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Prediction of TDS in groundwater by using BP-NN modeling

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■ **ABSTRACT :** Total dissolved solids (TDS) comprise inorganic salts (principally calcium, magnesium, potassium, sodium, bicarbonates, chlorides, and sulfates) and some small amounts of organic matter that are dissolved in water. TDS in drinking-water originate from natural sources, sewage, urban run-off, industrial wastewater, and chemicals used in the water treatment process, and the nature of the piping or hardware used to convey the water. The present study deals with the prediction of TDS in Nadia district, West Bengal using back propagation neural network approach with gradient descent training method and the performance evaluation was done using RMSE, NSE, IOA, MAE and R^2. It is found that the best result was obtained by M-6-10-1 (Input-Hidden-Output). The effectiveness of total hardness, chloride, potassium is also explained by the result of this study.

■ **KEY WORDS :** Back propagation neural network, TDS, Gradient descent method, Hidden nodes, Correlation matrix, Matlab

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