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# Multi-decadal-scale records of North Atlantic climate variability during the last and present interglacials and preceding glacial terminations.

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High-resolution records of natural interglacial climate variability can provide knowledge if the currently ongoing climate change and variability are part of or are already beyond the natural state. Warmer-than-present climatic conditions, a reduced Greenland Ice Sheet and higher sea level are some of the features the Last Interglacial (LIG, MIS5e; 129-115 kyr) climate has in common with numerous model projections of our future climate (Otto-Bliesner et al., 2006; Koop et al., 2009). Establishing multi-decadal resolution records of past North Atlantic climate variability hence contributes to a better understanding of the ocean and climate sensitivity of the wider North Atlantic region. We present palaeoceanographic time series of surface ocean climatology from Ocean Drilling Program (ODP) Site 976 in the Alboran Sea, westernmost Mediterranean that span the LIG and Present Interglacial (PIG, Holocene, 11-0 kyr). The site receives North Atlantic climate signals through the atmosphere and with the advection of Atlantic inflow waters which in connection with the high rate of sediment deposition underscores the exceptional quality of the site to monitor North Atlantic climate variability at multi-decadal resolution (60-90 yrs).

Sea surface temperature (SST) time series derived from Mg/Ca ratios and stable isotope records ($\delta^{18}$O, $\delta^{13}$C) of the planktonic foraminifera *Globigerina bulloides* are presented. Mg/Ca data display similar SST for the climatic optima PIG and LIG. The records compare well with speleothem and ice core palaeoclimatic profiles, confirming that Site 976 palaeo-profiles reflect climate of the North Atlantic region. The close link between SST$_{Mg/Ca}$and the LIG $\delta^{18}$O record from the Antro del Corchia speleothem in northern Italy highlights the strong connection between marine and terrestrial climatology during that time indicating a farfield contribution of atmospheric signals. Comparison with SST and benthic $\delta^{13}$C records at North Atlantic sites instructs on regional climatological offsets and AMOC stability and variability. Correlation with atmospheric data (ice core palaeo-$CO_2$, $\delta^{13}C_{atm}$) links the North Atlantic climate variability documented in Site 976 with ocean-to-air gas exchanges that were driven by AMOC variability.

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