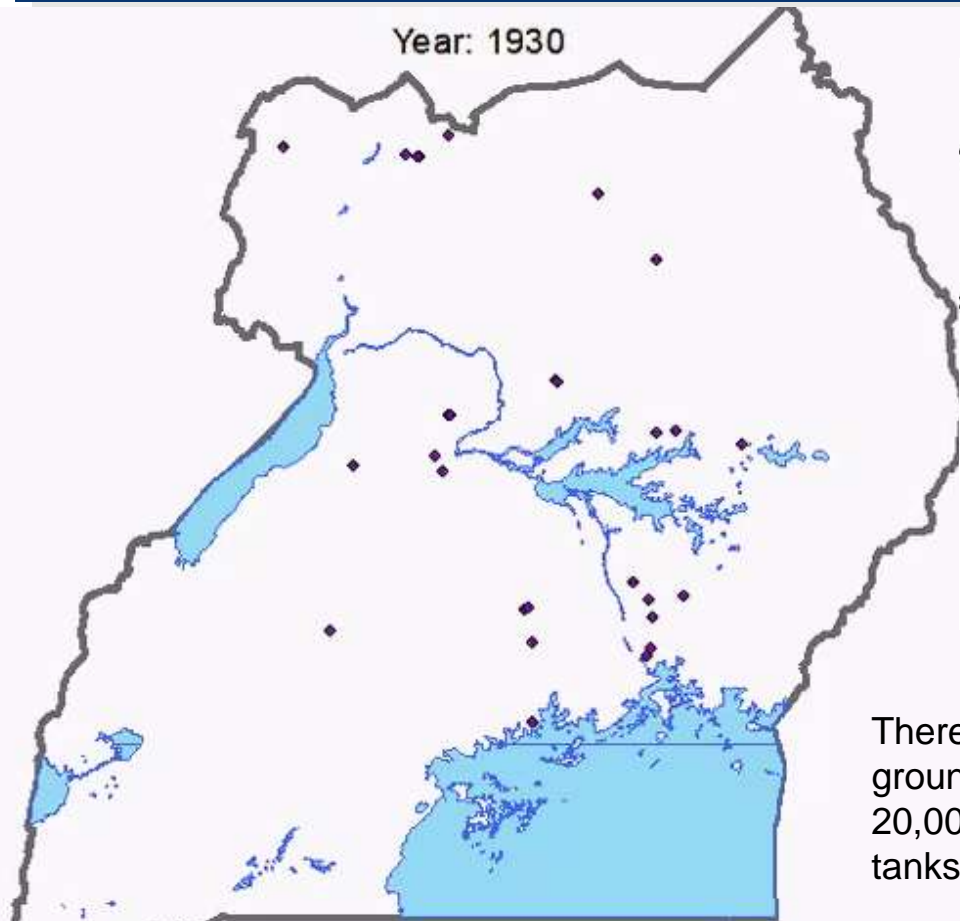


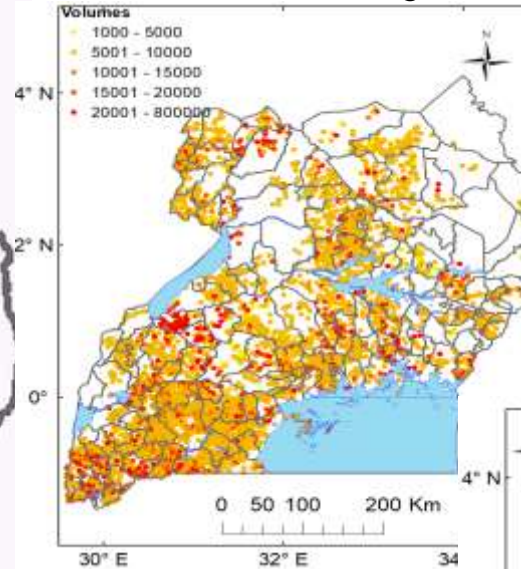
A Multi-sensor hydrologic modeling framework to assess the impacts of small-scale water storage practices to water resources over Uganda

Jamiat Nanteza/ Makerere University, Uganda

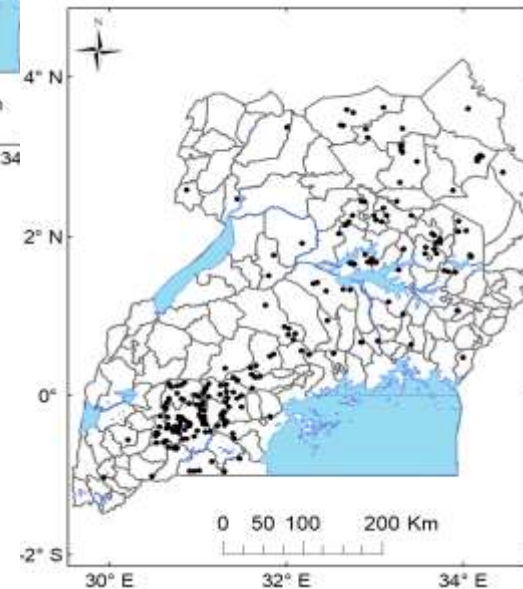


Groundwater supply points network

Rainwater harvesting tanks network



Dams network



There are over 70,000 groundwater supply points, 20,000 rainwater harvesting tanks and 300 dams



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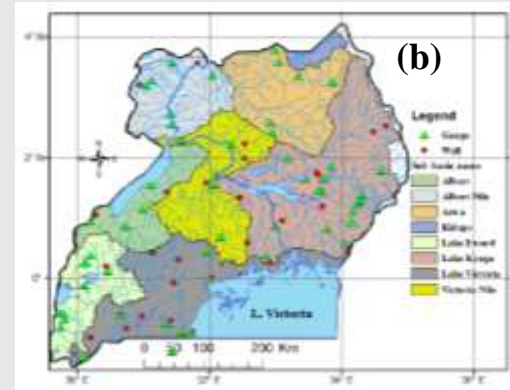
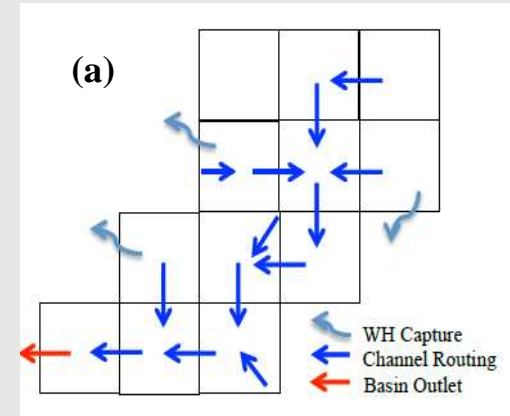
Research Approach:

The study takes on two major steps

1. Utilize remote sensing data, ground-based observations to:
 - 1) quantify and characterize water harvesting across the country; and
 - 2) to characterize recharge, stream flow and groundwater behavior
2. Utilize a land surface model to
 - 1) quantify runoff, streamflow, recharge and groundwater storage alterations that result from water harvesting operations; and
 - 2) to characterize locations suitable for water harvesting

Datasets being collected/estimated

- Hydroclimatic data – Precipitation, streamflow, groundwater levels and groundwater recharge
- Quantities harvested – water supply points, groundwater abstracted, rainwater and runoff harvested



A schematic of the grid-based water harvesting process (a) and Hydrologic sub-basins, Uganda (b)

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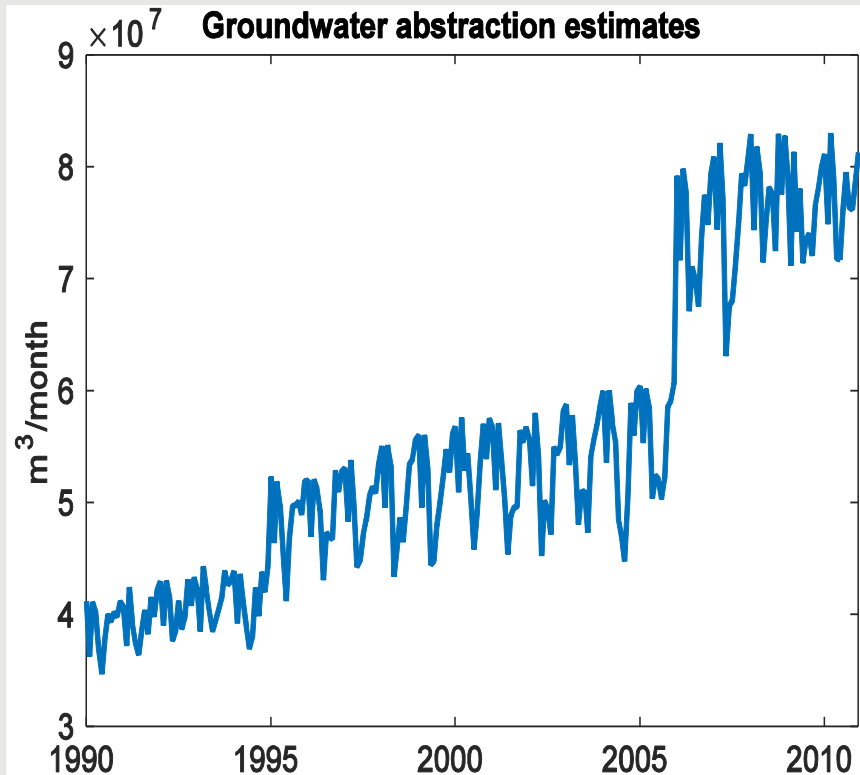
Key results of your research/project so far:

- Water harvesting from the groundwater source is greater in highly populated areas
- Water harvested across Uganda has increased through time
- Groundwater harvesting affects streamflow and groundwater levels

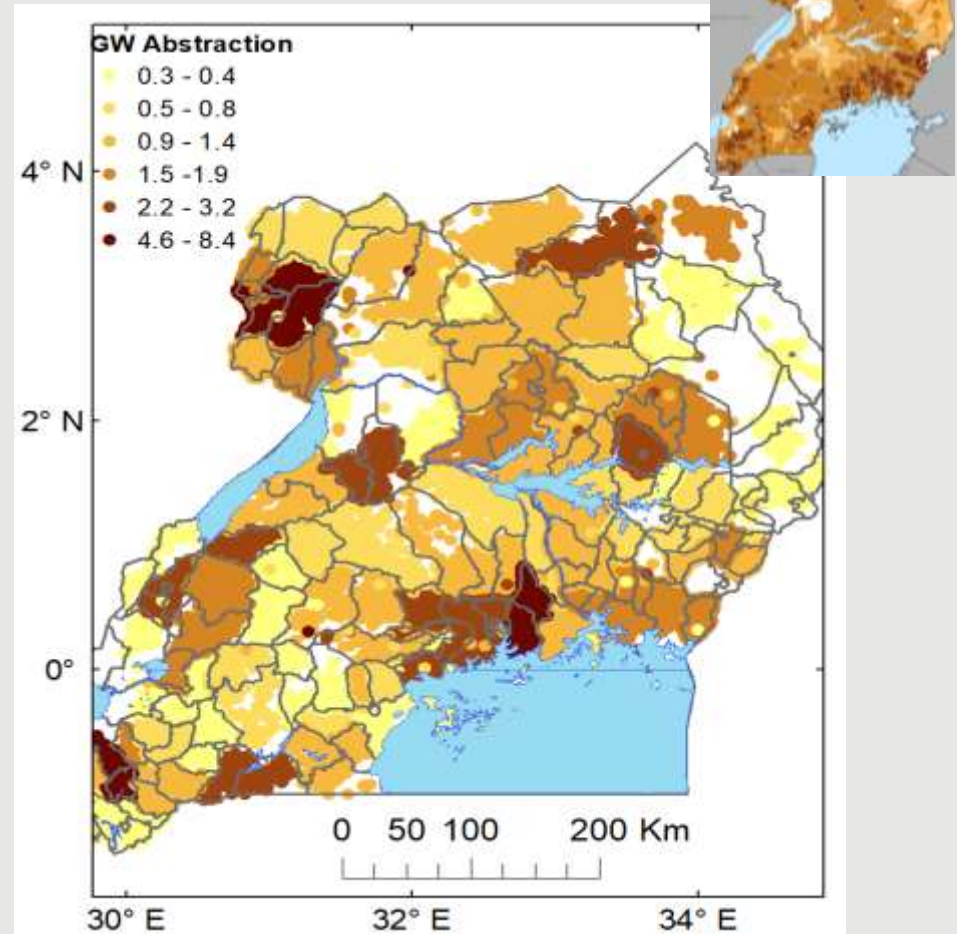
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Major results of your research/project



Volume ($m^3/month$) of groundwater abstracted over Uganda from WaterGAP model



Estimated groundwater harvested per district ($10^6 m^3/day$)

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Top next steps for your project:

- Estimate water harvesting amounts from tanks, protected springs, Dams in space and time across the country
- Run the model with water harvesting amounts that vary in space and time, calibration and validation

How data and results from your project will impact stakeholder decisions and the development problem:

- Results will guide on new developments aimed at increasing water access across Uganda

Challenges you have faced in collecting meaningful data:

- No readily available data on water use and irrigation amounts
- Estimating amounts of water harvested from rain tanks and dams is challenging
- Lack of geo-coordinates for some of the data points availed to us



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