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High-resolution 0-2.4ka BP surface water temperature and salinity reconstructions, Feni Drift, NW Atlantic Ocean (56ºN 14ºW), based on δ^{18}O and Mg/Ca in planktonic foraminifera

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The northward advection of warm, saline surface waters in the North Atlantic plays a key role in modulating the global thermohaline circulation and regional climate. Recently, there is increasing evidence for variability of this meridional overturning circulation on centennial- to millennial timescales during the Holocene interglacial. Here, we present late Holocene (0-2.2ka BP) surface water temperature and salinity reconstructions from combined Mg/Ca and δ^{18}O in planktonic foraminifera (*G. bulloides*, 250-315μm size fraction). These were obtained from a spliced record of piston core ENAM9606 and box core M200309 (both situated at 56ºN 14ºW, 2543m water depth). Results will be compared with present-day hydrographic data derived from CTD records in the vicinity of the core site. For the paleorecord, age control is based on radionuclide records (^{137}Cs, ^{210}Pb) and 12 AMS^{14}C dates; temporal resolution is 20-35 years.

To a first approximation, the Mg/Ca record implies a general cooling trend from 2.4ka to 0.3ka calendar BP. The Roman and Medieval Warm Periods ($\sim$1.8-1.6ka and $\sim$1.2-0.8ka as defined in our record) seem to display slightly higher temperatures than surrounding time intervals, but with considerable short-term variability. More significantly, both climate optima are characterized by increased surface water salinity compared to both the remainder of the downcore record and present-day hydrographic

data. On the other hand, the early part of the Little Ice Age (<0.6ka BP) is characterized by a pronounced drop in both temperature and salinity. These results imply highly variable northward surface water advection to our core site. Higher temperatures and salinities could be ascribed to enhanced influence of either the main North Atlantic current entering the study area from the southwest, and/or of the continental margin current comprising waters derived from the subtropical gyre and entering from the south to southeast. Similar paleorecords from other North Atlantic locations are required to distinguish between these two possibilities.