



Modeling Rainfall-Runoff using Artificial Neural Network (ANNs) and Wavelet based ANNs (WANNs) for Haripura Dam, Uttarakhand

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Abstract: The main objective of this study was to estimate runoff using rainfall as input variable on daily basis by developing models using artificial neural network (ANNs) and wavelet based ANNs (WANNs). This study deals with location and climate of study area, collection of rainfall-runoff data, standardization of data, input selection using Gamma test and methodology adopted for runoff estimation and modeling using ANNs and WANNs for Haripura dam located in U.S. Nagar district of Uttarakhand. As the numbers of neurons are increased, correlation between rainfall and runoff first increase and then decrease. So at an optimum number of neurons there exists a best correlation. WANNs models give better correlation coefficient, lesser root mean square error and more Nash Shutcliff coefficient of efficiency as compared to ANNs models. These results can be useful for runoff forecasting for various purpose such as irrigation purpose.

Keywords: Artificial Neural Networks (ANNs), Wavelet, Nash Shutcliff coefficient of efficiency (NSCE)
