

Reconstructing North Atlantic Deglacial Ocean Circulation: A High Resolution Trace Metal and Stable Isotope Record

D.J. HARDING¹ AND R.E.M. RICKABY¹

¹Department Of Earth Sciences, Parks Road, Oxford, UK
OX1 3PR

The trace metal chemistry of foraminiferal tests is an extremely valuable tool for palaeoceanographers, essential for reconstructing the nature of ancient oceans and environments. During calcification, foraminifera incorporate trace metals into their calcium carbonate test, the concentrations of which furnish the palaeoceanographer with a plethora of proxies such as water temperature (Mg/Ca)[1] and phosphate concentration (Cd/Ca)[2].

Q-ICP-MS analysis of planktic and benthic foraminifera using a multi-ratio method[3] has yielded the first high resolution deglacial trace metal ratio (Cd/Ca and Mg/Ca) record from the North Atlantic. Supplemented by Stable Isotope data ($\delta^{13}\text{C}$ and $\delta^{18}\text{O}$), the two North Atlantic cores, MD95-2008 from North of the Greenland-Scotland Ridge (1100m) and MD04-2829CQ South of the ridge (1743m), provide a high resolution record of ocean circulation through the rapid climatic change events of the deglacial from the Last Glacial Maximum to the early Holocene. The records include the Heinrich-1 (16.5ka), Bolling Allerod (14.5ka) and Younger Dryas (12.8ka) transitions

References

- [1] Nurnberg D. et.al. (1996) *Geochim. Cosmochim. Acta.* **60**, 803-814.
- [2] Boyle E.A. (1988) *Paleoceanography* **3**, 471-489.
- [3] Harding D.J. et.al. (2006) *G3* (in press).