

Abstract

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Flow Routing of Blue Nile from Deim to Khartoum

In the past few years, discussions about the possibility of water resource crises have introduced new concepts into the public debate. Taking into consideration the two facts of water limitation and population increase in Egypt, a good water resources management becomes a challenge. To enhance the water resources management, an integrated water resources model is intended to be developed to predict the water quantities arriving Aswan for both high and low flow periods. The model will divide the River Nile into three major tributaries that are White Nile, Blue Nile and Atbara River. The model will predict the flow for each tributary based on catchment's hydrologic data to perform the rainfall-runoff calculations; then by channel routing the model will estimate the flow passing the most downstream end of each tributary. The model will finally perform multiple input single output channel routing to predict the flow arriving to Aswan based on the flow for each major tributary of the River Nile. The model will be developed using the hydrologic modeling system "HEC-HMS" version 3.3 dated on September 2008 developed by "The U.S. army Corps of Engineering, Hydrologic Engineering Center "HEC"". This paper presents the work for channel routing of the Blue Nile from Deim at the Ethiopian-Sudanese border to Khartoum at the most downstream end of the Blue Nile. The basin is first described. The model is then explained, calibrated, and verified. Data used for model calibration and verification are also described. Finally, model development and outputs are concluded.