



The Temporal and Spatial Quantification of Holocene Sediment Dynamics in a meso-scale catchment in northern Bavaria/Germany

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The Aufsess River catchment (97 km²) in northern Bavaria, Germany, is studied to establish a Holocene sediment budget and to investigate the sediment dynamics since the early times of farming in the 3rd millennium BCE. The temporal characterization of the sediment dynamics is based on an intensive dating program with 73 OSL and 14 ¹⁴C ages. To estimate soil erosion and deposition, colluvial and alluvial archives are investigated in the field by piling and trenching, supported by laboratory analyses. The sediment budget shows that 58% of these sediments are stored as colluvium in on- and foot-slope positions, 9% are stored as alluvium in the floodplains and 33% are exported from the Aufsess River catchment. Colluviation starts in the End-Neolithic (ca. 3100 BCE), while first indicators of soil erosion derived alluviation is recorded ca. 2-3 ka later. The pattern of sedimentation rates also displays differences between the colluvial and alluvial system, with a distinct increase in the Middle Ages (ca. 1000 CE) for the alluvial system, while the colluvial system records low sedimentation rates for this period. A contrast is also observed since Modern Times (ca. 1500 CE), with increasing sedimentation rates for the colluvial system, whereas the alluvial system records decreasing rates. The different behavior of the colluvial and alluvial system clearly shows the non-linear behavior of the catchment's fluvial system. The results further suggest that human impact is most probably the dominant factor influencing the sediment dynamics of the catchment since the introduction of farming.

Fuchs, M., Will, M., Kunert, E., Kreutzer, S., Fischer, M. & Reverman, R. 2011. The temporal and spatial quantification of Holocene sediment dynamics in a meso-scale catchment in northern Bavaria / Germany. *The Holocene* 21, 1093-1104.

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