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Supplement of

The effects of El Niño–Southern Oscillation on the winter haze pollution of China

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Supplementary Material

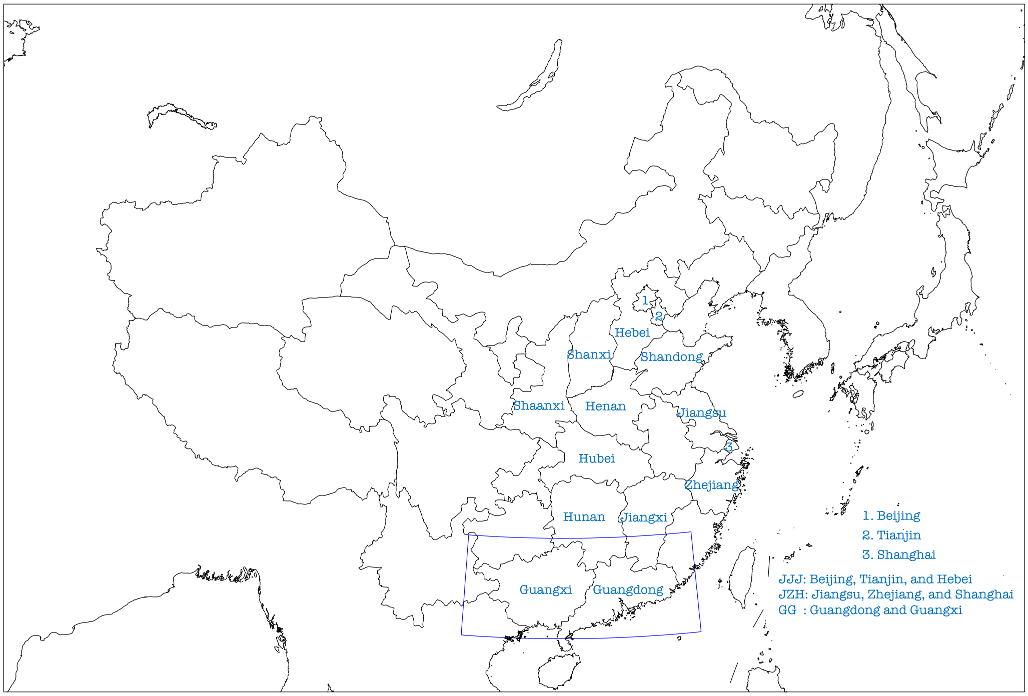

Figure S1. Names and short terms of the provinces and regions that are mentioned in section 3.1, with the box showing the scope for calculating regional average aerosol CONCsur in Figure 10.

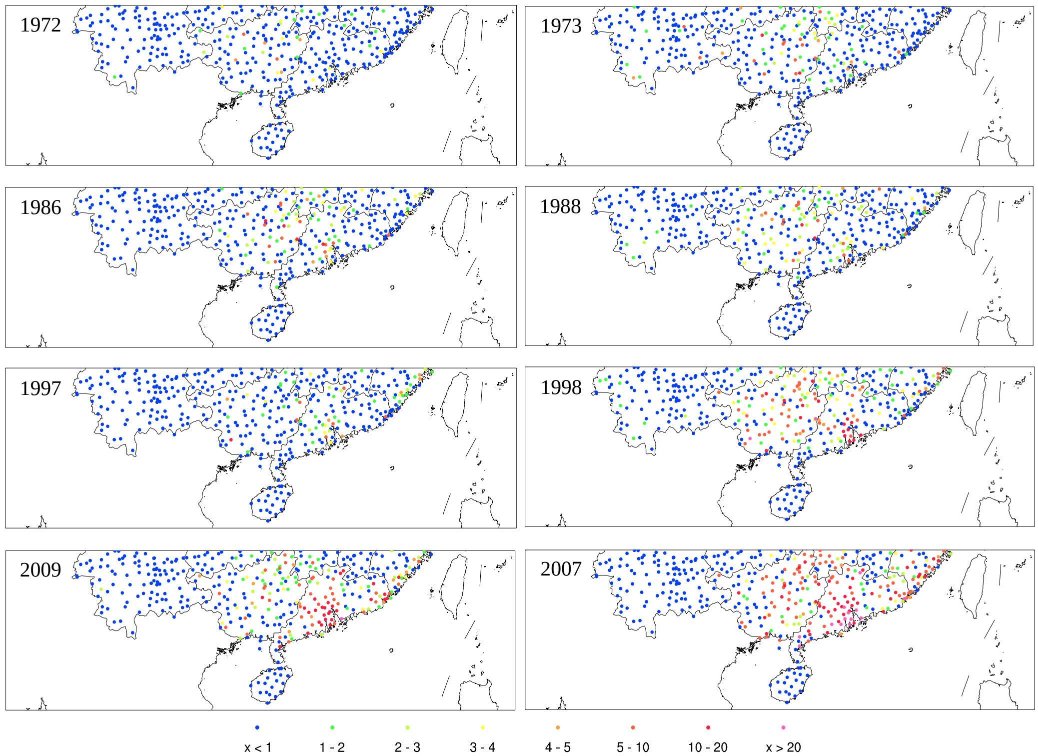

Figure S2. Comparisons between the average haze days (units: days) of 4 selected pairs of El Niño winters (left) and La Niña winters (right) over southern China, with the interval between each pair not longer than 2 years.

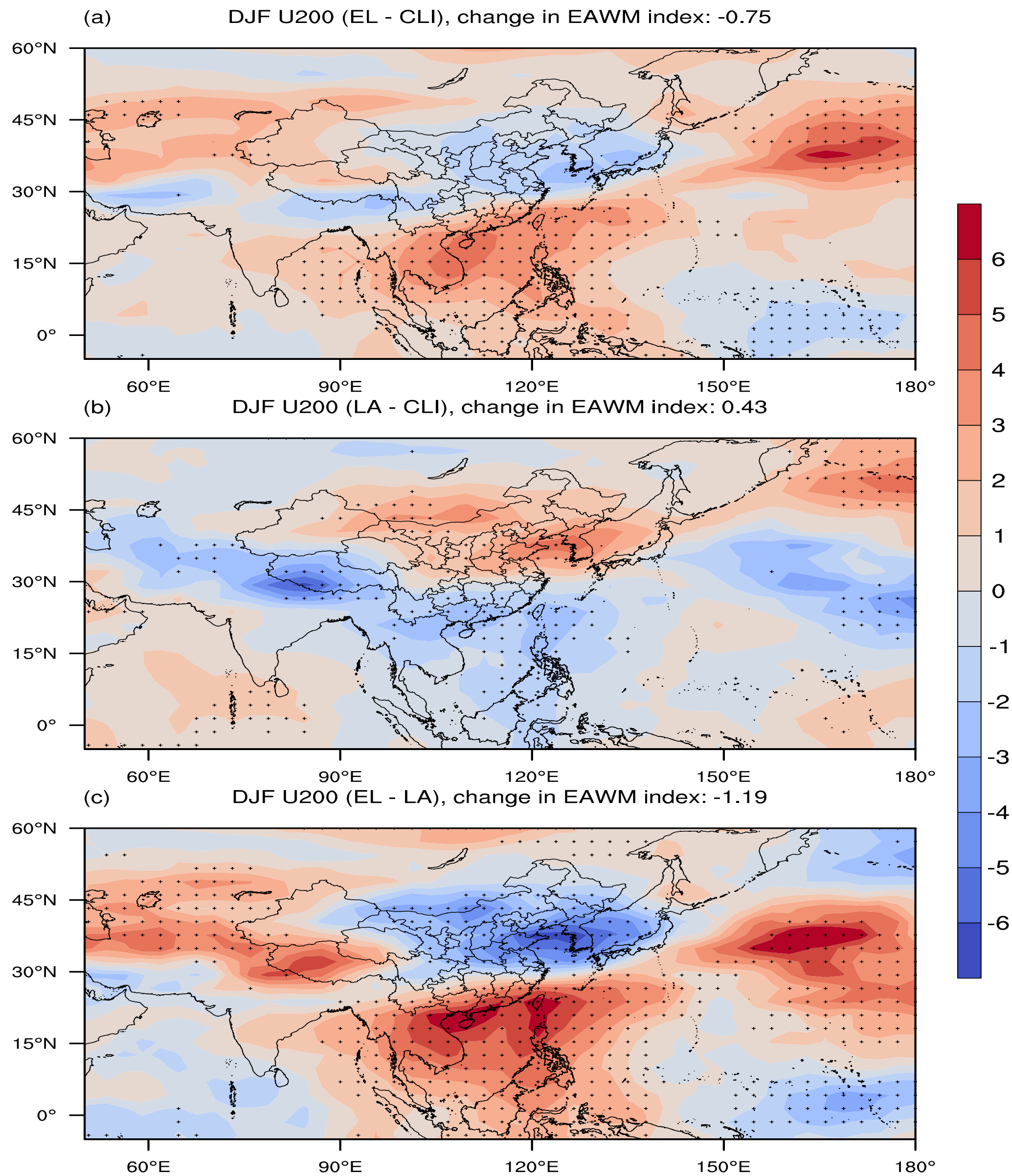

Figure S3. Medians of the simulated differences in winter-average zonal wind at 200 hPa (U200, units: m s^{-1}) between (a) EL and CLI, (b) LA and CLI, and (c) EL and LA, with black "+" indicating that the differences in U200 between more than 70% pairs of ensemble members have the same sign with the median differences. The changes in East Asian Winter Monsoon (EAWM) index (Li and Yang, 2010), which is calculated based on U200, are also given in titles.

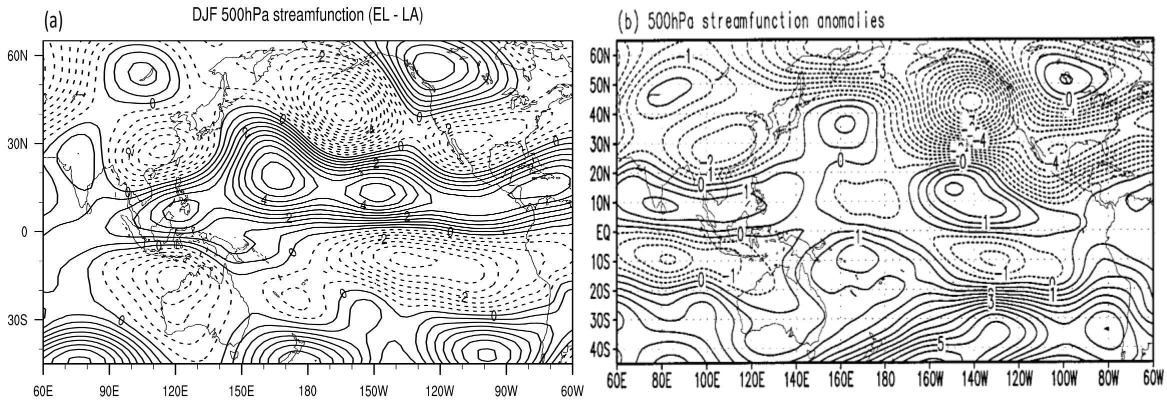

Figure S4. (a) Simulated differences in winter-average streamfunction at 500 hPa between EL and LA, and (b) composite 3-month mean streamfunction anomalies at 500 hPa around the peaks (in boreal winter) of six warmest ENSO events between 1958–1998, which is cited from Wang et al. (2000). Both (a) and (b) have a contour interval of 0.5, and a unit of 10^6 m^2 s^{-1}.

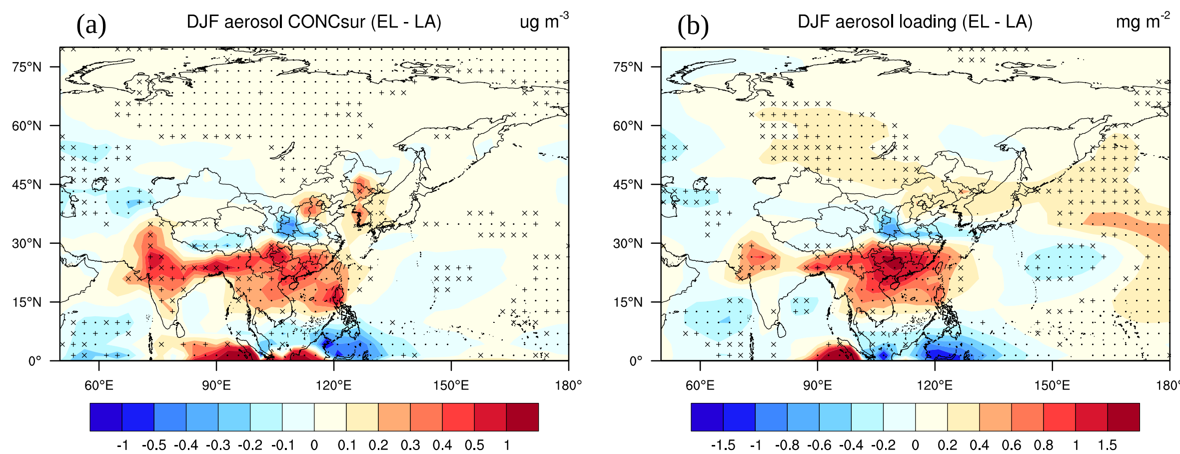

Figure S5. Means of the simulated differences in winter-average (a) aerosol surface concentrations (units: ug m^{-3}) and aerosol loadings (units: mg m^{-2}) between EL and LA, with “×”, “+”, and “·” indicating results significant at the levels of 0.2, 0.1, and 0.05, respectively.

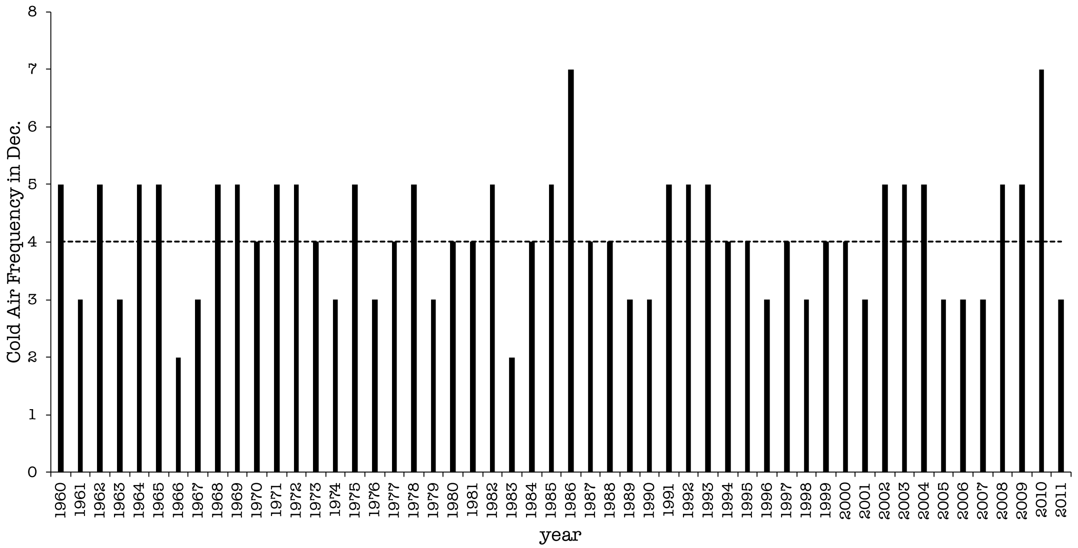

Figure S6. Recorded frequency of cold air in China in December ~~between~~ 1960–2011 by the National Climate Center of China.

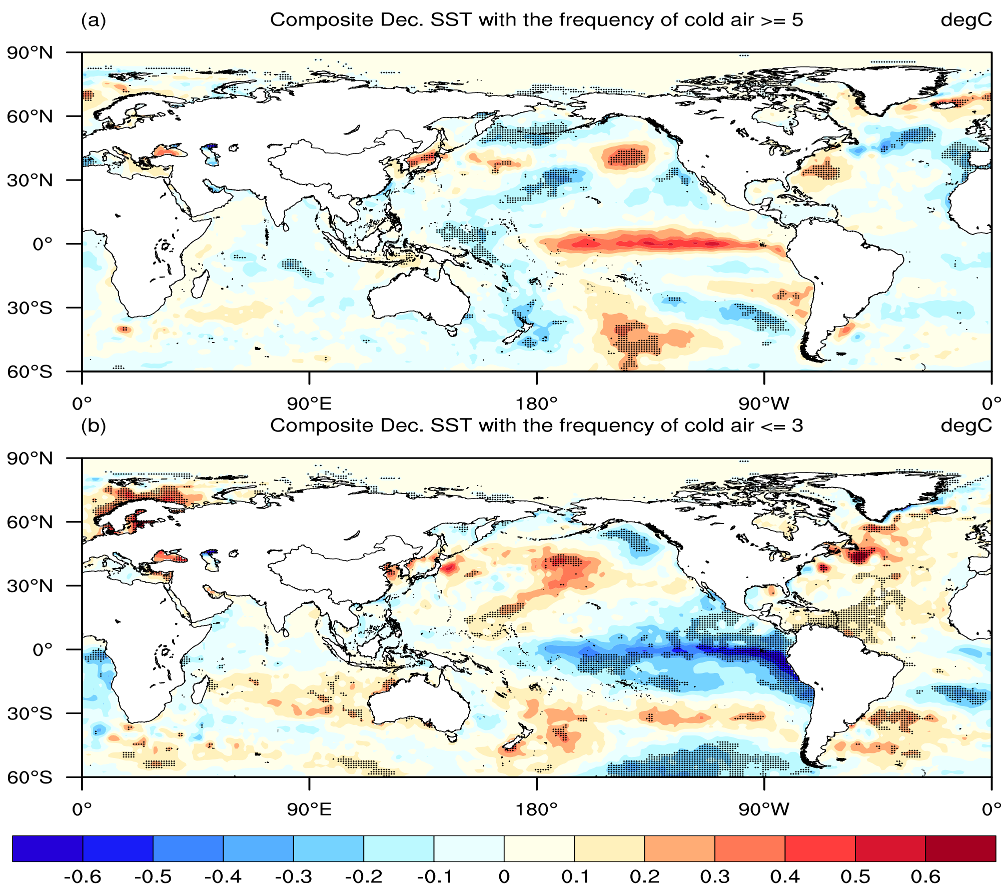

Figure S7. Composite of the anomalous sea surface temperature (SST, units: °C) in December, with the frequency of cold air in China in December (a) ≥ 5 times and (b) ≤ 3 times. Linear trend of the SST has been removed, and black dots indicate that results are significant at the level of 0.05.