



Intense salt deformation in the Levant Basin in the middle of the Messinian Salinity Crisis

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While numerous studies have shown that salt related deformation in the Levant Basin began in the Late Pliocene or Early Pleistocene, here we show that the first salt related deformation event occurred 3-4 myr earlier, in the middle of the Messinian Salinity Crisis. Considering that the entire crisis lasted only about 650 kyr and that halite deposition in the deep basin may have lasted only ~50 kyr, this deformation event must have been very short. At some point after deposition of nearly half of the evaporitic sequence, the upper 200 m thick clastic-rich layer glided downdip and formed a series of steep contractional ridges on the deep basin floor. However, unlike the recent salt motion, which is derived from northwestward tilting of the Levant continental margin towards the Cyprus Arc and by basinward progradation of the Nile-derived overburden, the short intra-Messinian deformation event is enigmatic. It predates the Nile-derived overburden and its direction does not match northwestward tilting. We postulate that it may reflect the uplift of the Carmel block northeast of the study area and possibly the entire north Levant coast. In a wider view, intra-Messinian deformation is a circum-Mediterranean phenomenon, possibly reflecting reorganization of the Africa-Euroasia boundary.