



40Ar/39Ar dating of subduction-related metamorphism in the Anatolide HP belt, W-Turkey: implications for the evolution of the Eastern Mediterranean

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In Eastern Mediterranean, throughout Mesozoic and Tertiary times, the closure of the Tethyan oceanic realm (between Eurasia and Gondwana) took place through the consumption of many oceanic basins and accretion of several continental blocks. The closure of a Neo-Tethyan oceanic branch in Western to Central Turkey resulted in the accretion of the Anatolide-Tauride Block, which is a continental fragment rifted away from Gondwana, to Eurasia. As a result, the northern passive margin of the Anatolide-Tauride Block was tectonized and metamorphosed between Late Cretaceous and early Tertiary. From the Aegean Coast to Cappadocia, over more than 700 km, subduction-related HP/LT metamorphism was evidenced in all the tectonic zones of the northern margin of this block, namely the Tavşanlı Zone, the Afyon Zone, the Ören Unit and the Mesozoic cover of the Menderes Massif. The age of HP metamorphism of the Tavşanlı Zone was estimated by radiochronologic methods to be middle Late Cretaceous. But in the other tectonic zones, only stratigraphic relations constrain the age of the HP metamorphic event around latest Cretaceous to Palaeogene times. Accurate isotopic ages would constitute strong clues for understanding the evolution of Western and Central Turkey and its correlation with the Aegean Domain. In the Afyon Zone, the Ören Unit and the Menderes Massif, Alpine HP/LT metamorphism was mainly evidenced by the presence of Fe-Mg-carpholite in Lower Triassic metasediments. White mica produced together with chlorite from the breakdown of Fe-Mg-carpholite can be dated by 40Ar/39Ar geochronology. A first trial bunch of mineral separates from the Ören Unit was irradiated and analyzed by 40Ar/39Ar dating method. It provided dates of around 67 Ma, which are coherent with the geological constrains. We made out a second, more complete bunch of both mineral separates (for CO2 laser step-heating) and rock chips (for in-situ UV laser ablation) of samples from the Afyon Zone, the Ören Unit and the Menderes Massif. The lab work on these samples is still in progress. Results and their implications on the understanding of the geodynamic evolution of Eastern Mediterranean will be presented in the General Assembly of the EGU in May 2010.