



## **Global sensitivity analysis for urban water quality modelling: comparison of different methods**

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### **ABSTRACT**

Sensitivity analysis represents an important step in improving the understanding and use of environmental models. Indeed, by means of global sensitivity analysis (GSA), modellers may identify both important (*factor prioritization*) and non-influential (*factor fixing*) model input factors. However, despite the potentialities of GSA methods, only few applications have been published in the field of urban drainage modelling. In order to fill this gap this paper presents a comparison among three GSA methods (SRC, Extended-FAST and Morris screening) on an urban drainage storm-water model. In particular, an exhaustive discussion on their peculiarities, applicability, and reliability is presented. Substantial agreement in terms of factors fixing was found between Morris screening and E-FAST methods. In general, the water-quality related factors exhibited higher interactions than factors related to quantity. In contrast to quantity model outputs, quality model outputs were found to be characterized by high non-linearity.

### **KEYWORDS**

Influence of model input factors; sewer sediments; uncertainty; urban drainage modelling.