



Metamorphic conditions and exhumation of the Kesebir-Kardamos dome – Rhodope Metamorphic Complex (Greece-Bulgaria)

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The Rhodope Metamorphic Complex (RMC) in northern Greece and southern Bulgaria is a synmetamorphic nappe pile that developed during the Alpine-Himalayan orogen. The nappe system is deformed and forms dome-and-basin structures that indicate syn- to post-convergent exhumation. High-pressure rocks showing variable degrees of retrogression occur in the intermediate high-pressure imbricate units. We document the deformation style and present new thermobarometric and geochronological constraints for the Kesebir-Kardamos dome in the eastern RMC in an attempt to comprehend the major mechanisms involved in the exhumation of high-pressure (HP) and high-temperature (HT) rocks. Thermodynamic modeling and thermobarometry applied to the high-grade rocks from the intermediate thrust sheets of the core of the Kardamos dome suggest peak conditions at 1.2GPa and ca. 750°C. U-Pb SHRIMP dating of zircons from rocks from the same unit reveals Early Cretaceous (144 Ma) as the time of the major metamorphic overprint whereas some zircon rims yield reset ages at Eocene times (53 and 44 Ma). Kinematic indicators from the imbricate units suggest a continuum from ductile to brittle conditions during exhumation. The exhumed high-grade rocks were covered by marine sediments soon after their exhumation (Lutetian-Priambronian?). Slumps in sediments suggest that sedimentation took place in a tectonically active environment. Our new structural, petrological and geochronological data suggest that the major shear zone in the core of the Kesebir-Kardamos dome is equivalent to the Nestos-Chepelare suture zone.