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Tropical Atlantic Variability Through the Holocene from Individual Foraminifera

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The tropical oceans are major drivers of global climate variability. The tropical Pacific Ocean's expression of this is the El Niño Southern Oscillation (ENSO), the largest source of inter-annual climate variability on Earth. The equatorial Atlantic Ocean is home to the Atlantic Equatorial Mode (AEM) or "Atlantic Niño", the dominant mode of Atlantic inter-annual variability that exhibits dynamical and mechanistic similarities to ENSO. Both ENSO and the AEM are coupled air-sea interactions that produce anomalous sea surface temperatures, affect upwelling, and alter the atmospheric Walker circulation. Over historical and geologic timescales, variations in tropical Atlantic SST fields also impact African hydroclimate. Here, we explore this coupling using new reconstructions of Holocene tropical Atlantic variability inferred from individual planktonic foraminiferal δ^{18}O from deep sea sediment cores. Core-top calibrations using the planktic foraminifer *Globigerinoides ruber* indicate that intra-core shell δ^{18}O variance closely tracks modern oceanographic SST values and seasonal variance. Downcore, we observe reductions in δ^{18}O variance during the mid-Holocene between 4-6 ka BP, similar in timing and amplitude to that observed for the tropical Pacific. We explore the relationship between tropical Atlantic variability and shifts in African hydroclimate that marked the end of the mid-Holocene "Green Sahara" period. We examine previous hypotheses and model results that suggest land feedbacks played a critical role in the climatic changes observed in the mid-Holocene, and explore possible teleconnections to tropical Pacific variability via alterations of the Walker circulation.