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**INTERGOVERNMENTAL OCEANOGRAPHIC
COMMISSION (OF UNESCO)**

DATA BUOY COOPERATION PANEL

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THIRTY FIRST SESSION

ITEM: 8.2

GENEVA, SWITZERLAND
19-23 OCTOBER 2015

ENGLISH ONLY

**PROGRESS REPORT ON PILOT PROJECT ON WAVE MEASUREMENT EVALUATION AND
TEST FROM MOORED AND DRIFTING BUOYS**

(Submitted by Mr Val Swail (Canada), Chair PP-WET)

SUMMARY AND PURPOSE OF DOCUMENT

This document provides information on the development and current status of the joint DBCP-ETWCH Pilot Project on wave measurement evaluation and test from moored and drifting buoys, and the Pilot Project workplan.

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.

Appendix: A. Updated workplan of the PP-WET

DISCUSSION

-A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

8.2.1 Mr Val Swail (Canada) reported on the development and current status of the joint DBCP¹-ETWCH² Pilot Project on wave measurement evaluation and test from moored and drifting buoys (PP-WET). The full report is included as a presentation accompanying the DBCP-31 meeting report.

8.2.2 As noted during the DBCP-30 session, the PP-WET Steering Committee had recommended that the Pilot Project should focus on the core networks, such as Canada, the US and the United Kingdom, where some progress and plans have been reported. Other member countries were still encouraged to participate in the Pilot Project intercomparison activities by submitting co-located spectral wave data to the Coastal Data Information Program (CDIP) at the Scripps Institution of Oceanography.

8.2.3 A meeting of the Pilot Project co-chairs and CDIP was held May 13-14, 2015 in La Jolla, California, to discuss proposed enhancements to the evaluation tool and the graphical interface to provide more quantitative information, and to identify additional intercomparison data sets for inclusion, including dual (or more) sensor hulls. Future evaluation opportunities were also discussed. Mr Swail emphasized the importance of understanding the wave measurements which formed the basis for calibration and validation of modelling systems in wave forecasting agencies. He encouraged the modelling and climate communities to promote the wave measurement evaluation activities within their respective countries, and urged the wave measurement agencies to ensure that high-quality wave data was measured for the benefit of a wide range of users, and not to sacrifice quality for quantity (**recommendation**).

8.2.4 The Panel noted with appreciation that the buoy farm at Monterey had become a reality, with a large number of platforms deployed and providing data either in real time or delayed mode. This included the July 2015 deployment of FLOSSIE (Field Laboratory for Ocean Sea State Investigation and Experimentation), a 6m NOMAD buoy instrumented with a large number of current and historical wave sensors and processing systems for both Canadian and US systems. This deployment represents a key cornerstone of the PP-WET objectives. Preliminary results were presented Dr. Robert Jensen, PP-WET Co-Chair, at the Technical Workshop preceding DBCP-31. Other intercomparisons were also carried out, from other platforms within the buoy farm, dual sensor buoy deployments, and a co-deployment of two identical Datawell waveriders at the Harvest location off the California coast. Data was also obtained from a UK waverider, co-deployed with two operational measurement systems, which will be provided to CDIP for analysis and posting to the web site. The Panel expressed its appreciation to Canada, US, United Kingdom for their continued participation in the intercomparison projects. The Panel also welcomed the continued contribution, supported by the US Army Corps of Engineers, from the Coastal Data Information Program (CDIP) at the Scripps Institution of Oceanography, in setting up the intercomparison methodology, web site and metadata criteria, and in carrying out individual intercomparisons. The Panel encouraged its member countries to participate in the intercomparison activities that were led by this pilot project (**recommendation**).

8.2.5 Mr Swail noted that three sessions on wave measurement, two on in situ measurement and one on remotely sensed measurements, have been convened as part of the 14th International Workshop on Wave Hindcasting and Forecasting (WW-14, November 8-13, 2015, Key West, USA) to present evaluation results to the scientific community and further develop guidelines and participation in the Pilot Project (<http://www.waveworkshop.org>).

8.2.6 Mr Swail also noted several other upcoming opportunities to promote participation in, and understanding of, the Pilot Project, including the Regional Marine Instrumentation Center (RMIC) wave workshop February 29 to March 2, 2016 (Mississippi), and the JCOMM Workshop on Marine Data (MARCDAT-4), July 18-22, 2016 (Southampton, UK). A section on wave measurement evaluation is also being written for the WMO Guide to Wave Analysis and Forecasting (WMO No.

1 DBCP: Data Buoy Cooperation Panel

2 ETWCH:JCOMM Expert Team on Waves and Coastal Hazard Forecasting Systems

702), which is presently being revised.

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

8.2.8 Mr Swail noted that work is also progressing well on the wave measurements from drifting buoys component of the Pilot Project. Evaluation of the Scripps GPS sensor is ongoing, including the dual sensor data retrieved from the Canadian 3m discus buoy at East Dellwood. The preliminary results of the project to develop spectral wave measurements from the drifting buoys in the Global Drifter Program (GDP) were presented by Mr. Lance Braasch at the Technical Workshop preceding the DBCP-31 session, and are available on the DBCP web site. The Panel noted this with interest, and recommended that this development should continue, in cooperation with the GDP and member countries that routinely deploy drifting buoys to further the evaluation of the technology. **(recommendation)**.

8.2.9 The Panel recognized that the pilot project would contribute to JCOMM in developing standards and best practice, as well as to the relevant WIGOS exercise, and encouraged the co-chairs and Pilot Project members to actively outreach these relevant activities with the progress in the inter-comparison exercise, in particular to the activities noted in sections 8.2.5 and 8.2.6 above. **(recommendation)**.

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

8.2.11 The meeting made the following recommendations:

- (i.) Continue the Pilot Project for the next year, with no funding support;
- (ii.) Encourage the co-chairs and Pilot Project members to contribute the results of the intercomparison exercise to JCOMM and WIGOS in developing standards and best practice;
- (iii.) Encourage its member countries, and RMICs with marine responsibilities, to participate in the Pilot Project intercomparison activities;
- (iv.) Panel members to consider procuring and deploying, in cooperation with SIO, a small number of the developmental GDP wave drifters with GPS wave measuring capability, to aid in the evaluation activities.
- (v.) Wave measurement agencies to ensure that high-quality wave data is measured for the benefit of a wide range of users, and not to sacrifice quality for quantity.

8.2.12 The meeting decided on the following action items:

- (i.) The future plans and membership of the Pilot Project will be reviewed in October 2015, at the ad hoc meeting during the 14th Wave Workshop (**action; PP-WET co-chairs, Secretariat; October, 2015**);
- (ii.) Guidelines on the best practices for measurement of reliable, high-quality spectral wave measurements, including directional spectra, will be developed, possibly as an outcome of the February 2016 RMIC workshop (**action; PP-WET co-chairs; DBCP-32**).

APPENDIX A

UPDATED WORKPLAN OF PP-WET

**WORKPLAN (OCTOBER 2015 TO SEPTEMBER 2016) OF THE PILOT PROJECT ON
WAVE MEASUREMENT EVALUATION AND TEST FROM MOORED AND DRIFTING BUOYS (PP-
WET)**

1. Coordinate intercomparisons of wave measurements from different platforms, on an opportunistic basis;
2. Publish intercomparison results and updated status reports on Pilot Project web site;
3. Promote widely the pilot project goals and objectives, and results, to encourage enhanced participation and additional partners;
4. Contribute to training material to educate users about appropriate wave measurement procedures and uses of the data, including the need for high quality information for all users;
5. Contribute, as appropriate, to the JCOMM Standards and Best Practice Guides, including a recommended approach to making reliable, high-quality spectral wave measurements, including directional spectra;
6. Develop a plan for a continuous testing and evaluation program;
7. Decide whether to continue the pilot project for a further year and investigate follow-on mechanisms;
8. Present results to DBCP-32 and other scientific fora.
