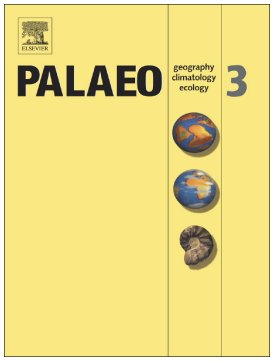

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Messinian salinity crisis record under strong freshwater input in marginal, intermediate, and deep environments: the case of the North Aegean

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Abstract

In the present study, we investigate the Mediterranean–Paratethys connection during the late Miocene in Strymon Basin (North Aegean, northeastern Mediterranean) and compare this onshore sequence with the adjacent offshore Prinos-Nestos sequence, before, during, and after the Messinian Salinity Crisis (MSC). Strymon Basin was a peripheral shallow-water basin during the first MSC stage. The Akropotamos sections expose a clastic sequence with gypsum intercalations, which is dated in the Messinian based on the ostracod and calcareous nannofossil assemblages. This sequence records the Primary Lower Gypsum deposition in a shallow marine environment and its passage via the Messinian erosional surface to a brackish environment with changing salinity conditions similar to the Paratethyan depositional environments. The sequence is capped by a travertine marker horizon observed across the entire Strymon Basin indicating freshwater environment. The Miocene–Pliocene transition is characterized by salinity changes caused by the interaction between Atlantic-Mediterranean and Paratethyan waters, predating the marine reflooding at the end of the MSC, which is attested by the overlying Pliocene open marine deposits. The offshore Prinos-Nestos basin incorporates the Nestos intermediate basin and the Prinos intermediate-deep basin. Borehole and seismic profile data from the offshore Prinos-Nestos oil field reflect a thick clastic