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Monthly River Flow Prediction Using a Nonlinear Prediction Method

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Abstract : River flow prediction is an essential to ensure proper management of water resources can be optimally distribute water to consumers. This study presents an analysis and prediction by using nonlinear prediction method involving monthly river flow data in Tanjung Tualang from 1976 to 2006. Nonlinear prediction method involves the reconstruction of phase space and local linear approximation approach. The phase space reconstruction involves the reconstruction of one-dimensional (the observed 287 months of data) in a multidimensional phase space to reveal the dynamics of the system. Revenue of phase space reconstruction is used to predict the next 72 months. A comparison of prediction performance based on correlation coefficient (CC) and root mean square error (RMSE) have been employed to compare prediction performance for nonlinear prediction method, ARIMA and SVM. Prediction performance comparisons show the prediction results using nonlinear prediction method is better than ARIMA and SVM. Therefore, the result of this study could be used to developed an efficient water management system to optimize the allocation water resources.

Keywords : river flow, nonlinear prediction method, phase space, local linear approximation
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