

ASSESSMENT OF SPATIO-TEMPORAL OCCURRENCE OF WATER RESOURCES IN DIDESSA SUB-BASIN, WEST ETHIOPIA

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ABSTRACT

The spatial and temporal occurrence of water resources within watersheds should be properly known for effective resource planning and management. However, direct measurement of parameters describing the physical system is time consuming, costly, tedious, and often has limited applicability; hence, the use of simulation model is becoming attractive. The main objective of the study was to assess the spatial and temporal occurrence of surface water resources in Didessa Sub-basin of the Abbay (Upper Blue Nile) Basin, West Ethiopia. The Soil and Water Assessment Tool (SWAT) was used to model the hydrology of the sub-basin with dataset including soils, land use/cover, digital elevation model, flow and meteorological data [from both conventional meteorological stations and the National Centers for Environmental Prediction's (NCEP) Climate Forecast System Reanalysis (CFSR) grids]. The study showed that monthly and annual stream flow and hydrologic components in Didessa Sub-basin were predicted by the SWAT hydrologic model with very good values of model performance evaluation parameters. Besides, the study showed that in data scarce areas, the use of satellite data from CFSR grids in conjunction with datasets from few conventional weather monitoring stations can give reliable results of monthly and annual stream flow.

KEYWORDS: SWAT, Hydrologic Modeling, Didessa Sub-Basin, CFSR, Water Resources, Water Yield