



## Vulnerability analysis of urban district on the urban flood damage: a case study – Changwon

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### ABSTRACT

Influenced by recent climate change, urban disasters have increased in scales and diversified in types. Such trend has urged the importance of urban prevention schemes. In this study, risk against urban flood damage in case of local downpour in highly concentrated urban areas is classified based on each use district to effectively cope with such disaster events. For city of Changwon, Korea, risk against economic and social damage of urban flood is classified for each use district by applying a fuzzy model using relevant district data that provide institutional bases of land use, data of land price and land areas that estimate the property values, data of underground space that is expected to have the greatest flood damage, and the data of model year of buildings that influence the vulnerability to flood damage. Analysis result for the districts of Changwon city shows that the highest flood damage was in central commercial areas, followed by general commercial, semiresidential, distribution commercial, neighborhood commercial, private residential, general residential, industrial, and green areas, because commercial areas have the highest density of buildings and the highest land values per unit area. This study has a unique research value because not only could it be used as data designing future land-use and urban planning, but also it proposed a mitigation plan against urban flood under climate change by varying land uses.

*Keywords:* Climate change; Flood damage; Land use; Urban flood; Use district

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