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DATA BUOY COOPERATION PANEL

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THIRTY FIRST SESSION

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ITEM: 6.4

GENEVA, SWITZERLAND  
19-23 OCTOBER 2015

ENGLISH ONLY

**REPORT BY THE TASK TEAM ON CAPACITY-BUILDING (TT-CB)**

*(Submitted by Sid Thurston (USA), Chair, TT-CB)*

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**SUMMARY AND PURPOSE OF DOCUMENT**

This document contains the report by the chairperson of the Data Buoy Cooperation Panel (DBCP) Task Team on Capacity Building (TT-CB), and provides details on the outcome of DBCP Capacity Building activities during the last intersessional period, including: 1) Outcomes of the First Pacific Islands Training Workshop on Ocean Observations and Data Applications (PI-1) Republic of Palau, 4-7 May, 2015 2) Establishment and Inaugural summer school session of the DBCP Tropical Cyclone-Ocean Interactions Training Center at Pusan National University and 3) Preparations for the Fourth North Pacific Ocean and Marginal Seas (NPOMS-4) "Applications of Ocean Observations for Improving Society's Understanding and Forecasting of Typhoons, 2-4 November 2015 at Korea Maritime and Ocean University (KMOU) in Busan, Republic of Korea, 4) As a result of its five Western Indian Ocean Capacity Building Workshops, TT-CB is pleased to recognize Kenya for now helping with the seeding of autonomous instruments in one of the presently most difficult ocean areas, the western Indian Ocean. These instruments will help Kenya at regional scale, and all others at global scale, as part of the Global Ocean Observing System.

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## **ACTION PROPOSED**

The Meeting is invited to note the information contained in this document when discussing how it organises its work and formulates its recommendations.

- Appendices:**
- A.** Report by the Task Team on PANGEA Capacity Building Activities for 2015
  - B.** Terms of Reference of the DBCP Task Team on Capacity Building
  - C.** Proposed goals for DBCP Capacity Building activities in 2016

## DISCUSSION

### -A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

6.4.1 Dr. Sid Thurston (USA), Chairperson of the DBCP Task Team on Capacity Building (TT-CB), reported on the Task Team activities during the last intersessional period. In particular, he provided comprehensive information on: 1) The Outcomes of the First Pacific Islands Training Workshop on Ocean Observations and Data Applications (PI-1) Republic of Palau, 4-7 May, 2015 2) Outcome of the Inaugural Session of the DBCP *Tropical Cyclone-Ocean Interactions* Training Center at Pusan National University, 3) Preparations for the Fourth North Pacific Ocean and Marginal Seas (NPOMS-4) “Applications of Ocean Observations for Improving Society’s Understanding and Forecasting of Typhoons, 2-4 November 2015 at Korea Maritime and Ocean University (KMOU) in Busan, Republic of Korea.

6.4.3 The meeting noted with appreciation that the preparations for NPOMS-4, which was decided by DBCP-30, are now well underway, and thanked the Republic of Korea and KMOU for their support to the event.

6.4.2 The meeting agreed on the following:

- To explore with the IOC Sub-Commission for Africa and the Adjacent Island States for a possible future session of a DBCP Western Indian Ocean (WIO) Capacity Building Workshop to focus on developing the contributions of WIO region to the 50<sup>th</sup> Anniversary of the International Indian Ocean Expedition (IIOE-2). (**action; TT-CB; DBCP-31**);
- To continue to employ recent advances in Information and Communication Technology (ICT) to help facilitate more effective DBCP TT-CB Outreach and Capacity Building Activities on a larger scale (**action; TT-CB; NPOMS-4**);
- To Enhance Coordination and Cooperation between TT-CB and WMO Regional Associations (**action; TT-CB; DBCP-31**);
- To emphasize that the regional activities should create synergies and avoid duplication, at all cost, therefore requested to develop specialize activities that meet the interest of the respective regions, preferably with the identified resources within the regions. (**action; TT-CB; continuous**);
- To commence planning, through TT-CB, in 2016 for the organization of the “Second Pacific Islands Workshop on Ocean Observations and Data Applications” (PI-2). The South West Pacific Region is fertile ground for capacity building, particularly in ocean issues. The Region has good networks and there is a lot of interest in building the human capacity to digest and understand data from the ocean and climate observing systems. Several venues have already been identified. (**action; TT-CB; DBCP-31**).

6.2.3 The Panel thanked Dr. Thurston and the members of the Task Team for the report. The Panel re-elected Dr. Thurston to Chair the Task Team during the next intersessional period. The full report of the Task Team is provided in Appendix A of DBCP-31 preparatory document No. 6.4, and will be included in the DBCP Annual Report for 2015.

## APPENDIX A

### REPORT BY THE TASK TEAM ON CAPACITY-BUILDING (TT-CB)

#### Partnerships for New GEOSS Applications (PANGEA)

During November 4-11 2009, the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology ([JCOMM](#)) Third Session held in Marrakesh Morocco endorsed the Partnership for New GEOSS Applications ([PANGEA](#)) concept. PANGEA provides for in-country practical applications training of ocean data to large and diverse groups of regional participants and fostering partnerships between developed and developing countries to realize the socio-economic benefits of ocean observing systems. Since the inception of PANGEA, a series of workshops has been convened by the DBCP as part of their contribution to the PANGEA concept:

- [1<sup>st</sup> Western Indian Ocean Capacity Building Workshop](#)
- [2<sup>nd</sup> Western Indian Ocean Capacity Building Workshop](#)
- [3<sup>rd</sup> Western Indian Ocean Capacity Building Workshop](#)
- [4<sup>th</sup> Western Indian Ocean Capacity Building Workshop](#)
- [5<sup>th</sup> Western Indian Ocean \(WIO-5\) Capacity Building Workshop](#)
- [1<sup>st</sup> In-Region Capacity Building Workshop for Asian \(Asia-1\) Countries](#)
- [1<sup>st</sup> In-Region Capacity Building Workshop for the North Pacific Ocean and Marginal Seas](#)
- [Second Typhoon Workshop for the North Pacific Ocean and Marginal Seas \(NPOMS-2\)](#)
- [Third Typhoon Workshop for the North Pacific Ocean and Marginal Seas \(NPOMS-3\)](#)
- [First Pacific Islands Training Workshop on Ocean Observations and Data Applications \(PI-1\)](#)

#### I. Outcomes of the *First Pacific Islands Training Workshop on Ocean Observations and Data Applications (PI-1)* 4-7 May 2015, Koror, Republic of Palau.

As contributions to the PANGEA concept in 2015, The DBCP and Partners supported the *First Pacific Islands Training Workshop on Ocean Observations and Data Applications*.

PI-1 was by Hosted by:

1. Republic of Palau, Office of the President
2. Pacific Island Global Ocean Observing System ([PI-GOOS](#))
3. Secretariat of the Pacific Regional Environmental Programme ([SPREP](#))
4. Pacific Islands Ocean Observing System ([PaclOOS](#))
5. Tropical Pacific Observing System ([TPOS](#))
6. NOAA's Office of Climate Observation ([OCO](#))

The Pacific Islands are a region of "Large Ocean States" in which 98% of the region is ocean, and the majority of the land area is part of Papua New Guinea. The ocean is essential to Pacific Islander's way of life, yet there is limited knowledge of the oceans in region, and limited skill in using ocean data. Currently there is a growing awareness of the importance of the oceans, highlighted most recently at the 3rd UN SIDS conference in Samoa. Oceanographic capacity is limited within the Pacific Islands region, and generally resides within local meteorological services. However, there is a strong interest in increasing capacity to collect, analyze, and communicate oceanographic data across a number of sectors such as meteorology and climate services, fisheries, marine trade, and tourism. Increasing capacity in these sectors will increase the livelihoods of Pacific Islanders, and will allow them to more effectively engage in the global ocean community.

**The PI-1 Resolutions and Action Items are as follows:**

Resolution 1 - Identify current gaps and needs for ocean observing systems in PIs

Resolution - 2. Develop innovative partnerships for cost-effective ocean observations (e.g. 'Green Cable' initiative, ships of opportunity).

Resolution 3 – Raise awareness of available data products and data producers in the region, and demonstrate the value,

Resolution 4 - Collaborate between stakeholders and partners towards joint observing platforms

Resolution 5 - Identify potential funding sources for small regional data producers seeking long-term sustainability of their observing networks

Resolution 6 - Identify priority areas to focus efforts - Coastal Inundation/Hazards, Tsunami, Maritime Safety.

**PI-1 Roundtable Discussion:**

How Best to Serve PI Stakeholders by Strengthening Existing Ocean Observing Systems to Continue Operations and to Help Fill Identified Gaps

This discussion centered on evaluating where there are ocean observing system and data product gaps within the Pacific Island Countries and Territories. Many initiatives and ideas for planning and coordinating a regional observational system were discussed along with what would be needed to have a more robust system.

Several areas were identified as priority areas (listed below) and had similar needs. Adequate bathymetry data is needed for all coastal priority areas, and vulnerability and gap analysis, training in the use of marine data, and improved data products are needed for all priority areas. Priority areas and needs/gaps:

- Coastal Inundation and Coastal Hazards
  - There are currently limited forecasting and early warning systems in place for coastal inundation and coastal hazards. Current needs are for adequate resolution bathymetry data and grid, metadata catalogue of what data is available, staff for data entry/analysis, and gridded data into data portals (user friendly, note that this is a onetime effort). Gaps include the need for improved tsunami monitoring and warning systems (especially in areas with locally generated tsunamis), and improved coastal inundation and hazards data products and delivery.
- Tsunami monitor systems
  - There is a gap in the coverage of deepwater tsunami monitoring systems, including the exploration of the Green Cables initiative which is looking at instrumenting telecom cables with ocean bottom seismometers, pressure sensors, etc. An additional opportunity was noted to add extra sensors to existing and new tsunami monitoring buoys for ocean and climate observing. The need for information and awareness raising in vulnerable countries, sources of additional funding, and information on countries installing telecom cables in the near future were noted. The IOC JTF on tsunamis has agreed to help pursue additional opportunities.
- Tide Gauges
  - Gaps in tide gauge coverage need to be identified, including reviewing the Sea Level Center at the University of Hawaii and Pacific Sea Level Monitoring Project (Australia Bureau of Meteorology). New tide gauges should be prioritized based on where there are coverage gaps. It was noted that there is only 1 tide gauge in FSM (Yap state), and that a second one is coming online soon in Chuuk state.

- Maritime safety and marine forecasting
  - There is a gap in the coverage of high-resolution marine forecasts, including access and coverage to HyCom, BlueLink OceanMaps, Mercator project (real time data). There is also a need for additional training, data products and delivery.
  
- Sea Level Pressure and Support for Meteorology
  - There are significant gaps in sea level pressure data coverage across the region, and a need to improve sensor coverage. The use of surface drifters and other autonomous platforms for low cost monitoring were noted.
  
- Data Products for Users (Fisheries, maritime safety, tourism, etc.)
  - There are gaps in data products for specific sectors and the need to document regionally appropriate best practices.
  
- ❖ Training/Capacity Building
  - There are significant capacity gaps in the region, and the need for education in oceanography, hands on training in the use and access to marine data, and distance education platforms. In the future there is the need for more participants from the region in capacity building workshops, and to invite participants from a wider range of sectors (namely fisheries, maritime safety and tourism). An additional need to have ocean focal points for all countries and territories.
  
- ❖ Funding
  - There are significant resource gaps in the region and the need for increased international and local support – both in-kind and local commitment.

## **II. Outcomes of the Inaugural Session of International Training Program of North Pacific Ocean and its Marginal Seas (NPOMS) on Applications of Ocean Observations for the Typhoon Forecasting and Climate Change Problems Related with Coastal Inundations and Hazards**

In the 30th DBCP (DBCP-30) meeting in Weihai, China in October 2014, DBCP general meeting granted the establishment of the North Pacific Ocean and Its Marginal Seas (NPOMS) Training Center in Busan, South Korea. On behalf of the acceptance, Pusan National University (PNU) established the training center as a pilot project under the leadership of Professor Sang Kil Park in close consultation with Professor BG Lee of Jeju National University. The training course was set up and commenced implementation of the program from 17 to 22 in August 2015. There were thirty participants including from: Iran, Pakistan, Malaysia, China, India, Singapore, Taiwan, Vietnam, Afghanistan, Philippines and Korea. The annual training aims to build capacities among government officials, social partners and other relevant stakeholders on the design, implementation, monitoring and evaluation of ocean data buoys. The course provided training in subjects to further DBCP's pursuit of applying ocean observations for North Pacific Regions focusing on Typhoon forecasting and its coastal effects and risk assessment. These are relevant and appropriate to regional needs, based on DBCP observation data such as drifters and moorings. The course achieved two goals: the first to study buoy characteristics and its data analysis, the second to teach the typhoon forecasting and climate change problems related with coastal inundations and hazards, to include how typhoons impact the ocean environment as they pass. The course brought together colleagues from the NPOMS region and their national counterparts for a unique opportunity to share their views and experiences and to learn how to apply ocean observing networks to mitigate a common challenge to all – tropical cyclones.

**III. Preparations for the “Fourth North Pacific Ocean and Marginal Seas” (NPOMS-4) Capacity Building Workshop in Busan, South Korea 2-4 November 2015.**

As agreed at DBCP-31, the DBCP will convene its Fourth North Pacific Ocean and Marginal Seas (NPOMS-4), "Application of Regional Ocean Observations for Increasing Society's Understanding and Forecasting of Typhoons", 2-4 November 2015 at Korea's Maritime and Ocean University as continuation of its fruitful [NPOMS-3](#) Typhoon Workshop in Kyoto Japan October 2014 at the University of Kyoto Graduate School in Advanced Integrated Studies (GSAIS) Co-Hosted by Japan's Disaster Prevention Research Institute (DPRI).

NPOMS-4 Co-Sponsors are the DBCP and NOAA's Office of Climate Observation (OCO).

The Following Goals reflect the needs of this NPOMS-4 Workshop and of the long-term Ocean-Climate Monitoring Capacity for Regional Cyclogenesis and Forecasting:

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

**APPENDIX B**

**TERMS OF REFERENCE OF THE  
DBCP TASK TEAM ON CAPACITY-BUILDING (TT-CB)**

*(As adopted at DBCP-28)*

***The DBCP Task Team on Capacity-Building shall:***

1. Initiate, plan and coordinate the implementation of the Training and Capacity-Building work programme including, in particular, Training Course on Buoy Programme Implementation and/or Data Management; coordinate production of relevant training materials, and identify lecturers;
2. In parallel with the organization of training programmes, keep under review existing training material (paper and electronic) and advise on updating and developing new DBCP standard material in this regard; and investigate ways to add training material from all capacity building activities to IOC/IODE OceanTeacher;
3. Review and assess national, regional, and global requirements for capacity-building and develop / improve programmes as appropriate;
4. Liaise with other capacity-building programmes in relevant areas to develop and implement integrated activities, to explore potential synergies and opportunities for efficiently using resources available; liaise in particular with the JCOMM cross-cutting Team on Capacity-Building;
5. Endeavour to mobilize the resources required for DBCP capacity-building, including those needed for the implementation of the Training Courses;
6. Make recommendations to the DBCP Executive Board and / or the DBCP for addressing the issues above;
7. Report to the DBCP Executive Board and the DBCP at its biennial Sessions;
8. Consider inviting mariners and shipping companies to the DBCP Capacity Building workshops as a way to advertise the ocean observation activities and seek their support;
9. Make sure the data buoy vandalism aspects are being addressed as part of its activities;
10. Investigate on possible cooperation with relevant Capacity Building programmes in WMO and IOC.



**DBCP-TT-CB Membership:**

The membership is open to all Panel members. The Chairperson<sup>1</sup>, appointed by the Panel, has selected the following team members:

Dr. Sidney THURSTON, NOAA/OCO  
(TT-CB Chairperson)

Dr. R. Venkatesan, NIOT/India  
(TT-CB Vice-Chairperson)  
DBCP Technical Coordinator

DBCP Executive Board members, including DBCP

Chairperson, Vice-chairpersons (or their  
Respective Deputies)

Sang Kil PARK (Republic of Korea)

Hamad Mohammed AL GHEILANI (Oman)

Mathieu BELBEOCH (JCOMMOPS)

Rick LUMPKIN (USA)

Walter FLORES SERVAT (Peru)

Djoko HARTOYO (Indonesia)

Dr. G. LATHA (India)

Byung-Gul LEE (Republic of Korea)

Kwan-Chang LIM (Republic of Korea)

David MELDRUM (UK)

John MUNGAI (Kenya)

Adote Blim BLIVI (Togo)

Lucy SCOTT (South Africa)

Louise WICKS (Australia)

Jean ROLLAND (France) Representative

of the IOC Secretariat

Representative of the WMO Secretariat

Juliet HERMES (South Africa)

Santjie du TOIT (South Africa)

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<sup>1</sup> The Chair and Co-Chair of the Task Team should not be in a situation of conflict of interest.

## APPENDIX C

### PROPOSED GOALS FOR DBCP CAPACITY BUILDING ACTIVITIES IN 2016

Two (2) DBCP TT-CB Capacity Building Workshops and the 3Busan Summer School are being proposed to the Executive Board during DBCP-31 for their consideration in 2016 as follows:

I. Details for The Fifth Capacity Building Workshop of the WMO/IOC Data Buoy Cooperation Panel (DBCP) for the North Pacific Ocean and Its Marginal Seas (NPOMS-5), *Application of Regional Ocean Observations for Increasing Society's Understanding and Forecasting of Typhoons*, will be advanced during DBCP-31 and NPOMS-4.

II. During PI-1 in Palau of May 2015, several proposed locations were offered for the DBCP's Second Pacific Islands (PI-2) Training Workshop on Ocean Observations and Data Applications. These locations (in alphabetical order) will be considered at the DBCP-31 Executive Board meeting 19-23 October, 2015.

1. Apia, Samoa (Secretariat of the Pacific Regional Environment Programme, SPREP)
2. Honolulu, Hawaii (University of Hawaii)
3. Noumea, New Caledonia (French Institute of Research for Development, IRD)
4. Papeete, French Polynesia (University of French Polynesia (UPF)/IRD)
5. Suva, Fiji (University of the South Pacific, USP)

In addition to these two DBCP Capacity Building Workshops, the Second Session of International Training Program of North Pacific Ocean and its Marginal Seas (NPOMS) on Applications of Ocean Observations for the Typhoon Forecasting and Climate Change Problems Related with Coastal Inundations and Hazards will be held during the summer of 2016 at Pusan National University.

Finally, Preliminary discussions are underway with the IOC Sub-Commission for Africa and the Adjacent Island States for a possible future session of a DBCP Indian Ocean Capacity Building Workshop to focus on developing the contribution of the Indian Ocean region to the 50th Anniversary of the International Indian Ocean Expedition (IIOE-2). Details remain to be confirmed.