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Control of the Dansgaard-Oeschger Climatic Variability over the Mediterranean Thermohaline Circulation

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The Alboran Sea is the westernmost basin of the Mediterranean Sea and forms the connection passage between the Atlantic Ocean and the Mediterranean Sea. Recent research on an IMAGES core from this basin (MD 95-2043) has demonstrated that this was a very sensible area to decadal-centenial past climatic variability. The Dansgaard-Oeschger climatic cycles defined on Greenland ice cores have been recognised in the Alboran Sea sedimentary record by large (2-5ºC) and rapid sea surface temperature oscillations estimated by the insaturation index $U^{K'}_{37}$[Cacho et al., 1999]. Therefore, core MD 95-2043 constitutes a very valuable archive of information about the response of the ocean dynamic to such kind of climatic fluctuations.

Here is presented a collection of high resolution profiles of both inorganic and organic geochemical proxies measured on core MD 95-2043. These proxies include oxygen and carbon isotopes measured on benthic and planktonic foraminifers (*Cibicidoides* spp. and *Globigerina bulloides* respectively), percentages of total organic carbon (TOC) and concentration of some molecular biomarkers from marine (C_{37} alkenones) and terrestrial source (*n*-nonacosane and *n*-hexacosanol). The objective of this study is to find out the possible occurrence of changes in the hydrography of this Mediterranean basin linked to the D-O climatic variability.

All the studied records show strong oscillations in relation with the D-O cycles. Both benthic $\delta_{18}O$ and $\delta_{13}C$ profiles show high values during the D-O Stadials (including the Heinrich Events) than during the warm D-O Interstadials documenting, therefore, the occurrence of a denser and better ventilated deep water mass during the cold intervals. Western Mediterranean Deep Water Mass is formed in the Gulf of Lions as a result of the climatic conditions over the Mediterranean region and strongly linked to the intensity of the north Westerlies system. Our results indicate that this Mediterranean thermohaline circulation was enhanced during the D-O Stadials as a result of a strengthening of the north Westerlies. This process could also be amplified by the more arid climatic conditions of these periods.

Increased wind transport during the cold intervals can also be inferred from the *n*-nonacosane record. On another hand, records of TOC, C_{37} alkenones and the *n*-hexadecanol to *n*-nonacosane index follow the same pattern with high value during the D-O Interstadials. Therefore, their concentrations are in strong link with deep sea preservation conditions which respond to deep water ventilation.

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