

Flexural response of the Black Sea basin to the Messinian Salinity Crisis

*J. Bartol and R. Govers (Dept. Earth Sciences, Utrecht University;
J.Bartol@students.uu.nl)*

Two lines of evidence suggest that there was base level drop of 1300 meters in the Black sea basin coinciding with the Messinian Salinity Crisis in the Mediterranean sea; 1) a regional erosional surface in seismic sections of two distinct margins of the Black Sea correlating with the unusual Miocene-Pliocene lithology in borehole DSDP 42, and 2) the discovery of a low stand sequence in the Dacic basin. If true, the removal of a significant water column from the earth surface is expected to have evoked an isostatic/flexural response of the solid earth that influenced the position of depocenters and the connectivity between sedimentary basins. Using the three-dimensional finite difference code UUFLEX, the flexural/isostatic rebound of the Black sea basin in response to the Messinian/Pontian base level drop is calculated. Our results show an uplift of 130 meters in the centre of the Black Sea and subsidence of 50 meter on its margins. The uplift and subsidence changes the slope angles and erosion rates in the Black Sea and surrounding basins and could potentially be linked the recorded increase in sedimentation rate and finding of slumped marls in the Dacic basin.