Jan 15th, 2:15 PM - 3:00 PM

Session 3 Discussion Notes

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Session III Notes
Advances and issues in wave measurement technologies

These notes are intended as a supplement to the Session III presentation. The following discussion points were captured by workshop rapporteurs:

- The new U.S. Navy paddle-driven wavemaker is much more effective than the former pneumatic wavemaker. The pneumatic wavemakers did not allow directional capabilities.

- Future capabilities with the paddle-driven wavemaker may support physical wave modeling in synchronization with waves measured from a wave buoy.

- *In-situ* wave measurements are sparse in the open ocean, but are useful for model verification or could be used in the analysis of satellite observations.

- Modeling efforts can be used to compensate for the inadequate number of *in-situ* wave measuring systems that are very unevenly distributed.

- Wave buoys come in a variety of shapes and sizes (i.e., spherical, discus, spar, or boat-shaped hulls). Algorithms use buoy response function to characterize wave motion.

- Organizations such as NOAA are involved in the calculation of measurement uncertainties, especially for different types of wave buoys. Assess differences in buoys with a main accelerometer sensor attached to a fine wire strain gauge in fluid on floating gimbal platform versus strapped down accelerometer.

- Use remote sensing imagery to extend observations from wave buoys and to support wave modeling.

- Innovations may support use of radar (coastal vs. deep ocean), improved measurement capabilities in marshes, and enhancements that allow modeling surf in wave tanks.

- Data telemetry is challenged in certain environments, for example in areas that are associated with sea ice. Development of the Hydrokite for air-sea interaction, data exfiltration, and challenging polar deployment sites has been initiated by Woods Hole Group. Hydrokite is a streamlined towed vehicle that is attached to a bottom mount or subsurface mooring.