



EVALUATION OF ARTIFICIAL NEURAL NETWORK TECHNIQUES FOR RIVER FLOW FORECASTING

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Abstract

River runoff forecasting is one of the most complex areas of research in hydrology because of the uncertainty of hydrological and meteorological parameters and scarcity of adequate records. Artificial neural networks (ANN) can be an efficient way of modeling stream flow processes as it is capable of controlling and modelling nonlinear and complex systems and does not require describing the complex nature of the hydrological processes. In this study, daily river flow is forecasted using two ANN models: a Multi Layer Perceptron (MLP) network and a Radial Basis Function (RBF) Network. The ANN technique was applied to predict runoff in three mountain rivers in Georgia. The results show that ANNs can be successfully applied to forecast runoff using rainfall time series for the studied sub-catchments. A comparative study of both networks indicates that RBF models require little background knowledge of ANNs and need less time for development.

Keywords: artificial neural network, multi layer perceptron, rainfall-runoff modelling, radial basis function, river flow forecasting

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