

Development of LiDAR-based Flood Footprint Map of October 2017 Zamboanga City Flooding due to Low Pressure Area

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Abstract: For a country located near the Pacific Ocean, the Philippines experiences an average of 20 tropical storms per year according to the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). However, due to the constant changes in the climate, even heavy rains, low pressure and thunderstorm causes flooding in several areas in the country. Located in the southwestern part of the Philippines, Zamboanga City, Mindanao is one of the areas easily affected by localized weather disturbances. Several interventions of the government, such as the Phil LiDAR 1 Program and Geo-SAFER Mindanao Program, which aimed to develop detailed flood hazard maps, were implemented in the area to mitigate the devastating effects of flooding. In October 2017, a series of rain events resulted to sudden rise of water in two major river systems, namely the San Jose River and Tumaga River resulted to major flooding in several areas in the city. Using the flood hazard map developed during the Phil LiDAR 1, the study aimed to establish and compare the different rain events which resulted to flooding and the level of flood water it generated in the areas affected in Zamboanga City. This study also validates the authenticity of the flood models generated by the Phil LiDAR 1 Program. The rain events in the area, which started in October 10, 2017 and lasted until October 19, 2017, have accumulated a total rain of 184.5mm. With the said rain data, the highest height of floodwaters reached up to 170cm or 1.7m, which validates the accuracy of the flood hazard maps developed by the Phil LiDAR 1 Program.

Keywords: flood hazard, flood map validation, LiDAR