



## **Identification of Storm Surge Vulnerable Areas in the Philippines Through Simulations of Typhoon Haiyan-Induced Storm Surge Using Tracks of Historical Tropical Cyclones**

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Super Typhoon Haiyan entered the Philippine Area of Responsibility (PAR) 07 November 2013, causing tremendous damage to infrastructure and loss of lives mainly due to the typhoon's storm surge and strong winds. Storm surges up to a height of 7 meters were reported in the hardest hit areas. The threat imposed by this kind of natural calamity compelled researchers of the Nationwide Operational Assessment of Hazards, the flagship disaster mitigation program of the Department of Science and Technology, Government of the Philippines, to undertake a study to determine the vulnerability of all Philippine coastal communities to storm surges of the same magnitude as those generated by Haiyan. This study calculates the maximum probable storm surge height for every coastal locality by running simulations of Haiyan-type conditions but with tracks of tropical cyclones that entered PAR from 1948-2013. DOST-Project NOAH used the Japan Meteorological Agency (JMA) Storm Surge Model, a numerical code that simulates and predicts storm surges spawned by tropical cyclones. Input parameters for the storm surge model include bathymetric data, storm track, central atmospheric pressure, and maximum wind speed. The simulations were made using Haiyan's pressure and wind speed as the forcing parameters. The simulated storm surge height values were added to the maximum tide level obtained from WXTide, software that contains a catalogue of worldwide astronomical tides, to come up with storm tide levels. The resulting water level was used as input to FLO-2D to generate the storm tide inundation maps. One product of this study is a list of the most vulnerable coastal areas that can be used as basis for choosing priority sites for further studies to implement appropriate site-specific solutions. Another product is the storm tide inundation maps that the local government units can use to develop a Risk-Sensitive Land Use Plan for identifying appropriate areas to build residential buildings, evacuation sites, and other critical facilities and lifelines. The maps can also be used to develop a disaster response plan and evacuation scheme.