2) During the Middle-Late Triassic, the uprising of primitive asthenosphere led to the generation of the Tethyan oceanic lithosphere. This stage is associated with the formation of: (a) N-MORBs derived from ~10-20% partial melting of primitive asthenosphere; (b) alkaline WPBs most likely erupted in seamounts or off-axis areas; (c) E-MORBs generated from ~12% partial melting of primitive asthenosphere influenced by the OIB-type component. The residual MORB mantle is represented by the depleted lherzolites cropping out in the EOa.

3) From the Early-Middle Jurassic, the tectonic regime was dominated by intra-oceanic convergence associated with the development of MTBs and IATs which derived respectively from ~10% and 10-20% partial melting of the MORB residual mantle with variable addition of subduction components. Afterwards, the progressive slab roll-back led to mantle diapirism and incipient intra-arc spreading associated either with 10-20% partial melting of the MTB and IAT residual mantle (harzburgite) or with ~30% partial melting of the MORB residual mantle (depleted lherzolite), both enriched in LREE by subduction-derived fluids. These partial-melting events produced the boninitic magmas in both fore-arc and inner arc and left, as residual mantle, the depleted harzburgites which are commonly found in the EOa, EOb and IOa.

4) During the Late Jurassic, a magmatic arc developed onto the Eurasia continental realm, leading to the formation of CAB rocks by ~15-20% partial melting of depleted peridotite mantle significantly enriched in Th and LREE by subduction-derived fluids. Soon after, extension in the back-arc region led to the uprising of primitive (MORB-type) asthenosphere, which was enriched in Th and LREE by the nearby subduction. 10-20% partial melting of this mantle source produced the BABBs cropping out, with CAB intercalations, in the IOb.

Reconstructing prehistoric landscapes in tectonically active regions: the Corinth and North Evia prehistoric lakes during LGM

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The Aegean and Ionian regions are known as tectonically and seismically very active areas and are characterized by frequent earthquakes and fault rupturing. In Central Greece particularly, the active neotectonic basins of the Gulf of Corinth and the North Evia Gulf undergo strong crust deformation under high strain rates during Pleistocene – Holocene, as indicated by vertical (uplift or subsidence) movements along their margins. The superposition of long-term vertical tectonics on the effect of the successive sea-level changes has produced a remarkable relief composed of uplifted marine terraces and submerged terrestrial landscapes.

Both the Gulf of Corinth and the North Evia Gulf are connected to the Ionian and Aegean Sea respectively through narrow and shallow straits. Maximum depth in the straits does not exceed 65-70m. Systematic high resolution seismic profiling, swath bathymetry and gravity piston coring have shown that both marine basins were isolated lakes when the sea-level was about 120-125m lower than the present one during the last glacial maximum(LGM). AMS radiochronology data have shown that sea water entered the lakes about 13-14kyrs before present, when sea-level rise drowned the shallow straits. The prehistoric landscapes which surrounded the LGM lakes became submerged and subject to tectonic movements and marine sedimentation.

The coastline of the LGM Corinth lake has been detected in seismic profiles from the northern margin of the Gulf at -90 m below present sea level. Geological data show that the northern margin of the Gulf subsides at 0.7-1.0 m/kyr while the southern margin emerges at 1.0-1.3 m/kyr. Consequently, the coastline of the LGM Corinth lake should have been initially at 77-80 m below present sea level. On the uplifting southern margin of the Gulf the coastline of the lake has not been detected yet but is expected to have emerged at about 65-70 m below present sea level since the incursion of sea water.

The water level of the LGM North Evia lake has been found in seismic profiles at about 90 m below present sea level. Vertical tectonic movements are evident around the Gulf but have not been quantified yet, so the initial lake level can not be determined precisely. Holocene sedimentation in the Gulf is mainly depended on the fertile clastic material supplied by rivers which drain the surrounding mountains. The submerged prehistoric landscape is covered be marine sediments, their thickness being up to 40 m off the outflow of rivers along the southern margin. Limited sedimentation areas or even relict landscapes have been mapped away from river mouths.

Thorough evaluation of the seismic data and sedimentological and laboratory analyses of the sediment cores are essential for the precise reconstruction of the submerged prehistoric landscapes around the Corinth and North Evia lakes during the last glacial maximum and early Holocene. Vertical tectonic movements and sedimentation rates need to be quantified and considered for the final paleo-morphological reconstruction.

Preliminary results of provenance analyses of exotic magmatic and metamorphic rock pebbles from the Eocene flysch deposits of the Magura nappe (Krynica facies zone, Polish Outer Carpathians)

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During the Late Cretaceous to Palaeogene, the Magura Basin was supplied by clastic material from source areas situated at the northern and southern margins of the basin, which are presently not outcropped at the surface. The northern source area is traditionally connected with the Silesian Ridge, whereas position of the southern one is still under discussion. The south-Magura source area supplied the Eocene pebbly paraconglomerates containing partly exotic material. The studied clastic material contains fragments of igneous and metamorphic rocks, derived from a continental type of crust, and frequent clasts of Mesozoic to Palaeogene deep and shallow-water limestones. Volcanites, rarely granitoids as well as schists, gneisses, quartzites and cataclasites were found in the group of crystalline exotic pebbles. Monazite ages of "exotic" pebbles from the Tylicz and Piwniczna-Mniszek sections document the Variscan age of metamorphic rocks. The provenance of these exotic rocks could be connected with the Eocene exhumation of the SE sector the Magura Basin basement or by supply of crystalline material from remote SE source area (Dacia and Tisza mega units).

The seasonal variations of ultraviolet radiation result in changes of human serum bone turnover markers

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Vitamin D is recognized as the sunshine vitamin playing a vital role in maintenance of skeletal health. Vitamin D status depends on latitude, as vitamin D3 is synthesized in the skin under the influence of UV irradiation from the sun mainly during spring and summer. Biochemical markers of bone turnover can be classified according to the process that underlie in markers of bone formation, [bone ALP, osteocalcin] and markers of bone resorption, [pyridinuim crosslinks, collagen I C- and N-terminal telopeptides (CTX-I and NTX-I)].