

Coccolithophore response to abrupt and short-term climate changes in the Gulf of Lions (western Mediterranean) for the last 25 000 years

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Cores PRGL-1 (310 m long) and MD99-2348 (21.5 m long) were recovered in the Gulf of Lions (42.690N; 03.838 E) at 298.48 m water depth, during the PROMESS 1 (SRV *Bavenit* drilling vessel) and IMAGES V (RV *Marion Dufresne*, Calypso piston core) cruises, respectively. The high sedimentation rates, estimated by robust ^{14}C dating, have given us an excellent opportunity to perform high-resolution analyses on these materials.

In this study, we present data from the last 25 kyr. The retrieved sediments consist of silty-clay terrigenous material mixed with small amounts of calcareous microfossils. Quantitative analyses of coccolithophore assemblages allow us to identify significant changes in sea-surface temperatures (SST) in this period. Cold peaks are marked by increases in the proportion of *Gephyrocapsa muelleriae* and large morphotypes of *Emiliana huxleyi* ($>5\ \mu\text{m}$); some of the most significant can be correlated with Heinrich events. The high sedimentation rates observed during most of the studied interval also allow us to identify an overprinted multicentennial-scale pattern related to Dansgaard-Oeschger cycles. The combined analyses of coccolithophores and planktonic foraminifers permit to produce a SST record in which sharp fluctuations of around 4°C in amplitude have been detected. These abrupt changes in SST are also linked to changes in surface productivity and in the deep and intermediate water dynamics, probably related to variations in the atmospheric patterns (NAO-like oscillations).

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