NEURAL NETWORK MODEL FOR RUNOFF PREDICTION IN THE KALUGANGA AT RATNAPURA

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Many researchers have medelled the rainfall runoffs of various catchments using various methods. These methods usually seek a large amount of information, such as rainfall distribution, catchment characteristics, etc. In this research the application of Artificial neural network model is suggested to overcome this difficulty.

Since the major objective of medelling is to predict the runoff of the catchment using the rainfall data at various stations, the model was designed to take the average rainfall of all the nine stations in the catchment and the previous day's runoff as the inputs. The model consisting of four layers was trained using the standard Levenberg-Marquardt Back Propagation mechanism. The Neural Network toolbox in the MATLAB mathematical package was used to develop the neural network program for predicting the runoff of the catchment of Kaluganga.

The neural network was trained using two inputs, the previous day's runoff and average rainfall over nine stations and tested for a period of one month. The error between predicted runoff and actual runoff is in the range of 10%.
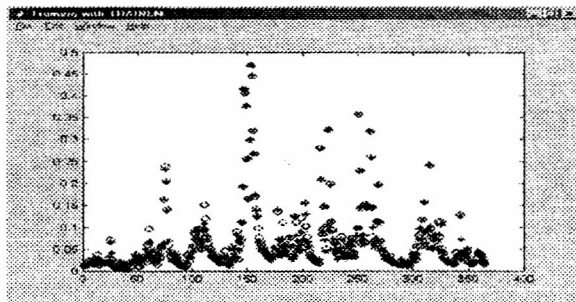

Figure 1 Graph of the expected and the predicted outputs