Geophysical Research Abstracts, Vol. 8, 04412, 2006
SRef-ID: 1607-7962/gra/EGU06-A-04412

Climate variability of the last 25.000 years in and off north western Iberia: a direct land-sea-ice correlation of two Galician margin deep-sea cores

F. Naughton (1,2), M. F. Sanchez Goñi (3), J-L. Turon (1), J. Duprat (1), E. Cortijo (4), B. Malaizé (1), C. Joli (1), E. Bard (5) and F. Rostek (5)

(1) DGO, UMR-CNRS EPOC 5805, Bordeaux 1 University, France, (2) Departamento de Geologia, Universidade de Lisboa, Portugal, (3) EPHE, DGO, UMR-CNRS EPOC 5805, Université Bordeaux 1, France, (4) Laboratoire des Sciences du Climat et de 1' Environnement, Gif-sur-Yvette, France, (5) CEREGE, UMR-CNRS 6635, Aix-en-Provence, France (f.naughton@epoc.u-bordeaux1.fr)

Climate variability is a global phenomenon involving shifts in the different Earth's reservoirs (ice, ocean, atmosphere, biosphere and land surfaces). Changes in these reservoirs modulate, in turn, the climate dynamics through feedback mechanisms. The origin, frequency and mechanisms of the natural climatic variability can, therefore, only be understood by correlating the impact of past climatic changes on these different reservoirs on a common chronology. Direct correlation between marine, terrestrial and ice climatic indicators is an elegant way to reliably correlate the response of the different domains to a particular climatic change.

Direct correlation between terrestrial (pollen), marine and ice proxies from two high resolution deep-sea cores, MD99-2331 and MD03-2697, retrieved $c.$ 100 km from the present-day north western Iberian coast-line provides a composite record of the millennial-scale climatic variability of the last 25.000 years. Two episodes of Sea Surface Temperature (SST) minima linked to iceberg discharges have been detected off north western Iberia. These episodes, called Heinrich events 2 and 1 (H2 and H1), are characterised by the presence of Ice Rafted Detritus (IRD) and a maxima of polar foraminifera *N. pachyderma* (left coiling) as well as by peaks of magnetic susceptibility. On the continent, H2 and H1 events are marked by heathland and grassland formations with almost no deciduous tree vegetation. A *Pinus* forest reduction characterises the first part of these events. Between H1 and H2 events, the Last Glacial

Maximum is characterised by a slight increase in SST. However, no deciduous forest expansion is detected in north western Iberia during this time interval. Following H1, an increase in SST values and a decrease of *N. pachyderma* mark the Bölling-Alleröd interstadial, while a subsequent return to cool oceanic conditions shows the Younger Dryas episode. On land, a *Quercus*-Cupressaceae-*Betula*-*Corylus* tree succession and a decrease of semi-desert associations are triggered by the Bölling-Alleröd warming phase. Decrease of deciduous forest and increase of pioneer and semi-desert plants characterise the Younger Dryas cold event. After this, a gradual increase in SST up to the middle of the Holocene is associated with the renewed spread of deciduous trees marking the first part of this interglacial.