

EFFECT OF DEM RESOLUTION ON SOIL WATER ASSESSMENT TOOL (SWAT) OUTPUTS OF RUNOFF (Case Study in Iraq)

**IMZAHIM ABDULKAREEM⁽¹⁾, IBTISAM.R.KARIM⁽²⁾, AND
MAHMOOD J. MOHAMED⁽³⁾**

¹Asst. Prof, ² Asst. Prof, ³Asst. Lecturer

Abstract

The effect of grid size on surface runoff hydrograph have been studied by using Soil Conservation System Curve Number (SCS-CN) with applying a model to predict the impact of land management Soil Water Assessment Tool (SWAT) to process the land use, soil type, and soil texture maps obtained from Landsat-8 (ETM+) satellite image. Digital Elevation Model DEM with three types of resolutions (14m x 14 m, 85m x 85 m and 250m x 250m) are used to delineate the watershed with aid of SWAT model which is applied for watershed and flow simulation. The study area at North Iraq and extended the South is selected for this purpose, and a milty rainfall storm were observed by measuring rainfall depth, duration, and runoff hydrograph at the outlet of the catchment to evaluate the effect of grid size for Digital Elevation Model (DEM). The objective of this study was to evaluate the impact of DEMs generated from different data sources, respectively on SWAT predictions for runoff. The digital elevation model is applied to represent the study area by dividing it to an equal square cells to consist the grids of equal size and elevation. Generally the study area is very steep at the northern part to moderate slope at the south part. The study area is divided to a three parts based on soil type which is consist of silty clay loam, silty clay, and stone, also land used is considered. The rainfall storms were prediction and the (SWAT) is applied of each one for each considered grid size and it showed output was most affected by input DEM data resolution. The result show that area, slop and number of subbasin that affective with DEM resolution. Finally the resolution of DEM effective on the prediction of quantity of water in which the results show that runoff depth increases by using finer DEMS.

Keywords: Runoff, Water harvesting, Land sat 8, SWAT