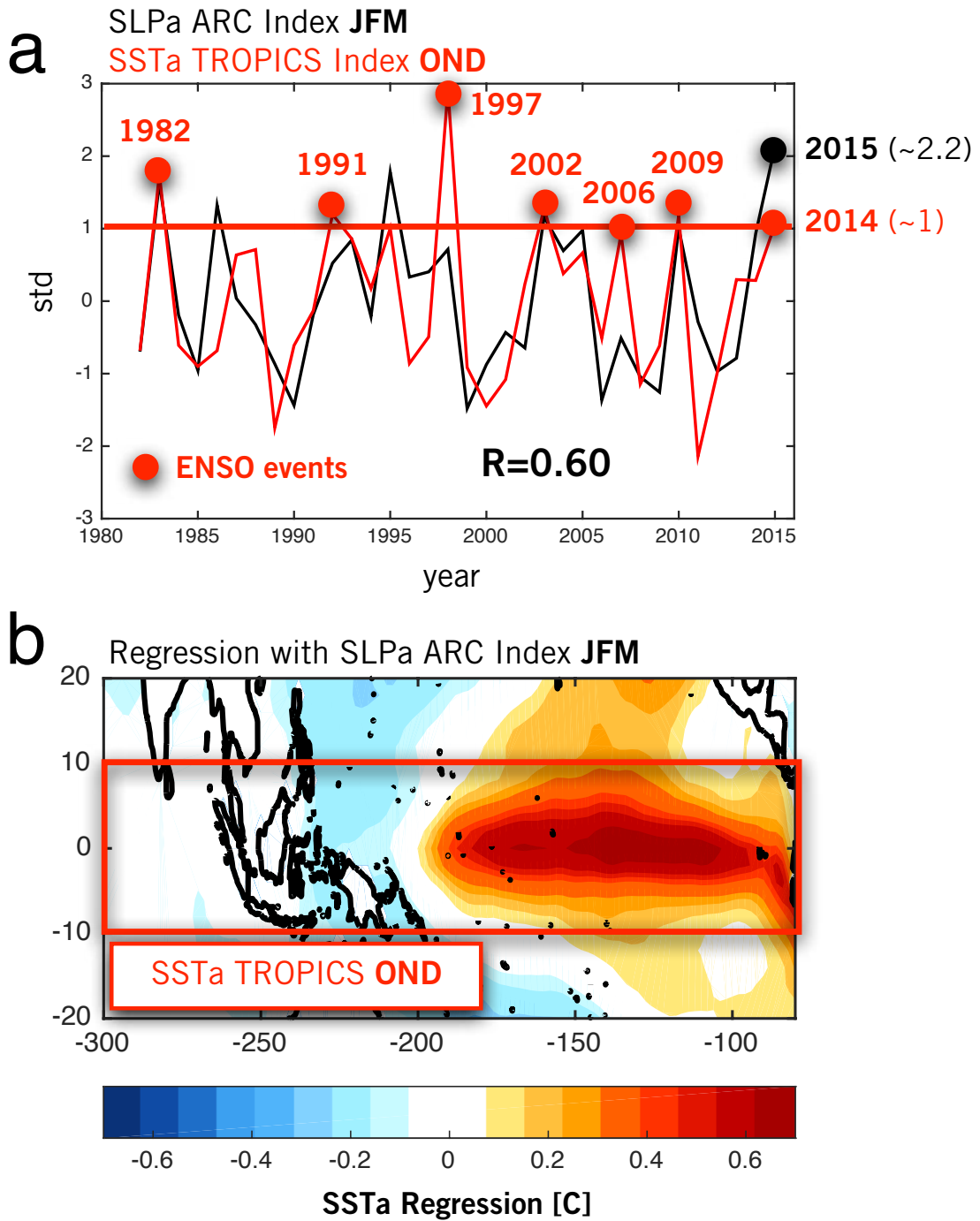


**Figure S3: Lead and lag relationship between SLPa and SSTa indices for (a) GOA SLPa vs GOA SSTa, and (b) ARC SLPa vs ARC SSTa.**



**Figure S4: Reconstructing the JFM ARC SLPa index using tropical SSTa in OND.** (a) Timeseries of NCEP JFM SLPa forcing index for the ARC (JFM values for SLPa index shown in Figure 1 b) and of preceding tropical OND SSTa from the NOAA ERSST.v3. The OND SSTa index is derived by projecting the tropical OND SSTa field on the lead correlation pattern (b) of JFM ARC SLPa index vs. previous year OND SSTa. The tropical area used for the projection is drawn as a red box in panel (b) and exhibits the typical SSTa associated with El Niño.