

IOOS COMT: A Wave, Surge and Inundation Modeling Testbed for Puerto Rico and the US Virgin Islands

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ABSTRACT

The operational prediction of hazardous storm surge inundation events in U.S. island regions in the Caribbean and Pacific poses many challenges. Compared to mild-sloped sandy beaches, waves play a significant role in driving the storm surge in these steep, reef-fringed environments. Therefore, NOAA/NWS currently does not have an operational inundation prediction system in these regions. Since Puerto Rico and the U.S. Virgin Islands are frequented by hurricanes and are well-instrumented, it is an ideal region for model inter-comparison. This project, which forms part of U.S. IOOS's Coastal and Ocean Modeling Testbed, aims to inter-compare a number of coupled wave and surge models for a set of hindcast field cases in this region to arrive at a selection of models or techniques that would be suitable for operational implementation at NOAA's National Hurricane Center and tropical island Weather Forecast Offices. This poster will show the first results of this project, including the selection of field cases, comprising Hurricane Georges (1998), Hurricane Isaac (2012), Superstorm Sandy (2012) and two nearshore field campaigns, the configurations of the coupled wave-surge models ADCIRC-SWAN, ADCIRC-WAVEWATCH III, SLOSH-SWAN and FUNWAVE, and initial model comparisons. These results include the validation of tidal simulations in the region, and inter-comparisons of wave and surge results for the selected field cases.