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Sensing seasonality in the North Atlantic during Termination III: an Individual Specimen Analysis.

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The increasing complexity of climate models enhances the need for matching proxy data. Variability between seasons has important consequences for the significance of annual mean temperature (AMT) in climatic studies. For example the AMT will be the same for a year with both a mild winter and a mild summer compared to a year with a cold winter and hot summer. Within the scope of the Darwin Center project Sensing Seasonality an attempt is made to unravel the full seasonal range (i.e. minima, maxima, and annual mean) for a North Atlantic core located within the Ice Rafted Debris belt.

Planktonic foraminifera are the most widely used organisms for geochemical analysis (e.g. oxygen/carbon isotopes, Mg/Ca). Several fractions (212-250μm; 250-300μm; 300-355μm; 355-400μm) of Globigerina bulloides, Globorotalia inflata and Globorotalia truncatulinoides covering Termination III ($\sim$244kyr) from a mid latitude North-Atlantic core (45°17.5'N; 25°41.3'W) were studied for their stable isotope composition (δ18O and δ13C) on an individual basis. By looking at single specimens as apposed to conventional isotope analysis the mean-weighted signal of a single life-span is reflected and reduces the noise.

Our results show that isotopic variability increases with decreasing test size for both δ18O and δ13C. Furthermore, our data suggest that we can potentially parameterise different water masses and thus determine the inception of glacial and interglacial times.