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Terrestrial Environmental Evolution in Chinese Basins
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**A land resources information system to assess soil losses from
water and wind erosion at the basin scale**

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Abstract

The global society is more and more concerned with the consequences of inadequate land use on water, soil and air quality. Among others, erosion of soil through wind and water are responsible for the contamination of water bodies and the atmosphere. In order to make reliable estimations of the regional extend of water and wind erosion, comprehensive model approaches are required that are based on land information systems that hold information about climate, soils and land cover/use. SLISYS is a soil and land resources information system that was created to provide information on natural resources and to make model-based assessments on soil erosion by the simultaneous impacts of water and wind. In addition, it allows for estimating crop yield and diffuse emissions of nitrogen, phosphorous and agricultural chemicals from various kinds of land use.

SLISYS has been established and tested in various ecological zones from humid temperate to tropical sem-arid. The system is composed of a data domain and a model domain. The data domain contains soil, climate and terrain information as well as model specific data on crop management. Land cover information is usually derived from LANDSAT TM interpretations and additional statistical data on agricultural production. Since soil disturbance through agricultural activities are among the major causes of soil erosion, agricultural crops and grazing activities are distinguished considering crop specific management with respect to operation scheduling, fertilisation and tillage.

The estimation of soil erosion is based on simulations with the agroecosystem model EPIC (Erosion Productivity Impact calculator, USDA 1990), which is linked to the data base. Different approaches for spatial upscaling of the simulation results and their significance for regional estimations of erosion are presented and discussed.