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Development of GIS-based disaster assessment system to reduce flood risks in urbanized creeks

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ABSTRACT

This study developed a disaster assessment system, which integrated flood inundation, risk analysis system, and a decision support system. The parameter representation of the model was selected through sensitivity analysis, used for automated parameter optimization of the model. The Bocheong watershed in South Korea was selected for this study. The results of the simulation were used for disaster assessments; estimated results were calculated basing from flood damages from historical flood disasters, GIS, population, and inundation results. Lastly, this study developed a user-support system to provide real-time meteorological and hydrological data to local government and disaster situation room in South Korea. From the results of the evaluation, the developed model in this study was proven to be more excellent than ModClark model. The application of this model was found superior for ungaged basin such as mountainous area and small creek basins.

Keywords: GIS; Disaster management; Flood; Urban; Creek; Climate change

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