



Artificial neural networks applied to flow prediction scenarios in Tomebamba River - Paute watershed, for flood and water quality control and management at City of Cuenca Ecuador

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The main aim of this research is to create a model of Artificial Neural Networks (ANN) that allows predicting the flow in Tomebamba River both, at real time and in a certain day of year. As inputs we are using information of rainfall and flow of the stations along of the river. This information is organized in scenarios and each scenario is prepared to a specific area.

The information is acquired from the hydrological stations placed in the watershed using an electronic system developed at real time and it supports any kind or brands of this type of sensors. The prediction works very good three days in advance

This research includes two ANN models: Back propagation and a hybrid model between back propagation and OWO-HWO. These last two models have been tested in a preliminary research. To validate the results we are using some error indicators such as: MSE, RMSE, EF, CD and BIAS.

The results of this research reached high levels of reliability and the level of error are minimal. These predictions are useful for flood and water quality control and management at City of Cuenca Ecuador