Geophysical Research Abstracts, Vol. 7, 10283, 2005
SRef-ID: 1607-7962/gra/EGU05-A-10283


# Holocene sediment budgets for soil erosion in the meso-scale Frankenforst system near Bonn (Germany)

**F. Lippert** and R. Dikau
Dept. of Geography, University of Bonn, Germany

In Central Europe, holocene slope processes are dominated by anthropogeneous soil erosion since the onset of neolithic agriculture. External factors such as landuse and climate are potential triggers for soil erosion, which is in turn influenced by internal configurations of the landscape system. In this study, the holocene sediment sink and the partially eroded as well as the non-eroded pre-holocene sinks are identified as the three functional compartments of the 340 ha Frankenforst system. The former is comprised of colluvial and alluvial bodies, whereas the latter two consist of pleistocene loess-deposits covering tertiary volcanic materials, with holocene soils mostly experiencing significant erosion. Reconstruction of soil erosion is carried out in three steps: Total soil erosion und re-accumulation are integrated into a sediment budget model. In a subcatchment funtioning as a training area, regionalisation strategies are developed. As a result, spatially differentiated sediment delivery ratios and a paleo-DEM of the pre-neolithic Surface will be developed. According to the oldest sediments dated so far, soil erosion has occurred in the study system since at least 4000 years. First results of an excavation campaign uncovering gully fills and sheet colluvia also indicate substantial dynamics in the last 200 years as well as probably in medieval times. By adding temporal resolution, the sediment budget model will be transferred into a cascade model, yielding multi-temporal sedimentation rates and sediment delivery ratios. Reconstructions of land-use and climate are integrated into a numerical sediment-flux model, which will be validated using the information extracted from the geo-archives. So far, a high-resolution sediment budget for a 27 ha training area could be established. This sediment budget model, along with first results from recent exvavations as well as a reconstruction of landuse for the last 200 years and preliminary climate data will be shown.