



Loess stratigraphy using palaeomagnetism: application to last glacial loess bearing archaeological remains

Christian Zeeden (1,2), Ulrich Hambach (2), Norbert Nowaczyk (3), Michael Hark (2), and the archaeological cooperation partners Team

(1) Stratigraphy and Paleontology, Utrecht University, Utrecht, The Netherlands (zeeden@geo.uu.nl), (2) Geosciences, University of Bayreuth, Bayreuth, Germany, (3) GeoForschungsZentrum Potsdam, Potsdam, Germany

Various sediment types may record properties of the Earth's magnetic field during or short after deposition. In this contribution we discuss high resolution palaeomagnetic studies of last glacial loess sites from the Danube catchment which contain archaeological remains.

Archaeological sites with relatively high sedimentation rates were chosen in order to 1) check whether the loess contains a reliable palaeomagnetic signal 2) check whether palaeosecular variation features may be identified 3) use the existing dating from the archaeological sites (^{14}C and luminescence) to gain a palaeomagnetic record from loess with reasonable age control and 4) compare palaeosecular variation signals to reference section(s) with the aim to construct a relative stratigraphy of archaeological layers from different localities in the Danube catchment. Because the investigated loess and loess-like sediments are not all homogeneous, but in some cases intercalated with humiferous horizons, studies on the relative palaeointensity of the Earth's magnetic field are not possible for all sites.

In this contribution we will show the application of palaeomagnetic stratigraphy to a loess site containing archaeological finds. We will demonstrate that the palaeosecular variation pattern can be matched to data from the Lac du Bouchet (France) lacustrine sequence. This comparison works reasonably well, and we are able to construct a stratigraphy based on the comparison to the dated Lac du Bouchet record. However, we are aware of some dating inaccuracies of this reference record at millennial scale.

Concluding, we are able to put archaeological layers from different localities in a stratigraphic order using the palaeosecular variation signal as recorded by loess as correlative dating technique.