

Dynamic Interactions among People, Livestock, and Savanna Ecosystems under Climate Change

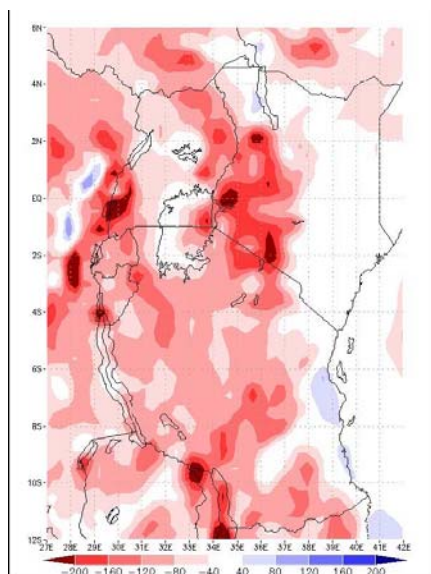
Background

Land use change may be a more important driver of climate change than previously thought. Recent evidence of meteorological data, land cover and climate modeling indicate that warmer temperatures and higher potential evapotranspiration, combined with variable precipitation may already be lowering productivity of much of the East African savanna. Short-term drought adjustments and broader changes in savanna livelihoods in East Africa suggests that some areas have heightened vulnerability to drought. Understanding societal adaptation to climate change requires an approach that recognizes the interaction of responses across spatial scales and the distributional benefits and burdens of adaptation within society.

Objective

The objective of this study is to understand;

- key characteristics of and dynamics between coupled human-biophysical systems in the East African savannas under climate change
- how savanna vegetation respond to a changing climate
- the combinatory effects of human land management and climatic change impacts on savanna vegetation
- how livelihood systems of pastoralists and agro-pastoralists are responding to climate change in the context of the evolving socioeconomic systems



Difference in annual precipitation (red decline; blue increase) due to projected land cover changes (2050 cover minus current cover) in mm.

Which Big Issue is addressed, and how?

Provide new information on the impact of climate change on savanna ecosystems and contribute to climate change science questions on the relative importance of land use affecting climate. It adds to scientific knowledge on interactions and feedbacks between climate, land and society, and contribute to complex system modeling.

Who are your main partners and donors?

University of Dar es Salaam, Michigan State University, Ohio State University, Meteorological Services of east African countries, National Museums of Kenya,

The project is funded by NSF

Links with other themes?

People Livestock and Environment.

Methodology

A comprehensive conceptual and methodological approach to modeling and statistical analysis of climate, land management, and ecosystem dynamics at two scales;

- local scale where human decisions are made and ecosystem dynamics are most evident.
- regional scale where the cumulative effect of human activity and ecosystem change may significantly impact climate.

The regional climate model run at both scales, and remote sensing and other data analyzed at both scales.

The interaction between scales and temporal dynamics including feedback effects form the crux of the analysis of the coupled natural and human system.

Outputs

Publications
Reports

Outcomes

Livelihoods and savanna ecosystems protected from climate change impacts.

More information?

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