



Quantification of Holocene sediment dynamics in a mesoscale river catchment of the Northern Franconian Jura, Germany

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In central Europe, earliest societies started in the Neolithic (c. 5.500 BCE), turning natural landscapes into cultural landscapes which triggered soil erosion, thus further altered sediment dynamics and continually replaced climate as a key factor in controlling sediment fluxes at the catchment scale. Although many studies have shown the importance of quantification of the contributing parts to the sediment cascade within a catchment, there is still a lack of knowledge on the patterns of human-induced soil erosion and sedimentation on longer temporal and spatial scales, caused by the often non-linear relationship between anthropogenic disturbances and response of sediment dynamics. Therefore, extensive and well-dated datasets on colluviation and floodplain sedimentation are required, as well as specific information from archaeological surveys.

The main objective of this research project aims at establishing a Holocene sediment budget for a mesoscale river catchment – an area with a long history of human impact through agriculture – to understand and quantify the response of Holocene sediment dynamics to extrinsic and intrinsic controls. Therefore, a high-resolution chronology for colluvial and alluvial sediment archives using optical stimulated luminescence dating as the preferred dating method is developed.

The Weismain river catchment (125 km²) is situated in the Northern Franconian upland which must have been densely populated during the Bronze Age and Iron Age (c. 2100 to 30 BCE) and drains into the Main river as part of the German Rhine catchment. Here we present first results of the onset of colluviation and alluviation in the upper part of the catchment as well as a quantification of alluvial sediment storage of a trunk valley derived from different cross-sections, soil profiles and individual corings.