

Preliminary Thermo-Chronometric and Paleo-Magnetic Results from the Western Margin of The Kırşehir Block: Implications for the Timing of Continental Collisions Occurred Along Neo-Tethyan Suture Zones (Central Anatolia, Turkey)

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Closures of Paleo- (largely Paleozoic) and Neo-Tethys (largely Mesozoic) Oceans developed between Europe, Africa and Arabia are the main driving mechanisms behind the post-Triassic tectonics, magmatism and metamorphism occurred in Anatolia. Although various scenarios have been suggested for the timing and characteristics of the subduction systems, it is largely accepted that these blocks are progressively collided and amalgamated along the northern (İzmir-Ankara-Erzincan suture zone; IAESZ) and the southern (Bitlis-Zagros suture zone; BZSZ) branches of Neo-Tethys Ocean. The geographic positions of these suture zones in Anatolia are marked by imbricated stacks of largely metamorphosed remnants of the Paleo- and Neo-Tethys Oceans. In addition to this tectonic frame, the existence of another suture zone within the northern branch of the Neo-Tethys separating the Kırşehir Block, a triangular (200km*200km*200km) continental domain represented by mainly high-pressure (HP) meta-sedimentary rocks, from the Taurides, is proposed and named as Intra-Tauride Suture Zone (ITSZ). Although traces of the Neo-Tethyan closure and continental collisions in the Central Anatolia are recorded (1) in sedimentary basins as fold and thrust belt developments (as northern Taurides fold and thrust belt along IAESZ and central Taurides fold and thrust belt along ITSZ), (2) on metamorphic rocks with Late Cretaceous to Late Paleocene peak metamorphism, and (3) on magmatic rocks with Late Cretaceous – Paleocene arc-related intrusions and post-Paleocene post-collisional magmatism, timing of these continental collisions are discussed in limited studies and furthermore they indicate a large time span (post-Paleocene to Miocene) for the collisions. This study aims to date continental collisions occurred in Central Anatolia qualitatively. In this regard, low-temperature thermo-chronometric and paleo-magnetic studies were conducted on the sedimentary units cropped-out along the western and north-western margins of the Kırşehir Block where two suture zones coincided (IAESZ & ITSZ). Although, thermo-chronometric studies have not been completely conducted, initial results consistently indicate Oligocene-Early Miocene continental uplift along the western margin of the Kırşehir Block. In keeping with thermo-chronometric results, paleo-magnetic samples (400 cores) taken systematically from upper Cretaceous to Miocene sedimentary units exposed along the IAESZ and ITSZ suggest that concentration of vertical block rotations are accumulated in Oligocene-Early Miocene time interval indicating the timing of main deformation events.

Based on the paleo-magnetic and low-temperature thermo-chronometric results, we propose that continental collisions along IAESZ and ITSZ in the Central Anatolia occurred during Oligocene - Early Miocene time interval which might also correspond to the commencement of continental deposition and the base of regional unconformities exposed in the region.