### Accepted Manuscript

#### Research papers

The influence of inlet drainage in modelling flow interactions between storm sewer system and overland surface

Tsang-Jung Chang, Chia-Ho Wang, Albert S. Chen, Slobodan Djordjević

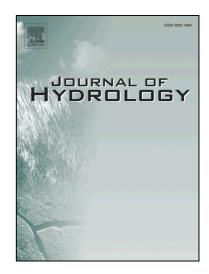
PII: S0022-1694(18)30075-1

DOI: https://doi.org/10.1016/j.jhydrol.2018.01.066

Reference: HYDROL 22548

To appear in: Journal of Hydrology

Received Date: 2 November 2017 Revised Date: 7 January 2018 Accepted Date: 31 January 2018



Please cite this article as: Chang, T-J., Wang, C-H., Chen, A.S., Djordjević, S., The influence of inlet drainage in modelling flow interactions between storm sewer system and overland surface, *Journal of Hydrology* (2018), doi: https://doi.org/10.1016/j.jhydrol.2018.01.066

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## **ACCEPTED MANUSCRIPT**

# The influence of inlet drainage in modelling flow interactions between storm sewer system and overland surface

Tsang-Jung Chang<sup>1,2</sup>, Chia-Ho Wang<sup>1</sup>, Albert S. Chen<sup>3,\*</sup>, Slobodan Djordjević

<sup>2</sup> Hydrotech Research Institute, National Taiwan University, Taipei, Taiwan

#### **Abstract**

In coupled sewer and surface flood modelling approaches, the flow process in gullies is often ignored although the overland flow is drained to sewer network via inlets and gullies. Therefore, the flow entering inlets is transferred to the sewer network immediately, which may lead to a different flood estimation than the reality. In this paper, we compared two modelling approach with and without considering the flow processes in gullies in the coupled sewer and surface modelling. Three historical flood events were adopted for model calibration and validation. The results showed that the inclusion of flow process in gullies can further improve the accuracy of urban flood modelling.

**Keywords:** Coupled 1D/2D flood model; Dynamic flow interaction; Model comparison; Overland flow; Roof drainage; Storm sewer flow.

#### 1 Introduction

Flooding is a major hazard in many urban areas that leads to significant damage to properties and disruption of services. Hydraulic modelling is the key for better understanding of flood dynamic such that enhanced adaptation measures can be applied for disaster risk reduction (DRR). For most modern cities, storm sewer networks are built to manage surface water caused by local rainfall. However, the cost for the construction and maintenance of drainage networks is expensive such

<sup>&</sup>lt;sup>1</sup> Department of Bioenvironmental Systems Engineering, National Taiwan University, Taipei, Taiwan

<sup>&</sup>lt;sup>3</sup> Centre for Water Systems, College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom

#### Download English Version:

# https://daneshyari.com/en/article/8894918

Download Persian Version:

https://daneshyari.com/article/8894918

<u>Daneshyari.com</u>