Workshop on Operational Measurements for Ocean Waves

BACKGROUND

In 2008, the JCOMM Data Buoy Cooperation Panel (DBCP), in cooperation with the JCOMM Expert Team on Waves and Surges (ETWS) and the International Association of Oil and Gas Producers (IOGP) organized a workshop in New York, NY to discuss the requirements for improved wave measurements. The workshop addressed a large range of user needs, including:

- Assimilation into offshore wave forecast models
- Validation of wave forecast models (and hindcast and reanalysis)
- Calibration / validation of satellite wave sensors
- Ocean wave climate and variability
- Role of waves in coupling
- Coastal zone modelling – erosion, sediment transport, inundation etc.
- Wave power resource assessment
- Port and harbour operations

The workshop focused on topics of significant interest that included (1) requirements for wave observations; (2) existing technology and their limitations; (3) operational aspects; and (4) potential for new cost-effective technology for drifters and moorings.

At its 24th Session, October 2008 in Cape Town, South Africa, the DBCP created the Pilot Project on Wave measurement Evaluation and Test (PP-WET). The PP-WET developed the basis for the continuous testing and evaluation of existing / planned wave buoy measurements, in order to establish confidence in the user community of the validity of wave measurements from the various moored buoy systems. A second Pilot Project on Wave Measurements from Drifting Buoys (PP-WMD) was also established; this was eventually integrated into PP-WET.

The Pilot Project successfully wrapped up in 2016, as reported at the DBCP-32 in La Jolla, CA. The work addressed the ongoing issues of wave measurements, and formed the basis for the creation of a new Task Team on Wave Measurements (TT-WM), highlighting in particular the continuation of the intercomparison activities and development of wave drifter measurement technology.

Over the past few years, considerable interest in revisiting the issues of quality wave measurements has been expressed from the international waves community, including the organizers of the 2008 workshop. The past few years have seen significant changes in wave measurement systems, with a host of new sensors capable of measuring the First-5 wave spectra; better, smaller hulls; operational shifts from metal hulls to foam hulls; as well as deployments of wave drifters in record numbers. This creates great opportunities, but also great challenges to understand how these new measurement systems compare among themselves and also with legacy systems. This is particularly critical for the use of buoy measurements in climate studies, where homogeneity is a major concern. There is certainly much to discuss on where we are and where we need to go with respect to high quality wave measurements covering the global ocean.

A follow-on to the 2008 New York workshop, the *Workshop on Operational Measurements for Ocean Waves*, was originally planned for September 28-30, 2020, hosted by the European Centre for Medium-Range Weather Forecasts. Of course that has been postponed several times due to Covid, but the need continues.

The workshop will now take place virtually on October 11-12, 2022, from 1600-1900 UTC. Due to the limited amount of time available in virtual sessions, the scope of this workshop will be reduced from what had been originally planned. We view this as an initial discussion, and hope that this might lead to an ongoing seminar series on wave measurements and their uses, addressing other topics in the original program. The workshop web page and program can be found at https://goosocean.org/WM-2022.

Workshop on Operational Measurements for Ocean Waves – revised virtual plan

Organizers:

- WMO Standing Committee on Marine Meteorology and Oceanography
- GOOS Data Buoy Cooperation Panel (DBCP) Task Team on Wave Measurements

Focus:

- "Operational" wave measurements, i.e. moored and drifting buoys and platform-mounted radar/laser systems which report on the GTS in near-real time. These are the measurements that will be available to NWP centres for data assimilation. They are also the primary measurements that form the data bases for satellite cal/val and for long-term climate trend and variability studies.

Target Audience:

- Wave data end users - including major NWP centres, national wave forecast agencies, satellite agencies with interest in cal/val studies and complementary operational wave data programs, major wave climate research initiatives and programs (such as COWCLIP) which need long term, high quality wave measurements and associated metadata.
- Wave data providers - National wave measurement agencies, and archive centres
- Manufacturers – for feedback on what is required, including (especially intercomparison)

Objectives/Outcomes:

- Review the progress over the past 10+ years regarding:
    - Intercomparisons of legacy and emerging wave measurement systems, including development of methodologies and evaluation of operational measurements, e.g. through the WET Pilot Project;
    - development of high quality spectral wave measurements from drifters, their evaluation and deployments in the global ocean, availability through the GTS;
- Report on outcomes and recommendations to the DBCP 38th Session, November 2022; SC-MMO 3rd Session (TBD).

Expected participants:

- Major NWP Centres
- National Wave Forecast Centres
- National Wave Measurement agencies
- National wave measurement archive centres
- WMO/JCOMMOPS
- IOGP Metocean Committee
- Data Buoy Cooperation Panel members
- Satellite agencies
- Major wave climate initiatives, e.g. COWCLIP