

**The performance evaluation of rainfall-runoff models AWBM,
Sacramento, SimHyd and Tank gauging station in the simulated runoff
Arazkuseh Grgan–Rvd Golestan watershed**

Abstract

Given the wide range of existing hydrological models to evaluate the effectiveness of different management models is necessary for the purpose. The aim of this study was to assess the relative performance of rainfall-runoff models and conceptual integration AWBM, Sacramento, SimHyd and RRL Tank software package for simulating the daily runoff gauging station Gorgan in Golestan Province Arazkuseh watershed as well as optimization of the parameters affecting rainfall Runoff is. Due to the large range of parameter variations and difficulty based on trial and error methods for parameter optimization, automatic calibration and calibration performed using 8-saver. Automatic calibration and validation for all models in the 1988-1984 five-year period of daily data flow and a four-year period 1995-1992 were used. The calibration warmup period of two years (1983-1982) and a three-year verification warmup period (1991-1989) was considered. The results of the evaluation model with the coefficient of determination (R^2), root mean square error (RMSE) and Nash Sutcliffe efficiency coefficient (ENS) demonstrates the success of the model simulation. So that the value of ENS in different models during calibration between 0.613 - 0.677 changes. The index of R^2 and RMSE in the calibration between different models of 0.787 - 0.823 and 4.565 ,4.985 change. Indices ENS, R^2 and RMSE were validated during 0.546 - 0.669, 0.719 0.802 and 7.905 - 0.938 respectively. The statistical results and graphical displays that model Sacramento with an index of $R^2=0.823$, $ENS=0.677$ and $RMSE=4.565$ during calibration and $R^2=0.719$, $ENS=0.669$ and $RMSE=7.905$ in Validation of the best performance among the models.

Keywords: rainfall-runoff, AWBM, Sacramento, SimHyd, Tank, Araz shark, Gorgan River watershed



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