



The impact of salt tectonics on supra-salt (Lago Mare?) deposits and on the structural evolution of the Cyprus-Eratosthenes collision zone

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Averagely 1.5 km thick Messinian evaporites laterally continue from the Levant Basin, easternmost Mediterranean Sea, into the collision zone between Cyprus and Eratosthenes Seamount where incipient continent-continent-collision is believed to occur. In this study, the impact of Messinian evaporites on the structural evolution of the collision zone is investigated for the first time based on a comprehensive set of seismic reflection profiles. Results show that the collision zone may be subdivided into an eastern and a western domain. In the eastern part, bordered by Eratosthenes Seamount and the Hecataeus Rise, compressionally thickened autochthonous salt is observed. Sub- and supra-salt deposits within this area appear to be in the stage of active accretion. Further west, between Cyprus and Eratosthenes Seamount strongly deformed allochthonous salt has evidently started to advance across sediments of post-Messinian age. In this domain, previously active sediment accretion at the Cyprus margin has now become inactive and shortening is largely accommodated at the leading edge of the allochthonous salt sheet. Such observations bear important implications for the structural interrelation between salt tectonics and the evolution of a young collision zone.

On top of highly deformed mobile Messinian evaporites, up to 700 m thick late Messinian supra-salt deposits are mapped within the western part of the Cyprus - Eratosthenes collision zone. Their uppermost 200 m were drilled in the course of ODP Leg 160 (Site 968) and interpreted as Lago Mare sediments, deposited during the final stage of the Messinian Salinity Crisis (Robertson, 1998). These sediments occupy small sub-basins flanked by salt diapirs, indicating a salt-tectonic control on late Messinian sediment deposition. Distribution of these sediments may have further been controlled by sea-level, inferred from rapid eastward thinning and pinchout of Messinian supra-salt deposits towards the Levant Basin. Identification of a thick, late Messinian supra-salt unit offshore southern Cyprus and presumably also within the Herodotus Basin may represent another step towards a possible correlation between the Messinian successions occupying the deep Eastern and Western Mediterranean basins.

References:

Robertson, A.H.F., 1998. Tectonic significance of the Eratosthenes Seamount: a continental fragment in the process of collision with a subduction zone in the eastern Mediterranean (Ocean Drilling Program Leg 160). *Tectonophysics* 298, 63-82.