



Land use history, floodplain development, and soil erosion in the vicinity of a millstone production center since the Iron Age in the Segbachtal near Mayen (eastern Eifel, Germany)

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In Roman times, the stone and pottery production near Mayen in western Germany reached a very high intensity which would have satisfied the needs of a much wider area. The rate and volume of production was unprecedented and never reached the same level thereafter. The Segbach valley study site with an area of only a few square kilometres offers a very special geoarchaeological archive. The Roman land use structures were completely preserved under a 2 meter thick layer of sediment and are now partially exposed in a gully due to erosion.

Pedological, sedimentological and geophysical studies at the colluvium and floodplain sediments as well as relict field structures showed that in the last 2500 years there has been a considerable human impact on both water and sediment budgets. This also had various implications on the further development of water courses, soils and relief. Evidence for the development of flood plain sediments can be traced as far back as the late La Tène period, the Roman Iron Age, and since the Middle Ages.

On one particular south-facing slope we found evidence of recultivation measures on a former quarry tailing heap dating from the Middle Ages. This and other human construction activities and land uses lead to a significant change in erosion and sedimentation patterns. It is surprising that sedimentation in flood plains was largely absent during the Roman Iron Age despite intensive land use. Evidence shows that flash flood events with intensive accumulation of soil matter in flood plains only occurred during the High Middle Ages. Sediments from the late Middle Ages and the Modern Times are largely missing.

The research undertaken in Segbach valley not only offers new insights into specific local historical land uses and land use changes but also fundamental knowledge about the principles and impacts of long-term human-environment interactions.