



Direct correlation of marine and terrestrial responses to rapid climate variability during the last deglaciation in the Atlantic and Mediterranean sectors of the Iberian Peninsula

W. Fletcher (1), F. Naughton (1), M.F. Sánchez Goñi (1), E. Cortijo (2), O. Peyron (3), J.-L. Turon (4)

(1) Ecole Pratique des Hautes Etudes, UMR 5805 EPOC – CNRS, Université Bordeaux 1, France, (2) LSCE (Laboratoire des Sciences du Climat et de l'Environnement), Gif-sur-Yvette, France, (3) Laboratoire de Chrono-Ecologie, UMR 6565 CNRS, Besançon, France (4) UMR 5805 EPOC – CNRS, Université Bordeaux 1, France, (w.fletcher@epoc.u-bordeaux1.fr / Phone : +33(0)540008384)

Marine sediment cores represent important palaeoclimatic archives, containing lithological, geochemical, and biotic fossil signatures of past climate changes. High-resolution pollen analyses as part of multi-proxy investigations of marine sediment sequences from the Iberian margin permit the direct correlation of environmental changes in the marine and terrestrial domains and the study of regional variability in environmental responses to global climate events. A comparison of the deglaciation records from marine cores MD03-2697 (Atlantic margin, NW Iberia) and MD95-2043 (Mediterranean margin, SE Iberia) is presented, including marine and terrestrial proxies and pollen-based quantitative climate reconstructions. Long-term trends in vegetation development between 20 and 6 ka reflect changes in summer insolation and ice volume extent in northern high latitudes. Millennial-scale variability (related to the changes in the N. Atlantic Meridional Overturning Circulation (MOC) and atmospheric circulation) is superimposed on the long-term trends. Synchronous changes in sea surface temperatures (SSTs) and vegetation development reflect Heinrich Event 1 (shown to be equivalent to the Oldest Dryas in terrestrial records), the Bölling-Allerød, the Younger Dryas (YD) and early Holocene. The timing and nature of SST and veg-

etation changes is similar in the two records, although vegetation composition varies between the NW and SE sectors related to climatic gradients across the Iberian Peninsula. Increasing summer insolation and the strengthening of the MOC at the onset of the Bölling resulted in synchronous increases in Atlantic and Mediterranean SSTs and major expansion of oak forest (*Quercus*) in both sectors. A moderate forest decline is observed for the YD in both sectors, related to the mitigation of this cold event in the Iberian Peninsula by its occurrence close to the summer insolation maximum. The maximum development of oak forest in the NW sector occurred at the onset of the Holocene between 11 700 and 8 200 cal yr BP, reflecting the Holocene Thermal Maximum (HTM), while maximum forest development occurred later in the SE sector, reflecting increased precipitation during the mid-Holocene. The record from SE Iberia also reveals centennial scale variability, with arid episodes occurring during the Bölling-Allerød and early Holocene which may be associated the Older Dryas, the Intra- Allerød Cold Period and the Preboreal Oscillation.