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“Development on the margin”

Analysing Land Use History in the Northern Rift Valley Lake Basins of Ethiopia to Identify and Assess Local Coping Strategies to Maintain Food Security under Imminent Climate Change

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Abstract

Ethiopia as many other developing countries faces currently environmental problems such as land degradation and loss of forest. The country has also experienced frequent drought resulting from climate variability. These problems have impacted on the food security of the country. At the same time, coping strategies are developed by local farmers, which include land use change towards more stress-resistant crops and management practices that reduce or evade drought stress. Identifying and distributing successful coping strategies requires monitoring of resources and practices, which should be based on reliable information. The current land use information situation in the country can be characterised as weak and needs improvement. The objectives of this study include investigating experiences in implementation, designing and implementing of a Land Use Information System (LUIS) that can effectively and efficiently support the analysis of current land-use practices; analysing the land-use history and change in context with the onset and duration of seasons; identifying farmers' adaptation strategies to climate variability; and evaluating the land-use potentials for environmental services. The research is undertaken in the Northern Part of the Rift Valley Lake Basins of Ethiopia. A geodatabase is designed to support the use of different data from various sources including remote sensing, ground surveying, participatory GIS and existing data. The framework is implemented based on open source Geographic Information Systems (GIS) including Quantum GIS, Geographic Resources Analysis Support System (GRASS GIS) and PostgreSQL (with PostGIS spatial extension). Expected outputs of the research include guiding principles for LUIS development with emphasis on agricultural applications; as well as models to support land use planning and monitoring at local level. These include development of a methodology which integrates various data from different sources for analysis of land use history in the context with onset and length of growing seasons; understanding of farmers' adaptation strategies to climate variability to ensure food security; and analysis models for evaluating the land-use potentials for environmental services taking C sequestration as a case study. The poster presentation will show the integration of different data sources in the information framework and demonstrate how selected datasets are represented in the LUIS.

Keywords: Climate variability, GIS, land use history, local coping strategy, remote sensing