

THESIS

SIMULATION OF FLOWS EMPLOYING TOP MODEL AND
COMPARISON OF DIFFERENT TECHNIQUES FOR INPUT DATA



7077

BY

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(2007-PG-EHY-30)

for the degree of

MASTER OF SCIENCE

IN

ENGINEERING HYDROLOGY

CENTER OF EXCELLENCE IN WATER RESOURCES ENGINEERING
University of Engineering and Technology, Lahore

2010

ABSTRACT

The study deals with simulation of flow employing TOPMODEL and comparison of different averaging techniques for input data. The study area is Winder River catchment at Goth Amun. The proposed dam site is located on main Winder River about two kilometers upstream of Goth Amun. Flood occurs due to variation in flow pattern. Therefore proper flood forecasting is necessary. For this purpose hydrological model (TOPMODEL) is used for flow simulation of Winder River at Goth Amun catchment. It is the best tool for reservoir and power generation operation and also it minimize the resources utilize for flood forecasting.

The TOPMODEL was simulated and calibrated for five years data (1974-1978) of stream flow for Winder river catchment at Goth Amun catchment on daily basis. Only five parameters are required for calibration in this model. Potential evapotranspiration data, observed discharge data and rainfall data is the primary input data along with some information about the catchment topography to run the TOPMODEL.

Three average techniques were applied on the input data to compare, which technique gives simulated results closely matched with observed discharge data. Three average techniques applied were (Thiessen Polygon method, Isohyetal method and Arithmetic mean method) to the input data. It was observed from the study that Theisson Polygon technique applied as an average technique for input data give best results as compare to Arithmetic mean and Isohyetal methods. The simulated results obtained by TOPMODEL by the application of Thiessen Polygon technique showed most closely results with the actual observed discharge data. It is concluded from the study that TOPMODEL by applying Thiessen polygon method is suitable to simulate the flow of the selected river basin.