



Development of hydrologic model of Kagera River basin using Remote sensing data

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Abstract: Decision support tools such modeling, are important for the management of natural resources specially water resources. In general or specifically in developing countries, there is a lack of necessary or information for building decision support tools. There are not sufficient data to build calibrate and validate models. In order to develop models with inadequate data, we should use different alternative to ground collected data that can be found in remote sensing data or global data.

There are various archive global datasets available on internet that have been used for hydrological modeling exercise. They range from topographical data to soil and land use as well as climatic data: SRTM topography data, FAO soil dataset and Global land use maps. The most interesting part is climatic datasets: precipitation and temperature. Some have been collected by different satellites such as TRMM, EARS or have been generated data from statistics, CRU, for instance from monthly to daily data, using weather generator, DWGA.

In this research, remote sensed data are used to develop a hydrological model for Kagera River basin. The Kagera catchment is located in east-central Africa. This is a sub-catchment of Nile River basin and it is distributed in four countries: Burundi, Rwanda, Tanzania and Uganda. The model was developed using Soil and Water Assessment Tool- SWAT, which is a continuous time and hydrological model used for river basin scale modeling. The various climatic global dataset were used to simulate flows of in the Kagera basin. All the dataset show almost the same spatial distribution of precipitations, but simulated flows show differences, which have been reduced by calibration.