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

Gasiorowski M.[1], Hercman H.[1], Gradzinski M.[2], Smosna P.[2], Czop M.[3] and Motyka J.[3]

[1]*Institute of Geological Sciences, Polish Academy of Sciences, Research Centre in Warsaw, Twarda St. No. 51/55, Warsaw, PL-00-818, mgasior@twarda.pan.pl*
[2]*Institute of Geological Sciences, Jagiellonian University, Oleandry 2a, 30-063 Krakow*
[3]*Institute of Geological Sciences, Jagiellonian University, Oleandry 2a, 30-063 Krakow*

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

Gautier P.[1], Gerdjikov I.[2], Ruffet G.[1], Bosse V.[3], Cherneva Z.[2], Pitra P.[1] and Hallot E.[1]

[1]*Université Rennes 1, Géosciences Rennes, UMR 6118 CNRS, Campus de Beaulieu, 35042 Rennes, France, pierre.gautier@univ-rennes1.fr, gilles.ruffet@univ-rennes1.fr, pavel.pitra@univ-rennes1.fr, erwan.hallot@univ-rennes1.fr*
[2]*Sofia University "St Kliment Ohridski", 15 Tzar Osvoboditel Blvd, 1504 Sofia, Bulgaria, janko@gea.uni-sofia.bg, cherneva@gea.uni-sofia.bg*
[3]*Université Blaise Pascal, Laboratoire Magmas et Volcans, UMR 6524 CNRS, 5 rue Kessler, 63000 Clermont Ferrand, France, V.Bosse@opgc.univ-bpclermont.fr*

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.

The main argument is the report of an inverted metamorphic gradient across the shear zone. As it is described in the literature, however, this gradient remains difficult to interpret. In contrast, for other authors, top-to-SW shearing across the NSZ reflects extensional shearing. This view relies on the apparent structural continuity and the consistency of fabrics between the NSZ and a domain of Neogene ductile extension further southwest. Based mostly on K-Ar Hbl ages, it is usually argued that shearing across the NSZ persisted until ca. 37 Ma. If so, support to the second interpretation may be found in the growing number of studies suggesting that post-orogenic extension started in and around the RMC during the Eocene or before.

We carried out a structural, petrological and geochronological (U-Pb and ^{39}Ar-^{40}Ar) study of the NSZ. Inverted metamorphism is confirmed and is found to be coeval with top-to-SW shearing. The whole SU (including its base, overlapping with the NSZ) experienced the conditions of advanced partial melting at T > 650°C. Leucosomes that locally crosscut the main fabric crystallized between ≥ 50 and ca. 40 Ma (U-Pb zircon and monazite ages), just before cooling of the metamorphic pile. This shows that at least part of the migmatization is not an old event but is part of the syn-shearing metamorphic evolution. In contrast, rocks of the PU right beneath the SU do not show any evidence that they ever reached the conditions of anatexis. In orthogneisses, microstructures document amphibolite facies shearing. Although relatively rare, metabasites and Grt-bearing micaschists keep the record of a prograde metamorphic path culminating at T ≤ 620°C (at P ~ 8-10 kbar). Thus, higher-grade rocks were emplaced onto lower-grade rocks during top-to-SW shearing, attesting for synmetamorphic thrusting along the NSZ. Hornblende ^{39}Ar-^{40}Ar single-grain plateau ages from the NSZ are between 39 and 37 Ma, which we interpret as dating amphibolite facies shearing. Later strain increments have produced greenschist facies mylonites and ultramylonites subconcordant with the earlier fabric and with identical kinematics. White mica ^{39}Ar-^{40}Ar single-grain plateau ages from these rocks are between 36 and 33 Ma, which we interpret as dating mylonitization. With respect to peak conditions in the PU, this deformation occurred at lower grade conditions, therefore inverted metamorphism cannot be invoked in this case. Nevertheless, several lines of evidence indicate that this deformation reflects thrusting as well. Consequently, our study documents persistent synmetamorphic thrusting along the NSZ as late as ca. 33 Ma. This is consistent with results obtained from the Chepelare Shear Zone, in the Bulgarian Central Rhodope (Gerdjikov et al., this volume), and contradicts the view that post-orogenic extension was already active in pre-Oligocene times in the northern Aegean. Our analysis of the RMC further indicates that post-orogenic extension did not start before ca. 27 Ma. Hence, it started at about the same time than it did further south in the Cyclades and Menderes region, at variance with the statement in some recent geodynamic syntheses. The picture arising from the RMC is consistent with a change in the geodynamic setting of the whole Mediterranean at around 30 Ma, from strongly compressional (i.e. Alpine collision) to a situation dominated by trench retreat and post-orogenic extension.

Biostratigraphy and palaeoenvironment of the Upper Cretaceous flysch sediments of the Mestia-Tianeti Zone of the Greater Caucasus Fold System

Gavtadze T.[1], Mikadze Kh.[2] and Chkhaidze Z.[1]

[1]*Department of Stratigraphy, Alexandre Janelidze Institute of Geology, 1/9 M.Alexidze st., 0171, Tbilisi, Georgia, tamaragavtadze@yahoo.com*
[2]*Institute of paleobiology, Georgian National Museum, 4 Niagvris st., 0108, Tbilisi, Georgia, xatmikadze@yahoo.com*

For the detailed stratigraphic division of the Upper Cretaceous sediments of the Zhinvali-Gombori subzone of the Mestia-Tianeti zone GCFS, and for specifying the volume and age of the formations, in the facies of Sadzeguri-Shakhveli and Zhinvali-Pkhoveli nappes the sections of the Ksani and Aragvi river basins (the rivers Aleura, Sakanaphe, Arkala, Didi