



## **Standing on a crossroad – Application of magnetic susceptibility in quaternary and geoarchaeological studies in Hungary**

**E. Horváth** and B. Bradák

Department of Physical Geography, Eötvös University, Budapest  
([erzsebet.horvath@geology.elte.hu](mailto:erzsebet.horvath@geology.elte.hu))

We are going to present three possible scopes of magnetic susceptibility measurements in our quaternary and geoarchaeological studies.

Since the appearance of poliglacial concept the climatic cycles of the Pleistocene have been tried to reconstruct with numerous methods, like the “Milanković – Bacsák climatic calendar”, oxygen isotope curves of the deep sea cores, and the complex analysis of terrestrial aeolian and fluvial sediments. However the climate-reconstruction based on terrestrial records was a question due to the problems of the adequate age determination or the sediment hiatuses. One of the possible solutions could be the magnetic susceptibility (MS) of loess and paleosoil sequences.

Despite the widespread application of this method (from the Chinese Loess Plateau to Alaska) in Hungary only the well-known outcrops (Paks, Mende) were investigated.

Our magnetic susceptibility measurements focusing on “new”, not yet described Hungarian loess-paleosoil sequences, usually supplemented by other methods (luminescence dating, AAR stratigraphy, etc.) which make possible correlations of these MS profiles.

Beside the above mentioned MS profiles we started to determine with laboratory measurements other magnetic properties of loess, such as anisotropy of magnetic susceptibility (AMS).

It is possible to draw the characteristics of magnetic fabric (foliation, lineation) by AMS results. These magnetic properties of loess are appropriate to build up a model

of the direction of paleowind, detect the potential mass movements and reworking of these aeolian sediments.

Finally, the MS investigation of archaeological sites, for example the cave sediments, should be one of the important meeting point of the Palaeolithic archaeology and the earth-sciences. We applied magnetic susceptibility measurements on a cave sediment sequence for the first time in Hungary.

The different types of cave deposits have been well separated by this method. To explain the proper section of MS-curve grain-size analysis, CaCO<sub>3</sub>- and humus content were determined. We supplemented the complex investigation of the cave deposit of "Anthropozoic" period with the result of archaeological research. The paleoenvironment and the development of the sediment sequence should be drowned by the multi-lateral analysis of the profile of the cave deposits..

Now we are standing on a crossroad. . .

Our future aim is the reconstruction of the Late Pleistocene climate changes based on the correlation of the local MS-curves and possibly later to create the main curve of Carpathian Basin and to correlate this with other records (e.g. MS-profile of Chinese Loess Plateau, marine  $\delta^{18}\text{O}$ -curve).