# PLANKTONIC FORAMINIFERA EVIDENCE FOR SURFACE-WATER CONDITIONS OFF SOUTHERN PORTUGAL DURING MID-PLEISTOCENE MARINE ISOTOPE STAGES 20 TO 24 (790 – 940 KY)

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**Abstract**
Characterized by a drastic change in the deep thermohaline circulation, the Mid Pleistocene Transition (MPT) was a global climatic event resulted in more intense and longer lasting glacial periods and cooler sea-surface temperatures. The present study's objective is characterized surface-water variations during the MPT interval at the mid-latitude southern Portuguese margin using planktonic foraminifera faunal data from Site U1387. Stratigraphy records reveals dominantly tropical and subtropical species interrupted by incursions of subpolar waters when the North Atlantic's subarctic front moved to southernmost position during the MPT.

*Keywords: Foraminifera, Gulf of Cadiz*

The Mid Pleistocene Transition (MPT) was a global climatic event that occurred between 1250 and 700 thousand years (ky) ago. This period was characterized by a drastic change in the deep thermohaline circulation during the glacial periods that resulted in more intense and longer lasting glacial periods (changing from 40ky to 100ky cycles) and cooler sea-surface temperatures (SST). It is believed that the MPT may have been influenced by ocean-atmosphere system changes directly linked to an increased ice volume. A consensus point is that there was a $pCO_2$ reduction which in turn reduced the atmosphere's temperature, causing the expansion of continental ice sheets [1]. In the North Atlantic, high-resolution records documenting the MPT's impact are still limited.

The present study's objective is therefore to characterize surface-water variations during the MPT interval from Marine Isotope Stage (MIS) 20 to MIS 26 at the mid-latitude southern Portuguese margin using planktonic foraminifera faunal data from Site U1387 (36.8°N; 7.7°W).

The refer site is located at the Faro Drift in the Gulf of Cadiz, explored by the Integrated Ocean Drilling Program (IODP). Nowadays, this site is dominantly influenced by subtropical surface waters. For an initial evaluation, the planktonic foraminifera fauna results were grouped into a tropical-subtropical group and a subpolar group (Fig. 1), following [2]. In the future, the faunal data will be used to calculate SST and export productivity.

Observing the results, the glacial periods (MIS 20 and MIS 22) are characterized by $\delta^{18}O$ lower values in *G. bulloides* shells contemporary with high abundances in subpolar species. These results are more explicit during MIS 22 that experienced colder conditions than MIS 20. Based on the tropical-subtropical group, interglacial MIS 23 was a little colder than MIS 21. So, the Site U1387 stratigraphy record reveals dominantly tropical and subtropical species interrupted by incursions of subpolar waters when the North Atlantic's subarctic front moved to southernmost position during the MPT.

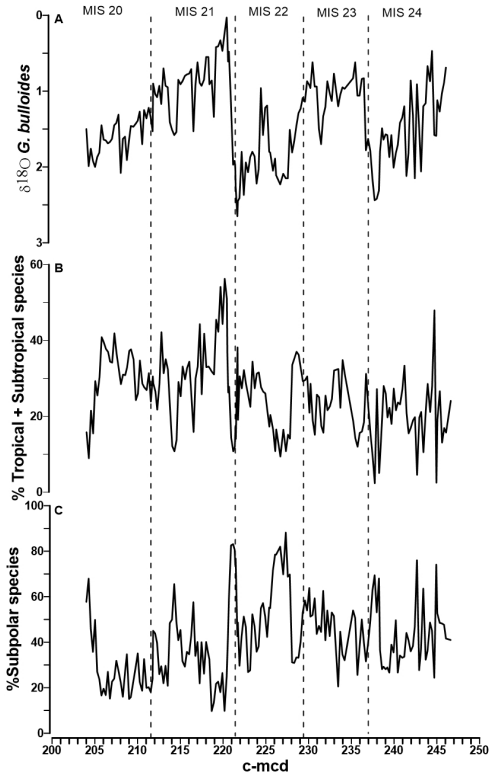


Fig. 1. A : $\delta^{18}O$ *G. bulloides* data from Site U1387. B: Percentage of tropical and subtropical species (*G. crassaformis, G. siphonifera, G. ruber white, G. calida, G. truncatulinoides, G. falconensis* and *O. universa*) from Site U1387. C: Percentage of subpolar species (*N. incompta, T. quinqueloba* and *N. pachyderma*) from Site U1387.

## References

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