

USGS Monitors Storm Surge Along the Massachusetts Coast during the January 2015 Blizzard

The US Geological Survey (USGS) New England Water Science Center deployed a network of several temporary storm surge sensors (SSS) and barometric pressure sensors along the eastern Massachusetts coast, from Marshfield (site 4, figure 1) to Plum Island (site 3, figure 1), prior to the Blizzard of January 26-28, 2015, to record the timing and magnitude of storm tide at locations where forecasters had predicted the potential for coastal flooding. Additionally, data were recorded and transmitted from four permanent USGS tide stations, three on Cape Cod (sites 8, 9, and 10, figure 1) and one near the mouth of the Merrimack River (site 7, figure 1). The SSS were deployed at pre-surveyed mounting stations that were installed in 2014 as part of the USGS Surge, Wave, and Tide Hydrodynamic (SWaTH) Network. The SWaTH network was funded through supplemental funding issued to USGS from Congress following the devastating landfall of Hurricane Sandy on October 2012. USGS received a total of \$18.8 million in funding through this supplemental to better understand coastal flooding, to improve our preparedness for future coastal storms, and to increase the resilience of coastal cities, infrastructure, and natural systems. In New England, USGS has 163 SWaTH monitoring locations along the coast.

The Blizzard of January 2015 was a powerful, destructive nor'easter that led to widespread cancelations and delays at schools, businesses and transportation hubs. Boston-Logan International Airport, for example, canceled all flights and was closed January 27. A total of 24.6 inches of snowfall and winds up to 45 mph were recorded at the airport. Several coastal communities were impacted with flooding, over wash and damage to seawalls, dwellings and other infrastructure. The Blizzard of January 2015 contributed to the snowiest 30-day period on record in Boston and surrounding areas.

The data from the six storm surge sensors are shown in figures 2 and 3. Storm tides were measured at all locations and ranged from about 4 to 4½ feet. Some stations, such as T-Wharf in Rockport Harbor, recorded up to 3 feet of chop (waves) during the storm, while other locations deployed at more protected locations, Ipswich Wharf in Ipswich, for example, recorded no chop, thus producing a smooth data curve (figure 2).

Further analyses of the impacts from this blizzard will be discussed in a forthcoming USGS Open-File Report. The USGS New England Water Science Center will continue to deploy storm surge sensors when powerful storms with significant coastal flood predictions threaten the New England coastline.

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INSERT FIGURE 1 HERE

Figure 1. Deployed monitoring sites.

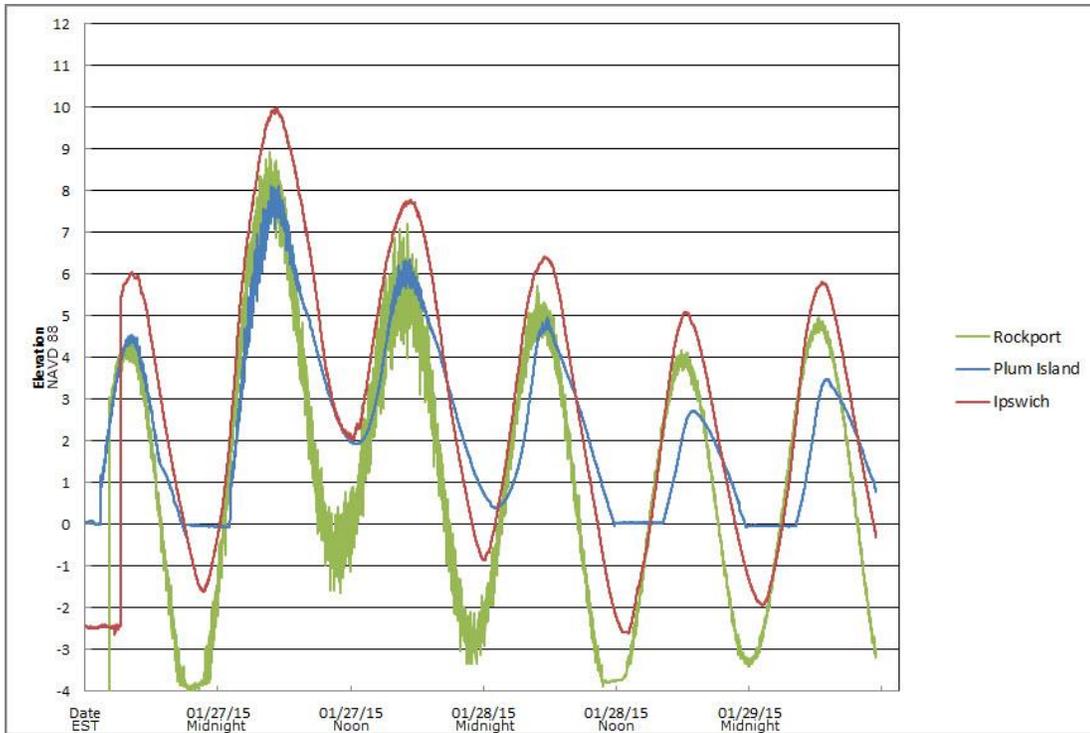


Figure 2. Hydrograph displaying storm-tide elevation recorded at Rockport, Plum Island and Ipswich on the Northshore of Eastern Massachusetts during the Blizzard of January 2015.

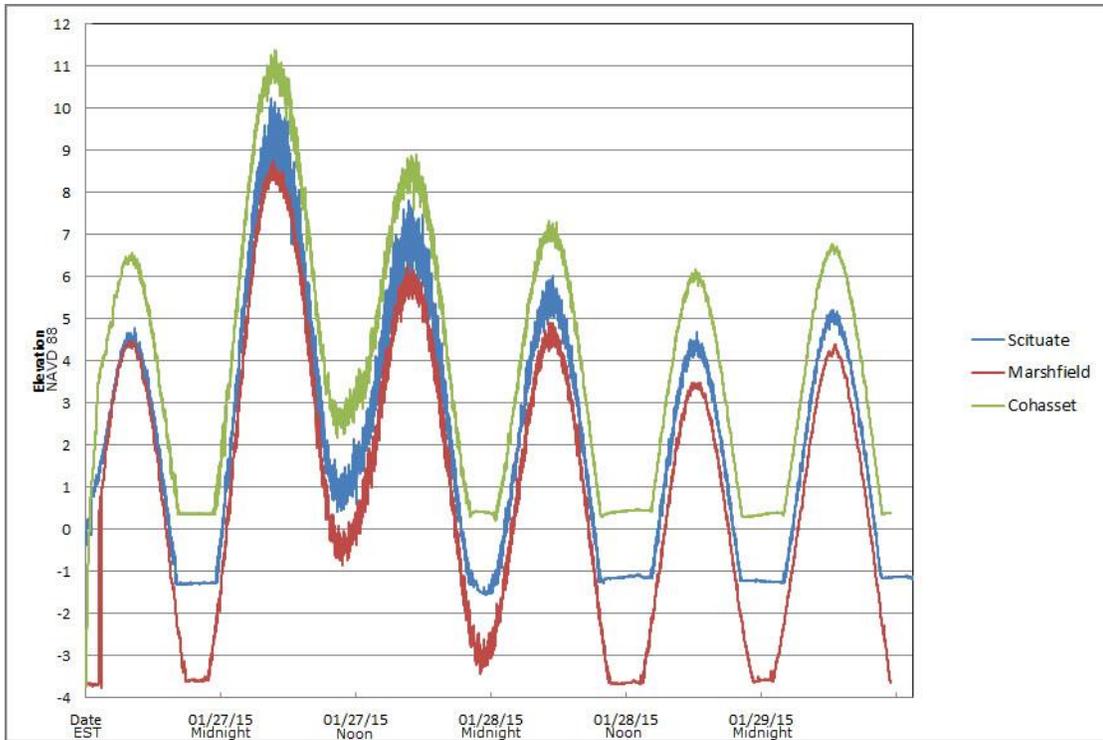


Figure 3. Hydrograph displaying storm-tide elevation recorded at Cohasset, Scituate and Marshfield on the Southshore of Eastern Massachusetts during the Blizzard of January 2015.