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*Supplement of*

## **Exploring the inconsistent variations in atmospheric primary and secondary pollutants during the 2016 G20 summit in Hangzhou, China: implications from observations and models**

**Gen Zhang et al.**

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1 **Figure captions**

2 Fig. S1. Profiles of meteorological parameters and atmospheric pollutants observed at NRCS before,  
3 during, and after G20.

4 Fig. S2. The clusters analysis of 24 h air masses back trajectories starting at 300 m from NRCS site  
5 before, during, and after G20, respectively.

6 Fig. S3. Mean hourly variations of atmospheric O<sub>3</sub> before G20, during the phase I and II G20, and after  
7 G20 period.

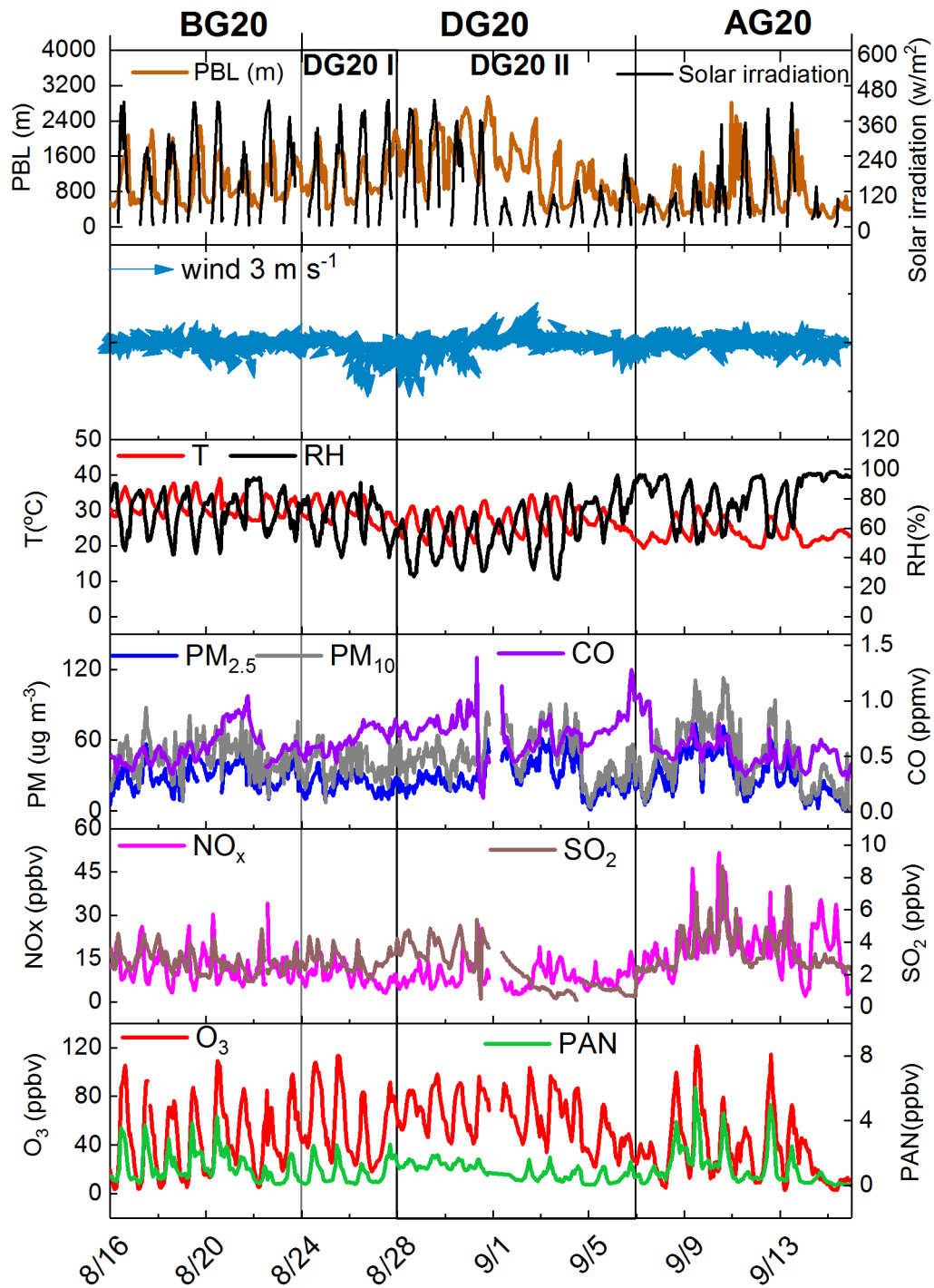
8 Fig. S4. Fire spots derived from the Fire Inventory NCAR version-1.5 (FINNV1.5) (Wiedinmyer et al.,  
9 2011) in eastern China before (a), during (b), and after (c) the period of 2016 G20. The alphabets of a,b,  
10 and c represent the period of 10-23 August, 24 August-6 September, and 7-20 September, respectively.

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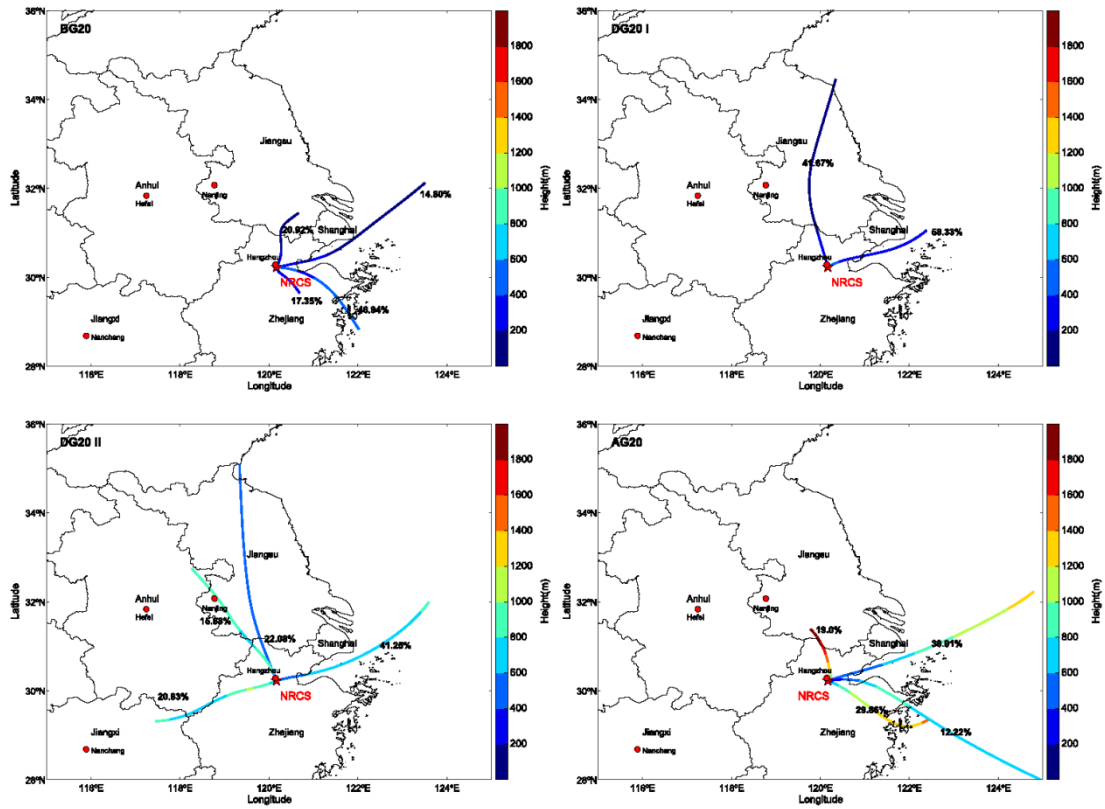
15 Table S2. VOCs mixing ratios (ppbv) at NRCS station in Hangzhou

16 Table S3. Average mixing ratios (ppbv) of VOCs species measured before (B), during (D), and after  
17 G20 (A), respectively.

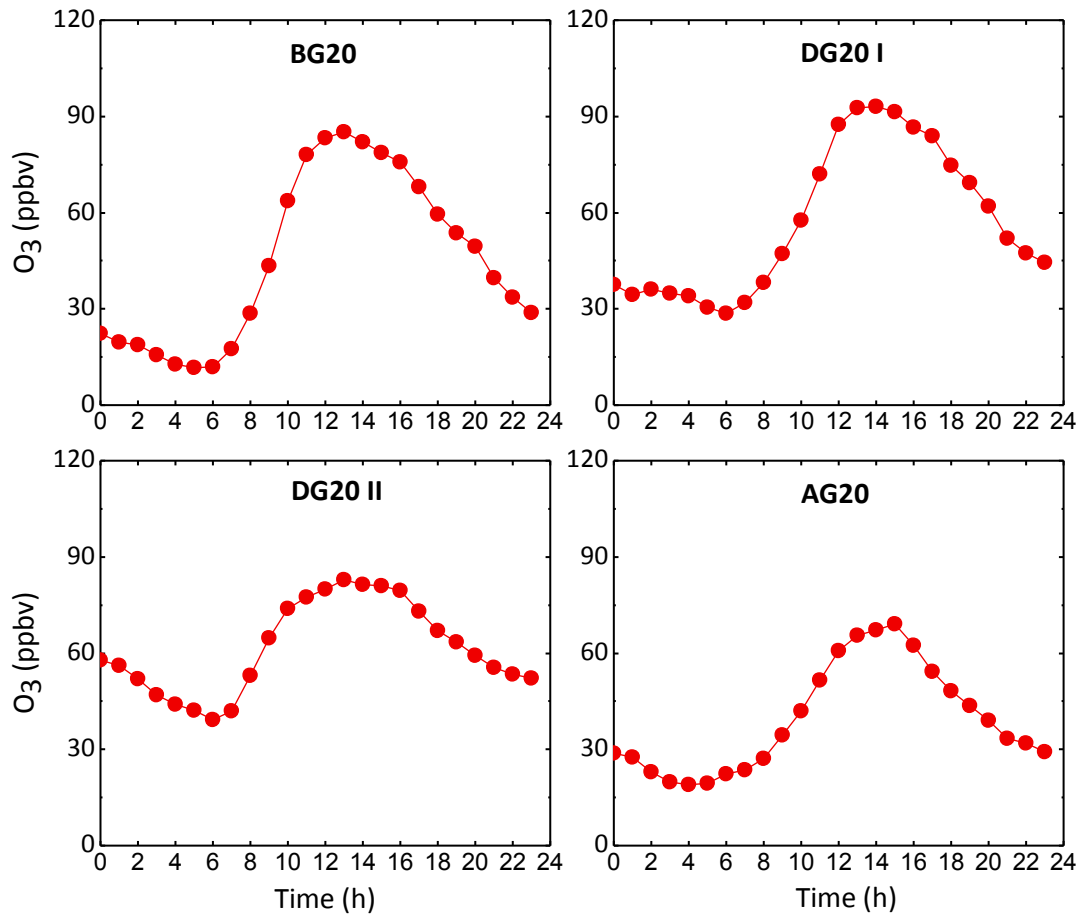


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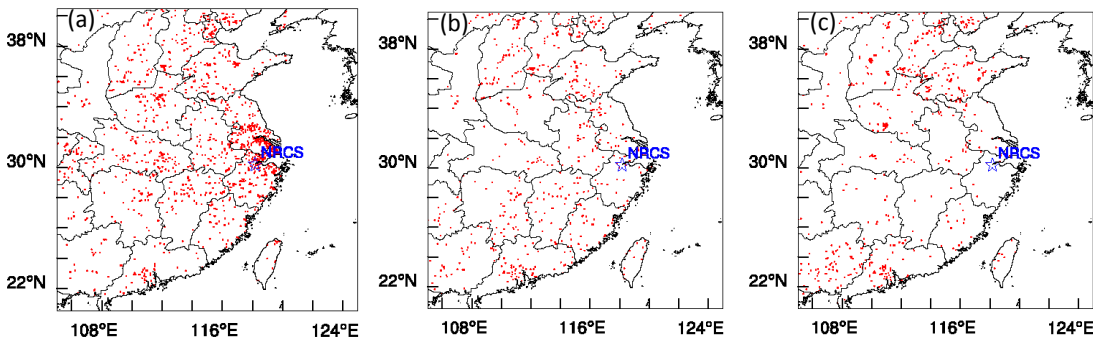


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Period	Cluster	Percentage	$\text{PM}_{2.5}$	$\text{PM}_{10}$	$\text{SO}_2$	$\text{NO}_x$	CO	$\text{O}_3$	PAN
BG20	1	46.9%	27.9	46.4	2.91	11.6	0.54	43.7	1.21
	2	17.4%	32.9	52.6	2.59	13.8	0.56	34.6	1.46
	3	14.8%	27.0	40.7	2.84	13.2	0.53	55.6	0.68
	4	20.9%	34.3	52.5	2.68	11.3	0.72	52.2	1.45
DG20 I	1	58.3%	23.8	40.5	2.89	10.8	0.57	61.2	0.76
	2	41.7%	20.7	37.7	2.71	7.15	0.75	51.1	0.93
DG20 II	1	23.2%	24.8	45.9	3.82	7.97	0.77	71.9	1.36
	2	43.4%	29.1	44.0	1.02	9.21	0.75	53.1	0.56
	3	16.7%	36.1	54.1	2.93	7.62	0.6	69.4	0.84
	4	16.7%	29.0	45.7	2.48	8.44	0.67	64.9	0.92
AG20	1	29.5%	42.0	63.6	4.20	22.0	0.64	42.6	1.53
	2	39.1%	24.6	37.8	3.51	18.6	0.47	38.0	0.95
	3	12.3%	12.0	22.1	2.71	19.7	0.49	7.98	0.18
	4	19.1%	29.4	45.5	2.91	15.3	0.60	38.7	1.47

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38 Table S2. VOCs mixing ratios (ppbv) at NRCS station in Hangzhou

VOCs group	BG20		DG20		AG20	
	Mean $\pm$ SD	Range	Mean $\pm$ SD	Range	Mean $\pm$ SD	Range
Total VOCs	9.24 $\pm$ 2.79	4.06-16.06	7.39 $\pm$ 2.59	3.12-16.57	15.10 $\pm$ 4.69	6.41-25.17
Alkanes	5.11 $\pm$ 1.75	2.22-10.43	4.10 $\pm$ 1.66	1.76-9.85	8.38 $\pm$ 2.79	3.29-14.60
Alkenes	1.64 $\pm$ 0.36	0.88-2.57	2.04 $\pm$ 0.71	0.68-4.24	3.45 $\pm$ 0.88	1.92-5.64
Aromatics	2.49 $\pm$ 0.89	0.92-4.61	1.25 $\pm$ 0.58	0.35-3.39	3.26 $\pm$ 1.23	1.02-5.40

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40 Table S3. Average mixing ratios (ppbv) of VOCs species measured before (B), during (D), and after  
 41 G20 (A), respectively.

Species	B	D	A	Species	B	D	A
Ethane	1.18	1.63	2.11	3-Methylheptane	0.03	0.04	0.07
Propane	0.61	0.46	1.16	<i>n</i> -Octane	0.20	0.09	0.28
<i>n</i> -butane	0.42	0.32	0.69	Ethylene	1.04	1.59	2.57
Isobutane	0.42	0.28	0.68	Propene	0.26	0.19	0.46
Isopentane	0.31	0.39	0.55	<i>trans</i> -2-Butene	0.05	0.02	0.07
Pentane	0.35	0.03	0.44	1-pentene	0.01	0.00	0.04
2,2-Dimethylbutane	0.06	0.03	0.20	<i>trans</i> -2-pentene	0.01	0.00	0.04
2,3-Dimethylbutane	0.03	0.01	0.32	Isoprene	0.23	0.22	0.17
2-Methylpentane	0.45	0.27	0.50	<i>cis</i> -2-pentene	0.04	0.01	0.10
3-Methylpentane	0.34	0.13	0.44	Benzene	0.49	0.35	0.66
<i>n</i> -Hexane	0.37	0.26	0.39	Toluene	0.97	0.49	1.31
2,4-Dimethylpentane	0.03	0.01	0.05	Ethylbenzene	0.27	0.09	0.35
Cyclohexane	0.08	0.04	0.13	<i>m/p</i> -Xylene	0.43	0.12	0.50
2,3-Dimethylpentane	0.07	0.05	0.09	<i>o</i> -Xylene	0.11	0.03	0.13
3-Methylhexane	0.03	0.01	0.08	Styrene	0.06	0.07	0.15
2,2,4-Trimethylpentane	0.05	0.04	0.07	<i>m</i> -Ethyltoluene	0.11	0.06	0.11
<i>n</i> -Heptane	0.03	0.01	0.06	<i>o</i> -Ethyltoluene	0.01	0.01	0.01
2,3,4-Trimethylpentane	0.05	0.02	0.09	1,2,4-Trimethylbenzene	0.02	0.02	0.04

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