"HYDROLOGICAL MODELLING OF PENGANGA SUB-BASIN BY USING ARC-SWAT"

ABSTRACT:

In this study the hydrology of Penganga sub-basin which flows along the south east boundaries of the district is modelled, using the Soil and Water Assessment Tool (SWAT).

INTRODUCTION:

The water cycle is the movement of water between the ice, the ocean, the atmosphere and fresh water. It consists of several processes such as precipitation, evaporation, transpiration, infiltration, runoff, interflow and routing. Precipitation is the fall of moisture from the atmosphere to the earth surface in any form.

The data used :

DEM from SRTM (Shuttle Radar Topography Map) (30 m resolution).

Soil Map from FAO (Food and Agricultural Organization).

Land-use land-cover Map from (DECADAL).

Weather data from Global Map.

METHODOLOGY

LOCATION:

Penganga River is a major tributary of Wardha river and it rises in the Ajantha range. The Penganga River is the chief river of the Buldhana district, Hingoli district, Nanded district, Yavatmal district, Chandrapur district, Washim district in the Maharashtra state in India flows along the South East boundaries of the district.
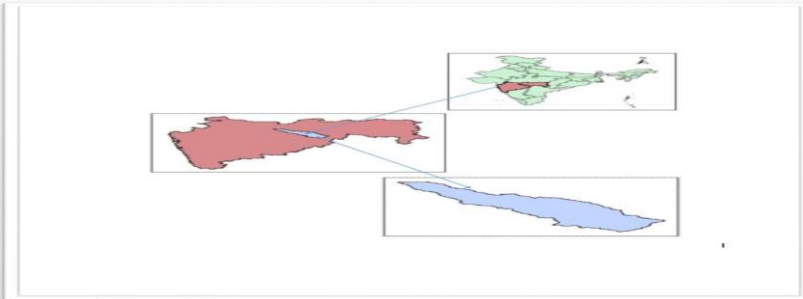
INPUT DATA:

Digital Elevation Model (DEM): Digital Elevation Model is one of the essential spatial input necessary for delineation of watershed into a number of sub-basin on the basis of elevation in SWAT model.

SWAT Model: SWAT is a deterministic, physically-based, continuous simulation, watershed model.

RESULT & DISCUSSION:

For validation, the result of flow shows a good correlation of observed and model simulation as represented in figure.
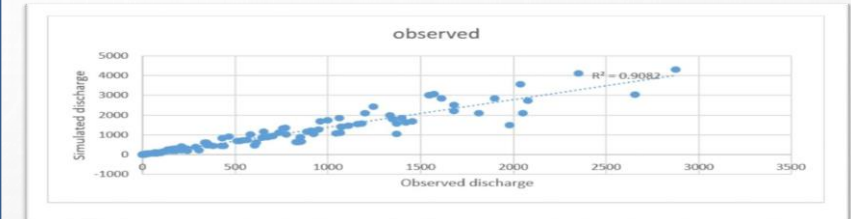
CONCLUSION:

The conclusions obtained for the hydrological simulation of Penganga sub-basin are:

SWAT is useful to demonstrate hydrological model by 0.9082 Coefficient of Correlation (R²) in Penganga River.

Over Penganga River the rate of evapotranspiration is reading by 0.01cm/year.

REFERENCES:

International Journal of Water Resources and Environmental Engineering Vol. 1(1), pp.001-010, October, 2009. Hydrological Modelling of Kihansi river catchment in South Central Tanzania using SWAT model.

Anita Nag, K. P. (2013). Hydrological Modelling of Watershed using HEC-HMS software and Arc-GIS. *International Journal of Advance Scientific and Technical Research, 2 (3), 313- 319.*

Data Collection   Write Input Tables   Run SWAT & Evaluate   Analysis of Result