



## Hydrological changes in the Mediterranean Sea during the LGM and Heinrich events

L. Essellami (1), M.A. Sicre (2), N. Kallel (1), L. Labeyrie (2), G. Siani (3) and M. Kageyama (2)

(1) Faculté des Sciences de Sfax, Unité GEOGLOB, Route de Soukra, BP.802, 3038, Sfax, Tunisia, (2) Laboratoire des Sciences du Climat et de l'Environnement, Ave de la Terrasse, Gif-sur-Yvette Cedex, France, (3) Université Paris-Sud XI, Faculté des Sciences d'Orsay, 91405 Orsay, Cédex, France. nejib.kallel@fss.rnu.tn, Fax: +216 74 274 437, Phone: +216 21 875 826

Sea surface temperatures were reconstructed over the last 25,000 yrs from alkenone paleo-thermometry ( $SST_{alk}$ ) and planktonic foraminifera assemblages using the Modern Analog Technique (MAT) ( $SST_{foram}$ ) along two cores of the Mediterranean Sea: MD84-632 (Levantine basin) and MD04-2797 (Sicily strait). Oxygen isotope of planktonic foraminifera *G. bulloides* for core MD04-2797, and *G. ruber* for core MD84-632 were also determined.  $SST_{alk}$  in the Levantine basin indicate colder values at the Last Glacial Maximum (LGM) ( $\sim 14^{\circ}\text{C}$ ) than earlier established from MAT in the Eastern basin, and a cooling amplitude of  $6-7^{\circ}\text{C}$ , comparable to the central Mediterranean Sea. Climatic events such as the Younger Dryas and Heinrich events 1 and 2 were times of significant cooling in the two cores, yet the LGM appeared milder.  $\Delta\delta w$  values indicate saltier waters during the LGM and deglaciation than today, with increasing  $\Delta\delta w$  values in the Eastern basin and decreasing ones in the Western basin during cold stadials. The observed alterations of T and  $\Delta\delta w$  surface water properties in the Western and Eastern Mediterranean Basin are consistent with LGM model simulations showing the impact of reduced exchanges through the Gibraltar and Sicily straits resulting from glacial sea level lowering. However, atmospheric forcing could have equally contributed to enhance the W-E salinity gradient through increased evaporation. Similar surface salinity increase has been observed in other low latitude records from the Atlantic and Indian Ocean.