Geophysical Research Abstracts,
Vol. 11, EGU2009-7395-2, 2009
EGU General Assembly 2009


# New U-Pb and Rb-Sr ages from northwest Turkey; Early Cretaceous continental collision in the western Pontides

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**Keywords:** Intra-Pontide suture, İstanbul Zone, Sakarya Zone, U-Pb zircon ages, Rb-Sr mica ages

We provide new isotopic data from the Intra-Pontide Suture Zone, which indicate Early Cretaceous collision between the Sakarya and İstanbul terranes following the consumption of the Intra-Pontide Ocean. The study area is located south of Sapanca Lake between the İstanbul and Sakarya terranes in northwest Turkey. These two terranes show different geological histories, as reflected in their stratigraphic record, and are juxtaposed along the Intra-Pontide suture. The new U/Pb zircon and Rb/Sr mica ages come from south of the Sapanca Lake, south of the North Anatolian Fault in northwest Turkey. The İstanbul terrane has a late Proterozoic basement (Chen et al., 2002; 570 Ma) overlain by a sedimentary sequence of Ordovician to Carboniferous age. The Sakarya terrane is characterized by Carboniferous (330-310 Ma) high temperature metamorphism (Okay et al., 2006), Paleozoic granitic plutonism (Topuz et al., 2007) and by the presence of Palaeo-Tethyan subduction-accretion units.

South of the Sapanca Lake, three main tectonostratigraphic units have been differentiated forming a northeastward dipping thrust stack. At the top of the thrust stack is an amphibolite-facies metamorphic unit consisting of an intercalation of amphibolite, metaperidotite, metapyroxenite and gneiss representing a Proterozoic metaophiolite in the basement of the Istanbul Zone. This old metaophiolite is underlain by a Cretaceous accretionary complex of metabasite, metachert, slate and serpentinite. The lowermost tectonic unit in the thrust stack is a metasandstone, slate, phyllite and marble unit metamorphosed in greenschist facies.

Our U/Pb geochronological data comes from the basement gneisses and the metasedimentary unit. The age of deposition and metamorphism of this metasedimentary unit were not constrained. The U/Pb ages of the clastic zircons from metasandstones are between 500-317 Ma. These new clastic zircon ages from the metasedimentary unit show that deposition of the sandstones must be later than Carboniferous (316±2,4 Ma).

The Rb-Sr muscovite and biotite ages from metasedimentary unit and the basement gneisses give Early Cretaceous (138-111 Ma) ages. The muscovite ages of metasandstones are 138±1,5 Ma represents the metamorphic age of metasedimentary unit and the biotite Cretaceous cooling age of 111,3±1,1 Ma from the reheating of the Proterozoic basement.

The new Rb/Sr ages indicate that the collision between the Istanbul and Sakarya terranes occurred during the Early Cretaceous.

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