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INTERGOVERNMENTAL OCEANOGRAPHIC  
COMMISSION (OF UNESCO)

DATA BUOY COOPERATION PANEL

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THIRTIETH SESSION

ITEM: 8.2

WEIHAI, CHINA  
27-31 OCTOBER 2014

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)*

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**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.

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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.

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**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 DBCP<sup>1</sup>-ETWCH<sup>2</sup> 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-30 meeting report.

8.2.2 Mr Swail noted that a special session on wave measurement (Session A) was held as part of the 13<sup>th</sup> International Workshop on Wave Hindcasting and Forecasting (WW-13, October 27-November 1, 2013, Banff, Canada) to present evaluation results to the scientific community and further develop guidelines and participation in the Pilot Project (<http://www.waveworkshop.org>). 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.

8.2.3 A PP-WET Pilot Project meeting was held the day prior to the WW-13 Workshop for Pilot Project members attending the Workshop as well as any other interested people, to review progress and future plans. The meeting 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.

8.2.4 A meeting of the Pilot Project co-chairs and CDIP was held February 11, 2014 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, including the proposed "buoy farm" off Monterey were also defined.

8.2.5 Mr Swail also made a presentation to the JCOMM 4<sup>th</sup> Workshop on Advances in Marine Climatology (CLIMAR-4) in Asheville, NC, June 9-12, 2014 on the JCOMM Extreme Wave Data Set (EWDS). The importance of the PP-WET results to the interpretation of the results from the EWDS was noted, as was the critical understanding of the measurements in reliable estimation of historical wave trends. The availability and ready accessibility (comparable to WMO No. 47) of historical buoy metadata to support wave climate analysis, the EWDS as well as PP-WET, was described as "abysmal". The Panel encouraged its member countries to take action to remedy this situation (**recommendation**).

8.2.6 The Panel noted that the past year, as in the one preceding it, had been a difficult one for many national agencies, due to issues of funding, personnel, logistics and ship time, which had significantly hampered progress in the Pilot Project, particularly for the deployment of new wave buoys. The situation was made worse with the actual loss of moorings in both Canada and the United Kingdom. In spite of this, some progress was reported, and exciting plans are already underway for the coming year with deployments off Canada and the UK, and a "buoy farm" including a 6m NOMAD hull instrumented with all historical Canadian and US sensors and processing systems off Monterey. The Panel expressed its appreciation to Canada, US, United Kingdom for their continued participation in the intercomparison projects in spite of the recent difficulties. 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**).

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1 DBCP: Data Buoy Cooperation Panel

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

8.2.7 The Panel noted that evaluation results continue to be routinely added to the intercomparison web site <http://www.icomm.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 on the wave measurements from drifting buoys component of the Pilot Project. Evaluation of the Scripps GPS sensor is ongoing, with some dual sensor data still to be retrieved from the Canadian 3m discus buoy. A second approach has also been investigated, using a different Scripps buoy; this drifting buoy is already operational, and has been widely used by the US Navy and the oil and gas industry. It measures spectral waves as well as currents using a GPS sensor, and sea surface temperatures. The Panel noted this with interest, and recommended that a small number of these buoys could be obtained and deployed as a complement to the regular drifter program for evaluation (**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 intercomparison exercise (**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 check their records, and make sure that the historical and present wave buoy metadata (and data) are made available to international archives (e.g. ICOADS) in a suitable exchange format such as that recently developed by the TT-MB;
- (v.) Panel members to consider procuring and deploying a small number of the operational SIO drifting buoys with GPS wave measuring capability and to inform PP-WET accordingly.

**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 2014, at the special meeting preceding the Wave Workshop, including a possible follow up technical workshop on results to date (**action; PP-WET co-chairs, Secretariat; October, 2014**);
- (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 technical workshop (**action; PP-WET co-chairs; DBCP-31**).

**APPENDIX A**

**UPDATED WORKPLAN OF PP-WET**

**WORKPLAN (OCTOBER 2014 TO SEPTEMBER 2015) OF THE PILOT PROJECT ON  
WAVE MEASUREMENT EVALUATION AND TEST FROM MOORED 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. Develop a plan for a continuous testing and evaluation program;
4. Promote widely the pilot project goals and objectives, and results, to encourage enhanced participation and additional partners;
5. Contribute to training material to educate users about how to deploy and operate wave sensors appropriately;
6. 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;
7. Decide whether to continue the pilot project for a further year and investigate follow-on mechanisms;
8. Present results to DBCP-31 and other scientific fora.

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