

# Coupled Waves and Storm Surge during Hurricane Gustav

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Recent modeling of hurricane storm surge has coupled circulation and wave models so that they run on the same unstructured meshes and by the same computational processors. This method improves both the efficiency and accuracy of the computed solution. The coupled SWAN+ADCIRC model is well-positioned to generate waves and surge in deep water, propagate them onto the continental shelf, and dissipate them in complex nearshore systems and can do so operationally using very high resolution unstructured grids.

Gustav impacted southern Louisiana in 2008, during the same intense hurricane season as Ike. Gustav made landfall in south-central Louisiana, but its winds forced waves and surge against the levees and infrastructure near New Orleans. It is an excellent validation hurricane because of the wealth of measured time series for waves and surge, which show how the hurricane response evolved as it moved through the system. In particular, 15 nearshore and 7 inland wetland gauges captured the detailed dynamics in very complex regions. Validation results show that SWAN+ADCIRC simulates accurately the waves and storm surge during this hurricane event.

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