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Mediterranean Outflow Water at the Pliocene/Pleistocene transition: New stratigraphic constraints from IODP Site U1389 (Gulf of Cadiz, IODP Expedition 339)

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IODP Hole U1389E, at present located in the lower core of the Mediterranean Outflow Water (MOW) at 640m water depth in the northern Gulf of Cadiz, represents a key-site for the understanding of changes in MOW contribution to the North Atlantic during the late Pliocene and the transition into the Pleistocene ice house climate. Integrated geophysical, micropalaeontological and geochemical proxy records of the recovered sediments imply major changes in MOW strength over the studied interval. However, to consider these data in a broader paleoceanographic and paleoclimatic context, a well-constrained age model is essential. New bio-, chemo-, magnetostratigraphic data and XRF core-scanning suggest that the shipboard age model for the site has to be reconsidered as major changes in the depositional environment have not been recognized in the original, comparably low resolution data-sets.
While the new, high-resolution biostratigraphic data confirm the overall time frame of 2.6 to 3.6 Myrs for the studied interval, they also indicate that the last occurrence of *Discoaster tamalis* in the succession should be reconsidered. New palaeomagnetic data constrain the Gauss normal chron and its subchrons more accurately. Finally, a high-resolution δ^{18}O-record of the planktic foraminifer *Globigerinoides ruber* allows the identification of many marine isotopic chrons, further refining the stratigraphic framework.
Cyclic patterns are recognized in the $CaCO_3$ and TOC contents as well as Ca/Ti- and Zr/Al-ratios. A preliminary cyclostratigraphic analysis of these records in well-recovered intervals suggests an interplay of obliquity and precessional forcing reflected in a change from deposits strongly influenced by terrestrial input (3.0-2.8 Myrs) to deposits strongly affected by MOW (2.8-2.6 Myrs).
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