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Human impact on the geomorphic evolution of the HOAL catchment, Lower Austria

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Since the beginning of human settlement extensive land cover and land use changes have induced significant geomorphic landscape changes as water and sediment dynamics have been transformed. The presented project focuses on the reconstruction of Holocene geomorphic landscape evolution and the assessment of recent geomorphic processes in the Northern foothills of the Eastern Alps in Austria – an area intensively agriculturally used since the middle ages and often overlooked in its geomorphic evolution. The study area is a small catchment (ca. 66 ha) which is located in the western part of Lower Austria comprising a land use history as well as environmental settings typical for wide regions across the Northern foothills of the Eastern Alps in Austria. The catchment elevation ranges from 268 to 323 m a.s.l. and has a mean slope angle of 8%. The climate in this region can be characterized as humid. The lithology mainly consists of Tertiary marly to sandy deposits which are superimposed by Quaternary sediments (e.g. loesses). Dominant soil types are Cambisols, Luvisols, and Planosols. Furthermore, the catchment is used as a Hydrological Open Air Laboratory (HOAL) implemented for the long-term research of water-related flow and transport processes in the landscape (http://hoal.hydrology.at). The main objective of this research project is to reconstruct Holocene landscape evolution by analyzing physical parameters of sediment cores taken from colluvial and alluvial sediment archives with additional 14C and OSL dating as well as by the measurement of truncated and covered standardized Luvisol profiles. First results will be presented at the EGU General Assembly 2016.