水文短序列模式預測之研究

Recently, Hurvich-Tsai (1997) employed the minimizing the mean squared error to establish the linear relationship between Z/sub t+h/ and {Z/sub t-k+1/,...,Z/sub t/} in order to increase the forecasting abilities for short time series. However, Hurvich-Tsai's research is only limited on analyzing the synthetic data of some specified models. Therefore, the following study is not only probing into the suitable range for Hurvich-Tsai method, but also investigating the monthly riverflow discharge data of Taiwan. In this study, the forecasting abilities of Hurvich- Tsai and the traditional time series models are compared for the data obeying stationarity and non-stationarity. For Hurvich-Tsai method, Burg (1978) and the traditional method for estimating the autocovariance were used to estimate the predictor parameters. The results of synthetic data show that Burg method has better parameters estimating accuracy than traditional method, whatever the data is close to non-stationarity or stationarity with small sample size. For the data close to non-stationarity, the Burg method has better forecasting ability than traditional time series model. When the data is stationary, the forecasting ability of both Hurvich-Tsai and traditional methods are very similar. In general, Hurvich-Tsai with the traditional method for estimating the autocovariance has the better forecasting ability for the real data. However, the SAR model and Hurvich-Tsai with the traditional method for estimating the autocovariance have the same accuracy of predication. The SAR model is better for the monthly riverflow data of Taiwan if the principle of parsimony of the parameter is considered.