

# **Tropical Storm Irene Data for Coastal and Riverine Areas of Southern New England**

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On August 27-28 Hurricane Irene travelled up the east coast of the United States, buffeting the states from South Carolina to Maine with heavy rains, damaging winds, and storm surge. Before, during, and after Irene, the U.S. Geological Survey (USGS) collected data in affected coastal and riverine areas along the east coast of the United States. This presentation will focus primarily on data in Connecticut, Massachusetts, and Rhode Island.

Based on the expected track of Irene, the USGS deployed storm-tide sensors from August 24-28 at 48 locations from Greenwich, CT to Westerly, RI to Harwich, MA. Data from storm-tide sensors and long-term, tidally influenced USGS streamgages showed storm tides ranging from about 1.7 to 4.3 ft above normal. Average storm-tides recorded were 3.3, 2.6, and 2.3 ft above normal high tides in Connecticut, Rhode Island, and Massachusetts, respectively.

Western Massachusetts and Connecticut experienced a period of intense rainfall on August 28, 2011 with totals ranging from 3 to 10 inches. This caused several rivers to peak at record levels, in many cases exceeding the stage-discharge rating curves for USGS streamgages that had been in place for decades. At a few streamgages, the river stages rose from 0.8 to 2.4 ft. in 15 minutes, and at one streamgage the river stage rose almost 20 feet in 3 hours (pre-storm to peak). A total of 9 streamgages in western Massachusetts and one in Connecticut—all with greater than 25 years of record—set new peakflows of record on August 28, 2011. These new peakflows of record ranged from approximately a 2 to <0.2 percent annual exceedance probability (50 to >500-year return interval) event. To document the historic flooding in northwestern Massachusetts, high-water mark elevation data were also collected at

about 313 locations along the rivers in Deerfield and Hoosic River Basins.

### **PRESENTER'S BIO**

**Gardner Bent** is a hydrologist with the USGS Massachusetts-Rhode Island Water Science Center. He has a B.S. in Geology/Geophysics from Boston College and a M.S. in Watershed Management and M.F. in Forest Management from Utah State University. He has worked at the USGS, since 1989, mainly on surface-water projects. From 2006 to 2010 he oversaw the long-term surface-water, groundwater, and water-quality networks in Massachusetts and Rhode Island. Since 2011 he has been working on USGS-FEMA flood studies.