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Importance of Integrating High-Resoultion 2D Flood Hazard Maps in the Flood Disaster Management of Marikina City, Philippines

Ben Joseph Tapales, Jerico Mendoza, Christopher Uichanco, Alfredo Mahar Francisco Amante Lagmay, Mark Anthony Moises, Patricia Delmendo, and Neil Eneri Tingin

Nationwide Operational Assessment of Hazards, Quezon City, Philippines

Flooding has been a perennial problem in the city of Marikina. These incidences result in human and economic losses. In response to this, the city has been investing in their flood disaster mitigation program in the past years. As a result, flooding in Marikina was reduced by 31% from 1992 to 2004. [1] However, these measures need to be improved so as to mitigate the effects of floods with more than 100 year return period, such as the flooding brought by tropical storm Ketsana in 2009 which generated 455mm of rains over a 24-hour period. Heavy rainfall caused the streets to be completely submerged in water, leaving at least 70 people dead in the area. In 2012, the Southwest monsoon, enhanced by a typhoon, brought massive rains with an accumulated rainfall of 472mm for 22-hours, a number greater than that which was experienced during Ketsana. At this time, the local government units were much more prepared in mitigating the risk with the use of early warning and evacuation measures, resulting to zero casualty in the area. Their urban disaster management program, however, can be further improved through the integration of high-resolution 2D flood hazard maps in the city's flood disaster management. The use of these maps in flood disaster management is essential in reducing flood-related risks. This paper discusses the importance and advantages of integrating flood maps in structural and non-structural mitigation measures in the case of Marikina City. Flood hazard maps are essential tools in predicting the frequency and magnitude of floods in an area. An information that may be determined with the use of these maps is the locations of evacuation areas, which may be accurately positioned using high-resolution 2D flood hazard maps. Evacuation of people in areas that are not vulnerable of being inundated is one of the unnecessary measures that may be prevented and thus optimizing mitigation efforts by local government units. This paper also discusses proposals for a more efficient exchange of information, allowing for flood simulations to be utilized in local flood disaster management programs. The success of these systems relies heavily on the knowledge of the people involved. As environmental changes create more significant impacts, the need to adapt to these is vital for man's safety.
[1] Pacific Disaster Center