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Three-Gorges-Dam: Studying the ecological impacts in a highly dynamic ecosystem

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The impoundment of the Yangtze River in 2003 by the Three-Gorges-Dam (TGD) evokes ecological impacts alongside the Yangtze and its major tributaries that appear to be unforesseable in their dimension and dynamic. The scheduled water level elevation to 176 m in 2009 and the seasonal water level fluctuations at the TGD for the purpose of hydro power generation and flood control will still foster the typical aftermaths such as slope instability, mass movements, soil erosion, the expansion of infrastructure and land reclamation for subsistence agriculture and cash crops distant to the inundated area. Together, geoscientists from China and Germany try to develop an integrated risk assessment system for landslides, soil erosion, diffuse sediment and matter fluxes into the reservoir and land-use vulnerability. Since April 2008 the research activities take place within the Sino-German YANGTZE project funded by the German BMBF and initiated by the German Research Centre Juelich. The project proceeds in close collaboration with the Ministry of Land and Resources of the People's Republic of China (MRL). In four subprojects located at the universities of Erlangen, Giessen, Potsdam and Tuebingen main focus lies on the analysis and assessment of the mechanisms and trigger of landslides, the mechanisms of soil erosion for different landscape morphologies and soil associations and the multi-temporal land-use classification and land-use dynamic on the meso-scale. The research area is the highly dynamic and mountainous Xiangxi catchment (3.100 km^2) close to the TGD. Using multi-level approaches by means of GIS, field investigations and remote sensing the Yangtze project aims to assess the spatial and temporal varying risk potential of soil erosion and the landslide susceptibility and risk for the infrastructure, people and agriculture. Finally, high-resolution risk potential maps will serve as a base for decision making. In close collaboration with our Chinese partner projects (China University of Geosciences, Wuhan; Institute of Soil Sciences, CAS, Nanjing; Aero Geophysical Survey and Remote Sensing for Land and Resources, Beijing) we seek to enhance our understanding of the ecological consequences of large dam projects.