Comparing the smart model (artificial neural network) and experimental models to assess the watershed runoff of Sarney's dam

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ABSTRACT:

Long time ago, various equations were presented by researchers to managethe water resources, which had wide usage in hydrologic sciences. In this paper, by using the observational dates to estimate the runoff, the application of experimental models and artificial neural networks were investigated. For this purpose, runoff amounts were estimated by experimental model and neural smart model, using the physiographic and climatic dates of Qalat Rostam pluviometric and hydrometric stations that were located in Sarney,s dam watershed, and the results were compared to annual runoff amounts. The input parameters included average of annual rainfall, average of annual temperature, minimum and maximum temperature and evaporation values. The results showed that neural smart models had a reasonable accuracy to estimating the runoff by 0.024 Error and 0.98 Correlation. Among the experimental methods used in this research, the Intermediate Complexity Atmospheric Research method showed the best result by 0.52 Error and 0.88 Accuracy. Also by removing the input parameters of artificial neural network one by one, the findings of this paper proved that the most sensitive parameters for this model were rainfall and temperature and the least sensitive parameters were minimum temperature and evaporation. According to the limitation of necessary in formation of the experimental model and high accuracy of smart model, using of neural model was recommended.