عنوان مقاله:

An ANFIS-based Approach for Predicting the Manning Roughness Coefficient in Alluvial Channels at the Bank-full Stage

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خلاصه مقاله:

An intelligent method based on adaptive neuro-fuzzy inference system (ANFIS) for identifying Manning's roughness coefficient, n, in modeling of alluvial channels e.g. rivers is presented. Theprocedure for selecting values of the Manning n is subjective and requires engineering judgments andskills developed primarily through experience. During practical applications, researchers often find thata correct choice of the Manning n can be crucial to make a sound prediction of hydraulic problems. Inthis paper, an ANFIS model is set up to predict the Manning coefficient of river channels, with the mean bed particle size, mean flow depth and channel bed slope, as some three input parameters. The regression equations are also applied to the same data. Statistic measures are then used to evaluate theperformance of the models. Based on the comparison of the results, it is well found that the ANFISmodel presented here gives some better estimates than the other empirical relationships. Also, a sensitivity analysis showed that mean flow depth has a greater influence on the Manning coefficient than the other independent parameters in ANFIS model.

کلمات کلیدی:
Manning Coefficient,ANFIS Model,Alluvial Channel,River,Bank-full Stage

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