

composition of the middle Miocene hominoid bearing assemblages indicates closed environment with warm/humid conditions, while during late Miocene the environment was relatively open/dry. The analysis and comparison of the hominoid bearing mammal assemblages with other Eurasian middle and late Miocene ones, as well as with modern faunas from known environments indicate that all the European middle Miocene faunas and the Vallesian ones of Western Europe can be correlated to the modern closed assemblages (tropical/subtropical forests, seasonal forests) indicating similar palaeoenvironment. On the other hand, all the late Miocene with or without hominoids assemblages of Eastern Mediterranean (except Udabno I) are correlated with the modern open assemblages suggesting relatively open landscape with warm and dry conditions (wooded savannah, savannah with shrubs, savannah with grass). The habitat of *Griphopithecus alpani* and *Kenyapithecus kizili* was similar to that of a monsoon forest with meadows. The hominoids *Ankarapithecus metei*, *Ouranopithecus macedoniensis*, *Ouranopithecus turkae* and the Chirpan hominoid were living in open landscape (savannah with trees, bushes, shrubs and grass) under warm/dry conditions. The palaeoenvironment of *Udabnopithecus garedziensis* seems to be more closed and humid than the other late Vallesian ones and closer to that of the middle Miocene assemblages.

Late Miocene Carnivores from the Greco-Iranian Province: comparisons, guild structure, palaeoecology

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The Greco-Iranian Province (Balkans, Turkey, Iran and Afghanistan) includes numerous mammal localities, which provided a significant number of carnivores. Although there are several taxonomic studies concerning them, their guild structure and relationships were never studied in details. The present study is a preliminary effort to give some data about their relationships, guild structure and their palaeoecology

The carnivores of the studied area are separated in groups, including the taxa of each MN zone of the Greco-Iranian Province. The faunal similarity of the defined groups is analyzed, indicating that Vallesian (MN-9 and MN-10) assemblages are well separated from the Turolian (MN-11 and MN-12) ones. Their faunal similarity is low, suggesting different taxa. The MN-13 assemblage is separated from the others due to its limited faunal data.

The guild structure (comparing body mass, locomotor pattern and diet class) of each MN assemblage is also studied and the diagrams indicate differences between the Vallesian and Turolian carnivoran assemblages. The absence of arboreal forms in all assemblages, as well as the relative abundance of the hyaenids and the cursorial forms suggest a possible open environment. The multivariate analysis of the studied carnivoran assemblages in comparison with the recent ones from known environments confirms their open character. These palaeoecological results fit quite well with the known palaeoenvironmental conditions of the Greco-Iranian Province.

Preliminary results of the palynological investigation of the Toarcian deposits of Ionian Zone (Western Greece)

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In this study we present preliminary palynological data from Lower Toarcian deposits of the Ionian Zone (Western Greece). The Ionian Zone belongs to the external Hellenides and during the Mesozoic constituted part of the southern Tethyan margin. The initially shallow

carbonate platform of the Ionian Basin began to break up in the early Pliensbachian. The first deepening of the basin has been recorded in Siniais Limestones that are followed by Posidonia Beds. The occurrence of macroremains of the conifer *Brachyphyllum nepos*, together with geochemical and palynological studies of Toarcian deposits of the Ionian Zone, suggested the presence of a tropical biome in the broader area.

The 20-m outcrop examined (Toka section) begins in the upper part of the Siniais Limestones and continues into the lower part of the overlying Posidonia Beds. In the studied deposits previous research has documented the local expression of the global Toarcian Oceanic Anoxic Event. The Early Toarcian Oceanic Anoxic Event has been associated with exceptionally high rates of organic-carbon burial, marine anoxia to euxinia, sea transgression, high palaeotemperatures and mass extinction and is generally considered as a significant climatic driven event.

Palynological investigation of the deposits aims to contribute further to our knowledge about the Toarcian palaeoenvironmental conditions, while the resulting dataset is an additional contribution to the Jurassic biostratigraphy of the Ionian Zone. Most studied samples yielded a considerable amount of palynological residue, including moderate diverse and fairly well preserved palynomorph assemblages of pollen, spores and dinoflagellate cysts. Additionally in palynospectra from organic rich horizons a significant quantity of amorphous organic matter has been recorded.

Fission-track constraints on the thermotectonic evolution of the Apuseni Mountains (Romania)

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The Apuseni Mountains, located inside of the Carpathian arc and bounding the Transylvanian basin to the west, constitutes the largest outcropping part of the Tisza block. This crustal fragment consists of a stack of several nappe sequences formed in response to continental collision, which followed the closure of the Neotethys Ocean. The northwestern part of the Apuseni Mountains represents a coherent nappe sequence consisting of the Bihor and Codru nappe systems. The tectonically highest Biharia nappe system, previously considered as part of Tisza plate, is attributed to the Dacia Mega-Unit. The assignment of the Biharia nappes to Dacia is made on the basis of the fact that both structurally underlie the obducted remnants of the Neotethys (Transylvanian Ophiolitic unit) leading to the assumption that an oceanic suture needs to be placed between Biharia nappe system and the Tisza block.

The main high-grade metamorphic event in the basement rocks, outcropping in the Apuseni Mountains, is of pre-Mesozoic age because the metamorphics are covered by Triassic or Jurassic non-metamorphic sediments. The first Alpine tectonic event was probably related to the obduction of the Eastern Vardar Ophiolitic unit (Transylvanides) onto parts of the Dacia Mega-Unit (Biharia) in the latest Jurassic. This was followed by late early-Cretaceous final closure of the Neotethys remnants and the collision between Tisza and Dacia blocks producing top-E nappe stacking. The final emplacement of the nappes in the Apuseni Mountains involving top-W to NW superposition of the Biharia, Codru and Bihor nappe systems did not occur before Turonian time as documented by the late Turonian “Gosau” unconformity. Subsequent compressional deformations in the area are reported for the end of the Cretaceous and the Eocene.

The Jurassic volcanics of the Transylvanides and their sedimentary cover, as well as the underlying Baia de Aries nappe (the highest structural unit of the Biharia nappe system) exhibit late early-Cretaceous zircon fission-track (FT) ages (Aptian and Albian, 120-103 Ma). The more westerly and structurally lower units (Biharia nappe of the Biharia nappe system, Codru and Bihor nappe systems), however, exhibit Late Cretaceous (Turonian to Campanian, 95-71Ma) zircon FT ages. The late early-Cretaceous zircon FT ages from the Baia de Aries nappe, together with the Jurassic ophiolites and their sedimentary cover, suggest that these rocks must have been buried to a minimum of 8 km during this time. Such associated