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Flood Routing in Maroon River Using Time Series in Modular Neural Network

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Abstract

Flood routing, one of the most complex issues in hydraulic open channel science and river engineering is investigated. There are different methods in the field of flood routing which are divided broad and focus groups. Today, a new technique using evolutionary artificial neural network model based on artificial intelligence is widely used in various fields, especially water engineering works. In this study the flood routing in Maroon river, Khyrabad-Pol Felor reach using MNN, FF, JEN, and RBF evolutionary artificial neural network models Were Studied. Including cases where a

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new method is a model using linear cross correlation between input and output time series. Using genetic algorithm models the structure of artificial neural networks in terms of number of layers, number of nodes in the hidden layer, the type of network learning algorithm and transfer function were optimized. Results show that the method of cross correlation. and the output models compared with actual values show that the MNN selected model has capabilities, flexibility and greater accuracy in forecasting and flood routing in the river than the statistical model and other models of artificial neural network determining the number and time delay. Effective input data were effecative, while the number and time delay input data were also effective.

Keywords: Flood routing, Modular Artificial Neural Network, Time series, Genetic algorithms, Statistical models, Maroon river.

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