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How to define a suture: the Izmir-Ankara suture in the central Turkey

Okay, A.I.

Istanbul Technical University, Eurasia Institute of Earth Sciences, Maslak 34469 Istanbul, Turkey okay@itu.edu.tr

The Izmir-Ankara-Erzincan suture represents the trace of a major Tethyan ocean, which separated Laurasia (Pontides in Turkey) in the north from Gondwana (Anatolide-Tauride Block) in the south (Fig. 1). The Tethyan ocean, which separated the two megacontinents, existed from the Late Paleozoic (Carboniferous) until the early Tertiary; during the Mesozoic it subducted northward with the formation of magmatic arcs of Triassic, Jurassic and Late Cretaceous ages in the Pontides. Apart from these magmatic arcs, the Pontides bear the imprints of pre-collisional deformation and metamorphism related to the Triassic (Cimmeride), Jurassic and Cretaceous subduction-accretion events. The Tethyan ocean was finally closed, when the Anatolide-Tauride Block collided with the Pontides in the early Tertiary. Prior to the continental collision, the northern margin of the Anatolide-Tauride Block (the passive margin) was subducted in an intra-oceanic subduction zone and underwent high-strain deformation and blueschist facies metamorphism during the Late Cretaceous (ca. 80 Ma).

A segment of the Izmir-Ankara suture was mapped in Central Anatolia; it juxtaposes Triassic, Jurassic and Cretaceous accretionary complexes against the subducted continental margin of the Anatolide-Tauride Block. The accretionary complexes formed part the southern active margin of the Pontides, which grew southward over time. The present structure of the active margin, e.g. Pontides of Laurasia, is shaped more by Mesozoic subduction-accretion events than by the early Tertiary continental collision. Similarly the structures on the northern margin of the Anatolide-Tauride Block are predominantly of Late Cretaceous age and have formed during the continental subduction. The continental collision in the Pontides is marked by thin-skinned southward thrusting and by the deposition of Eocene turbidites.

A suture can be described as a tectonic line, which juxtaposes sequences deposited on either side of an ocean. In this sense, the Izmir-Ankara suture in Central Anatolia is marked by Early Eocene thrusts, which place Pontide sequences, including Triassic and Jurassic subduction-accretion units, over the former passive margin sequences of the Anatolide-Tauride Block. The deeper structure between the Pontides and the Anatolide-Tauride Block lies farther north and needs to be imaged by geophysical methods.

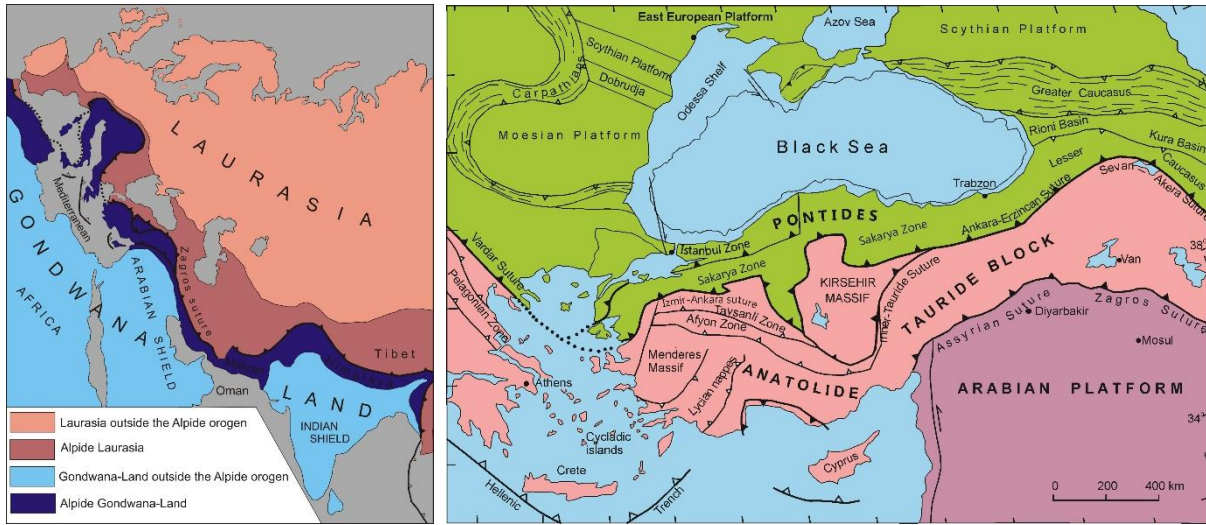


Figure 1: Alpid-Himalayan orogen (left) and tectonic map of Eastern Mediterranean-Black Sea (right)

