

Hurricane Season Rollout May 22, 2014

Message:

The U.S. Integrated Ocean Observing System (IOOS®) enables decision making every day by delivering coastal intelligence. IOOS fosters advances in science and technology in support of Hurricane related research and operations within NOAA. IOOS adds data, models, and new technologies to increase understanding, skill, and innovation in coastal intelligence.

Data

- ❖ IOOS delivers additional ocean and coastal observations such as winds, waves, surface currents, and water temperature to the National Weather Service (NWS) for use in its operational models and forecasts.



Photo: Hurricane Sandy approaching the MARACOOS HF Radar network.

- During Sandy, IOOS buoys and sensors along the mid-Atlantic coast generated hourly updates of wind, wave, visibility, water levels, and air and water temperatures; more than 40 coastal high-frequency radars provided ocean current data that contributed to wave and storm-surge forecasts; and an unmanned scientific glider deployed off New Jersey reported water temperature information.
- IOOS is partnering with NWS to make surface current data from High Frequency radars accessible through the NWS Advanced Weather Interactive Processing System (AWIPS) and National Centers for Environmental Prediction data tanks.
- IOOS coordinates delivery of high resolution wave data from 200 stations to CO-OPS and NWS in partnership with the U.S. Army Corps of Engineers.
- IOOS regions are delivering more than 3.8 million observations per year to the NWS National Data Buoy Center, where data undergoes quality assurance and control practices before it is delivered to the Global Telecommunications System for use by operational modelers. These are primarily meteorological observations in locations not covered by NWS assets near shore, or in areas of sparse coverage off shore.
- In the Northeast, IOOS provides 50% of the surface observations and 90% of the subsurface observations used by NWS.

Modeling

- ❖ IOOS improves models through the Coastal and Ocean Modeling Testbed to evaluate research models for operational use.
 - For one testbed project, scientists are working to extend the present wave/surge operational forecasting capability from mild-sloped coastal areas, such as the U.S. East and Gulf of Mexico coasts, to steep-sloped areas, such as the Caribbean and Pacific Islands. They are working to identify models or techniques to transition to NOAA's National Hurricane Center and local WFOs.
- ❖ The IOOS Northeast Regional Association runs an operational high resolution modeling program, and provides inundation forecasts for the sea wall in Scituate, MA.

Technology, Innovation, and Expertise

- ❖ IOOS advances technology, new data, and promising research:



- IOOS supplies new technologies such as unmanned, underwater robotic gliders that can collect subsurface data before, during, and after hurricanes to increase understanding of hurricane intensity.
- Rutgers University, a MARACOOS partner, is conducting research on Hurricanes Irene and Sandy to determine the influence of subsurface temperature on hurricane intensity. The results of this research are promising and may support improvements to the National Weather Service's hurricane intensity forecasting in the future.

- ❖ IOOS is using Sandy supplemental funds to replace and harden 17 high frequency radar stations damaged in the storm. High frequency radars collect surface current speed and direction in near real time as hurricanes pass through to aid models and forecasts. In the Northeast, funds will be used to restore damaged buoy hulls, replace met sensors, and create a cloud-based solution to ensure data, models, and observations are available during future storms.



- ❖ **IOOS Regional Associations bring trusted expertise to the table:** In Hoboken, NJ, about 1,700 buildings were severely flooded, impacting up to 34,000 people. Having an IOOS partner present, who is also a trusted member of the community, was key to the Mayor's decision to order the evacuation of all ground floor apartments by midnight the day before landfall. This single decision saved a significant number of lives as there are thousands of these street-level and basement-level apartments.