

Risk Assessment of Heavy Rainfall and Development of Damage Prediction Function for Gyeonggi-Do Province

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Abstract : Recently, the frequency and magnitude of natural disasters are gradually increasing due to climate change. Especially in Korea, large-scale damage caused by heavy rainfall frequently occurs due to rapid urbanization. Therefore, this study proposed a Heavy rain Damage Risk Index (HDRI) using PSR (Pressure - State - Response) structure for heavy rain risk assessment. We constructed pressure index, state index, and response index for the risk assessment of each local government in Gyeonggi-do province, and the evaluation indices were determined by principal component analysis. The indices were standardized using the Z-score method then HDRIs were obtained for 31 local governments in the province. The HDRI is categorized into three classes, say, the safest class is 1st class. As the results, the local governments of the 1st class were 15, 2nd class 7, and 3rd class 9. From the study, we were able to identify the risk class due to the heavy rainfall for each local government. It will be useful to develop the heavy rainfall prediction function by risk class, and this was performed in this issue. Also, this risk class could be used for the decision making for efficient disaster management. Acknowledgements: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT & Future Planning (2017R1A2B3005695).

Keywords : natural disaster, heavy rain risk assessment, HDRI, PSR

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