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Supplement of

Response of O₂ and pH to ENSO in the California Current System in a high-resolution global climate model

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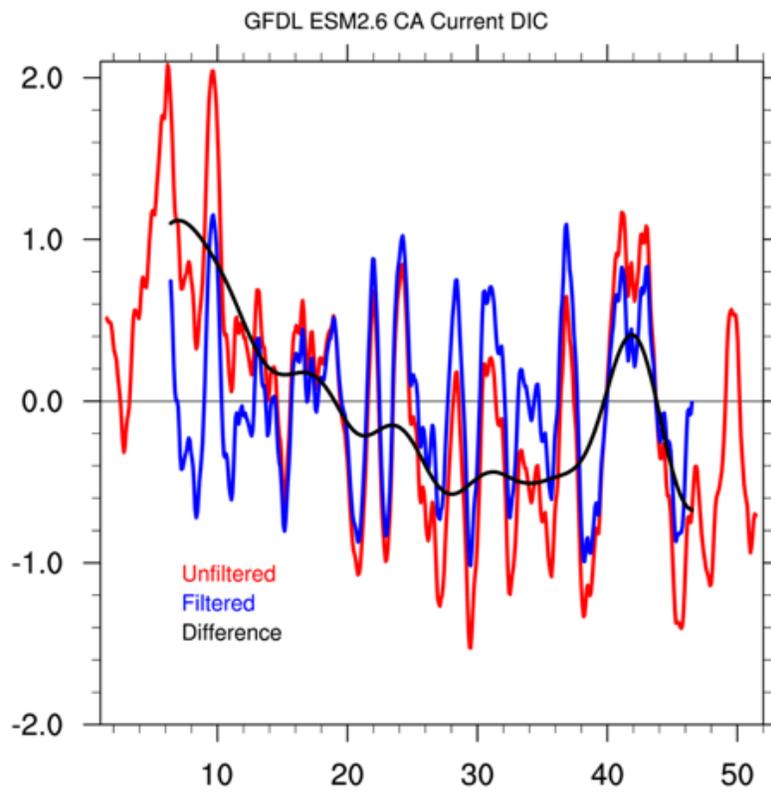


Figure S1: ESM2.6 temporal evolution of dissolved inorganic carbon (DIC) anomalies (mol C m^{-3}) for the 52 simulation years. The unfiltered DIC is shown in red, and the Lanczos-filtered DIC is shown in blue. The black line is the difference between the unfiltered and the filtered data.

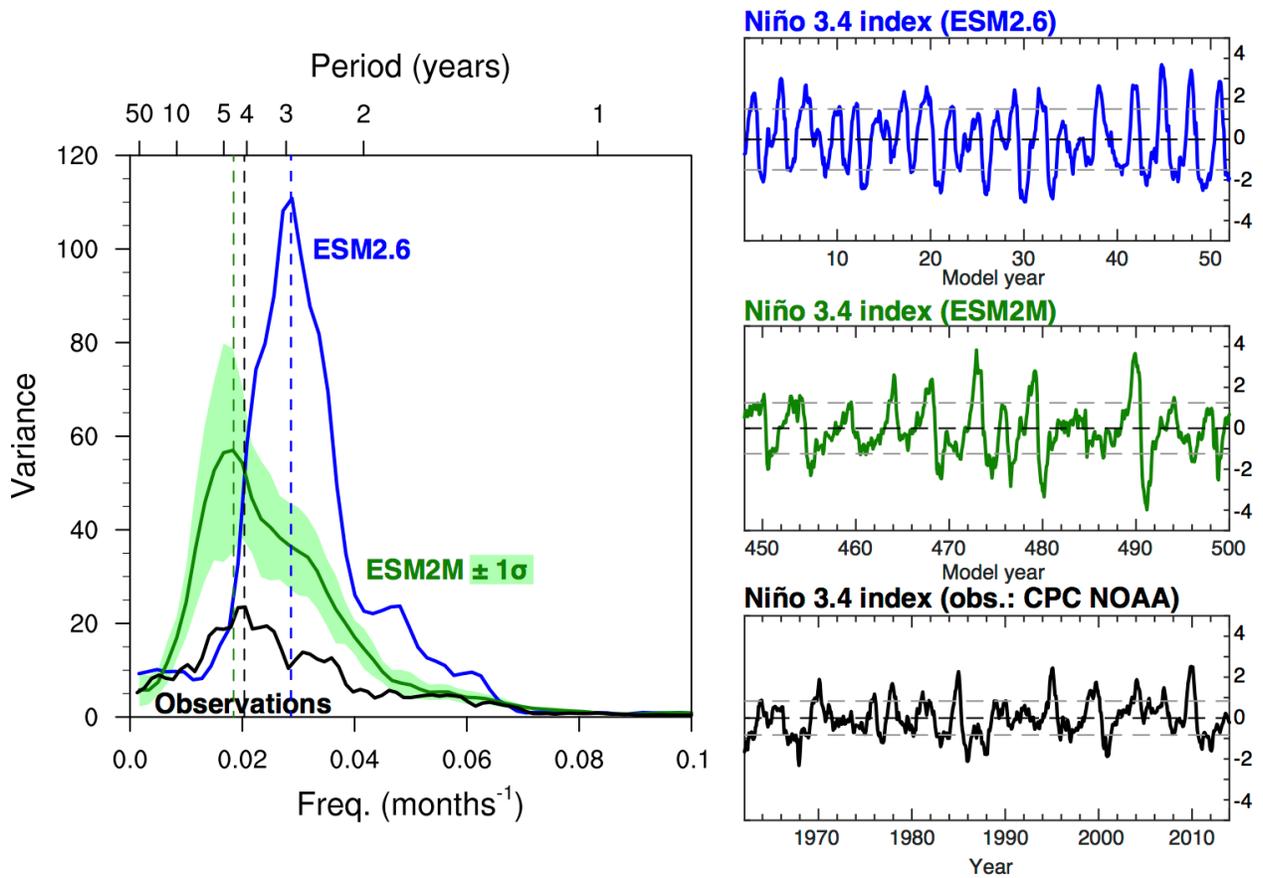


Figure S2: Left: Spectral analysis of Niño3.4 indices for ESM2.6 (blue), ESM2M (green) and observations (black; CPC NOAA). The shaded green area represents the ± 1 standard deviation range of ten 50-year segments of the 500-year ESM2M control run. Right: corresponding color-coded Niño3.4 index time series with ± 1 standard deviation range for each time series (gray dashed lines). Note that the three x-axes all show 52 years to be comparable with the whole ESM2.6 time series (ESM2.6: model years 1-52; ESM2M: model years 449-500; observations: years 1963-2014).

GFDL ESM2.6 FMA SST(shaded) SLP(contour)

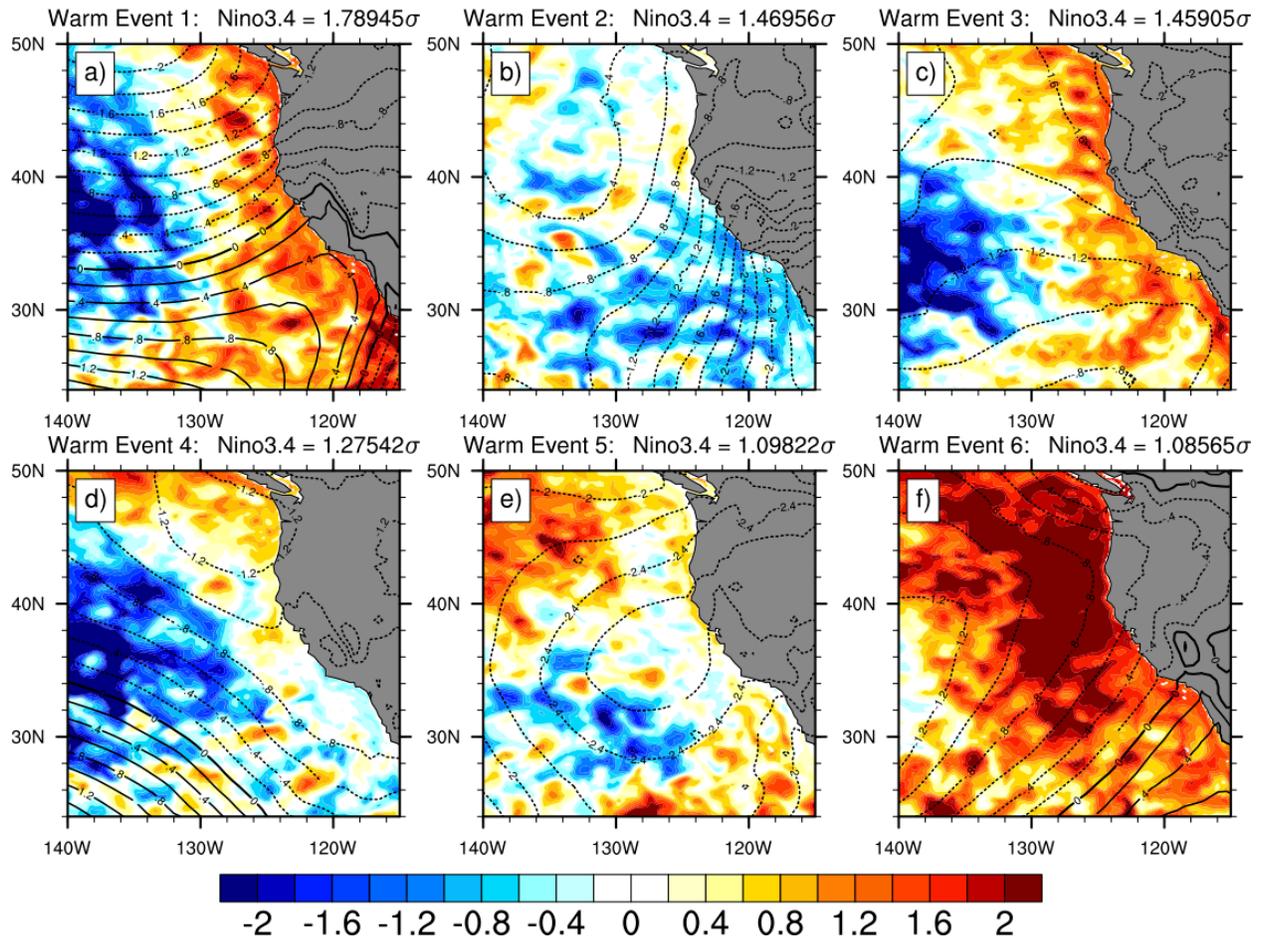


Figure S3: ESM2.6 FMA high-pass filtered standardized anomalies for SST (shaded) and SLP (0.2 sigma interval contours) for the top six El Niño events based on NDJ Niño3.4 anomalies.

GFDL ESM2.6 FMA O₂

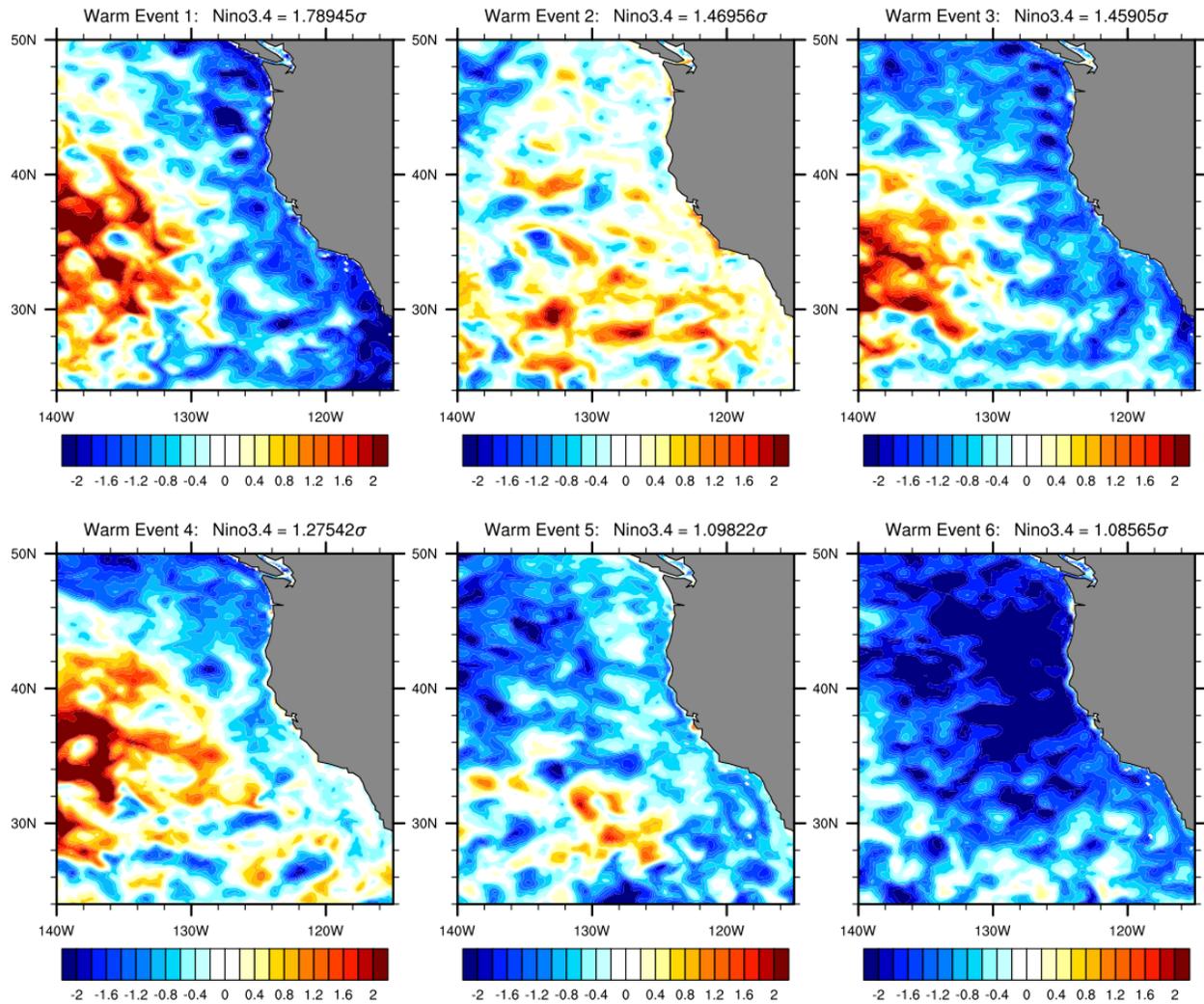


Figure S4: ESM2.6 FMA high-pass filtered standardized anomalies for surface O₂ for the top six El Niño events based on NDJ Niño3.4 anomalies.

GFDL ESM2.6 FMA pH

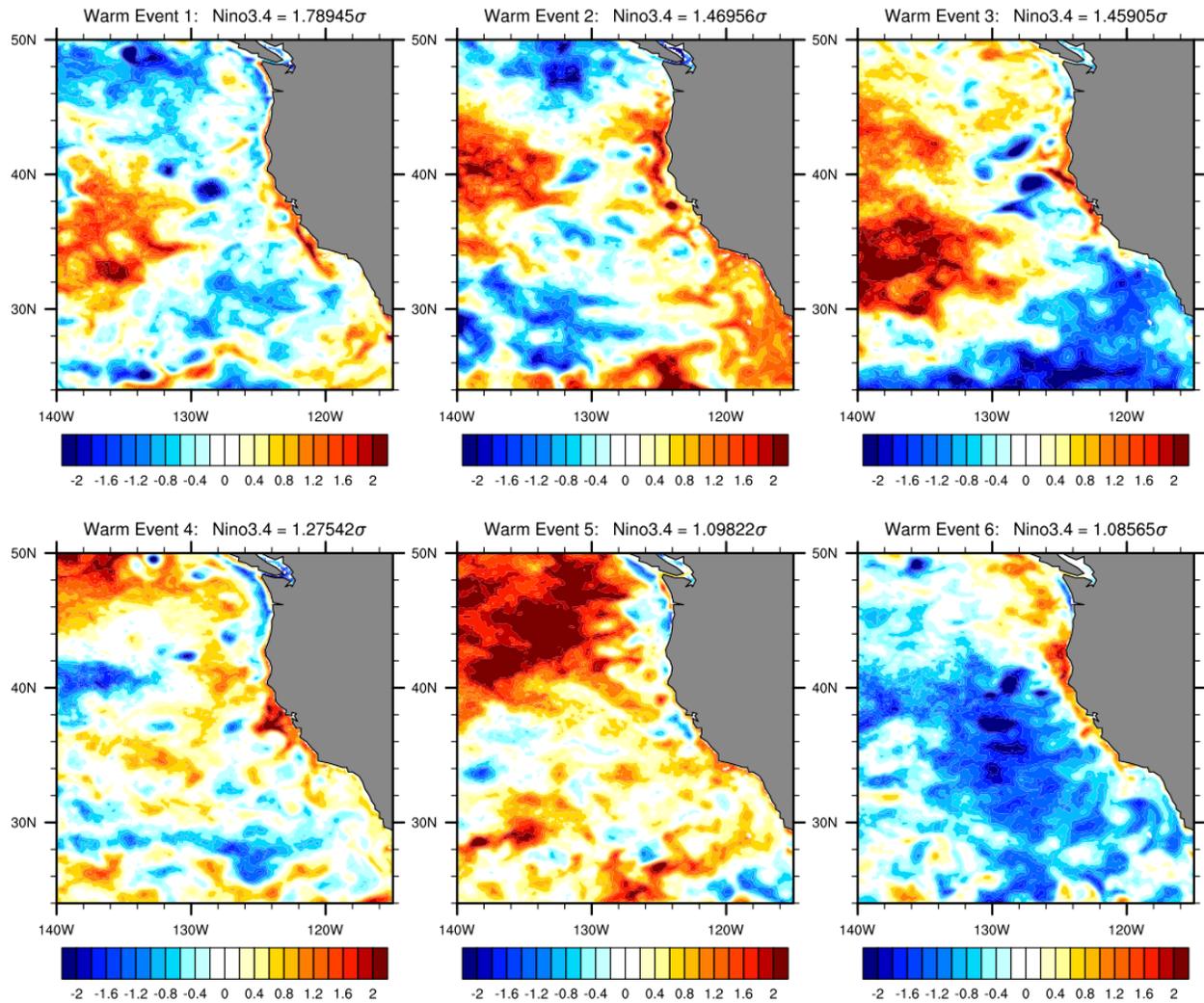


Figure S5: ESM2.6 FMA high-pass filtered standardized anomalies for surface pH for the top six El Niño events based on NDJ Niño3.4 anomalies.

GFDL ESM2.6 FMA SST(shaded) SLP(contour)

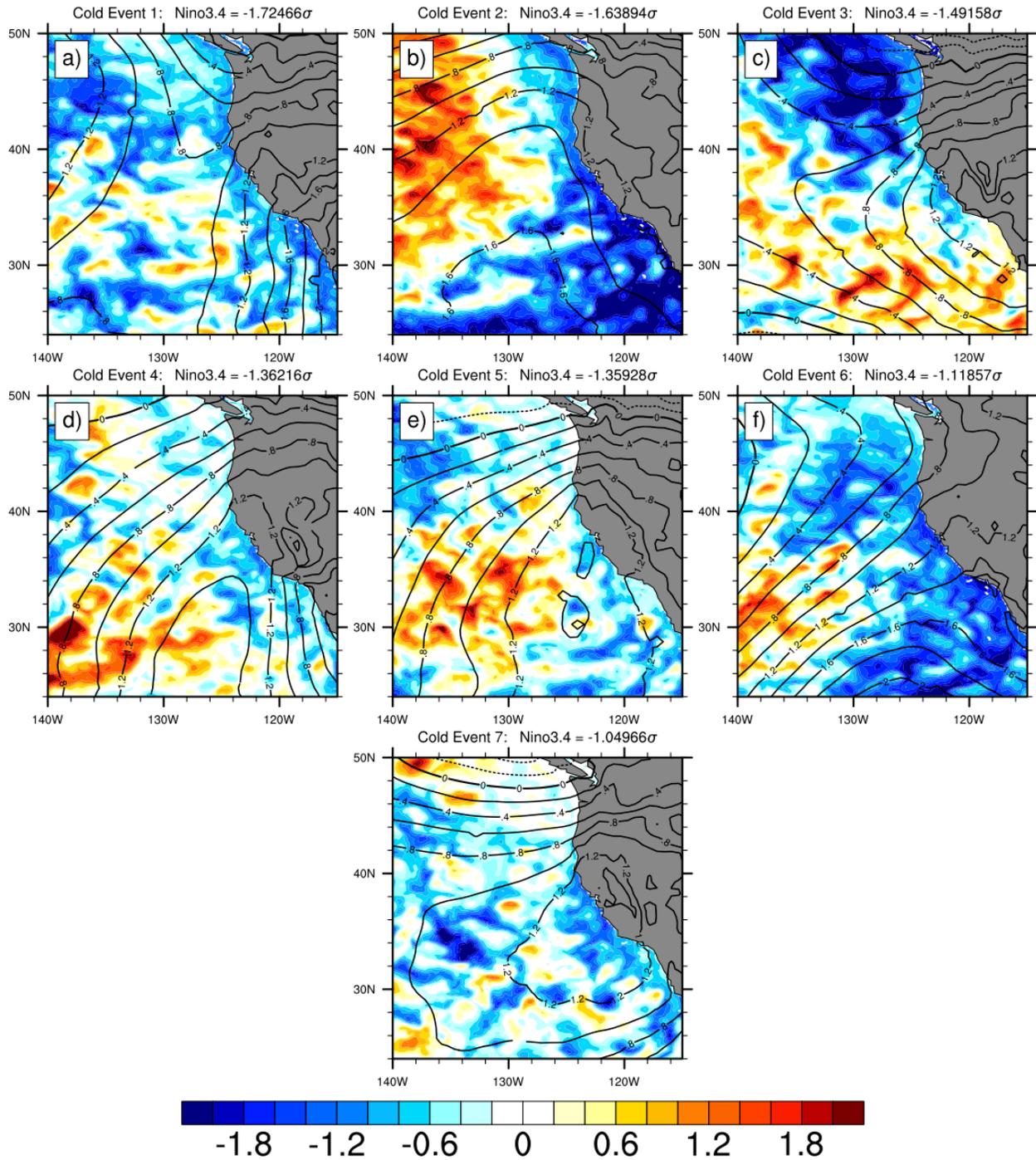


Figure S6: ESM2.6 FMA high-pass filtered standardized anomalies for SST (shaded) and SLP (0.2 sigma interval contours) for the top seven La Niña events based on NDJ Niño3.4 anomalies.