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Impact of remote forcing on climate in the eastern Caribbean Sea during the 20^{th} century as captured by a coral record from Guadeloupe (Lesser Antilles)

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We have generated 104-year-long (1895-1999) monthly oxygen isotopic and trace elemental ratio (Sr/Ca) time series by analyzing a coral core from a fast-growing *Diploria strigosa* colony drilled off Guadeloupe Island, Lesser Antilles. Coral Sr/Ca reliably records local annual to interannual temperature variations and is even higher correlated to *in-situ* air temperature than to grid-SST data. Using coral Sr/Ca, we calculated a warming of approximately 1.1-2˚C since the mid-1970s, concurrent with the strong surface temperature increase at the study site. The $\delta^{18}O_{sw}$ contribution to coral $\delta^{18}O$ is estimated by calculating the $\delta^{18}O_{residual(Sr/Ca)}$, which shows a stong decrease since 1950, following a pronounced decrease in precipitation.

Geochemical proxy data show a close relationship to major climate signals (ENSO and NAO) affecting the seasonal-scale SST anomalies in the north tropical Atlantic (NTA) region. A quantitative comparison between extreme events in the respective indices (Nino 3 and NAO) and extremes in mean March-May coral $\delta^{18}O$ imply that interannual SST variability at the study site is highly linked to Pacific and North Atlantic variability, by this means supporting observational- and model-based studies which suggest a strong impact of ENSO and NAO forcing onto the NTA region through a modulation of trade wind strength in boreal winter. Spectral analysis suggests that in-

terannual climate variability recorded by the coral proxies is largely dictated by Pacific ENSO forcing, whereas at interdecadal timescales the influence of the NAO becomes dominant.