Climate Change Impact Assessment and Adaptation Options in Vulnerable Agro-Landscapes in East-Africa

D Manful (1), K Tscherning (1), K Kersebaum (1), J Dietz (3), O Dietrich (1), C Gomani (1), H Böhm (2), M Büchner (2), G, Lischeid (1), M, and Ojoyi (1)

(1) Leibniz-Centre for Agricultural Landscape Research (ZALF) e.V., Müncheberg, Germany, (3) World Agroforestry Centre (ICRAF), Nairobi, Kenya, (2) Potsdam Institute of Climate Change Research (PIK), Potsdam, Germany

Climate change poses a risk to the livelihoods of large populations in the developing world, especially in Africa. In East Africa, climate change is expected to affect the spatial distribution and quantity of precipitation. The proposed project will assess aspects of climate impacts and adaptation options in Tanzania. The project will attempt to quantify (1) projected impacts including: variability in temperature, rainfall, flooding and drought (2) the affect changes in 1. will have on specific sectors namely agriculture (food security), water resources and ecosystem services.

The cumulative effects of diminished surface and ground water flow on agricultural production coupled with increasing demand for food due to increase in human pressure will also be evaluated. Expected outputs of the project include (1) downscaled climate change scenarios for different IPCC emission scenarios (2) model based estimations of climate change impacts on hydrological cycle and assessment of land use options (3) scenarios of sustainable livelihoods and resilient agro-landscapes under climate change (4) assessment of adaptive practices and criteria for best adaptation practices.

The presentation will focus on novel approaches that focus on the use of agro-ecosystem models to predict local and regional impacts of climate variability on food with specific needs of the end-user factored into model set-up process. In other words, model configurations adapted to the information needs of a specific end-user or audience are evaluated. The perception of risk within different end-users (small scale farmer versus a regional or state level policy maker) are explicitly taken into consideration with the overarching aim of maximizing the impact of the results obtained from computer-based simulations.