

Klang River Level Forecasting Using ARIMA and ANFIS Models

ABSTRACT

Selection of the right modeling technique is always a challenging issue because every model can produce only an approximation of the reality it is attempting to illustrate. As a result, model performance in a specific situation is the only criterion that confirms the model's applicability in that particular situation. This study investigated the applicability of the adaptive neuro-fuzzy inference system (ANFIS) and the autoregressive integrated moving average (ARIMA) models in water-level modeling. Results showed a definite preference for the ANFIS model against the simple-ARIMA model, but an updated-ARIMA model outperformed ANFIS. A mean absolute error of $< 1\%$ in each model confirmed the applicability of these models in predicting the water level in the Klang River in Malaysia. On the basis of the obtained prediction accuracy level, the updated-ARIMA and ANFIS models are introduced as reliable and accurate models for prompt decision-making, planning, and urgent managing of water resources in crisis.

Keyword: ARIMA model; ANFIS model; Klang River; simulation