



Interglacial climates during the last million years from polygenetic palaeosols in the Krems region, Lower Austria

Tobias Sprafke (1), Christine Thiel (2), and Sergey Sedov (3)

(1) Institute of Geography and Geology, University of Würzburg, Germany (tobias.sprafke@uni-wuerzburg.de), (2) Section S3: Geochronology and Isotope Hydrology, Leibniz Institute for Applied Geophysics, Hannover, Germany, (3) Institute of Geology, Universidad Nacional Autónoma de México, Mexico

The Austrian lowlands next to the Danube show a clear gradient from oceanic climate in the west to continental climate in the east, which is reflected by the present day soil cover (Luvisols vs. Chernozems on loess). The Bohemian Massif in between these regions acts as climate shed. On its hilly eastern margin, thick loess deposits of variable age and resolution are preserved. Slope processes significantly influenced these loess-palaeosol sequences (LPS), resulting in eroded or polygenetic palaeosols. This hampers the application of established quantitative proxies for weathering intensities and thus requires a thorough genetic evaluation.

Interglacial pedocomplexes at the LPS of Stiefern, Paudorf, Göttweig, and Krems-Schießstätte have ages from MIS 5 to Early Pleistocene. Detailed qualitative and semi-quantitative micromorphological studies unravelled trends in the intensities of interglacial pedogenesis during the last million years. The presence of primary carbonates in weathered substrate, disturbed and transported clay coatings, distinct fragments of redeposited soil, and other feature relations combined with further laboratory data are the basis for developmental models of the pedocomplexes. The chronological framework for correlations of the different sites is provided by luminescence dating (< 350 ka) and the Matuyama Brunhes Boundary (780 ka); the temporal context is further used for palaeoclimatic interpretations of weathering intensities

On average, interglacial pedogenesis in polygenetic LPS of the Krems region is characterized by a significantly lower weathering intensity compared to those of interglacial palaeosols west of the Bohemian Massif. The results show that the present climatic gradient was also present during the last interglacials.