Geophysical Research Abstracts, Vol. 7, 00956, 2005 SRef-ID: 1607-7962/gra/EGU05-A-00956 © European Geosciences Union 2005



Applicability of two-dimensional urban flood modeling coupled with pipe flow model - a case study: Dhaka City, Bangladesh

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Many cities in the world are facing sever urban flood and subsequent water logging problems. This causes huge damages to the society in terms of economic, social and environmental losses. In order to analyze such a very unwanted phenomenon, there is a need for accurate modeling approaches, which in turn depend on the quality of the input data and the technique applied in building model. A possible strategy is development of 2-D hydrodynamic model describing surface flow combined with 1-D pipe flow model. With a view to develop such a modeling technique DHI Water & Environment and Asian Institute of Technology, Thailand jointly have coupled the 2-D surface flow model (MIKE21) with a 1-D sewer model (MOUSE). The simulation of the coupled model is carried out by a simultaneous simulation of both models where

they exchange flow data through an explicit coupling. Different flow concepts have been incorporated in the model to calculate the flow exchange between the surface and sewer system. In this paper, the applicability of MOUSE-MIKE21 model has been presented. The model has been applied to Dhaka City, Bangladesh, which often suffers from urban flooding. This paper deals with urban flooding due to local rainfall over the city.