



The Miocene to Recent evolution of an active transform fault at the junction of Hellenic and Cyprus Arcs, eastern Mediterranean: the linkage between the western Antalya Basin and Finike Basin and Anaximander Seamounts

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A 100 km-wide transform ('STEP') fault zone separates the Hellenic and Cyprus Arcs at the convergent plate boundary of the eastern Mediterranean, where the African plate to the south is being subducted below the Aegean-Anatolian microplate to the north. The eastern edge of the transform fault zone is a N-S transtensional lineament which occurs at the shelf edge between the onland Bey Dağları mountains and the offshore Antalya Basin. The lineament runs northwards to the Isparta Angle in southern Turkey; and continues southwards to veer to the southwest through the Anaximander Seamounts to connect with the Strabo Trough. The Finike Basin lies immediately west of the transtensional fault zone, and south of the Turkish shelf. Its Pliocene-Quaternary sedimentary fill is trapped between the shelf and the Anaximander Seamounts, which appear to override it in a shallow-dipping north-verging thrust which carries the Sırrı Erinç Plateau.

Recent acquisition of around 1200 km of multi-channel seismic reflection profiles has enabled us to discern the relationships of the Finike Basin with the fault systems which bound it. Miocene thrusts verging to the south characterise the area, and many are reactivated in Pliocene-Quaternary time, accompanied by back thrusts (verging to the north) indicative of transpression. A north-verging thrust carries the Sırrı Erinç Plateau over the southern margin of the Finike Basin, and similarly-verging thrusts occur within the Basin. These, like the back-thrusts, are indicative of the (?)sinistral transpression that characterizes the STEP fault zone in Pliocene-Quaternary time.

The Finike Basin has similarities with the adjacent Rhodes Basin. It is a deep bathymetric feature (3 km water depth), underlain by over 2 km of Pliocene-Quaternary clastic sediment. Messinian evaporites are either absent or very thin. Rapid Pliocene-Quaternary subsidence of the Finike Basin appears to mimic that of the Rhodes Basin, and is interpreted as caused by flexural response to thrust loading of the Tauride mountains to the north.