Prediction of Discharge in Maroun River Watershed using HEC-HMS Model and Comparing to Time Series Model.

Abstract

Considering the importance of stream flow prediction in water resources management various methods are applied for stream flow modeling which using these models enable us to minimize costs of droughts and floods. in this research HEC-HMS and Box –Jenkins seasonal model are used for Prediction of stream flow in maroun watershed. SMA models (continuously flow simulator), which is one of the up dated models added to HEC-HMS, is used to calculating losses. Necessary data when using HEC-HMS are daily rainfall, daily temperature and daily ET. In box-Jenkins Seasonal Model, Monthly discharges are used. HEC-HMS Model is calibrated by daily discharge of maroun watershed at idank Station during 1374-1385. Then model were verified using daily during 1385-1390. For prediction of flow the data during 1390-1391 were used. Comparison of the two models were based on the predicted monthly flow For verification of box-Jenkins Seasonal models, auto correlation function partial auto correlation of residuals portmanteau test, Akaik in Formation criterion and time series diagram sketched on normal paper. Also, for assessing the efficiency the two models, coefficient of determination (R^2), root mean square error, residuals sum of squares, mean absolute deviation, and mean of errors were used. The results show that HEC-HMS model is superior to the box –Jenkins seasonal model due to R^2 (0.76 vs.0.69), RMSE (2.8 VS 3.41), RSS (2.91 VS 3.61), MAD (0.75 VS 0.93) And MSD (7.87 vs12.14).

Key words: stream flow prediction, water resources management, drought flood, box-Jenkins, HEC-HMS, time series.

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