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Forecasting of Runoff and Sediment Yield Using Artificial Neural Networks

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ABSTRACT

Runoff and sediment yield from an Indian watershed during the monsoon period were forecasted for differ-ent time periods (daily and weekly) using the back propagation artificial neural network (BPANN) modeling technique. The results were compared with those of single- and multi-input linear transfer function models. In BPANN, the maximum value of variable was considered for normalization of input, and a pattern learning algorithm was developed. Input variables in the model were obtained by comparing the response with their respective standard error. The network parsimony was achieved by pruning the network using error sensitiv-ity - weight criterion, and model generalization by cross validation. The performance was evaluated using correlation coefficient (CC), coefficient of efficiency (CE), and root mean square error (RMSE). The single input linear transfer function (SI-LTF) runoff and sediment yield forecasting models were more efficacious than the multi input linear transfer function (MI-LTF) and ANN models.

KEYWORDS

Artificial Neural Network, Forecasting, Runoff, Sediment Yield

Cite this paper

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