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**CONGRESS
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CONGRESS
PROGRAMME
AND ABSTRACTS



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LABORATORY EXPERIMENT ON ASSOCIATION OF RARE EARTH OXIDES TO DIFFERENT AGGREGATE SIZES – PRELIMINARY STUDY OF A FIELD SCALE RESEARCH ON SEDIMENT REDISTRIBUTION DUE TO EROSION

Author: *Adrienn Tóth**, Research Center for Astronomy and Earth Sciences, Hungary

Keywords: rare Earth elements, tracers

Abstract: Laboratory and field studies of soil erosion on arable lands have several decades of tradition, our knowledge on the right place of origin of eroded sediment is still limited resulting in gaps in controlling soil loss and its associated nutrient and pollutant transport, as well as in developing appropriate watershed management tools. Quest for spatially distributed erosion data has directed scientific interest to the development of tracing methods. Due to their advantageous characteristics, rare earth elements (REEs) have already been successfully used as multi-sediment tracers, but up to now under field conditions without gaining information on soil redistribution along the studied slope profile.

The primary goal of my research will be to investigate and track sediment redistribution along the slope in field scale, in a multi-year period. Data received from this experiment will help in a good understanding of the tracer redistribution along the tagged slope profile, which could be the key for reducing the uncertainty associated with the conversion of tracer concentrations into erosion rates.

At the beginning of the experiment a very important consideration was the selectivity in REE binding to soil aggregates of different sizes. For this reason REE analysis had to be carried out also on separated samples for different aggregate sizes. The laboratory experiment was carried out after the suggestions by Zhang et al. The present paper shows the results of this preliminary laboratory experiment of the starting field study.

P45 TERRESTRIAL CLIMATE ARCHIVES IN EURASIA

Organizers: *Erzsébet Horváth, Farhad Khormali*

Location: Room I

SLOT1

Chair: *Erzsébet Horváth*

Schedule: Tuesday, 1 September, 15:00–16:45

GRANULOMETRIC PROPERTIES OF AEOLIAN DUST DEPOSITS IN THE CARPATHIAN BASIN

Authors: *György Varga**, Research Centre for Astronomy and Earth Sciences (HAS), Hungary; *János Kovács; Zoltán Szalai*, Eötvös Loránd University / RCAES HAS, Hungary; *Gábor Újvári*

Keywords: aeolian dust, loess, pleistocene

Abstract: Granulometric features of aeolian dust deposits are holding important information on past environmental conditions. On one hand, grain size properties are dependent on wind strength, distance(s) from source area(s), dust transportation/depositional processes and post-depositional alterations. On the other hand, the applied methodological approaches have also important effects on grain size distributions (GSDs), and their interpretations. Samples were collected from Hungarian red clay – loess – paleosoil series, which were analysed using a Malvern Mastersizer 3000 laser diffraction particle sizer, a Fritsch Analysette 22 Microtec and a Horiba Partica La-950 v2 instrument to investigate possible effects of the used laser sources with different wavelengths. Various optical settings of the instruments were employed to analyse the effects of applied refractive and absorption indices on the finer particle fractions. The GSD curves of most of the investigated aeolian sediments were polymodal, illustrate various transport and depositional processes, and can be interpreted as sedimentary mixtures. Grain size populations can be partitioned from each other using different mathematic techniques, like parametric curve-fitting and end-member modelling. The GSDs of loess and paleosoil samples could be easily distinguished from each other, while differences towards the older deposits are continually decreasing, indicating smaller amplitude variations in the climatic and depositional systems and/or more intense post-depositional alterations of glacial deposits. Support of the Hungarian Research Fund OTKA under contracts PD108708 (for G. Varga) and PD108639 (for G. Újvári) are gratefully acknowledged. It was additionally supported (for G. Varga) by the Bolyai János Research Scholarship of the Hungarian Academy of Sciences.

PALEOSOLS OF THE HUNGARIAN LOESSES

Authors: *Erzsébet Horváth**, Eötvös Loránd University, Dept. of Physical Geography, Hungary; *Gabriella Barta*, Eötvös Loránd University Faculty of Science, Department of Physical Geography, Hungary; *Balázs Bradák; Ágnes Novothny*, Eötvös Loránd University, Hungary

Keywords: aeolian dust, aeolian loess, climate change, loess, oSL dating, pleistocene

Abstract: Hungary is situated in the middle of the European Loess Belt characterized with thick loess, which covers almost 1/3 of its territory. The loess formed during the colder and dryer periods of the Quaternary, while during the warmer and more humid interglacials and interstadials the soil formation took place. As a result of the alteration of these periods huge loess paleosol series formed and preserved the traces of the environmental changes. The analysis of paleosol horizons is very useful for the environment reconstructions, because various soil types developed under different conditions. However the diagnostic horizons of these later

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