

عنوان مقاله:

Simulation of low flow using SWAT under climate change status

محل انتشار:

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خلاصه مقاله:

One of the climate change impacts is an increase in the severe drought frequencies. Recently, low flow frequency analysis has been considered in the study of hydrological drought. This study aims to forecast low flow by ۲۰۹۹ in the Kan River Basin in order to assess climate change impacts on low flow in this region. For this purpose, temperature and precipitation data were simulated by HadCM۳ model using SDSM downscaling model under the scenarios A۲ and B۲ by ۲۰۹۹. Runoff simulation was estimated using SWAT while calibration and validation were implemented using the SWAT-CUP software and SUFI-۲ algorithm. The optimal parameters obtained from monthly and daily calibration were projected via SUFI-۲ algorithm. The results showed an increase in temperature but decrease in precipitation rate, which in the most pessimistic scenario, proves an increase in maximum temperature up to ۴.۲ °C and for the precipitation, a decrease down to ۱۰.۸% by ۲۰۹۹ is expected, as well. Furthermore, the accuracy analysis of the simulated runoff based on the monthly and daily calibration results showed a good fit between observed and simulated values. In fact, their correlation coefficient with the measured values differed less than ۰.۰۳. Meanwhile for maximum flow values, daily calibration led to a more accuracy. The results of runoff forecasts showed a decrease in runoff, which is expected for spring and summer however an increase would be for autumn and winter. Overall, a ۱۵ to ۲۱ percent reduction in runoff was projected by ۲۰۹۹.

کلمات کلیدی:

Climate change, Hydrological Drought, Discharge, SWAT model, Kan basin

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