

ANN For The Prediction Of Various Physiochemical Parameters Of Subernarekha, A River Of Jharkhand

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ABSTRACT

The use of Artificial Neural Network (ANN) has been investigated for prediction of important physicochemical parameters of Subernarekha, an important river of Jharkhand. The network was sufficiently accurate in prediction of the parameters undertaken. The two algorithms namely Levenberg-Marquardt Backpropagation Network (trainlm) and Resilient Backpropagation Network (trainrp) were used for estimation of physicochemical parameters of the river. The MAPE for physicochemical parameters were respectively 16.645 for alkalinity, 5.883 for dissolved oxygen (DO) and 23.28 for chemical oxygen demand (COD). Both the algorithms used different sets of hidden layers - one in case of trainlm with 5 hidden neurons, and three in case of 'trainrp' with 5, 4 and 5 hidden neurons respectively, which were determined by trial-and-error method. This method is economically favorable and time-adaptive as well as it depends on the amount and span of data available and it can predict values to a very high degree of accuracy. The method can be employed for the prediction of parameters of any river system of the world.

Keywords: ANN, Predictive Models, Physicochemical Parameters, hydrology.