WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

DATA BUOY COOPERATION PANEL

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REPORT BY THE CHAIRPERSON, VICE-CHAIRPERSONS AND THE EXECUTIVE BOARD

(Submitted by Al Wallace, DBCP Chairperson, Canada)

Summary and purpose of the document

This document contains brief reports by the Panel Chairperson, the vice-Chairpersons, and the DBCP Executive Board on their respective activities in support of the panel during the past intersessional period.

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.

Appendix A Report by the DBCP Vice-Chair for Asia

-A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

4.1 Report by the Chairperson of the DBCP

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

4.1.2 Mr. Wallace his appreciation for the excellent support and work done by the Secretariat particularly in light of the departure of the Technical Coordinator. During the year, the Chairperson undertook two missions specific to the work of the Panel.

4.1.3 The first was to the Fourth International Port Meteorological Officer Conference (PMO-IV), and support to Global Ocean Observations using Ship Logistics, held in Orlando, Florida in December 2010. He made a presentation on trends and feedback on ship deployments of drifting buoys, and also included highlights on the work of the Panel. He used the meeting as an opportunity to promote participation with the Panel and to highlight the need for additional ship deployments. The second mission was to attend the 4th Session of the JCOMM Observations Coordination Group held in Hobart, Australia in April 2011. At this meeting leads for all of the ocean observations groups discussed issues and challenges, considered how the needs of clients for observing essential ocean variables are being met, and to seek out synergies for working collectively to achieve common outcomes.

4.1.4 The Panel supported the 2nd Western Indian Ocean Capacity Building Workshop in Mauritius in May. Sydney Thurston again demonstrated excellent leadership and exceptional organizational skills in developing the agenda, soliciting speakers, and arranging logistics.

4.1.5 On behalf of the Panel, the Chair provided input regarding moored and drifting buoys to the new WMO Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP).

4.1.6 The staffing process for the recruitment of the new Technical Coordinator (TC) took much longer than expected. The Panel was without a TC for most of the intersessional period. The Panel acknowledges the support by Mathieu Beolboch in keeping JCOMMOPs functioning during this time. The new TC, Kelly Stroker relocated in August and began her work on the 29th. We are pleased to welcome Kelly and look forward to working with her. The Chair expressed his thanks to Ms Boram Lee (IOC) for leading this process, and to Mr Etienne Charpentier (WMO) for his excellent advice, and to David Meldrum (past Chair) for his participation.

4.1.7 The Chair would like to acknowledge the excellent support provided by Boram Lee during her tenure in the Secretariat. Boram has accepted a post as a Scientific Officer at WMO. In the interim, David Meldrum, working under contract, is supporting the IOC Secretariat.

4.2 Report by the vice-Chairpersons of the DBCP

4.2.1 Report by the vice-Chairperson for Europe

4.2.2.1 The DBCP vice-Chairperson for Europe, Mr Jean Rolland (France) reported on his activities during the last intersessional period. His activities were mainly conducted through the Executive Board in providing guidance to actions and budget issues within the recommendations established at DBCP-XXVI. He takes a proactive role in developing links with GHRSST and Iridium activities. About eighty drifters equipped to report SST with a resolution of 0.01K and accuracy of 0.05K to meet GHRSST requirements have been deployed in the Atlantic Ocean and the Indian Ocean. The data are reported in BUFR code on to the GTS. However the probes need to be calibrated, so next step consists in building drifters which should have their probe pre-and post calibrated. Thirty drifters were upgraded to Iridium with DBCP funds to be used in Indian

Ocean. Nineteen out of them were deployed in Spring 2011. As decided at last DBCP session, a proposal was made to have five drifters upgraded to Iridium, to be deployed in the South Pacific.

4.2.2 Report by the vice-Chairperson for Asia

4.2.2.1 The DBCP vice-Chairperson for Asia, Dr Venkatesan (India) reported on his activities during the last intersessional period. He provided up to date information regarding the successful reestablishment of the moored buoy network in India in January 2011 (16 units functional as of July 2011). In particular, next generation deep water moored buoy systems (with met. and 500m sub-surface data) are also established in 6 locations in the Bay of Bengal and Andaman Sea.

4.2.2.2 India has also started its participation in the DBCP Pilot Project on Wave Measurement and Evaluation Test (PP-WET) with the deployment and testing of one wave rider buoy and contribution to best practices.

4.2.2.3 Dr Venkatesan also reported on the use of INMARSAT data telecommunication. The Panel concurred with Dr Venkatesan's suggestion to urge INMARSAT to provide special attention to buoy data reception (action; INMARSAT; ongoing).

4.2.2.4 The Panel concurred that vandalism of ocean data buoys has been, and remains, a significant problem in many ocean areas (see agenda item 9.4). Further, in recent days, piracy issue in Arabian Sea is affecting the servicing and deployment work in Arabian Sea.

4.2.2.5 Dr Venkatesan also reported on major events of interest to the Panel that took place in the region, including in particular:

1. Regional Workshop on *Establishing a Cooperative Mechanism for Protection of Met-ocean Data and Tsunami Buoys in the Northern Indian Ocean Region*, NIOT, Chennai, India, 6 – 7 May 2011.

2. NOAA – NDBC Training - Capacity Building on *Moored Buoy Data Management and Quality Control*, NDBC, Mississippi, USA, 18th – 29th April 2011.

3. *JCOMM* Marine Instrumentation *Workshop* for the Asia Pacific *Region**, Tianjin, China,*** 11 to 13 July 2011**.**

4. 8th International Scientific Symposium, UNESCO -IOC Sub-Commission for the Western Pacific (IOC/WESTPAC), Busan, Republic of Korea, 28–31 March 2011.

4.2.2.6 Dr Venkatesan outlined future plans for the region, including the proposal for a 3-day Regional workshop on best practices for instruments and methods of ocean observation in 2012 with the aim to build capacity for Asian developing countries (see details in Appendix A, and the Panel's discussion under agenda item 6.4).

4.2.2.7 It was also reported that the Indian Ministry of Earth Sciences has developed a comprehensive programme for continuous observation of various ocean parameters including surface meteorological parameters. This network primarily designed for the development of operational oceanography is also providing valuable data that is being used on real/near-real time by weather prediction/analysis centers and for the validation of satellite derived products. Now Indian Government is in the process of finalizing a cohesive Indian - Ocean Observation programme under the national Five Year plan for the period 2012-17.

4.2.2.8 The full report of the Vice-Chair for Asia is provided in Appendix A.

4.2.3 Report by the vice-Chairperson for the Southern Hemisphere

4.2.3.1 The DBCP vice-Chairperson for the Southern Hemisphere, Mr Johan Stander (South Africa) reported on his activities during the last intersessional period. He explained that he was on constant e-mail communication with various task teams and contributing in this regard throughout the period. During the meeting of the Executive Committee of the Argos Joint Tariff Agreement (Miami, USA, 27-29 April 2011), he also visited the NOAA Atlantic Oceanographic and Meteorological Laboratory (USA), which operates the Global Drifter Centre (GDC), for a better understanding on what they do for the Panel and how this is done.

4.2.3.2 Mr Stander also attended the second DBCP in-region Capacity Building Workshops for the Western Indian Ocean (Mauritius, 2-6 May 2011) – see agenda item 6.4 for details – where he had put emphasis on training of researchers especially for East Africa countries. During this workshop with the assistance of NOAA, Mr Stander also committed to buoys for deployment by East Africa countries as well as buoys for "*adopt a drifter*" programme purpose for the remainder of WMO Regional Association I (RA-I, Africa). He started a process of the South African Weather Service (SAWS) signing a Memorandum of Understanding (MOU) with the Global Learning and Observations to Benefit the Environment (GLOBE[1]), ensuring that the SAWS provides buoys to the RA-I for the purpose of learner education while all of this is done under the hospice and credit to DBCP.

4.2.3.3 Mr Stander reported that he is working closely with the SAWS Chief Executive Officer (CEO) ensuring that RA-I gets more involved in Marine Meteorology and or Oceanography. Once RA-I has been elevated and all been made aware of DBCP activities, Mr Stander will work closely with other Southern Hemisphere partners in expanding certain services such as "*adopt a drifter*" and/or learner/teacher programme.

4.2.3.4 Within South Africa, Mr Stander also expanded the services of DBCP to all other oceanography institutions/organisations and a national JCOMM committee was formed to coordinate activities nationally. All of these stakeholders contributed towards to the second DBCP in-region capacity building workshop for the Western Indian Ocean, mostly in the form of educators/presenters.

4.3 Report by the Executive Board

4.3.1 The DBCP Chairperson, Mr Al Wallace (Canada), reported on the activities of the DBCP Executive Board during the last intersessional period. The Chair noted that the Executive Board conducted most of the necessary Panel business electronically, and without difficulty and he thanked his Vice-Chairs for their diligence, and the Secretariat for facilitating the decision making.

4.3.2 The Executive Board implemented a change in the schedule for the 27th Meeting of the Panel in order to facilitate meetings of action groups, task teams and pilot project teams.

4.3.2 In line with the DBCP Operating Principles, and the guidelines for DBCP Trust Fund expenditures, the Executive Board has been consulted and had to make a number of decisions on behalf of the Panel, regarding expenditures not originally planned or entirely covered as part of the budget that was agreed upon by the Panel at its 26th Session, including:

- Agreement to commit up to USD7.0K from the DBCP Trust Fund to permit the upgrading of 7 drifters to HRSST standard in support of the pilot project.
- Agreement to increase the funding for shipping cost to USD7.2K of Argos 3 buoys in support of the pilot project.

1: http://www.GLOBE.gov

- Agreement to fund David Meldrum’s participation on behalf of the Panel at the annual GHRSST meeting in Edinburgh, Scotland.
- Agreement to fund the DSA for the participation of Joaquin Tinanes at the Inter-Programme Expert Team on Data representation and Codes (IPET-DRC), in Melbourne, Australia, September 2011.
- Agreement to fund missions to Paris and Geneva for the new Technical Coordinator.
- Agreement to commit the $20k presently under the "SOT Travel" budget line to the "JCOMMOPS Data Devt" budget line.

4.3.3 The Executive Board has been consulted to approve publication of a couple of DBCP Publications on behalf of the Panel:

- DBCP TD No. 41, Ocean Data Buoy Vandalism, Incidence, Impact and Responses
- Revision 1 (2011) of DBCP TD No. 3, Guide to Data Collection and Location Services using Service Argos.

4.3.4 The Executive Board has also been consulted regarding a proposal from the Secretary General of WMO suggesting that International Public Accounting Standards be adopted for the management of the DBCP Trust Fund, and that an external audit be conducted at WMO's cost.

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Appendix: 1

APPENDIX A

2011 report by DBCP Vice Chairman for Asia

(by Dr R. Venkatesan, NIOT, India))

Reestablishment of moored buoy network: During this period Indian moored buoy network was re-established successfully in January 2011. And 16 buoys are functional as on July 2011. In order to measure sub surface data up to 500m water depth along with met - ocean data to transmit real time for monsoonal studies next generation of moored buoy systems are established in 6 locations in deep waters in Bay of Bengal with one in Andaman Sea. Data is being transmitted in GTS through our sister institute INCOIS. Coral Reef Buoy in Mahatma Gandhi Marine National Park, Andaman & Nicobar Islands during February 2011. **Data buoy as a reference platform** was deployed Off Agatti, Lakshadweep and is functional from March 2011 with dual mast and redundant wind & humidity sensors for the first time. This is a challenging task to integrate and to deploy such a buoy system. This mooring has a shore anchor and is experiencing severe wave and wind loads.

As a part of Inter Calibration exercise on the request of UNESCO-IOC global Pilot Project on Wave Measurement and Evaluation Test (PP-WET) is initiated. One wave rider buoy and data buoy were successfully deployed in April 2011 Off Agatti and inter comparison exercise is in progress. The **Best of Practice** method **manual** was prepared and is being followed using inputs from PMEL NOAA and vetted by NOAA NDBC to obtain quality data from moored buoys.

Data miss in INMARSAT communication: INMARSAT is approved by Indian Government. Important factors that decide the most appropriate satellite communication link to be used for buoy systems are: (a) power consumption of the transceiver electronics, (b) high data rate and (c) low latency. Recently many data misses are observed and brought to the notice of INMARSAT London and LES SingTel Singapore.
Suggestion DBCP may urge INMARSATto provide special attention to buoy data reception

Another major challenge faced is **'vandalism of surface buoys'**, destruction of solar panels, destruction of transmission units, destruction of sensors mounted on a 3 m tall mast on met-ocean data buoys, etc. Vandalism of these valuable ocean data buoys has been, and remains, a significant problem in many ocean areas.

Further, in recent days, piracy issue in Arabian Sea is affecting the servicing and deployment work in Arabian Sea.

Major events

5. Regional Workshop on *"Establishing a Cooperative Mechanism for Protection of Met-ocean Data and Tsunami Buoys in the Northern Indian Ocean Region"* organized by the National Institute of Ocean Technology (NIOT) and the Bay of Bengal Programme – Inter Governmental Organization (BOBP-IGO) at NIOT Campus, Chennai from 6 – 7 May 2011.
6. **NOAA – NDBC Training -** Capacity Building on "Moored Buoy Data Management and Quality Control" was offered by Mr Walter Henry McCall and Mr Micheal Nolan Huguet from National Data Buoy Centre (NDBC) – NOAA, USA. This was successfully completed during 18th – 29th April 2011 and it is jointly agreed to conduct this event annually. NIOT thanks NOAA NDBC for their support

7. Reported that *JCOMM* Marine Instrumentation ***Workshop*** for the Asia Pacific ***Region*** from 11 to 13 July 2011 at Tianjin, ***China was successfully organised by JCOMM and Government of China.***

8. Represented as Vice Chairman Asia during 8th International Scientific Symposium, UNESCO -IOC Sub-Commission for the Western Pacific (IOC/WESTPAC) jointly hosted by Ministry of Land, Transport and Maritime Affairs and Korea Ocean Research &

Development Institute. March 28–31, 2011, Busan, Republic of Korea. The participation in this symposium enabled to interact with the International Experts working on Buoy Technology and gave an opportunity to share their views on various common issues, challenges faced & new buoy technology and materials technology etc. Through this meeting, the international collaborations on the surface buoy arrays in the Pacific Ocean (TAO/TRITON) and Indian Ocean (RAMA), which consists a part of Global Tropical Moored Buoy Array (GTMBA) maintained and developed by multinational efforts under CLIVAR and GOOS were discussed. This provided a good opportunity for the promotion and enhancement of ocean climate observation in the IOC/WESTPAC region. This was organized by Dr Ken Ando, JAMSTEC Japan.This symposium covered following topics:

1) Surface buoy design, materials and strengthen of cables, and necessary conditions
2) Underwater measurements and communication
3) Design of electronics of sensor-data converter and signal processing
4) Countermeasures to vandalism, including experiences of failures and successes.

OUTCOME: This visit was very useful to interact with KORDI Korea, JAMSTEC Japan and other participating countries and to share our experience on buoy technology. Side meetings with IOC UNESCO, KORDI JAMSTEC would help for future collaboration

Future Plan

DBCP Capacity Building - Proposed a Regional workshop on best practices for instruments and methods of ocean observation- *2012 for 3 days*

Could be taken up through Capacity Building Team

Proposed to be hosted by National Institute of Ocean Technology Ministry of Earth Sciences Government of India

Aim: The aim of this workshop is capacity building exercise on best of practice on calibration and testing instruments for ocean observation

Focus: This will be a platform to bring together Scientists, Engineers and Technicians working on ocean observation system and Industry to focus on capacity building on best of practice on calibration and testing of instruments. This will also give an opportunity to understand the design and development calibration of instruments by the industry. Further this workshop would concentrate on present and future trends in ocean observation methods.

Need: This capacity building exercise is required for

- high quality marine meteorology and oceanographic measurements from the world oceans
- regular calibration and maintenance of marine instruments
- adherence of high level standards of instruments and methods of observation,
- documenting methods of measurements
- management of the data as per International standard
- understanding biases introduced by each type of instrumentation, and
- developing methods to correct such biases, in order to achieve delivery and use of coherent data sets,

New Users: This workshop will attract new countries in this region - to mention a few Sri Lanka, Bangladesh, Maldives, Myanmar, Cambodia, Philippines.

Funding: Government of India through National institute of Ocean Technology under the Ministry of Earth Sciences will provide conference facility, Local transport, administrative support, inaugural

function Request DBCP to fund USD 20000 towards expenses on inviting new member countries in the region.

Delegates: Expected Delegates - 15

- Expected number of participants India & abroad
- Resource Persons including WMO, UNESCO-IOC& DBCP and Industry

Experts would be invited from UNESCO-IOC, WMO, and DBCP and from industry that is manufacturing sensors, buoys etc.

The difference here is industry would be requested to depute their R&D managers to present about the Product on design, calibration and testing and its capability rather than marketing aspects. Preliminary discussion with Industry is very encouraging and they would be deputed by the respective firms

Outcome: To install transformational technology in ocean observatories for researchers, policymakers and the public

Future plans - Indian Efforts:

The Ministry of Earth Sciences (earlier, Department of Ocean development) has developed a comprehensive programme for continuous observation of various ocean parameters including surface meteorological parameters. The existing network for ocean observations includes Argo floats, moored buoys, drifting buoys, XBT, current meter arrays and modern tide gauges, etc. This network primarily designed for the development of operational oceanography is also providing valuable data that is being used on real/near-real time by weather prediction/analysis centers and for the validation of satellite derived products. Now Indian Government is in the process of finalising a cohesive Indian - Ocean Observation programme under the national Five Year plan for the period 2012-17 comprising of below given programmes:

- Met-ocean data buoys attached with surface and sub-surface sensors in the open ocean.
- Coastal Met-ocean data buoys
- Argo profiling floats (3 X 3 deg spatial resolution)
- Drifters (5 X 5 deg spatial resolution)
- XBT/XCTD
- Equatorial current meter moorings
- Coastal ADCP moorings
- HF Radars
- Tsunami buoys
- Wave rider buoys in the coastal regions
- AWS on board ships
- Bay of Bengal Observatory (physical and biogeochemical parameters)
- Gliders
- Wave measurements from ships and offshore platforms along with AWS
- Installation of bottom mounted tide gauges on the shelf region
- R & D in Ocean Observations

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