

Title: An Assessment on Base and Peak Flows Using a Physically-Based Model

Author/Authors: Milad Jajarmizadeh, Sobri Harun, Mohsen Salarpour

Abstract: A physically-based model namely the Soil Water Assessment Tool (SWAT) was used on the Roodan watershed in southern part of Iran; the watershed has an area of 10570 km². The main objectives were to simulate monthly discharge and evaluate the base and peak flows separately. Required parameters to run the model were meteorological data, soil type, land use, management practices and topography maps at watershed scale. To find the sensitive parameters, an initial sensitivity analysis was performed using the Latin Hypercube sampling One-at-A-Time (LH-OAT) method embedded in the SWAT model. Then, the model was calibrated and validated for stream flow using the SWAT-CUP program. Generally, the model was assessed using the modified coefficient of determination (bR²), Nash-Sutcliffe (NS) and PBIAS. Values of bR² and NS were 0.93 and 0.92 for calibration respectively and 0.69 and 0.83, respectively, for validation. For calibration and validation, PBIAS were obtained at 23 and 5%, respectively. Reviewing the results, it seems that simulation of the monthly peak flows has better harmony (fluctuation) than monthly base flows for Roodan watershed. To summarize, the simulated SWAT stream flow was within the acceptable range for Roodan watershed as an arid catchment.