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**ALUCCSA: Adaptation of Land Use to Climate Change in sub-Saharan Africa (Concepts and Preliminary Results)**

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**Abstract**

Farmers and pastoralists of the Sub-Saharan Africa (SSA) face severe challenges from changing climatic conditions (*e.g.* observed later onset of the rainy season), as well as the pressure of a rapidly growing population. Sub-Saharan countries are likely to be severely affected by climatic changes which will complicate the conditions for sustainability of agroforestry production systems and disturb the balance of natural ecosystems. Thus, adequate adaptation and mitigation measures must be developed and these require knowledge on potential trends of climate development in SSA.

The main objective of ALUCCSA is to develop ready-to-use scenarios and recommendations for agroforestry and silvopastoral ecosystems in SSA on highly-resolved spatial scale for the two SRES (Special Report on Climate Scenarios) climate projections (A1B, B1). Scenarios B1 and A1B as calculated from the coupled General Circulation Model ECHAM5-MPIOM are used as input for regional climate models (CLM, MM5) which downscale the climate projections to the regional and local scale for Burkina Faso. In addition, past climatic conditions, vegetation dynamics and current vegetation cover are analysed by means of tree ring analyses, remote-sensing and ground surveys.

The efficiency and sustainability of different land use types under conditions of climate projections is calculated by means of Soil-Vegetation-Atmosphere-Transfer (SVAT)-Model WaNuLCAS (Water, Nutrient and Light Capture in Agroforestry Systems). Climate scenario calculations are currently (as of September 2009) still running. The first results show the increase of mean air temperature and decrease of precipitation in Burkina Faso as compared to the reference period of 1980-2000. The sample based large area vegetation inventory and remote sensing imagery processing has started for Burkina Faso. A number of intensive study sites representing the major bioclimatic zones of Burkina Faso are chosen for the more detailed research and data collection on vegetation, livestock and microclimate, where the installation of automated weather stations has been completed.

**Keywords:** Adaptation, climate change, climate modelling, land use