



The story of landscape evolution in Lower Austria told by sedimentological analysis and luminescence dating

Ingo Hofer (1), Christine Thiel (2,3), Birgit Terhorst (4), Iva Jaburova (1), Jan-Pieter Buylaert (3), Andrew Murray (3), and Manfred Frechen (2)

(1) Institute of Geography and Regional Research, University of Vienna, Austria, (2) S 3: Geochronology and Isotope Hydrology, Leibniz Institute for Applied Geophysics, Hannover, Germany, (3) Nordic Laboratory for Luminescence Dating, Department of Earth Sciences, University of Aarhus, Risø DTU, Denmark, (4) Institute of Geography, Chair of Physical Geography, University of Würzburg, Germany

Loess/palaeosol sequences contain detailed information about palaeoenvironmental changes during the Quaternary. Furthermore, because of its long distance aeolian transport, which resets the luminescence signal to zero prior to deposition, loess is highly suitable for luminescence dating. This allows the determination of geodynamic processes with time.

The loess deposits in the Kremser Feld (Lower Austria) are up to 30 m thick. The loess/paleosol sequence of Stratzing is situated at the eastern margin of the west-east elongated hill of the 'Galgenberg'; this location is famous for its archaeological finds, e.g. the sculpture "Fanny", one of the oldest identifiable representations of the human figure (Neugebauer-Maresch, 1993).

The loess profile examined here has a total depth of 7.5 m and is subdivided into 19 prominent horizons. For each horizon the grain size distribution, pH-value, total carbonate content, total organic content and sulphur content was derived in order to reconstruct the environmental conditions leading to sedimentation and soil formation. To set up a geochronological framework for the loess deposition and the subsequent soil formation, nine samples were dated by means of elevated temperature post-IR IRSL (Thiel et al., submitted).

Besides a general discussion about the sedimentological data we will discuss horizon 18 in more detail; this is a paleosol rich in clay and poor in mineralic carbonate. The sulphur content is relatively high and indicates higher humidity and warmer climate, all making the unexpectedly low organic carbon content of particular interest.

The luminescence ages reveal an important hiatus above this well-developed palaeosol (from ~ 100 to ~ at least 200 ka) clearly showing that this loess/palaeosol sequence is not a continuous record. This implies either significant erosion or lack of loess deposition in this area.

Neugebauer-Maresch, C., 1993. Kunst und geistige Welt. – In: Neugebauer-Maresch, C., (ed): Altsteinzeit im Osten Österreichs. Wissenschaftliche Schriftenreihe Niederösterreich 95/96/97 (St. Pölten).

Thiel, C., Buylaert, J. P., Terhorst, B., Murray, A. S., Hofer, I., Tsukamoto, S., Frechen, M., submitted. Luminescence dating of the Stratzing loess profile (Austria) - Testing the potential of an elevated temperature post-IR IRSL protocol. Quaternary International.