Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
Commission technique mixte OMM-COI d'océanographie et de météorologie maritime
http://www.jcomm.info

JCOMM Technical Workshop on Wave Measurements from Buoys

2 - 3 October 2008, New York, United States

PROPOSAL FOR PILOT PROJECT

– DBCP-ETWS Pilot Project on Wave measurement Evaluation and Test from moored buoys – (DBCP-ETWS PP-WET)

Background:

The JCOMM Technical Workshop on Wave Measurements from Buoys (New York, 2-3 October 2008) recognized and supported the recent work carried out in the development of the US IOOS Operational Wave Observation Plan (September 2007) and its related documents including the March 2007 US Wave Sensor Technologies Workshop. The underlying basis for that plan, which was endorsed by the NY workshop, made the case that continuous testing and evaluation of wave measurement systems is an essential programme activity, of equal importance to the deployment of new assets. In particular it was agreed that

- the success of a directional wave measurement network is dependent in large part on reliable and effective instrumentation (e.g. sensors and platforms),
- a thorough and comprehensive understanding of the performance of existing technologies under real-world conditions is currently lacking
- independent performance testing of wave instruments is required

The New York workshop also confirmed the following basic principles:
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- the basic foundation for all technology evaluations, is to build community consensus on a performance standard and protocol framework.
- multiple locations are required to appropriately evaluate the performance of wave measurement systems given the wide spectrum of wave regimes that are of interest.
- protocols and resources could be established to conduct "in-place" evaluations of wave measurement systems which can not easily be moved to the test sites.

The meeting further agreed that the most effective way to proceed with a DBCP-based Pilot Project on Wave Measurement Test and Evaluation was to expand and extend the relevant parts of the US experience from the IOOS Wave Plan test and evaluation activities to an international context within JCOMM.

Objectives of a Pilot Project on Wave measurement Evaluation and Test from moored buoys

- Develop the basis for an international framework for the continuous testing and evaluation of existing and planned wave buoy measurements
- Coordinate buoy inter-comparison activities.
- Develop technical documentation of differences due to hull, payload, mooring, sampling frequency and period, processing (e.g. frequency bands & cutoff), precision, transmission
- Develop training material to educate users about how to deploy and operate wave sensors appropriately.
- Contribute appropriate material to the JCOMM Standards and Best Practice Guide
- Establish confidence in the user community of the validity of wave measurements from the various moored buoy systems
- Sponsor the work needed to arrive at the most promising technique

Methodology

- Establish a Pilot Project Steering Team comprising a wide representation from end-users, wave experts, buoy manufacturers, and buoy operators
- Draw up a work programme (see draft later in this document) that
    - Establishes standards for the intercomparison of moored buoy wave measurements
    - Documents existing procedures for moored buoy wave measurements
    - Establishes standards and contributes to development of guidelines for best practices for wave data and metadata
- Consult with buoy network operators, manufacturers and potential end users (e.g. global wave modellers, satellite operators, forecasters) potential end-users to undertake coordinated evaluations of buoy wave measurements according to the agreed-on standard.
- Engage with other operators and end-users to seek contributions (cash and in-kind)
- Present results (written reports, conference presentations, scientific publications)

DBCP-ETWS Pilot Project on Wave measurement Evaluation and Test from moored buoys (DBCP-ETWS PP-WET)

Draft Steering Team Membership:

The Steering Team is comprised of the following individuals:

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- Representative(s) from Korea, Australia, Mediterranean, India

Secretariat support will be provided by WMO and IOC. Contact points:

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DBCP-ETWS Pilot Project on Wave measurement Evaluation and Test from moored buoys (DBCP-ETWS PP-WET)

– Draft workplan –

The Pilot Project will run for an initial two-year period from November 2008 and will report to the DBCP on progress at its annual sessions. The Steering Team shall be selected and tasked to guide the Pilot Project through the following actions:

Year 1 –

1. Expand and extend the relevant parts of the US experience from the IOOS Wave Plan test and evaluation activities to an international context within JCOMM

2. Develop or adapt, as necessary, test and evaluation standards and the methodology for the inter-comparisons for both directional and non-directional data.

3. Establish basic protocols for how the field tests of wave measurement systems will be conducted (*note that SIO has already established tools for wave sensor intercomparison*)

4. Develop specific protocols for how the first set of system tests will be conducted (e.g. length of time for testing), and analysis software to be used, and how results will be presented.

5. Develop metadata standards for wave measurements and documentation of existing wave measurement metadata in coordination with the Meta-T PP (there already is an ODAS standard for buoy metadata)

6. Liaise with existing marine metadata projects to develop support for the goals of the Pilot Project (e.g. ODAS, IODE, WIS)

7. Develop technical documentation and evaluation of differences due to hull, payload, mooring, sampling frequency and period, processing (e.g. frequency bands & cutoff), precision, transmission in existing global moored buoy networks.

8. Identification and possible development of standard wave quality control guidelines

9. Contribute, as appropriate, to the JCOMM Standards and Best Practice Guide

10. Present results to DBCP-XXV and other scientific fora

Year 2 –

1. Carry out coordinated intercomparisons of wave measurements from different platforms on an opportunistic basis as proof of concept of the test and evaluation plan

2. Develop a plan for the implementation of a continuous technology testing and evaluation program

3. Promote the development of new wave measurement sensors and measurement techniques and their evaluation

4. Identify approaches to evaluating the performance (e.g comparisons to a currently accepted technology/approach) of current operational and pre-operational (including nautical and HF radar, ADCP, GPS sensors, and ASIS buoys) in situ and remote sensing technologies

5. Investigate the possibility of an alternative testing site if an ocean platform, suitable for mounting a pressure array, were to be available through an industry partnership agreement; the evaluation framework would remain the same irrespective of the actual site

6. Develop training material to educate users about how to deploy and operate wave sensors appropriately

7. Decide if a case can be made to continue the pilot project for a further year and investigate follow-on mechanisms

8. Present results to DBCP-XXVI and other scientific fora