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Deglacial hydrography and IRD inputs: A comparison of Terminations I and II in the N.E. Atlantic

Fiona Hibbert (1), Mark Chapman (2), William Austin (3), and Eelco Rohling (4)

(1) University of Southampton, Ocean and Earth Sciences, Southampton, United Kingdom (f.hibbert@noc.soton.ac.uk), (2) School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, United Kingdom , (3) School of Geography & Geosciences, Irvine Building, University of St Andrews, North Street, St Andrews, Fife KY16 9AL UK, (4) Research School of Earth Sciences, The Australian National University, Canberra, ACT 0200. Australia

We present a high resolution marine record (MD04-2822) from the N.E. Atlantic. This record captures the demise of the penultimate glaciation (Termination II) in high resolution. The record of co-registered proxies offers the opportunity to investigate the evolution of the last two deglacial events in the North Atlantic.

The deglacial evolution of Termination II is much less well documented than the last deglaciation (Termination I). A striking feature of Termination II in the MD04-2822 record, are several large ($\sim$1 ‰ oscillations in benthic δ18O, reflecting oscillations in sea level (e.g. Grant et al., 2012, Thomas et al., 2009) and/or deep sea temperatures (cf. Skinner and Shackleton, 2006).

Also notable is the markedly different pattern of surface and deep water evolution for the two deglaciations. Termination I is characterised by a short offset between benthic δ18O decrease and δ13C increase (and northwards migration of the polar front) whereas during Termination II, benthic δ13C 'improvement' (and inferred resumption in overturning) occurs only during the Marine Isotope Stage (MIS) 5e plateau, giving the marine record it's characteristic 'drawn-out' appearance.

The most conspicuous feature of the penultimate deglacial in most marine cores is Heinrich event 11 (H11), an extensive episode of ice rafted debris (IRD) discharge that spread across the North Atlantic to the margin of what is now the subtropical gyre (Chapman et al., 2000). H11 generally manifests in marine records as one large and long ($\sim$ 2.5 ka) event throughout the Termination. In MD04-2822 however, there are multiple IRD events within the Termination. The continued influence of the disintegrating N. hemisphere ice sheets is also evident within the benthic δ13C and surface conditions (the polar front migrates north of the core site early within MIS 5e following a brief SST reversal).