



Sea surface temperature during Heinrich Events in the NE Atlantic, evidence from coccolithophore-based proxies

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Recent research into the Heinrich (H) events of the last glacial provide conflicting records of sea surface temperature (SST), questioning the true climatic conditions under which periodic collapse of the Laurentide ice sheet occurred. High resolution planktonic foraminiferal Mg/Ca SST records appear to oppose those based on faunal assemblage composition, suggesting elevated summer SSTs immediately preceded and persisted through each of the last five H events. It is possible that these discrepancies may be related to anomalous salinity conditions or to variable seasonal conditions having differential effects on the various proxies. To constrain our understanding of these records we present coccolithophore based SST records in parallel with Mg/Ca and faunal assemblage investigations of planktonic foraminifera selected cores from the NE Atlantic.

We have used two independent coccolithophore-based approaches; the well-established organic geochemical alkenone palaeothermometry technique, based on lipids produced by Noelaerhabdacean coccolithophorids (primarily *Gephyrocapsa* and *Emiliania*) and a novel coccolithophore assemblage-based method using relative abundance of different *Coccolithus* morphotypes. All available evidence from molecular genetics, culture experiments and biogeography suggests that size-defined morphotypes of *Coccolithus* are pseudo-cryptic species with discrete temperature preferences and so can be used for palaeotemperature reconstruction. We found strong patterns of size variation in *Coccolithus* and will present these results in a framework of independent data from alkenones and planktonic-foraminifera derived data.