



Quantitative analysis of Paratethys sea level change during the Messinian Salinity Crisis

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At the time of the Messinian Salinity Crisis in the Mediterranean Sea (i.e. the Pontian stage of the Paratethys), the Paratethys sea level dropped also. Evidence found in the sedimentary record of the Black Sea and the Caspian Sea has been interpreted to indicate that a sea level fall occurred between 5.6 and 5.5 Ma. Estimates for the magnitude of the fall range between tens of meters to more than 1500 m. The purpose of this study is to provide quantitative insight into the sensitivity of the water level of the Black Sea and the Caspian Sea to the hydrologic budget, for the case that the Paratethys is disconnected from the Mediterranean. Using a Late Miocene bathymetry based on a palaeographic map by Popov et al. (2004) we quantify the fall in sea level, the mean salinity, and the time to reach equilibrium for a wide range of negative hydrologic budgets. By combining our results with (i) estimates derived from a recent global Late Miocene climate simulation and (ii) reconstructed basin salinities, we are able to rule out a drop in sea level of the order of 1000 m in the Caspian Sea during this time period. In the Black Sea, however, such a large sea level fall cannot be fully discarded.