

ABSTRACT

In the present research, the Soil and Water Assessment Tool (SWAT) model was used for the prediction of surface runoff amounts of the catchment of Al-Masad, in the Western Desert of Iraq. The prediction period was from September 2020 to January 2030. The calibration and verification of this model were performed according to the daily surface runoff data that were measured between 2010 and 2014. Statistical parameters were employed to determine the performance of the model. These parameters were RSR (ratio of the root mean square error to the standard deviation of measured data), NSE (Nash-Sutcliffe efficiency), and PBias (percent Bias), which were calculated as 0.58%, 0.71%, and 13% for calibration and 0.55%, 0.74% and 11% for verification, respectively. The results from the model verification and calibration prove that this model was sufficient in simulating the catchment surface runoff. Furthermore, the SWAT model was applied for the prediction of daily, monthly, and yearly surface runoff value of the catchment from 2021 to 2030. The results obtained from the model showed that the annual surface runoff volume of the catchment, throughout the period of the simulation, was between 0.65 and 8.3 million m³ with an average value of 2.622 million m³ .