Abstract

Several recent hurricanes along the eastern United States seaboard have resulted in catastrophic flooding: Hurricane Katrina (2005), Hurricane Irene (2011), and Hurricane Sandy (2012). In addition to their disastrous effect on life and property, protracted utility outages from flooding are expensive and disruptive to recovery. Utilities could be less vulnerable to flooding if company assets were protected better in advance, based on the models of predictable storms surges. The Federal Emergency Management Agency (FEMA) is tasked with hazard mitigation and response through the United States, for floods among other perils. FEMA's HAZUS [Hazards US] software included modules for predicting flood extents in response to stream discharges (inland) and coastal surges. The National Oceanic and Atmospheric Administration (NOAA) also makes predictions of storm surges via its SLOSH [Sea, Lake, and Overland Surges from Hurricanes] maps. Both HAZUS and SLOSH rely on geographic information systems (GIS) technology. This study compares the FEMA HAZUS and NOAA SLOSH model predictions against direct flood measurements for the Hurricane Sandy "Superstorm" that damaged extensive areas of New York and New Jersey beginning on October 29th, 2012. Focus is placed on differences in predicted vs. observed flood inundation for key utility asset and infrastructure locations, especially in flood hazard zones. For Superstorm Sandy, SLOSH produced more accurate flood predictions than HAZUS for New York City.