

CLIVET presentation

**The hydrological functioning and role
of groundwater in irrigation and
climate change adaptation in the Upper
Great Ruaha River Basin, Tanzania,
East Africa**

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Objectives

To investigate the spatial and temporal distribution of groundwater in Tanzanian agriculture. This entails the groundwater's role in irrigated farming and climate change adaptation.

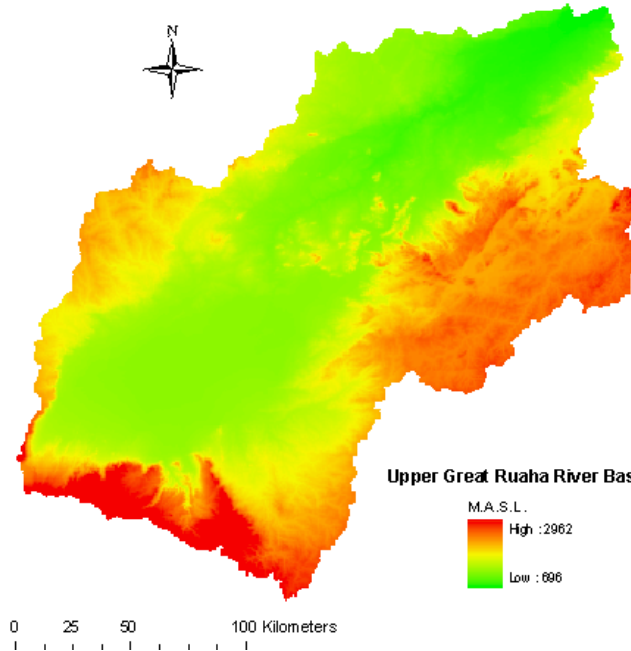
To assess the hydrological and hydro-geological conditions of the UGRRB and/or a sub-catchment in the UGRRB

To investigate the hydro-geological functioning of the local aquifers or a sub-catchment in the UGRRB

To investigate the present and potential role of groundwater for irrigated agriculture and climate change adaptation in the UGRRB

Study area

Upper Great Ruaha River Basin



Rufiji River catchment

- Great Ruaha

- Upper Great Ruaha River Basin
(Large scale)

- Rujewa, Mbarali district
(Small scale)

- Sub catchment
of Rujewa
(Micro scale)

Rujewa catchment area



Method

Assessment of the water balance of the study area (with focus on the groundwater component)

Mapping of land-use conditions

If data availability allows, a detailed modelling of a groundwater aquifer in the study area

(Household surveys to elicit information on the importance of groundwater in agriculture, including land use and economic returns in the study regions)

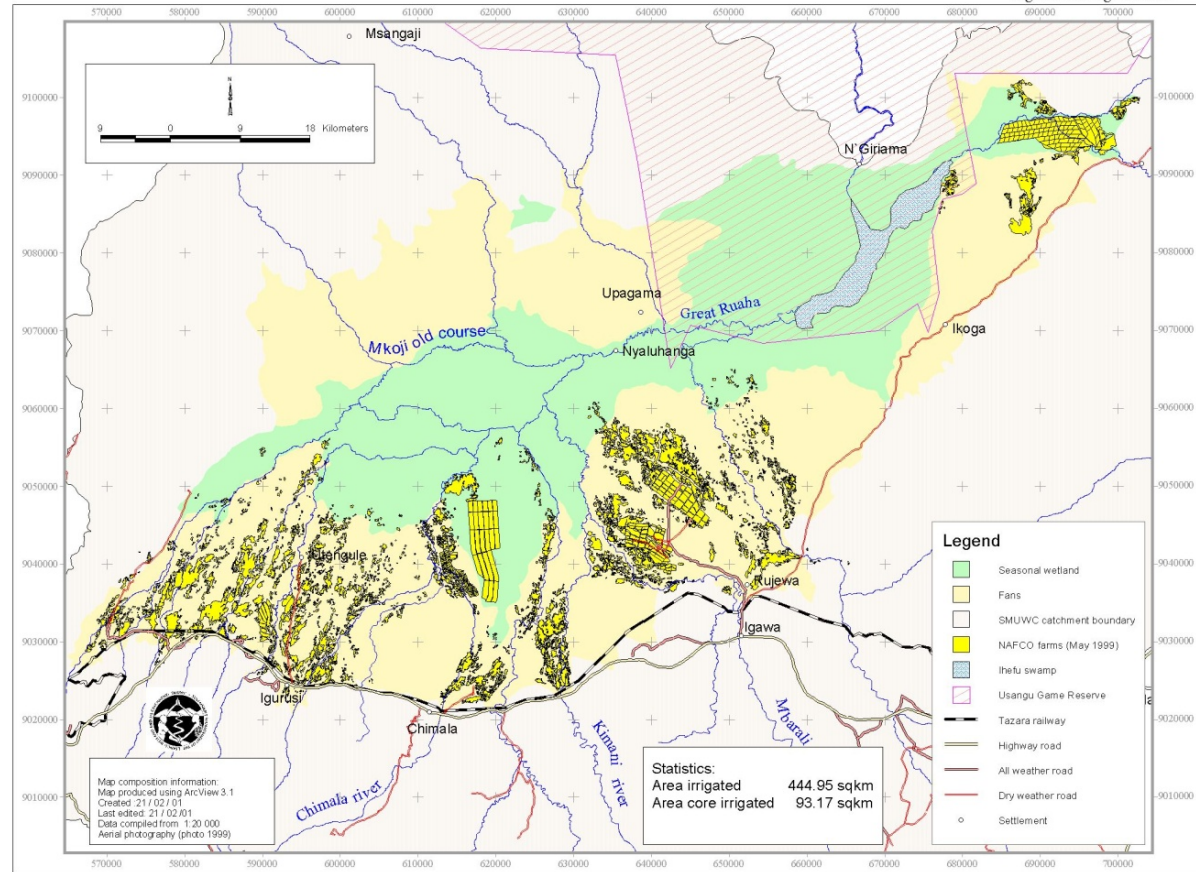
Land use

Land use is increasingly dominated by irrigated paddy fields

Demographic development causes increasing population

Economic interests in the area

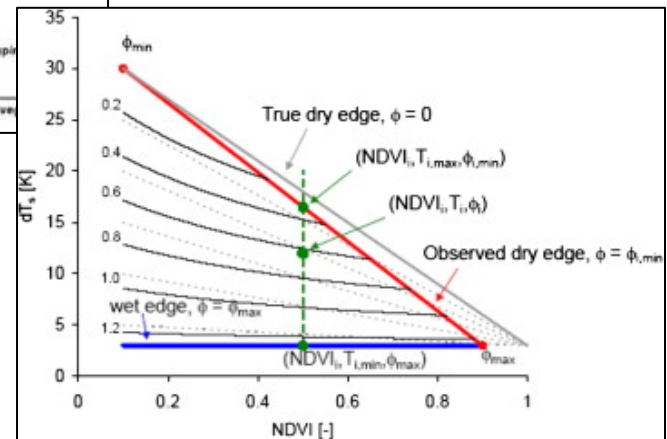
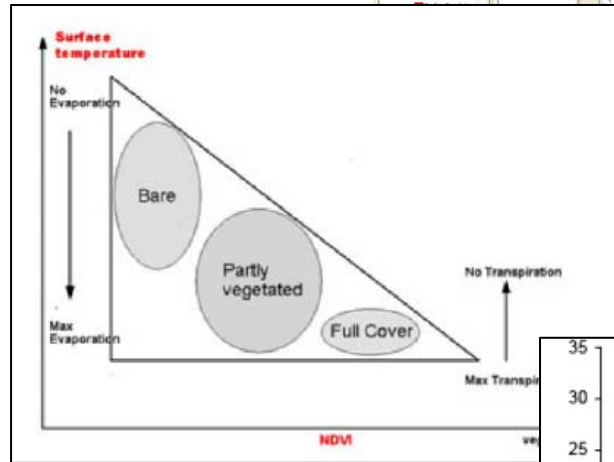
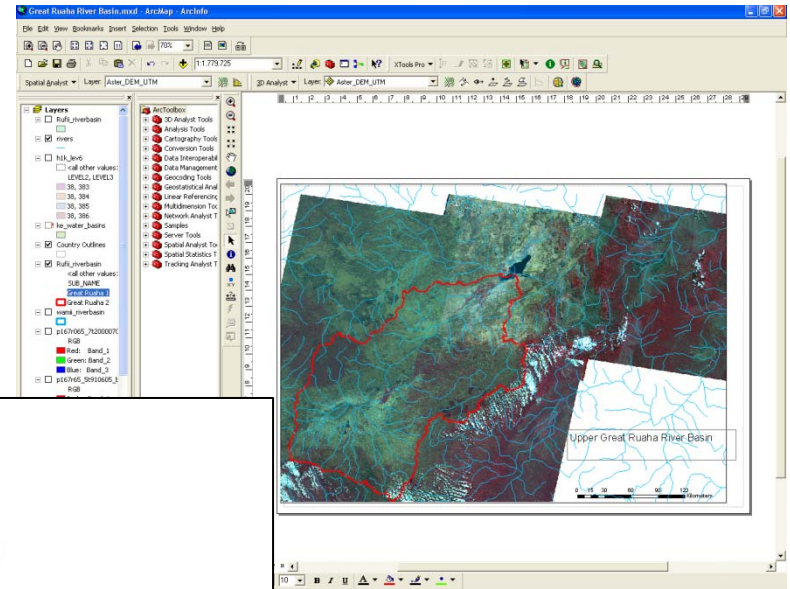
Figure 3.2 Irrigated area



Remote sensing

Get detailed data on land use and land cover. Landsat

Calculate TVDI and absolute evapotranspiration. Modis and MSG



Additional model tools

GMS-MODFLOW

Hydrus

NAM

Field work

- Measurements of hydraulic head in the study area
- Execution of slug tests in the study area
- DC measurements in the study area
- Soil moisture measurements in the study area
- Vegetation parameters
- Collecting climatic and discharge data from established monitoring stations
- Co-operate with Jegan concerning surveys concerning groundwater, irrigation and socio-economic conditions