Performance Evaluation of SWAT Model for groundwater variability analysis in Venna river basin of central India

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Abstract

Monitoring of groundwater level fluctuation is important for water resource management practices in a region. The objective of this study is to find out the performance of SWAT hydrologic model in groundwater level variability studies of a watershed. This study has been performed in Venna river basin Maharashtra, India. Groundwater level monthly data for calibration and validation was obtained from CGWB. Other data such as precipitation data from Indian Meteorological Department (IMD), soil data from NBSS-LUP, and weather data from National Centers for Environmental Prediction (NCEP) Climate Forecast System Reanalysis (CFSR) has also been used to run the SWAT model. The agreement of the model output groundwater level with observed groundwater level data was tested using RMSE R^2, PBIAS, and Nash Sutcliffe methods. Calibration has been done for the period 1995 to 2005 and validation for the period of 2006 to 2015. The result indicates that there is a good correlation between the SWAT- output and observed groundwater level data for the study region.

Keywords

Groundwater, SWAT, SWAT-CUP