Geophysical Research Abstracts, Vol. 9, 05990, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-05990

Timing of subduction-related magmatism and metamorphism during the evolution of the Southeast Anatolian Orogen, Turkey

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The Southeast Anatolian Orogen (located along the Bitlis-Zagros suture zone) resulted from collision of the Afro-Arabian and the Eurasian plates following the Cretaceous to Miocene closure of the southern Neotethyan oceanic basin. In the Kahramanmaras-Malatya-Elazig regions (southeast Anatolia) there are number of tectonomagmatic entities in that are important in understanding the geological evolution of the southeast Anatolian orogenic belt during the Late Cretaceous. These are (a) the metamorphic massifs, (b) the ophiolites, (c) the metamorphic sole rocks and (d) the granitoids. The granitoids (with pluton compositions that range from gabbro, diorite, monzodiorite, quartzdiorite, quartzmonzodiorite, quartzmonzonite, granodiorite, to tonalitie) are located at Goksun in Kahramanmaras, Dogansehir in Malatya and Baskil in Elazig. The granitoid rocks intrude the Malatya-Keban platform, ophiolites and related metamorphic rock units in the region. The Late Cretaceous ophiolitic bodies of the southeast Anatolia are represented by the Göksun in the north of Kahramanmaras, Ispendere in Malatya and Kömürhan-Guleman in Elazig. Although the ophiolitic bodies have distinct features in terms of metamorphic grade, geographic distribution and absence/presence of a sheeted dyke complex, they are all originated as single, vast Late Cretaceous thrust sheet that was dispersed between the metamorphic massifs within the evolving Cretaceous-Miocene orogenic system. Metamorphic soles to the ophiolites commonly display inverted metamorphic zonation, with conditions that reached garnet-amphibolite facies to epidote-amphibolite facies. To further refine the interpretations of this region, we are applying ^{40}Ar-^{39}Ar geochronology to magmatic and

metamorphic assemblages. Our main targets in geochronologic research include: (a) the age of the oceanic crust, (b) the timing of intra-oceanic subduction/thrusting, and (c) the age of the Tauride active margin formation in the southern Neotethys.