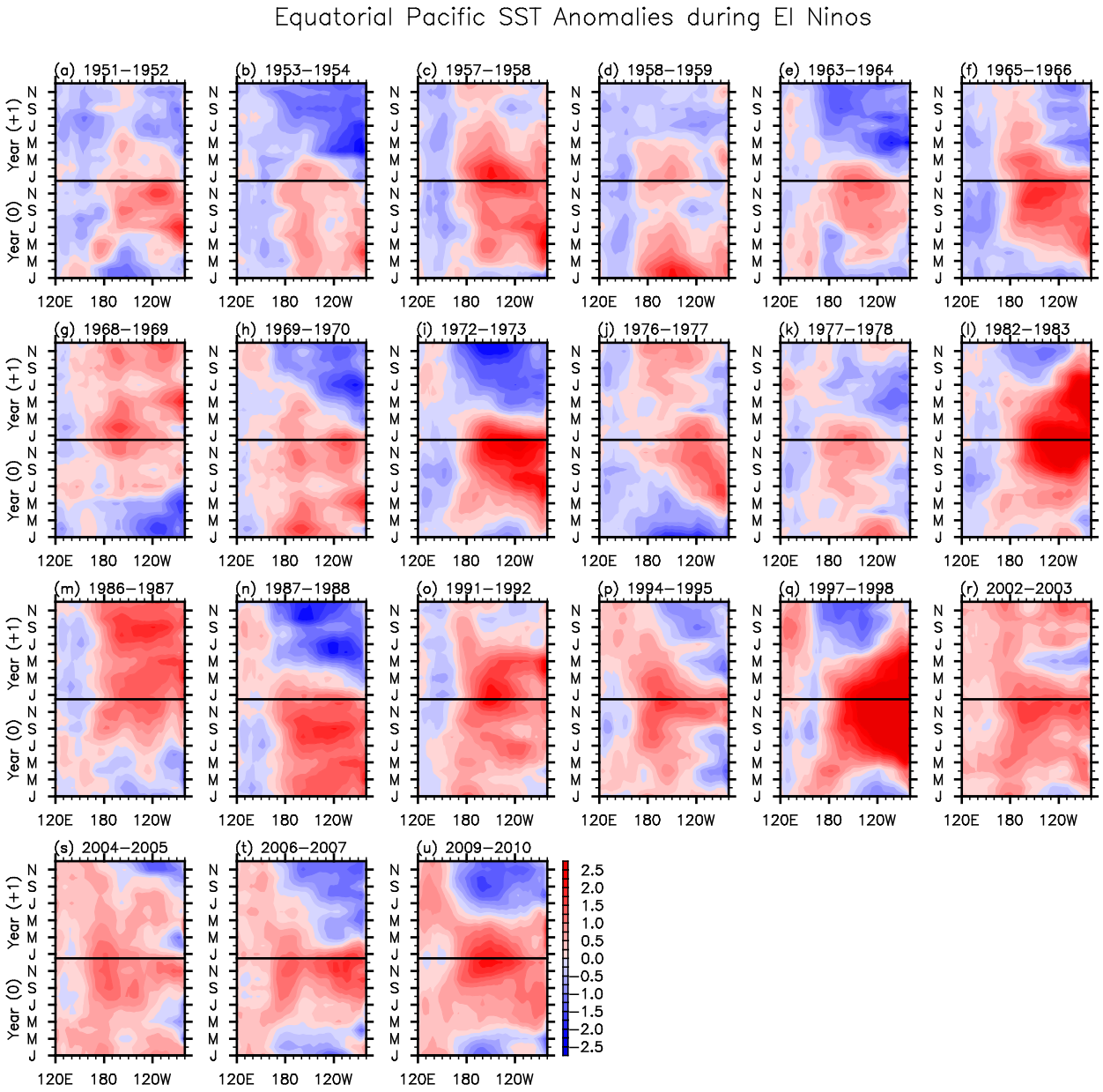

Figure S1. Time-longitude plots of the tropical Pacific SST anomalies averaged between 5°S and 5°N for 21 El Niños that occurred during 1949-2013, derived from ERSST3. Units are in °C.

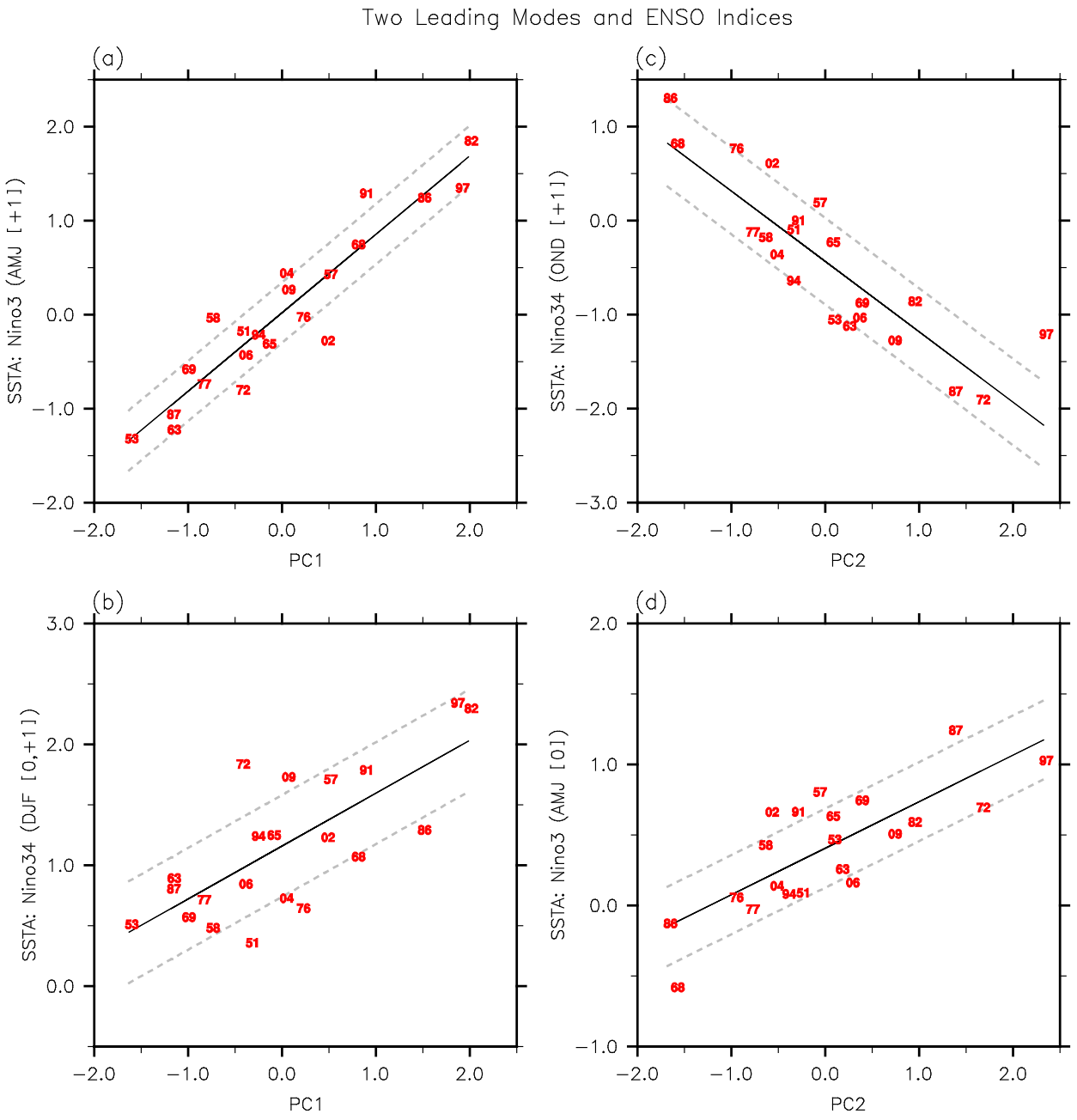

Figure S2. Scatterplot of (a) SSTAs in Niño 3 (AMJ [+1]) versus PC1, (b) SSTAs in Niño 3.4 (DJF [0,+1]) versus PC1, (c) SSTAs in Niño 3.4 (OND [+1]) versus PC2, and (d) SSTAs in Niño 3 (AMJ [0]) versus PC2. The two digit numbers indicate the El Niño onset years. For each plot, the black solid line is the linear regression, whereas the two dashed gray lines show the standard error of the linear regression.

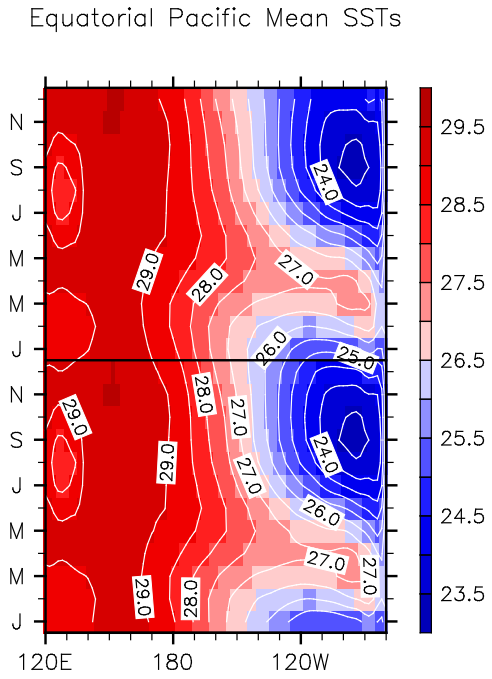

Figure S3. Time-longitude plot of the climatological equatorial Pacific SSTs averaged between 5°S and 5°N. The units are ºC.

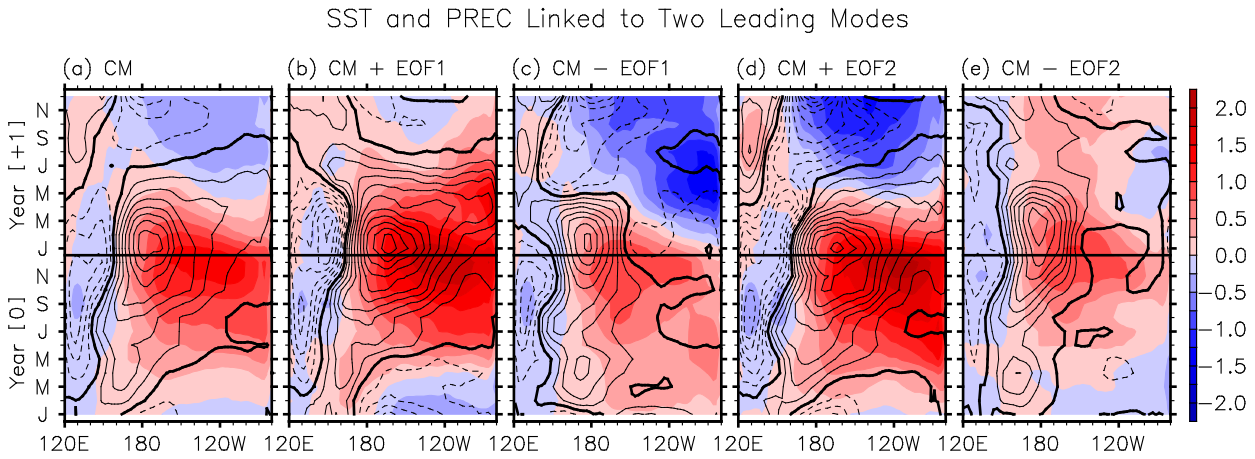

Figure S4. Time-longitude plots of the equatorial Pacific SST (color shade) and rainfall (contour) anomalies averaged between 5°S and 5°N, for (a) CM, (b) CM+EOF1, (c) CM-EOF1, (d) CM+EOF2, and (e) CM-EOF2 of the 21 El Niños during 1949–2013. NOAA's precipitation reconstruction [Chen et al., 2002] is used to compute the rainfall anomalies. The units are ºC for SST, and mm day^{-1} for rainfall.

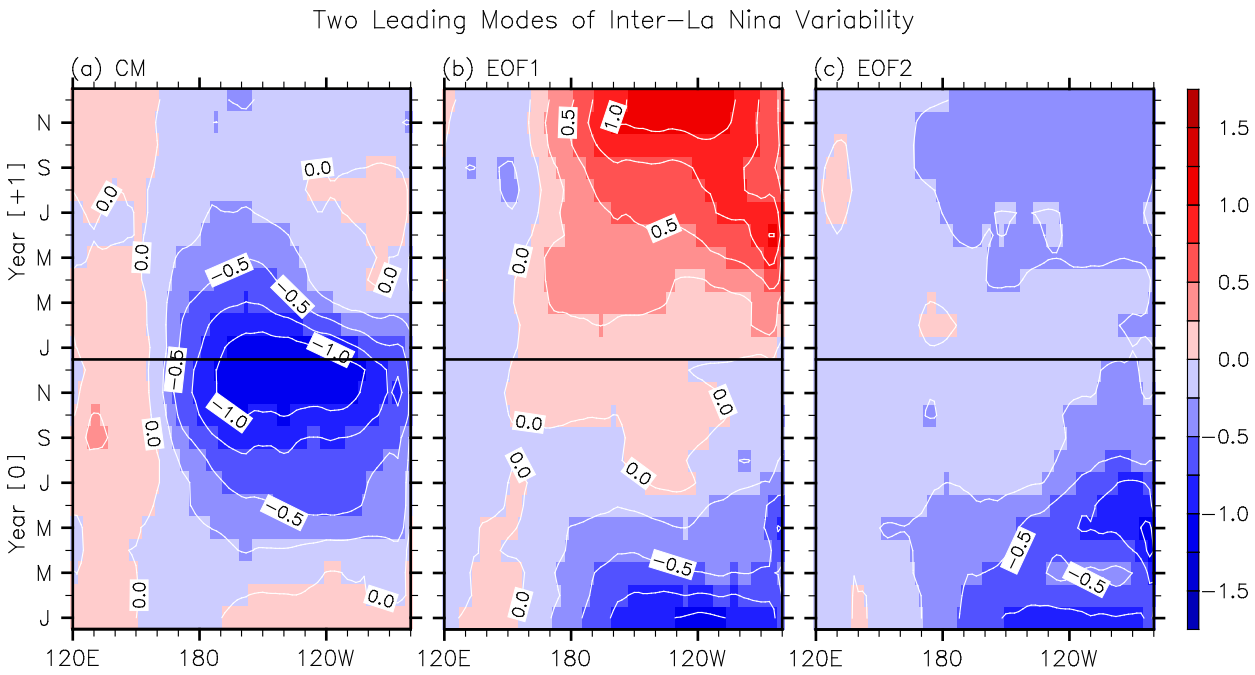

Figure S5. Time-longitude plots of (a) CM and the two (b and c) leading inter-event EOFs of the tropical Pacific SSTAs averaged between 5°S and 5°N, for 22 La Niñas during 1949–2013. Units are in ºC.

References

Chen, M., P. Xie, J. E. Janowiak, and P. A. Arkin (2002), Global land precipitation: A 50-yr monthly analysis based on gauge observations, *J. Hydrometeor.*, *3*, 249-266.