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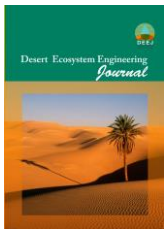

Using stochastic models to predict monthly average discharge using time-series models (Case Study: Springs Sulaimanieh Kashan)

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Abstract

Different types of time series analysis models are commonly used for predicting hydrological factors. In this study, the situation of Soleimanieh spring discharge in Kashan was investigated using various time series models and mean monthly flow during 11 years period. Then, spring discharge predicted using the best modals for future 9 years. In this research, the data were analyzed using 12 time series models including Autoregressive, Moving average, Autoregressive-composite moving average, seasonal and non-seasonal models such as Box and Jenkins. Finally, the results showed that the value of AIC is the lowest and model parameters don,t exceed of one in SARIMA (1, 1, 0) (1, 1, 1) [12] model. So, this model was selected to predict discharge data. Then, Komogorov-Smirnov test was used to investigate the normality situation of the predicted data. The obtained results showed that predicted data are normal. Therefore, according to the results, it can be conducted as the type of selected model is very important and it affects the accuracy of output response. Also, according to the uncertain nature of hydrological issues, time series models are one of the best methods in hydrological prediction.

Keywords: Time Series, Solaymanieh Spring, Box and Jenkins, SARIMA, AIC.

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