



## **Method for the Preparation of Hazard Map in Urban Area Using Soil Depth and Groundwater Level**

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The hazard maps for predicting collapse on natural slopes consists of a combination of topographic, hydrological, and geological factors. Topographic factors are extracted from DEM, including aspect, slope, curvature, and topographic index. Hydrological factors, such as distance to drainage, drainage density, stream-power index, and wetness index are most important factors for slope instability. However, most of the urban areas are located on the plains and it is difficult to apply the hazard map using the topography and hydrological factors. In order to evaluate the risk of collapse of flat and low slope areas, soil depth and groundwater level data were collected and used as a factor for interpretation. In addition, the reliability of the hazard map was compared with the disaster history of the study area (Gangnam-gu and Yeouido district).

In the disaster map of the disaster prevention agency, the urban area was mostly classified as the stable area and did not reflect the collapse history. Soil depth, drainage conditions and groundwater level obtained from boreholes were added as input data of hazard map, and disaster vulnerability increased at the location where the actual collapse points. In the study area where damage occurred, the moderate and low grades of the vulnerability of previous hazard map were 12% and 88%, respectively. While, the improved map showed 2% high grade, moderate grade 29%, low grade 66% and very low grade 2%. These results were similar to actual damage.

**Keywords:** hazard map, urban area, soil depth, ground water level

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