

Flood Extent Validation Surveys in the River Basins of Caraga Region, Mindanao, Philippines and its Importance in Assessing the Accuracy of Flood Hazard Maps

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SUMMARY

In this paper, we discuss the methods and results of our field surveys that we conducted to gather information on flood extents that are necessary for assessing the accuracy of flood hazard maps. This activity is a major part of the CSU LiDAR 1 project which we currently undertake for the purpose of generating flood hazard maps of river basins of Caraga Region in Mindanao, Philippines. CSU LiDAR 1 is one of the several projects under the “Phil-LiDAR 1: Hazard Mapping of the Philippines using LiDAR” program funded by the Philippines Council for Industry, Energy and Emerging Technology Research and Development - Department of Science and Technology (PCIEERD-DOST). For the project’s first year of implementation on 2014, it focused on the river basins of Cabadbaran, Mainit-Tubay-Asiga and Tago. The flood hazard maps of these project areas needs to be validated on the actual ground to determine its reliability and accuracy. For 2014, there were two typhoons that struck the Caraga Region in the Philippines, namely: typhoon Lingling (local name Agaton) which hit last January 2014 and typhoon Jangmi (local name Seniang) last December 2014. Necessary information on actual extent of flooding during the two typhoons were collected through conduct of GPS surveys last December 2014 – February 2015. The survey locations were based on random points generated within the flood plains of the three river basins. Information gathered during the surveys includes the estimated flood heights during the two typhoons, the corresponding date and time of occurrence and the geographic coordinates. These datasets were consolidated and statistical analyses were conducted to initially assess the effects of the nearness to the river and the slope from the river banks for the flooding that occurred on every location. Based on the results, it can be generally concluded that those areas that are near to the river are more prone to flooding compared to other areas within the river basin. Nevertheless, a relatively flat slope from the river banks to any point within the floodplain weights more effect on the proneness to flooding of an area. This was verified from the datasets from some far from the river areas but was still flooded due to its relatively flat topography from the river banks. All the data points collected were used to assess the accuracy of flood hazard maps generated by the project for the two typhoon events.

BIOGRAPHY

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