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Paleodepth variations on the Eratosthenes Seamount (Eastern Mediterranean): sea-level changes or subsidence?

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Abstract. The Eratosthenes Seamount (Eastern Mediterranean) is interpreted as a crustal block in process of break up in response to subduction and incipient collision of the African and Eurasian Plates. Subsidence is considered to be the mechanism triggering the Messinian to Pleistocene water deepening above this unique structure. However, the application of a recently developed transfer equation of depth range distribution of benthic foraminifera indicates that sea-level changes may also have played a role, although it was generally minor. In particular, we suggest that across the Miocene/Pliocene boundary and during the Pliocene-Pleistocene, the eustatic signal is frequently coupled with uplifts and subsidence. The uplift of Cyprus across the Pliocene-Pleistocene transition is clearly recorded in the paleodepth curve. Micropaleontological studies and the use of this transfer equation based on the distribution of benthic foraminifera proves to be useful when studying the paleodepth history of complex sites, where tectonic and eustatic signals combine. We also show that marginal seas record global sea-level changes that can be identified even in tectonically active settings.

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