

The prediction of suspended solids of river in forested catchment using artificial neural network

ABSTRACT

This study presents an artificial neural network (ANN) model that is able to predict suspended solids concentrations in forested catchment namely Berring River, Kelantan, Malaysia. The network was trained using data collected during a period of 13 days in April 2001. The sampling location was established in the middle section of the river for collecting water samples. The study was carried out for a duration of two weeks in April 2001. The water sample was collected at 60% of the total depth from the river bed for every two hours starting from 6:00 am to 12:00 midnight for the whole duration of the study period. In this study five parameters were selected as input parameter for the network which are turbidity, flow velocity, depth, width, and weather condition of during the sampling period, while suspended solids as desire output. The data fed to the neural network were divided into two set: a training set and testing set. 116 of the data were used in training set and 24 remained as testing set. A network of the model was detected automatically by the network to give good predictions for both training and testing data set. A partitioning method of the connection weights of the network was used to study the relative percentage contribution of each of the input variables. It was found that turbidity and river width gives 73.03% and 24.73% each. The performance of the neural network model was measured by computing the correlation coefficient which gives the value of 0.93. It's shown that the neural network gives superior predictions. Based on the results of this study, ANN modeling appears to be a promising technique for the prediction of suspended solids. Dynamic Metadata(s)

Keyword: Artificial neural network; Backpropagation; Suspended solids; Turbidity; River; Forested catchment