Geophysical Research Abstracts, Vol. 9, 05991, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-05991

Petrologic constraints along the Arabian promontory

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Ophiolite complexes and associated ultramafic rocks are used to trace the sutures of the Tethyan realm between Western Anatolia and Iran. The Izmir-Ankara-Erzincan ophiolite belt separates the Sakarya Composite Terrane from the Taurid-Anatolide Units. To SE the Amanos-Elazig-Van ophiolite belt devides the Southeast Anatolian belt from the Taurid–Anatolide Units. Further to the East the suture is marked by the ophiolites separating Sanandaj-Sirjan metamorphic belt from the Zagros Belt. However, most of the ophiolites are non metamorphic. Thus they are related to obduction processes rather then to a suture.

In mafic rocks subduction-related metamorphism produces typically blueschists or ecolgites, while in aluminium-rich meta-sediments Fe-Mg-carpholite, chloritoid and kyanite characterise high-pressure metamorphism. The metasediments are prone to record the high-pressure and the exhumation history in great detail. Therefore for identifying and constraining positions of palaeosubduction/suture zones it is most promising to study blueschists and eclogites and the widely distributed high-pressure metasediments showing Fe-Mg-carpholite. Blueschist facies metasediments have been observed from the Aegean Coast (Lycian nappes/Menderes) through the Afyon Zone (S of the Tavsanli HP belt) and along the southern margin of the Central Anatolian Crystalline Complex to Bühyan in eastern Anatolia typically tracing a suture, which only recently has been described (Candan et al. 2005). We show that this suture is neither an equivalent of the Izmir-Ankara-Erzincan Zone nor of the Amanos-Elazig-Van Belt. Comparison with the Tavsanli Zone, where high-pressure metamorphism is dated as 80 ± 0.5 Ma (Sherlock et al., 1999) reveal that high-pressure metamorphic evolution most probably took place during Late Cretaceous.

Recently we observed Fe-Mg-charpholite in the Mesozoic Cover sediments of the Bitlis complex and blueschists from the Palaeocene-Miocene Maden-Hakkari-Çüngüs Unit. These high-pressure events are Alpine. Lithology of the Pan-African basement

rocks in the Menderes Massif in Western Anatolia differ from the lithology of the Bitlis Complex in Eastern Anatolia and show a different metamorphic evolution supporting the hypothesis of well separated terranes. The new observations of high-pressure metamorphism further constrain the subduction history in the front of the Arabian indenter.