

tensor (HMT) obtained from the observed induction vectors. The electrical model of the Carpathian region is presented and discussed in relation to other geophysical data available and with respect to the basic regional geological units. The modelling allowed us to constrain both the geometry and electrical properties of the anomalous electrical structures beneath the Carpathians. The models show significant spatial variability of the geometry of the Carpathian conductivity anomaly along the Carpathian arc. Particularly, according to the modelling results the maximum width of the electrically anomalous zone reaches 50 to 60 km and the depth of the crustal conductors varies between 10 and 30 km in the West Carpathians and between 6 and 25 km in the northern and eastern part of the Carpathians. A special character of the induction vectors is observed in the western part of the Carpathian region where it makes contact with the Variscan structures of the Bohemian Massif and shows a complex 3D structural pattern generated most likely by a couple of pronounced but discordant anomalous induction features.

An integrated study on the Late Miocene Tuğlu formation – palaeoecological, palaeoclimatic and palaeogeographical interpretation (Çankiri Basin, Central Anatolia, Turkey)

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Within the framework of the EUROCORES Topo-Europe programme the VAMP (Vertical Anatolian Movements Project) Project, an international and interdisciplinary research team (APVV-ESF-EC-0009-07 and IGAG-CNR TA.P05.009.003) has achieved detailed sampling and study of key stratigraphic sections in the Çankiri Basin (Central Anatolia). Ostracods, benthic foraminifera, nannoplankton, charophytes, molluscs, fish remains, palynomorphs and micromammals have been recovered from the 21m thick Tuğlu section. Biostratigraphy based on small mammals is still in progress, because new data from VAMP sampling during last year point to an age of rodent assemblage (MN7-8) older than the previously published data (MN10). The rodent assemblage composition is characterized by the dominance of *Byzantinia* cf. *bayraktensis* and unusually diversified Gliridae (genera *Myomimus*, *Myoglis*, *Muscardinus* and *Glirulus*). The genus *Myoglis* was not previously known from Anatolia. The less common taxa are *Democricetodon*, *Keramidomys* and *Spermophilinus*. The association of rodents from Tuğlu suggests humid and forested environment. Insectivores have not yet been processed. Both magnetic mineralogy and magnetic susceptibility analyses were carried out and the variations of magnetic parameters (SIRM, SIRM/k, IRM_{1/0.1}) along the section were studied. These parameters display a link with the distribution of freshwater ostracods probably related to humid climatic inputs. Most likely, the Tuğlu formation deposited in a continental setting characterised by permanent water bodies affected by strong salinity and depth oscillations. The molluscs from the middle and upper part of the section are characterised by terrestrial, freshwater and low-oligohaline gastropods and bivalves represented by the genera *Lymnaea*, *Bithynia*, *Melanopsis*, *Dreissena*, *Potomida* and Helicidae, showing alternating open land, lacustrine and fluvial conditions. A diversified charophyte assemblage (*Nitellopsis*, *Lychnothamnus* and *Chara*) confirms the existence of a permanent water body in the middle part of the section. Since dating is still in progress, it is difficult to estimate sedimentation rates and to distinguish seasonal or inter-annual salinity changes from changes in salinities due to other inputs. To better understand such oscillations, high-resolution sampling of a 350-cm-long section has been performed. The palynological record documents subtropical climate (*Cathaya*,

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 nannoplankton 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 fluorescence (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