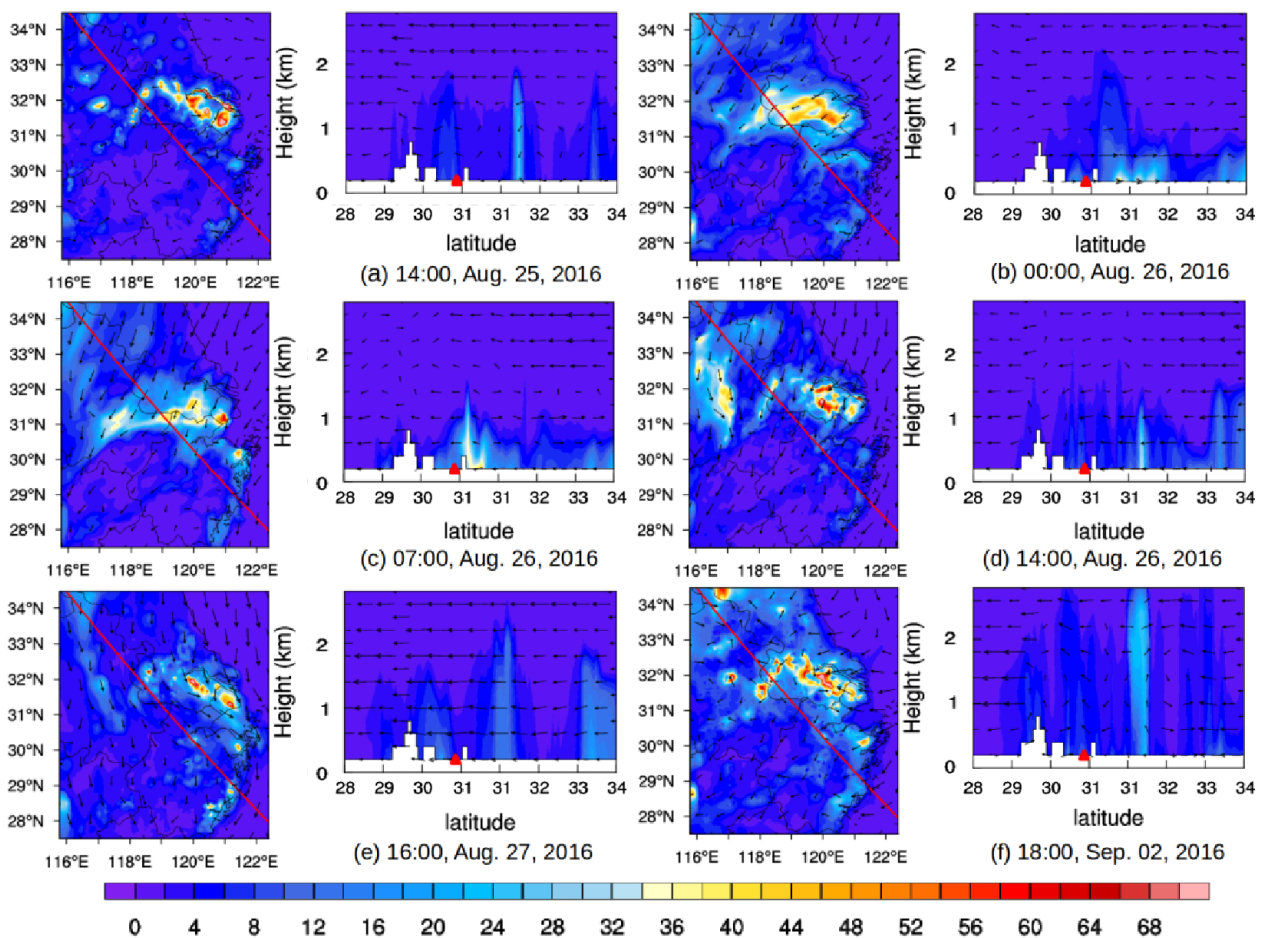


Supplement of

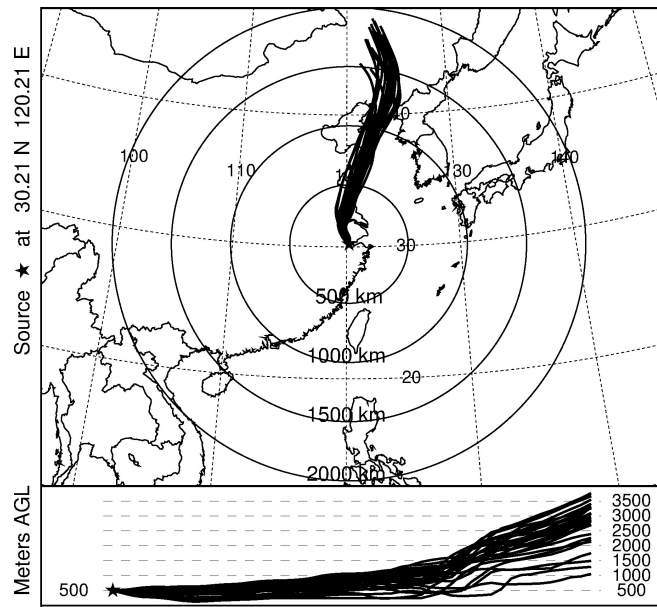
## Modeling tropospheric ozone evolution during G20 summit period in Hangzhou, China, 2016

Zhi-zhen Ni et al.

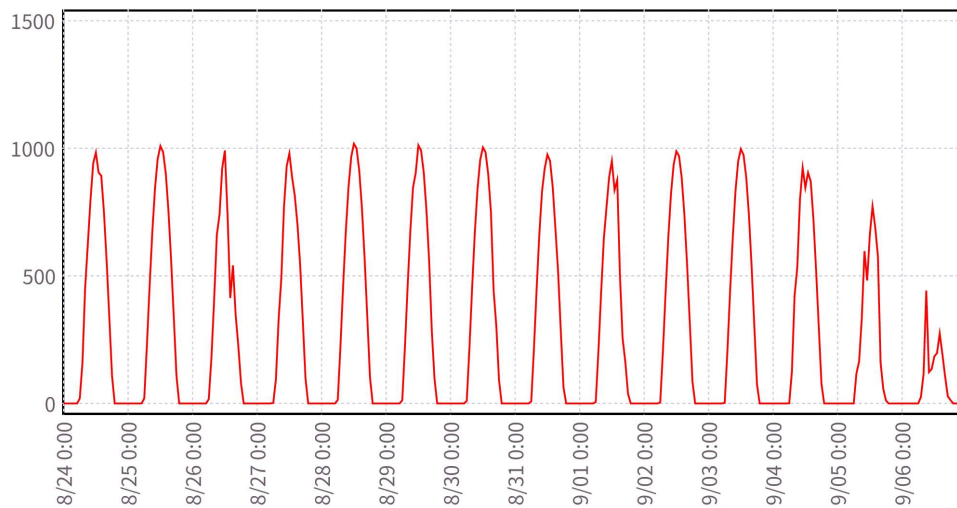
Correspondence to: Kun Luo ([zjulk@zju.edu.cn](mailto:zjulk@zju.edu.cn))



**Fig. S1.** Surface and upper-level NO<sub>2</sub> distributions ( $\mu\text{g m}^{-3}$ ) and wind fields (vectors,  $\text{m s}^{-1}$ ) for representative episodes. (a) Stagnant weather before the tropical cyclone, (b–e) pollutant transport when the tropical cyclone approached, and (f) stagnant weather after the cyclone. The red line denotes the cross section line of upper-level NO<sub>2</sub> distributions. The red triangle denotes the location of Hangzhou.



**Fig. S2.** Atmospheric backward trajectory of 48 hours arrived at Hangzhou ending at 10:00 LST (Local Sidereal Time) on August 27, 2016 in East Asia (via HYSPLIT model).



**Fig. S3.** Simulated hourly downward short wave flux at ground surface in Hangzhou ( $\text{W m}^{-2}$ ) during August 24 to September 6, 2016.

**Table S1.** Discrete statistical indicators used in the model evaluation

Metrics	Definition	Range
Mean Fractional Bias (MFB)	$MFB = \frac{2}{N} \sum_{i=1}^N \frac{S_i - O_i}{S_i + O_i} \times 100\%$	-200% to 200%
Mean Fractional Error (MFE)	$MFE = \frac{2}{N} \sum_{i=1}^N \frac{ S_i - O_i }{S_i + O_i} \times 100\%$	0 to 200%
Correlation Coefficient (r)	$r = \frac{\sum_{i=1}^N (S_i - \bar{S})(O_i - \bar{O})}{\sqrt{\sum_{i=1}^N (S_i - \bar{S})^2 \sum_{i=1}^N (O_i - \bar{O})^2}}$	0 to 1
Mean Bias (MB)	$MB = \frac{1}{N} \sum_{i=1}^N (S_i - O_i)$	$-\infty$ to $+\infty$
Gross Error (GE)	$GE = \frac{1}{N} \sum_{i=1}^N  S_i - O_i $	0 to $+\infty$
Root Mean Square Error (RMSE)	$RMSE = \sqrt{\frac{1}{N} \sum_{i=1}^N (S_i - O_i)^2}$	0 to $+\infty$

$N$  is the number of samples.  $S_i$  and  $O_i$  are values of simulations and observations at time or location  $i$ , respectively.