

Rapid dynamics changes in NE Atlantic transitional surface waters during the last 57ka

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Northeast Atlantic transitional surface water dynamics was reconstructed from calcareous nannofossil assemblages and molecular biomarkers for the last 57ka (MIS3-MIS1). Gravity core KTA-05 (46.18595° N, -18.31385° W; 3939mbsl; 337cm long) contained placoliths, especially small *Gephyrocapsa* taxa, although colder stadials also had high abundances of *Gephyrocapsa muelleriae* and *Emiliana huxleyi*. Several drastic changes in nannofossil accumulation rates (NAR) occurred during the studied period. In early MIS3, the total NAR was markedly higher than in MIS2 and MIS1. We hypothesize that there was a combined effect of a southernmost position of the current location of high coccolithophores abundances in the North Atlantic and a narrowing of the transitional water zone due to the expansion of the subpolar front that constricted the North Atlantic Current. An abrupt decrease in NAR, including some barren

intervals, occurred during Heinrich Events when an increase in colder and less saline arctic water masses would have hampered coccolithophore development. Nevertheless, an exception occurred during H5 when, in spite of a NAR depletion, *Florisphaera profunda* increased, probably due to a shallow effect of this event. During the coldest stages and substages, as well as during Heinrich Events, N ratio and %C_{37:4} suggest that there was major stratification of ocean waters, which was triggered by a desalinization effect that slowed down the Atlantic Meridional Overturning Circulation (AMOC), at least in the upper meters of the water column. This decreased the productivity due to the colder temperatures and a reduction in nutrient input. Results from the KTA-05 core revealed that there were important submillennial changes in North Atlantic transitional waters during the last glaciation.