Figure S1 - X-ray of core EU2 with sampling tracks indicated. Coral growth parameters were measured up to 1968, while geochemical proxies were measured between 2003 and 2013 (yellow line).
Figure S2 - X-ray of core EU3 with sampling tracks indicated. Coral growth parameters were measured up to 1911, while geochemical proxies were analysed between 1970 and 2013 (yellow line).
Figure S3 - Linear regressions of trace element (TE)/Ca proxies with ERSSTv4 for core EU3 (a,c) and EU2 (b,d). The TE/Ca records were calibrated using the respective linear regression equations of the bimonthly correlations obtained for each of the core records from the two sites. The 95% confidence intervals of the regressions are indicated. Regression equations are provided in Table 2.
Figure S4 - Linear regressions of Mg/Ca and Li/Ca with AVHRR-OI SSTv2 for core EU2 (a,b) between 2003-2012 and EU3 (c,d) between 1981 and 2012. The TE/Ca records were calibrated using the respective linear regression equations of the bimonthly correlations obtained for each of the core records from the two sites. The 95% confidence intervals of the regressions are indicated. Regression equations are provided in Supplementary Table 1.
Figure S5 - Absolute SST reconstructions for cores EU2 (blue) and EU3 (red) with SST residuals based on the calibration period 1981 to 2013 for a) Sr/Ca-SST, b) Li/Mg-SST and c) their combination in comparison to ERSSTv4 (black) scaled to in situ SST (orange; 2009-2010).
Figure S6 - SST anomaly reconstructions with SST residuals to ERSSTv4 for a) EU composite Sr/Ca, b) EU composite Li/Mg and 3) EU composite Sr/Ca and Li/Mg-SST combined. Anomalies were calculated relative to the 1981 to 2010 average bimonthly seasonal cycle.
Figure S7 – SST anomaly reconstructions for a) EU3 and EU2 Sr/Ca and b) EU3 and EU2 Li/Mg. Anomalies were calculated relative to the 2003 to 2013 average bimonthly seasonal cycle where both cores overlap.
Figure S8 - Mean annual coral growth parameters of cores EU2 and EU3 compared to coral composite Sr/Ca-SST reconstruction, AVHRR-OISSTv2 and ERSSTv4. a) SST time series, b) linear extension rate, c) skeletal density and d) calcification rate.
Figure S9 - Regional comparison of Mozambique Channel ERSSTv4 anomalies (red line) and coral proxy-derived SST anomalies (Sr/Ca= black line; d$^{18}$O= blue line) between 1970 and 2013 for a) Mayotte Island, Comoros b) Europa and c) Ifaty Reef, southwest Madagascar. Anomalies calculated relative to 1973-1993 period. Linear warming trends indicated in brackets for ERSSTv4 (1970-2013) and proxy-SST for individual record length. Proxy data taken from Zinke et al. (2004, 2008).
Table S1 - Linear optimal least squares regression equations for core EU2 and EU3 trace element ratios. Conf. interval= 95% confidence interval of the regression slopes and intercepts; $r^2$ adj. = $r^2$ adjusted; SSE= Standard Error; RMSE= Root Mean Square Error; DF= degrees of freedom.