



The Rhodes Basin: a deep Pliocene-Quaternary depression related to convergence at the junction of Hellenic and Cyprus Arcs

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The Rhodes Basin is a deep (4 km) seabed depression at the junction of the Cyprus and Hellenic Arcs in the eastern Mediterranean. It contains up to 1000 metres of Pliocene-Quaternary sedimentary fill, but lacks Messinian evaporites. Interpretation of ~1500 km of high-resolution multi-channel seismic reflection profiles shows that the basin evolved in two distinct stages. Miocene convergence resulted in the development of a SSE-verging fold-thrust belt. Rapid subsidence during the Pliocene-Quaternary was accompanied by sinistral transpression, often involving reactivation of the earlier structures. We suggest that the Rhodes Basin subsided in response to thrust loading of the western Tauride Mountains. Crustal thickening in the western Taurides is manifest in thrusts encountered in wells on land. 6 km of crustal thickening implies around 40 km of dip slip on the thrusts and can account for uplift of ~1 km of the onland Kasaba Basin and the ~5 km of subsidence of the Rhodes Basin. The Basin also lies along a broad shear zone linking the Pliny-Strabo Trenches to the Burdur-Fethiye Fault Zone. This shear zone is interpreted as a sinistral transform allowing rollback of the Hellenic subduction zone to be detached from the stagnating Cyprus Arc.