*Engelhardia*) and in the lower part of the profile changes in low sporomorphs concentration (Pinaceae) are recorded opposite to higher percentages of halophytes (Chenopodiaceae) and dinoflagellates. Ostracods, benthic foraminifera, molluscs, charophytes, fish remains and pollen have been recovered. Palaeomagnetic sampling was also performed and all samples display a normal polarity. The ostracod assemblage is characterised by the alternate dominance of *Cyprideis* sp. and *Ilyocypris* spp., with *Leucocythere* sp., *Zonocypris membranae quadricellae*, *Heterocypris salina* and *Candonidae* as accompanying species. The benthic foraminifera appear suddenly in the *Cyprideis* dominated samples and disappear as much abruptly. *Quinqueloculina*, *Miliolina Trisegmentina* and *Varidentella*, tolerating hyperhaline conditions, dominate the foraminiferal assemblage. Species rapidly increase in size with aberrant coiling up to top of profile. In the lowermost part of the profile, abundant exemplars of *Perfocalcinella fusiformis* and Palaeogene and Cretaceous redeposited calcareous nannofossils were recovered. Foraminifera and calcareous nannoplancton presence in the lower part of the profile provide two hypotheses about this sequence origin.

## Seismic anisotropy and deformation patterns in upper mantle xenoliths from the central Carpathian-Pannonian region: indications for a collision driven asthenospheric flow?

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The Cenozoic geodynamic evolution, including basin formation, volcanism in the Carpathian-Pannonian region (Central Europe, CPR for short), has been interpreted in many different ways. A review is presented on deformation patterns in mantle xenoliths from the central part of the Carpathian-Pannonian region and seismic anisotropy data which appear to support the existence of an E-W directed asthenospheric flow underneath the study area. The E-W oriented asthenospheric flow and accompanying horizontal extrusion of lithospheric blocks from the Alpine orogen, as well as extension was the result of the collision between the European and Adriatic units in the Eocene. The eastward directed asthenospheric flow may be an additional driving force to the previously proposed slab-rollback and gravitational instability models for the formation and deformation of the Carpathian-Pannonian region. The existence of such a flow beneath the CPR may also generally confirm that the asthenosphere does not only have a passive role in tectonically active zones (i.e., orogen belts) but can be an important driving-force for the formation of marginal basins.

## Late Neogene red clay in the Carpathian basin and its paleoclimatological implications

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The red clays in Hungary (Tengelic Red Clay Formation: TRCF; Kerecsend Red Clay Formation: KRCF) is overlain by loess paleosol sequences. The thickness of the red clay (in general) ranges from 4 to 90 m. The red clay sediments in the Carpathian basin are known from both exposures and boreholes. The age of these formations is ~3.5–1.0 Ma. Elemental oxide analyses of red clays were determined by x-ray florescence (XRF), and x-ray powder diffraction (XRD) was used for mineral identification. The degree of chemical weathering in soils by hydrolysis increases with available precipitation and temperature. Both water and