



The Holocene expression in humidity and sea surface temperatures in the western Mediterranean Sea

**A. Català¹, L.D. Pena¹, E. Garcia-Solsona¹, E. Paredes¹, J. Frigola¹, A. Sanchez-Vidal¹,
A. Calafat¹ and I. Cacho¹**

¹GRC Geociències Marines, Dept. de Dinàmica de la Terra i de l'Oceà, Facultat de Ciències de la Terra, Universitat de Barcelona. C/ Martí i Franqués s/n 08028, Barcelona, Spain.

The Mediterranean region is particularly sensitive to global climate variability that critically reflects on its hydrological conditions. A recently published high-resolution reconstruction of Holocene Sea Surface Temperature (SST) based on *Globigerina bulloides* Mg/Ca ratios set the basis to explore, within a warm climatic period, the impact of North Atlantic oceanographic conditions shaping the properties of the inflowing waters into the Mediterranean Sea. Going a step further in establishing the potential links between these oceanographical changes with the hydrological conditions on the southern Iberian Peninsula, we isotopically characterized (Sr, Nd and Pb) the present terrigenous sourcing and their transport processes on the Alboran Sea to use as an analogue to reconstruct the Holocene variations. The present-day isotopic characterization was performed of settling particles recovered by moored sediment traps under well-characterized meteorological conditions. This reveals that the main sources of the terrigenous particles arrive transported by the fluvial discharges around the Alboran Sea. Also, the observed isotopic changes during the recorded year were closely linked to rainfall patterns. Transferring this knowledge to the past time and compared with the SST, the results indicate that the most humid and warmer conditions were developed during the Early Holocene. Afterwards, a transition towards colder temperatures was linked with an aridification and enhancement of the torrential rainfalls, culminating with the coldest SST and higher torrential effect. During the Late Holocene, relative cold and drier conditions similar to the present were recorded.