Paleoceanography and Paleoclimatology

Supporting Information for

Tracking interannual to multidecadal-scale climate variability in the Atlantic Warm Pool using central Caribbean coral data

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Introduction

This supporting information includes additional figures; all the figures are in this Adobe Acrobat PDF file.

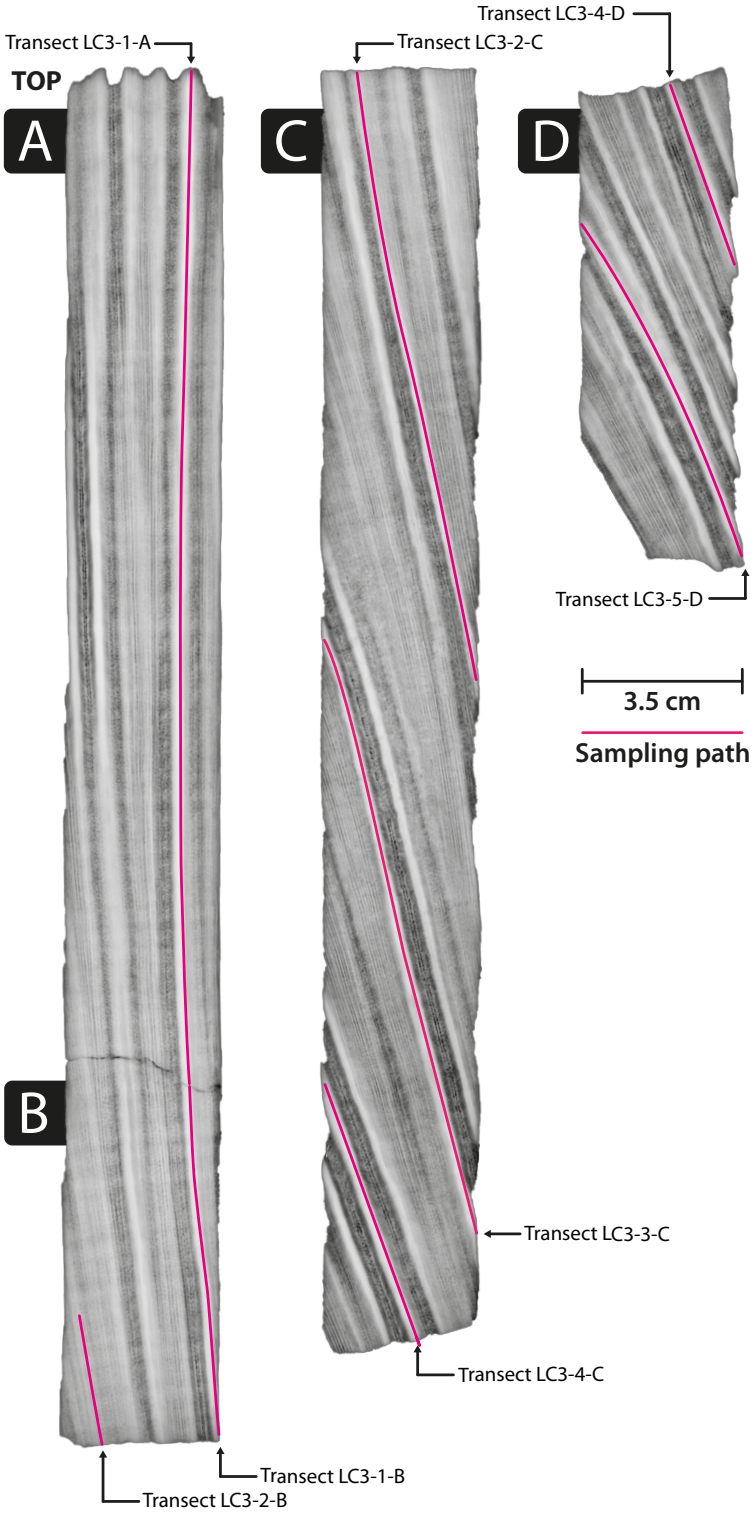

Figure S1. X-radiographs of the slabs from core LC3 recovered from a *Diploria strigosa* colony. Lighter regions in negative X-radiographs are denser and vice versa. Sampling transects are indicated by pink solid (sub-)vertical lines on each slab.

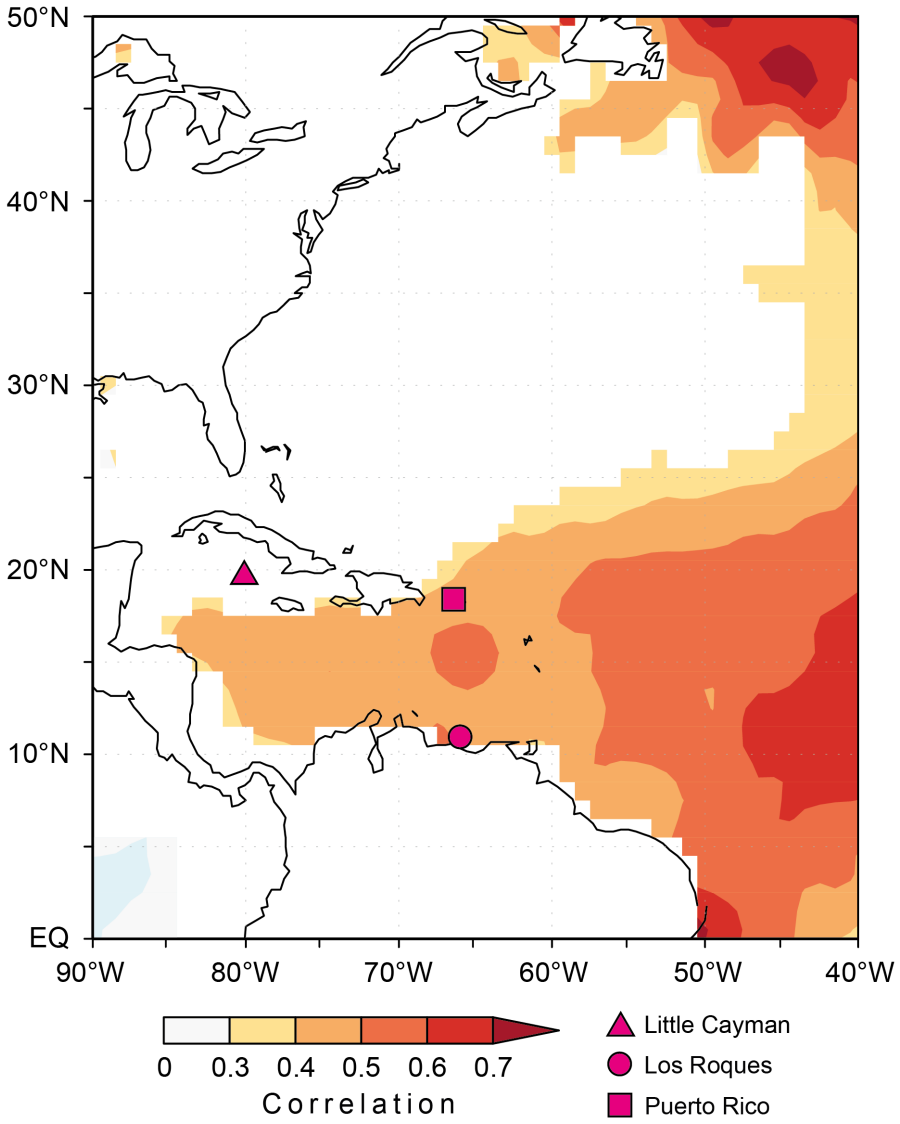

Figure S2. Spatial distribution of correlations between annual mean HadISST data [Rayner et al., 2003] and the AMO index [*van Oldenborgh et al.*, 2009]. Data cover the period 1887-2011. Note that Guadeloupe and Puerto Rico are situated within a field of significant agreement. In contrast, no correlation exists in the northwestern part of the Caribbean, north of the latitude of Jamaica where the Cayman Islands are situated. Correlations are significant at the 1% level and were computed and plotted at http://climexp.knmi.nl/.

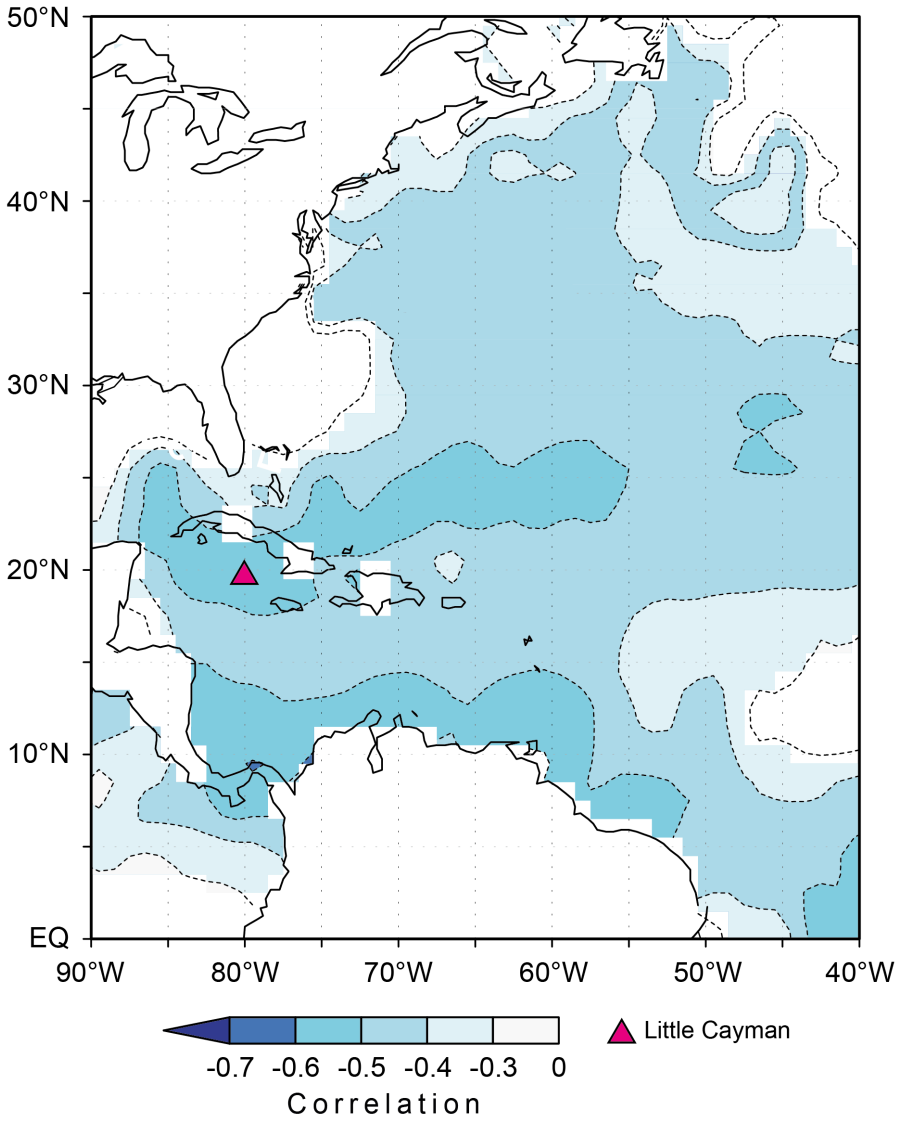

Figure S3. Spatial distribution of correlations between annual mean coral Sr/Ca [Rayner et al., 2003] and HadISST data [Rayner et al., 2003]. Data cover the period 1887-2011 and were detrended. In contrast to annual mean coral $\delta^{18}O$, which reveals strong negative relations to SST in the Loop Current region and the Gulf Stream region, annual mean Sr/Ca and SST exhibit strong relations mainly restricted to the local level and not on regional to large scales. Correlations are significant at the 1% level and were computed and plotted at http://climexp.knmi.nl/.

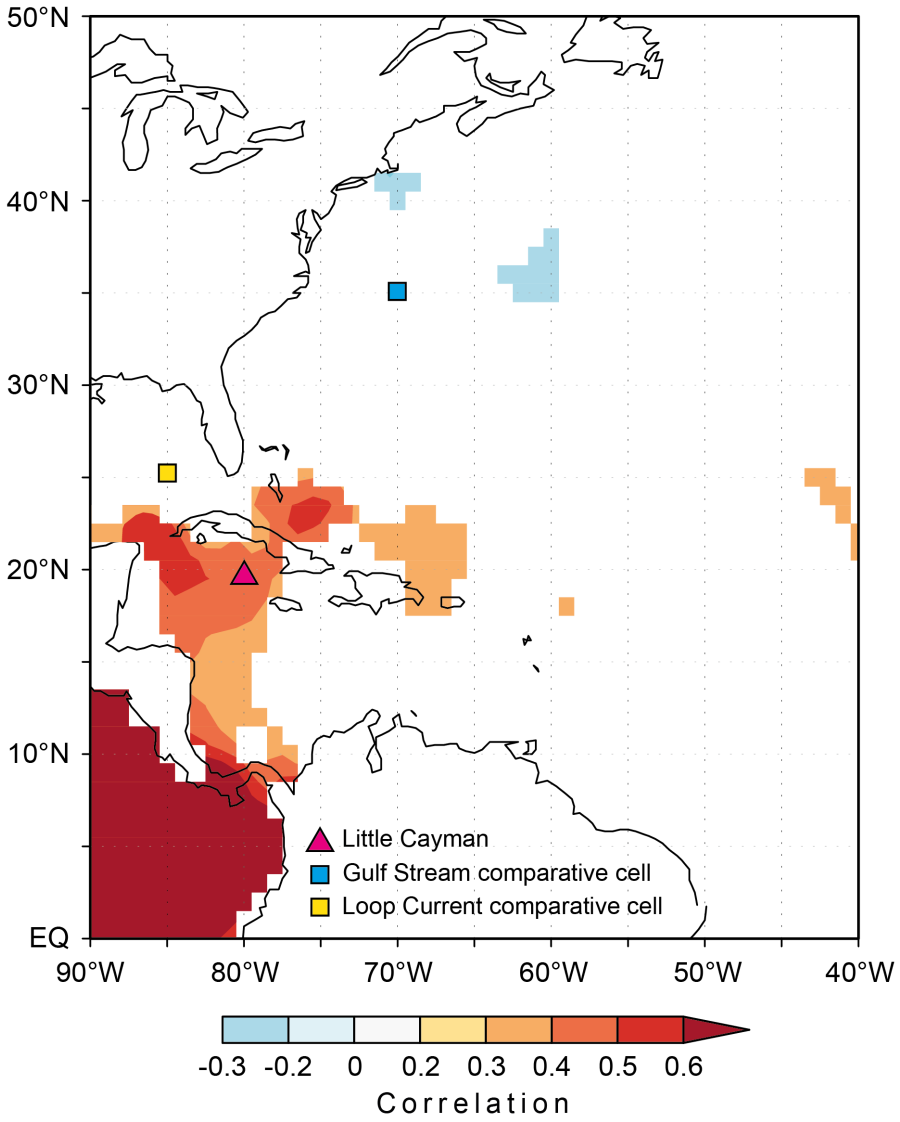

Figure S4. Spatial distribution of correlations between annual mean HadISST data [Rayner et al., 2003] and the ONI index. Data cover the period 1970-2000 and were detrended. Note the moderate correlations for the northeast Caribbean while for the Gulf Stream and Loop Current region no or only weak correlations can be observed. ENSO potentially has a measurable impact on local SST and thus coral $\delta^{18}O$ at Little Cayman, while SST in the comparative regions seems to be unaffected. Correlations are significant at the 1% level and were computed and plotted at http://climexp.knmi.nl/.

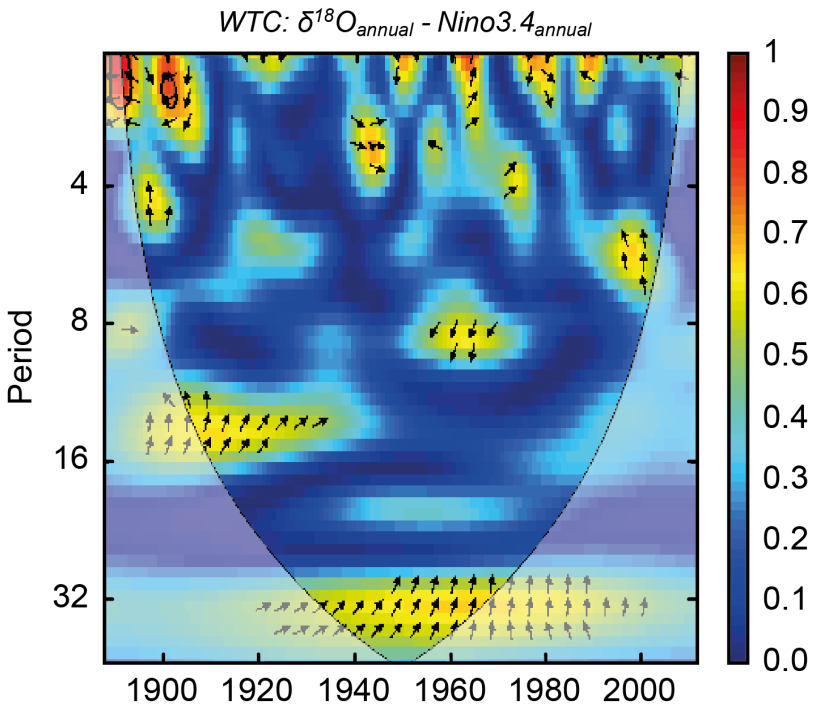

Figure S5. Results from a wavelet coherence spectrum between annual coral $\delta^{18}O$ and Nino3.4 index data. The black contour designates the 5% significance level against red noise and the cone of influence where edge effects might distort the picture is shown as a lighter shade. The plots were computed using wavelet coherency software by [*Grinsted et al.*, 2004].

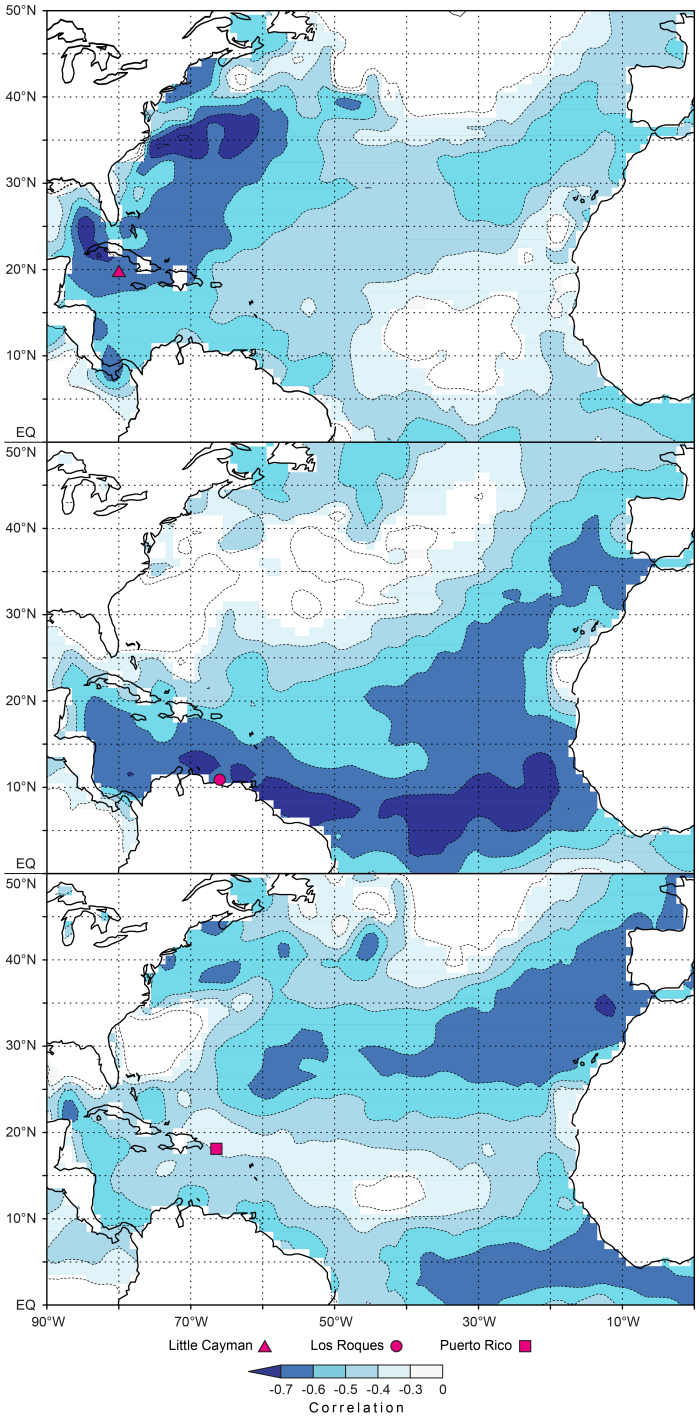

Figure S6. Spatial distribution of correlations between annual mean coral $\delta^{18}O$ and HadISST data [Rayner et al., 2003] for Little Cayman, Los Roques [*Hetzinger et al.*, 2008] and Puerto Rico [*Kilbourne et al.*, 2008]. Data cover the period 1887-2011 (Little Cayman), 1918-2003 (Los Roques) and 1751-2004 (Puerto Rico) and were detrended. Correlations are significant at the 1% level and were computed and plotted at http://climexp.knmi.nl/.

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