

Jason Price TO talk, 28 Jan 2014

Abstract: Over a three-week period in September 2013, I traveled with the Caltech enrichment trip, plus four additional days, from the Grecian mainland, across the Aegean Sea, into central Turkey. We observed four major tectonic provinces, including (west to east): (1) the Corinth rift, which is the product of very young (Pliocene-Recent) normal faulting. Recently acquired clumped isotope data from the Loutraki fault, at the east end of the Gulf of Corinth, show crystallization temperatures of calcite slickensides to be in the 53 to ~90°C range; (2) The Cycladic detachment system in the Aegean Sea, which exhibits Eocene-Miocene HP-LT metamorphism with subsequent exhumation from several 10s of km of depth within the crust along a series of detachment faults; (3) The Menderes massif, which has a convolute core of metamorphic rocks, including Pan-African (~550 Ma), Variscan (~300 Ma), and Alpine (50 Ma) eclogite-, granulite-, and amphibolite-facies gneisses and schists overlain by Miocene and younger arkosic sandstones and conglomerate. Exhumation of the metamorphic core has been accommodated by low- and high-angle normal faults that are contemporaneous with extension observed all across the Aegean region; finally, (4) the Ankara 'mélange', which comprises serpentinized peridotites and various ophiolitic blocks of gabbro, diabase, pillow basalt, and bedded chert, disconformably overlain by shelfal(?) carbonates and arkosic redbeds. Despite the name 'mélange', there is coherency to the blocks on the scale of 100s to 1000s of m, and more careful mapping is needed to reconstruct the geologic history. Nevertheless, I came away with the strong impression that at least some part of the Ankara mélange represents an oceanic metamorphic core complex, possibly formed during the middle Mesozoic (PaleoTethyan).