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Dual Artificial Neural Network for Rainfall-Runoff Forecasting

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ABSTRACT

One of the principal issues related to hydrologic models for prediction of runoff is the estimation of extreme values (floods). It is well understood that unless the models capture the dynamics of rainfall-runoff process, the improvement in prediction of such extremes is far from reality. In this paper, it is proposed to develop a dual (combined and paralleled) artificial neural network (D-ANN), which aims to improve the models performance, especially in terms of extreme values. The performance of the proposed dual-ANN model is compared with that of feed forward ANN (FF-ANN) model, the later being the most common ANN model used in hydrologic literature. The forecasting exercise is carried out for hourly river flow data of Kolar Basin, India. The results of the comparison indicate that the D-ANN model performs better than the FF-ANN model.

KEYWORDS

Forecasting; Hybrid model; ANN; Floods; Non Linear

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