

## Storm surge inundation validation in Daram, Samar during Super Typhoon Hagupit (2014)

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On December 4, Super Typhoon Hagupit (local name Ruby), one of the strongest tropical cyclones of 2014, entered the Philippine Area of Responsibility (PAR) with a 10-min maximum sustained winds of 213 kph. However, when it made landfall over Dolores, Eastern Samar, the typhoon weakened with a 10-min maximum sustained winds of 167 kph. Based on the Typhoon Hagupit storm surge simulation of the Nationwide Operational Assessment of Hazards (Project NOAH), the municipality of Daram in the province of Samar was forecasted to experience storm surge of 2.6-3.6 meters. To validate the forecasted storm surge height, field measurements and interviews were done after the typhoon. The observed and simulated flood depths were compared and the root-mean-square error (RMSE) was computed to test the performance of the model. Results showed that the RMSE values for barangays Mongolbongol, Ubo, Mayabay, Losa, and Mabini are in the acceptable range of less than one meter. However, high RMSE with more than one meter is computed for barangays Casab-ahan, Jacopon, and Rizal that can be attributed to the presence of structures (e.g. seawalls and other coastal structures) which were not taken into account in the FLO-2D model. Thus, the storm surge simulation and inundation maps of Project NOAH are reliable given the low RMSE values for the five out of eight barangays surveyed. These maps are important in helping local government units to locate safe areas for people to evacuate when storm surge is predicted to hit their locality. Furthermore, this will improve existing evacuation plans and delineate safe and unsafe areas to prevent loss of lives, injuries, and damages to properties.