



Abrupt climatic changes during the last climatic cycles in the Gulf of Lions (Western Mediterranean) revealed by micropaleontological and geochemical tools

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Core MD992348 (21.5 m long) was recovered in the Gulf of Lions (42° 41.51N; 03° 50.50E) during the IMAGES 5 cruise on the Marion Dufresne at 296 m water depth. These sediments consist of silty-clay terrigenous material mixed with a small content of calcareous microfossils

Micropaleontological and biogeochemical data allowed us to identify two important and abrupt changes in the sea-surface conditions during the last 25 kyr; characterized by peaks in cold-water microfossils (*Neogloboquadrina pachyderma* –dextral-; and large specimens of *Emiliania huxleyi*). Radiocarbon dates indicate that these two peaks can be correlated with Heinrich events (HE) 1 and 2. It is also important to note that other rapid changes are observed in the micropaleontological assemblages between HE related with Dansgaard-Oeschger cycles. The analyses of these assemblages allow us to produce a sea surface temperature (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 with variations in the atmospheric pattern.

At the same position as MD992348, a 300 m-long borehole (GL1) was drilled during the PROMESS 1 expedition. Preliminary biostratigraphic results show that the

age of the bottom sediments (at 271.88 mbsf) are older than 460 kyr (isotope stage 12). This continuous record, with high sedimentation rates especially during glacial pulses, combining micropaleontological and biogeochemical techniques, will permit to extend this high resolution climatic record (at secular and decadal level) into the last 4 glacial climatic cycles. Additionally, it is planned to combine this paleoceanographic information with the sedimentary model from the seismic profiles in order to interpret some of the observed features.

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