



Supplement of

Exploring 2016–2017 surface ozone pollution over China: source contributions and meteorological influences

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Figure S1. Spatial distribution of bimonthly mean (a) anthropogenic NO emissions, (b)

- anthropogenic CO emissions, (c) anthropogenic NMVOC emissions averaged for 2016–2017.



MAR APR MAY JUN JUL AUG SEP OCT
Figure S2. Simulated vs. observed daily maximum 8 h average (MDA8) ozone concentrations at
the ensemble of the 169 cities categorized by the 9 city clusters for March-October 2016-2017. The
colors denote different months. The mean concentrations, standard deviations, correlation
coefficients (r), the 1:1 line, and number of cities in each city cluster are shown inset.



Figure. S3 Time series of observed and simulated daily MDA8 ozone concentrations from the nested model (red) and the global model (blue) at 15 representative sities from the nine situ clusters

nested model (red) and the global model (blue) at 15 representative cities from the nine city clusters
in March-October 2017. The mean concentrations and correlation coefficients (r) are shown inset.





Figure. S4 Spatial distribution of bimonthly mean (a) daily maximum 2-meter air temperature

- with 850hPa horizontal wind overlaid, (b) specific humidity, (c) cloud cover fraction, and (d)
- 500hPa vertical velocity averaged for 2016–2017.



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34 Figure. S5 Spatial distribution of bimonthly mean (a) soil NO emissions, (b) column integrated NO

emissions, (c) biogenic isoprene emissions averaged for 2016–2017, and (d) biomass burning CO

36 emission in 2014 used in the model.



Figure S6. Zonal-vertical distribution of (a) lightning NO emissions and (b) lightning ozone 41 enhancement at $30^{\circ}N_{\circ}$



46 ozone chemical production regime) at the surface averaged for 2016–2017. Areas with H_2O_2/HNO_3

47 values lower than 0.3 can be considered as the VOC-limited regime, while values higher than 0.6

- 48 can be considered as NO_x-limited.
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Figure S8. Differences in May-August mean domestic anthropogenic PM_{2.5} contribution between

- 54 2017 and 2016 in unit of $[\mu g m^{-3}]$.





Figure S9. Spatial distributions of Chinese domestic anthropogenic contributions to surface MDA8 ozone in 2017 estimated from (a) zero-out methods (difference between the BASE simulation and the noCH simulation), (b) 20% perturbation method (five times of difference between the BASE simulation and the CH20off simulation). (c) shows the difference between (a) and (b).

Daily maximum temperature (2016-2017 minus 2013-2015)



Figure S10. Differences in May-August mean daily maximum 2-m air temperature between 2016-

65 2017 period and 2013-2015 period.