



## Supplement of

## Investigating ENSO and its teleconnections under climate change in an ensemble view – a new perspective

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Figure S1: The time-dependence of the ensemble-based regression coefficient at two-two random geographical locations (indicated in the legend in brackets) chosen from the region of strong positive trend (marked by orange and red curves) and from the region of negative trend (marked by cyan and blue curves) in Fig. 2, (a) for JJAS and (b) for DJF. The slope of the linear fits over time  $[10^{-3} \, {}^{\circ}\mathrm{C}\,\mathrm{yr}^{-1}]$  is also indicated in the legend.



Figure S2: The ensemble-based explained variance of mode #2-#5 of the SEOF analysis, (a) in JJAS and (b) in DJF. Linear fits over time are indicated by dashed lines, legends indicate the slope of the linear fits over time with 95% confidence intervals.



Figure S3: The time-dependence of the ensemble-based SST loading pattern (the maps of the first SEOF modes, i.e., normalized eigenvectors associated with the largest eigenvalue of the covariance matrix of the SST anomaly fields) for years given in the panel's title for JJAS (a-c) and DJF (d-f). The explained variance of the first SEOF mode is also displayed in the title of the panels.



Figure S4: The slope of the linear fit over time  $[10^{-6} \text{ yr}^{-1}]$  at each grid point of the (a) JJAS and (b) DJF SEOF loading patterns from 1950 to 2100. Dots represent geographical locations where the trend is significant at the 95% level. For better visibility, only every fourth grid point is dotted.