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## Application of the Land Resources Information System SLISYS in the Oueme Basin of Benin (West Africa)

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### Abstract

The objective of the soil and land resources information system SLISYS for the Oueme basin in Benin is the estimation of long-term evolution of crop yields and of diffuse emissions from agricultural land into water bodies in relation to climate and land management changes.

SLISYS-Oueme was created to provide data about soils, climate and terrain conditions in the Oueme basin. The data domain of SLISYS-Oueme contains soil information based on the SOTER map of Benin, climate information from 133 meteorological stations distributed in the whole country as well as model specific data on crop management. Land cover is derived from a LANDSAT TM PLUS interpretation from the year 2003 (Igue et al. 2006). On the land cover unit “Mosaic of fallow and cultivation”, 16 crops as well as fallow land are distinguished considering crop specific management with respect to fertilisation, irrigation and length of fallow period. SLISYS-Oueme contains a spatially distributed model for the estimation of diffuse emissions at a high spatial and temporal resolution. The estimation of crop yields for the 16 crops is based on simulations with the agroecosystems model EPIC (Erosion Productivity Impact calculator, USDA 1990). The basin has been subdivided into hydrological response units (LUSAC: land use-soil association-climate unit) which are quasi-homogenous with respect to land use, soil and climate. EPIC calculates the crop yields for each LUSAC unit. The results are then aggregated to the department or subbasin scale according to the area coverage of each LUSAC. As an example for potential applications of SLISYS, calculations of actual and nutrient limited crop yields as well as the effects of fallow systems on crop productivity at the department level are presented

**Keywords:** Benin , crop production, information system, land resources