

Presentation on Estimation of hydrological components using swat model, guder catchment, upper abbay basin in Ethiopia

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Abstract:

The quantification of hydrological components is important for water resources assessment and management. Hydrological modeling of Guder Catchment is efficaciously calibrated and validated using the Soil and Water Assessment Tool (SWAT) model. Model calibration from (1986-1997) and validation from (1998-2001) was performed for the monthly flow from the Guder measuring station. Estimation of water yield and water balance components of the hydrologic cycle in the basin was aimed. The model generally works well by simulating runoff according to the result of 2 objectives, Nash-Sutcliffe efficiency (NSE) and coefficient of determination (R^2). Threshold depth of water in the shallow aquifer mandatory for return flow to occur, Channel effective hydraulic conductivity & curve number for moisture condition II CN2.mgt was sensitive flow parameters. The contributions of precipitation to the streamflow, Evapotranspiration, and groundwater as percolation to shallow aquifer were 88%, 9%, and 65% respectively. The water yields of whole sub-basins were evaluated and the variation ranged from 926 mm to 1340 mm per year. The present study offers an initial estimation of the components of water yield and water balance at the level of the basin in the Guder Catchment, and the findings can be used to determine the impacts of land cover and climate change and also local government agencies can arrange projects to solve community water-related issues. **KEYWORDS:** Hydrological Components; Water yield, SWAT; Guder Catchment; Abbay Basin Ethiopia.