

(superterrane), as well as the southern edge of Sp are characterized by manifestation of polymetamorphism, though in various terranes, separate stages of regional metamorphism established by geological observation, but mostly confirmed by isotopic-geochronological data (K-Ar, Ar-Ar, Rb-Sr, U-Pb, Sm-Nd), became unequally apparent. For instance, Grenville regional metamorphism is observed only in GC (T-700-750°C, P-3.2-3.5kbr), BC (T -600-700°C, P-3.2-3.5kbr) and IA (T -500-550 °C, P-3.8kbr) terranes, whereas the Baikalian - only in Sp (T-300-400°C, p-6_5-s_51<bf) and IA (T-460°C, P-4kbr) terrane. Late Baikalian metamorphism took place only in GC (T -430-540°C, P-3.3-3.5kbr) and BC (T -540-570°C, P-2.5kbr) terranes. Caledonian regional metamorphism strictly characterizes Sp (T 700+-50°C, P-17.8+-4kbr) and GC (T -500-620°C, P-2.2-2.8kbr) terranes. Early Variscan (Bretonian) metamorphism is observed almost in all terranes of the Caucasus: GC (T -350-630°C, P-1.35-2.7kbr), BC (T -320-380°C, P-1.5-1.8kbr), BS (T -330-550°C, P-1.5-2.6kbr) excluding IA terrane, and southern edge of Sp. Late Variscan metamorphism also comprises almost the whole Caucasus (T <4 30°C, P< 1.4kbr) excluding Sp and IA terranes. Within separate terranes, as well as in Sp, synchronously or almost synchronously with principal stages of metamorphism (connected with main phases of tectogenesis) formation of pre-syn- and postmetamorphic granitoids of different type took place. Based on a vast analytical material concerning the petrogenic and rare elements in pre-Alpine granitoids of the Caucasus, it is established that the Neoproterozoic granitoids, occurring in all terranes excepting SP, are represented mainly by the crustal and upper crustal formations of the subduction mantle-crust and mantle island arc categories.

The Late Baikalian granitoids are developed in GC and BC only. They are represented by the subduction mantle-crust and crust-anatectic categories. The Caledonian granitoids, cropping out only on SP, are represented by the subduction mantle-island arc formations formed with participation of the mantle and lower crustal material, and also subduction granitoids emerging due to melting of the immature continental crust. The Bretonian granitoids appear only in GC and BS. Granitoids of GC as whole correspond to the upper crustal granitoids of the other regions of the world, whereas the granitoids of BS are represented by the subduction formations of the mixed mantle-crust category; sialic part of the continental crust has an insignificant role during their formation. The late Variscan (Sudetic) granitoids are present in all terranes, excluding IA. The Sudetic orophase is the time of post-metamorphic potassium granitoid formation and consequently of true continental crust. The Sudetic granitoids of all exposures are characterized by similar composition, petrogeochemical parameters and geodynamic conditions of formation. Their major part corresponds to the upper crustal formations, and the minor part - to the common crustal ones. The observed occurrence of different age and diversity of endogenic activity in various terranes of the Caucasus show asynchronism of episodic activity of subduction zones on different sides of oceanic basins separating these terranes.

Geomorphological and geological observations at the coast of Tripiti Hill (Heraklion Harbour, Crete), in relation to reported active faulting

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Heraklion is a fast-growing urban centre where knowledge of active faulting is necessary for city planning and infrastructure projects. Neotectonic faults (not all necessarily active at present) most probably traverse the built-up coastal part of Heraklion, but they require subsurface geological and geophysical studies to be precisely located and characterised. In the frame of a research project assigned to the Institute of Geodynamics by the Heraklion Municipality, we made detailed geomorphological and geological observations in the coastal area of the Tripiti Hill, where previous workers report a NNW-SSE trending, WSW-dipping, presently active normal fault crossing the port of Heraklion as well as a

densely built-up part of the city. Based on our observations, we conclude that this fault does not exist. In support of our conclusion, we discuss: (1) the nature of a steep contact between Neogene bedrock and Quaternary deposits exposed at a roadcut along the coastal avenue, (2) the depositional environment of Quaternary deposits at the above outcrop and surrounding area, (3) the buried relief and stratigraphic features exposed in a trench excavated by previous workers across the alleged fault trace, and (4) the geomorphological context of coastal deposits and marine terrace remnants used by previous workers for fault slip rate estimation. This case study is presented as a vivid example of the importance Geomorphology and Quaternary Geology have in studies of active faulting.

Geochemical and climatic parameters of environment versus isotopic composition of travertine in northern Slovakia

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Isotopic studies on carbonates and lake sediments are a major source of paleoclimate and paleoenvironment data from continental records. Studies on recently deposited travertines from Northern Slovakia were basis for correlation of isotopic record with recent climate changes.

Many sites with presently deposited travertine are located in North Slovakia and they annual sedimentation rate is up to several tens of centimetres. The geochemical and isotopic measurements give possibility to precise description of deposition process and its relation to air and water temperatures. This was useful for revision of paleotemperature records obtain from fossil travertines in the region.

Two sets of data were collected for realisation of the project: water samples of stream flows through travertines cascades and samples of travertine. Actinide activity and stable isotope composition were measurement for both sets of data.

The results point to: (1) a high sedimentation rate of travertines – 1 mm of sediment is deposited during 2-4 days, (2) a high activity of actinides in water and travertine samples, (3) changes of actinides' activity during the year, probably related to changes in metabolism of algae growing in travertine cascades, (4) no correlation between oxygen isotopic composition and changes in air temperature in annual scale.

Persistent synmetamorphic thrusting in the Rhodope until 33 Ma: evidence from the Nestos Shear Zone and implications for Aegean geodynamics

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The Nestos Shear Zone (NSZ), mostly on the Greek territory, is recognized as one of the major structures of the Rhodope Metamorphic Complex (RMC). It consists of a thick NNE-dipping pile of mylonites with top-to-SW kinematics encompassing the contact of the 'Sidironero Unit' (SU) onto the 'Pangaeon Unit' (PU, the lowest exposed unit of the RMC). For most authors, the top-to-SW shear fabric of the NSZ reflects synmetamorphic thrusting.