

Abstract

Rainfall-runoff simulation is very important in many hydrological studies, including the effects of climate change on river flow, flood forecasting, and water resource planning. In this study, the hydrological simulation of Sarbaz watershed in Sistan and Baluchestan province was performed using SWAT model. The average height of the Sarbaz basin is 932 m and the area of the basin to the Pishin hydrometric station is 6324/29 km². The prevalence of precipitation in this area is low and precipitation is often accidentally descended into extreme rainfall. The main objective of this research is application and implementation of SWAT model in simulating monthly runoff of Sarbaz watershed and evaluation of model simulation accuracy through calibration and validation. Calibration and uncertainty analysis of the SWAT model was performed using the SWAT-CUP program. To simulate runoff using the SWAT model, the basin was first divided into sub-basins based on the elevational digital model and then divided into hydrological reaction units (HRU) according to soil maps and land use. Physical properties such as slope and dimensions of the canals for sub-basins were simulated based on the altitude map. The results of the model in the calibration phase for runoff of R² and NS coefficients were 0.83 and 0.80, respectively, and 0.38 and 0.50 m³ / s in the validation phase, respectively. The results show that the method used in this research and the calibration of the model has been well suited for simulating the runoff of the soldier's rivers.

Key Wods: Hydrological Simulation, Calibration, Validation, SWAT Model, Runoff



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