



## **Changes in hillslope-channel coupling over medium to long timescales ( $10^2$ - $10^3$ years) - examples from loess areas in central and western Europe.**

**A Lang**

Department of Geography, University of Liverpool, Liverpool, L69 7ZT, UK (lang@liv.ac.uk / +44 (0)151 794 2842)

The loess covered regions of central and western Europe can look back on more than 7 500 years of human impact. Here, results from several case studies are reviewed to show how land use change and climate impacts have transformed fluvial systems. The focus is on changes in sediment delivery pathways and slope-channel coupling, which mainly depend on (1) system configuration, (2) system evolution and (3) event magnitude. Based on the start of sediment deposition leads and lags of sub-system response are identify. The results show that due to the dynamics of hillslope-channel coupling, sedimentary successions are products of rather complex nonlinear interactions and often cause-consequence interpretations used in geomorphology are over-simplistic. For example, human impact is recorded in slope deposits only as long as rainfall intensity and runoff generation do not exceed the threshold for gullying. Similarly, climatic impacts are only recorded in alluvium when both the landscape is rendered sensitive by human activities (e.g. deforestation) and rainfall thresholds for gullying are exceeded.