



Climate variability over the Central Kenyan Rift: Data quality assessment and use.

L. Olaka (1), M. Trauth (1), S. Roessner (2), E. Zehe (3)

1) Institute of Geosciences, Potsdam University, Germany (2) Remote Sensing Department, GFZ Potsdam, Germany (olaka@geo.uni-potsdam.de)

Rainfall variability in Eastern Africa is strongly teleconnected with El Niño/ Southern Oscillation (ENSO) induced Seas Surface Temperature (SST) fluctuations in the Indian and Atlantic Oceans. Additionally, complex terrain effect has significantly modified the large-scale influence and result in distinct contrast in the local climate responses.

Sixty years (1940-2000) of daily rainfall and river discharge data collected for six sub catchments from weather and river stations and analyzed to study the long-term variations of the annual seasonal frequency of extreme rainfall events in the central rift of Kenya and to forecast the future scenario. Two methods were used to supplement missing data: a statistically linear model and a conceptual hydrological model. A linear equation, developed from the regression of precipitation and discharge, was used to evaluate the quality of existing data. Monthly and annual standardized anomalies are computed, for each decade that enable to put in evidence of the interannual variability of the climatic conditions. Kalman filtering and smoothing is used to extend the record back to 1800 using proxy derived data.

The semi-distributed conceptual model, HBV/IHMS (Hydrologiska Byråns Vattenbalans-avdelning/ Integrated Hydrological Modelling system) model is calibrated and used to improve the hydrologic predictability based on changes in both climate variables or land surface characteristics in the study area. The results of the analysis comparing both the historical and generated data will be presented in the paper.