Abstract

The artificial neural networks (ANNs) have been applied to various hydrologic problems recently. This research demonstrates dynamic neural approach by applying general recurrent neural network to rainfall-runoff modeling for the upper area of Wardha River in India. The model is developed by processing online data over time using dynamic modeling. Methodologies and techniques by applying different learning rule, activation function and input layer structure are presented in this paper and a comparison for the short term runoff prediction results between them is also conducted. The prediction results of the general recurrent neural network with Momentum learning rule and Tanh activation function with Axon as input layer structure indicates a satisfactory performance in the three hours ahead of time prediction. The conclusions also indicate that general recurrent neural network with Momentum learning rule and Tanh activation function with Axon as input layer structure is more versatile than other
combinations for general recurrent neural network and can be considered as an alternate and practical tool for predicting short term flood flow.

Reference

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