



Comparison between Multi-Layer Perceptron and Radial Basis Function Networks for Sediment Load Estimation in a Tropical Watershed

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ABSTRACT

Prediction of highly non-linear behavior of suspended sediment flow in rivers has prime importance in environmental studies and watershed management. In this study, the predictive performance of two Artificial Neural Networks (ANNs), namely Radial Basis Function (RBF) and Multi-Layer Perceptron (MLP) were compared. Time series data of daily suspended sediment discharge and water discharge at the Langat River, Malaysia were used for training and testing the networks. Mean Square Error (MSE), Normalized Mean Square Error (NMSE) and correlation coefficient (r) were used for performance evaluation of the models. Using the testing data set, both models produced a similar level of robustness in sediment load simulation. The MLP network model showed a slightly better output than the RBF network model in predicting suspended sediment discharge, especially in the training process. However, both ANNs showed a weak robustness in estimating large magnitudes of sediment load.

KEYWORDS

Sediment Load; Neural Network; MLP; RBF; Hulu Langat Watershed

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