In recent years, many studies have been carried out to understand the sources, trigger mechanisms and global impact of Heinrich events (e.g. Hemming, 2004). These extreme episodes were first documented in several North Atlantic deep-sea cores between 45° and 50° N (IRD belt) (Heinrich, 1988; Bond and Lotti, 1995) and identified by the anomalous presence of ice-rafted detritus (IRD), Neogloboquadrina pachyderma (s) increases, sea surface temperature (SST) decreases (e.g. Cortijo et al., 1997) and magnetic susceptibility peaks (Grouset et al., 1993). These IRD layers were also detected below 40° N (e.g. LaBeyrie et al., 1996; Bard et al., 2000; Chapman et al., 2000; de Abreu et al., 2003). The thickness of the IRD layers and the magnetic signal is, however, smaller in the mid-latitude sites than in the IRD belt (Thouveny et al., 2000). Also, the duration of the impact of these extreme events on the sea surface temperatures (SST) of the Iberian margin is longer than that of the IRD layers (e.g. Bard et al., 2000; Chapman et al., 2000; Sánchez Goñi et al., 2000). Indeed, Heinrich events have left a complex pattern imprinted along the Iberian margin (e.g. Bard et al., 2000) and on the adjacent continent (Naughton et al., 2007). However, the mechanisms proposed for explaining this complex pattern within Heinrich events in the Iberian margin are not conclusive so far. Therefore, we performed a high resolution multi-proxy study on the MD99-2331 deep sea core, retrieved off Galicia (42° 09' 00" N, 8° 40' 90" W) (Figure 1), supported by 55 accelerator mass spectrometer (AMS) ¹⁴C dates obtained on nonspecific samples with maxima of absolute Globigerina bulloides or N. pachyderma (s) abundances (Figure 2).

Direct correlation between marine and terrestrial proxies from MD99-2331, shows two main vegetation phases in north-western Iberia linked to the complex pattern left by the typical Heinrich events on the Iberian margin (Figure 3):