

EGU2020-2475

<https://doi.org/10.5194/egusphere-egu2020-2475>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Evidence for polar surface-water incursions into the Gulf of Cadiz (SW Iberia) during the Early-to-Mid Pleistocene Transition

Aline Mega¹, Emilia Salgueiro^{1,2}, and Antje Helga Luise Voelker^{1,2}

¹Portuguese Institute for the Sea and Atmosphere, Marine Geology and Georesources (DivGM), Lisbon, Portugal

(alinemega20@gmail.com)

²Centre of Marine Sciences (CCMAR), University of the Algarve, Faro, Portugal

The Mid Pleistocene Transition (MPT) was a global climatic event characterized by a drastic change in the deep thermohaline circulation during the glacial periods that resulted in more intense and longer lasting cold periods and cooler sea-surface temperature (SST). These changes might be linked to the atmospheric pCO₂ reduction which in turn led to colder atmospheric temperatures and the expansion of continental ice sheets. In the mid-latitude North Atlantic, high-resolution records documenting the MPT's impact are still limited. Thus, this study's objective is to contribute to the knowledge by reconstructing circulation changes in the subtropical gyre realm off the southwestern Iberian Margin. We use planktonic foraminifera faunal data from Integrated Ocean Drilling Program (IODP) Site U1387 (Faro Drift, Gulf of Cadiz) to characterize centennial-scale SST variations during the interval from Marine Isotope Stage (MIS) 18 to MIS 28. The results indicate relative stable SSTs during the interglacial and interstadial periods with temperatures around 20°C during summer and 16°C during winter. During MIS 20, 22, 24, and 25 short-termed extreme cold events were recorded when winter temperatures dropped below 5°C, during late MIS 22 even close to 0°C. They mark the terminal stadial events during deglaciation and were related to increased abundance of polar planktonic foraminifera species *N. pachyderma* that reached values near to 80%. *N. pachyderma* values. Percentages of that species between 90 and 50% can be found in the polar regions near the Arctic Front and those between 50 and 5% are indicative of subarctic waters. Whereas the terminal stadial events and the first stadial phase of MIS 22 were marked by incursions of polar surface waters to the southern Iberian margin, abrupt cold events during periods of continental ice shield growth of MIS 19, 21, 25 and 28 were associated with subarctic surface waters. During the MPT, the waters off southern Iberia, therefore, experienced cooling events more extreme than during the last glacial cycle.