

## 乾峰橋日流量之非線性時間序列分析

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**摘 要** 水文較長期距之序列資料,其具有動態且非線性之系統特性,故本文以非線性時間序列,模擬與掌握日流量序列系統其具有之乾、溼季週期變異特性。本文將建立門檻自迴歸模式、雙線性模式,而其模式的階數與參數之優選,係以遺傳演算法推定。本文另將以線性模式為對照組相互比較。本文選擇未來在烏溪水資源利用具關鍵位置之乾峰橋流量站作為研究對象,分析結果以門檻自迴歸模式之預報能力最佳。

**關鍵詞** : 日流量、非線性時間序列、門檻自迴歸模式、雙線性模式、遺傳演算法。

## **Non-linear Time Series Analysis for daily stream discharge of Chien-Feng Bridge**

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**ABSTRACT** Hydrologic time series have more dynamic and nonlinear characteristics of system. This study attempted to simulate the daily stream discharge of Chien-Feng Bridge with the dry and wet cyclical phenomena systematic variation characteristics by utilizing nonlinear time series, i.e. Threshold autoregressive model (TAR) and Bilinear time series model (BL) were built by genetic algorithm to seek the optimum orders and parameters of models. Besides, several linear models, including ARIMA and TFN models, were also constructed for comparison. The analytic results show that the threshold autoregressive model has the best forecasting ability of all models.

**Key Words:** day stream discharge, non-linear time series, threshold autoregressive model, bilinear time series model, genetic algorithm.