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A coral-based reconstruction of Atlantic sea surface temperature trends and variability since 1552

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North Atlantic sea-surface temperature (SST) variability can have a near global impact on climate. Observed variability has been described as a natural multidecadal (65-100 year) oscillation superimposed upon a linearly-increasing, externally-forced background warming. The multidecadal portion of this variability may be persistent, suggesting useful decadal climate predictions may soon be possible. However, our understanding of multidecadal Atlantic SST variability prior to the brief instrumental record relies almost exclusively on high latitude tree-ring proxies. No proxy SST reconstruction from the Atlantic itself has the resolution, dating accuracy and length needed to assess the behavior of multidecadal variability. We present the first absolutely dated and annually-resolved multi-centennial record of Atlantic sea surface temperature. Our 439-year coral-based reconstruction suggests western low-latitude Atlantic SSTs were nearly as warm as today from ~1552-1570 A.D., cooled by more than 1ºC from ~1650-1730 A.D. and generally warmed to the present. Estimates of externally-forced background variability suggest that anthropogenic forcing can account for most of the warming since 1850 A.D. Multidecadal variations superimposed upon this background disappear prior to ~1730 A.D. in favor of interdecadal (15-20 year) variability. This suggests observed multidecadal variability is not persistent and may be difficult to predict.