



Artificial Neural Networks for Real Time Inflow Forecasting in the Paute River Reservoir

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Hydropower generation, which depends on reservoir inflows, is generally the cheapest power within a country's generation facilities. To apply for electricity production quotas an accurate forecast of those inflows is essential. Artificial Neural Network (ANN) models have become a popular choice among the non-linear flow forecasting methods, because of its ability to learn from examples. This paper applies ANN to forecast the river flow at the Amaluza reservoir in the Paute river basin for one lead day, based on river flow and rainfall measured at various upstream stations and at the Amaluza reservoir itself. In a first stage the approach uses measurements from online stations available in the river basin; afterwards as to reduce ANN model complexity, and based on the correlation analysis of the measurements at the online stations, some data were eliminated. The research revealed that the existing station network does not cover adequately rainfall in the catchment, mainly because of the high spatial variability of rainfall within the Paute basin. Therefore some additional non-online stations were included in the model, enabling a better description of the meteorological regimes in the basin. In doing so, the model produces adequate forecasts of the Amaluza reservoir inflow.