

The morpho-tectonic structure of Kos-Nisyros-Tilos volcanic area based on onshore and offshore data

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The tectonic structure of the volcanic area among the islands of Kos, Nisyros and Tilos is analyzed using as topographic base a digital map covering both onshore and offshore areas. The classification of faults in major and secondary structures separating blocks with Alpine basement outcrops, post-Alpine sedimentary sequences, present-day marine basins and volcanic structures permitted the distinction of neotectonic units. Thus, several tectonic horsts are described with considerable relative uplift of 1-2 km manifested by the outcrops of Alpine basement rocks at high altitudes (Dikeos, Kefalos, Kondellioussa, Tilos). Several tectonic grabens are distinguished by the subsidence of neotectonic blocks at about 600 m depth and the deposition of several hundreds of meters of Quaternary sediments (the basins of Eastern Kos, Western Kos, Western Nisyros, Southern Nisyros and Northern Tilos). Some intermediate transitional tectonic blocks show step-like structures with tilted post-Alpine strata in between the tectonic horsts and grabens (Antimachia plateau, Zipari and Kos – Knidos channel). The Quaternary volcanic structures occur at the central subsided area of the regional tectonic graben between Kos and Tilos forming a positive volcanic relief of more than 1.4 km around Nisyros. The maximum tectonic throw observed between the neotectonic blocks of the area is about 2.5 – 3.0 km based on the displacement of the top of the Alpine rocks.

Detailed chronological and high resolution grain size, geochemical and palaeomagnetic study of the Sutto loess-palaeosol sequence, Hungary

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The loess-palaeosol record in Sutto, Hungary provides an excellent high-resolution archive for palaeoenvironmental changes of the Carpathian Basin. Loess deposits up to 20 m thick cover the Sutto travertine complex, located next to the right bank of the Danube River. The loess is intercalated by two greyish stratified horizons, three brownish steppe-like soils and a pedocomplex, including a reddish-brown palaeosol covered by a chernozem-like palaeosol.

Detailed infrared stimulated luminescence (IRSL) dating was carried out, revealing more or less continuous sedimentation from MIS 6 to MIS 2. Independent age control is provided by radiocarbon dating for the upper part of the profile, by amino acid racemisation (AAR) from the main loess units and by uranium-series (²³⁰Th/²³⁴U) ages correlating the travertine with MIS 7-8 from below the loess.

In order to reconstruct the palaeoclimatic and environmental changes during the penultimate and last glacial cycles, high resolution grain size, malacological, geochemical (bulk carbonate stable isotope composition and n-alkanes) as well as palaeomagnetic analyses have been performed, which provides a high-resolution record of the Sutto loess-palaeosol sequence.