

# Stormwater Quality simulation with KNNR Method based on Depth function

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## Abstract

To overcome main drawbacks of parametric models,  $k$ -nearest neighbor resampling (KNNR) is suggested for water quality analysis involving geographic information. However, with KNNR nonparametric model, Geographic information is not properly handled. In the current study, to manipulate geographic information properly, we introduce a depth function which is a novel statistical concept in the classical KNNR model for stormwater quality simulation. An application is presented for a case study of the total suspended solids throughout the entire United States. Total suspended solids concentration data of stormwater demonstrated that the proposed model significantly improves the simulation performance rather than the existing KNNR model.

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*Key words* : Depth function, Geographic information,  $k$ -nearest neighbor resampling, Parametric model, Stormwater quality

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