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# Millennial-scale fluctuations in North Atlantic surface-water temperatures and salinities during MIS 100

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Given its proximity to the large dynamic ice-sheets of the northern hemisphere and the role in deep-water formation the North Atlantic represents on of the climatically sensitive regions on Earth. Hence, data sets in key areas like the North Atlantic are extremely useful in order to e.g. quantify and reconstruct the paleoceanographic dynamics of the Pliocene. The broad objective of this study is to quantify, at millennial time-scales, paleoclimatic and paleoceanographic changes during the Late Pliocene (MIS 99 to 101). These objectives will be met by the integration of the Mg/Ca paleotemperature method and its use to allow a differentiation between changes in global ice-volume and SST.

The recently drilled Integrated Ocean Drilling Program Site 1313 from the central North Atlantic (50°N) provides an ideal opportunity to tackle these questions. A demonstrably complete Mid to Late Pliocene section for Site 1313 was recovered, consisting mainly out of nannofossil ooze and nannofossil silt. A very high sedimentation rate and the abundant and well-preserved microfossils provide the requirements for high-resolution studies on planktic foraminifera and optimal reconstruction of the phasing of SST records and their relationship to salinity and ice-sheet changes on a high temporal resolution.

For this study 145 samples in 2-cm spacing (resulting in a ∼400 years resolution) of isotope stages MIS 99 to 101 were prepared for parallel Mg/Ca and stable isotope analyses. Per sample 60 tests of G. ruber were picked from the 212 to 250 µm size interval and subsequently split in half for Mg/Ca and stable isotope analyses. Mg/Ca ratios of the samples were measured by inductively coupled plasma-optical emission spectrometry.