Geophysical Research Abstracts
Vol. 19, EGU2017-13268, 2017
EGU General Assembly 2017

Landscape dynamics in the Otterbach catchment (Bavarian Forest, Southern Germany)

Daniel Schwindt, Sebastian Scheck, Emanuel Scholz, Peter Waltl, and Jörg Völkel
Geomorphology and Soil Science, Technical University Munich, Freising, Germany (daniel.schwindt@tum.de)

As part of the TUM-CZO (TU-Munich Critical Zone Observatory), the Otterbach Valley has been focus of numerous research approaches, focusing on soil carbon dynamics, hydrological processes as well as landscape dynamics.
Aim of this contribution is the reconstruction of the landscape evolution of the Otterbach catchment in context with anthropogenic land use and natural process dynamics. Therefore, studies focus on alluvial and colluvial sediments which are usually regarded as correlated with anthropogenically induced erosion.
Located in the western Bavarian Forest the Otterbach is a creek of 2nd stream order and runs directly into the Danube River. Geologically, most parts of the catchment are composed of granitic rocks, mylonites and saprolites. While agricultural land use is dominant in the upper and lower reaches of the Otterbach, the steep middle reaches are forested, floodplains are used as grasslands. Settlement history points out that the forest of the so-called "Thiergarten", covering large parts of the catchment, has been used invariably for forestry, makes this study site valuable for the reconstruction of anthropogenic impact on landscape evolution.
Characterization of the shallow subsurface is based on the analysis of soil pits (up to 2 m depth), core samples (up to 18 m depth) and geophysical measurements (electrical resistivity tomography, seismic refraction tomography). Temporal contextualization of sediments is achieved using radiocarbon dating.
As a result of illuvial processes, clay curtains are observed almost continuously up to 18 m depth within the slope sediments, suggesting a genesis during Pleistocene warm stages. Radiocarbon dating in the alluvial floodplain point to pronounced sedimentary relocation processes between around 2.400 and 1.000 BP. This emphasizes the importance of naturally caused process dynamics as population density in the surroundings of the Otterbach catchment was low during this period and the area was mostly forested. With close proximity and interlockings between slope sediments relict river terraces and Holocene alluvial sediments investigations allow for a reconstruction of the palaeoenviroment in context with land use and human dynamics in the catchment of the Otterbach valley.