

Sensitivity Analysis of Movable Bed Roughness Formula in Sandy Rivers

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Abstract : Sensitivity analysis as a technique is applied to determine influential input factors on model output. Variance-based sensitivity analysis method has more application compared to other methods because of including linear and non-linear models. In this paper, van Rijn's movable bed roughness formula was selected to evaluate because of its reasonable results in sandy rivers. This equation contains four variables as: flow depth, sediment size, bed form height and bed form length. These variable's importance was determined using the first order of Fourier Amplitude Sensitivity Test. Sensitivity index was applied to evaluate importance of factors. The first order FAST based sensitivity indices test, explain 90% of the total variance that is indicating acceptance criteria of FAST application. More value of this index is indicating more important variable. Results show that bed form height, bed form length, sediment size and flow depth are more influential factors with sensitivity index: 32%, 24%, 19% and 15% respectively.

Keywords : sensitivity analysis, variance, movable bed roughness formula, Sandy River

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