M.Sc. Thesis at the Hydrology Research Group

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Assessment of hydro-physical properties and development of a "false chronosequence" of anthropogenic influenced soils in wetland regions of Namulonge, Uganda.

Keywords: Wetlands, Ecosystem Services, East Africa, Inland Valley, Hydro-Physical Properties, Soil moisture , False Chronosequence

Fresh water and fertile soils are scarce and valuable resources. Water losses through runoff, degradation of soils and decreasing yields constitute major problems in the sub-Saharan Africa. Wetlands show relatively fertile soils and year-round availability of water, while providing a wide range of ecosystem services. The work is embedded within the GlobE: Wetlands in East Africa Project looking at sustainable use of wetlands and their potential contribution to food security. The study constituted a preliminary investigation of soil hydro-physical properties within an inland valley wetland in south-central Uganda. Parameters determined included particle size distribution, bulk density and volumetric soil moisture content. Measures of four or six depth increments were taken at three transects along the stream. Transects were divided into four toposequence positions along the gradient from uplands to lower slopes at the valley bottom. To estimate impacts of the duration of cultivation, a "space for time" approach was used. As spatial variation was high, possibilities to develop such a "false chronosequence" were limited. Results generally indicate that longer periods of cultivation are associated with an increase in bulk density and a decrease in moisture content. Overall, soils under semi-natural vegetation showed relatively high moisture contents in upper layers, indicating a quick recovery of soil quality. Further research is required to better understand hydrological processes affecting the health of wetlands and to develop sustainable agronomic options.
The master thesis is supported by the fiat panis foundation.

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Work Package	B2 Environmental effects
Countries of work	Uganda, Namulonge
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2nd Supervisor	
Subject	Geography
Faculty	Faculty of Mathematics and Natural Sciences
University	Rheinische Friedrich-Wilhelms-Universität Bonn
Working period	04/2014 – 09/2014