



Coccolithophore estimates of paleotemperature changes in the Southeast Pacific over the past ~27 kyr and comparison to other proxies.

Mariem Saavedra-Pellitero (1), Karl-Heinz Baumann (1), José-Abel Flores (2), Frank Lamy (3), Aleix Cortina (2), and Francisco Javier Sierra (2)

(1) University of Bremen, Germany (mariemsaavedra@usal.es), (2) University of Salamanca, Spain, (3) AWI Bremerhaven, Germany

Sea Surface Temperature (SST) data for Termination 1 are reconstructed based on factor analyses performed on modern census coccolithophore data from surface sediments in the equatorial and southeast Pacific. Subsequently this calibration technique was applied to Ocean Drilling Project (ODP) Site 1233 sediments (41°00'S, 74°27'W at 838 m water depth).

Surface sediment samples were collected during Génesis III-RR9702A, NEMO-Me0005A and PUCK cruises. Smear slides were prepared following the Flores and Sierra (1997) settling technique, which allowed us to estimate the relative abundance of coccolithophore taxa (Saavedra-Pellitero et al., 2010a) and absolute numbers of coccoliths per gram of sediment. Following the counting routine a minimum of 400 whole coccoliths per sample were recognized and classified in Light Microscope, except in few samples where the expectations were not fulfilled. The 14 most common taxa or groups of coccoliths considered in this study were: *Calciosolenia* sp., *Calcidiscus leptoporus*, *Coccolithus pelagicus*, *Emiliana huxleyi*, *Florisphaera profunda*, *Gephyrocapsa muelleriae*, *Gephyrocapsa oceanica*, *Helicosphaera carteri*, *Rhabdosphaera clavigera*, "small" *Gephyrocapsa* (that include *Gephyrocapsa* <3µm), *Syracosphaera* spp., *Umbellosphaera* spp., *Umbilicosphaera* spp. and *Oolithotus* sp.

Coccolithophore assemblages from ODP Site 1233 were studied throughout the upper 135.65 mcd, corresponding to the last 70 kyr. SST was estimated for Termination I at high resolution (for further details on the statistical procedure followed see Saavedra-Pellitero et al., 2010b). The coccolithophore SST record was compared with other SST reconstructions based on alkenones (e.g., Lamy et al. 2007), dinoflagellates (Verleye and Louwey, 2010) and radiolarians (Pisias et al., 2006). All reconstructions showed a remarkable concordance, although slight discrepancies were highlighted concerning the three major warming steps registered by the floral assemblages during last deglaciation: from 18.6 to 18 kyr BP (~2.6°C), 15.7 to 15.3 kyr (~2.5°C) BP, and from 13 to 11.4 kyr BP (~3.4°C), and the cooling event recorded between 15.3 and 13 kyr BP coincident with the Antarctic Cold Reversal.

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