The NOAA Coastal Hazards Resilience Workshop: Rip Currents and Wave Runup

Figure 1. Group photo at the 2015 NOAA Coastal Hazards Resilience Workshop.

Summary provided by Nicole Kurkowski, National Weather Service.

The NOAA Coastal Hazards Resilience Workshop: Rip Currents and Wave Runup was held on April 14-16, at the Virginia Modeling, Analysis, and Simulation Center (VMASC) on the Old Dominion University campus in Suffolk, Virginia. The workshop was held to assist NOAA in further developing and improving strategies to mitigate problems associated with rip currents and wave runup (changes in water elevation at the beach due to breaking waves) and was co-sponsored by the NOAA Coastal Storms Program (CSP), North Atlantic Regional Team (NART), Southeast & Caribbean Regional Team (SECART), and National Weather Service's (NWS) Office of Science and Technology Integration (NWS/STI). Approximately 80 participants attended the workshop (Figure 1), representing NWS forecasters and other NOAA scientists from the National Ocean Service and National Sea Grant Office, lifeguards, emergency managers, researchers, and the private sector and media. Workshop outputs will be transferrable nationwide and therefore all US coasts were represented, including Alaska and Hawaii. Other attendees included forecasters from the Great Lakes (Figure 2) and Puerto Rico,as well as an expert on rip currents who traveled from Australia.

Figure 2. Bob Dukesherer (WFO Grand Rapids) presents on the CSP-funded social science work conducted in the Great Lakes to better inform the public about hazardous currents.

Days 1 and 2 of the workshop were focused entirely on rip currents; Day 1 efforts concentrated on forecasting and modeling, while rip current communication and messaging were addressed on Day 2. Wave runup was the topic of discussion on Day 3 and a subset of workshop attendees participated in an offsite wave runup field experiment on the afternoon on Day 2 (Figure 3).

Figure 3a. John Cannon (WFO Gray, Maine) leads workshop attendees on an offsite wave runup field experiment on Day 2 of the workshop.

Figure 3b. Workshop attendees participate in the offsite wave runup field experiment on Day 2 of the workshop.

Participant feedback and initial results indicate the workshop was a resounding success and achieved its goals. Some highlights from key workshop break-out discussions included, but were not limited to (Figure 4):

- scientific considerations and strategies in expanding the rip current forecast model;
- national standardization of rip current messaging and communication allowing for regional adjustments;
- establishment of personal relationships between forecasters and local lifeguards in obtaining near real-time rip current observations to validate forecasts and improve impact-based decision support services (IDSS);
- concern over issuance of “low” rip current risk;
- training requirements for forecast offices, lifeguards, and the public including the incorporation of rip current prevention training in K-12 school curriculum;
- requirements for social science and evaluation of messaging prior to determining whether it is appropriate to update ”Break the Grip of the Rip” messaging;
- continuing to include “always swim near a lifeguard” in messaging;
- the power of utilizing visualizations and social media to reach the public in messaging;
- establishing baseline statistics for rip current-related drownings and studying demographics to ensure proper messaging;
- the need to accelerate development of unstructured grids for the Nearshore Wave Prediction System (NWPS) to serve as input for both the rip current forecast model and wave runup forecast; and

- merging wave runup efforts with the USGS in expanding from point-based forecasts to the entire shoreline.

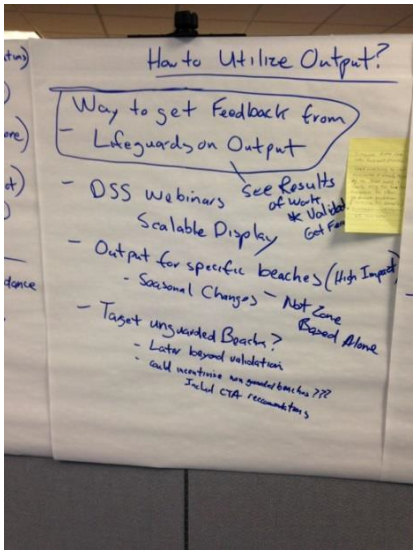

Figure 4. Attendee feedback documented on a flipchart during the Day 1 break-out group session on expanding/transitioning the rip current forecast model.

Workshop outputs will include:

- generation of needs assessment documents and strategies for transitioning social science and messaging from CSP-funded findings in the Great Lakes to coastal beaches in the Mid-Atlantic and beyond;
- expansion of the NOAA rip current forecast model from forecast offices presently running the model experimentally to additional offices and potentially to NWS operations;
- identification of enhancements to the rip current reporting pilot project currently underway at the NWS;
- development of a strategy for expanding wave runup applications from Northeast to Southeast Weather Forecast Offices (and beyond);
- expansion of wave runup forecasts beyond point-based to the entire coastline; and
- generation of a needs assessment document and strategy for utilizing social science to help shape communication and messaging of the wave runup threats and impacts.