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Parameter estimation of ARMA model for river flow forecasting using Goal Programming(GP)

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River flow forecasting is one of the important applications in hydrology. Several methods have been developed for this purpose and one of the most famous methods is Auto Regressive Moving Average (ARMA). In this method, the hydrological parameters of time series are estimated given a set of observations. After calibration, the model can be used to forecast the stream flow. In estimating the parameters, it is tried to minimize the error between the observed and calculated data for the whole series. In this research, the goal was to minimize the error for a specific season of the year as well as the whole series. Goal programming (GP) was used to estimate the ARMA model parameters. Shaloo Bridge station on Karun River with 68 years observed stream flow data was selected to evaluate the performance of proposed method. It was compared with the usual method, maximum likelihood estimation, and results were in favor of new proposed algorithm.