INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

WORLD METEOROLOGICAL ORGANIZATION

DATA BUOY COOPERATION PANEL

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TWENTY-FOURTH SESSION

ITEM: 6

CAPE TOWN, SOUTH AFRICA
13-16 OCTOBER 2008

ENGLISH ONLY

REPORT BY THE TASK TEAMS

(Submitted by the proposed Chairpersons of the Task Teams, and the Secretariats)

Summary and Purpose of the Document

This document provides for the reports of the nominated DBCP Task Team Chairpersons, including their recommendations regarding future Task Teams, their Terms of Reference, and leadership.

ACTION PROPOSED

The Panel will review the information contained in this report and comment and make decisions or recommendations as appropriate. See part A for the details of recommended actions.

Appendices:

A. Terms of Reference and membership of the Executive Board and Draft Terms of Reference and Membership for the Tasks Teams as proposed at DBCP-XXIII;
B. Report by the Task Team on Quality Management;
C. Report by the Task Team on Data Management;
D. Report by the Task Team on Technological Developments;
E. Report by the Task Team on Capacity-Building;
F. Report by the Task Team on Moored Buoys; and
G. Draft Terms of Reference of the Task Team Quality Management and Drifter Technology Development

-A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

6.1 At the last DBCP Session, the Panel proposed to establish Task Teams to work proactively on key issues identified by the Panel, and ensure that the workplan is implemented during the intersessional period. According to the DBCP Operating Principles, also agreed upon at DBCP-XXIII, Task Team Chairpersons are appointed by the Panel and the teams report to the Panel at its regular sessions. The Panel proposed to establish Task Teams to deal with: (i) Data Management (DM); (ii) Quality Management (QM); (iii) Technological Developments (TD); (iv) Capacity-Building (CB); and (v) Moored Buoys (MB). However, the Panel could not agree on definite Terms of Reference. The Panel tasked the Selected Chairpersons to coordinate with identified experts, other proposed Task Team Chairpersons, the Technical Co-ordinator, and the Secretariats during the intersessional period in order to propose new and appropriate Terms of Reference and membership for discussion at this Panel Session.

6.2 Report from the selected Task Team Chairpersons are provided in Appendices B, C, D, E, and F, respectively.

6.3 Based on those reports, and discussions between the Task Team chairs, and the Executive Board (including the Secretariat), it appeared that there was some potential overlap between the Task Teams on Quality Management, Data Management, and Technology Development regarding their Terms of Reference. There is also some overlap regarding the membership (3 to 5 persons in common between any two TTs), and especially between the Task Teams on TD and QM (5 people).

6.4 The goal pursued by the Panel in defining its working structure is to build the most effective system in order to make progress on the issues; it is not to multiply the number of Task Teams. So, there might be some substantial advantages in merging two, or three of the Task Teams. Possible options are:

a) Keeping the three DM, QM, TD Task Teams and looking carefully at the ToR to avoid any duplication;

b) Merging the TD and QM Task Teams to become a "Task Team on quality management and technology developments" (e.g., 22 people);

c) Merging the QM and DM Task Teams to become a "Task Team on quality and data management" (e.g., 15 people); and

d) Merging the three Task Teams to become a "Task Team on best practices and technology developments" (e.g., 24 people).

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6.5 The discussions led to a proposal to eventually merging the Task Teams on Technology Development and Quality Management despite the fact that TD was more looking at designing new systems while QM was addressing the quality monitoring of existing systems For example, it is not clear with the Terms of Reference proposed at the last Panel Session what Team should be responsible for reporting progress on Iridium buoys, address updates required for the SVPB manual, or look at the evaluation of lithium batteries on SVPB (Argos or Iridium). Also, as addressed in the report from the Task Team on Moored Buoys (Appendix F), technology development aspects between drifters and moored buoys systems need to be addressed appropriately and in a way avoiding duplication. It is proposed that the Task Team on Technology developments specifically addresses the satellite data telecommunication aspects, and the technology issues directly relevant to drifting buoys. The Task Team on moored buoys would address those technology aspects more relevant to moorings (mooring technology, acquisition systems, sensor technology, vandalism proof designs, etc), identify the best technology of the moment available and address Best Practices issues.

6.6 **The Meeting agreed on the following**:

The Panel finally agreed to merge two of the Task Teams, refine their names, Terms of Reference, and appoint Chairpersons. The four DBCP Task Teams will be as following:

- Task Team on Quality Management and Drifter Technology Development, chaired by Bill Burnett (Appendix G);
- Task Team on Moored Buoys, Chaired by Jon Turton (Appendix F);
- Task Team on Data Management (data processing and distribution of the data, GTS issues, archival of the data), Chaired by Mayra Pazos (Appendix C); and
- Task Team on Capacity-Building, Chaired by Sid Thurston (Appendix A).

- B - BACKGROUND INFORMATION

6.7 At its twenty-third session, Jeju, Republic of Korea, 15-19 October 2007, the Panel considered a proposal regarding a new structure for the DBCP and its meeting schedule that had been prepared by its chair and the joint secretariat. In essence, the proposal attempted to describe a more efficient modus operandi for the Panel that would allow its intersessional business to be delegated to task teams. The teams would be overseen by the Executive Board that had been created at DBCP-XXII to facilitate intersessional decision-making within bounds clearly defined by the Panel. The new proposal took account of the following constraints, the Panel had recognized most of which at previous sessions:

- The mature status of DBCP (and Argos JTA), and the attendant risks of stagnation and loss of status;
- The emergence of fresh challenges in areas such as capacity-building, technology development, and the new organizational and support structures being developed within JCOMM and GEOSS;
- The need for the DBCP to be proactive throughout the intersessional period;
- The increasing pressure on every participant's time and budget; and
- The need to streamline the documentation produced by the Panel, both to increase its impact and to lessen the considerable load on the joint secretariat.

6.8 A key element of the proposal, aimed at reducing travel costs for meetings, the annual total of which exceeded the Panel's regular budget for the employment of the Technical Co-ordinator and other activities, was to shorten Panel sessions, and only to hold plenary sessions in alternate years, the intermediate year sessions being replaced by Executive Board meetings. This was akin to the model that had been successfully adopted by the Ship Observations Team (SOT). Furthermore, it was suggested that future meetings should as a rule be held at WMO or IOC to lessen the stress on secretariat resources, although the Panel would remain open to invitations from other hosts, as had been its successful tradition in the past.

6.9 In the discussion that followed, general support was accorded to the task-team concept, in recognition that this allowed those Panel members who were able to devote significant time to Panel activities to work in an efficient and focused manner, while allowing the Panel as a whole to continue to offer advice and exert control over task team directions. It was also agreed that the Panel should appoint task team chairs, and that it should fall to the task team chairs to recruit team members as they saw fit. Work needed to be done to define the terms of reference of these teams and to revise those of the Executive Board, and the Panel welcomed the guidance offered by Mr Al Wallace and Mr

Chris O'Connors in this regard during this Panel Session. Finally, the Panel agreed on the Terms of reference and membership of the Executive Board; they are provided in Appendix A. Draft Terms of Reference and Membership of the Task Teams to be reviewed at DBCP-24 are provided in Appendix A as well.

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Appendices: 7

TERMS OF REFERENCE AND MEMBERSHIP OF THE EXECUTIVE BOARD AND DRAFT TERMS OF REFERENCE AND MEMBERSHIP FOR THE TASK TEAMS AS PROPOSED AT DBCP-XXIII (JEJU, REPUBLIC OF KOREA, OCTOBER 2007)

Terms of Reference of the DBCP Executive Board

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 Coordinator 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; and

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 Coordinator (*ex officio*);
- Representative of the IOC Secretariat (*ex officio*); and
- 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.

Draft Terms of Reference for the DBCP Task Team on Data Management
(as proposed at DBCP-XXIII)

The DBCP Task Team on Data Management shall:

1. Receive and review reports from the Data Management Centres specialized with buoy data, i.e. (i) the SOC / DB, and (ii) the RNODC / DB;

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 real-time distribution of the data issues, including GTS issues;

4. Address delayed-mode distribution of the data issues;

5. Address archiving of the data issues;

6. Review data timeliness issues;

7. Review instrumental metadata issues;

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

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

10. 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:

- Mayra Pazos (TT Chairperson and GDP representative);
- RNODC representative;
- SOC representative;
- NDBC data manager;
- CLS data manager;
- DBCP Technical Co-ordinator (*ex officio*); and
- A representative from buoy manufacturers may be invited as an associate member.

Draft Terms of Reference for the DBCP Task Team on Quality Management
(as proposed at DBCP-XXIII)

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

The DBCP Task Team on Quality Management shall:

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);

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

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

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, 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:

- Bill Burnett, NDBC (TT Chairperson);
- Pierre Blouch, Météo-France;
- The DBCP Technical Co-ordinator;
- Julie Fletcher, MSNZ;
- Ken Jarrott, BOM;
- David Meldrum, SAMS;
- Peter Niiler, SIO;
- Sarah North, UK MetOffice;
- Mayra Pazos, NOAA / AOML;
- Satheesh Chandra Shenoi, NIO; and
- Paul Whiteley, UK MetOffice.

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Draft Terms of Reference for the DBCP Task Team on Technology Developments
(as proposed at DBCP-XXIII)

The DBCP Task Team on Technology Developments shall:

1. Propose technological developments in terms of sensor technology, on-board hardware and data processing, that might be engaged in order to meet the user requirements better and remain cost-effective;

2. Review operational satellite data telecommunication systems, investigate how well they meet the use requirements as well as their cost-effectiveness;

3. Review operational platform location systems, their accuracy, and whether they meet the user requirements (e.g., Argos, GPS);

4. Investigate upcoming satellite data telecommunication systems that might potentially be used for the collection of buoy data, and keep a review document up to date;

5. Propose recommendations, if needed, to the Argos Joint Tariff Agreement. Such recommendations shall be passed via the DBCP Executive Board or the DBCP as appropriate;

6. Evaluate, test, and promote buoy designs that prevent vandalism;

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

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

9. Provide the DBCP Executive Board or the DBCP with technical advice needed for addressing the issues above; and

10. 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:

- Jean Rolland (TT Chairperson)
- Pierre Blouch
- Julie Fletcher
- Shaun Dolk
- K. Premkumar
- Paul Freitag
- Yvonne Cook
- Frank Grooters
- Bill Burnett
- Bill Woodward
- Philippe Gros
- Steve Piotrowicz
- Sergey Motyzhev
- Andy Sybrandy
- David Meldrum
- DBCP Technical Co-ordinator

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Draft Terms of Reference for the DBCP Task Team on Moored Buoys
(as proposed at DBCP-XXIII)

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;

7. Review all relevant JCOMM Publications to make sure they are kept up to date 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:

- Jon Turton, UK MetOffice (TT Chairperson);
- Paul Freitag, NOAA / PMEL;
- Bill Burnett, NOAA / NDBC;
- Richard L. Crout, NOAA / NDBC;
- Chris Meinig, NOAA / PMEL;
- K. Premkumar, NIOT;
- Ariel Troisi, SHN; and
- Uwe Send, SIO.

Draft Terms of Reference for the DBCP Task Team on Capacity-Building
(as proposed at DBCP-XXIII)

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:

- Sid Thurston, NOAA / OCO (TT Chairperson);
- DBCP Chairperson;
- DBCP Executive Board members;
- DBCP vice-chairs (or their respective deputies);
- DBCP Technical Co-ordinator;
- Representative of the IOC Secretariat; and
- Representative of the WMO Secretariat

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REPORT BY THE TASK TEAM ON QUALITY MANAGEMENT

(Submitted by Bill Burnett, TT Chairperson)

1. CURRENT TECHNOLOGY

1.1 During the intersessional period, the DBCP drifters performed well in general.

1.2 This year, as in 2006 and 2007, the Global Drifter Program (GDP) at the NOAA / Atlantic Oceanographic and Meteorological Laboratory (AOML) is conducting an AOML Data Buoy (ADB) comparison study. During this study, drifters from four different buoy manufacturers (Clearwater Instruments Inc., Metocean Data Systems Ltd., Pacific Gyre Inc., and Technocean Inc.) are deployed in clusters in various regions throughout the world. The clusters are initially only a few meters apart, allowing us to cross-compare for SST quality and wind-driven slip.

1.3 Preliminary results show that after five months of data collected, a total of four drifters out of 20 have already ceased transmitting, one from Technocean after 50 days, two from Metocean after 34 and 64 days and one from Pacific Gyre after 91 days. The Task Team is concerned about the rapid death of the Metocean drifters, with two out of five already dead, and will continue to monitor the lifetimes of the remaining drifters.

1.4 Five ADB drifters have already lost their drogues: one Clearwater drifter lost its drogue after 99 days, three Technocean drifters lost their drogues after 101, 99 and 75 days, and one Pacific Gyre showed drogue lost after only 12 days in the water. The Task Team is concerned with the rapid loss of drogues in the Technocean drifters.

1.5 With respect to SST, we found two problems with Pacific Gyre drifters: one had an offset of 0.45^0C with respect to its neighbors (confirmed not to be an error with the SST coefficients). This offset was added to the GTS distribution to correct and avoid wrongful data dissemination; another drifter from Pacific Gyre had SST sensor failure after 30 days in the water. Also one Metocean drifter's SST failed five days after deployment.

1.6 Finally, the GDP would like to reiterate the importance of the packaging of these drift buoys. Safety is a major concern for all who are involved in this project and every precautionary measure should be taken to ensure this point. One of the easiest ways to promote safety is to educate the individuals who are deploying and handling these instruments.

1.7 Ideally, the GDP would like to see all buoys wrapped in clear plastic, contain detailed (colored) instructions on the outside of the wrapping and (colored) labels on water soluble tape that indicates the proper deployment techniques. It is the belief of the GDP that taking these measures will maximize safety.

2. METEO-FRANCE / AOML STRAIN GAUGE COMPARISON STUDY

2.1 Another comparison study carried out by Météo-France and AOML took place in the Bay of Biscay. This study was to evaluate the addition of strain gauge sensor for drogue detection to a batch of 15 SVPB drifters, five each from three manufacturers (Clearwater, Pacific Gyre, and Technocean). These drifters were deployed in tight clusters in the Bay of Biscay between 12 to 14 August 2008. As well as testing the sensors, the GDP and Météo-France is taking this opportunity to examine other aspects of these drifters, such as barometer port sensors, SST values, battery life, signal strength, etc.

2.2 Prior to deployment, Pacific Gyre asked Météo-France to safeguard the water tightness of the upper ring of their drogues, to avoid a leak that could lead to a loss of buoyancy and sink the drifters. This was performed by applying putty and self-bonding electrical tape on the coupling of the bent tube ends.

2.3 A 48-hour transmission test was performed ashore prior to deployment to measure their performances with respect to data and location availability before being deployed. The drifters were randomly spaced out 10 meters at least in a field close to Météo-France buildings. All drifters were in the same conditions to emit. This showed that the average number of locations (classes 1 to 3 mixed) during 48 hours were 45, 38 and 31 for Clearwater, Pacific Gyre and Technocean drifters respectively when ashore, and 32,25,39 for the same manufacturers when the drifters were at sea. This means a decrease of their numbers at Clearwater (-30%) and Pacific Gyre (-34%) but an increase of the Technocean drifters (+20%). Technocean drifters, which use larger hulls are more comfortable at sea than on land, conversely to the others.

2.4 Preliminary results submitted by Pierre Blouch and Jean Rolland show that after two weeks at sea, all drifters are transmitting and all the drogues seem still to be attached. Technocean showed around 20% of the maximum value, Clearwater showed 10% at most but strong homogeneity, Pacific Gyre showed no signal (N=0), except during a few days after deployment on one drifter. All five Clearwater drifters reported wrong SST's and air pressure tendencies. All Pacific Gyre drifters reported no air pressure tendency. Météo-France would like to express that it would have been more interesting for the purpose of this study, to have the drifters equipped with both types of drogue detection sensors (submergence and strain gauge) to look at the difference between the two mechanisms.

2.5 The Centre of Marine Meteorology of Météo-France focused mainly on its technical activities – evaluating the Iridium Short Burst Data (SBD) transmission as an alternative to Argos for operational purposes. The work, which concerns SVP-B drifters as well as other platforms, is partly seen as a contribution to the DBCP drifter Iridium Pilot Project. A complete report on the evaluation of Iridium drifting buoys will be presented at the Technical and Scientific Workshop.

2.6 Fifteen SVP-B prototypes of that kind, built by three manufacturers, and fitted with a GPS have been purchased and deployed in different areas since 2006. On average, the results were promising. Comparisons with Argos SVP-B clearly show a similar availability and quality of the data but a better timeliness onto the GTS and a lower transmission cost. The evaluation also showed that Iridium positions were sufficiently accurate for meteorological purposes.

2.7 Consequently, 45 SVP-B drifters, without GPS, were purchased from Metocean for operational E-SURFMAR purposes. Forty of them have been deployed in the North Atlantic since December 2007 and all but two are still operating at the beginning of September. A mean lifetime of 12 months at least is expected. Eighty more buoys of that kind were ordered and half of them were delivered in mid-2008.

2.8 A standard data format has been agreed upon for Iridium SVP-B drifters. Version 3.2 is the current version and manufacturers are invited to use it. Météo-France developed a complete chain able to process the raw data and send them onto the GTS in WMO formats (bulletin header SVX13 LFPW). Until mid-2008, GTS data from buoys participating in the DBCP drifter Iridium Pilot Project were only processed through this way.

2.9 Météo-France continued to operate and evaluate SVP derived drifters for different applications. One wind drifter (SVP-BW), 8 salinity drifters (SVP-BS) and two drifters measuring the sea temperature in depth (SVP-BTC) have been deployed over the past 12 months. Thanks to feedback from experimenters, manufacturers may improve their products. Data from experimental buoys are systematically sent onto the GTS and carefully monitored.

2.10 The main purpose of salinity drifters is the validation and calibration of SMOS (Soil Moisture and Ocean Salinity) satellite which should fly next year. Experimentations are carried out in

association with the French Oceanographic laboratory LOCEAN. Some of the buoys are deployed in areas such as off Amazon estuary where the variability of the salinity is high.

Météo-France continue to evaluate SVP-BTC drifters from Marlin Yug. The most recent deployed buoy, fitted with a 80-metre thermistor string is still working after 75 days at sea. Finally, five Iridium SVP-B drifters fitted with GPS were ordered to Marlin and five Iridium SVP-BS were ordered to Metocean. All will be tested during the coming months.

2.11 MetService New Zealand deploys SVPB buoys into the Tasman Sea under the NZ National Programme and works jointly with the GDC to deploy buoys under the Southern Ocean Buoy Programme (SOBP) into the Southern Ocean to the south and east of NZ. The SOBP buoys are a mix of MetService Upgrade buoys and GDC SVPB buoys.

2.12 MetService is pleased with the average lifetimes being achieved by Technocean SVPB buoys. Being an Operational Weather Forecasting Centre, MetService's primary interest in buoy data is in obtaining reliable pressure, so lifetime is counted until the pressure data is removed from GTS, or until battery or transmission failure. The average lifetime achieved by 27 Technocean SVPB GDC buoys which have finished since 2000 is 16.4 months, while 24.4 months average per buoy was achieved by 27 Technocean Upgrades. Disappointingly, only 5.3 months average lifetime was achieved by ten Clearwater GDC buoys deployed in mid-2007.

2.13 MetService is still seeing problems with spikey pressure from buoys in the Southern Ocean. It is thought this problem is related to sea state, because the spikey data is intermittent. There has been no progress in getting anyone to analyze the data from buoys with the TEST format. It was believed that the extra data contained in the DBCP-M2-TEST format might offer clues on how the de-spiking algorithm could be improved.

2.14 During the southern winter of 2008 several buoys south of 50° South exhibited signs of frozen barometer ports, resulting in erroneous pressure data which had to be removed from GTS. Unless buoy operators take steps to return the pressure data to GTS when temperatures rise,'good' pressure data is being permanently lost from GTS. Perhaps a mechanism to reinstate pressure data to GTS when buoy SST rises could be considered? Alternatively, a study to determine whether sub-Arctic buoy pressures are being affected by barometer port icing may reveal whether another type of buoy might be better suited to measure pressure in sub-Antarctic waters.

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REPORT BY THE TASK TEAM ON DATA MANAGEMENT
(Submitted by Mayra Pazos, TT Chairperson)

The Task Team on Data Management was recently created during DBCP-XXIII in Jeju, Korea, October 2007.

During the intersessional period, the TT-Data Management has proposed changes to the Terms of Reference, and proposed membership to selected team members, that includes data managers from different centers, and a drifter manufacturer. These proposed changes are provided in the Annex to this report.

Delayed-mode distribution of data

Regarding delayed-mode distribution of the data to the RNODC archiving center for drifting buoys, the Drifter Data Assembly Center at AOML, has recently submitted an update that includes drifter data from the period January 2006 through June 2007. A question was raised to ISDM, Canada, as to why drifter raw data was only available through 2003, while quality control/interpolated data was available through beginning of 2006, they are aware of the problem and the reasons for the submissions not being processed have been a few internal processing and organizational problems that are expected to be sorted out in less than three months.

Real-time distribution of data

A new tool, very useful for buoy operators to look at the quality of in situ observations of SST drifter data, developed by the Norwegian Meteorological Institute is available on the web. The data are collected from the OSI SAF match up data base where METOP SST observations are collocated with in situ SST observations from the GTS.

http://saf.met.no/validation/list_sst_mdb_global.php

Format issues

CLS reported they are beginning to work with drifter manufacturers to integrate Argos PMT in drifters. This could positively impact most of data formats that have been developed thought the years, in that these formats can be much simpler, and easy to integrate in a database, it would also an impact on users in that the processing routines will need to be changed. At the same time, the new Argos processing centers are now able to handle multiple messages and formats, concatenate messages, process checksums that data delivered to the user will need less decoding effort. Nevertheless, the old distribution formats will still be an option. CLS would like to initiate thoughts and discussion on this issue on how to proceed in the future.

Proposed recommendations

- CLS should continue to address data timeliness issues in the Atlantic, Southern Pacific and Indian oceans, only very minor improvements have been made, so investment in new LUTs is necessary;

- CLS has developed a tool to summarise buoy data delays over the long term. They are also investigating the delays in each section of the data flow to see where improvements can be made. This Argos timeliness monitoring tool, should be extended to demonstrate the sources of delays in each component of the data flow and for different geographic areas.

- Participation by all buoy operators in the Iridium Pilot project and the Argos-3 Pilot Project should be encouraged by the DBCP;

- Review the BUFR template for buoys and define requirements for additions or changes in future. Particularly for any additional metadata to be included (in real-time, with the GTS message i.e., Category 1 metadata);

- Consider the potential impacts of the implementation of 7-digit WMO numbers in BUFR messages, on data processing systems (e.g., the Argos processing system, Data Centers and Data Managers in the community); and

- Review of roles in archiving centers to avoid overlap between DBCP (ISDM, Canada and Météo- France) and IODE.

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ANNEX

TERM OF REFERENCE OF THE TASK TEAM ON DATA MANAGEMENT
(as proposed for discussion 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:

Mayra Pazos (TT Chairperson and GDP representative);
Bruce Bradshaw (RNODC representative) ;
Jean Rolland (SOC representative);
Bill Burnett (NDBC data manager);
Christian Ortega (CLS data manager);
Hester Viola (DBCP Technical Co-ordinator (*ex officio*)); and
Jeff Wingenroth (Technocean Inc.) - Representative from buoy manufacturer.

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REPORT BY THE TASK TEAM ON TECHNOLOGICAL DEVELOPMENTS
(Submitted by Jean Rolland, TT Chairperson)

1. The Task Team on Technological Developments (TT-TD) was established at DBCP-XXIII, Jeju, Republic of Korea, October 2007. Draft Terms of Reference (ToR) were proposed. The Panel asked the Task Team to review and propose new Terms of Reference and Membership if needed.

2. It appeared there was potential overlap between the Terms of Reference proposed at DBCP-XXIII and others Task Teams, especially with the Task Team on Quality Management. The new proposed ToR are provided in Annex.

3. As part of the proposed ToR 2, David Meldrum, DBCP Chairperson, on behalf of the Task Team, updated in February 2008 the document dealing with satellite data telecommunication aspects, and current technology (see DBCP website – Satellite Communications).

4. The DBCP Technical Document N°4 (Barometer Drifter Design Reference Rev.2, May 2005) describes in detail the construction of the Surface Velocity Program Barometer (SVP-B), satellite-tracked drifter. The Task Team is proposing to add some modifications and to have a Rev.3 version produced in order to take the following into account:

- Air Pressure Tendency (APT) shall be computed over the past three hours (WMO rule) and not since the previous observation of air pressure;
- Recommendation that all bits set to “1” should not represent the highest value for a sensor but indicate that the sensor is not present or the data are missing; and
- Recommendation for data formats (DBCP-M2 as unique format for **operational** SVP-B drifters, Iridium V3.3 for Iridium drifters, or / and new format to be proposed for SST sampling every 15 minutes).

5. The latest version of the standard data format for Iridium SVP-B drifters is Version 3.2. Manufacturers are invited to use it. Until mid-2008, the only data processing system (for processing the raw data and send them onto the GTS in WMO format) used for the DBCP drifter Iridium Pilot Project is the one developed by Météo-France. The new data processing system developed by CLS is capable of handling Iridium data for GTS purposes and is now operational.

6. Some modifications were set up on Marlin SVP-B drifters as the first prototype of Iridium-GPS SVP-B mini drifter in the South Atlantic has shown that the buoy air pressure data quality were good quality in any environmental conditions:

- Since 2008 all the drifters are provided with Real-Time Clock (RTC) on the basis of: (i) GPS synchronization; or (ii) factory installed watch for drifters without GPS. GPS synchronization permitted to provide for highly accurate GMT times for the buoy observations. RTC can be used for different purposes, e.g., for making samples at round hours;
- On-board data processing software was updated for optimizing the buoy interaction with the Iridium unit. The goal is to increase the buoy's lifetime and to eliminate duplicate hourly samples transmitted via Iridium thanks to: (i) shorter durations of SBD sessions; and (ii) more attempts of SBD sessions;
- Iridium modem and GPS receiver antennas have been replaced so that they appear near the top of the surface float as close as possible from each other in order to provide

for a better radio visibility between the buoy and the satellite systems in different weather conditions. Those changes were carried out in order to: (i) reduce the probability of having GPS fixes gaps for the most recent data; and (ii) to decrease Iridium transmission duration;

- The buoy's software was updated to avoid the GPS data gaps under bad weather conditions, by transmitting fresh of old fixes in each message; and

- The development of Iridium-GPS SVP-B mini drifter with hourly samples and two-year lifetime is expected to be completed soon.

7. The UK Met Office deployed some drifters in South Atlantic and Southern Ocean with lithium batteries. It is expected to at least double the lifetime at a cost 1.3 times the normal cost.

8. It is recommended to address the following issue:

- A lot of drifters are now using hulls and drogues with reduced sizes. While they are certainly lighter, cheaper to ship, easier to handle and deploy, the question remains whether using them is actually more cost effective. Baring in mind that the cost effectiveness of an observation is related to the lifetime of the buoys, the life-time of those drifters need to be estimated and compared with the one of larger drifters.

9. At the previous DBCP session, the Task Team on Technology Developments was asked the following:

- to liaise with IOCCP and prepare a technical report on pCO2 measurement from drifters. No specific action was undertaken; and

- to consider the development of a Pilot Project on wave observations (new developments on drifters, OceanSITES). A technical workshop was held (New York City, USA, 2-3 October 2008). Results will be reported at this DBCP session.

10. It is recognized that one of the major goals for the Task Team on Technology Developments as proposed at DBCP-XXIII was to determine further activities or further technologies. At the same time, the Task Team on Quality Management is more addressing issues related to the quality of existing systems. However, the Task Team Chairperson is proposing the merging of these two Task Teams.

11. The Panel is invited to discuss these issues, and reach agreement. If agreeable, the Task Team will then develop a work-plan for the forthcoming intersessional period.

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TERM OF REFERENCE OF THE TASK TEAM ON TECHNOLOGY DEVELOPMENTS
(as proposed for discussion at DBCP-XXIV)

The DBCP Task Team on Technology Developments shall:

1. 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;

2. 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;

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

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

5. 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;

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

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

8. 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:

- Jean Rolland (TT Chairperson)
- Pierre Blouch
- Julie Fletcher
- Shaun Dolk
- V. Rajendran
- Paul Freitag
- Chris Marshall
- Frank Grooters
- Bill Burnett
- Bill Woodward
- Christian Ortega
- Steve Piotrowicz
- Sergey Motyzhev
- Andy Sybrandy
- David Meldrum
- DBCP Technical Co-ordinator

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REPORT BY THE TASK TEAM ON CAPACITY-BUILDING

(Submitted by Sid Thurston, TT Chairperson)

1. Since the establishment of the Capacity-Building Task Team at DBCP-XXIII in Jeju, South Korea, there has been significant advancement of mooring observations and the societal applications of these new data for the sparsely sampled Indian Ocean Rim Region.

2. During this intersessional period, the Indian Ocean *Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction* (RAMA) implementation was advanced considerably. RAMA is an ongoing CLIVAR / IOGOOS program and is a contribution to the Global Ocean Observing System (GOOS), the Global Climate Observing System (GCOS), and the Global Earth Observing System of Systems (GEOSS). Nations that have provided mooring equipment, ship time, personnel, and/or logistic support so far include Japan, India, the United States, Indonesia, China, and France. In addition, for the Western Indian Ocean, the Agulhas and Somali Current Large Marine Ecosystems (ASCLME) Project, a consortium of eight African countries, has also provided ship time and logistic support. By the end of 2008, RAMA will be 47% complete, with 22 of the 46 mooring sites occupied.

3. During the First US National Oceanic and Atmospheric Administration (NOAA) - India Ministry of Earth Sciences (MoES) Science Colloquium for "*Earth Observations and Earth Science for Societal Benefits*" the RAMA Implementing Arrangement (IA) was concluded that will include MoES providing 60 days of ship time plus approximately 15 more days to help accelerate the program in 2009. Under the IA, NOAA / PMEL will provide surface and subsurface moorings to be deployed from Indian MoES ships and will also transfer PMEL moored buoy data display and delivery software to the MoES India National Center for Ocean Information Services (INCOIS) so that RAMA data can be served from within India and be made more readily available for societal benefits.

4. Partnerships for New GEOSS Applications (PANGEA) in the Indian Ocean Region continue to help build sustainable capacity in maritime regions by conducting in-country, practical, socio-economic applications training by U.S. experts to decision-makers, policy and budget administrators, scientists, end-users and other stakeholders, in exchange for regional ship time for the deployment of new in situ ocean observations. During this intersessional period, two new Implementing Arrangements were advanced with Indonesia's Ministry of Marine Affairs and Fisheries (MoMAF) and Indonesia's Agency for the Assessment and Application of Technology (BPPT) at the *4th NOAA-Indonesia Ocean Observations Capacity Building Workshop & University Partnerships*. These two Implementing Arrangements will provide an estimated additional 25-30 days of *Baruna Jaya* ship time to support climate moorings in the Eastern Indian Ocean.

5. In exchange, four US Experts conducted capacity-building training in Jakarta on: the use of RANET for ocean data fisheries applications such as SST, chlorophyll; organizational structure of the U.S. Coastal Ocean Observing System (COOS); how to identify stakeholders and their needs; various processes used to engage with different stakeholders; the use, application, and dissemination of Ocean Observing System data; and explaining the importance of real-time application of ocean observing system data for decision makers, such as port managers and fisheries resource managers. Several U.S. pilot projects involving federal and state agencies, universities and stakeholders were also highlighted.

6. With these combined resource commitments, institutional agreements and capacity-building or *Resource Sharing* activities, it will now be possible to expand RAMA from 22 to 33 moorings sites, or 72% complete, by the end of 2009.

7. Principal activities for the Capacity-Building Task Team for 2009 will include inviting additional DBCP Colleagues to become Members of this new Task Team; making any appropriate necessary revisions to the Terms of Reference; and assessing opportunities for Capacity-Building for increasing mooring and drifter operations as well as the effective and timely acquisition and applications of these data for improved societal benefits.

8. For Team Membership, it will be important to have broad representation from Europe, Asia, Africa and the Americas. DBCP Members are most welcomed and highly encouraged to discuss opportunities to both benefit from and contribute to the Capacity-Building Task Team with the Chairperson and other Members during DBCP-XXIV in Cape Town, South Africa, October 2008.

9. After an initial core Capacity-Building Task Team is established, topics of workshops and Regions of focus will be discussed and identified. Regions for continued Capacity-Building will include the Indian Ocean Rim and Gulf of Guinea Nations, with other potential areas of opportunity being explored by the Task Team. Preliminary thematic areas of Capacity-Building will include: enhancing data analysis skills: data access, downloading data, manipulating, and possible calculations; making widely known the large amount of currently available data worldwide, how to apply these data and provide feedback to the numerous data providers on ways to improve delivery content and format so that it can be more readily applied by decision-makers and end users such as for fisheries, agriculture, health, water resource management, climate risk management and others; training in the deployment operations for drifters and moorings, ship time opportunities.

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REPORT BY THE TASK TEAM ON MOORED BUOYS

(Submitted by Ton Turton, TT Chairperson)

1. The Task Team on Moored Buoys was established at DBCP-XXIII Jeju, Republic of Korea, October 2007. Draft Terms of Reference were proposed.

2. As part of the proposed Terms of Reference number 1 for the Task Team (ToR #1), "review and document operational moored buoy systems and their underlying requirements", initial discussions with Task Team members have proposed to build a definitive list of operational moored buoy systems detailing the systems and what parameters they measure. For example, it would be useful for data end users as well as platform operators to know what sensors are being used (including heights of exposure), whether the winds are corrected to 10m or not, what satellite data telecommunication systems are used, what hulls are used etc. Sharing this information could help everyone to adopt best (and hopefully consistent) practices.

3. There are bits of information that can be collected from international and national sources but there is no system available on a global basis that provides such information on a comprehensive, systematic, and detailed enough basis.

4. Internationally, the JCOMM ODAS information collected by MEDS (http://www.meds-sdmm.dfo-mpo.gc.ca/odas/main.htm) has not been properly updated in the last five years and is limited to certain types of platforms. The JCOMMOPS database only includes moored buoy information on:
(i) tropical moorings; (ii) US Programme; and (iii) Canadian Programme. Many national or regional initiatives are not reflected in the JCOMMOPS monitoring system, which is primarily designed for drifting buoys.

5. Relevant marine ODAS types include lighthouses and light vessels, observing towers and platforms, oil rigs, land-based automatic stations which have been allocated international ocean data buoy identifier numbers (or national identification numbers, as is the case with Coastal-Marine Automated Network [C-MAN] reports from NDBC), ice drift buoys, and buoys mounted on ships. The JCOMM Data Management Coordination Group (DMCG) has proposed that the JCOMM ODAS Bulletin be transferred to the JCOMM ODAS Metadata Centre operated by the National Marine Data and Information Service (NMDIS, China). Under the META-T Pilot Project, NMDIS has been invited to consider transitioning the ODASMS+META-T into a more general JCOMM Metadata Service for ocean observing platforms (to address platform types not covered by ODASM, and to address variables not presently covered by META-T).

6. Jon Turton has put together a strawman spreadsheet with the sort of information that might be useful (for the UK moored buoy systems and some other E-SURFMAR systems). At this stage, information is limited to met / ocean systems reporting operationally via GTS and does not include wave buoys.

7. It is suggested that JCOMMOPS collects moored buoy metadata directly from the platform operators, and eventually forwards the information to the JCOMM ODAS Metadata Centre in China. At the same time, it is recognized that collecting the information represents a significant amount of effort and it is recommended to reach agreement regarding the type of information to be collected before asking JCOMMOPS to proceed.

8. The following questions have to be addressed:

- Defining what are "operational" moored buoy systems. This needs to be clarified in order to include research systems that are sustained, but not "operational" (for example, for the Global Tropical Moored Buoy Array only TAO is operational, while PIRATA, RAMA are regarded as research arrays);

- There are operational systems that are not necessarily providing all or part of the data on GTS. Sometimes the data are being made available in real-time without restrictions through other data distribution systems (e.g., GDACs). This can be the case for some wave buoys, sub-surface moorings (e.g., ADCP), some OceanSITES, and some tropical Moorings for which only a sub-set of the data are being distributed on GTS (e.g., short and long wave radiation, precipitation, CO2, and currents). So the question is the level of details proposed for providing information about real-time data distribution, broken down by distribution system, and possibly by variable; and

- Building a database that compiles information from different sources. It is important to make sure that the future monitoring system will be easy for the buoy operators to feed in, this suggest that a database would be more efficient. Generation of spreadsheets for one hundred or more tropical moorings would take a substantial effort by the buoy operators, and could be more difficult for the user to find what he / she was looking for.

9. It is proposed that JCOMMOPS works with the buoy groups (TIP, OceanSITES, E-SURFMAR and National Programmes), on how to best transfer information from their native records into a new database, and explore the synergies between them. In doing so, the Panel would also: (i) establish links with the different communities deploying moorings, and promote the development of multi-disciplinary mooring systems (addressing ToR #2); and (ii) be in a position to compile information on opportunities for the deployment and/or servicing of moored buoys (ToR #5).

10. No specific action was undertaken by the task Team to address ToR #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”.

11. As part of the ToR #4 “Liaise with the JCOMM Expert Team on Wind Waves and Storm Surges (ETWS) regarding the need for in situ wave observations”, Jon Turton is attending the JCOMM Technical Workshop on Wave Measurements from Buoys, New York City, New York, USA, from 2 to 3 October 2008. Results will be reported during the Panel Session under agenda item 7.3.

12. Regarding the monitoring of technological developments for moored data buoys and liaison with the Task Team on Technological Developments (ToR #6), it is recognized that slightly different groups and communities are involved between the drifting buoy and the moored buoy communities. From that perspective, it is proposed that the Task Team on Technology developments specifically addresses the satellite data telecommunication aspects, and the technology issues directly relevant to drifting buoys. The Task Team on moored buoys would address those technology aspects more relevant to moorings (mooring technology, acquisition systems, sensor technology, vandalism proof designs, etc.), identify the best technology of the moment available and address Best Practices issues (also as part of ToR#7). It is proposed to change the corresponding Term of Reference accordingly (see Annex).

13. No action was taken regarding ToR #7 “review all relevant JCOMM Publications to make sure they are kept up to date and comply with Quality Management terminology” but it is recommended to also address other types of publications (e.g., WMO Commission on Instruments and Methods of Observation – CIMO) as recommended in the WMO Integrated Global Observing System (WIGOS) framework.

14. The last two Terms of Reference (ToRs #8 and #9) are being addressed through this document and the follow up discussion at the Panel Session.

Slightly revised Terms of Reference and Membership for the Task Team are proposed in the annex. The Panel is invited to discuss these issues, and reach agreement. If agreeable, the Task Team will then develop a work-plan for the forthcoming intersessional period.

ANNEX

TERM OF REFERENCE OF THE TASK TEAM ON MOORED BUOYS
(as proposed for discussion at DBCP-XXIV)
(changes from DBCP-XXIII draft are highlighted)

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 ~~JCOMM~~ 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:

- Jon Turton, UK MetOffice (TT Chairperson);
- Paul Freitag, NOAA / PMEL;
- Bill Burnett, NOAA / NDBC;
- Richard L. Crout, NOAA / NDBC;
- Chris Meinig, NOAA / PMEL;
- ~~K. Premkumar, NIOT~~
- Rajendran Velayutham, NIOT;
- Ariel Troisi, SHN; and
- Uwe Send, SIO.

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DRAFT TERMS OF REFERENCE OF THE
TASK TEAM ON QUALITY MANAGEMENT AND DRIFTER TECHNOLOGY DEVELOPMENT
(as proposed for discussion at DBCP-XXIV, and resulting from the merging of the proposed Terms of Reference of the TT on quality Management and the TT on Technology Development as detailed in Appendices A and D, respectively)

The DBCP Task Team on Quality Management and drifter technology development shall:

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);

6. Define specific criteria for evaluation purposes (e.g. ocean areas, definition of acceptable quality data, e.g. early failures, life-times, 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;

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 and comply with Quality Management terminology;

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:

- Bill Burnett, NDBC (TT Chairperson)
- Andy Sybrandy, Pacific Gyre
- Bill Burnett, NOAA / NDBC
- Bill Woodward, CLS America
- Chris Marshall, Environment Canada
- Christian Ortega, CLS
- David Meldrum, SAMS
- Frank Grooters, KNMI
- Hester Viola, Technical Co-ordinator, DBCP
- Jean Rolland, Météo-France
- Julie Fletcher, MSNZ
- Ken Jarrott, BOM
- Mayra Pazos, NOAA / AOML
- Paul Freitag, NOAA / PMEL
- Paul Whiteley, UK MetOffice
- Peter Niiler, SIO
- Pierre Blouch, Météo-France
- Sarah North, UK MetOffice
- Satheesh Chandra Shenoi, NIO
- Sergey Motyzhev, Marlin Yug.
- Shaun Dolk, NOAA / AOML
- Steve Piotrowicz, NOAA
- V. Rajendran, NIOT

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