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Inundation Simulation of Urban Watershed

KIL SEONG LEE[1], KYUNG-HO LEE[1] and EUN-SUNG CHUNG[1]
[1]*Civil Urban & Geosystem Engineering Department, Seoul National University*

In this study, HEC-GeoHMS, HEC-GeoRAS, HEC-RAS and PCSWMM which are widely used in inundation simulation were investigated. HEC-HMS and HEC-RAS were used for overflow simulation and PCSWMM was used for manhole surcharged flow simulation and their combination. In case of HEC-geoHMS, it is necessary to accurately divide the stream and watershed comparing the result of GIS software (ARCVIEW) with the result of digitizing the paper topographical map. In case of HEC-GeoRAS, it is necessary to modify the topographical data by using HEC-RAS cross section data because topographical data near the stream is not precise in spite of high resolution digitized map. HEC-RAS cannot simulate the surcharged flow and overestimate the water stage in overflow simulation. But, it was possible to reduce works, making the overflow map by levee safety evaluation. PCSWMM can simulate the surcharged flow considering overflow and the result is shown in figure 1. This process has an advantage which can be used for both surcharged flow and water stage using real cross section. At first, PCSWMM can be calibrated by use of water stage measured data of water stage observation station which has no stage-discharge curve, and can be used for the flood control in terms of recognition of water stage changes.

Keywords: Manhole surcharged flow; Levee overflow; PCSWMM; HEC-HMS; HEC-RAS; Anyangcheon (stream)

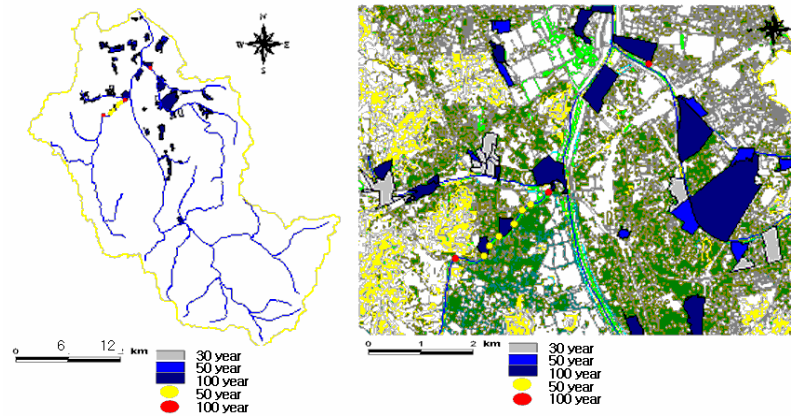

Figure 1: Surcharged flow maps considering the overflow on levee