

Variability of Hydrological Modeling of the Blue Nile

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Abstract : The Blue Nile Basin is the most important tributary of the Nile River. Egypt and Sudan are almost dependent on water originated from the Blue Nile. This multi-dependency creates conflicts among the three countries Egypt, Sudan, and Ethiopia making the management of these conflicts as an international issue. Good assessment of the water resources of the Blue Nile is an important to help in managing such conflicts. Hydrological models are good tool for such assessment. This paper presents a critical review of the nature and variability of the climate and hydrology of the Blue Nile Basin as a first step of using hydrological modeling to assess the water resources of the Blue Nile. Many several attempts are done to develop basin-scale hydrological modeling on the Blue Nile. Lumped and semi distributed models used averages of meteorological inputs and watershed characteristics in hydrological simulation, to analyze runoff for flood control and water resource management. Distributed models include the temporal and spatial variability of catchment conditions and meteorological inputs to allow better representation of the hydrological process. The main challenge of all used models was to assess the water resources of the basin is the shortage of the data needed for models calibration and validation. It is recommended to use distributed model for their higher accuracy to cope with the great variability and complexity of the Blue Nile basin and to collect sufficient data to have more sophisticated and accurate hydrological modeling.

Keywords : Blue Nile Basin, climate change, hydrological modeling, watershed

Conference Title : ICWEEM 2015 : International Conference on Water, Energy and Environmental Management

Conference Location : Madrid, Spain

Conference Dates : March 26-27, 2015