

## **Long-term interaction between past soil erosion and land-use change in central Europe**

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This paper will review the current state of knowledge of the dynamics of past soil erosion and gullying in small catchments, the effects to adjacent fluvial systems and possible feedback mechanisms to land-use changes for the last 7000 years in central Europe. The discussed studies were made on hillslopes and gully systems in low mountain range areas. They are characterised by coupled slope-channel systems as well as uncoupled systems like closed depressions in Pleistocene lowlands, maars, lakes, and sunken areas. The studies show that sediment fluxes in small catchments are highly sensitive to local land-use changes while river sediments show regional trends in land use and climate changes. Peaks of soil erosion and gullying took place during phases of rapid climate change. Particularly, extreme precipitation events caused intensive runoff on slopes used for agriculture. The most remarkable phases occurred in the first half of 14th and in the mid-18th to the early 19th century. Most of the gully systems in Europe today are a result of these catastrophic occurrences. These punctuated events triggered land abandonment and influenced the ecosystem and the socio-economic situation. The results imply that a future increase in land-use intensity and extreme precipitation events during climatic change might have severe consequences regarding soil erosion, flood risk, and ecological aspects. These long-term human environment processes will be discussed in the light of resilience and vulnerability over the long duree.