

**Reconstructing North Atlantic
palaeotemperatures: an evaluation of
clumped isotopes as part of
multiproxy foraminiferal
investigations.**

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Clumped isotope analysis of carbonate proxies offers an additional means of quantifying palaeotemperatures. However due to the large sample sizes required, the technique has not been widely used for foraminifera. The Multi-Isotopologue-Ratio-Analyser (MIRA) mass spectrometer at the University of East Anglia is the first instrument of its kind specifically designed for the measurement of clumped isotopes, offering exceptionally high precision and measurement of small samples.

Here we present planktonic foraminiferal clumped isotope derived temperature estimates from modern coretops and selected subpolar North Atlantic core samples spanning the last 150,000 years. These reconstructions are compared to high resolution temperature results inferred from Mg/Ca analyses and assemblage based transfer functions. Clumped isotope results are consistent with the more established techniques and yield near-freezing temperatures for glacial and stadial cold climate extremes (e.g. marine isotope stages 6 & 4). Results from interglacial and interstadial intervals appear to under estimate likely palaeotemperatures. This offset, which may be due to factors such as species selection and the temperature calibration step, reveals the need for a careful assessment of the viability of using clumped isotopes to produce reliable temperature reconstructions in marine cores.