Title: Holocene variations in South Atlantic Sea Surface Temperatures

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Abstract:

Paleoceanographic records from the tropical and mid-latitude North Atlantic reveal quasi-cyclic Holocene climate fluctuations that appear to be in phase with subpolar North Atlantic ice-rafted debris records. The precise mechanism underlying Holocene climate variability is unknown but some linkage to solar irradiance forcing has been proposed. The ocean’s role in this mode of climate variability may be evaluated by constraining the amplitude and phase of sea-surface temperatures records from the South Atlantic. Recent modeling results suggest North and South Atlantic temperature records should be hemispherically-symmetric, whereas a deep thermohaline mechanism would suggest an antiphased relationship. We have preliminary new faunal assemblage data from the Benguela upwelling region which shows century- to millennial-scale variations similar to those described in the subpolar North Atlantic. We propose to collect eight AMS radiocarbon dates to nominally constrain the ODP Site 1084 core chronology and to measure Mg/Ca ratios in planktonic foraminifera to confirm the SST signature. We are requesting $3000 to cover some of the associated costs so that we can subsequently use these data for a more comprehensive NSF proposal.