

# “Sea surface temperature and oceanic productivity variations off the Iberian margin during the last 20.000 years.”

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## Abstract

The aim of this study is a detailed reconstruction of the sea surface temperature (SST) and oceanic productivity off the Iberian margin during the last 20.000 years. Sediment samples from the Calypso giant piston core MD01-2446 (39°03.36'N, 12°37.44'W; 3547 m water depth) collected on the southeastern slope of the Tore Seamount, about 300 km west of Portugal, were analyzed qualitatively and quantitatively. For the quantitative analysis of the planktonic foraminiferal assemblages, 56 samples were counted in the combination of the >250 µm and 150-250 µm fractions, with the identification of the species accordingly to taxonomic criteria of Hemleben *et al.* (1989). The abundance data was then used to calculate the SST and export productivity variations using the Pflaumann *et al.* (1996, Paleoc.) SIMMAX transfer function technique. The modern analog data files used for the transfer function are extended versions of the Salgueiro *et al.* (2010, QSR) data files which combine samples from the Iberian and NW African margins with the North Atlantic surface samples set of the Margo project (Kucera *et al.*, 2005a, QRS), resulting in a total of 1066 analogs for SST and 1039 for productivity. The reconstructed SST range from 10 to 21,7 °C and the summer export productivity from 31,5 to 95,2 gC/m<sup>2</sup>/y. The Holocene is marked by relative warm summer SST of more than 20 °C but can be divided into 3 phase with slightly colder SST before and after a warm period between 7,7 and 3,7 ky BP. This warm period coincided with the lowest export productivity values. Between 13,3 and 12 ky BP a colder period occurred (min. 10 °C) with increase of export productivity values (max. 89,9 gC/m<sup>2</sup>/y). Trends observed in core MD01-2446 are in general conform with the lower resolution record of D11957P, also located on the Tore Seamount (39°03'N, 12°35'W, Lebreiro, 1997, Paleo.). For the Holocene climatic evolution offshore site MD01-2446 is more similar to the core sites off Sines (37°47.99'N, 10°9.99'W, Salgueiro *et al.*, 2010, QSR), but the site recorded much stronger cooling during the Younger Dryas than the nearshore cores along the Portuguese margin, while Heinrich stadial 1 was warmer.

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