7.4.4 Mr. Swail extended the invitation for SC membership, particularly to Indian Ocean countries and Mediterranean countries.

7.4.5 Mr Swail then reported that a special session on wave measurement has been organized as part of the 11th International Workshop on Wave Hindcasting and Forecasting (October 2009, Halifax, Canada) to further develop guidelines and participation in the Pilot Project (<http://www.waveworkshop.org>). The next meeting of the Steering Committee is scheduled for April 2010.

7.4.6 The Panel noted that the expected outcome of this pilot project was closely linked with the work of the Task Team on Moored Buoys, therefore recommended that the PP-WET SC collaborate with the Task Team in developing the metadata list for wave data collection (**Action: PP-WET SC and TT-MB, ASAP**). It also recognize that the pilot project would contribute to JCOMM in developing standards and best practice, as well as to the relevant WIGOS exercise, and encourage the co-chairs and SC members to actively outreach these relevant activities with the progress in inter-comparison exercise (**Recommendation**).

7.4.7 The Panel agreed that this pilot project was progressing well after its first year, and decided to retain its financial support from the trust fund until the second year (see Agenda Item 11). The Panel thanked the PP-WET SC co-chairs, Mr Val Swail and Dr. Robert Jensen, and SC members for their work to make progress.

8. ISSUES FOR THE PANEL

8.1 International Tsunameter Partnership

8.1.1 The Panel received a report by Mr Ken Jarrott, Chairperson of the International Tsunameter Partnership (ITP) and Vice-chairperson of the DBCP, on the tsunami warning systems and the issues arising from the discussions of the ITP.

8.1.2 During the year member countries of the ITP have been very active in the continued establishment of deep ocean tsunami monitoring networks in the Indian Ocean, and the sustaining of the large DART™ network in the Pacific Ocean and in the Caribbean Sea and west Atlantic

Ocean. Many of the different tsunameter types have now observed tsunamis, and high resolution event data sets are being exchanged with the tsunami modelling community to improve forecasting science.

8.1.3 The operational availability of tsunameter networks has been compromised through the year through a combination of continuing technical developments, production immaturity and vandalism. In the Indian Ocean in particular, deliberate theft or damage, or unintentional damage arising from fishing operations has had a great cost and is currently resulting in significant impairment of the network.

8.1.4 During the year, standards for tsunameter data transfer in BUFR code via the GTS were finalised and were trialled by Australia and the USA. Extension of the trials to all non-DART tsunameter products are planned by end of the first Quarter of 2010.

8.1.5 The ITP-5 meeting in Paris immediately prior to the DBCP meeting was very successful. It was attended by all global tsunameter equipment suppliers and development agencies, and by almost all national operators. The conjunction of the two meetings also led to ITP-introduced national representatives and suppliers participating in the DBCP for the first time.

8.1.6 The major objectives of the ITP and its members in 2010 relate to data exchange trials, the compilation of best practice documentation, the completion of the Indian Ocean tsunameter networks, and addressing long term sustaining challenges, including vandalism (see item 8.5).

8.1.7 The members of the ITP recognised the value in the association with the DBCP, and the capacity for the action agendas of both parties to be advanced by a more direct association. Accordingly, the ITP expressed its wish to become an Action Group of the DBCP.

8.1.8 The ITP is conscious of its mission to be responsive to the requirements of the IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), to which it currently reports through the IOTWS Working Group on Sea Level Data Collection and Exchange. It is also conscious of its obligation to support the global tsunami warning community. With some global agendas for tsunami warning systems recently entrusted to the IOC TOWS Working Group, and the planned restructuring of working groups across regional Tsunami Warning Systems, formulation of appropriate ITP governance and reporting arrangements will be under active discussion over the coming year.

8.2 Information exchange

8.2.1 The Technical Coordinator reported on this agenda item. The Panel was reminded that the official address for the DBCP website is as follows: <http://www.jcommops.org/DBCP/> however it is also possible to access the site using the address <http://dbcp.jcommops.org>. A new draft website is available for review by the panel. While appreciating the effort to make the web site more user friendly and appealing, the Panel requested the Technical Coordinator to make sure that the wealth of information existing on the present web site will remain accessible through the new menu structure (**Action: TC, DBCP-26**). The Panel members were also invited to review the new page and inform the Technical Coordinator on any required/missing information (**Recommendation: Members, by DBCP-26**)

8.2.2 The DBCP mailing lists have been added to this year, for the Quality Control Guidelines email list, the Argos3 Pilot Project and OceanSITES. Details on the mailing lists, and how to register, can be obtained at: http://www.jcommops.org/mailling_lists.html#DBCP (information on other JCOMMOPS mailing lists, including for SOOP, Argo, JCOMM and the SOT can also be obtained from this web page). All attendees at the panel session will be included on the list: dbcp@jcommops.org.

8.2.3 New DBCP-related publications and revisions to existing documents were outlined, as

well as a draft website showing, i) existing Best Practices documents and ii) where gaps exist in the DBCP documentation. Some new products were also detailed including an online photo album and New and improved Google Earth files layers (daily and monthly updates).

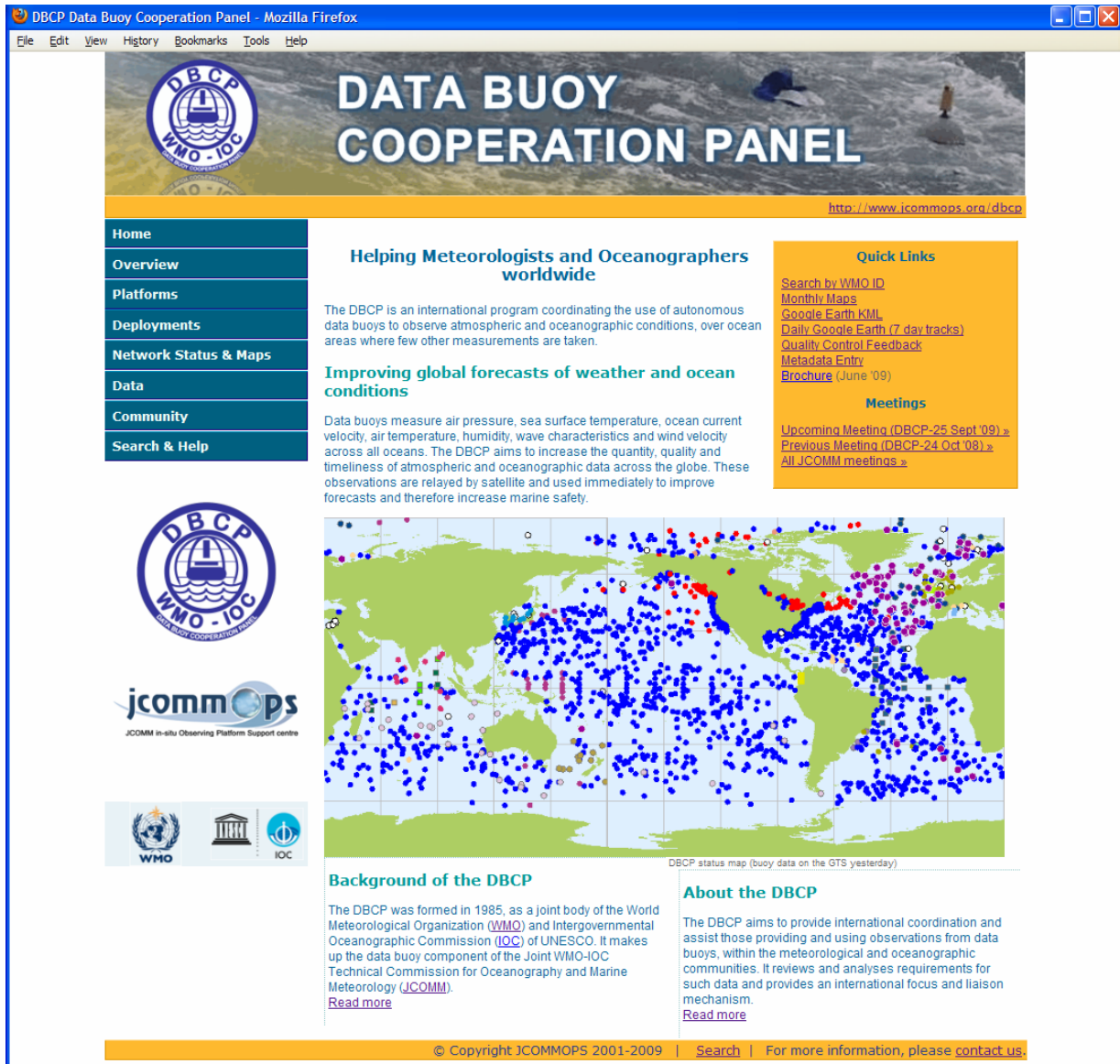


Figure. New draft DBCP website

8.3 Deployment opportunities and strategies

8.3.1 Ms Hester Viola, Technical Coordinator reported that gaps in the DBCP network remain and are in similar areas to last year. According the JCOMMOPS monthly maps however, the Indian Ocean has fewer gaps than last year. For the Drifting Buoy network, the Southern Ocean and Arctic Ocean were identified as areas where deployment opportunities are needed, as well as the central and far north Pacific, surrounding New Zealand and to the west of the African continent.

8.3.2 JCOMMOPS overlaid active SOOP lines with areas of interest to obtain a list of lines to consider. However, the Panel recommended to use ships of opportunity for deploying drifters with caution as ship riders deploying the XBTs usually have a busy schedule. VOS ships are appropriate and the new format of the WMO Publication No. 47 now includes areas where the ships are sailing and this information can be used for targeting specific ocean areas for the deployment of drifters. The Repeat Hydrography Network would also create more opportunities.

8.3.3 The Technical Coordinator reported that she had sent deployment opportunity information via the monthly e-mail to the DBCP community, and that some Panel Members had provided information in response to this. The TC outlined new opportunities, and reminded the Panel about the Argo Deployment planning application and that she could source additional information about the Argo plans, as required.

Specific opportunities include:

- Repeat Hydrography cruises
- NAVOCEANO Air Deployments recommenced.
- KNMI, Netherlands will make VOS ships available for buoy deployments.
- Korea Polar Research Institute began to use a new icebreaker in September 2009, and KMA research vessel would be available in 2011.
- The Russian research ship Prof. KHROMOV will be in the NW Pacific in October 2009.
- The DART Tsunami buoy deployment and maintenance cruises will continue to provide an ongoing opportunity in the Pacific and Central Atlantic oceans.
- The POGO Research Cruise database : <http://www.pogo-oceancruises.org/cruises/>
- Voyages to and around Antarctica: <http://www.caml.aq/voyages/index.html>

8.4 GTS Delays and Data Dissemination

8.4.1 The Panel was reported that, on average, delays between GTS reception and observation time have remained about the same in the last year.

8.4.2 At the last session the Panel discussed those platforms reporting with a 'Mooring-like WMO number', which have not been included on DBCP network maps in the past. Coastal buoys are one type that fit in this category (off the US coastline). The Panel decided that they should appear on maps, so will now be included as part of the network. Panel members are reminded however, that if a buoy is not using the Argos System, then information should be sent to the Technical coordinator when a new buoy is deployed or replaced, so that metadata in the JCOMMOPS database can be updated. The Technical Coordinator has worked with several buoy operators to assist them in disseminating data onto the GTS during the inter-sessional period.

8.4.3 The JCOMMOPS maps focusing on delays were produced monthly and show, in general, the delays across the network have remained similar throughout the last year. Persistent delays were still experienced in the Central / Southern Atlantic, Southern Pacific, though the delays in the Mediterranean Sea appear to have improved in recent months. Buoy operators are encouraged to use Iridium telecommunications in areas with the worst delays in the Argos System. (see <http://www.jcommops.org/dbcp/dbcpmaps.html> --> GTS delays).

8.4.4 CLS has been monitoring the sources of delays and is enhancing its monitoring system to enable focusing on specific ocean basins. Concerns about the delays on Argos buoys in the Indian Ocean have been responded to by CLS and results were presented under Agenda Item 9.3.

8.5 Vandalism

8.5.1 The Panel invited Ms Ken Jarrott, Chair of the International Tsunameter Partnership, to lead the discussion under this agenda item. In addition to the long-standing experiences of vandalism in the TAO/TRITON, PIRATA and RAMA moored buoy arrays, the newly established tsunameter networks in the Indian Ocean have suffered significant damage and economic loss, and consequent loss of vital observations to Indian Ocean tsunami warning centres warning centres. Over 60% of the deployed tsunameter sites in the Indian Ocean have suffered one or more vandalism events, with over 25 events being recorded over the last three years. As a result, around half of the deployed network is currently not operational. Some of those gaps will be

addressed once buoy modifications are completed to remove solar cells, to reduce their physical exposure to vandalism.

8.5.2 The Panel was also recalled the IOC Resolution XXV-13 at the 25th session of the IOC Assembly (June 2009, Paris), requesting “the International Tsunameter Partnership and the Data Buoy Cooperation Panel (DBCP), in coordination with JCOMM, to prepare a report for the Working Group on Tsunamis and Other Ocean Hazards Warning and Mitigation Systems (TOWS-WG) and Intergovernmental Committee for the Global Ocean Observing System (IGOOS) at their next meetings, on ocean observing platform vandalism”.

8.5.3 At the request by IOC, Mr Jarrott noted that a number of strategies, ranging from community education, technical anti-vandalism measures, and enforcement by local authorities have been applied by various countries with some effect. The Panel, after discussion, agreed that it would collaborate with the ITP to contribute to a global assessment of the scope and impact of vandalism, and a formulation of strategies that collectively could reduce its incidence and consequence (**Action, members led by Ken Jarrott, by JCOMM-III**). Once the report is agreed and endorsed by DBCP, ITP and other related JCOMM community, it would be submitted to IGOOS and TOWS-WG as requested.

8.6 Metadata

8.6.1 The Technical Coordinator reported on various activities dealing with metadata. In terms of the JCOMMOPS database, its metadata is populated by inputs from platform operators (and some manufacturers) either upon deployment or as a regular status reports from Buoy operators. The TC thanked those Moored Buoy operators who already do this and encouraged the others to use similar methods as well. Operators of Iridium platforms have been reporting metadata successfully upon deployment.

8.6.2 Technocean provided JCOMMOPS with a list of metadata for all Argos buoys manufactured in 2008 (reporting Argos ID, Manufacture Date, Type, Data Format, Drogue Type and Hull type), as a simple comma delimited text file, which was very useful. The TC plans to discuss this with other manufacturers to see if a regular update would be possible with similar information.

8.6.3 The TC explained that the BUFR templates had not yet been updated for buoy data as the JCOMM Task Team on Table Driven Codes, had worked on the XBT and VOS templates as a priority during the inter-sessional period, however the review of the buoy templates and possibly creation of additional templates will be the next priority (**Action, TC, ASAP**).

8.6.4 The goal of gathering metadata for buoy platforms at JCOMMOPS is to make the information available to data processing centres and in future for analysis of the datasets by modellers or climatologists. The TC updated JCOMMOPS' routines to export the contents of the database for use by the ODAS metadata servers, which will be developed as part of the Meta-T Pilot Project (USA and China).

8.6.5 The overall framework for making improvements to the metadata management for all JCOMM observing system is being considered by the META-T Pilot Project, chaired by Derrick Snowden. The TC remains involved in the Meta-T Pilot Project and broader JCOMM Metadata management initiatives.

8.6.6 The Panel noted with satisfaction the progress of the META-T Pilot Project. It has been advancing JCOMM metadata management through the assessment of the information and data management needs of multiple application areas and recommending strategies for capturing and sharing metadata.

8.6.7 One strategy recommended by META-T is to include as much metadata as is practically

available at the time of GTS encoding in the BUFR templates. Therefore, of primary importance to the overall management and distribution of data and metadata, is the design of BUFR templates.

8.6.8 Another strategy which may be tested as part of the Pilot Project is to provide instrument metadata directly from a platform (in a daily or weekly message) in XML as a metadata service. Using SensorML as the basis for the message is one possible way to implement this metadata transfer.

8.6.9 The TC explained that she participated in a community whitepaper for the OceanObs 09 (September 2009, Venice, Italy) entitled "Metadata Management in Global Distributed Ocean Observation Networks" (Snowden et al).

8.6.10 The Panel thanked the TC for her very pro-active role in effectively addressing these metadata and code matters, and encouraged her to continue these actions.

8.7 Technological developments in support of user requirements

Interactions with the Group for High Resolution Sea Surface Temperatures (GHRSSST)

8.7.1 GHRSSST were essentially looking to improve the quality of SST retrieval from satellite instruments such as the AVHRR and AATSR. In order to do so they were reliant upon in situ datasets from platforms such as ships, Argo floats and drifters, and had for some time expressed a series of requirements to the DBCP for improved resolution and accuracy of drifter measurements of SST, location and SST sensor depth. As a result, the Panel had engaged in a constructive dialogue with GHRSSST in order to more fully understand, prioritise, cost and hopefully begin to implement their requirements.

8.7.2 During the last intersessional period the Panel chair had entered into discussions with Drs Donlon, Merchant and Corlett from GHRSSST, and together they had arrived at a realistic proposal for a way forward. In essence the proposal would involve the equipping of a number of drifters in a given ocean region with HRSST sensors (+/- 0.05C accuracy), GPS and Iridium communications, as a pilot project for evaluating the impact of in situ HRSST on the quality of satellite SST retrievals. Additionally there were realistic prospects that such a pilot might be funded through the ESA Climate Change Initiative (CCI).

8.7.3 The Panel reviewed the concept, and despite some doubts as to the representativeness of drifter SST for the km-scale pixel sizes of satellite SST, agreed that the project might go ahead. It thanked the representatives of ESURFMAR for their willingness to participate in the project, and asked the Chair to continue pursuing opportunities for the Panel within the ESA CCI, not only for HRSST but also for a sub-set climate quality network of in situ observations of other Essential Climate Variables (ECVs) such as Sea Surface Salinity (SSS) and 2D wave spectral data (**Action, David Meldrum, ASAP**) [edit by David Meldrum]. It also noted the need to flag HRSST and other high-performance sensors appropriately within platform metadata (**Recommendation**).

8.8 Other issues to be discussed

8.8.1 The Panel considered any other technical issues requiring international coordination or action. In particular, it reviewed issues proposed by the Technical Coordinator, Task Teams and Action Groups.

8.8.2 With respect to making NWP/Ocean model outputs available to buoy operators for i) Checking data quality before sending to the GTS upon deployment and ii) Checking data that had been removed from the GTS, against model outputs to assess if perhaps it had improved over time and could be disseminated on the GTS again (if it has improved). A description should be compiled for buoy operators to see if model data can be made available on an *ad hoc* basis for a time and

location, for comparison to data not already on the GTS or for measurements which have been suppressed in the past. (**Action, Pierre Blouch and Jon Turton, supported by TC, DBCP-26**)

8.8.3 The panel was supportive of the measurement of Sea Surface Salinity. Météo-France reported that test were underway on these measurements and they would continue. The quality control processes and approaches for SSS was raised as a question. Many panel members suggested documents or tools for assessing QC for SSS. It was agreed that the Panel members provide details of Sea Surface Salinity quality control processes to JCOMMOPS (**Action, Panel members, December 2009**)

Quality Management issues

8.8.4 The Technical Coordinator outlined the different tools for checking buoy data quality and reporting issues with data quality. According to the DBCP Quality Control Guidelines, Systematic errors are reported either via a dedicated web page or through the buoy-qir@vedur.is mailing list. The use of these mechanisms has improved in the last year and encouraged some good discussion amongst buoy operators and manufacturers.

8.8.5 The Panel was also presented an overall summary of buoy quality. The quality of buoy data, air pressure and sea surface temperature remained very good this year. The RMS values for air pressure on both drifters and moorings increased significantly in the last year. The number of accepted observations increased for all parameters.

9. INFORMATION REPORTS

9.1 Argo

9.1.1 The Panel received a report on the Argo programme, given by Mr Jon Turton. He noted that although the array had 'achieved' its 3,000 float target around 800 floats/year would be needed to maintain this level. However, to meet the core objectives of Argo (3° spacing in the ice-free deep oceans between 60° N and 60° S) around 3,200 floats were needed. Of the ~3,300 floats presently operating a number were not producing good data (grey-listed), were in high latitudes or marginal seas, such that only ~2,700 floats were presently supporting the core mission. Also, there is a deficit of around 500 floats in the southern hemisphere that Argo needs to address.

9.1.2 The Panel noted that 90% of Argo profiles reach the GTS (for operational users) and the GDACs within 24 hours of collection - the data distribution is closely monitored by AIC. At present around 60% of eligible profiles have been subjected to delayed-mode QC but there is a backlog of ~100,000 profiles needing to be processed. Argo is working hard to address this.

9.1.3 Deployments have been 'on hold' this year due to a problem with the pressure transducers (the Druck microleak problem) although tested/replacement sensors are now becoming available and deployments are restarting.

9.1.4 As various technical problems with floats have been identified and addressed float lifetimes have significantly improved and there are reasonable expectations that floats will now achieve their design lifetime of an average of 4 years. Near surface temperature measurements were likely to start being implemented on most floats as this can be achieved at virtually no additional cost.

9.1.5 Other new capabilities were making measurements of dissolved oxygen (on 400 floats at present) and there is a strong push from the bio-geochemical community to make bio-geochemical measurements from floats. A need for deeper sampling has also been identified for climate applications (e.g. decadal prediction).

9.1.6 However, the top priority for Argo is to complete and sustain the array with respect to its

original core design. It remains a concern that most national funding for Argo relies on research budgets which are subject to research programme timescales – and can not be regarded as sustained funding.

9.2 Buoy Data Management Centres

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

9.2.2 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.

9.2.3 The Panel thanked both centres for their reports. These reports are reproduced in the accompanying CD-ROM.

9.2.4 As noted at the previous DBCP Session, the two respective IODE and JCOMM centres are completely separate but provide similar functions. The Panel noted with appreciation that efforts were made during the last intersessional period to initiate dialogue between the two centres (see Item 5.1.2). The Panel encouraged again the two centres to continue liaising between themselves (**Action, RNODC / DB and SOC, ongoing**).

9.3 Argos operations and developments

9.3.1 Mr Bill Woodward (CLS America) reported on the status of Argos operations. The two global ground stations at Gilmore Creek and Wallops Island continued to deliver STIP data from NOAA-15, NOAA-16, NOAA-17, and NOAA-18 throughout the past year. TIP or real-time data are delivered to CLS & CLS America on reception from 56 stations around the globe. METOP-A DCS data was acquired and relayed via EUMETCAST originally and now via the internet to CLS & CLSA and to all Argos users during 2008. The two global processing centers, Toulouse and Largo, processed approximately 850+ playback and real-time datasets per day and the two centers continue to be fully redundant with an average of 2 backups per month. Both global centers successfully implemented the Argos 2001 Phase III B (GTS processing) software in May 2008. The main communications link to distribute processed data to users and to receive datasets from regional stations continues to be the internet. The number of operating Argos platforms continues to increase with more than 10,000 platforms (up from 9500 in 2007) seen on average per day and more than 18,000 active platforms (up from 17,800 in 2006) per month. The amount of data from NOAA-17 & 18 available within one hour was between 70 % and 80%.

9.3.2 Mr Woodward also briefly reported that the U.S. Air Force has given their contractor, LMSC, authorization and appropriation to begin the work necessary to upgrade their Mark IVB Met data ingest, processing and dissemination system to collect direct-readout data from METOP A and from NPOESS.

9.3.3 Mr Michel Guigue presented the different components of the Argos Ground Segment, including the computing system architecture, the global and regional network ground stations, the control and processing centers, the user PMTs and the regional processing centres.

9.3.4 The global ground stations network is still composed of the Wallops, Fairbanks and Svalbard antennas. Wallops and Fairbanks are dedicated to the NOAA POES satellites while Svalbard is dedicated to the download of the global MetOp data. Since July 2007, the Svalbard ground station has also been in charge of receiving the two NOAA-18 blind orbits per day during 2008 (now for NOAA-19).

9.3.5 NOAA provided the following summary of the “Blind Orbit” recovery project:

“Over the last 4 years NOAA has been investigating ways to collect blind orbits from its polar satellites to improve data latency for Argos users and all satellite data user in general. Currently there are two command data acquisition antennas in Svalbard Norway, one operated by EUMETSAT and the other developed by NOAA. Under the Initial Joint Polar Satellite (IJPS) agreement EUMETSAT and NOAA are collaborating to provide a two satellite constellation to make environmental measurements of the earth. This agreement provides for blind orbit support for the two primary satellites in the constellation. Currently Metop-A and NOAA-19 (launched February 2009) have stored data downloaded on every pass. The agreement also covers NOAA-18 which NOAA-19 replaced as the primary afternoon satellite. NOAA-18 blinds will be collected at a best effort, but since NOAA 19 and NOAA 18 are in the same orbit and collect almost the same data there is no significant loss if NOAA-18 blinds are not collected. For the older secondary satellites operated by NOAA, NOAA-15, NOAA-16, and NOAA-17 they are not covered as part of the IJPS agreement. For the last several years satellite operations as worked with Integrated Program Office to test the NOAA antenna located at Svalbard. The Svalbard NOAA antenna was developed to support the future National Polar-orbiting Operational Environmental Satellite System (NPOESS). Initial testing was completed in 2007 and deemed successful. Plans to use this capability in Svalbard to collect non-IJPS satellites was put on hold due to the launch of Metop-A and other technical issues with sharing equipment. In recent months the priority and interest of completing the ability to ingest data from the NPOESS antenna has been renewed. NOAA would like to take the action item to provide this document or a summary through the DBCP chairmen during the intersessional period.”

9.3.6 The local ground station network is composed of 56 stations and no new stations joined the network in 2008 (4 new ones in 2009). Based on a DBCP request to gain better coverage in Indian Ocean and South Atlantic an investigation into possible US Navy antennas in the Indian Ocean region was initiated. Unfortunately, we have discovered this year that there are no existing U.S. Navy antennas anywhere in the Indian Ocean region. The Navy has essentially abandoned their Diego Garcia Base so there are no opportunities for antenna partnerships in the region with them. In parallel, CLS kept investigating in 2009 other opportunities to cover the Indian Ocean as a first priority. An EUMETSAT owned antenna has been very recently installed in OMAN for meteorological purposes connected to the EUMETCAST satellite data telecommunication network. CLS has contacted EUMETSAT to benefit from this station already receiving NOAA and Metop satellites to benefit from it for ARGOS data collection retrieval (as with other “connected” EUMETSAT antennas). This agreement and its technical implementation is underway to benefit from such receiving facility before the end of the year 2009, improving significantly delays in North Indian Ocean.

9.3.7 The Panel was informed that, in 2010, CLS would continue searching for new antennas location to address South Atlantic and South Pacific delays issues.

9.3.8 Significant improvements in the data delivery times from the Hyderabad antenna were made following last year’s DBCP meeting. Unfortunately though, that antenna stopped working in July of 2009 and is still off-line at the time of this report. Globally the real-time availability of Argos datasets improved by 12% during the last 12 months, and observations were inserted onto the GTS more quickly by creating the bulletins in 2 minutes rather than 5 minutes.

9.3.9 In this context, a new project was launched (see Section 2.2 above) in 2009 with CNES with the aim to replace antennas in the existing Argos real-time network with antennas compatible with Argos-3 (NOAA & MetOp) + SARAL (Satellite with Argos and Altika) + Argos-4. Within this project, in view of the DBCP requirements, the first antenna is to be installed in the Indian Ocean. This could be done possibly by upgrading the station(s) at Reunion and/or Hyderabad as well as installing an antenna in a new location. There are very few suitable islands in the area though, especially in the central Indian Ocean. CLS is currently looking at the Seychelles, Socotra and the Cocos Islands as candidate sites.

9.4 Iridium operations and developments

9.4.1 The Panel chairperson, Mr David Meldrum, reported that operations of the Iridium satellite system had been stable throughout the intersessional period, apart from the loss of one of the 66 operational spacecraft following a collision with a defunct Russian satellite. This had caused limited service disruption while one of the remaining in-orbit spares was moved to fill the gap. At present attrition rates, the last of the in-orbit spares is expected to be put into service in 2014, by which time Iridium expects to have started the launch of the 'Iridium Next' replenishment constellation. The new constellation is planned to consist of 66 operational spacecraft plus 6 in-orbit spares, all of which will be backwards compatible with the existing system as well as offering higher bandwidth data services and the possibility of carrying third party earth observation payloads. Two candidates have been identified for building the new system, Lockheed Martin and Thales Alenia Space, and the successful contractor is expected to be announced soon. Use of the system has continued to grow in both commercial and defence sectors, and ownership of the company, now known as Iridium Satellite LLC, has been transferred to venture capitalists GHL Acquisition, who have recently launched the company on the US stock market.

9.4.2 Of particular interest to data buoy operators, the Short Burst Data (SBD) service allows the transmission of messages of up to nearly 2 kbytes to designated e-mailboxes or IP addresses. A new SBD modem, the 9602 measuring approximately 4x4x1cm, is to be released in mid 2010. Services are sold through a network of resellers ('VARs'), with SBD services typically costing in the order of \$14 per month plus \$1.50 per kbyte. The service has proved to be very reliable, continuously available throughout the day and extremely fast, with messages typically reaching their destination less than 30 seconds after transmission. As a result, many operators were already transitioning to or actively investigating Iridium as an alternative to other carriers, particularly as the future of the system seems to be relatively secure.

9.5 Additional Reports to be Presented, as Required: OceanObs'09

9.5.1 Under this agenda item, the Panel was reported on the outcome of the OceanObs'09 (21-25 September 2009, Venice Italy), by Ms Candyce Clark. As a follow-on to the OceanObs'99 Conference ten years ago, OceanObs'09 was organized to celebrate progress in implementing the existing initial ocean observing system, realizing societal benefits from it and highlighting its potential; and develop a process for building consensus for sustaining and evolving systematic and routine global ocean observations over the next 10 years in support of societal benefits. Over 600 scientists from 36 countries attended, and the 99 Community White Papers and 47 Plenary Papers will inform the refresh of the Global Climate Observing System Implementation Plan (GCOS-92). Panel members are urged to comment on all Papers (available <http://www.oceanobs09.net/>), especially those concerning buoys (**action, Panel Members, 31 October 2009**).

9.5.2 The agreed Conference Statement:

- Calls on nations and governments to fully implement by 2015 the initial global ocean observing system envisioned at OceanObs'99;
- Calls on nations and governments to commit to the implementation of systematic biogeochemical and biological observations, and to extend the international coordination of observations, archiving and dissemination to regional and coastal ecosystems, guided by the outcomes of OceanObs'09;
- Invites governments and organizations to embrace a Framework for planning and moving forward with an enhanced global sustained ocean observing system over the next decade, integrating new physical, biogeochemical, biological observations while sustaining present observations. Recommendations on this Framework, considering how to best take advantage of existing structures, will be developed by an post-

Conference working group of limited duration;

- Urges the ocean observing community to increase our efforts to achieve the needed level of timely data access, sensor readiness and standards, best practices, metadata, uncertainty estimates, and integrated data set availability, and;
- Asks governments, organizations, and the ocean observing community to increase their efforts in capacity-building and education.

10. ORGANIZATIONAL ISSUES

10.1 JCOMM Observing Programme Support Centre

10.1.1 The Secretariat reported on the developments during the last intersessional period regarding the selection process for an ocean Observing Programme Support Centre (OPSC) and following a call for proposals issued in xx 2007 by the WMO and IOC to host the future OPSC:

- Fifteen Letters of Intent (LoI) have been received from 13 countries and an evaluation committee lead by the JCOMM Co-Presidents established. The committee included representatives from the DBCP, Argo, the SOT, and the Secretariat;
- The evaluation was made in two steps. In the first step, a short list of five candidates was proposed for undergoing further evaluation;
- In the second step, the evaluation committee was expanded by the JCOMM Management Committee to include representatives from the Argo Steering Team, the DBCP, the SOT, OceanSITES, the IOCCP, GLOSS, WIGOS, the OOPC, and the WMO and IOC Secretariats. Candidates were objectively evaluated against the following criteria (i) scientific activities related to the use of ocean observations; (ii) significant involvement in implementation of ocean observing systems; (iii) operational 24H IT support and GTS access; (iv) cost effectiveness for Members voluntarily contributing financially to the OPSC; (v) commitment to long-term support for the OPSC; and (vi) risks;
- The CLS-Coriolis (France) proposal came first in total scores, first in scores for 5 out of 6 criteria, and first in overall ranking by 6 out of 8 team members. Other proposals get (not surprisingly) very honourable scores and rankings. The evaluation committee proposed to IOC and WMO to retain the French proposal and to enter into negotiations with CLS-Coriolis on the details of their offer in order to bring further benefits to OPSC and its staff and to clarify the role of the Brest centre in view of the strongly relevant science being pursued there. The committee proposed to; warmly thank the other candidates for their highly relevant proposals, largely in accordance with the requirements of the OPSC, and to, explicitly state the reasons for accepting the CLS-Coriolis proposal over those from NOAA and INCOIS;
- The evaluation Committee engaged in a negotiation with the selected institution. This resulted in the offering of a part-time science Coordinator by IFREMER to support the Project Office function of the OPSC (see Terms of Reference in Appendix E), as well as some additional IT support by CLS. At present, the WMO Secretary General and IOC Executive Secretary was expected to make a decision upon the evaluation results, and formally inform the CLS-Coriolis about the final decision and the conditions under which a Memorandum of Understanding could be signed. The unsuccessful institutions would also be informed of the decision;
- The third session of the JCOMM Observations Coordination Group, Paris, France, 9-11 March 2009 will be invited to review the draft Terms of Reference (ToR) for the OPSC,

in fact an expanded JCOMMOPS. The proposed draft ToR are provided in Appendix C.

10.1.2 The Panel endorsed actions listed above and recommended that JCOMM-III (Marrakech, 5-12 November 2009) adopt the new Terms of Reference for an expanded JCOMMOPS as reproduced in [Annex V](#).

10.2 Other JCOMM Activities

10.2.1 The Secretariat reported briefly on activities under or associated with JCOMM which have taken place since the previous session (October 2008), and were of direct interest to the Panel.

10.2.2 The Panel noted that several meetings had taken place during the intersessional period, involving JCOMM Panels and Programmes, as well as other relevant bodies. The Panel noted that major efforts were made within JCOMM to align its workplan and deliverables to WMO Expected Results and IOC Actions for High Level Objectives, in preparing the third Session of JCOMM (4-11 November, Marrakesh, Morocco), through the JCOMM Management Committee (JCOMM-III: Melbourne, December 2008) and other Coordination Group meetings including the Observations Programme Area (Paris, March 2009). The Panel agreed to cooperate for the execution of the plan.

10.2.3 With regard to the progress in developing a catalogue of JCOMM Standards and Best Practices, the Panel noted progress that the catalogue would be published on the web prior to JCOMM-III. The ODP-WIGOS Pilot Project for IODE and JCOMM also deals with the standard process for ocean data management – it was further reported and discussed under agenda item 10.5.

10.2.4 The Panel noted the development within the JCOMM Data Management Programme Area of an “Oceanographer’s and Marine Meteorologist’s Cookbook for Submitting Data in Real Time and In Delayed Mode”. The first version of the “cookbook” would be available by JCOMM III, which would provide information on procedures required to provide data for exchange, who to contact for assistance and other practical matters, not only for real time but also for delayed mode data. Completion of the Cookbook would require assistance from the OPA. The Panel requested its Technical Co-ordinator to continue participating in this exercise (**Action: Technical Coordinator, ASAP and ongoing**).

10.2.5 The Panel members were informed of the joint project of the JCOMM Expert Team on Marine Climatology (ETMC) and Expert Team on Wind waves and Storm surges (ETWS) to develop an extreme waves data base, for waves exceeding 12 m significant wave height. A template for documenting extreme wave occurrences and associated metadata would be developed at the 3rd Session of the ETMC, scheduled for February 8-12, 2010 in Melbourne Australia. The database would subsequently be hosted at the NOAA/NODC. Panel Members were invited to contribute via this template (**Action: Panel Members, from when the procedure would be set up**) to this database when such events would be observed by data buoys.

10.2.6 The Panel noted that the main decisions regarding the JCOMM structure, strategy, and intersessional workplan would be taken place at JCOMM-III, and was invited to review proposed decisions and documents at <ftp://ftp.wmo.int/Documents/SESSIONS/JCOMM-III/>.

10.3 Report on governing body meetings of WMO and IOC

10.3.1 The Panel recalled that its contribution towards WMO Strategic Planning was mainly related to Expected Result No. 4, Integration of WMO Observing Systems, addressed under agenda item 11.5 (WIGOS). The Panel noted the following outcome from the sixty-first Executive Council of WMO (Geneva, 3-12 June 2009):

- *“Noting that the percentage of completion of the overall ocean observing system stayed at the 60 per cent level since EC-LX, the Council requested Members to commit additional resources to eventually ensure full implementation and sustainability of the observing components within their responsibility. In particular, the Council noted that, although the surface drifter network was in principle fully implemented, this did not apply to all drifter instrumentation, including atmospheric pressure measurements. The Council therefore urged Members to participate in the DBCP barometer upgrade scheme and install barometers on all drifting buoys.”*
- *“The Council requested JCOMM to coordinate the development of cost-effective global in situ wave observing technology in support of the monitoring of extreme wave events for disaster risk reduction, wave modelling, and the calibration and validation of satellite wave measurements, and invited Members to assist in the development of technology through deployment, testing of prototypes, and evaluation of wave measuring instruments. The Council further requested JCOMM to address the establishment of a network of moored wave rider buoys to cover, in particular, data sparse ocean areas where storms are generated and propagated. The Council urged Members who have island territories under their jurisdiction to consider installing such equipment and exchanging the data obtained through the GTS.”*
- *“The Council noted the proposal from the WIGOS Pilot Project for JCOMM to establish Regional Marine Instrument Centres (RMIC) and invited Members to consider offering national facilities to act as such on a trial basis in order to prove the RMIC concept.”*

10.3.2 The Panel noted that the EC decisions were entirely consistent with the DBCP Implementation Strategy. It requested its members to work pro-actively nationally in order to achieve the goals proposed by EC-LVI as detailed above (**Action; members; DBCP-26**).

10.3.3 The Panel noted that the Fourteenth Session of WMO Regional Association II, Tashkent, Uzbekistan, 5-11 December 2008, urged Members to participate actively in the North Pacific Data Buoy Advisory Panel (NPDBAP) and nominate a co-Chairperson for representing Asia. The Association recommended that its Members work closely with the DBCP, the ISABP, the Global Drifter Programme, and Argo for providing deployment opportunities for drifting buoys and profiling floats in data sparse areas. The Association urged its Members to install barometers on all drifters they are planning to deploy in the Indian and North Pacific Oceans.

10.3.4 The IOC Secretariat recalled the IOC Resolution EC-XXXIX.1 (IOC Draft Medium-Term Strategy 2008 - 2013) which decided on the high-level objectives and associated activities of the Commission. Based upon this reference, the 25th Assembly (June 2009, Paris: <http://www.ioc-unesco.org/ioc-25>) adopted the IOC Biennial Strategy for 2010 - 2011 which defines Biennial priorities and expected results for the Commission, as given in the IOC Resolution XXV-14.

10.3.5 The IOC Secretariat reported on the instruction from IOC Assembly to JCOMM III: it was pleased by the proposed JCOMM workplan that was well aligned with the IOC Actions for High Level objectives, and instructed JCOMM to continue its good work particularly with close collaboration with IOC/IODE. The Assembly endorsed the following priorities for the future, to be considered by JCOMM at its third session:

- Enhanced implementation of the ocean observing system, including close coordination with pilot projects and programmes, such as Argo and OceanSITES, and support for the IPY legacy projects SOOS and SAON;
- Development of standards and best practices for operational ocean and marine meteorological data, products and services;

- Joint work with IODE on data management standards, the IODE Ocean Data Portal and the WIGOS Pilot Project;
- Scientific and technical support for marine hazard forecasting systems, particularly for vulnerable coastal areas;
- Further work to standardize, facilitate and apply operational ocean forecasting systems

10.3.6 The Panel was reported that the IOC Executive Council and Assembly have worked on the selection process of the IOC Executive Secretary. It was noted that, the newly appointed Executive Secretary would commence the duty as of January 2010..

10.4 Report on GOOS/OOPC activities

10.4.1 The GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC) appreciates the efforts of the DBCP, as a critical part of the backbone of the in situ ocean observing system, and asks that the DBCP:

- keep focused on delivering data with metadata and QC to agreed standards in as close to real time as possible
- ensure a system approach to funding, implementation and monitoring
- ensure ocean data system makes these data available to all prospective users and can also provide useful delayed mode QC
- keep strong two-way interactions with the JCOMM Services and Data Management Programme Areas and other users.
- keep research and operations as close as possible.
- Ensure broad and dedicated input into the Community White Papers, as part of the OceanObs'09 process.

10.5 WMO Integrated Global Observing Systems (WIGOS)

10.5.1 The Secretariat reported on recent developments with regard to the WMO Integrated Global Observing System (WIGOS). The Panel noted that its contribution to the JCOMM Pilot Project for WIGOS was so far essentially realized through the following elements:

Instrument Best Practices

- The DBCP Task Team on Instrument Best Practices and Drifter Technology Developments is addressing instrument evaluation issues, reviewing and recommending best practices, and working on specific technical issues in order to facilitate standardization, and propose buoy design changes;
- The Pilot Project on Wave measurement Evaluation and Test from moored buoys (PP-WET) is conducting instrument inter-comparisons, and working at publishing the results;
- The US National Data Buoy Centre has volunteered to act as a WMO-IOC Regional Instrument Centre (RMIC) on a trial basis; it has been proposed to organize a metrology workshop in early 2010 in order to test concept;

Interoperability with the WMO Information System (WIS)

- The Panel recommends the distribution of all buoy data onto the GTS;
- The RNODC/DB operated by ISDM has been identified as a key dataset for which interoperability with the Ocean Data Portal (ODP) and the WIS should be provided;

Quality Management

- The Panel recommends the making of automatic real-time quality control checks before inserting buoy data on the GTS; these are documented in DBCP Technical Document No. 2¹;
- The DBCP Quality Control guidelines permit the relay of delayed mode quality information from data users back to platform operators; these are documented via the DBCP web site²;

10.5.2 The Panel noted the need to review and update the following Publications from a marine/ocean observations perspective in order to make them consistent to each other and reflect latest technological progress:

- IOC Manual and Guides No. 4, Guide to Oceanographic and Marine Meteorological Instruments and Observing Practices³
- IOC Manual and Guides No. 26, Manual of Quality Control Procedures for Validation of Oceanographic Data⁴
- WMO No. 8, Guide to Meteorological Instruments and Methods of Observations (CIMO Guide)⁵;
- WMO No. 544, WMO Manual on the Global Observing System (GOS)⁶;
- WMO No. 488, WMO Guide to the Global Observing System (GOS)⁷;

10.5.3 The Panel noted with interest that the JCOMM Pilot Project for WIGOS was proposing a strategy whereby those Publications would initially be updated for instrument practices related to the measurement of SST and/or surface meteorological variables. The Pilot Project proposed to establish one or two task teams to carry out this work. The Panel requested the DBCP Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBP) to liaise with the Pilot Project Task Team(s) once/if established, and invited TT-IBP members to consider participating as members (**Action, TT-IBP, ASAP**). The Panel also noted that the Pilot Project proposed contracting expert(s) to review those Publications from a platform perspective. It was considered that substantial benefits for the overall ocean observations community could be expected from this work in terms of standardization of ocean measurements. Related discussion is noted under Agenda Item 11.

10.5.4 The Panel noted that the changes proposed to WMO No. 8 will have to be submitted through Krunoslav Premec (Croatia), Rapporteur on the CIMO Guide. The changes proposed to WMO No. 544 and No. 488 will have to be submitted to Alexander Vasiliev (Russian Federation), CBS Rapporteur on Regulatory Material, for review before March 2010 in order for such changes to be considered by the CBS Implementation Coordination Team on Integrated Observing Systems (ICT-IOS) (Sept. 2010) and approved by the CBS in 2011.

10.5.5 The Panel also decided to publish a new DBCP Technical Document that would include

1: <http://www.jcommops.org/doc/satcom/argos/Argos-GTS-sub-system-ref-guide.pdf>

2: <http://www.jcommops.org/dbcp/2qgd.html>

3: <http://unesdoc.unesco.org/images/0005/000599/059947eo.pdf>

4: <http://unesdoc.unesco.org/images/0013/001388/138825eo.pdf>

5: http://www.wmo.int/pages/prog/www/IMOP/publications/CIMO-Guide/CIMO_Guide-7th_Edition-2008.html

6: http://www.wmo.int/pages/prog/www/OSY/Manuals_GOS.html

7: ftp://ftp.wmo.int/Documents/MediaPublic/Publications/WMO488_GOSguide/488_Guide_2007.pdf

information on DBCP recommended quality control procedures (i.e. automatic real-time QC checks, as well as DBCP quality control guidelines for quality information feedback from data users to platform operators) made generic with regard to satellite data telecommunication systems. It asked the Technical Coordinator complete the draft and circulate it to the Task Team on Data Management with a view to publishing the document during the next intersessional period (**Action; TC & TT-DM; DBCP-26**).

10.5.6 The Panel noted the organization of a marine metrology workshop at NDBC in early 2010 for Regional Association IV Members. The Panel thanked NDBC for hosting it, and encouraged DBCP members from the region to participate at the workshop.

10.6 Financial situation

10.6.1 The Meeting noted with satisfaction the positive and secure cash balance of funds totaling USD 379,693 as of 31 December 2008, as shown in [Annexes VII, VIII, and IX](#).

10.6.2 The budget items including Capacity Building, Collaborative Arrangement and New Technical Evaluation were kept since 2007. In 2008, USD 1,966 ([Annex IX](#), Table 2) was charged to the Capacity Building line item for late payment of the financial support of the Training Course on Buoy Programme Implementation and Data Management (Ostend, June 2007). Also USD 25,004 was charged to the New Technical Evaluation line item for the 27 drifters in the DBCP/Iridium Project for upgrade, activation and airtime.

10.6.3 The IOC Interim Statement for the period 1 January – 31 July 2009 is provided in [Annex VII \(Table 1\)](#). It shows a positive balance of USD 176,677 as of 31 July 2009. During this period, contribution was received from NOAA on the IOC accounts for DBCP.

10.6.4 The WMO Interim Statement for the period 1 January – 31 July 2009 is shown in [Annex VII \(Table 2\)](#). It shows a positive balance of USD 272,759. USD 2,875 corresponding to expenditures for the Iridium Pilot Project was charged as a reimbursement to SAMS to the line item New Technical Evaluation.

10.6.5 The IOC Interim Statement and the WMO Interim Statement are included in the Interim Statement of Accounts for the DBCP/SOOP Trust Fund, as given in [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-XXIV (2008).

10.6.6 The Panel noted the status and plans for contributions from the countries for the year 2009, as given in [Annex VIII](#) as well as in [Annex IX \(Table 2\)](#). The Panel expressed its appreciation to all donors for their invaluable contribution to the Panel's activities. In the meantime, the Panel recognized the perennial problem of identifying additional financial contributions, and urged all participants to actively explore funding opportunities (**Recommendation**) in order to meet the requirements for maintaining and developing Panel's activities.

10.6.7 The meeting made the following **Recommendations** and **Decisions**:

- Recognizing that the exchange rate between the US dollar and the Euro is continuing to effect the DBCP budget, the Panel encourages the Members once more to consider contributing to the DBCP/SOOP Trust Fund in Euros;
- At DBCP-XXIII it was decided to include estimated budget figures for the different activities. Maintaining the level of these figures will result in a negative estimated budget as from 2010 (see Appendix Z, Table2). The actual spending however is below the estimations. The Panel recommended the Executive Board to review the level of estimated budget figures for 2010-2011;

- On the advice of the Panel members from Australia, New Zealand and the United States the Panel agreed to introduce a separate budget line item for SOT expenditure and to allocate, in addition to the current German and US contribution, 50% of the Australian and New Zealand contribution to this budget line;
- The Panel decided to allocate \$ 15,000 as a maximum from the budgeted "New Technical Evaluation" line item to upgrade Iridium buoys with barometric pressure sensors;
- The Panel also agreed to allocate \$ 10,000 additionally to the "Outreach and Publications" line item for DBCP volunteer(s) or paid consultants to be recruited to update relevant WMO and IOC manuals and guides provided there is matched funding from other sources (see Agenda item 11);
- For financial support to the Vice-Chairperson for Asia to encourage Members in the Asian region to contribute to the DBCP Trust Fund, the Panel agreed to allocate \$ 10,000 under the budgeted "Collaborative Arrangement" line item.

10.6.8 The Meeting decided on the following action items:

- **Action1:** The Executive Board, authorized by the Panel, and taking in account the decisions and recommendations made at the twenty-fifth session of the DBCP, will set a plan for the 2010 and 2011 expenditure. The Executive Board will liaise with Mr Frank Grooters for updating the interim financial report with the most accurate and actual information. Deadline: 31 January 2010;
- **Action 2:** The joint Secretariats and Mr Grooters to work together to distribute the final statement for 2009 to the Panel members as soon as the IOC and WMO Final Statement of accounts for the year 2009 are finalized. Deadline: 1 March 2010.

11. REPORT AND RECOMMENDATIONS FROM THE EXECUTIVE BOARD SESSION

11.1 Executive Board Report from the In-session Meeting

11.1.1 The DBCP Executive Board (EB) convened during the evening of 29 September 2009 to discuss a number of issues that had arisen during the plenary session and to make recommendations to the Panel for its consideration. The full report of the EB is attached as [Annex VI](#).

11.1.2 The EB considered its membership, currently consisting of the chair and vice chairs, a Panel member and ex officio representatives from IOC, WMO and JCOMMOPS (the DBCP TC). It was felt appropriate to seek representation from the buoy manufacturing community, and the suggestion was made that the buoy manufacturers should arrange to elect a representative from amongst their number (**Recommendation**).

11.1.3 In general, the EB was of the opinion that there was a clear need for succession planning amongst the Panel's office bearers and recommended that the chair and vice chairs should generally serve for a term of 4 – 6 years (**Recommendation**). It further suggested that the Action Groups should consider invoking similar procedures.

11.1.4 The EB then moved to consider the poor statistics for data timeliness that had persisted for many years in the South Pacific, South Atlantic and Indian Oceans. Despite these concerns having been voiced repeatedly at Panel sessions, little improvement had been apparent. The EB therefore suggested that these areas be populated with Iridium SVP-Bs as soon as possible. Moreover, the Panel could, if it wished, apply the unused funds from the Iridium Pilot

Project (about \$15k) to pay for 30 Iridium upgrades for these areas. This would be an appropriate use of these funds, as the South Pacific and Indian Oceans had not been well evaluated in the course of the project, despite the best intentions of project participants. It therefore recommended that the Panel approve the use of the above funds to pay for Iridium upgrades for the South Pacific and Indian Oceans, provided other agencies (e.g. the GDP and Météo-France) could be identified to fund the basic SVP-Bs from their own budgets (**Recommendation**).

11.1.5 At its previous session, the Panel had approved a WMO request for the Panel to undertake the updating of a number of WMO Manuals and Guides. Nonetheless, no volunteers had yet come forward, and the EB felt that the Panel needed to become more proactive in discharging this action. It therefore recommended that the chair of the Task Team for Instrument Best Practices and Drifter Technology Developments (Mr W Burnett) take responsibility for identifying suitable authors, and, if needs be, to use Panel funds up to a maximum of \$10k to pay for the hire of a suitably qualified consultant (**Recommendation**). It further recommended that these funds should only be called upon only if matched funding from other sources could be identified (**Recommendation**).

11.1.6 With regard to the valuable SVP intercomparison exercises being regularly undertaken by the GDP (Ms Mayra Pazos), the EB noted that it was not currently possible to include platforms from Marlin-Yug because of the five-year procurement arrangements that were currently in place, and which specified only the four North American manufacturers. The EB felt that it would enhance the value of the intercomparison exercise to include Marlin-Yug, and recommended that up to \$10k of Panel resources be used to match-fund the procurement of five evaluation SVPs from Marlin-Yug (**Recommendation**).

11.1.7 The EB noted that the Panel had fallen somewhat behind with regard to its Capacity Building (CB) commitments, and that the \$25k set aside for this purpose in 2009 had yet to be used. It was therefore pleased to hear from EB member Dr Sidney Thurston that plans were well advanced for a CB Workshop in Pretoria in Feb 2010, and endorsed its earlier decision to allocate up to \$25k to this activity from the 2009 budget. It further recommended that funds already earmarked in the 2010 budget be used to support the mission costs of DBCP trainers that might be recruited to this workshop (**Recommendation**).

11.1.8 As regards the perennial problem of identifying additional financial contributions to the Panel's annual budget, the EB repeated its call to Panel participants to try to identify additional resources. It further recommended that participants from countries or organizations that did not currently contribute should actively explore funding opportunities, and that the Panel and the secretariats should give every assistance to these non-paying participants in preparing the case and approach to their funding bodies (**Recommendation**).

11.1.9 In this respect the EB greatly welcomed the initiative by its member Dr V Rajendran to convene a regional DBCP meeting in Asia with a view to recruiting additional countries to the Panel membership. The EB recommended that up to \$10k of Panel funding be made available to Dr Rajendran to assist him in this activity (**Recommendation**).

11.1.10 In the plenary session, the Panel thanked the EB for its activities on the Panel's behalf, both during the session described above and throughout the intersessional period, and unanimously approved all of the above-noted recommendations. It also thanked the representative of the WMO for his offer to seek matched funding for any documentation consultant that might be identified to deal with the WMO guide updates.

11.2 DBCP implementation strategy

11.2.1 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. The Chair asked the Panel to review the document at

http://www.icommops.org/doc/DBCP/DBCP_Impl_Strategy.pdf and to forward any comments to the Chairperson by the end of November 2009 (action, Members, by November 2009).

11.2.2 The Technical Coordinator presented a proposed text of the DBCP Data Policy, which is to be a part of the Operating Principles (*Annex III*). The Panel is encouraged to review the Draft Data Policy and provide feedback to the TC (**action: Panel members, by October 2009**)

11.3 New Action Groups

11.3.1 The Panel had already heard a convincing case from the International Tsunami Partnership (ITP) under agenda item 8.1, and unanimously agreed that the ITP become a new Action Group forthwith. It thanked the ITP Chair, Mr Ken Jarrott, for his efforts in this regard.

11.3.2 The Panel had also heard arguments in favour of the sea mammal trackers becoming an Action Group, given the considerable progress they were making in reporting near-real-time hydrographic profiles from remote and previously undersampled ocean areas, such as from underneath Antarctic ice sheets. However no official approach had yet been received, and the Panel therefore urged these groups to come together and make a concerted submission to the Panel regarding possible Action Group status. The Panel noted that such status could well be beneficial to the sea mammal trackers in other fora, by heightening their international visibility and increasing their ability to negotiate effectively with equipment and service providers.

11.4 Employment Condition of the Technical Coordinator

11.4.1 The IOC Secretariat reported that negotiations with the IOC and UNESCO with regard to securing the long-term employment of the Panel's TC were now nearly complete, and that the unsatisfactory arrangements of the UNESCO Appointment of Limited Duration (ALD) would no longer apply. Nonetheless, the Panel would be obliged to invoke a formal recruitment process, involving external advertising and an interview process. It was expected that the creation of a short list of possible candidates would be completed by end-April 2010, and that thereafter the process should be completed rather rapidly, with a new contract in place in time for the end of the current ALD.

11.4.2 The Panel also noted that it would be required to demonstrate that it had sufficient funds at its disposal (approx \$200k) to fully cover the most expensive annual employment and benefit costs that might befall it on appointment of a new TC, and that it would, furthermore, be obliged to cover all costs associated with the recruitment process. Nonetheless, it recognized that the new arrangements were a very significant step forward for the Panel and its TC, and it warmly thanked the IOC Secretariat for the considerable efforts it had made on the Panel's behalf. The Panel requested the IOC Secretariat to report on the progress and/or results of the new recruitment process at the next Session in 2010 (**Action, IOC Secretariat, DBCP-XXVI**).

11.5 Work plan and Priorities for the Panel and the Technical Coordinator

11.5.1 As was by now customary, 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 X*.

11.5.2 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 X*).

11.6 Operating Principles

11.6.1 These principles were not discussed (apart from the DBCP data policy now to be part of the operating principles), although the Panel noted that the document describing them would be updated in the light of the Panel's decision at this session. The operating principles are attached as [*Annex III*](#).

11.6.2 The Panel recalled the dynamic nature of the document and invited its members to provide the Chairperson with comments by the end of the year (**Action, members, 31 December 2009**).

12. NATIONAL REPORTS

12.1 The Panel received verbal and/or written reports on current and planned buoy programmes from Australia, Brazil, Canada, China, France, Germany, India, Japan, Malaysia, New Zealand, Republic of Korea, South Africa, and USA. As usual, these written reports, as well as others submitted to the Secretariat before 30 November 2009, would be published in the Panel's Annual Report (**Action, Members and Secretariat, 30 November 2009**).

13. ELECTION OF THE CHAIRPERSON AND THE VICE-CHAIRPERSONS OF THE PANEL

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

13.2 The Panel elected Mr Jean Rolland (Météo-France, France) to serve as Vice-chairperson for Europe.

13.3 The Panel re-elected Dr Velayutham Rajendran (NIOT, India) as its Vice-chairperson for Asia.

13.4 The Panel re-elected Mr Ken Jarrott (BOM, Australia) as its Vice-chairperson for the Southern Hemisphere, for the same period.

14. DATE AND PLACE OF THE NEXT SESSION

14.1 The Panel recalled its agreement at DBCP-23 to hold DBCP Sessions either in Paris or Geneva every other year as of its Twenty-fifth session.

14.2 The Panel welcomed the offer from the Scottish Association for Marine Science for hosting its 26th session in Scotland, United Kingdom. Tentative dates for the session were agreed to be from 27 to 30 September 2010, ensuring minimum duplication with schedules for events of other JCOMM and related programmes. The Panel requested the host provide further details and fixed venue as soon as possible (action, David Meldrum, ASAP).

15. ADOPTION OF THE SESSION REPORT

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

15.2 The Panel also decided, as of the next session in 2010, to add a new agenda item on review action items from previous sessions (**Action, Secretariats and Panel, ongoing**).

16. CLOSURE OF THE SESSION

16.1 In closing the session, the outgoing Chairperson Mr David Meldrum and incoming Chairperson Mr Al Wallace thanked the participants, the Technical Coordinator, the Executive Board, the Task Team chairs, the Action Groups and the Secretariat for their active and positive contributions to the meeting and to the work of the panel in general.

16.2 All participants praised and thanked the outgoing Chairperson, Mr. David Meldrum, for his tremendous contribution and dedicated service to the panel, its members and activities, over many years, and wished his continuous involvement in the Panel activities for coming years.

16.3 The twenty-fifth session of the Data Buoy Cooperation Panel closed at 1700 on Thursday 1 October 2009.

ANNEX I

AGENDA

- 1. Opening and Welcome**
- 2. Scientific and Technical Workshop**
- 3. Reports from the Chairperson, Vice Chairpersons and the Executive Board**
 - 3.1 Report by the Chairperson of the DBCP
 - 3.2 Reports by the DBCP Vice-chairpersons
 - 3.3 Report by the DBCP Executive Board
- 4. Report from the Technical Coordinator**
- 5. Reports from the Task Teams**
 - 5.1 Task Team on Data Management
 - 5.2 Task Team on Instrument Best Practices and Drifter Technology Developments
 - 5.3 Task Team on Moored Buoys
 - 5.4 Task Team on Capacity Building
- 6. Reports from the Action Groups**
 - 6.1 E-SURFMAR
 - 6.2 GDP
 - 6.3 IABP
 - 6.4 IBPIO
 - 6.5 IPAB
 - 6.6 ISABP
 - 6.7 NPDBAP
 - 6.8 OceanSITES
 - 6.9 TIP
- 7. Pilot Projects**
 - 7.1 Iridium Pilot Project
 - 7.2 Pilot Project for the evaluation of Argos-3 technology
 - 7.3 Pilot Project on Wave Measurement from Drifters
 - 7.4 Pilot Project on Wave measurement Evaluation and Test from moored buoys
- 8. Issues for the Panel**
 - 8.1 International Tsunameter Partnership
 - 8.2 Information Exchange
 - 8.3 Deployment opportunities and strategies
 - 8.4 GTS delays and data dissemination
 - 8.5 Vandalism
 - 8.6 Metadata
 - 8.7 Technological developments in support of user requirements
 - 8.8 Other issues to be discussed, as proposed by the Task Teams
- 9. Information Reports**
 - 9.1 Argo

- 9.2 Buoy data management centres
- 9.3 Argos operations and developments
- 9.4 Iridium operations and developments
- 9.5 Additional reports to be presented, as required

10. Organizational Issues

- 10.1 JCOMM Observing Programme Support Center
- 10.2 Other JCOMM activities
- 10.3 Report on governing body meetings of WMO and IOC
- 10.4 Report on GOOS/OOPC activities
- 10.5 WMO Integrated Global Observing Systems (WIGOS)
- 10.6 Financial situation

11. Report and Recommendations from the Executive Board Session

- 11.1 Executive Board report from the in-session meeting
- 11.2 DBCP implementation strategy
- 11.3 New Action Groups
- 11.4 Employment condition of the Technical Coordinator
- 11.5 Workplan and priorities for the Panel and the Technical Coordinator
- 11.6 Operating Principles

12. National Reports

13. Election of the Chairperson and Vice-Chairpersons of the Panel

15. Date and Place of the Next Session

17. Adoption of the Session Report

18. Closure of the Session

(The Executive Board meeting takes place separately in day 2 of the session, before the discussion on Item 11.)

ANNEX II

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ANNEX III

OPERATING PRINCIPLES OF THE DATA BUOY CO-OPERATION PANEL (DBCP) (as adopted at DBCP-XXV)

1. INTRODUCTION

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

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

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

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

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

2. PANEL MEMBERS AND PARTICIPANTS

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

2.2 Participants in the DBCP activities can be operational agencies, meteorological and oceanographic institutes, research agencies, data centres, governmental and non-governmental organizations, and commercial services interested in the global oceans who actively contribute to the aims of the Panel. Individuals with an interest in data buoy activities are also welcome to

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

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

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

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

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

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

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

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

4. TASK TEAMS

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

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

5. ACTION GROUPS

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

Appendix III.

6. IMPLEMENTATION STRATEGY

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

7. WORKPLAN

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

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

8. FUNDING

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

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

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

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

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

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

8.7 The WMO and IOC Secretariats provide finalized financial statements of account on an annual basis to the Panel in early Year+1 as soon as the organizations' fiscal year accounting is finalized. The Panel also reviews its financial situation at regular Panel sessions, with interim statements of the budget provided by the WMO and IOC Secretariats.

8.8 The Panel may appoint a Panel Member as finance advisor to act on its behalf of and to

work with the WMO-IOC Joint Secretariat to produce a consistent, comprehensive and comprehensible set of annualized accounting reports to be presented to the Panel and its Executive Board at their regular meetings (see *Appendix X* for currently appointed person).

9. ORGANIZATION AND CONDUCT OF THE DBCP SESSIONS

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

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

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

10. INFORMATION EXCHANGE AND REPORTING

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

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

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

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

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

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

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

- the Executive Board;
- the Technical Co-ordinator;

- the Action Groups (annual basis), and
- the Member Countries (annual).

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

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

a. A 2-page covering letter containing important information for decision makers, including:

- Executive summary of the Panel's achievements, activities and aspirations for the current year; and
- Table of national contributions.

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

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

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

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

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

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

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

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

11. ROUTINE TASKS OF THE TECHNICAL CO-ORDINATOR

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

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

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

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

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

11.5 The Technical Co-ordinator also participates actively in buoy quality monitoring as defined in the DBCP Quality Control Guidelines ([details on the DBCP website](#)). 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.

12. REVIEW OF THE MANAGEMENT STRUCTURE AND OPERATING PRINCIPLES

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

APPENDIX I

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

The Data Buoy Co-operation Panel shall:

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

1. Co-ordinate activity on existing programmes so as to optimize the provision and timely receipt of good quality data from them;
 2. Propose, organize and implement, through the co-ordination of national contributions, the expansion of existing programmes or the creation of new ones to supply such data;
 3. Support and organize as appropriate such Action Groups as may be necessary to implement the deployment of data gathering buoys to meet the expressed needs of oceanographic and meteorological programmes such as WWW, WCRP, GOOS and GCOS;
 4. Encourage the initiation of national contributions to data buoy programmes from countries which do not make them;
 5. Promote the insertion of all available and appropriate buoy data into the Global Telecommunication System;
 6. Promote the exchange of information on data buoy activities and encourage the development and transfer of appropriate technology;
 7. Ensure that other bodies actively involved in buoy use are informed of the workings of the Panel and encourage, as appropriate, their participation in the Panel deliberations;
 8. Make and regularly review arrangements to secure the services of a Technical Co-ordinator with the terms of reference given in Part B;
 9. Report formally to the Joint WMO / IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), and participate in and contribute to an integrated global operational ocean observing system, implemented and co-ordinated through JCOMM; and
 10. Submit annually to the Executive Councils of the WMO and the IOC, to JCOMM and to other appropriate bodies of WMO and IOC, a report that shall include summaries of the existing and planned buoy deployments and data flow.
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APPENDIX II

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

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

1. Under the direction of the Data Buoy Co-operation Panel take all possible steps within the competence of the Panel to assist in the successful achievement of its aims;
 2. Assist in the development, implementation, and management of quality control procedures for data buoy systems;
 3. Assist in setting up suitable arrangements for notifying the appropriate user communities of changes in the functional status of operational buoys;
 4. Assist in the standardization of buoy data formats, sensor accuracy, etc.;
 5. Assist when requested with the development of cooperative arrangements for buoy deployment;
 6. Assist in the clarification and resolution of issues between Service Argos and buoy operators;
 7. Assist in promoting the insertion of all available and appropriate buoy data into the Global Telecommunications System;
 8. Supply information about buoy developments and applications to the WMO and IOC Secretariats and assist the Data Buoy Co-operation Panel to promote an international dialogue between oceanographers and meteorologists;
 9. Coordinate and monitor the flow of buoy data into appropriate permanent archives.
-

APPENDIX III

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

1. A DBCP Action Group is an independent self-funded body that maintains, as a significant element of its responsibilities, an observational buoy programme providing meteorological and oceanographic data for real-time and / or research purposes in support of the World Weather Watch (WWW), the World Climate Research Programme (WCRP), the Global Climate Observing System (GCOS), and the Global Ocean Observing System (GOOS), and other relevant WMO and IOC programmes.
 2. Action Groups of the DBCP shall support the aims and objectives of the DBCP - as set out in the Terms of Reference of the DBCP - particularly with respect to:
 - Provision of good quality and timely data to users;
 - Insertion of real-time (or near real-time) data into the GTS;
 - Exchange of information on data buoy activities and development and transfer of appropriate technology.
 3. An Action Group may be regional or national in nature provided that its programme benefits a regional or international community.
 4. To be adopted as an Action Group of the DBCP, the Terms of Reference or operating principles of the body or programme shall be submitted to a session of the DBCP for formal approval. Once approved these shall be lodged with the Secretariats of WMO and IOC.
 5. The DBCP shall support the activities of its adopted action groups especially through the assistance of its key personnel (technical co-ordinator and the Secretariats of WMO and IOC) as far as resources allow.
 6. Action Groups of the DBCP shall submit annual reports of their activities to the Chairperson of the DBCP.
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APPENDIX IV

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

The DBCP Executive Board shall:

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

Membership:

The following individuals are members of the DBCP Executive Board:

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

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

Note 2: Any Panel Member may attend DBCP annual Executive Board meetings as an observer, subject to the availability of adequate meeting room space. If required, the Chairperson of the DBCP Executive Board will make a final decision as to which observers may attend, and may also invite other persons to attend at his / her discretion.

APPENDIX V

TERMS OF REFERENCE OF THE DBCP TASK TEAMS

TERM OF REFERENCE OF THE TASK TEAM ON DATA MANAGEMENT

(as adopted at DBCP-XXIV)

The DBCP Task Team on Data Management shall:

1. Receive and review reports from the Data Management Centres specializing in buoy data, i.e., (i) the Météo-France SOC / DB, and (ii) the ISDM, Canada RNODC / DB; reconcile any overlaps with emphasis on differences;
2. Liaise with the DBCP Task Team on Quality Management for compiling table driven coding requirements for data buoy observations, for all relevant applications, and submit them in a consolidated way to the DMPA Task Team on Table Driven Codes;
3. Address issues to do with real-time distribution of data, including GTS issues, timeliness and methods to improve data / flows;
4. Address issues relating to delayed-mode distribution and archiving of the data;
5. Seek input from data users on which instrumental metadata is most important and how it is best managed and coordinate these activities with the JCOMM Meta-T Project;
6. Review all relevant JCOMM Publications, to make sure they are kept up-to-date and comply with Quality Management terminology;
7. Follow-up with regard to the development of the WIGOS Pilot Project for JCOMM and make sure that the developments proposed by the Task Team are consistent with the WIGOS and WIS requirements;
8. Make recommendations to the DBCP Executive Board or the DBCP for addressing the issues above; and
9. Report to the DBCP Executive Board and the DBCP at its biennial Sessions.

Membership:

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

Ms Mayra Pazos (TT Chairperson and GDP representative);
Mr Bruce Bradshaw (RNODC representative);
Mr Jean Rolland (SOC representative);
Mr. Pierre Blouch (France);
Mr Johan Stander (SAWS);
Dr Bill Burnett (NDBC data manager);
Mr Christian Ortega (CLS data manager);
Ms Hester Viola (DBCP Technical Co-ordinator (*ex officio*));
Mr Jeff Wingenroth (Technocean Inc.), and;
Ms Emily MacPherson (MetOcean).

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

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

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

Instrument Best Practices and Quality Management

1. When required by the DBCP, evaluate quality of buoy data produced by specific types of buoys, as well as functioning, efficiency;
2. Review existing practices for automatic real-time buoy data quality control, and delayed-mode buoy data quality control, and possibly suggest design changes for improvement (sensors, hardware, software, data formats) in liaison with the Task Team on technological developments;
3. Address instrument evaluation issues; suggest specific tests and / or evaluation deployments in different sea conditions to DBCP members in order to evaluate buoy quality as described in (1) above;
4. Share experience and results of evaluation with the DBCP and other interested parties;
5. Review and recommend Best Practices; work on specific technical issues in order to facilitate standardization and liaise with the other DBCP Task Teams as appropriate (e.g., DBCP recommended Argos message formats); and
6. Define specific criteria for evaluation purposes (e.g. ocean areas, definition of acceptable quality data, e.g., early failures, lifetimes, delays, accuracies, resolutions, etc.);

Drifter technology developments

7. Investigate developments in the fields of sensor technology, on-board processing, buoy hardware, hull design, energy generation and storage in order to better meet user requirements in terms of the range, reliability and quality of observed parameters and their cost-effectiveness;
8. Regularly review and document operational and upcoming satellite telemetry systems in terms of their ability to address user requirements such as bandwidth, timeliness, availability, geographical coverage, reliability, service quality, technical support, energy consumption and cost; and make specific recommendations to the communications service providers on required / desired enhancements;
9. Review operational platform location systems, and whether they meet the user requirements;
10. Propose to the DBCP and its Executive Board any evaluation activities and pilot projects that it deems beneficial to data buoy operators;
11. Propose recommendations, both upon request and unsolicited, to the Argos Joint

Tariff Agreement. Such recommendations shall be passed via the DBCP Executive Board or the DBCP as appropriate; and

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

General

13. Review all relevant JCOMM Publications to make sure they are kept up to date, comply with Quality Management terminology, and adhere to the WMO Quality Management Framework (QMF);
14. Provide the DBCP Executive Board and the DBCP, both upon request and unsolicited, with technical advice needed for addressing the issues above; and
15. Submit reports to the DBCP Executive Board and to the DBCP at its annual session that describe intersessional activities and propose a Workplan for the next intersessional period.

Membership:

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

- Dr Bill Burnett, NDBC (TT Chairperson);
 - Mr Pierre Blouch, Météo-France;
 - Mr Shaun Dolk, NOAA / AOML;
 - Ms Julie Fletcher, MSNZ;
 - Mr Paul Freitag, NOAA / PMEL;
 - Mr Frank Grooters, KNMI;
 - Mr Michel Guigue, CLS;
 - Mr Ken Jarrott, BOM;
 - Mr Robert Jenson, USACE;
 - Mr Chris Marshall, Environment Canada;
 - Mr David Meldrum, SAMS;
 - Mr Sergey Motyzhev, Marlin Yug;
 - Mr Peter Niiler, SIO;
 - Mr Christian Ortega, CLS;
 - Ms Mayra Pazos, NOAA / AOML;
 - Mr Steve Piotrowicz, NOAA; and
 - Dr V. Rajendran, NIOT.
 - Dr M Ravichandran, INCOIS
 - Dr. Tim Richardson, Liquid Robotics
 - Mr Jean Rolland, Météo-France;
 - Mr Andy Sybrandy, Pacific Gyre;
 - Mr Jon Turton, UK Met Office;
 - Ms Hester Viola, Technical Co-ordinator, DBCP;
 - Mr Bill Woodward, CLS America;
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TERM OF REFERENCE OF THE TASK TEAM ON MOORED BUOYS
(as adopted at DBCP-XXIV)

The DBCP Task Team on Moored Buoys shall:

1. Review and document operational moored buoy systems and their underlying requirements;
2. Liaise with the different communities deploying moorings, including TIP, OceanSITES, seabed observatories, as well as national moored buoy programmes (coastal and global), and promote the development of multi-disciplinary mooring systems;
3. Liaise with the GOOS Scientific Steering Committee (GSSC) and its technical sub-panel for Integrated Coastal Observations (PICO) to facilitate synergy between advances in GOOS implementation and the development of operational capabilities, in particular, for sustained coastal observations, analysis and related services by using mooring systems;
4. Liaise with the JCOMM Expert Team on Wind Waves and Storm Surges (ETWS) regarding the need for in situ wave observations;
5. Compile information on opportunities for the deployment and / or servicing of moored buoys;
6. Monitor technological developments for moored data buoys and liaise with the Task Team on Technological Developments on satellite data telecommunication aspects;
7. Review all relevant WMO and IOC Publications on Instrument Best Practices (e.g., JCOMM, CIMO) to make sure they are kept up to date, address WIGOS issues, and comply with Quality Management terminology;
8. Provide the DBCP Executive Board or the DBCP with technical advice needed for developing moored buoy programmes, including the issues above; and
9. Report to the DBCP Executive Board and the DBCP at its biennial Sessions, with periodically updated Workplans supporting implementation.

Membership:

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

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

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

The DBCP Task Team on Capacity-Building shall:

1. Initiate, plan and coordinate the implementation of the Training and Capacity-Building work programme including, in particular, the regular Training Course on Buoy Programme Implementation and Data Management;
2. Keep under review existing training material (paper and electronic) and advise on updating as well as for the development of new material;
3. Review and assess national, regional, and global requirements for capacity-building and develop / improve programmes as appropriate;
4. Liaise with other capacity-building programmes in relevant areas to develop and implement integrated activities, to explore potential synergies and opportunities for efficiently using resources available; liaise in particular with the JCOMM cross-cutting Team on Capacity-Building;
5. Endeavour to mobilize the resources required for DBCP capacity-building, including those needed for the implementation of the Training Courses;
6. Make recommendations to the DBCP Executive Board and / or the DBCP for addressing the issues above; and
7. Report to the DBCP Executive Board and the DBCP at its biennial Sessions.

Membership:

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

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

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

The DBCP budget includes the following line items:

1. Contract for the Technical Co-ordinator¹;
2. JCOMMOPS logistical support²;
3. Travel of DBCP Chairperson³;
4. Travel for the Technical Co-ordinator³;
5. Travel of DBCP Representatives³;
6. Bank charge and support cost⁴;
7. Outreach and publication activities⁵;
8. JCOMMOPS Data/Development⁶;
9. JCOMMOPS information system migration⁷;
10. SOT (travel for the Technical Coordinator and/or Representatives);
11. Provision for termination / transition of the Technical Co-ordinator after 2010;
12. Technical developments and evaluations⁸;
13. Capacity-Building⁹;
14. Collaborative Arrangements¹⁰;
15. JTA Chairperson's contract¹¹;
16. JTA Executive Board and Secretariat support; and
17. Contingency.

1: Includes the salary and benefits;

2: Expenses shared with the Argo Information Centre (AIC). This includes office space and use of furniture, personal computer, licenses for basic office software, secretarial support, telephone, Internet and e-mail access, and miscellaneous office supplies;

3: Missions on behalf of the Panel;

4: Bank charges and service charges from the WMO and IOC for supporting the DBCP Trust Fund;

5: DBCP and JCOMMOPS brochures and DBCP Publications;

6: Hardware and software, and host IT support for developing, running, and maintaining the JCOMMOPS Information System;

7: Provision for the migration of the JCOMMOPS Information System;

8: For example, the DBCP Iridium Pilot Project;

9: Support for DBCP-related training courses: travel of trainers and / or trainees; training materials;

10: 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

11: This expenditure is balanced by an equivalent contribution of the JTA to the DBCP Trust Fund.

APPENDIX VII

Terms of Reference for the DBCP Trust Fund at WMO

(as adopted at DBCP-XXIV and further agreed by way of exchange of letters between the WMO Secretary General¹ and the DBCP Chairperson²)

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 9.7³, 9.8⁴ and 9.9⁵ of the WMO Financial Regulations (Resolution 37, Cg-XV);
3. The Fund shall be managed by WMO under its applicable rules and procedures, according to an annual budget adopted by the DBCP at its regular Sessions and any other directions provided by the DBCP;
4. The budget will be constructed according to a format agreed by the Panel, in which all income and expenditures will be identified in general articles and specific chapters. The format of the budget may be revised by the Panel as necessary. The budget may take note of other monies and resources made available for support of the DBCP activities, but which are not included as part of the Fund. Only those monies placed in the Fund, however, shall be subject to these terms of reference. The DBCP will provide WMO with details of the share to be borne by participating Members and contributors for invoicing purposes;
5. The DBCP Executive Board, under its Terms of Reference, may authorise in writing through its Chairperson the WMO Secretariat to commit any expenditure necessary for the resolution of these issues and the promotion of the Panel's aims and objectives, as long as these are consistent with the DBCP Operating Principles agreed by the Panel at its previous session;
6. The unit of account shall be the United States dollar. When commitments are made, the appropriate funds will be converted, as necessary, to the currency of commitment in at least the amount of the commitment;
7. The income of the Fund will include:
 - (i) Annual contributions from participating Members / Member States;
 - (ii) Funds deposited for specific purposes, hereafter referred to as deposits;
 - (iii) Other contributions from third parties;
 - (iv) Interest on investments as may be made by the Secretary-General in accordance with the provisions of Financial Regulation 12.2⁶ (Resolution 37, Cg-XV); and
 - (v) Miscellaneous income.

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

2: Letter from David Meldrum dated 5 January 2009

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

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

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

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

8. The Fund will be used as agreed by the DBCP to:
- (i) Finance technical and operational support services for the DBCP, including in particular for supporting its Technical Co-ordinator salary, benefits, logistical support, and missions; DBCP capacity-building activities; data buoy Technical Evaluation and DBCP Pilot Projects; consultancy and missions of experts acting on behalf of the Panel; practical arrangements for the deployment or servicing of buoys; promotion and exchange of information about the Panel activities;
 - (ii) Finance the share of the DBCP in supporting the activities of JCOMMOPS and the Observing Programme Support Centre (OPSC) as agreed by the Panel at its regular sessions;
 - (iii) Provide support to the Argos Joint Tariff Agreement within the resources set aside by the DBCP under these activities;
 - (iv) Assist in the establishment and operation of data buoy programmes;
 - (v) Meet appropriate administrative costs incurred by WMO in providing support to DBCP activities;
 - (vi) Meet other administrative costs including such items as meetings and consultants;
 - (vii) Purchase specified goods or services; and
 - (viii) Support other activities required to meet the basic goal of the DBCP Panel;
9. Authority for the disbursement of funds, in respect of contracts and agreements properly concluded, is delegated to the Chairman of the DBCP. The Chairperson of the DBCP will request in writing the Secretary-General of WMO, or his representative, to disburse the funds;
10. Where required by their internal regulations, individual contributors to the DBCP Fund may wish to negotiate additional conditions governing the application, conditions of deposit and disbursement of funds. Such additional conditions shall not inhibit the efficient and proper use of the Fund nor modify the intent of the Fund. They shall require the acceptance in writing by the Chairperson of the DBCP and the Secretary-General of WMO or his representative;
11. The Fund shall be maintained on a continuous basis and amounts standing to the credit of the Fund at the end of any WMO biennial period shall remain in the Fund for use in the subsequent period;
12. Upon liquidation of the Fund for any reason, the DBCP shall make provision for the payment of unliquidated obligations and estimated expenses of winding-up business. It shall then arrange for repayment - to the extent that funds are available and according to the depositors instructions - of deposits for which no equipment or services have been received;
13. At the closure of the Fund:
- (i) Any remaining surplus after (12) above, shall be distributed among the then DBCP Members in proportion to their total contributions and deposits paid by them to the DBCP Fund; and
 - (ii) Any remaining deficit, including provision for the payment of unliquidated obligations and estimated expenses of winding-up business, shall be met by the DBCP Members in an equitable way, to be decided upon by the DBCP.

14. The Fund will be terminated not later than one year after the formal termination of the DBCP;
 15. All funds credited to the DBCP Fund shall be subject to these terms of reference and to the Terms of Reference of the DBCP; and
 16. Any revision or amendment to the present Terms of Reference is subject to a decision of the DBCP and the agreement of WMO.
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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, may accept income as set forth in Article 3.1 on behalf of IOC, provided that, in any case which would involve IOC in an additional financial liability, the Secretary shall obtain the prior approval of the IOC Executive Council and the consent of the Executive Board of UNESCO.
- 3.3 The Secretary shall report to the IOC Assembly and the IOC Executive Council on any subventions, contributions, grants, gifts or bequests accepted.

Article 4 - Budget

- 4.1 The Secretary shall prepare, in a form to be determined by the IOC Assembly, a biennial programme and budget and shall submit it to the IOC Assembly for approval.
- 4.2 The appropriations voted in the budget shall constitute an authorization to the Secretary to incur obligations and to make expenditures for the purposes for which the appropriations are voted and up to the amounts so voted.

- 4.3 The Secretary is authorized to transfer funds between activities under the same appropriation line. The Secretary may be authorized by the IOC Assembly to transfer funds, when necessary, between appropriation lines within the limits established by the Appropriation Resolution voted by the IOC Assembly and shall report to the IOC Executive Council on all such transfers.
- 4.4 The Secretary is required to maintain obligations and expenditures within the level of the actual resources that become available to the General Account mentioned in Article 5.1 below.
- 4.5 Appropriations shall remain available for obligation during the financial period to which they relate.
- 4.6 The Secretary shall make allotments and any modifications thereon, within the limits of the Appropriation Resolution, which shall be communicated, in writing, to the officials authorized to incur obligations and make payments.
- 4.7 Appropriations shall remain available for 12 months following the end of the financial period to which they relate to the extent that they are required to discharge obligations for goods supplied and services rendered in the financial period and to liquidate any other outstanding legal obligations of the financial period.
- 4.8 At the end of the 12-month period provided for in Article 4.7 above, the then remaining unspent balance of obligations retained shall revert to the General Account mentioned in Article 5.1 below.

Article 5 - The General Account

- 5.1 There shall be established a General Account, to which shall be credited the income of IOC as described in Article 3 above and which shall be used to finance the approved budget of IOC.
- 5.2 The balance remaining in this General Account shall be carried forward from one financial period to the next.
- 5.3 The uses to which this balance may be put shall be determined by the IOC Assembly.

Article 6 - Trust Funds, Reserve and Subsidiary Special Accounts

- 6.1 In addition to a Working Capital Fund, the Secretary shall establish a Reserve Fund to cover end-of-service indemnities and other related liabilities; the Fund shall be reported to the IOC Assembly at the time of the budget approval.
- 6.2 Trust Funds, Subsidiary Special Accounts and any other Reserve Accounts may be established by the Secretary, who shall report to the IOC Assembly and the IOC Executive Council.
- 6.3 The Secretary may, when necessary, in connection with the purpose of a Trust Fund, Reserve or Subsidiary Special Account, prepare special financial regulations to govern the operations of these funds or accounts and shall report thereon to the IOC Assembly and the IOC Executive Council. Unless otherwise provided these funds and accounts shall be administered in accordance with these Financial Regulations.

Article 7 - Accounts

- 7.1 The UNESCO Comptroller shall maintain such accounting records as are necessary and shall prepare, for submission to the IOC Assembly and the IOC Executive Council, the biennial accounts showing, for the financial period to which they relate:
- (a) the income and expenditure of all funds;
 - (b) the budgetary situation including:
 - (i) original appropriations;
 - (ii) the appropriations as modified by any transfers;
 - (iii) the amounts charged against these appropriations;
 - (c) the assets and liabilities of IOC.
- 7.2 The Secretary shall also give such other information as may be appropriate to indicate the current financial position of IOC.
- 7.3 The biennial accounts of IOC shall be presented in dollars of the United States of America. Accounting records, may, however, be kept in such currency or currencies as the Secretary may deem necessary.
- 7.4 Appropriate separate accounts shall be maintained for all Trust Funds, Reserve and Subsidiary Special Accounts.

Article 8 - External audit

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

Article 9 - General provision

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

APPENDIX IX

DBCP DATA POLICY (as adopted at DBCP-XXV)

Data access policy

The DBCP encourages timely, free and unrestricted access to data. Real time data sharing is achieved via the Global Telecommunications System²⁵ of WMO. DBCP also cooperate with data contributors to ensure that data can be accepted into and be used through the NODC and WDC network of the IOC/IODE as long-term repositories for oceanographic data and associated metadata.

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

Data archiving

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

Instrumental Metadata

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

Quality control

Quality control procedures are in place to ensure the usefulness of real time data and also of data archives. A well-defined feedback mechanism is required to control real time data (see the DBCP QC Guidelines²⁶).

More information :

- WMO data policy Resolution 40²⁷
- IOC Oceanographic Data Exchange Policy²⁸
- CLIVAR data policy²⁹

25 : <http://www.jcommops.org/DBCP/1gtsinfo.html>

26 : <http://www.jcommops.org/dbcp/2qgd.html>

27 : http://www.wmo.int/pages/prog/www/ois/Operational_Information/AdditionalDataProducts/02_Resolution%2040.pdf

28 : http://www.ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=338

29 : http://www.clivar.org/data/data_policy.php

APPENDIX X

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

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ANNEX IV

SUMMARIES OF THE ACTION GROUP REPORTS

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

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

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

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

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

Chairperson, Data Buoy Technical Advisory Group (DB-TAG):
Mr Jon Turton, UK Met Office

Data Buoy Manager: Mr Jean Rolland, Météo-France

Website: <http://www.eucos.net>, under the heading "EUCOS Public" in "EUCOS networks"
<http://esurfmar.meteo.fr> (restricted working area web site for E-SURFMAR participants)

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

Status:

Drifting buoys

One hundred drifting buoys were deployed between July 2008 and June 2009 including twenty upgrades of SVP drifters. Fifty seven out of the SVP-B were fitted with Iridium transmitters. Nine SVP-BW were a contribution of Environment Canada. The deployments balanced the loss of buoys which occurred during the year. Over the year an average of about 100 drifting buoys were in operation in the EUCOS area of interest. The mean lifetime (for Air Pressure) of the SVP-B drifters was approximately 15 months (463 days).

The evaluation of the Iridium communication system continued as a contribution to the DBCP drifter Iridium Pilot Project. The number of Iridium drifters deployed has increased during the year with more than 1/2 of the buoys operating now using Iridium. This improves the data timeliness and also has a lower transmission cost.

The availability, timeliness and quality of drifting buoy data from the EUCOS area continues to be carefully monitored. Real time observations monitoring tools in Météo-France (<http://www.meteo.shom.fr/qctools/>) have been enhanced for more parameters, as well as for comparison to model outputs. ECMWF analyses are systematically used for all parameters in parallel to French Arpege models outputs. Mercator SST and SSS outputs are also used.

Moored buoys

The E-SURFMAR design study recommended that four moored buoys that are operated by UK, Ireland, France and Spain were needed to meet the EUCOS requirements, i.e. providing a suitable network to improve the quality of regional NWP over Europe, and for the validation and calibration of satellite wind and wave measurements. However, monitoring of the availability, timeliness and quality of moored buoys data from the full K-series moored buoy network continues. By the end of June 2009, 12 K-pattern buoys and 15 Oceanor buoys were operating (although the Oceanor buoys are not yet being monitored).

An average of 150 hourly observations per day are being reported from the offshore K-series buoys to the GTS, with about 70 messages per day from the 3 K-pattern E-SURFMAR buoys. More than 95% of data were received by HH+50 minutes (to be compared to the EUCOS target for timeliness of 85%) for the K-pattern buoys.

The Air Pressure (AP) differences with the French model outputs shows the EUCOS target of 0.5% of Gross Errors was achieved. The RMS of AP differences are between 0.5 to 0.8 hPa.

PLANS:

The E-SURFMAR design study recommended the deployment of an average of 175 SVP-B type drifters per year. Within the allocated budget more than 100 buoys (including 30 upgrades) will be deployed in the E-SURFMAR area of interest in the coming twelve months. A revision of the design study will be made after the results of an OSE which will be carried out by ECMWF for a period running from December 2008 to January 2009.

The transmission of drifting buoy data through Iridium will become the standard for E-SURFMAR rather than Argos.

E-SURFMAR will continue to deploy buoys in the Arctic Ocean through IABP. The main challenge with the ice buoys is their ability to survive after being released from frozen ice.

The E-SURFMAR design study has recommended that directional wave spectra should be provided by all four buoys and it is expected that the solution developed by the Met Office will be also installed on the Lion buoy (and in time other buoys within the K-series network). For M6 it is expected that the Irish Marine Research Institute will replace M6 with an Oceanor buoy with spectral wave capability. Cabo Silleiro, which is a SeaWatch buoy, already has direction spectral wave capability

Global Drifter Programme (GDP)

Area of interest:	The global ocean
Targeted horizontal resolution:	5 degree x 5 degree (1250 units)
Variables measured:	Basic: surface velocity, SST; Other: surface pressure, wind, salinity, sub-surface temperature profiles
Directors:	Dr Rick Limpkin, NOAA/AOML, USA Dr Peter Niiler, SIO, USA
Data Assembly Center Manager:	Ms Mayra Pazos, NOAA/AOML, USA
Operations Manager:	Mr Shaun Dolk, NOAA/AOML, USA
Website:	http://www.aoml.noaa.gov/phod/dac/gdp.html
Status (September 2009):	

The GDP is managed with close cooperation between **Manufacturers** in private industry who build the drifters according to closely monitored specifications, NOAA's Atlantic Oceanographic and Meteorological Laboratory (**AOML**) that coordinates deployments, processes the data, archives data at AOML and at MEDS (Canada), maintains META files describing each drifter deployed, develops and distributes data-based products, updates the GDP website and NOAA's Joint Institute of Marine Observations (**JIMO**) that supervises the industry, upgrades the technology, develops enhanced data sets.

As of September 14, 2009 the GDP had a total of 1319 drifters reporting, surpassing the 1250 expected to maintain. Death rate had been increasing from mid-2005 to end 2008. ~65 drifters per month in mid-2005, ~100 drifters per month end 2008.

Death rate peaked end 2008. Also slightly fewer deployments than normal in Austral winter resulted in the array shrinking to minimum size of 1108 drifters on 9 March 2009.

One of the reasons that the death rate had increased was the increasing age of the average drifter in the array. This age has now stabilized. Death rate peaked in early 2009, and has been decreasing since then. This, plus increased deployments, has led to the array now at 1319 drifters.

We will probably see the death rate fluctuate in the range 80—100 drifters per month in the foreseeable future. This suggests that we will need to deploy 960—1200 drifters per year to maintain array.

Goals and plans for 2010 include to deploy 1000 Drifters in the period between October 2009 and September 2010, maintain 1250 drifters at a nominal resolution of 5°x 5°, continue to update quality-controlled interpolated database, conduct 2010 AOML Data buoy comparison study, continue to evaluate array evolution, drogue detection and drogue lifetime, and develop new products.

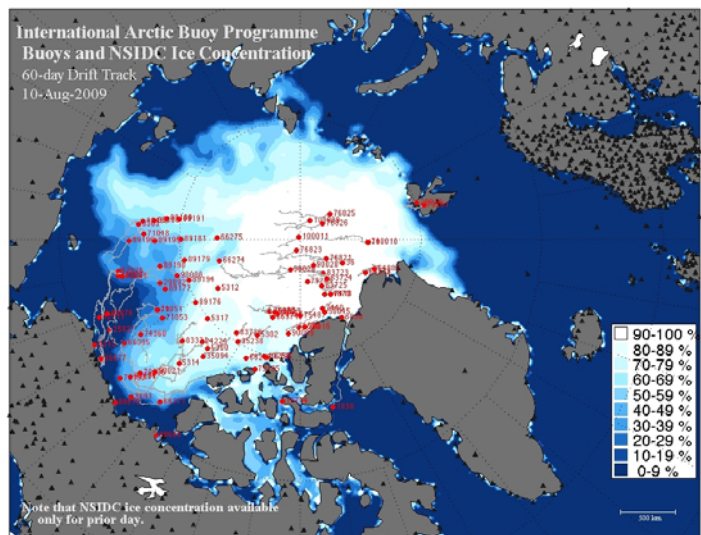
International Arctic Buoy Programme (IABP)

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

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.

Status (August 2009):

- The daily buoy status report for 9 August 2009 shows 89 buoys, 3 of which appear to be grounded: one on the shores of the north coast of Alaska and 2 on the shores of Spitsbergen.
- The number of buoys in the Arctic increased significantly during the International Polar Years (March 2007 – March 2009)
- There continues to be several ice thickness and oceanographic buoys in the array.
- The number of buoys on the Eurasian side of the pole on ice and/or in water remains low
- Many of the buoys on the basin are now "southern, blue water" buoys such as SVP buoys whereas even 5 years ago, only "white water" (ice) buoys were used.



International Buoy Programme for the Indian Ocean (IBPIO)

Area of interest:	Indian Ocean North of 55°S and between 25°E and 120°E
Targeted horizontal resolution:	500 km x 500 km
Variables measured:	<u>Drifting buoys</u> : Air pressure, wind, air temperature and SST <u>Moorings</u> : air pressure, wind, air temperature, SST, waves, relative humidity and SSS
Chairperson:	Dr Graeme Ball, BoM, Australia
Vice-Chairperson:	Vacant
Coordinator:	Mr Jean Rolland, Météo-France
Website:	http://www.shom.fr/meteo/ibpio
Meetings:	Annual meetings in conjunction with DBCP meetings

Status Report (August 2009):

Mr. G. Ball, Chairman of the IBPIO, reported on the activities of the Panel during the 2008/09 intersessional period and its plans for the 2009/10 intersessional period.

Mr Ball recalled that the IBPIO planned to deploy 263 platforms during 2008/09. Whilst the actual number of deployments totalled only 192 platforms, this still eclipsed the previous record number of deployments (184) in 2007/08. A breakdown of the 2008/09 deployments are as follows: 40 moored buoys, 56 SVP, 92 SVP-B and 4 SVP-BW.

Mr Ball reported that in 2009/10, the IBPIO planned to deploy 213 platforms, comprising: 16 moored buoys, 55 SVP-B, 125 SVP-B and 17 SVP-BW. A continuing challenge for the IBPIO is to populate the data-sparse areas that are regularly identified by JCOMMOPS, particularly in the Tropics.

A major concern of the IBPIO over many years has been the low percentage of drifting buoy reports received in a timely manner. In the past twelve months, the number of reports received within 50 minutes has remained low at around 20%. The percentage of Indian Ocean drifting buoy reports received within 100 minutes varies between 55-63% (50 – 55% in 2007/08), compared to EUCOS at 83 – 89% (75 – 85% in 2007/08). Whilst there has been a slight improvement in data timeliness from the Indian Ocean, there is still room for improvement. This improvement however may only be realised through more widespread use of Iridium buoys.

WCRP-SCAR International Programme for Antarctic Buoys (IPAB)

Area of interest: South of 55°S and that region of the Southern Ocean and Antarctic marginal seas within the maximum seasonal sea-ice extent

Targeted horizontal resolution: 500 km x 500 km

Variables measured: Basic variables: Buoy position, atmospheric pressure and SST
Other variables: air temperature, ice and / or snow temperature, atmospheric pressure tendency, wind, snow and sea-ice properties and oceanographic variables

Chairperson: Mr Shuki Ushio, NIPR, Japan

Coordinator: Mr Christian Haas, AWI, Germany

Website: <http://www.ipab.aq/>

Meetings: Biennial meetings

Status and planned activities:

- Successful deployments during IPY (> 30 buoys)
- Only 3 buoys deployed, but survived only few days
- GTS transmission & group communication still major problems
- Last meeting in July 2008 in Bern, Switzerland
- Next meeting during IGS Tromsø, June 2010, or Bern (Jan or June 2010)

International South Atlantic Buoy Programme (ISABP)

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

Status and planned activities:

During the intersessional period, cooperation and coordination between participants have continued in the form of equipment (drifters), storage, deployment opportunities, communications, data dissemination and archiving. The GDP continues to offer the opportunity to upgrade to barometer drifters, thus the increase in the number of drifters with barometric pressure sensor in the area. There is also a network of fixed stations and profiling floats in the area, providing data in real time via the Global Telecommunication System (GTS).

A total of 245 drifters were deployed in the ISABP region from September 1, 2008 – August 31, 2009 of which 9 failed on deployment (200 SVP, 44 SVPB and 1 SVPB + salinity). Deployments were carried out by the Drifter Operations Center at AOML, US Navy, Brazilian Navy, South Africa Weather Service, Fisheries Departments of Tristan da Cunha and Falkland Islands. All drifter data were disseminated on the GTS soon after deployments occurred.

At the end of August 31, 2009, there were a total of 321 drifters in the ISABP region of which 195 were SVP and 126 SVPB. An increase from last year's totals: 184 SVP, and 107 SVPB.

In May and June the Navy Hydrographic Center (CHM), Brazil, deployed two moored buoys of Platform type and one moored buoy of Coastal type. The coastal buoy, suffered from a navigation incident in July, and was brought to shore. It is being prepared for redeployment by early October 2009. All data was reported on the GTS.

There is one AWS in Gough, Marion Islands and in Antarctica. One fix buoy in Tristan da Cunha and Southern Thule Islands that get replaced every year and the old one deployed.

This year the Servicio de Oceanografía, Hidrografía y Meteorología de la Armada (SOHMA) from Uruguay has joined ISABP.

The GDP will continue to fund the upgrade opportunity of SVP drifters to barometer drifters. The GDP has the following deployments projected through May 31, 2010:

Tropical Atlantic (30°N – 20°S):	150 drifters (15 SVPB).
Extra Tropical Atlantic (20°S – 40°S):	35 drifters (5 SVPB)
South Atlantic (40°S – 60°S):	65 drifters (all SVPB)

Brazilian DHN (Directorate of Hydrographic and Navigation) confirmed the availability of ship time to deploy up to one hundred and twenty drifters in the Tropical and South Atlantic regions with the support of Brazilian Navy vessels in the area, and promised to upgrade some SVP to SVPB.

Argentina is looking into innovative ways to get instruments into the country. Even though things look promising, a commitment to carry out deployments next year cannot be made at the time of this report.

SAWS will strive to continue working together with other groups in the region to expand the buoy network in this area.

The next ISABP meeting will take place in Buenos Aires, Argentina, 15-16 April 2010.

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

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

Status (August 2009):

Between 1 September, 2008 and 31 August of 2009, there were a total of 63 buoys deployed north of 30°N, between 110°E and 110°W. Of these 63 deployments in the North Pacific, 28 of these buoys were SVP drifters (44%), 13 were SVPG drifters (21%) and the remaining 22 buoys were SVPB drifters (35%).

It is apparent by looking at these results that the goal of having 50 SVPB buoys deployed in this region was not met. In fact, 38 more SVPB buoys were needed to meet the 2009 goal.

2009-2010 Deployment Plan

The current plan which calls for the deployment of 50 SVPB drifters in the North Pacific region between September 2009 and August 2010 will not only help populate the area, but also decrease the average age of active buoys.

Research Vessel (R/V) and Voluntary Observation Ship (VOS) Deployments

Buoys will continue to be deployed by Research Vessels and VOS. The GDP will work to coordinate deployment efforts with Research vessels operated by Canada, Japan, Korea, China and the United States, in addition to acquiring and maintaining lasting relationships with various VOS vessels that transit the area.

SVPB Upgrade Opportunity

The GDP provides an opportunity for Meteorological agencies to add barometers to SVP drifters deployed in the North Atlantic. More information can be found on the DBCP website under SVPB Upgrade Opportunity link.

- http://www.dbcp.noaa.gov/dbcp/svpb_upgrade.html

OCEAN Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES)

The Technical coordinator, presented an update on behalf of the OceanSITES co-chairs, of the work undertaken by the OceanSITES Steering Team, Data Management Team and JCOMMOPS in 2008-09. She reminded the panel that she provides support for the OceanSITES 30% of the time. She reviewed the main duties and responsibilities of the project office. She then outlined the priority tasks in the previous year, which were:

- Updating documentation to get a clearer Network status
- Creating new map products to view network status
- Updating websites
- Updating contact details and user groups
- Supporting the Data Management Team in getting data (and metadata) onto GDACs
- Maintaining Site Catalog, monitoring data flows and GDAC structure
- Seeking Sustained funding for the Project Office Support

The website at www.oceansites.org had been updated with new scientific descriptions of sites, a new summary spreadsheet listing all sites and new Current Status maps and Vision maps (2009) and a Google Earth file as a new interactive map. A new Monthly map now available showing sites sharing data on the GTS of WMO.

The current status is as follows:

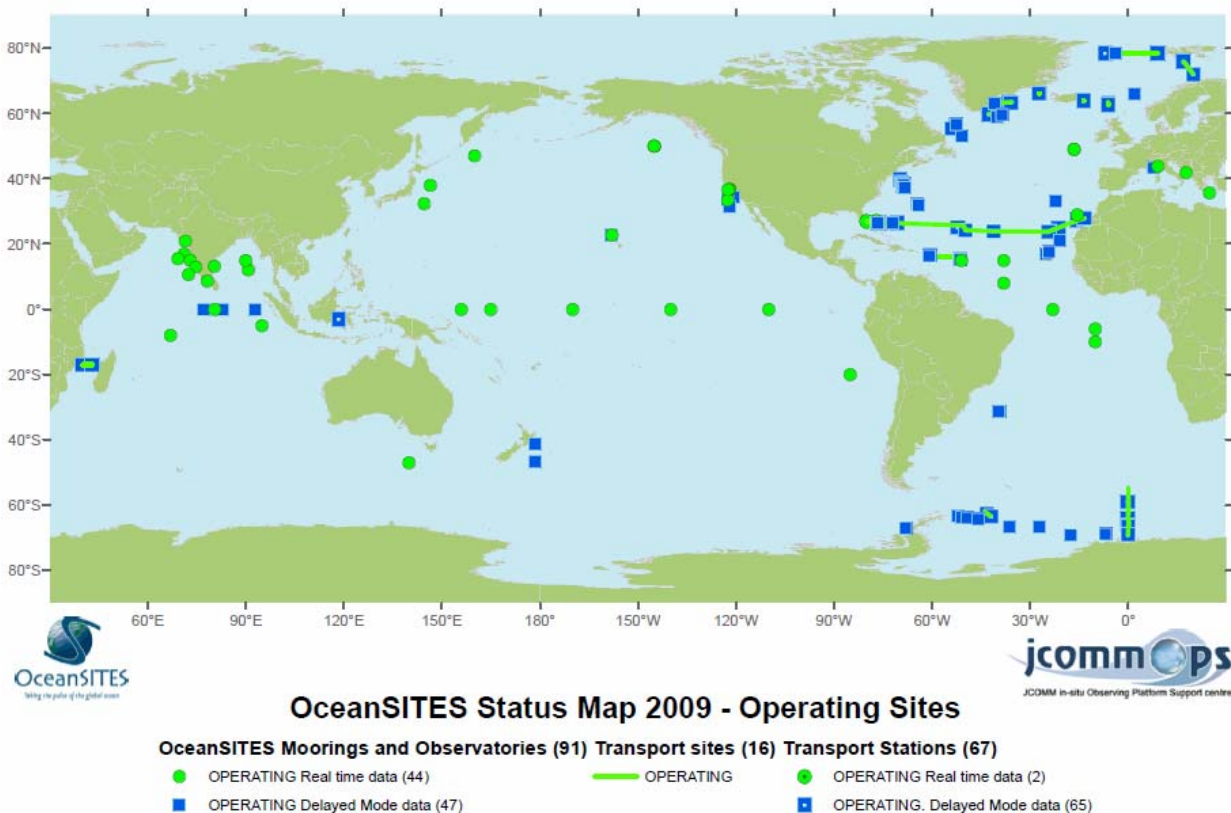


Figure. Map of Current Status – Operating Sites

Tropical Moored Buoys Implementation Panel (TIP).

Area of interest: The tropical ocean regions as part of an integrated approach to observing the climate system to address the research needs of CLIVAR and the operational strategies of GOOS and GCOS. Pacific Ocean: 8°N to 8°S; Atlantic Ocean: 20°N to 10°S; Indian Ocean: 15°N to 25°S.

Targeted horizontal resolution: Tropical Pacific Ocean: 76 moorings ; Tropical Atlantic Ocean: 18 moorings ; Tropical Indian Ocean: 47 moorings

Variables measured: Surface: wind, air temperature, relative humidity, SST and SSS on all surface moorings. Air pressure, precipitation, short wave radiation, long wave radiation on some surface moorings.
Sub-surface: temperature profiles down to 500m on all surface moorings; Salinity profiles down to 120m on some surface moorings; Current velocity on some moorings.

Chairperson: Mr Mike McPhaden, PMEL, USA

Coordinator: Mr Paul Freitag, PMEL, USA

Website: <http://www.pmel.noaa.gov/tao/global/global.html>

Status (August 2009):

Tropical Atmosphere Ocean / Triangle Trans-Ocean Buoy Network (TAO / TRITON)

It is a central component of the ENSO Observing System, deployed specifically for research and forecasting of El Niño and La Niña. The Array consists of 55 ATLAS moorings maintained by the National Data Buoy Center (NDBC) and the Pacific Marine Environmental Laboratory (PMEL), 12 TRITON moorings maintained by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and 5 subsurface Acoustic Doppler Current Profiler (ADCP) moorings (4 maintained by NDBC and 1 by JAMSTEC). In addition to these core moorings, there are several moorings deployed as enhancements, including 3 TRITON moorings in the far western tropical Pacific along 130°E and 137°E, and test sites maintained by NDBC for mooring refresh development. NDBC has been responsibility for TAO field operations since January 1, 2007, while instrument preparation remains at PMEL.

Traditionally, 8 cruises per year were required to keep mooring deployment lengths within their design life of 12 months and to replace failed or damaged sensors mid-deployment. In 2009, about 20% less sea days had been rendered by NOAA, resulting in lower data return (81% for the time period 1 October 2008 to 5 August 2009, compared to 87% for the previous year). JAMSTEC cruises in February and April 2009 serviced 6 Pacific TRITON moorings. Additional TRITON moorings will be serviced in November 2009.

Prediction and Research Moored Array in the Tropical Atlantic (PIRATA)

It continued in a 17 surface mooring and one subsurface ADCP mooring configuration in 2009. Mooring preparation, data processing and evaluation are provided by the US. Ship time for mooring maintenance is provided by Brazil, France and the US. Cruises are staffed by US, French and Brazilian technicians.

PIRATA data return has typically been lower than that for TAO, primarily due to a greater relative amount of vandalism (concentrated in the Gulf of Guinea) and a smaller array size. However,

PIRATA data return exceeds TAO in 2009 (85%).

Four FY 2009 PIRATA cruises have been completed (123 days in total) and a fifth is scheduled for September 2009. On one of the cruises NOAA chartered 29 days on France's RV Antea in October 2008 to replace the days lost due to cancellation of a cruise on NOAA's Ron Brown in April 2008.

Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA)

Nations providing support for RAMA include the United States, Japan, India, Indonesia, China, and France. Additional support was provided in the past year from the Agulhas and Somali Current Large Marine Ecosystems (ASCLME) Project, a consortium of 9 African nations (Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa and Tanzania).

By September 2010 moorings will have been deployed at 24 of the 46 sites (implementation 52% complete), comprising 16 ATLAS (US), 3 Deep Ocean (India), 2 TRITON (Japan), and 3 subsurface ADCP (1 each, US, Japan and China). France has provided instrumentation to add barometric pressure to 4 RAMA moorings in the southern portion of the array for enhanced cyclone forecasting.

To address the problem of theft of instrumentation, 2 moorings deployed in August 2008 contained no meteorological sensors on buoys modified in a "conehead" shape to discourage vandals from boarding or attaching lines to the buoy. To date, subsurface data from these conehead moorings has been nearly complete, suggesting that the anti-vandalism design modification has been effective. These moorings will be replaced in September 2009, again with modified buoy design, but with the addition of a single meteorological sensor package to measure wind, air temperature, relative humidity, precipitation and barometric pressure.

ANNEX V

**PROPOSED NEW TERMS OF REFERENCE FOR THE expanded
JCOMM *IN SITU* OBSERVATIONS PROGRAMME SUPPORT CENTRE (JCOMMOPS)**

DRAFT RECOMMENDATION

**Rec. 6.4 (JCOMM-III) — TERMS OF REFERENCE FOR THE expanded
JCOMM *IN SITU* OBSERVATIONS PROGRAMME SUPPORT CENTRE (JCOMMOPS)**

**THE JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE
METEOROLOGY,**

Noting:

- (1) The JCOMM Terms of Reference and especially those related to the development of observing networks
- (2) Recommendation 4 (JCOMM-II) – New Terms of Reference for the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS)
- (3) The final report of the fifth Session of the JCOMM Management Committee, Geneva, Switzerland, 5-7 October 2006, JCOMM Meeting Report No. 45
- (4) The final report of the twenty-second Session of the Data Buoy Cooperation Panel (DBCP), La Jolla, USA, October 2006, JCOMM Meeting Report No. 42
- (5) The final report of the fourth Session of the JCOMM Ship Observations Team (SOT), Geneva, Switzerland, 16-21 April 2007, JCOMM Meeting Report No. 52
- (6) The final report of the second session of the Observations Coordination Group, JCOMM Meeting Report No. 53
- (7) The final report of the twenty third session of the Data Buoy Cooperation Panel (DBCP), Jeju, Republic of Korea, 15-19 October 2007, JCOMM Meeting Report No. 54
- (8) The final report of the sixth Session of the JCOMM Management Committee, Paris, France, 3-6 December 2007, JCOMM Meeting Report No. 55
- (9) The final report of the twenty-fourth Session of the Data Buoy Cooperation Panel, Cape Town, Republic of South Africa, 13-16 October 2008, JCOMM Meeting Report No. 61
- (10) The final report of the seventh Session of the JCOMM Management Committee, Melbourne, Australia, 8-12 December 2008, JCOMM Meeting Report No. 62
- (11) The joint WMO-IOC Circular Letter JCOMM No. 07-27 dated 24 September 2007 with the announcement and call for Letters of Intent to host an Observing Programme support Centre (OPSC), the resulting evaluation process of the Letters of Intent, and the recommendation from the OPSC evaluation Committee
- (12) The decision by the WMO Secretary General, and the IOC Executive Secretary regarding the Member/Member State and institution selected to host the OPSC.

Considering:

- (1) The requirement for JCOMM to be active in a process in which oceanographic and marine meteorological observing system elements make the transition to a fully integrated system;
- (2) The need to integrate at the international level a number of activities regarding operation and implementation of *in situ* marine observing systems;
- (3) The success of the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) development and work, based on DBCP, SOT, and Argo technical coordination facilities, thanks to resources provided by Members/Member States through the DBCP, SOT, and Argo;
- (4) The potential value of extending JCOMMOPS activities to include services to support coordination for the Ocean Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES), the International Ocean Carbon Coordination Project (IOCCP), and the Global Sea-level Observing System (GLOSS);
- (5) The recommendation by the Management Committee to consider enhancing links to the satellite information services.

Recommends:

- (1) That the JCOMMOPS should expand its activities to enable (i) the provision of support to the DBCP, Argo, the SOT, the IOCCP, GLOSS, and the OceanSITES Coordination, and (ii) the dissemination on the Web site of information on Satellite Data Requirements, and satellite information services;
- (2) That the Terms of Reference of the expanded JCOMMOPS should be as given in the annex to this recommendation;
- (3) That JCOMMOPS should be based in France, under the day-to-day supervision of the WMO and IOC Secretariats;

Invites:

- (1) France to consider increasing its support to JCOMMOPS through national mechanisms;

Requests Members/Member States, where possible, to commit the resources required to support JCOMMOPS.

NOTE: This recommendation replaces Recommendation 4 (JCOMM-II), which is no longer in force.

ANNEX TO RECOMMENDATION 6.4 (JCOMM-III)

**TERMS OF REFERENCE FOR THE expanded
JCOMM IN SITU OBSERVATIONS PROGRAMME SUPPORT CENTRE (JCOMMOPS)**

Under the overall guidance of the JCOMM Observations Coordination Group and following the direction of the Data Buoy Cooperation Panel, the Ship Observations Team, the Argo Steering Team, the OceanSITES Science Team, the Global Sea Level Observing System Group of Experts (GLOSS), the International Ocean Carbon Coordination Project (IOCCP), and the CBS Expert Team on Satellite Utilization and Products (ET-SUP), the JCOMMOPS shall promote an integrated framework for deployment and further development of ocean observing networks.

Specifically, JCOMMOPS shall:

- (i) Act as a focal point for implementation and coordination of observing programmes by clarifying and assisting in resolving technical issues between platform operators, data centres, manufacturers, and satellite data telecommunication providers;
 - (ii) Assist demonstrating the scientific value of global ocean observing programmes in support of WMO and IOC Programmes and co-sponsored Programmes by compiling materials and assisting ocean observation science teams as appropriate;
 - (iii) Maintain information on relevant observational requirements in support of GOOS, GCOS, and the WWW as provided by the appropriate international scientific panels, JCOMM experts participating in the CBS ET-SUP, and other JCOMM Expert Teams and Groups;
 - (iv) Routinely collect and distribute information on (a) the performance of the observing system networks relative to requirements, in cooperation with the Observing System Monitoring Center, (b) instrumentation and telecommunication systems, and (c) functional status and (data quality of individual observing platforms;
 - (v) Act as a focal point for instrument and data management standardization by collecting and distributing information on current and best practices from across all elements of the observing system and by representing the observing system interest in international standardization processes;
 - (vi) Facilitate free and unrestricted data and metadata exchange in real-time, by providing appropriate technical assistance to platform operators, and serving as a collection and distribution point for select platform/instrument metadata and as a source of information on other metadata and data distribution services;
 - (vii) Facilitate the flow of data and metadata to the archiving centres;
 - (viii) Provide a gateway for information on observing platform deployment plans and servicing opportunities, and on operator contact information, to maximize deployment opportunities and sharing of resources;
 - (ix) Encourage cooperation between communities, observing programmes, and Member/Member States to develop synergies between, and to promote the observing systems.
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ANNEX VI

REPORT FROM THE EXECUTIVE BOARD MEETING

(Paris, 29 September 2009)

1.1 The Executive Board convened during the evening of 29 September 2009 to discuss a number of issues that had arisen during the day's plenary session. Those present were:

David Meldrum (DBCP chair)
Ken Jarrott (DBCP vice-chair)
Al Wallace (DBCP vice-chair)
V 'Raju' Rajendran (DBCP vice-chair)
Sid Thurston (Panel member)
Etienne Charpentier (WMO)
Boram Lee (IOC)
Hester Viola (DBCP Technical Coordinator)

A quorum of the EB was therefore present and the EB was consequently able to make recommendations and, if need be, decisions. The discussions and recommendations are described in the following paragraphs. On return to the plenary session the following day, the Panel was invited to freely discuss the recommendations with a view to agreeing a set of decisions and actions for the next intersessional period and beyond.

1.2 The EB considered its membership, currently consisting of the chair and vice chairs, a Panel member and *ex officio* representatives from IOC, WMO and JCOMMOPS (the DBCP TC). It was felt appropriate to seek representation from the buoy manufacturing community, and it was agreed that the buoy manufacturers should be invited to elect a representative from amongst their number.

1.3 In general, the EB was of the opinion that there was a clear need for succession planning amongst the Panel's office bearers and recommended that the chair and vice chairs should generally serve for a term of 4 – 6 years. It further suggested that the Action Groups should consider invoking similar procedures.

1.4 The EB then discussed a number of proposed initiatives and expenditures that had arisen during the plenary and as a result of its own deliberations. These were:

- a) Continuation of the DBCP Iridium Pilot Project for a further year
- b) The use of a consultant to update guides and manuals
- c) An extension of the GDP's SVP intercomparison exercise to include platforms built by Marlin-Yug
- d) Capacity Building
- e) A regional DBCP meeting in Asia

1.5 The Iridium Pilot Project and improvements in data timeliness. One of the notable successes of the project had been to demonstrate the dramatic improvement in data delivery times that could result from the implementation of Iridium as a communications system. This was in sharp contrast to the poor statistics for data timeliness that had persisted for many years in the South Pacific, South Atlantic and Indian Oceans for data being transmitted via Argos. Despite these concerns having been voiced repeatedly at Panel sessions, little improvement had been apparent. The EB therefore suggested that these areas be populated with Iridium SVP-Bs as soon as possible. Moreover, the Panel could, if it wished, apply the unused funds from the Iridium Pilot Project (about \$15k) to pay for 30 Iridium upgrades for these areas. This would be an appropriate use of these funds and was consistent with previous decisions, as the South Pacific and Indian Oceans had not been well evaluated in the course of the project, despite the best intentions of project participants. It therefore recommended that the Panel approve the use of the above funds

to pay for Iridium upgrades for the South Pacific and Indian Oceans, provided other agencies (e.g. the GDP and ESURFMAR) could be identified to fund the basic SVP-Bs from their own budgets.

1.6 At its previous session, the Panel had approved a WMO request for the Panel to undertake the updating of a number of WMO Manuals and Guides. Nonetheless, no volunteers had yet come forward, and the EB felt that the Panel needed to become more proactive in discharging this action. It therefore recommended that the chair of the Task Team for Instrument Best Practices and Drifter Technology Developments (Mr W Burnett) take responsibility for identifying suitable authors, and, if needs be, to use Panel funds up to a maximum of \$10k to pay for the hire of a suitably qualified consultant. It further recommended that these funds should only be called upon if matched funding from other sources could be identified.

1.7 With regard to the valuable SVP intercomparison exercises being regularly undertaken by the GDP (Ms Mayra Pazos), the EB noted that it was not currently possible to include platforms from Marlin-Yug because of the five-year procurement arrangements that were currently in place, and which specified only the four North American manufacturers. The EB felt that it would enhance the value of the intercomparison exercise to include Marlin-Yug, and recommended that up to \$10k or Panel resources be used to match-fund the procurement of five evaluation SVPs from Marlin-Yug.

1.8 The EB noted that the Panel had fallen somewhat behind with regard to its Capacity Building (CB) commitments, and that the \$25k set aside for this purpose in 2009 had yet to be used. It was therefore pleased to hear from EB member Dr Sidney Thurston that plans were well advanced for a CB Workshop in Pretoria in 2010, and endorsed its earlier decision to allocate up to \$25k to this activity from the 2009 budget. It further recommended that funds already earmarked in the 2010 budget be used to support the mission costs of DBCP trainers that might be recruited to this workshop.

1.9 The EB greatly welcomed the initiative by its member Dr V Rajendran to convene a regional DBCP meeting in Asia with a view to recruiting additional countries to the Panel membership. The EB recommended that up to \$10k of Panel funding be made available to Dr Rajendran to assist him in this activity.

1.10 As regards the perennial problem of identifying additional financial contributions to the Panel's annual budget, the EB repeated its call to Panel participants to try to identify additional resources. It further recommended that participants from countries or organizations that did not currently contribute should actively explore funding opportunities, and that the Panel and the secretariats should give every assistance to these non-paying participants in preparing the case and approach to their funding bodies.

1.11 Finally, taking into account the likely budget for discretionary activities that the Panel would have at its disposal, the EB suggested the following table of budget maxima in \$k over three years. After discussion, this was accepted by the Panel.

Activity	2010	2011	2012
Iridium Pilot Project	15	0	0
Argos-3 Pilot Project	15	?10	0
Moored buoy pilot (WET)	10	10	0
Waves drifter pilot (WMD)	10	?10	0
Consultant for document updating	10	0	0
SVP intercomparison extension	10	0	0
Capacity Building	25	25	25
Asian regional meeting	10	0	0
Total	105	55	25

ANNEX VII

INTERIM STATEMENTS OF ACCOUNT

Note: Financial statements for the period 1 January 2008 to 31 December 2008 can be found in the DBCP Annual Report for 2008.

TABLE 1: IOC Statement of Account (1 January 2009 ~ 31 July 2009)



193-GLO-2001/193DBC2000

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
DBCP/SOOP Technical Coordinator: Salary, Missions and Other Costs
 (Statement of Account from 1 January 2009 to 31 July 2009)
 (Expressed in US Dollars)

Cash Balance Brought Forward as at 1 January 2009		149,882.23
Funds Received from:	NOAA	105,000.00
<i>Deduct:</i>		
Disbursements		
Salary of Ms Hester Viola:	1/2009 - 7/2009	53,566.94
Home Leave of Ms Hester Viola:		763.00
Salary of Ms Hester Viola:		
Missions :	<u>Ms Hester Viola</u>	
	Paris - January 2009	592.23
	Paris - March 2009	1,618.33
		<u>2,210.56</u>
Sub-contract :	Logistical Support	16,010.55
Programme Support Costs		5,654.05
Cash balance as at 31 July 2009		<u>176,677.13</u>
Unliquidated Obligations		-
Funds available as at 31 July 2009		<u>176,677.13</u>

TABLE 2: WMO Statement of Account (1 January 2009 ~ 31 July 2009)



World Meteorological Organization
Organisation météorologique mondiale

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

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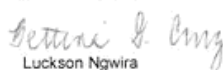
DATA BUOY CO-OPERATION PANEL

Statement of income and expenditure
For the period 1 January to 31 July 2009
Amounts in United States dollars

1. Balance brought forward , 1 January 2009				261,418
2. Income:				
2.1 Contributions received				70,236
3. Total available funds during reporting period				<u>331,654</u>
4. Expenditure				
4.1 Direct project costs		<u>Actual</u>	<u>Obligations</u>	<u>Total</u>
4.1.1 Other consultancy services		-	15,000	15,000
4.1.2 Travel of staff to meetings of WMO Constituent Bodies		1,849	-	1,849
4.1.3 Travel - other representatives ad hoc travel		5,067	9,588	14,655
4.1.4 Travel - other representatives -other WMO meetings		15,890	-	15,890
4.1.5 Publication of meeting report - DBCP 25		-	918	918
4.1.6 Meteorological telecommunications equipment		2,875	-	2,875
4.1.7 Total direct costs		<u>25,681</u>	<u>25,506</u>	51,187
4.2 Indirect project costs				
4.2.1 Support costs at 3%				1,536
4.2.2 Bank charges				36
4.2.3 Exchange differences				6,136
4.2.4 Total indirect costs				<u>7,708</u>
4.3 Total project expenditure				<u>58,895</u>
5. Balance of fund at 31 July 2009				<u><u>272,759</u></u>

	Contributions received	
Canada		19,085
France -CNRM Meteo France		51,151
Total		<u>70,236</u>

Certified correct:

for 
Luckson Ngwira
Chief, Finance Division
2 September 2009

ANNEX VIII

TABLE OF NATIONAL CONTRIBUTIONS

Budget Country	JCOMMOPS	DBCP	OceanSITES	SOT	JTA	COMMENT
Australia	USD 8,100		USD 5,000	USD 8,100		JCOMMOPS (DBCP and SOT)
Canada	CAD 25,000					CAD 25,000 for JCOMMOPS (DBCP and SOT)
CLS					USD 65,000	USD 15,000 for JTA Chairperson USD 30,000 for support to the JTA-EC USD 10,000 for the IOC Secretariat (JTA support) USD 10,000 for the WMO Secretariat (JTA support)
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				USD 5,000		
India		USD 3,000				
New Zealand	EUR 1,800					JCOMMOPS (DBCP and SOT)
South Africa		USD 4,500				
USA		USD 80,000		USD 25,000		Contribution made through IOC

ANNEX IX

BUDGET FOR THE NEXT YEAR

Table 1: Summary of finalized interim accounts based on WMO and IOC interim statements in Annex VI, in USD, as at 31 July 2009

Item	Actual 2007		Actual 2008		Interim 2009		Budget 2010		Budget 2011	
	Receipts	Obligation: at 31 Dec.	Receipts	Obligations: at 31 Dec.	Receipts	Obligations	Receipts	Obligation: at 31 Dec.	Receipts	Obligations: at 31 Dec.
DBCP										
Carried over	237,643		431,261		411,299		446,934		354,884	
Contributions	411,233		159,189		175,236		279,950		279,950	
Adjustment	6,907		13,295							
Expenditure										
Technical Coordination	86,934		93,747		54,330		100,000		100,000	
JTA Consultancy	15,854		15,263		17,500		17,500		17,500	
JTA EC and Secretariat Support							50,000		50,000	
Travel DBCP	40,921		33,738		32,276		43,000		43,000	
Travel SOT					2,329		20,000		20,000	
Bank Charges/Support Cost	3,724		1,921		13,362		12,500		12,500	
IOC	60,000									
Marine Programme										
JCOMMOPS			20,807		16,011		52,000		52,000	
Outreach and Publications					918		2,000		2,000	
Supp Meetings/Workshops										
New Technical Evaluation			25,004		2,875		30,000		30,000	
Capacity Building	17,089		1,966				25,000		25,000	
Contingency					50,000		50,000		50,000	
Collaborative Arrangements							20,000		20,000	
Total DBCP	655,783	224,522	603,745	192,446	586,535	189,601	726,884	422,000	634,834	422,000
Unliquidated obligations		1,797		31,606						
Balance of DBCP Trust Fund		429,464		379,693		396,934		304,884		212,834
Contingency						50,000		50,000		50,000
Carried over		431,261		411,299		446,934		354,884		262,834

????????????????????
 Balance/Carry over is based on the CURRENT level of expenditure as at 31 July 2009

Rough estimation based on Interim Statement as at 31 July 2009

Rough estimation

Table 2: Details of finalized interim accounts based on WMO and IOC interim statements in Annex VI, in USD, as at 31 July 2009

	Final account		Final account 2008				Interim Statement 1 January-31 July 2009				Estimated budget		Estimated budget	
	Jan-Dec 2007		Jan-Dec		Estimated budget		Jan-July		Estimated budget		Jan-Dec 2010		Jan-Dec 2011	
	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC	WMO	IOC
DBCP														
Receipts														
Brought Forward	113,350	124,293	151,769	279,492	151,769	277,695	261,417	149,882	115,519	249,695	53,469	229,695	-18,581	209,695
Contributions (listed below)	141,233	270,000	159,189	0	100,750	105,000	70,236	105,000	124,950	105,000	164,950	115,000	164,950	115,000
Adjustment	6,907		13,295											
Total Receipts	261,490	394,293	324,253	279,492	252,519	382,695	331,653	254,882	240,469	354,695	218,419	344,695	146,369	324,695
Expenditure/Oblig'ns														
Consultancy (JTA Chair)	15,854		15,263		17,500		17,500		17,500		17,500		17,500	
JTA EC and Secretariat Support											40,000	10,000	40,000	10,000
Tech Coordination		86,934	93,747		98,000		54,330		100,000		100,000		100,000	
JCOMMOPS logistic supp			16,877		15,000		16,011		15,000		15,000		15,000	
IOC	60,000								0		0		0	
Marine Programme														
Travel/Missions														
Tech Coordinator		27,850		18,986	10,000	10,000		2,211	20,000		20,000		20,000	
DBCP Chairman	13,071		4,618		21,000		12,327		21,000		21,000		21,000	
DBCP Representatives			10,134		2,000		17,738		2,000		2,000		2,000	
Bank Charges/SuppCost/Other	3,707	17	1,921		2,500	10,000	7,708	5,654	2,500	10,000	2,500	10,000	2,500	10,000
Projects & Activities														
Outreach and Publications					2,000		918		12,000		2,000		2,000	
JCOMMOPS Data Devt			3,930		7,000				7,000		7,000		7,000	
JCOMMOPS IS migration											30,000		30,000	
SOT							2,329		0	0	20,000		20,000	
Supp. DBCP Mtgs/WSs														
New Technical Evaluation			25,004		30,000		2,875		50,000		30,000		30,000	
Capacity Building	17,089		1,966		25,000				25,000		25,000		25,000	
Contingency					30,000	20,000	30,000	20,000	30,000	20,000	30,000	20,000	30,000	20,000
Collaborative Arrangement					20,000				30,000		20,000		20,000	
Total Expenditure	109,721	114,801	62,836	129,610	167,000	153,000	91,395	98,206	217,000	145,000	267,000	155,000	267,000	155,000
Unliquidated Obligations		1,797		31,606										
Balance of Fund	151,769	277,695	261,417	118,276	85,519	229,695	240,258	156,676	23,469	209,695	-48,581	189,695	-120,631	169,695
Contingency carry over					30,000	20,000	30,000	20,000	30,000	20,000	30,000	20,000	30,000	20,000
Carried over	151,769	279,492	261,417	149,882	115,519	249,695	270,258	176,676	53,469	229,695	-18,581	209,695	-90,631	189,695
Contributions														
CLS/Argos Inc														
Australia #	32,400		16,200						16,200		16,200		16,200	
Canada \$			45,047		22,750		19,085		22,750		22,750		22,750	
CLS	15,000		20,000		17,500				17,500	10,000	57,500	10,000	57,500	10,000
E-SURFMAR *	53,333		63,092		53,600		51,151		53,600		53,600		53,600	
France (incl E-SURFMAR)*														
Germany #	5,000		5,000						5,000		5,000		5,000	
Greece														
Iceland														
India #	6,000		2,950						3,000		3,000		3,000	
Ireland														
Japan														
Netherlands														
New Zealand \$			2,400		2,400				2,400		2,400		2,400	
Norway														
South Africa #	4,500		4,500		4,500				4,500		4,500		4,500	
United Kingdom														
United States of America	25,000	210,000				105,000		105,000		105,000		105,000		105,000
WMO		60,000												
Total	141,233	270,000	159,189	0	100,750	105,000	70,236	105,000	124,950	105,000	164,950	115,000	164,950	115,000

\$=including 2007 contr.
#=including 2009 contr.

E

E

E

E

E=Estimate

ANNEX X

ACTION LIST / WORKPLAN

DBCP WORKPLAN FOR THE NEXT INTERSESSIONAL PERIOD (2009)

(actions and recommendation arising from this Panel session are indicated in bold)

-1- IMPLEMENTATION & TECHNICAL WORKPLAN

Action / Recomm.	Reference	Item	Description	Who	Supported by	Reporting to	When	Status
Action	DBCP-23	3.3.8 and DBCP ToR	To identify sources of buoy data not currently reported on the GTS & determine reason for non-availability, (particularly for the Arctic Buoys IABP).	TC, CLS	Members, Secretariats	Chair & Panel for information		ONGOING
Action	DBCP TOR	TC ToR	To coordinate operations of DBCP QC guidelines.	TC	Members, Data Quality centres	Panel		ONGOING
Action	DBCP TOR	DBCP ToR	To follow up & possibly assist in implementing requirements expressed by the buoy users within the Argos system.	CLS	TC	Panel, meeting on JTA		ONGOING
Action	DBCP TOR	TC ToR	To support, as required, existing DBCP action groups, and provide assistance on request to other internationally coordinated buoy programme developments.	TC, Secretariats	Chair	Panel		ONGOING
Action	DBCP-20	-	To coordinate with IOP implementing strategy for the Indian Ocean Observing System as far as data buoys are concerned.	IBPIO	Chair, TC, Secretariats	Panel		
Action	DBCP-23	8.1.2	To encourage other centres to act as PMOC and existing centres to invest more resources in the implementation of QC guidelines	Members	TC	Panel		
Action	DBCP-23	7.2.4, 8.6.1.1 and DBCP-22 8.6.1.13	To provide information on deployment opportunities – annual reports, action group annual planning, ship schedules, national plans, national contact points etc	Members, Task Team on Capacity Building	TC	JCOMMOPS , Panel		
Action	DBCP-22	8.6.1.1, 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.	Members	WMO Secretariat	WMO Secretariat		
Action	DBCP-23	4.2.4 & DBCP-16	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	Members	Panel		ONGOING
Action	DBCP-21	-	To routinely provide the list of moorings reporting in SHIP or BUOY format	Members	TC	Panel		ONGOING
Action	DBCP-17	-	To enhance buoy safety through improved design (refer recommendations) and keep the Panel informed about related changes.	Manufacture rs, Members	Members, TC	Panel		

Action	DBCP TOR	DBCP ToR	To maintain summary of requirements for buoy data to meet expressed needs of the international meteorological & oceanographic communities.	TC	Members, Secretariats	Chair for presentation to the Panel		ONGOING
Action	DBCP-23	4.3.6	To develop and keep up to date standardized training materials in parallel with the organization of training programmes	TT/CB	Secretariat	Ongoing		ONGOING
Action	DBCP-22	7.2.3	To provide info/materials for DBCP/JCOMMOPS web sites (news, brochure)	Interested Members	TC	Panel		ONGOING
Action	DBCP-23	7.2.2, 8.5.1.13, 8.6.1.10 and DBCP-22 7.2.1,	To provide feedback on required updates and ways to restructure JCOMMOPS web sites – especially contact details	Members	TC	Panel		
Action	DBCP-19		To maintain close links with SOT members so that support on deployment opportunities can be obtained from the SOOP and VOS Panels of SOT.	Chair	TC	Panel		ONGOING
Action	DBCP-24	10.5.6, 6.14 and DBCP-23 8.6.4.5, and DBCP-21	Buoy operators to provide metadata to JCOMMOPS; Manufacturers to collaborate with buoy operators and JCOMMOPS and submit the instrument/platform metadata using the recommended mechanisms; Both to comply with buoy metadata collection scheme	Buoy operators, manufacturers	TC	Panel		ONGOING
Action	DBCP-23	8.6.4.7	To continue to actively participate in the Meta-T Pilot Project	TC		Panel		ONGOING
Action	DBCP-23	8.6.4.9	To liaise with the META-T in order to take the requirements for Category1 Metadata into account when defining requirements for the BUFR templates for buoy data	Task Team on Data Management	TC	Panel	DBCP-26	
Action	DBCP-23	8.4.2.4 and DBCP ToR	To maintain a catalogue of existing ongoing ocean data buoy programmes	TC	Members, Secretariats	Chair & Panel for information		ONGOING
Action	DBCP-21		To provide input on buoy models for JCOMMOPS database	Manufacturers	TC	Panel		
Action	DBCP-21		To review best practices prior to drifter purchase for safety, and GTS data processing purposes	Members	Evaluation group, TC	Panel		
Action	DBCP-21		To provide Service Argos with list of most used buoy models and formats they operate.	Manufacturers	TC	Service Argos	before deployment	ONGOING
Action	DBCP-22	8.3.17	To participate in Argos-3 test programme	TC, Members, Manufacturers	CLS	Panel/next Panel session	DBCP-26	
Action	DBCP-22	8.3.23	To react on the presented characteristics of Argos-4	Argos users	CLS	Michel Faup/end of 2006	12/31/2006	

Action	DBCP-23	8.6.1.10	To provide information to panel members or on its website, about where inventories of buoys are held, to aid in deployment planning.	GDP		Panel/next Panel session	DBCP-26	
Action	DBCP-22	DBCP-22 8.5.3 & DBCP 23 8.5.1.8 and 8.5.1.9	To implement JCOMMOPS work-plan – particularly with respect to Deployment opportunities.	TC/DBCP, TC/Argo	JCOMM	Panel/next Panel session	DBCP-26	ONGOING
Action	DBCP-22	DBCP-22 8.6.5.2	To design deployment packages for safe deployments from 20m height from 25 knots ships	Manufacturers	Evaluation Group	Panel/next Panel session	DBCP-26	
Action	DBCP-23	8.6.5.4	Liaise with the IOCCP and prepare a report of pCO2 measurement from drifters.	Task Team on Technology developments	IOCCP	Panel/Next session	DBCP-26	
Action	DBCP-23	8.4.2.4	To continue review of satellite data telecommunications systems – particularly supporting the DBCP Iridium Pilot Project	D Meldrum, TC	Members	Panel	Ongoing	ONGOING
Action	DBCP-24	12.1.13	to address user requirements and particular observing systems deficiencies as expressed in the JCOMM Statement of Guidance for Ocean Applications	Panel Members		Panel	DBCP-26	
Action	DBCP-24	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	Chairs ETWS, ETMC, NDBC	Panel	DBCP-26	
Action	DBCP-24	12.6.8.4	to follow the best practices and standards eventually proposed under WIGOS, and in particular, to provide the buoy platform / instrument metadata to JCOMMOPS, META-T servers, and the ODASMS as appropriate	Panel Members	TC, Secretariat	Panel	Ongoing	ONGOING
Action	DBCP-23	8.4.2.2	To share experiences regarding usage of various satellite communications systems for buoy data and participate in the DBCP Iridium pilot project	Members	Chair, TC	Chair	Ongoing	ONGOING
Action	DBCP-23	8.4.1.10	To notify of all deployments of Iridium Drifters via a dedicated mailing list (iridium-pp@jcommops.org) and eventually via a notification web page on the JCOMMOPS web	Participants in Iridium PP	TC	JCOMMOPS	Ongoing	ONGOING
Action	DBCP-23	8.6.2.19	To put in place real time tools for monitoring GTS data flows and data timeliness in order to improve its responsiveness to possible problems, this should include an analysis of the long term trends in delays through the system at each stage.	TC, CLS		Panel		COMMENCED
Action	DBCP-24	5.1	Forward to the Chairperson of the Task Team the nomination of Dr Bruce Bradshaw for participating as DBCP representative in the JCOMM Data Management Programme Area Task Team on Table driven Codes	Secretariat			ASAP	
Action	DBCP-24	6.13	Address the repetitive transmission issue and to develop a recommendation statement accordingly	TT IBP&TD			Oct. 2009	
Action	DBCP-24	6.16	Address the identified issues and to report at the next Panel Session	TT IBP&TD			Oct. 2009	

Action	DBCP-24	10.5.3	Work with Panel members and with ET / DRC to define requirements for metadata as part of the BUFR template for buoy data, and to propose new template	TC			Mid-2009	NOT COMPLETE D.
Action	DBCP-24	11.3.4	Closely monitor CLS actions regarding improving data timeliness in the Indian Ocean and report at the next Panel session	TC			Oct. 2009	COMMENCED
Action	DBCP-24	12.1.2	Seek information from Panel members on data buoy-related instrument Best Practices, calibration procedures, and standards for inclusion in the <i>JCOMM Catalogue of Best Practices and Standards</i>	TC			End 2008	COMMENCED
Action	DBCP-24	12.5.5	Investigate developing an easy-to-calculate global statistic that reports the status of the array, also taking into account drifter distribution targets	TT IBPD			Oct. 2009	
Action	DBCP-24	12.6.8.1	Participate in the WIGOS Pilot Project for JCOMM and address related data management aspects including interoperability with the WIS, and quality management	RNODC / DB and SOC / DB			ASAP	
Action	DBCP-24	12.6.8.2	Investigate whether it would be appropriate and desirable that their national organizations contributes to the Pilot Project as specialized and / or Regional Instrument Centres or assist candidate instrument centres as appropriate	Members			Mid-2009	
Action	DBCP-24	7.3.7	Compile and clearly state as part of Pilot Project documentation existing requirements for wave observations as documented by the ETWS and JCOMM	PP WMD and PP WET			ASAP	
Action	DBCP-24	8.4(iv)	Reduce the delays regarding the Indian Ocean and to inform the Panel on how well the region will be served by Argos-3	CLS			Oct. 2009	
Action	DBCP-25	10.2.4 and DBCP-24 12.1.5	The Panel requested its Technical Co-ordinator to continue participating in reviewing the "Oceanographer's and Marine Meteorologist's Cookbook for Submitting Data in Real Time and In Delayed Mode"	TC	NDBC	JCOMM DMCG	Ongoing	
Action	DBCP-25	10.2.5	Panel Members were invited to contribute to the extreme waves data base, for waves exceeding 12 m significant wave height when such events would be observed by data buoys.	Panel Members	NODC		early 2010	
Action	DBCP-25	10.3.2	The Panel noted that the WMO EC decisions were consistent with the DBCP Implementation Strategy and therefore requested its members to work pro-actively at a national level, in order to achieve the goals proposed by EC-LVI as detailed in the report (10.3.1).	Panel Members			DBCP-26	
Action	DBCP-25	10.5.3	DBCP Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBP) to liaise with the WIGOS Pilot Project Task Team(s) once/if established, and invited TT-IBP members to consider participating as members (action, TT-IBP, ASAP).	TT-IBP&TD			DBCP-26	

Action	DBCP-25	10.5.5	Publish a new DBCP Technical Document that would include information on DBCP recommended quality control procedures (i.e. automated real-time QC checks, as well as DBCP quality control guidelines for quality information feedback from data users to platform operators) made generic with regard to satellite data telecommunication systems. The draft document should be circulated and reviewed by the Task Team on Data Management	TT-DM	TC		DBCP-26	
Action	DBCP-25	11.1.1	The Chair asked the Panel to review the 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 2009	Panel members		Chair	11/1/2009	
Action	DBCP-25	5.3.4	The Panel supported the initiative of collating metadata requirements for all Moored Buoy networks and requested that the Task Team to bring concrete proposals forward to the next session for discussion and agreement and to input to discussions on BUFR template updates for data buoys.	TT-MB	TC	DBCP	DBCP-26	
Action	DBCP-25	5.4.4	The Panel appreciated the offer by South African Weather Services to host a Capacity Building workshop in Pretoria, in April 2010. The Panel requested Dr Thurston and the Task Team Capacity Building members to firm up the programme, to identify the lecturers, and to start the process to select trainees as soon as possible.	Sidney Thurston	Secretariats , TT-CB	DBCP	11/1/2009	
Action	DBCP-25	7.3.7	Progress with its work on Wave Drifter tests as quickly as possible, and to interact with other groups, such as ESA, who were pursuing initiatives to improve the quality of in situ data in support of cal/val activities for a number of Essential Climate Variables (ECVs)	David Meldrum and PP-WMD SC			ASAP	
Action	DBCP-25	7.4.6	The Panel noted that the expected outcome of PP-WET was closely linked with the work of the Task Team on Moored Buoys, therefore recommended that the PP-WET SC collaborate with the Task Team in developing the metadata list for wave data collection.	PP-WET SC and TT-MB	TC		ASAP	
Action	DBCP-25	8.2.1	While appreciating the effort to make the web site more user friendly and appealing, the Panel requested the Technical Coordinator to make sure that the wealth of information existing on the present web site will remain accessible through the new menu structure.	TC	Members		DBCP-26	
Action	DBCP-25	8.5.3 and DBCP-23 8.6.3.2 and DBCP-22 8.6.3.3	The Panel, after discussion about approaches to managing vandalism, agreed that it would collaborate with the ITP to contribute to a global assessment of the scope and impact of vandalism, and a formulation of strategies that collectively could reduce its incidence and consequence Once the report is agreed and endorsed by DBCP, ITP and other related JCOMM community, it would be submitted to IGOOS and TOWS-WG as requested.	Ken Jarrott	Members		JCOMM-III	

Action	DBCP-25	8.6.3	The TC explained that the BUFR templates had not yet been updated for buoy data as the JCOMM Task Team on Table Driven Codes, had worked on the XBT and VOS templates as a priority during the inter-sessional period, however the review of the buoy templates (for additional metadata and to cater to different platforms, and pilot projects e.g. waves) and possibly creation of additional templates will be the next priority.	TC	JCOMM TT-TDCF			
Action	DBCP-25	8.7.3	The Panel thanked the representatives of ESURFMAR for their willingness to participate in the High Resolution SST project, and asked David Meldrum to continue pursuing opportunities for the Panel within the ESA CCI, not only for HRSST but also for a sub-set climate quality network of in situ observations of other Essential Climate Variables (ECVs) such as Sea Surface Salinity (SSS) and 2D wave spectral data.	David Meldrum			ASAP	
Action	DBCP-25	8.8.2	With respect to making NWP/Ocean model outputs available to buoy operators for i) Checking data quality before sending to the GTS upon deployment and ii) Checking data that had been removed from the GTS, against model outputs to assess if perhaps it had improved over time and could be disseminated on the GTS again (if it has improved). A description should be compiled for buoy operators to see if model data can be made available on an adhoc basis for a time and location, for comparison to data not already on the GTS or for measurements which have been suppressed in the past.	Pierre Blouch and Jon Turton	TC		DBCP-26	
Action	DBCP-25	8.8.3	The development of quality control processes and approaches for SSS is required. Many panel members suggested documents or tools for assessing QC for SSS. It was agreed that the Panel members provide details of Sea Surface Salinity quality control processes to JCOMMOPS	Panel members	TC		12/31/2009	
Action	DBCP-25	9.2.4 and DBCP-24 11.2.5 and DBCP-23 7.1.5	The Panel encouraged again the two Buoy Data Management centres to continue liaising between themselves. (see Item 5.1.2)	ISDM and Meteo France			Ongoing	
Action	DBCP-25	9.3.5	In recent months the priority and interest of completing the ability to ingest data from the NPOESS antenna has been renewed. NOAA should provide this document or a summary through the DBCP chairman during the inter-sessional period.	NOAA/NES DIS	B Woodward		DBCP-26	
Action	DBCP-25	9.5.1	Panel members are urged to comment on all White Papers (available http://www.oceanobs09.net/), especially those concerning buoys	Panel Members			10/30/2009	
Action	DBCP-23	8.5.1.13	To link, as much as possible, to the JCOMM (http://www.jcomm.info) websites for JCOMM related information and redesign the DBCP website	TC, Secretariats		Panel		DONE
Action	DBCP-23	8.5.1.14	To provide assistance to JCOMMOPS in redevelopment of the DBCP	TC	Members	Panel		DONE

			website					
Action	DBCP-24	9.5	Address ITP-DBCP relationship issues and report at the next Panel session	Mr Ken Jarrett			Oct. 2009	DONE
Action	DBCP-24	10.1.3	Re-design the DBCP website	JCOMMOPS			Oct. 2009	DONE
Action	DBCP-23	8.6.3.7	to assist in the proper distribution of information on data buoy vandalism to the fishing fleets	CLS	JTA	Next Panel Session	DBCP-24	DONE
Action	DBCP-23	8.6.4.2 and Meta-T workshop	To address the issue of usability of the JCOMMOPS metadata collection system. To provide Panel Members with the list of metadata required	TC		Panel Members		DONE
Action	DBCP-21		To monitor Argos GTS sub system & arrange for modifications as necessary.	TC	CLS	Panel & users		DONE
Action	DBCP-23	2.2.1.3 (xiii); 8.6.2.18	Investigate and implement appropriate solution to decrease delays within the Argos system	TC and CLS		Panel		DONE
Action	DBCP-24	10.6.6, 12.5	Coordinate with appropriate experts and to develop a new document summarizing requirements for the reporting of high temporal resolution SST data	TC			ASAP	DONE
Action	DBCP-24	10.6.7	Work with JAMSTEC to ensure CO2 data is put onto the GTS	TC			Oct. 2009	DONE
Action	DBCP-24	11.4.3	Study this issue of using Iridium positions for oceanographic purposes, and investigate whether technical solutions could be proposed to address the oceanographic requirements	PP Iridium			Oct. 2009	DONE
Action	DBCP-24	12.1.5	Participate in the development of the DMPA document that explains how marine data can be distributed in both real time and delayed mode from a data buoy perspective "Cookbook"	TC and Dr Bill Burnett			Oct. 2009	DONE
Action	DBCP-24	12.5.6	Organize in due course a face to face meeting with a few GHRSSST key players	Chairperson			ASAP	DONE
Action	DBCP-24	7.1.9.5	Define precise criteria for measuring success	Iridium PP			Oct. 2009	DONE
Action	DBCP-24	7.1.9.6	Update the terms and conditions for the Iridium upgrade	Chairperson			ASAP	DONE
Action	DBCP-24	7.2.5.3	Address the Argos format issue and make recommendations	Argos 3 PP			Oct. 2009	DONE
Action	DBCP-24	7.3.6	Investigate implications of PP WMD proposing new fields to be included in BUFR template	TC			Oct. 2009	DONE
Rec.	DBCP-25	6.3	The Panel urged Panel members to continue increasing the number of barometers buoys in operation.	Members			Ongoing	Ongoing

Rec.	DBCP-25	6.3	The Panel recognized the advantages of Iridium buoys in terms of better timeliness and lower cost per message, and suggested more Iridium drifters to be deployed in the Indian Ocean region and other areas where the delay of data delivery is particularly an issue.	Members			Ongoing	Ongoing
Rec.	DBCP-25	6.3	The Panel noted with concern that there existed spatial gap in Russian sector of the Arctic region, due to challenging environment for deployment. Data sharing through GTS has been greatly improved, and the Panel further encouraged the research programmes (e.g. DAMOCLES) to put real-time and/or near-real-time data on GTS.	Arctic Research Programs	Members and TC		DBCP-26	
Rec.	DBCP-25	6.3	The Technical Coordinator reported on the work of the OceanSITES project office, for which she has spent her 30% of the time. The Panel noted that, with exception of TAO/TRITON buoys, monitored data have been collected and archived in GDACS but not available on GTS. The Panel noted that sharing some data on GTS would greatly increase the use/application of the data (e.g. NWP) that eventually would improve their recognition, and encouraged the OceanSITES to consider this issue.	Moored Buoy operators	TC		DBCP-26	
Rec.	DBCP-25	11.1.4	The EB recommended that the Panel approve the use of the above funds to pay for Iridium upgrades for the South Pacific and Indian Oceans, provided other agencies (e.g. the GDP and Météo-France) could be identified to fund the basic SVP-Bs from their own budgets.	Executive Board			DBCP-26	
Rec.	DBCP-25	11.1.5	The Panel therefore recommended that the chair of the Task Team for Instrument Best Practices and Drifter Technology Developments (Mr W Burnett) take responsibility for identifying suitable authors for updating best practice documents, and, if needs be, to use Panel funds up to a maximum of \$10k to pay for the hire of a suitably qualified consultant. It further recommended that these funds should only be called upon only if matched funding from other sources could be identified.	TT-IBP	WMO Secretariat		DBCP-26	
Rec.	DBCP-25	11.1.6	The EB felt that it would enhance the value of the SVP intercomparison exercises being regularly undertaken by the GDP to include Marlin-Yug, and recommended that up to \$10k of Panel resources be used to match-fund the procurement of five evaluation SVPs from Marlin-Yug.	GDP	Marlin-Yug		DBCP-26	
Rec.	DBCP-25	11.1.7	The EB endorsed its earlier decision to allocate up to \$25k to this activity from the 2009 budget. It further recommended that funds already earmarked in the 2010 budget be used to support the mission costs of DBCP trainers that might be recruited to this workshop	TT-CB			DBCP-26	
Rec.	DBCP-25	5.1.3	The Panel requested its Members to make sure the rules on 7-digit WMO Ids were taken into account as appropriate	Members			2012	

Rec.	DBCP-25	5.2.3 & 6.3	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	Manufacturers		Ongoing	Ongoing
Rec.	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	Liquid Robotics	TT IBP&TD		Ongoing	Ongoing
Rec.	DBCP-25	7.1.8 & DBCP-24 7.1.9.5	The Iridium Pilot Project Participants should update the Terms of Reference to include key success factors and the analysis required in 2010.	Iridium Pilot Project Members	TC		Ongoing	Ongoing
Rec.	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	TC		Ongoing	Ongoing
Rec.	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.	Members				
Rec.	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 SC			DBCP-26	
Rec.	DBCP-25	8.2.1	The Panel members were invited to review the new web page and inform the Technical Coordinator on any required/missing information.	Members	TC		DBCP-26	
Rec.	DBCP-25	8.7.3	The Panel noted there was a need to flag HRSST and other high-performance sensors appropriately within platform metadata which would require a deployment notification to be sent to JCOMMOPS, as with other Pilot Projects	Members	TC		Ongoing	

-2- ADMINISTRATIVE WORKPLAN

Action / Recomm.	Reference	Item	Description	Who	Supported by	Reporting to	When	Status
Action	DBCP TOR	-	To maintain a list of national contact points for the DBCP & within other relevant bodies with potential for involvement in DBCP activities.	Secretariats	Members	Chair & Panel for information	Ongoing	
Action	DBCP-21		To identify necessary funding to allow for expansion of JCOMMOPS & AIC staffing & resources.	Secretariats, Members	JCOMM /OCG	Panel	DBCP-22	
Action	DBCP-21	-	To actively communicate with national coordination for GEO to fully inform on the Panel's activities and capabilities in this regard.	Members		Panel	Ongoing	ONGOING
Action	DBCP-22	10.1.8, 10.1.10	To prepare & distribute revised budget estimates for the following year, and final financial statement	Finance Advisor	Secretariats, Chair	Panel	ONGOING	ONGOING
Action	DBCP-22	10.1.10	To prepare interim statement of the budget for the next DBCP session	Finance Advisor	Secretariats	Panel	ONGOING	ONGOING
Action	DBCP-22	10.3.1	To inform chairman of her wish or otherwise to continue to work as TC/DBCP	TC		Chair/	End of each contract	ONGOING
Action	DBCP-22	11.1	To make recommendations to JTA XXVI	Chair		JTA, Panel	JTA-XXVI	ONGOING
Action	DBCP-22	2.2.1.2 (xii), 4.3.3, 4.3.5	To organize Capacity Building activities (training workshops, training materials, identifying lecturers)	Panel	Secretariats	Panel/Ongoing	DBCP-23	ONGOING
Action	DBCP-23	2.2.1.3 (xxiii) & 2.2.2.7	Encourage cooperation with OceanSITES and the Tsunameter network at a national level					
Action	DBCP-22	10.3	Continue the arrangements (including finance) to secure the services of a technical coordinator.	Chair	Secretariats	Secretariats	Ongoing	
Action	DBCP-22	10.4	Review programme & establish working priorities of the technical coordinator.	Executive Board	Panel Members	Panel	Next Panel session	
Action	DBCP-23	6.8	To organize scientific & technical workshop at the next Panel session (identify 2nd co-chair from the host country if required) including CD-ROM inputs	Workshop Chair	Secretariats	Panel	Next Panel session	ONGOING
Action	DBCP-23	6.7	Compile a CD-ROM of scientific & technical workshop at the last Panel Session	Chair, Secretariats	TC	Executive councils of WMO & IOC/	End of each year	ONGOING

Action	DBCP-23	6.7, and DBCP-22 7.2.12	To consolidate and publish the Panel's session report (web only) and Annual Report (CD-ROM and web)	Chair, Secretariats	TC	Executive councils of WMO & IOC/	End of each year	ONGOING
Action	DBCP-23	4.2.5, 4.3.10 and DBCP-22 4.4.1, 4.2.3	To finalise updates to the DBCP implementation strategy (DBCP TD 15) including reference to the Capacity Building efforts being undertaken by the Panel – feedback sought by members,	Chair	Members	Panel	End of each year	ONGOING
Action	DBCP-22	4.3.6	To investigate on possible cooperation with relevant Capacity Building programmes in WMO and IOC	Secretariats	Chair	Panel/next Panel session	DBCP-23	ONGOING
Action	DBCP-22	7.2.2	To design and produce JCOMMOPS brochure	TC	Members, Secretariats	Panel/next Panel session		
Action	DBCP-24	10.3.4	Write to the NFPs, provide them with the list of blocks allocated to each country, and ask them to release unused WMO numbers if possible	Secretariat			Early 2009	
Action	DBCP-24	10.4.4	Make proposals for a anti-vandalism strategy	Mr Ken Jarrott			Oct. 2009	
Action	DBCP-24	10.7.3	Investigate participating in the Association of Hydro-Meteorological Equipment Industry (HMEI - http://www.hydrometeoindustry.org/) as a way to be represented at JCOMM meetings	Manufacturers			Oct. 2009	
Action	DBCP-24	12.5.4	Relay the OOPC recommendation to CBS (i.e., addressing similar NWP needs regarding high-resolution SST data) as appropriate	Secretariat			ASAP	
Action	DBCP-24	12.1.15	Take into account requirements for met-ocean forecasts and services, and the gap analysis from the <i>JCOMM Statement of Guidance for Ocean Applications</i> to produce a future revised version of the JCOMM OPA Strategic Workplan	OCG and OCG-III			ASAP	
Action	DBCP-24	12.2.3	Provide reports on the development / improvement of the IOC Operating Plan in the annual session	Secretariat			Oct. 2009	
Action	DBCP-24	12.3.5	Provide input to the JCOMM OCG Chairperson for the WMO Operating Plan, as appropriate	DBCP Chairperson and Secretariat			End 2008	
Action	DBCP-24	12.6.7.1	Check the WIGOS Pilot Project for JCOMM Implementation Plan and see how they could contribute to the Pilot Project	Panel members			Mid-2009	
Action	DBCP-24	12.6.7.2	Lead the DBCP efforts regarding instrument Best Practices in close liaison with the JCOMM Focal Point on CIMO matters (Dr Teng) and the Technical Co-ordinator, as well as with the TT IBPD and Panel members	Dr Bill Burnett			Mid-2009	

Action	DBCP-24	13.5.3	Write to the JCOMM Co-chairpersons to highlight DBCP concerns and the need for an adequate career structure and satisfactory status for the TCs	Chairperson			ASAP	
Action	DBCP-24	13.8.9	Seek advice from Panel members and the Executive Board and then write to WMO and IOC Members / Member States in order to seek additional contributions to the Trust Fund	Secretariat			Oct. 2009	
Action	DBCP-25	2.6	Act as the Workshop co-chairperson for 2010.	Bill Burnett and David Meldrum		DBCP	DBCP-26	
Action	DBCP-25	12.1	Annual National Reports, as well as others submitted to the Secretariat before 30 November 2009, would be published in the Panel's Annual Report .	Panel members	Secretariat	Secretariat	12/1/2009	
Action	DBCP-25	15.2	The Panel requested, SAMS as potential host for DBCP-26 to provide further details and fixed venue as soon as possible.	David Meldrum		Panel Members	ASAP	
Action	DBCP-25	10.6.7	Liaise with Mr Frank Grooters for updating the interim financial report with the most accurate and current information.	Executive Board	F Grooters		End of each year	Ongoing
Action	DBCP-25	10.6.7	The joint Secretariats and Mr Grooters to work together to distribute the final statement for 2009 to the Panel members as soon as the IOC and WMO Final Statement of accounts for the year 2009 are finalized.	Secretariats	F Grooters	Panel Members	3/1/2010	Ongoing
Action	DBCP-25	11.1.2	The Technical Coordinator presented a proposed text of the DBCP Data Policy, which is to be a part of the Operating Principles (Annex to report). The Panel is encouraged to review the Draft Data Policy and provide feedback to the TC.	Panel members		TC, Secretariat	11/1/2009	
Action	DBCP-25	11.4.2	The Panel requested the WMO Secretariat to facilitate, when appropriate, the transfer of required funds from the DBCP Trust Fund at WMO to the IOC in order for IOC to have sufficient funds at its disposal in this regard. The Panel recognized that the new arrangements were a very significant step forward for the Panel and its TC, and it warmly thanked the IOC Secretariat for the considerable efforts it had made on the Panel's behalf. The Panel requested the IOC Secretariat to report on the progress and/or results of the new recruitment process at the next Session in 2010	IOC Secretariat	WMO Secretariat, Chair		DBCP-26	
Action	DBCP-25	11.4.2	Develop a time line for actions relating to the recruitment.	IOC Secretariat	WMO Secretariat, Chair	Panel Members	2/1/2010	
Action	DBCP-25	11.4.2	Add an agenda item to review the action items from the previous meeting.	Secretariat and Chair.	Panel Members	Panel Members	5/1/2010	

Action	DBCP-25	11.6.2	The Panel recalled the dynamic nature of the DBCP Operating Principles document and invited its members to provide the Chairperson with comments by the end of the year	Panel members	Chair	Panel	End of each year	Ongoing
Action	DBCP-25	11.6.2	Collate Updates to the DBCP Operating Principles document	Chair	Secretariat	Chair	End of each year	Ongoing
Action	DBCP-22	13.2	To identify a new vice Chair	Members	Chair, Secretariats	Panel/next Panel session	DBCP-23	DONE
Action	DBCP-22	2.2.1.2 (iii)	To write to Members of Asian Countries in order to seek their participation in NPDBAP	Secretariats		Panel/next Panel session	DBCP-23	DONE
Action	DBCP-22	2.2.3.3	To work with representatives of sea level working groups to explore cooperation with Tsunami warning systems	Members	Chair, Secretariats	Panel/next Panel session	DBCP-23	DONE
Action	DBCP-22	4.1.7,10.1.9	To convene an Executive Board	Chair	Secretariats	Panel	DBCP-23	DONE
Action	DBCP-22	10.3.5	To pay their contributions as soon as invoices are received.	Members		WMO Secretariat	Upon invoice	DONE
Action	DBCP-22	2.3.1	To submit national reports & Action Group reports in electronic form	Action Group Members		Secretariats	12/31/2006	DONE
Action	DBCP-22	6.7, 7.2.12	To provide electronic versions of papers presented at the workshop	Authors, Workshop presentation		Ken Jarrott	11/30/2006	DONE
Action	DBCP-24	11.2.5	Liaise between themselves and to work out a better strategy for providing a coherent system for archiving the buoy data	RNODC / DB and SOC /DB			Oct. 2009	DONE
Action	DBCP-24	12.7.7.1	Set a plan for the 2009 expenditure and update the interim financial report with the most accurate and actual information	EB			31-Dec. 2008	DONE
Action	DBCP-24	12.7.7.2	Work together to distribute the final statement for 2008 to the Panel members as soon as the IOC and WMO final Statement of Accounts for the year 2008 are finalized	Secretariat and Mr Frank Grooters			1 Mar. 2009	DONE
Action	DBCP-24	-	To explore options for allowing Panel contributors to participate in a wider funding activity that might eventually translate to direct contribution to a JCOMMOPS trust fund.	Chair	JCOMM OGG, secretariat	Panel	JCOMM 4-year intersessional period	DONE
Action	DBCP-22	10.3	To send invoices to Participants	Secretariats		Panel	11/1/2006	DONE
Action	DBCP-22	7.2.2	To revise DBCP brochure	TC	Members, Secretariats	Panel	DBCP-24	DONE

Action	DBCP 22	7.2.8	To update & publish new versions of DBCP publications No. 3 (Argos guide)	Service Argos (No. 3)	TC (No. 3)	Panel/next Panel session		DONE
Action	DBCP 24	2.6	Submit papers via e-mail or CD-ROM to the Workshop Chairperson, in electronic form (MS Office compatible format only)	Authors workshop			30 Nov. 2008	DONE
Action	DBCP 24	2.7	Act as the Workshop Co-chairpersons for 2009	Dr Bill Burnett and Jean Rolland			DBCP XXV	DONE
Action	DBCP 24	5.9	Address the issue of updating the JCOMMOPS TOR (to add OceanSITES) in view to make appropriate recommendation to JCOMM-III	OGG			Early 2009	DONE
Action	DBCP 24	16.1	Publish DBCP Annual Report for 2008	Secretariat			Early 2009	DONE
Action	DBCP 24	16.2	Submit their National Reports to the Secretariat	Members			31 Dec. 2009	DONE
Action	DBCP 24	11.3.3	Write to NESDIS regarding the issue of accessing the NOAA Satellite data via the Svalbard receiving station	Chairperson			ASAP	DONE
Action	DBCP 24	12.5.3	Coordinate provision of a proposal for Community White Papers, via the conference OceanObs'09 website (www.oceanobs09.net) in due course and assist in identifying authors	Chairperson			15 Nov. 2008	DONE
Action	DBCP 24	12.6.8.3	Review the Chapter 4, Part II of the WMO Guide on Instruments and Methods of Observation and make proposals through the Pilot Project Steering Group for its updating as required	Members			Mid 2009	DONE
Action	DBCP 24	13.1.2	Inform the Chairperson about required changes	Members			31 Dec. 2008	DONE
Action	DBCP 24	13.11.1	Advise on the appropriate level in due course regarding UNESCO requirements for the deposit of advance salary and severance payments as a precondition for the continuation of the TC's employment through IOC	Secretariat			Oct. 2009	DONE
Action	DBCP 24	13.4.6	Provide the Chairperson with comments regarding DBCP operating principles by the end of the year	Members			31 Dec. 2008	DONE
Action	DBCP 24	13.7.1	Propose a prioritization of her tasks based on her understanding of the Panel's requirements, and to submit it for review and approval to the Chairperson through the Executive Board	TC			ASAP	DONE
Action	DBCP 24	8.4(ii)	Make the Final Reports from the last workshop on the impact of observational systems on NWP (Geneva, Switzerland, 2008) available to Panel members	Secretariat			ASAP	DONE

Rec.	DBCP-25	2.5	Authors who would wish to publish their full paper from the Science and Technology workshop were invited to submit them via e-mail or CD-ROM to the Workshop Chairperson, in electronic form (MS Office compatible format only).	Authors			10/30/2009	Ongoing
Rec.	DBCP-25	10.6.7	The Panel expressed its appreciation to all donors for their invaluable contribution to the Panel's activities. In the meantime, the Panel recognized the perennial problem of identifying additional financial contributions, and urged all participants to actively explore funding opportunities in order to meet the requirements for maintaining and developing Panel's activities.	Panel members	Secretariats			
Rec.	DBCP-25	11.0.9	The EB recommended that up to \$10k of Panel funding be made available to Dr Rajendran to assist him in convening a regional DBCP meeting in Asia	V Rajendran	TT-CB		6/1/2010	
Rec.	DBCP-25	11.1.2	The EB considered its membership, currently consisting of the chair and vice chairs, a Panel member and ex officio representatives from IOC, WMO and JCOMMOPS (the DBCP TC). It was felt appropriate to seek representation from the buoy manufacturing community, and the suggestion was made that the buoy manufacturers should arrange to elect a representative from amongst their number.	Manufacturers			DBCP-26	
Rec.	DBCP-25	11.1.3	In general, the EB was of the opinion that there was a clear need for succession planning amongst the Panel's office bearers and recommended that the chair and vice chairs should generally serve for a term of 4 – 6 years. It further suggested that the Action Groups should consider invoking similar procedures.	Executive Board	Action Groups		DBCP-26	
Rec.	DBCP-25	11.1.8	As regards the perennial problem of identifying additional financial contributions to the Panel's annual budget, the EB repeated its call to Panel participants to try to identify additional resources. It further recommended that participants from countries or organizations that did not currently contribute should actively explore funding opportunities, and that the Panel and the secretariats should give every assistance to these non-paying participants in preparing the case and approach to their funding bodies	Panel members	Secretariat		DBCP-26	

ANNEX XI

ACRONYM LIST

ABE-LOS	IOC Advisory Body on the Law of the Sea
ADOS	Autonomous Drifting Ocean Station
ADS	Automatic Distribution System (Argos)
AG	DBCP Action Groups
AIC	Argo Information Center
ALD	Appointment of Limited Duration
AMDAR	Aircraft Meteorological Data Relay (WWW)
ANIMATE	Atlantic Network of Interdisciplinary Moorings and Time-series for Europe
AOML	NOAA Atlantic Oceanographic and Meteorological Laboratory (USA)
Argo	Argo Profiling Float Pilot Project
AST	Argo Steering Team
ATF	Acoustic Tank Facility
BATS	Bermuda Atlantic Time-series Study
BOM	Bureau of Meteorology (Australia)
BPPT	Agency for the Assessment and Application of Technology (Indonesia)
BUFR	Binary Universal Form for Representation of meteorological data
CB	Capacity Building
CBS	Commission for Basic Systems (WMO)
CIS	Central Irminger Sea
CLIMODE	CLIVAR Mode Water Dynamics Experiment
CLIVAR	Climate Variability and Predictability (WCRP)
CLS	Collecte Localisation Satellites (France)
CNES	Centre national d'études spatiales (France)
CORC	Consortium on the Oceans Role in Climate
DAMOCLES	Developing Arctic Modelling and Observing Capabilities for Long-term Environmental Studies (European joint project)
DAR	Data Discovery, Access and Retrieval service (WMO WIS)
DART	Deep-ocean Assessment and Reporting of Tsunami (buoy)
DBCP	Data Buoy Co-operation Panel (WMO-IOC)
DB-TAG	E-SURFMAR Data Buoy Technical Advisory Group
DCPC	Data Collection and Production Centres (WMO WIS)
DCS	Data Collection System
DMCG	Data Management Coordination Group (JCOMM)
DPM	Natural Disaster Prevention and Mitigation Programme (WMO)
E2EDM	End-to-End Data Management (JCOMM Pilot Project)
EB	DBCP Executive Board
EBD	Equivalent Buoy Density
ECMWF	European Centre for Medium-Range Weather Forecasts
EEZ	Exclusive Economic Zone
EMC	NOAA's Environmental Modelling Center (USA)
ER	Expected Result
E-SURFMAR	Surface Marine programme of the Network of European Meteorological Services, EUMETNET
ET/AWS	CBS/IOS Expert Team on Requirements for Data from Automatic Weather Stations (WMO)
ET/DRC	CBS Expert Team on Data Representation and Codes (WMO)
ET/EGOS	CBS/IOS Expert Team on the Evolution of the Global Observing System (WMO)
ETDMP	Expert Team on Data Management Practices (JCOMM)
ETMC	Expert Team on Marine Climatology (JCOMM)
ETSI	Expert Team on Sea Ice (JCOMM)
ETWS	Expert Team on Wind Waves and Storm Surge (JCOMM)
EUCOS	EUMETNET Composite Observing System

EUMETNET	Network of European Meteorological Services
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EuroSITES	European integrated network of open ocean multidisciplinary observatories
FAO	Food and Agriculture Organization
FOAM	Forecast Ocean Assimilation Model (UK)
GCN	GLOSS Global Core Network
GCOS	Global Climate Observing System
GDAC	Global Data Access Centre
GDP	Global Drifter Programme
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GHRSSST	GODAE High Resolution SST Pilot Project
GIS	Geographical Information System
GISC	Global Information System Centres (WMO WIS)
GLOSS	Global Sea-level Observing System (JCOMM)
GLOSS-GE	GLOSS Group of Experts
GMDSS	Global Maritime Distress and Safety System (IMO)
GODAE	Global Ocean Data Assimilation Experiment (GOOS)
GOHWMS	Working Group on the Framework for a Global Tsunami and other Ocean-Related Hazards Early Warning System
GOOS	Global Ocean Observing System
GOSUD	Global Ocean Surface Underway Data
GPS	Global Positioning System
GSSC	GOOS Scientific Steering Committee
GTOS	Global Terrestrial Observing System (WMO, UNESCO, FAO, UNEP, ICSU)
GTS	Global Telecommunication System (WWW)
GTSP	Global Temperature-Salinity Pilot Project / Profile Programme
HOT	Hawaii Ocean Timeseries
HWRP	Hurricane Weather Research and Forecast model system (USA)
IABP	International Arctic Buoy Programme
IATTC	Inter-American Tropical Tuna Commission (IATTC)
IBPIO	International Buoy Programme for the Indian Ocean
ICCAT	International Commission for the Conservation of Atlantic Tuna
ICG/IOTWS	Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (IOC)
ICG/PTWS	Intergovernmental Coordination Group for the Pacific Ocean Tsunami Warning and Mitigation System (IOC)
ICSU	International Council for Science
ICTT-QMF	Inter Commission Task Team on Quality Management Framework
IFREMER	French Research Institute for Exploitation of the Sea
IGDDS	Integrated Global Data Dissemination Service (satellite)
I-GOOS	The intergovernmental IOC-WMO-UNEP Committee for GOOS
IHO	International Hydrographic Organization
IJPS	Initial Joint Polar-Orbiting Operational Satellite System (NOAA, EUMETSAT)
IMB	Ice Mass Balance
IMO	International Maritime Organization
INPE	Instituto Nacional de Pesquisas Espaciais (Brazil)
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCCP	International Ocean Carbon Coordination Project
IODE	International Oceanographic Data and Information Exchange (IOC)
IOOS	Integrated Ocean Observing System (USA)
IOTC	Indian Ocean Tuna Commission
IPAB	WCRP-SCAR International Programme for Antarctic Buoys
IPY	International Polar Year (2007-2008)
IRD	Institut de recherche pour le développement (France)
ISABP	International South Atlantic Buoy Programme
ISDM	Integrated Science Data Management (formerly MEDS)

ISO	International Organization for Standardization
IT	Information Technology
ITP	International Tsunameter Partnership
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM in situ Observing Platform Support Centre
JCOPE	Japanese Coastal Ocean Predictability Experiment
JTA	Joint Tariff Agreement (Argos)
KEO	Kuroshio extension region
KMA	Korea Meteorological Administration
KML	Keyhole Mark-up Language (GoogleEarth file format)
LUT	Local User Terminal (Argos)
MAN	JCOMM Management Committee
MCSS	Marine Climatological Summaries Scheme
MEDS	Marine Environmental Data Service (Canada, now ISDM)
MERSEA	Marine Environment and Security for the European Area
META-T	Pilot Project for the Collection of Real-time Metadata regarding Sea Surface Temperature and Water Temperature Profile data (JCOMM)
METOP	Meteorological Operational satellites of the EUMETSAT Polar System (EPS)
MFS	Mediterranean ocean Forecasting System
MOU	Memorandum of Understanding
MSS	Maritime Safety Services
NAVOCEANO	Naval Oceanographic Office (USA)
NC	National Centres (WMO WIS)
NCDC	NOAA's National Climate Data Center (USA)
NCEP	NOAA National Center for Environmental Prediction (USA)
NDBC	NOAA National Data Buoy Center (USA)
NESDIS	NOAA National Environmental Satellite Data and Information Service (USA)
NFRDI	National Fisheries Research and Development Institute
NIOT	National Institute of Ocean Technology (India)
NMDIS	National Marine Data and Information Service (China)
NMHS	National Meteorological and Hydrological Service
NOAA	National Oceanic and Atmospheric Administration (USA)
NOCS	National Oceanography Center Southampton (UK)
NORI	National Oceanographic Research Institute (Rep. Korea)
NPDBAP	North Pacific Data Buoy Advisory Panel
NPOESS	National Polar-orbiting Operational Environmental Satellite System (USA)
NSF	National Science Foundation (USA)
NWP	Numerical Weather Prediction
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
ODINAFRICA	Ocean Data and Information Network for Africa (IODE)
OGP	Oil and Gas Producers
OOPC	Ocean Observations Panel for Climate (GCOS-GOOS-WCRP)
OPA	Observations Programme Area (JCOMM)
OPSC	Observing Programme Support Centre
OPSCOMM	Argos Operations Committee
ORION	US/NSF Ocean Research Interactive Observatory Networks project
OSMC	NOAA Observing System Monitoring Center (USA)
PA	Programme Area (JCOMM)
PANGEA	Partnerships for New GEOSS Applications
PAP	Porcupine Abyssal Plain
PAPA	Programme for a Baltic network to assess and upgrade an operational observing and forecasting System in the region (EU project)
PDE	Puertos Del Estado (Spain)

PGC	Principal GTS Co-ordinator (DBCP)
PICES	North Pacific Marine Science Organization
PICO	Panel for Integrated Coastal Observations
PIRATA	Pilot Research Moored Array in the Tropical Atlantic
PMEL	NOAA Pacific Marine Environmental Laboratory (USA)
PMO	Port Meteorological Officer
PMOC	Principal Meteorological or Oceanographic Centres responsible for quality control of buoy data (DBCP)
PMT	Platform Messaging Transceivers
POGO	Partnership for Observation of the Global Oceans
POPS	Polar Ocean Profiling System
PTT	Platform Transmitter Terminal (Argos)
QA	Quality Assurance
QC	Quality Control
QMF	WMO Quality Management Framework
RMS	Root Mean Square
RNODC	Responsible Oceanographic Data Centre (IODE)
RNODC/DB	RNODC for Drifting Buoys
ROOS	Regional Ocean Observing Systems
RRR	Rolling Review of Requirements
SAMS	Scottish Association for Marine Science
SAT	Site Acceptance Test
SAWS	South African Weather Service
SBD	Short Burst Data
SCD	Satélite de Coleta de Dados (Data Collection Satellite, Brazil)
SCG	Services Coordination Group (JCOMM)
SCOR	Scientific Committee on Oceanic Research (ICSU)
SEACORM	South East Asia Center for Ocean Research and Monitoring (Republic of Indonesia)
SeaDataNET	Pan-European infrastructure for Ocean & Marine Data Management
SHOM	Service Hydrographique et Océanographique de la Marine (France)
SIMORC	System of Industry Metocean data for the Offshore and Research Communities
SIO	Scripps Institution of Oceanography (University of California, USA)
SOBP	Southern Ocean Buoy Programme
SOC	Specialized Oceanographic Centre (JCOMM)
SOOP	Ship-of-Opportunity Programme
SOOPIP	SOOP Implementation Panel (JCOMM)
SOT	Ship Observations Team (JCOMM)
SPA	JCOMM Services Programme Area
SST	Sea Surface Temperature
STIP	Stored Tiros Information Processing
SVP	Surface Velocity Programme (of TOGA and WOCE, replaced by GDP) drifter
SVP-B	SVP Abarometer at a drifter
SVP-BS	SVP drifter with salinity
SVP-BTC	SVP drifter with temperatures in depth
SVP-BW	SVP Abarometer and wind at a drifter
TAO	Tropical Atmosphere Ocean Array
TC	Technical Coordinator
TIP	Tiros Information Processing
TIP	Tropical Moored Buoys Implementation Panel
TOWS-WG	Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems
TRITON	Triangle Trans-Ocean buoy network
TSG	ThermoSalinoGraph
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/QM	DBCP Task Team on Quality Management
TT/TD	DBCP Task Team on Technological Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNOLS	University National Oceanographic Laboratory System (USA)
URL	Uniform Resource Locator
VOS	Voluntary Observing Ship (JCOMM)
WCRP	World Climate Research Programme
WIS	WMO Information System
WMO	World Meteorological Organization (UN)
WMS	Open Geospatial Consortium Web Map Services
WWW	World Weather Watch (WMO)
XBT	Expendable BathyThermograph
