Geophysical Research Abstracts, Vol. 8, 00734, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00734


# Development of GIS based surface runoff and pathways model and interface with surcharged sewer model

**S. Boonya-aroonnet** (1), Č. Maksimović (1), I. Marković (1), S. Djordjević (2), D. Prodanović (3) and M. Stanić (3)

(1) Department of Civil and Environmental Engineering, Imperial College London, London UK, (2) School of Engineering, Computer Science and Mathematics, University of Exeter, Exeter UK, (3) Institute of Hydraulic Engineering, Faculty of Civil Engineering, University of Belgrade, Yugoslavia (s.boonya@ic.ac.uk / Tel: +44 20-75946018)

Conventional urban drainage models deal with rainfall-runoff analysis under the effects of local storms. Recently, an integrated approach of various models (surface runoff, sewer network, groundwater, water quality, etc) is commonly employed among the projects and researches. Additionally, the enhancement of GIS technology provides more detailed and accurate information than before (i.e. LIDAR data that were made available for this case study). This set a new standard of next generation of urban flood modelling (e.g. when modelling extreme events in which large surfaces are flooded, clearly the only way to obtain reasonably accurate results is by using GIS analytical tools) Therefore, the advanced urban flood modelling requires an integration of GIS-based analysis on the surface terrain in order to reliably estimate surface flooding when the sewer network surcharged.

This paper presents the development of GIS-based surface runoff and pathways model and interface with surcharged sewer model. The aim is to develop model with interaction between surface runoff (based on terrain analysis tool) and sewer network for quantification of performance of the overloaded system (spatial and temporal extent of urban flooding) and quantification of potential risk to the existing buildings and new developments. The methodology is based on numerical simulation, sensitivity analysis and calibration. Based on this type of LIDAR terrain data, the procedures for analysis of flow pathways for surface runoff, catchment delineation and creation of input files for surface flow have been tested. Finally, under climate change scenario, the impact and risk to the drainage system has been estimated.