The role of socio-economic and property variables in the establishment of flood depth-damage curve for the data-scarce area in Malaysia

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ABSTRACT

Flood is a frequent natural hazard worldwide that has significant financial consequences. Physical damages caused by floods are commonly estimated by stage-damage functions. However, these methods usually consider only the water depth and the type of buildings at risk. This study uses the empirical dataset collected from 2013 flood in the Kuantan River Basin to explore the influence of impact and resistance variables on the level of flood damages using the tree-based Random Forest approach. Due to data scarcity, the multivariate flood damage model has been utilized to establish the flood damage curves in the study area. As the result, in addition to flood depth, flood damage is also influenced by flood duration, value of properties, types of properties and business/household income. The obtained flood depth–damage curves are sufficient and comparable with other studies, with the R2 of more than 0.80 for both residential and commercial categories.

KEYWORDS: Flood Damage Assessment, Flood Depth-damage Curve, Multivariate Model, urban, Malaysia

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