

Forecasting Performance Comparison of Autoregressive Fractional Integrated Moving Average and Jordan Recurrent Neural Network Models on the Turbidity of Stream Flows

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Abstract : In this study, the Autoregressive Fractional Integrated Moving Average (ARFIMA) and Jordan Recurrent Neural Network (JRNN) models were employed to model the forecasting performance of the daily turbidity flow of White Clay Creek (WCC). The two methods were applied to the log difference series of the daily turbidity flow series of WCC. The measurements of error employed to investigate the forecasting performance of the ARFIMA and JRNN models are the Root Mean Square Error (RMSE) and the Mean Absolute Error (MAE). The outcome of the investigation revealed that the forecasting performance of the JRNN technique is better than the forecasting performance of the ARFIMA technique in the mean square error sense. The results of the ARFIMA and JRNN models were obtained by the simulation of the models using MATLAB version 8.03. The significance of using the log difference series rather than the difference series is that the log difference series stabilizes the turbidity flow series than the difference series on the ARFIMA and JRNN.

Keywords : auto regressive, mean absolute error, neural network, root square mean error

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