



Water Dynamics in Fogera and the Upper Blue Nile - Farmers perspectives and remote sensing

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This research work is about finding the connection between farmers perspectives on changes of water conditions in their socio-agricultural environment and satellite remote sensing analysis.

Key informant surveys were conducted to investigate localised views on water scarcity as a counterpoint to the physical measurement of water availability. Does a numerical or mapped image identifying water scarcity always equate to a dearth of water for agriculture? To push the limits of the relationship between human and physical data we sought to ground-truth GIS results with the practical experience and knowledge of people living in the area.

We data-mined public domain satellite data with FOSS (GDAL, GRASS GIS) and produced water-related spatio-temporal domains for our study area and the larger Upper Nile Basin.

Accumulated remote sensing information was then cross-referenced with informant's accounts of water availability for the same space and time. During the survey fieldwork the team also took photographs electronically stamped with GPS coordinates to compare and contrast the views of informants and the remote sensing information with high resolution images of the landscape.

We found that farmers perspective on the Spring maize crop sensibility to variability of rainfall can be quantified in space and time by remote sensing cumulative transpiration. A crop transpiration gap of 1-2.5 mm/day for about 20 days is to be overcome, a full amount of 20 to 50 mm, depending on the type of year deficit. Such gap can be overcome, even by temporary supplemental irrigation practices, however, the economical and cultural set up is already developed in another way, as per seasonal renting of higher soil profile water retention capacity fields.