Modelling Internal Boundary Conditions of a Sewer Network

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ABSTRACT

Due to the increased frequency of rainfall events caused by climate change, flooding in urban areas are becoming increasingly frequent. Thus the accurate modelling of drainage systems is a fundamental tool to enable operators to minimize flooding. In this paper we compare the experimental data obtained from a facility in the University of Sheffield with the numerical results obtained with two one-dimensional numerical models (1D), SIPSON and SWMM. The experimental facility is a scaled model of an urban drainage system located in the north of England. The inputs of the scaled model were taken from two rainfall events that occurred on the 12th December 2008 and on the 17th January 2009 (data measured by a rain gauge installed in the basin). It was found that SIPSON internal boundary conditions at the manhole level represented well the head losses of the flow inside the manhole, thus the model was able to reproduce fairly well the water depths along the drainage system.

KEYWORDS

Numerical modelling, urban flooding, urban drainage, internal boundary conditions