Geophysical Research Abstracts
Vol. 14, EGU2012-4882, 2012
EGU General Assembly 2012

Neotethys closure history of Anatolia: insights from new 40Ar-39Ar geochronologic data and mulit-equilibrium thermobarometry from blueschist-facies metasediments (Afyon Zone)

A. Pourteau (1), M. Sudo (1), P. Lanari (2), O. Candan (3), and R. Oberhänsli (1)

(1) Universität Potsdam, Institut für Geowissenschaften, Germany (pourteau@geo.uni-potsdam.de), (2) IsTerre, Université Joseph Fourier, Grenoble, France, (3) Department of Geological Engeneering, Dokuz Eylül Universitesi Izmir, Turkey

In the last past years, subduction-related metamorphism has been documented in three tectono-sedimentary units of West Anatolia (namely the Afyon Zone, the Lycian Nappes and the south-Menderes cover series), which were previously supposed to have undergone only greenschist-facies metamorphism, related to obduction and collision. These discoveries of high-pressure relicts reopened the discussion on Neotethys closure history of Anatolia, in particular due to the lack of accurate constraints on the timing of metamorphism.
We report new occurrences of Fe-Mg-carpholite in metamorphosed Triassic sediments all along the Afyon Zone, which indicate the entire unit underwent blueschist-facies metamorphism in a subduction zone. We further present new results of 40Ar-39Ar geochronology on potassic white mica from high-pressure metasediments from these three tectonic units. Geochronology was combined with multi-equilibrium thermochronology on quartz + chlorite $\pm$ white mica $\pm$ chloritoid, which allows unravelling the significance of the obtained isotopic age results (mineral growth vs. cooling ages). We show that high-pressure metamorphism occurred from 65 (in Central Anatolia) to 60 Ma (in West Anatolia) in the Afyon Zone and the Lycian Nappes, and around 45 Ma in the south-Menderes cover series. These new results indicate that the Afyon Zone and the metamorphosed Lycian Nappe belong to a continuous Maastrichtian-Danian high-pressure belt, and the southern Menderes cover represents the eastern ending of the early Eocene high-pressure belt exposed in the Aegean. We conciliate the new results and published multi-disciplinary data into a geodynamic reconstruction for the Late Cretaceous to Neogene time interval.