

1 **Supporting Information (SI)**

2 **Figure captions**

3 **Figure S1.** Pictures showing the sites #15 (a) and #20 (b) on the 5th ring road, site #2
4 on the 3rd ring road (c) and site #10 on the 4th ring road (d).

5 **Figure S2.** Correlations between daily average concentrations of PM_{2.5} with those of
6 CO (a), NO₂ (b), SO₂ (c), CO+NO₂+SO₂ (d) and CO+NO₂ (e).

7 **Figure S3.** Map showing the distance between sampling site #22 and the Wanliu
8 monitoring station in Beijing (<http://map.baidu.com/>).

9 **Figure S4.** Daily average sulfur oxidation ratio (SOR) and nitrogen oxidation ratio
10 (NOR) during the pre-Parade Blue and Parade Blue periods.

11 **Figure S5.** Correlations between NH₄⁺ and SO₄²⁻, SO₄²⁻ + NO₃⁻ (unit: μeq m⁻³) during
12 the pre-Parade Blue and Parade Blue periods.

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31 **Figure S1**



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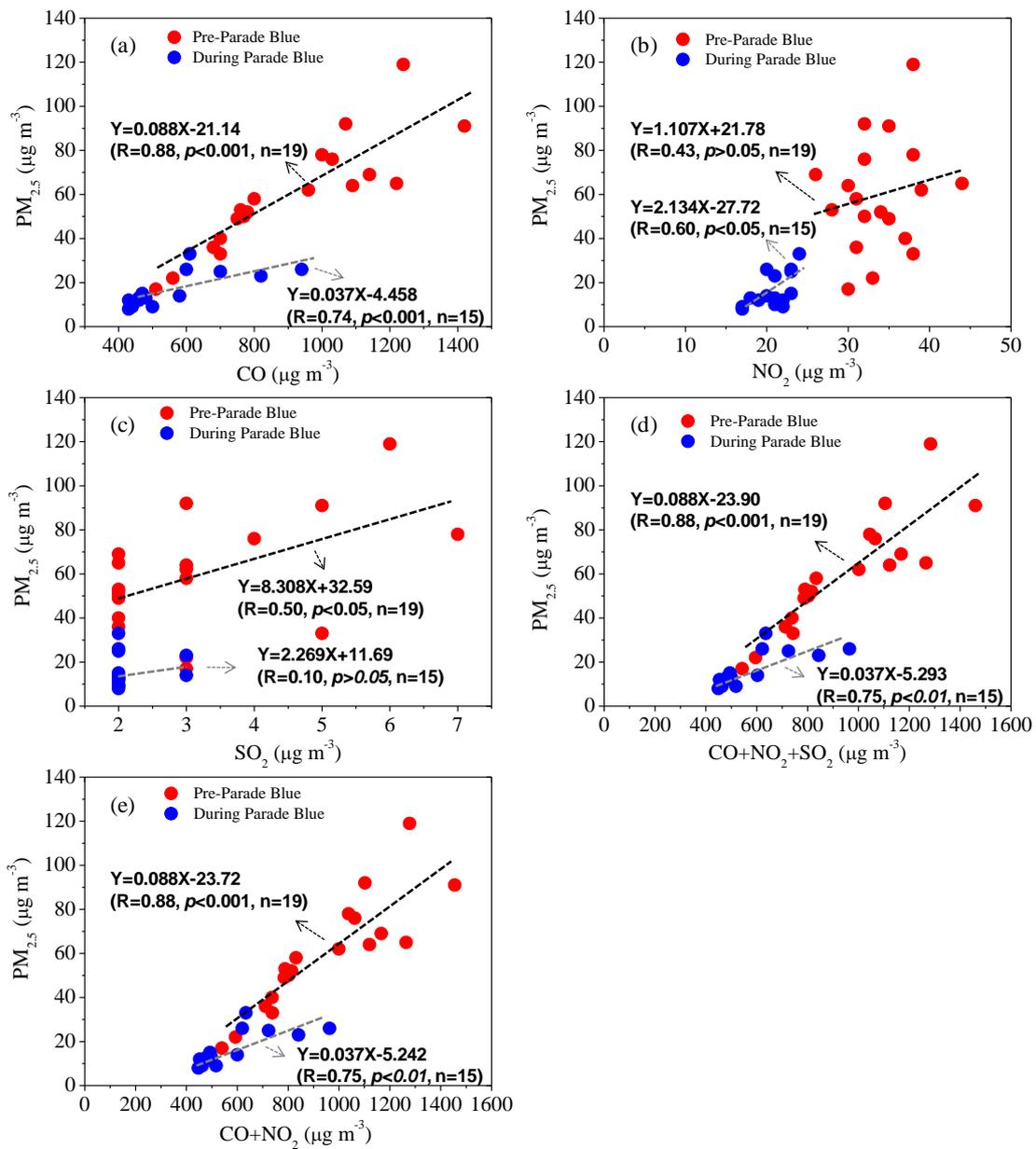
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45 **Figure S2**



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57 **Figure S3**



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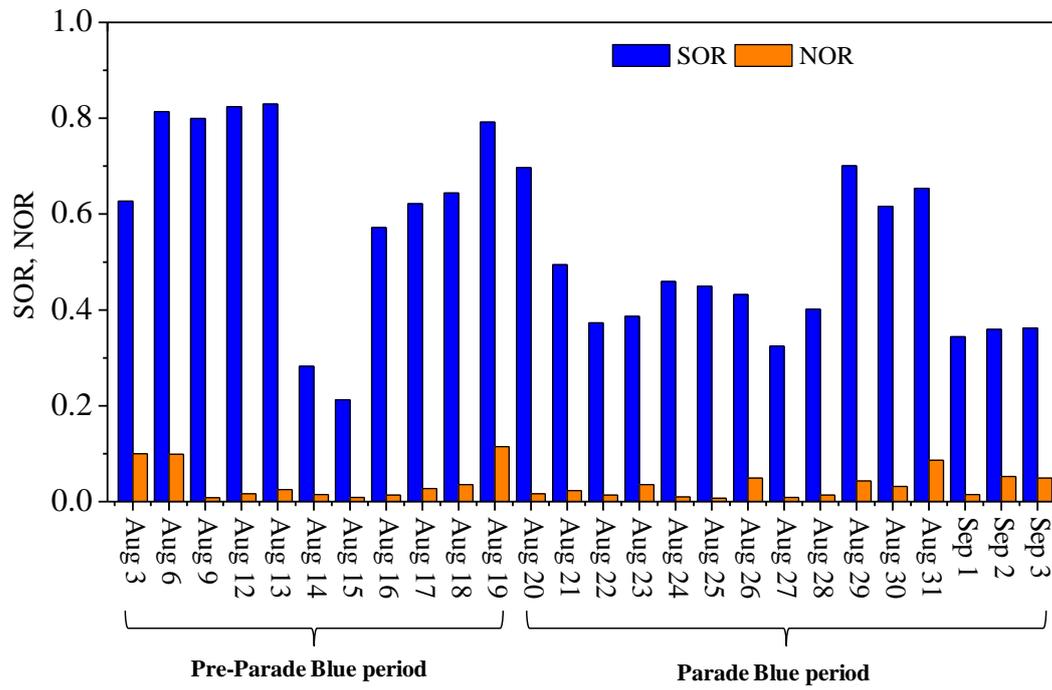
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76 **Figure S4**



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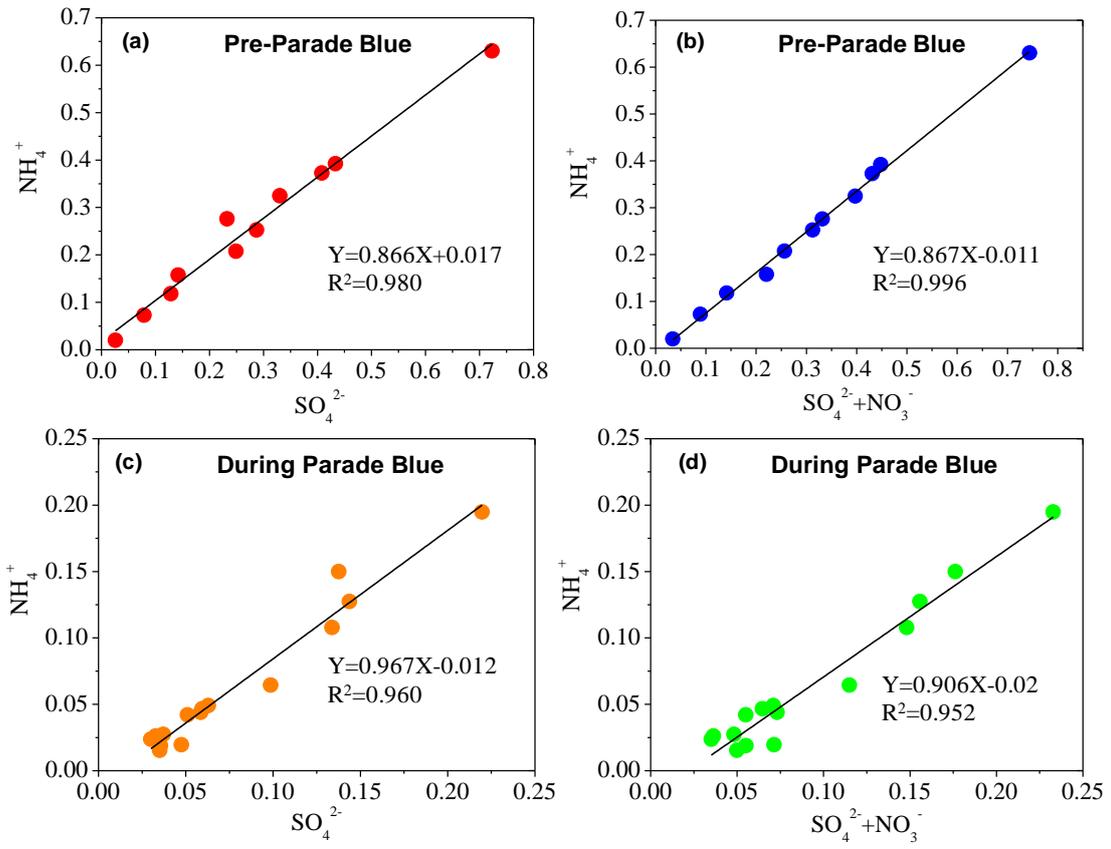
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97 **Figure S5**



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Table S1. Information on the third-one monitoring sites.

Site code	Coordinate	Sampling place	Site type ^a	Measured pollutants	Sampling durations for each pollutant ^b			Numbers of samples ^c			Surrounding environment and possible emission sources
					NH ₃	NO ₂	PM _{2.5}	NH ₃	NO ₂	PM _{2.5}	
1	116.37 E, 39.95 N	At Beijing Normal University	NRS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Densely occupied residences, traffic roads
2	116.47 E, 39.91 N	On the 3rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
3	116.39 E, 39.86 N	On the 3rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
4	116.32 E, 39.92 N	On the 3rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
5	116.38 E, 39.97 N	On the 3rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
6	116.29 E, 39.95 N	At Beijing Academy of Agriculture and Forestry	NRS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Occupied residences, traffic roads
7	116.36 E, 39.99 N	On the 4rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
8	116.28 E, 39.91 N	On the 4rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
9	116.39 E, 39.84 N	On the 4rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
10	116.49 E, 39.92 N	On the 4rd ring road	RS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Traffic roads
11	116.39 E, 40.01 N	Inside Olympic Park	NRS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Occupied residences, traffic roads
12	116.54 E, 39.92 N	Near sewage treatment plant	NRS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Small villages, sewage treatment plant
13	116.29 E, 40.00 N	Inside Summer Palace	NRS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Occupied residences,

14	116.22 E, 39.99 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	traffic roads Traffic roads
15	116.22 E, 39.91 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
16	116.27 E, 39.79 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
17	116.40 E, 39.77 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
18	116.49 E, 39.81 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
19	116.56 E, 39.88 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
20	116.52 E, 39.99 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
21	116.39 E, 40.03 N	On the 5rd ring road	RS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Traffic roads
22	116.29 E, 40.03 N	In China Agricultural University	NRS	NH ₃ , NO ₂ , PM _{2.5}	I, II, III	I, II, III	I, II, IV	3	3	41	Densely occupied residences, industry, small-scale urban agriculture, and traffic roads
23	116.26 E, 40.04 N	On the Baiwang hill	NRS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Small villages and roads
24	116.23 E, 40.07 N	Near refuse landfill	NRS	NH ₃	II, III	n.m.	n.m.	2	n.d.	n.d.	Small villages, refuse landfill
25	116.19 E, 40.14 N	In Shangzhuang Agricultural Experiment Station	NRS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Small villages, croplands

26	116.14 °E, 40.26 °N	On the high way	RS	NH ₃ , NO ₂	II, III	II, III	n.m.	2	2	n.d.	Traffic roads
27	116.02 °E, 40.36 °N	Inside Badaling Highway Tunnel	RS	NH ₃ , NO ₂	II, III	II, III	n.m.	2	2	n.d.	Traffic roads
28	116.01 °E, 40.36 °N	Near the exit of Badaling Highway Tunnel	RS	NH ₃ , NO ₂	II, III	II, III	n.m.	2	2	n.d.	Traffic roads
29	116.58 °E, 36.84 °N	In Yucheng Agricultural Experiment Station	RS	NH ₃ , NO ₂ , PM _{2.5}	I, II, III	I, II, III	I, II, IV	3	3	21	Small villages, croplands
30	115.02 °E, 36.87 °N	In Quzhou Agricultural Experiment Station	RS	NH ₃ , NO ₂ , PM _{2.5}	I, II, III	I, II, III	I, II, IV	3	3	19	Small villages, croplands
31	120.75 °E, 37.93 °N	On Changdao island	BS	NH ₃ , NO ₂	I, II, III	I, II, III	n.m.	3	3	n.d.	Almost no agricultural and industrial activities

116 ^a NRS, NR and BS denote non-road site, road site and background site, respectively.

117 ^b I, II, III, and IV denote the periods of 3-19 August 2015, 20 August-3 September 2015, 8-19 September 2015, and 4-30 September 2015,
 118 respectively; n.m. means no measurements.

119 ^d Values for NH₃ and NO₂ samples multiply by 3 to obtain the total numbers of samples; n.d. means no data.

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125 **Table S2.** Summary statistical of daily average PM_{2.5} concentrations ($\mu\text{g m}^{-3}$) during the pre-Parade Blue and Parade Blue periods in the 291
 126 cities across China.

City	Province	Region ^a	The Pre-Parade Blue period				The Parade Blue period				Reduction or Increase ^b
			Standard		Min	Max	Standard		Min	Max	
			Mean	Error			Mean	Error			
Beijing	Municipality	NC	59	6	17	119	17	2	8	33	-72
Tianjing	Municipality	NC	62	5	20	116	32	4	15	77	-49
Baoding	Hebei	NC	88	7	29	148	35	4	16	75	-60
Cangzhou	Hebei	NC	59	6	17	119	17	2	8	33	-72
Chengde	Hebei	NC	31	4	11	73	14	0	11	17	-56
Handan	Hebei	NC	81	7	35	147	52	7	9	91	-36
Hengshui	Hebei	NC	91	7	33	159	47	5	25	92	-48
Langfang	Hebei	NC	69	6	17	113	24	4	5	78	-66
Qinhuangdao	Hebei	NC	45	6	10	92	7	1	4	23	-85
Shijiazhuang	Hebei	NC	78	7	20	128	35	5	6	77	-55
Tangshan	Hebei	NC	73	6	25	118	13	2	4	29	-83
Xingtai	Hebei	NC	83	7	30	144	45	7	8	101	-45
Zhangjiakou	Hebei	NC	29	3	17	66	18	1	9	27	-39
Changzhi	Shanxi	NC	59	5	22	96	39	3	25	55	-34
Datong	Shanxi	NC	26	2	13	59	16	1	12	22	-37
Jincheng	Shanxi	NC	41	3	11	69	37	3	19	70	-12
Jinzhong	Shanxi	NC	39	3	21	71	26	3	11	51	-34
Linfen	Shanxi	NC	32	2	19	44	27	2	17	43	-18
Lvliang	Shanxi	NC	46	4	17	88	29	2	18	40	-38

Shuozhou	Shanxi	NC	39	2	18	54	28	1	22	36	-29
Taiyuan	Shanxi	NC	44	3	26	73	23	3	9	55	-48
Xinzhou	Shanxi	NC	39	3	23	61	20	2	12	36	-48
Yangquan	Shanxi	NC	38	3	16	64	19	2	9	31	-49
Yuncheng	Shanxi	NC	58	3	29	78	48	3	29	69	-17
Binzhou	Shandong	NC	49	5	12	94	37	4	18	69	-24
Dezhou	Shandong	NC	89	6	25	133	44	4	23	85	-51
Dongying	Shandong	NC	65	7	21	123	43	4	21	80	-34
Jinan	Shandong	NC	59	5	21	87	50	4	30	82	-15
Jining	Shandong	NC	50	5	22	103	49	3	34	78	-1
Laiwu	Shandong	NC	54	6	19	98	65	5	40	101	21
Liaocheng	Shandong	NC	67	6	24	105	49	5	17	80	-27
Linyi	Shandong	NC	37	4	15	76	43	4	25	78	15
Qingdao	Shandong	NC	35	4	9	60	30	3	14	71	-15
Rizhao	Shandong	NC	39	4	8	75	40	5	16	74	4
Tai'an	Shandong	NC	42	4	21	76	40	3	20	67	-5
Weihai	Shandong	NC	38	4	19	74	22	2	7	31	-44
Weifang	Shandong	NC	51	6	17	102	55	7	25	115	8
Yantai	Shandong	NC	39	5	14	87	23	2	9	36	-40
Zaozhuang	Shandong	NC	45	5	16	83	51	3	40	74	14
Zibo	Shandong	NC	56	4	29	90	55	4	35	89	-2
Alxa League	Inner Mongolia	NC	38	3	18	66	33	1	22	40	-15
Bayannur	Inner Mongolia	NC	33	3	15	56	32	1	21	41	-3
Baotou	Inner Mongolia	NC	35	3	11	56	22	1	13	30	-37
Chifeng	Inner Mongolia	NC	22	2	10	47	13	1	11	18	-38
Ordos	Inner Mongolia	NC	22	3	5	40	12	1	8	18	-46

Hohhot	Inner Mongolia	NC	23	2	8	43	14	1	10	23	-37
Hulun Buir	Inner Mongolia	NC	28	2	18	48	26	2	16	38	-7
Tongliao	Inner Mongolia	NC	46	6	17	99	25	3	17	55	-45
Wuhai	Inner Mongolia	NC	42	4	18	85	30	2	18	44	-29
Hinggan League	Inner Mongolia	NC	27	2	15	37	21	1	15	28	-20
Anyang	Henan	NC	61	5	30	106	46	5	16	82	-25
Hebi	Henan	NC	50	4	26	76	31	4	10	61	-38
Jiaozuo	Henan	NC	40	3	13	61	41	4	12	63	0
Kaifeng	Henan	NC	45	4	21	81	38	4	17	69	-17
Luoyang	Henan	NC	56	6	20	95	41	3	21	56	-27
Luohe	Henan	NC	48	5	21	87	52	3	31	71	7
Nanyang	Henan	NC	49	4	22	84	56	4	31	85	14
Pingdingshan	Henan	NC	53	6	19	91	50	3	33	73	-5
Sanmenxia	Henan	NC	58	5	17	94	39	3	20	56	-32
Shangqiu	Henan	NC	41	4	19	88	40	4	18	79	-2
Xinyang	Henan	NC	29	4	13	67	40	3	22	61	36
Zhengzhou	Henan	NC	61	6	25	112	50	6	17	98	-18
Zhoukou	Henan	NC	36	3	22	60	42	3	21	58	15
Zhumadian	Henan	NC	41	4	16	76	41	3	16	59	0
Anshan	Liaoning	NE	42	5	14	72	43	2	30	59	2
Benxi	Liaoning	NE	34	3	17	72	30	2	12	45	-11
Chaoyang	Liaoning	NE	30	4	13	65	14	1	9	25	-54
Dalian	Liaoning	NE	41	5	13	97	23	3	11	52	-44
Dandong	Liaoning	NE	24	4	1	51	20	2	8	28	-13
Fushun	Liaoning	NE	27	3	12	63	18	2	6	28	-32
Fuxin	Liaoning	NE	44	6	11	97	18	2	9	34	-59

Huludao	Liaoning	NE	66	9	20	137	24	2	15	48	-64
Jinzhou	Liaoning	NE	58	8	23	125	19	2	10	44	-67
Liaoyang	Liaoning	NE	36	4	11	69	31	2	18	41	-15
Panjin	Liaoning	NE	41	6	13	93	18	2	10	43	-55
Shenyang	Liaoning	NE	36	4	16	66	23	2	11	35	-37
Tieling	Liaoning	NE	28	3	13	53	17	2	7	31	-40
Wafangdian	Liaoning	NE	48	6	19	103	27	1	21	38	-44
Yingkou	Liaoning	NE	25	3	11	45	23	3	9	51	-7
Baicheng	Jilin	NE	47	2	36	63	42	1	32	51	-10
Baishan	Jilin	NE	29	3	15	52	25	2	17	38	-16
Changchun	Jilin	NE	29	4	16	73	23	2	8	39	-23
Jilin	Jilin	NE	19	2	10	39	18	2	8	30	-7
Liaoyuan	Jilin	NE	36	5	13	76	36	6	14	81	0
Siping	Jilin	NE	35	5	15	89	23	2	12	38	-35
Songyuan	Jilin	NE	20	1	10	36	13	1	5	23	-33
Daqing	Heilongjiang	NE	30	2	17	51	21	1	15	33	-30
Daxinganling	Heilongjiang	NE	13	2	5	40	10	1	7	14	-21
Harbin	Heilongjiang	NE	25	2	15	38	18	2	11	35	-27
Hegang	Heilongjiang	NE	47	2	33	70	28	4	6	61	-40
Heihe	Heilongjiang	NE	33	1	26	44	27	1	18	34	-19
Jixi	Heilongjiang	NE	19	1	14	25	16	1	11	27	-19
Jiamusi	Heilongjiang	NE	15	1	6	24	13	1	7	29	-13
Mudanjiang	Heilongjiang	NE	20	1	16	27	22	1	14	33	10
Qitaihe	Heilongjiang	NE	22	1	17	32	21	1	14	33	-8
Qiqihar	Heilongjiang	NE	19	2	7	31	13	1	6	22	-29
Shuangyashan	Heilongjiang	NE	23	1	17	28	26	1	19	34	13

Suihua	Heilongjiang	NE	15	1	9	26	11	1	8	15	-23
Ankang	Shaanxi	NW	21	2	7	43	27	2	13	44	30
Baoji	Shaanxi	NW	38	5	11	78	34	4	11	68	-12
Hanzhong	Shaanxi	NW	27	3	10	60	32	2	18	40	20
Shangluo	Shaanxi	NW	28	3	9	65	27	2	14	42	-3
Tongchuan	Shaanxi	NW	36	4	12	71	32	2	14	45	-12
Weinan	Shaanxi	NW	36	3	8	58	34	3	17	52	-4
Xi'an	Shaanxi	NW	45	4	13	73	40	3	20	66	-11
Xianyang	Shaanxi	NW	38	4	10	60	35	3	19	55	-9
Yan'an	Shaanxi	NW	33	3	14	59	24	2	14	44	-27
Yulin	Shaanxi	NW	30	3	12	53	20	2	9	33	-32
Baiying	Gansu	NW	26	3	9	65	27	1	21	33	4
Dingxi	Gansu	NW	21	1	9	29	28	1	19	36	37
Gannan	Gansu	NW	17	1	9	33	26	3	15	53	54
Jiayuguan	Gansu	NW	23	5	10	86	26	3	12	58	16
Jiuquan	Gansu	NW	36	6	19	121	35	3	18	61	-2
Lanzhou	Gansu	NW	36	2	19	62	32	1	24	38	-12
Linxia	Gansu	NW	18	1	7	28	21	2	12	35	20
Pingliang	Gansu	NW	30	3	10	68	20	2	12	29	-33
Qingyang	Gansu	NW	22	3	7	57	20	2	11	31	-11
Tianshui	Gansu	NW	18	3	6	67	14	2	6	30	-22
Wuwei	Gansu	NW	27	4	14	77	27	2	11	44	-2
Zhangye	Gansu	NW	21	2	9	54	17	2	5	30	-17
Guyuan	Ningxia	NW	25	3	9	53	22	1	14	32	-11
Shizuishan	Ningxia	NW	30	3	13	51	23	1	12	31	-25
Wuzhong	Ningxia	NW	26	3	13	46	28	2	17	35	8

Yinchuan	Ningxia	NW	41	3	21	68	34	3	18	50	-16
Zhongwei	Ningxia	NW	27	3	13	74	26	2	17	36	-4
Aksu	Sinkiang	NW	99	16	22	281	52	6	28	95	-47
Hami	Sinkiang	NW	29	9	11	191	22	2	11	40	-26
Hotan	Sinkiang	NW	130	29	26	646	82	12	21	180	-37
Kashgar	Sinkiang	NW	103	20	25	329	45	10	10	141	-57
Karamay	Sinkiang	NW	20	1	15	35	16	1	12	20	-22
Kizilsu	Sinkiang	NW	59	13	7	209	20	5	0	65	-65
Shihezi	Sinkiang	NW	32	6	9	106	21	2	11	35	-33
Urumchi	Sinkiang	NW	32	3	10	58	30	3	15	56	-6
Wujiaqu	Sinkiang	NW	32	3	12	57	30	3	13	52	-4
Yili	Sinkiang	NW	26	2	11	35	26	2	10	37	-2
Ezhou	Hubei	SE	33	4	8	67	51	3	22	71	53
Huanggang	Hubei	SE	33	3	9	64	46	3	21	60	42
Jingmen	Hubei	SE	32	4	13	77	57	5	23	84	79
Shiyan	Hubei	SE	30	3	9	61	42	4	23	64	39
Wuhan	Hubei	SE	32	3	13	62	53	4	24	76	66
Xianning	Hubei	SE	31	3	10	62	57	3	25	69	85
Xiangyang	Hubei	SE	33	4	10	74	45	4	24	74	38
Xiaogan	Hubei	SE	36	3	19	61	57	3	31	76	58
Yichang	Hubei	SE	29	4	10	74	48	4	26	84	67
Anqing	Anhui	SE	38	3	14	58	35	3	14	58	-7
Bengbu	Anhui	SE	41	4	12	71	55	4	18	76	34
Bozhou	Anhui	SE	34	3	19	63	63	5	28	103	84
Chuzhou	Anhui	SE	42	4	14	77	52	5	22	80	24
Fuyang	Anhui	SE	31	3	13	61	47	3	25	76	49

Hefei	Anhui	SE	35	4	8	60	43	4	13	65	23
Huaibei	Anhui	SE	37	4	14	86	41	2	22	51	10
Huainan	Anhui	SE	23	3	6	53	41	4	9	62	80
Huangshan	Anhui	SE	22	2	6	37	35	5	10	62	63
Lu'an	Anhui	SE	37	3	12	67	50	2	34	64	36
Ma'anshan	Anhui	SE	38	3	16	58	50	5	21	85	32
Suzhou	Anhui	SE	56	7	22	111	58	4	34	79	2
Tongling	Anhui	SE	42	4	14	80	54	5	24	85	28
Wuhu	Anhui	SE	30	3	10	52	44	4	17	70	49
Changzhou	Jiangsu	SE	31	3	11	67	40	5	8	61	29
Huaian	Jiangsu	SE	32	3	10	59	45	4	12	74	38
Lianyungang	Jiangsu	SE	33	4	9	64	42	5	13	90	30
Nanjing	Jiangsu	SE	29	3	7	47	39	4	13	63	36
Nantong	Jiangsu	SE	34	4	10	62	42	6	10	96	22
Suzhou	Jiangsu	SE	33	3	9	54	54	7	15	96	63
Suqian	Jiangsu	SE	37	3	12	67	45	3	18	71	23
Taizhou	Jiangsu	SE	36	4	10	68	38	4	13	62	7
Wuxi	Jiangsu	SE	35	3	12	59	52	6	15	90	50
Xuzhou	Jiangsu	SE	31	3	10	56	38	2	26	52	21
Yanchen	Jiangsu	SE	30	4	8	67	29	3	8	49	-4
Yangzhou	Jiangsu	SE	31	3	9	57	38	3	17	55	22
Zhenjiang	Jiangsu	SE	38	4	10	65	46	5	15	70	20
Shanghai	Municipality	SE	31	3	9	54	56	8	11	122	79
Hangzhou	Zhejiang	SE	32	3	9	63	43	5	12	74	32
Huzhou	Zhejiang	SE	31	2	17	54	49	5	20	77	55
Jiaxing	Zhejiang	SE	32	3	10	47	52	6	16	99	64

Jinhua	Zhejiang	SE	33	3	13	57	53	6	19	100	60
Lishui	Zhejiang	SE	23	2	6	33	30	3	14	45	33
Ningbo	Zhejiang	SE	23	2	9	37	36	5	10	73	57
Quzhou	Zhejiang	SE	33	3	13	57	52	6	19	81	58
Shaoxing	Zhejiang	SE	33	3	12	63	57	7	21	113	75
Taizhou	Zhejiang	SE	25	2	10	40	29	4	8	61	17
Wenjiang	Zhejiang	SE	30	2	15	42	30	3	12	47	1
Zhoushan	Zhejiang	SE	17	1	8	30	23	3	7	47	40
Fuzhou	Jiangxi	SE	28	2	15	50	44	4	16	74	57
Ganzhou	Jiangxi	SE	38	3	20	63	44	4	24	73	15
Ji'an	Jiangxi	SE	32	3	15	56	41	4	19	65	28
Jingdezhen	Jiangxi	SE	31	2	14	47	45	4	17	66	46
Jiujiang	Jiangxi	SE	31	3	9	49	48	4	24	69	57
Nanchang	Jiangxi	SE	23	2	8	36	40	4	10	68	74
Pingxiang	Jiangxi	SE	23	2	13	40	49	5	15	78	116
Shangrao	Jiangxi	SE	41	3	19	61	38	4	20	71	-8
Xinyu	Jiangxi	SE	25	2	10	36	38	4	15	59	54
Yichun	Jiangxi	SE	31	1	25	49	48	2	28	62	52
Yingtian	Jiangxi	SE	21	2	6	42	39	4	20	66	87
Changsha	Hunan	SE	27	2	14	49	59	4	21	86	117
Changde	Hunan	SE	22	2	6	43	31	2	11	43	39
Chenzhou	Hunan	SE	27	2	12	48	45	8	12	126	70
Huaihua	Hunan	SE	21	1	13	33	49	4	17	76	130
Loudi	Hunan	SE	28	2	15	40	54	3	21	71	90
Xiangtan	Hunan	SE	27	2	15	46	58	4	22	79	111
Yiyang	Hunan	SE	28	2	17	51	49	3	19	68	77

Yongzhou	Hunan	SE	37	2	25	55	44	3	22	63	19
Zhangjiajie	Hunan	SE	23	3	9	56	45	4	17	71	96
Zhuzhou	Hunan	SE	22	1	11	34	50	4	21	85	126
Dongguan	Guangdong	SE	26	2	11	45	35	3	16	57	34
Foshan	Guangdong	SE	34	3	20	59	44	4	18	75	31
Guangzhou	Guangdong	SE	34	2	17	47	39	3	19	63	16
Heyuan	Guangdong	SE	25	2	10	37	31	4	12	54	24
Huizhou	Guangdong	SE	22	2	10	39	25	4	7	44	15
Jiangmen	Guangdong	SE	19	2	10	39	36	5	12	67	85
Maoming	Guangdong	SE	19	3	5	56	28	6	4	65	47
Meizhou	Guangdong	SE	23	2	9	43	26	3	9	48	11
Qingyuan	Guangdong	SE	32	3	17	62	32	4	14	59	0
Shantou	Guangdong	SE	24	2	12	38	25	3	13	43	4
Shaoguan	Guangdong	SE	30	2	15	56	32	4	13	59	8
Shenzhen	Guangdong	SE	20	2	8	48	27	4	11	47	36
Zhujiang	Guangdong	SE	15	2	6	42	31	6	7	69	102
Zhaoqing	Guangdong	SE	30	2	15	53	40	4	17	73	35
Zhongshan	Guangdong	SE	19	3	7	56	28	5	7	59	46
Zhuhai	Guangdong	SE	17	3	6	55	26	5	7	57	53
Fuzhou	Fujian	SE	22	2	6	38	17	2	7	27	-25
Longyan	Fujian	SE	17	2	5	36	19	2	10	37	12
Nanping	Fujian	SE	18	2	3	37	18	3	9	37	-1
Ningde	Fujian	SE	21	2	7	35	17	2	7	30	-18
Putian	Fujian	SE	23	2	10	44	19	2	9	30	-19
Quanzhou	Fujian	SE	20	2	7	33	16	1	9	26	-23
Sanming	Fujian	SE	21	2	4	38	22	3	11	44	6

Xiamen	Fujian	SE	21	2	10	36	19	1	12	30	-6
Zhangzhou	Fujian	SE	20	2	8	44	20	1	14	29	-2
Haikou	Hainan	SE	12	1	7	25	20	3	7	48	60
Sanya	Hainan	SE	10	0	6	13	11	1	6	19	18
Chongqing	Municipality	SW	34	3	11	64	53	3	24	71	53
Bazhong	Sichuan	SW	17	1	8	25	23	2	14	36	36
Chengdu	Sichuan	SW	33	4	9	75	54	4	30	78	63
Dazhou	Sichuan	SW	32	2	13	50	62	4	33	85	92
Deyang	Sichuan	SW	31	3	12	58	53	5	28	94	73
Guangyuan	Sichuan	SW	13	2	4	52	13	1	8	18	3
Leshan	Sichuan	SW	29	4	7	82	55	6	23	105	89
Luzhou	Sichuan	SW	36	5	6	84	57	8	13	111	60
Meishan	Sichuan	SW	32	4	8	63	51	6	25	100	58
Mianyang	Sichuan	SW	25	2	8	40	41	3	19	70	67
Nanchong	Sichuan	SW	36	3	15	59	50	3	28	65	40
Panzhihua	Sichuan	SW	22	1	12	32	28	2	17	40	28
Suining	Sichuan	SW	29	3	8	51	47	3	18	71	63
Ya'an	Sichuan	SW	15	2	6	36	16	1	10	25	4
Ziyang	Sichuan	SW	18	1	12	31	25	2	15	42	39
Zigong	Sichuan	SW	37	4	17	80	57	6	29	88	54
Baoshan	Yunnan	SW	20	1	13	34	18	1	14	23	-8
Chuxiong	Yunnan	SW	14	1	5	26	24	3	6	45	77
Dali	Yunnan	SW	13	2	4	31	13	1	9	24	0
Dehong	Yunnan	SW	21	1	13	33	19	1	12	32	-8
Honghe	Yunnan	SW	19	4	5	78	34	4	14	68	78
Kunming	Yunnan	SW	18	2	9	38	27	3	12	43	49

Lijiang	Yunnan	SW	15	0	14	22	16	0	14	19	3
Lincang	Yunnan	SW	15	1	8	26	17	1	14	24	14
Nujiang	Yunnan	SW	12	0	8	15	13	0	11	16	10
Qujing	Yunnan	SW	23	2	8	44	34	3	16	51	46
Wenshan	Yunnan	SW	27	2	17	48	40	2	28	53	50
Xishuangbanna	Yunnan	SW	7	1	2	13	16	1	5	23	122
Tuxi	Yunnan	SW	13	1	5	25	26	3	8	40	107
Zhaotong	Yunnan	SW	31	3	15	56	37	4	10	68	17
Anshun	Guizhou	SW	19	1	14	33	34	3	17	57	84
Bijie	Guizhou	SW	18	2	6	32	29	3	4	48	56
Guiyang	Guizhou	SW	19	2	7	42	41	3	10	60	115
Liupanshui	Guizhou	SW	26	3	11	52	42	5	11	67	61
Tongren	Guizhou	SW	15	0	13	16	19	1	14	29	29
Zunyi	Guizhou	SW	19	2	7	37	35	3	15	58	81
Baise	Guangxi	SW	28	3	7	63	37	4	6	59	30
Beihai	Guangxi	SW	16	2	6	42	24	5	5	59	53
Chongzuo	Guangxi	SW	20	2	5	38	29	5	7	63	48
Fangchenggang	Guangxi	SW	18	2	7	46	26	6	7	66	44
Guigang	Guangxi	SW	37	3	17	73	39	7	11	85	5
Guilin	Guangxi	SW	25	2	14	41	43	5	10	66	72
Hechi	Guangxi	SW	28	3	16	55	42	5	11	70	49
Hezhou	Guangxi	SW	31	2	20	44	37	6	10	72	22
Laibin	Guangxi	SW	34	3	15	70	39	6	11	80	16
Liuzhou	Guangxi	SW	34	3	16	68	45	7	14	83	34
Nanning	Guangxi	SW	27	4	8	62	37	7	7	70	37
Qinzhou	Guangxi	SW	22	3	10	47	29	6	7	69	32

Wuzhou	Guangxi	SW	32	3	19	56	36	5	13	60	10
Yulin	Guangxi	SW	30	3	11	53	32	5	13	65	6
Golog	Qinghai	TP	34	2	22	47	49	3	40	80	42
Haidong	Qinghai	TP	41	2	28	56	42	4	29	72	1
Xining	Qinghai	TP	33	2	15	62	33	2	25	48	-1
Ali	Tibet	TP	14	2	7	33	11	1	5	21	-19
Qamdo	Tibet	TP	17	1	9	35	14	1	8	18	-14
Lhasa	Tibet	TP	18	1	10	36	19	2	12	39	7
Nyingchi	Tibet	TP	8	0	5	12	6	0	5	8	-22
Naqu	Tibet	TP	35	4	16	77	40	4	26	68	12
Shigatse	Tibet	TP	16	2	5	37	13	1	7	26	-22
Lhoka	Tibet	TP	9	1	3	14	5	0	4	7	-43

127 ^a NC, NE, NW, SE, SW, TP represent north China, northeast China, northwest China, southeast China, southwest China, and the Tibetan Plateau,
128 respectively.

129 ^b Negative values with red color mean significant ($p < 0.05$ or 0.01) reduction, and positive values mean increase.

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138 **Table S3.** Summary statistical of daily average PM₁₀ concentrations ($\mu\text{g m}^{-3}$) during the pre-Parade Blue and Parade Blue periods in the 291
 139 cities across China

City	Province	Region	The Pre-Parade Blue period				The Parade Blue period				Reduction or Increase
			Standard		Min	Max	Standard		Min	Max	
			Mean	Error			Mean	Error			
Beijing	Municipality	NC	87	8	44	176	29	3	13	51	-67
Tianjing	Municipality	NC	111	8	57	200	58	7	23	125	-48
Baoding	Hebei	NC	152	10	61	241	70	8	33	142	-54
Cangzhou	Hebei	NC	87	8	44	176	29	3	13	51	-67
Chengde	Hebei	NC	72	5	43	121	32	2	23	46	-55
Handan	Hebei	NC	157	11	84	245	104	14	23	194	-34
Hengshui	Hebei	NC	121	9	51	221	69	9	12	141	-43
Langfang	Hebei	NC	131	9	47	200	56	8	21	147	-57
Qinhuangdao	Hebei	NC	90	8	30	175	25	3	13	54	-73
Shijiazhuang	Hebei	NC	136	11	41	212	70	8	16	127	-48
Tangshan	Hebei	NC	124	9	52	187	35	4	14	68	-72
Xingtai	Hebei	NC	127	9	65	208	81	11	20	162	-36
Zhangjiakou	Hebei	NC	70	14	37	320	40	3	16	54	-44
Changzhi	Shanxi	NC	89	7	34	148	63	4	41	86	-29
Datong	Shanxi	NC	70	11	36	250	44	3	24	66	-36
Jincheng	Shanxi	NC	92	7	28	139	73	7	39	140	-21
Jinzhong	Shanxi	NC	64	5	32	117	52	4	29	86	-19
Linfen	Shanxi	NC	58	4	39	118	45	4	25	70	-24
Lvliang	Shanxi	NC	66	4	31	101	46	2	34	62	-30
Shuozhou	Shanxi	NC	91	7	47	169	64	4	39	96	-30

Taiyuan	Shanxi	NC	92	7	45	169	58	5	25	97	-38
Xinzhou	Shanxi	NC	67	4	45	118	42	2	30	51	-37
Yangquan	Shanxi	NC	74	5	36	120	49	4	25	68	-34
Yuncheng	Shanxi	NC	92	11	38	242	74	6	43	113	-19
Binzhou	Shandong	NC	86	7	27	144	59	6	32	118	-32
Dezhou	Shandong	NC	137	9	41	204	71	8	25	140	-48
Dongying	Shandong	NC	109	11	35	196	79	7	44	130	-28
Jinan	Shandong	NC	101	7	37	137	85	7	50	135	-16
Jining	Shandong	NC	80	8	42	154	85	6	52	131	6
Laiwu	Shandong	NC	91	9	40	153	96	7	57	156	5
Liaocheng	Shandong	NC	135	12	47	223	101	11	32	169	-25
Linyi	Shandong	NC	91	10	36	173	91	8	55	174	0
Qingdao	Shandong	NC	75	5	37	115	68	6	40	135	-10
Rizhao	Shandong	NC	69	6	24	123	70	7	29	128	1
Tai'an	Shandong	NC	85	9	39	163	85	7	46	140	0
Weihai	Shandong	NC	69	6	39	123	41	3	21	59	-40
Weifang	Shandong	NC	101	9	47	177	99	12	44	198	-1
Yantai	Shandong	NC	75	7	36	141	50	4	23	75	-33
Zaozhuang	Shandong	NC	92	8	46	148	98	5	69	135	7
Zibo	Shandong	NC	109	7	56	159	106	9	63	164	-2
Alxa League	Inner Mongolia	NC	96	9	56	195	67	4	33	93	-30
Bayannur	Inner Mongolia	NC	82	8	43	193	67	3	54	94	-17
Baotou	Inner Mongolia	NC	86	8	35	165	62	3	39	90	-28
Chifeng	Inner Mongolia	NC	59	7	34	156	35	2	24	49	-41
Ordos	Inner Mongolia	NC	54	7	20	148	36	2	28	51	-33
Hohhot	Inner Mongolia	NC	87	8	46	207	54	4	33	80	-39

Hulun Buir	Inner Mongolia	NC	53	7	16	127	65	5	36	99	23
Tongliao	Inner Mongolia	NC	95	8	56	165	62	4	46	99	-35
Wuhai	Inner Mongolia	NC	104	12	43	280	67	5	33	104	-35
Hinggan League	Inner Mongolia	NC	61	3	41	82	43	2	34	53	-30
Anyang	Henan	NC	100	7	49	169	82	9	39	151	-19
Hebi	Henan	NC	99	6	59	144	66	8	27	132	-34
Jiaozuo	Henan	NC	84	6	40	137	71	8	18	123	-16
Kaifeng	Henan	NC	76	5	46	131	68	7	35	130	-10
Luoyang	Henan	NC	96	11	34	223	72	5	31	101	-25
Luohe	Henan	NC	80	6	42	117	99	7	57	141	24
Nanyang	Henan	NC	93	6	48	140	109	7	67	148	17
Pingdingshan	Henan	NC	91	8	42	148	91	6	61	133	1
Sanmenxia	Henan	NC	100	12	29	255	72	5	42	112	-28
Shangqiu	Henan	NC	65	6	30	141	65	6	31	112	-1
Xinyang	Henan	NC	56	5	30	104	78	4	45	103	40
Zhengzhou	Henan	NC	107	9	44	187	97	12	37	193	-9
Zhoukou	Henan	NC	57	4	29	92	68	5	36	94	19
Zhumadian	Henan	NC	78	6	47	125	88	8	32	128	13
Anshan	Liaoning	NE	61	5	24	101	70	4	52	101	14
Benxi	Liaoning	NE	57	5	29	108	57	3	29	80	1
Chaoyang	Liaoning	NE	61	6	34	139	41	2	30	56	-34
Dalian	Liaoning	NE	67	8	25	141	46	4	22	81	-32
Dandong	Liaoning	NE	28	7	0	90	36	2	19	49	30
Fushun	Liaoning	NE	47	4	25	90	36	3	19	53	-24
Fuxin	Liaoning	NE	72	8	27	143	30	2	17	49	-58
Huludao	Liaoning	NE	94	12	31	191	45	3	33	75	-52

Jinzhou	Liaoning	NE	83	10	38	174	37	3	29	67	-56
Liaoyang	Liaoning	NE	60	5	21	103	64	3	44	82	5
Panjin	Liaoning	NE	63	8	23	141	33	3	25	69	-48
Shenyang	Liaoning	NE	62	5	30	99	46	3	30	69	-26
Tieling	Liaoning	NE	48	4	26	83	34	2	15	45	-29
Wafangdian	Liaoning	NE	57	6	21	93	45	3	25	69	-20
Yingkou	Liaoning	NE	54	5	23	109	44	7	14	122	-19
Baicheng	Jilin	NE	63	3	42	83	51	2	39	61	-19
Baishan	Jilin	NE	50	3	26	82	39	2	22	52	-21
Changchun	Jilin	NE	52	4	26	103	42	4	15	64	-19
Jilin	Jilin	NE	38	3	23	59	38	3	14	54	-1
Liaoyuan	Jilin	NE	46	6	21	91	48	8	18	103	5
Siping	Jilin	NE	59	5	27	118	40	3	18	54	-33
Songyuan	Jilin	NE	34	2	20	55	23	2	8	37	-32
Daqing	Heilongjiang	NE	47	2	33	75	38	2	26	48	-19
Daxinganling	Heilongjiang	NE	48	3	31	88	43	2	35	53	-9
Harbin	Heilongjiang	NE	45	2	26	59	32	2	15	47	-28
Hegang	Heilongjiang	NE	80	4	48	123	48	5	21	100	-40
Heihe	Heilongjiang	NE	56	3	32	81	41	2	30	56	-26
Jixi	Heilongjiang	NE	35	2	24	46	30	3	15	54	-12
Jiamusi	Heilongjiang	NE	29	2	16	43	26	2	14	44	-12
Mudanjiang	Heilongjiang	NE	38	1	27	53	45	2	31	59	16
Qitaihe	Heilongjiang	NE	36	2	21	56	32	3	14	51	-13
Qiqihar	Heilongjiang	NE	47	3	30	68	42	2	31	56	-10
Shuangyashan	Heilongjiang	NE	44	2	35	57	45	3	27	63	2
Suihua	Heilongjiang	NE	23	2	14	40	21	1	15	32	-6

Ankang	Shaanxi	NW	34	3	11	60	43	2	26	59	25
Baoji	Shaanxi	NW	87	14	31	286	73	5	42	113	-16
Hanzhong	Shaanxi	NW	42	5	19	126	50	2	33	58	20
Shangluo	Shaanxi	NW	53	10	18	213	45	3	28	57	-16
Tongchuan	Shaanxi	NW	75	9	35	178	64	2	46	82	-14
Weinan	Shaanxi	NW	79	11	16	219	74	4	46	102	-6
Xi'an	Shaanxi	NW	106	15	30	285	94	5	61	136	-11
Xianyang	Shaanxi	NW	79	10	22	189	78	4	43	104	-2
Yan'an	Shaanxi	NW	76	8	39	194	67	3	53	95	-11
Yulin	Shaanxi	NW	70	8	26	160	59	5	39	97	-15
Baiying	Gansu	NW	71	11	19	247	71	4	37	100	1
Dingxi	Gansu	NW	49	4	19	74	59	4	39	91	21
Gannan	Gansu	NW	42	4	19	80	68	7	43	140	62
Jiayuguan	Gansu	NW	85	22	31	421	82	11	38	212	-3
Jiuquan	Gansu	NW	126	39	45	662	96	8	49	180	-23
Lanzhou	Gansu	NW	90	10	36	237	81	6	45	117	-11
Linxia	Gansu	NW	46	3	20	82	44	2	34	57	-5
Pingliang	Gansu	NW	59	6	22	135	41	2	27	51	-31
Qingyang	Gansu	NW	54	10	14	186	40	2	27	54	-25
Tianshui	Gansu	NW	43	9	14	200	28	2	16	41	-35
Wuwei	Gansu	NW	80	13	39	284	74	7	34	129	-7
Zhangye	Gansu	NW	50	11	20	199	34	4	9	58	-31
Guyuan	Ningxia	NW	75	11	27	232	55	3	28	71	-26
Shizuishan	Ningxia	NW	86	12	40	258	64	5	39	90	-26
Wuzhong	Ningxia	NW	75	9	35	157	78	4	51	99	4
Yinchuan	Ningxia	NW	96	8	58	187	74	5	44	104	-22

Zhongwei	Ningxia	NW	65	8	30	168	63	4	29	79	-3
Aksu	Sinkiang	NW	255	46	46	804	118	18	48	231	-54
Hami	Sinkiang	NW	79	8	39	197	114	16	72	317	45
Hotan	Sinkiang	NW	485	117	77	2562	296	42	67	628	-39
Kashgar	Sinkiang	NW	295	63	97	1039	151	32	43	413	-49
Karamay	Sinkiang	NW	53	5	21	139	58	8	31	147	9
Kizilsu	Sinkiang	NW	213	46	21	757	97	24	23	291	-55
Shihezi	Sinkiang	NW	79	19	18	369	59	8	24	134	-25
Urumchi	Sinkiang	NW	95	9	30	209	102	15	38	208	7
Wujiaqu	Sinkiang	NW	86	11	26	225	95	18	21	229	11
Yili	Sinkiang	NW	64	4	27	97	66	9	17	127	2
Ezhou	Hubei	SE	61	5	16	98	79	5	36	110	30
Huanggang	Hubei	SE	48	4	18	87	63	3	29	83	31
Jingmen	Hubei	SE	58	6	20	135	90	6	44	122	56
Shiyan	Hubei	SE	48	4	21	85	63	5	38	92	32
Wuhan	Hubei	SE	66	6	13	116	103	8	42	158	57
Xianning	Hubei	SE	55	4	28	93	83	4	41	96	49
Xiangyang	Hubei	SE	59	5	26	112	80	5	51	115	34
Xiaogan	Hubei	SE	55	4	30	84	79	5	45	108	44
Yichang	Hubei	SE	58	6	21	117	85	5	55	131	47
Anqing	Anhui	SE	58	4	25	80	53	4	24	77	-9
Bengbu	Anhui	SE	64	5	19	102	85	6	32	136	32
Bozhou	Anhui	SE	60	4	37	98	85	6	48	114	42
Chuzhou	Anhui	SE	69	6	20	112	81	7	34	125	18
Fuyang	Anhui	SE	59	4	28	94	77	5	45	133	30
Hefei	Anhui	SE	67	5	14	99	79	6	26	120	17

Huaibei	Anhui	SE	66	7	27	129	63	4	42	84	-5
Huainan	Anhui	SE	53	4	32	85	78	6	35	118	47
Huangshan	Anhui	SE	30	2	14	43	46	5	19	83	51
Lu'an	Anhui	SE	58	4	20	96	79	4	48	103	35
Ma'anshan	Anhui	SE	60	4	20	84	79	7	34	120	32
Suzhou	Anhui	SE	72	8	29	142	85	6	45	119	17
Tongling	Anhui	SE	83	6	38	142	102	9	49	150	22
Wuhu	Anhui	SE	54	3	26	78	74	5	35	107	37
Changzhou	Jiangsu	SE	66	7	24	126	79	9	14	121	20
Huaian	Jiangsu	SE	57	5	18	100	72	6	20	120	26
Lianyungang	Jiangsu	SE	55	5	23	92	69	7	24	139	26
Nanjing	Jiangsu	SE	61	5	12	89	69	7	27	105	13
Nantong	Jiangsu	SE	56	5	21	91	59	8	15	136	5
Suzhou	Jiangsu	SE	60	5	26	92	76	8	23	125	26
Suqian	Jiangsu	SE	56	5	24	94	67	4	28	104	20
Taizhou	Jiangsu	SE	74	7	24	128	75	7	28	123	2
Wuxi	Jiangsu	SE	61	5	27	96	79	8	25	130	29
Xuzhou	Jiangsu	SE	62	5	25	109	78	4	53	104	26
Yanchen	Jiangsu	SE	56	6	19	104	51	4	16	81	-8
Yangzhou	Jiangsu	SE	64	6	20	112	63	5	30	82	-2
Zhenjiang	Jiangsu	SE	50	5	12	92	57	6	14	86	14
Shanghai	Municipality	SE	52	4	27	92	72	10	17	149	38
Hangzhou	Zhejiang	SE	53	5	24	96	64	7	20	107	21
Huzhou	Zhejiang	SE	48	4	21	80	64	7	19	99	33
Jiaxing	Zhejiang	SE	51	4	29	74	72	8	25	134	41
Jinhua	Zhejiang	SE	49	3	18	78	69	8	18	118	41

Lishui	Zhejiang	SE	39	3	12	59	47	3	26	66	20
Ningbo	Zhejiang	SE	38	2	24	65	51	6	17	101	33
Quzhou	Zhejiang	SE	49	3	18	78	70	8	18	110	42
Shaoxing	Zhejiang	SE	48	4	23	89	76	9	24	138	58
Taizhou	Zhejiang	SE	41	2	31	57	45	5	20	81	10
Wenjiang	Zhejiang	SE	48	3	29	73	48	4	24	71	-1
Zhoushan	Zhejiang	SE	28	1	22	44	34	5	11	72	20
Fuzhou	Jiangxi	SE	46	4	26	79	67	6	30	106	46
Ganzhou	Jiangxi	SE	60	5	33	102	61	5	32	99	1
Ji'an	Jiangxi	SE	51	4	23	89	57	6	24	100	12
Jingdezhen	Jiangxi	SE	53	5	20	85	71	6	31	99	35
Jiujiang	Jiangxi	SE	53	4	17	81	74	6	38	103	38
Nanchang	Jiangxi	SE	66	7	19	118	80	8	31	149	21
Pingxiang	Jiangxi	SE	47	3	29	79	83	7	33	124	77
Shangrao	Jiangxi	SE	54	4	23	77	62	6	30	108	15
Xinyu	Jiangxi	SE	53	3	26	79	70	5	35	99	31
Yichun	Jiangxi	SE	44	2	33	70	68	4	43	93	52
Yingtian	Jiangxi	SE	39	4	13	64	61	5	35	88	54
Changsha	Hunan	SE	47	3	15	72	85	6	31	124	82
Changde	Hunan	SE	41	3	17	62	59	4	25	80	43
Chenzhou	Hunan	SE	53	4	30	81	71	9	28	157	34
Huaihua	Hunan	SE	49	3	33	71	91	6	36	125	85
Loudi	Hunan	SE	52	3	28	88	87	6	41	117	69
Xiangtan	Hunan	SE	48	3	25	76	90	6	37	123	85
Yiyang	Hunan	SE	48	3	29	70	79	4	40	104	64
Yongzhou	Hunan	SE	57	3	40	88	69	5	37	100	20

Zhangjiajie	Hunan	SE	44	3	18	80	71	5	35	102	60
Zhuzhou	Hunan	SE	42	3	23	70	81	7	38	134	94
Dongguan	Guangdong	SE	39	2	21	63	50	4	27	78	30
Foshan	Guangdong	SE	52	3	35	83	63	6	27	105	20
Guangzhou	Guangdong	SE	55	2	34	75	57	5	31	93	3
Heyuan	Guangdong	SE	37	2	20	55	45	5	22	79	22
Huizhou	Guangdong	SE	44	3	24	72	45	5	19	76	2
Jiangmen	Guangdong	SE	33	3	16	58	52	7	18	94	58
Maoming	Guangdong	SE	34	4	13	81	46	8	9	94	36
Meizhou	Guangdong	SE	38	3	18	61	39	5	16	71	2
Qingyuan	Guangdong	SE	51	3	29	80	44	6	19	84	-14
Shantou	Guangdong	SE	42	3	20	66	42	5	25	74	-1
Shaoguan	Guangdong	SE	47	3	29	82	46	6	20	79	-2
Shenzhen	Guangdong	SE	37	4	20	78	44	6	20	77	18
Zhujiang	Guangdong	SE	33	3	13	64	50	8	16	99	55
Zhaoqing	Guangdong	SE	47	3	27	77	54	6	27	104	17
Zhongshan	Guangdong	SE	31	4	15	76	39	6	11	80	27
Zhuhai	Guangdong	SE	38	5	21	95	47	8	17	101	24
Fuzhou	Fujian	SE	44	4	11	86	38	3	19	55	-14
Longyan	Fujian	SE	33	3	10	65	34	4	17	58	3
Nanping	Fujian	SE	25	2	7	48	26	3	13	51	4
Ningde	Fujian	SE	35	3	10	59	31	2	20	43	-14
Putian	Fujian	SE	38	3	18	58	31	2	19	41	-19
Quanzhou	Fujian	SE	45	5	10	98	30	4	18	59	-33
Sanming	Fujian	SE	44	4	11	74	41	5	18	78	-6
Xiamen	Fujian	SE	37	3	21	65	32	2	21	51	-15

Zhangzhou	Fujian	SE	43	3	24	80	42	2	33	59	-1
Haikou	Hainan	SE	28	2	19	46	34	4	20	68	21
Sanya	Hainan	SE	21	1	16	30	24	2	15	33	12
Chongqing	Municipality	SW	58	5	21	104	82	5	42	106	40
Bazhong	Sichuan	SW	27	2	11	41	35	2	25	46	31
Chengdu	Sichuan	SW	62	7	15	134	88	8	42	139	42
Dazhou	Sichuan	SW	49	3	12	73	86	5	53	121	76
Deyang	Sichuan	SW	56	4	22	87	89	9	43	169	60
Guangyuan	Sichuan	SW	35	4	16	101	38	2	29	50	9
Leshan	Sichuan	SW	44	6	14	126	78	9	27	150	77
Luzhou	Sichuan	SW	49	7	14	113	80	9	32	145	64
Meishan	Sichuan	SW	54	5	14	84	79	8	38	136	46
Mianyang	Sichuan	SW	40	3	12	62	63	5	26	98	56
Nanchong	Sichuan	SW	54	5	20	93	71	4	41	97	33
Panzhihua	Sichuan	SW	44	3	22	69	53	4	34	81	19
Suining	Sichuan	SW	53	5	21	92	72	4	39	105	38
Ya'an	Sichuan	SW	30	3	12	57	35	2	24	58	15
Ziyang	Sichuan	SW	41	3	24	62	60	5	38	91	46
Zigong	Sichuan	SW	59	6	30	115	85	8	44	128	45
Baoshan	Yunnan	SW	37	2	27	51	37	1	29	46	-2
Chuxiong	Yunnan	SW	26	2	14	41	41	6	11	75	57
Dali	Yunnan	SW	15	1	4	27	18	2	8	37	19
Dehong	Yunnan	SW	34	2	19	51	30	2	23	46	-12
Honghe	Yunnan	SW	38	5	17	108	59	7	26	99	57
Kunming	Yunnan	SW	34	3	17	65	48	5	22	76	39
Lijiang	Yunnan	SW	30	1	24	37	33	1	29	43	11

Lincang	Yunnan	SW	27	1	19	40	27	1	22	38	1
Nujiang	Yunnan	SW	24	1	16	35	27	1	21	38	9
Qujing	Yunnan	SW	30	2	14	49	44	4	21	67	47
Wenshan	Yunnan	SW	26	3	7	68	45	3	24	64	72
Xishuangbanna	Yunnan	SW	22	1	10	31	29	2	15	40	33
Tuxi	Yunnan	SW	25	2	9	40	45	4	16	69	76
Zhaotong	Yunnan	SW	47	4	23	88	59	6	21	92	24
Anshun	Guizhou	SW	36	3	24	63	69	8	28	124	94
Bijie	Guizhou	SW	28	3	8	47	43	4	6	74	51
Guiyang	Guizhou	SW	34	4	16	79	63	6	13	97	82
Liupanshui	Guizhou	SW	51	5	24	94	74	7	25	120	46
Tongren	Guizhou	SW	27	1	25	35	41	2	28	54	52
Zunyi	Guizhou	SW	50	3	28	74	74	6	35	113	48
Baise	Guangxi	SW	46	4	17	85	51	5	12	83	10
Beihai	Guangxi	SW	34	3	16	63	41	8	12	87	22
Chongzuo	Guangxi	SW	42	4	11	73	53	7	13	96	26
Fangchenggang	Guangxi	SW	34	3	15	63	44	8	12	100	30
Guigang	Guangxi	SW	61	4	32	105	60	10	19	122	-1
Guilin	Guangxi	SW	43	3	26	63	58	6	17	86	34
Hechi	Guangxi	SW	47	4	30	79	61	6	16	98	28
Hezhou	Guangxi	SW	50	3	30	73	51	7	17	85	3
Laibin	Guangxi	SW	59	4	29	99	67	9	23	116	15
Liuzhou	Guangxi	SW	56	4	31	110	70	9	24	112	25
Nanning	Guangxi	SW	58	8	19	135	69	12	13	151	18
Qinzhou	Guangxi	SW	44	4	20	78	49	9	13	111	11
Wuzhou	Guangxi	SW	55	4	31	90	49	7	19	83	-12

Yulin	Guangxi	SW	45	4	23	78	45	7	17	91	2
Golog	Qinghai	TP	77	7	34	133	86	8	53	122	11
Haidong	Qinghai	TP	37	4	0	75	49	7	20	126	35
Xining	Qinghai	TP	84	14	36	326	72	4	40	97	-14
Ali	Tibet	TP	25	4	4	60	18	3	8	37	-28
Qamdo	Tibet	TP	37	4	12	98	38	4	18	81	3
Lhasa	Tibet	TP	44	4	24	99	44	3	25	72	-1
Nyingchi	Tibet	TP	15	1	6	30	12	1	7	22	-19
Naqu	Tibet	TP	84	11	19	166	110	16	48	241	30
Shigatse	Tibet	TP	24	2	11	53	23	2	13	41	-4
Lhoka	Tibet	TP	29	3	7	53	22	2	9	43	-23

140 ^a NC, NE, NW, SE, SW, TP represent north China, northeast China, northwest China, southeast China, southwest China, and the Tibetan Plateau,
141 respectively.

142 ^b Negative values with red color mean significant ($p < 0.05$ or 0.01) reduction, and positive values mean increase.

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151 **Table S4.** Summary statistical of daily average CO concentrations (mg m^{-3}) during the pre-Parade Blue and Parade Blue periods in the 291 cities
 152 across China

City	Province	Region	The Pre-Parade Blue period				The Parade Blue period				Reduction or Increase
			Standard		Min	Max	Standard		Min	Max	
			Mean	Error			Mean	Error			
Beijing	Municipality	NC	0.90	0.06	0.51	1.42	0.56	0.04	0.43	0.94	-38.4
Tianjing	Municipality	NC	0.97	0.05	0.67	1.40	1.04	0.08	0.61	1.79	6.9
Baoding	Hebei	NC	1.01	0.07	0.51	1.74	0.64	0.05	0.34	1.08	-36.6
Cangzhou	Hebei	NC	0.90	0.06	0.51	1.42	0.56	0.04	0.43	0.94	-38.4
Chengde	Hebei	NC	0.78	0.04	0.48	1.04	0.49	0.02	0.38	0.75	-37.5
Handan	Hebei	NC	0.99	0.07	0.48	1.51	1.51	0.23	0.67	3.55	52.3
Hengshui	Hebei	NC	1.09	0.03	0.85	1.33	1.00	0.04	0.74	1.36	-8.3
Langfang	Hebei	NC	1.13	0.08	0.65	1.92	0.79	0.10	0.38	1.81	-29.8
Qinhuangdao	Hebei	NC	1.38	0.15	0.38	2.46	0.63	0.10	0.36	1.87	-54.1
Shijiazhuang	Hebei	NC	0.66	0.05	0.36	1.17	0.57	0.05	0.24	0.95	-13.6
Tangshan	Hebei	NC	1.81	0.21	0.84	4.53	1.89	0.23	0.59	3.91	4.4
Xingtai	Hebei	NC	1.12	0.12	0.51	2.40	0.93	0.11	0.33	1.70	-16.3
Zhangjiakou	Hebei	NC	0.51	0.02	0.37	0.66	0.45	0.02	0.37	0.58	-10.5
Changzhi	Shanxi	NC	1.42	0.08	1.01	2.06	1.57	0.04	1.30	1.79	10.7
Datong	Shanxi	NC	0.79	0.01	0.69	0.88	0.87	0.02	0.77	1.00	10.6
Jincheng	Shanxi	NC	1.71	0.19	0.59	3.97	1.64	0.15	0.78	2.83	-4.1
Jinzhong	Shanxi	NC	0.88	0.05	0.61	1.31	0.59	0.03	0.36	0.82	-33.2
Linfen	Shanxi	NC	1.59	0.07	1.13	2.32	1.64	0.04	1.34	1.94	3.2
Lvliang	Shanxi	NC	1.73	0.04	1.47	2.13	1.85	0.03	1.63	2.00	6.9
Shuozhou	Shanxi	NC	1.26	0.04	0.84	1.51	1.11	0.02	1.01	1.27	-11.4

Taiyuan	Shanxi	NC	0.85	0.03	0.68	1.15	0.84	0.03	0.71	1.08	-1.1
Xinzhou	Shanxi	NC	1.00	0.03	0.70	1.31	1.84	0.43	0.84	7.71	82.9
Yangquan	Shanxi	NC	0.85	0.03	0.67	1.14	0.63	0.02	0.52	0.85	-25.7
Yuncheng	Shanxi	NC	2.11	0.05	1.77	2.49	2.30	0.15	1.02	3.17	9.2
Binzhou	Shandong	NC	1.71	0.08	1.17	2.32	1.45	0.07	1.12	2.24	-15.3
Dezhou	Shandong	NC	1.92	0.05	1.62	2.34	1.66	0.06	1.32	2.08	-13.6
Dongying	Shandong	NC	1.00	0.07	0.61	1.50	0.87	0.05	0.60	1.12	-13.0
Jinan	Shandong	NC	0.92	0.05	0.57	1.33	0.97	0.04	0.76	1.25	4.7
Jining	Shandong	NC	0.99	0.04	0.72	1.26	0.92	0.04	0.70	1.19	-6.4
Laiwu	Shandong	NC	1.28	0.06	0.91	1.60	1.47	0.06	1.09	1.85	15.0
Liaocheng	Shandong	NC	1.39	0.04	1.16	1.72	1.18	0.05	0.86	1.50	-14.9
Linyi	Shandong	NC	1.09	0.06	0.75	1.85	1.17	0.05	0.86	1.49	7.5
Qingdao	Shandong	NC	0.62	0.04	0.33	0.99	0.63	0.03	0.48	0.91	0.4
Rizhao	Shandong	NC	0.81	0.05	0.49	1.37	0.95	0.04	0.72	1.26	17.3
Tai'an	Shandong	NC	1.45	0.08	1.13	2.56	1.24	0.06	0.86	1.62	-14.0
Weihai	Shandong	NC	0.68	0.05	0.39	1.37	0.54	0.02	0.37	0.67	-20.4
Weifang	Shandong	NC	0.71	0.06	0.34	1.19	0.87	0.07	0.58	1.35	22.9
Yantai	Shandong	NC	0.70	0.05	0.41	1.28	0.49	0.02	0.34	0.62	-30.1
Zaozhuang	Shandong	NC	0.71	0.05	0.37	1.00	0.86	0.02	0.75	1.04	21.4
Zibo	Shandong	NC	1.91	0.09	1.41	2.63	2.11	0.10	1.53	2.78	10.3
Alxa League	Inner Mongolia	NC	0.71	0.04	0.43	1.05	0.75	0.04	0.57	1.07	5.8
Bayannur	Inner Mongolia	NC	0.47	0.06	0.19	1.18	0.36	0.02	0.27	0.54	-22.6
Baotou	Inner Mongolia	NC	1.01	0.06	0.60	1.54	0.98	0.06	0.60	1.39	-3.1
Chifeng	Inner Mongolia	NC	0.86	0.09	0.35	1.51	0.54	0.03	0.39	0.78	-37.5
Ordos	Inner Mongolia	NC	0.60	0.03	0.40	0.88	0.61	0.01	0.48	0.72	1.2
Hohhot	Inner Mongolia	NC	0.63	0.03	0.46	0.98	0.63	0.02	0.49	0.74	-0.2

Hulun Buir	Inner Mongolia	NC	0.31	0.03	0.15	0.58	0.21	0.03	0.05	0.42	-34.0
Tongliao	Inner Mongolia	NC	0.75	0.05	0.52	1.21	0.51	0.01	0.40	0.65	-32.3
Wuhai	Inner Mongolia	NC	0.70	0.06	0.31	1.20	0.64	0.06	0.37	1.04	-9.4
Hinggan League	Inner Mongolia	NC	0.69	0.04	0.51	1.31	0.49	0.02	0.40	0.66	-29.9
Anyang	Henan	NC	1.41	0.08	0.75	2.10	1.63	0.10	1.24	2.44	16.2
Hebi	Henan	NC	0.99	0.06	0.66	1.54	1.18	0.14	0.52	2.25	19.2
Jiaozuo	Henan	NC	1.50	0.05	1.14	1.79	1.38	0.09	0.90	2.00	-7.9
Kaifeng	Henan	NC	1.14	0.05	0.77	1.58	1.30	0.04	1.02	1.76	13.9
Luoyang	Henan	NC	1.67	0.06	1.19	2.25	1.36	0.04	1.12	1.57	-18.7
Luohe	Henan	NC	0.66	0.04	0.46	1.00	0.74	0.03	0.53	1.00	12.1
Nanyang	Henan	NC	0.69	0.06	0.31	1.22	0.70	0.02	0.57	0.90	0.8
Pingdingshan	Henan	NC	0.90	0.04	0.56	1.10	0.87	0.04	0.64	1.13	-3.6
Sanmenxia	Henan	NC	1.05	0.03	0.76	1.27	1.13	0.02	0.97	1.28	7.8
Shangqiu	Henan	NC	0.59	0.05	0.28	1.14	0.64	0.03	0.47	0.88	9.0
Xinyang	Henan	NC	0.86	0.03	0.54	1.04	0.76	0.02	0.59	0.89	-11.5
Zhengzhou	Henan	NC	1.05	0.04	0.77	1.43	1.12	0.04	0.87	1.42	6.5
Zhoukou	Henan	NC	1.02	0.05	0.77	1.47	1.35	0.04	1.06	1.55	33.1
Zhumadian	Henan	NC	0.50	0.04	0.26	0.87	0.65	0.03	0.46	0.83	29.1
Anshan	Liaoning	NE	1.43	0.06	0.97	1.99	1.32	0.06	0.97	1.67	-7.8
Benxi	Liaoning	NE	1.10	0.04	0.84	1.42	1.01	0.07	0.60	1.72	-8.4
Chaoyang	Liaoning	NE	1.71	0.06	1.43	2.31	1.52	0.01	1.42	1.62	-11.0
Dalian	Liaoning	NE	0.78	0.04	0.46	1.06	0.72	0.04	0.51	1.16	-7.2
Dandong	Liaoning	NE	7.13	1.59	0.97	24.00	1.26	0.03	1.06	1.40	-82.3
Fushun	Liaoning	NE	1.05	0.04	0.77	1.46	0.94	0.03	0.71	1.15	-10.6
Fuxin	Liaoning	NE	0.86	0.08	0.45	1.51	0.55	0.03	0.44	0.88	-36.7
Huludao	Liaoning	NE	1.26	0.11	0.55	1.89	0.90	0.07	0.60	1.80	-28.9

Jinzhou	Liaoning	NE	1.17	0.09	0.68	1.95	0.65	0.04	0.47	1.08	-44.8
Liaoyang	Liaoning	NE	1.07	0.04	0.75	1.44	1.14	0.05	0.89	1.59	6.7
Panjin	Liaoning	NE	0.89	0.06	0.50	1.47	0.68	0.04	0.54	1.18	-23.6
Shenyang	Liaoning	NE	0.88	0.05	0.55	1.31	0.58	0.03	0.38	0.82	-34.3
Tieling	Liaoning	NE	0.72	0.06	0.38	1.13	0.71	0.03	0.55	0.97	-1.7
Wafangdian	Liaoning	NE	0.44	0.03	0.22	0.66	0.39	0.03	0.27	0.60	-11.3
Yingkou	Liaoning	NE	0.79	0.05	0.38	1.08	0.71	0.05	0.41	1.02	-10.5
Baicheng	Jilin	NE	0.39	0.02	0.26	0.56	0.39	0.03	0.20	0.62	1.1
Baishan	Jilin	NE	0.83	0.07	0.54	1.50	0.72	0.03	0.51	0.89	-13.4
Changchun	Jilin	NE	0.68	0.03	0.52	1.08	0.64	0.04	0.48	0.91	-5.8
Jilin	Jilin	NE	0.63	0.02	0.49	0.79	0.64	0.03	0.45	0.76	0.9
Liaoyuan	Jilin	NE	0.93	0.04	0.55	1.26	0.87	0.07	0.63	1.63	-6.7
Siping	Jilin	NE	0.74	0.08	0.16	1.65	0.40	0.05	0.11	0.84	-45.5
Songyuan	Jilin	NE	0.98	0.10	0.36	1.78	0.55	0.03	0.39	0.70	-43.1
Daqing	Heilongjiang	NE	0.55	0.02	0.40	0.66	0.40	0.02	0.27	0.58	-27.0
Daxinganling	Heilongjiang	NE	0.68	0.05	0.47	1.30	0.77	0.03	0.64	1.19	14.3
Harbin	Heilongjiang	NE	0.86	0.02	0.70	1.05	0.70	0.04	0.47	0.95	-18.3
Hegang	Heilongjiang	NE	1.15	0.11	0.49	2.09	0.59	0.03	0.39	0.79	-49.0
Heihe	Heilongjiang	NE	0.40	0.02	0.32	0.68	0.34	0.02	0.20	0.49	-16.4
Jixi	Heilongjiang	NE	0.51	0.02	0.39	0.73	0.52	0.04	0.25	0.86	2.6
Jiamusi	Heilongjiang	NE	0.81	0.02	0.70	0.96	0.67	0.03	0.53	0.93	-17.9
Mudanjiang	Heilongjiang	NE	0.45	0.01	0.36	0.54	0.42	0.02	0.30	0.55	-7.4
Qitaihe	Heilongjiang	NE	0.41	0.01	0.28	0.56	0.42	0.02	0.27	0.60	3.5
Qiqihar	Heilongjiang	NE	0.61	0.03	0.37	0.92	0.44	0.02	0.35	0.64	-28.4
Shuangyashan	Heilongjiang	NE	0.72	0.05	0.36	1.34	0.54	0.06	0.28	1.00	-24.5
Suihua	Heilongjiang	NE	0.36	0.03	0.18	0.60	0.32	0.02	0.24	0.46	-11.7

Ankang	Shaanxi	NW	0.56	0.02	0.39	0.77	0.63	0.01	0.57	0.75	13.5
Baoji	Shaanxi	NW	0.89	0.03	0.63	1.14	0.90	0.04	0.65	1.12	1.0
Hanzhong	Shaanxi	NW	1.10	0.04	0.78	1.43	1.53	0.03	1.30	1.72	38.3
Shangluo	Shaanxi	NW	1.06	0.04	0.80	1.43	1.51	0.06	1.17	1.93	41.7
Tongchuan	Shaanxi	NW	0.74	0.04	0.44	1.05	0.71	0.02	0.55	0.82	-4.1
Weinan	Shaanxi	NW	0.61	0.02	0.49	0.73	0.70	0.03	0.53	0.86	14.9
Xi'an	Shaanxi	NW	1.00	0.02	0.83	1.19	1.16	0.03	0.96	1.45	16.6
Xianyang	Shaanxi	NW	0.84	0.03	0.56	0.99	0.89	0.03	0.60	1.08	5.5
Yan'an	Shaanxi	NW	1.15	0.06	0.69	1.48	1.05	0.03	0.89	1.37	-9.3
Yulin	Shaanxi	NW	0.94	0.07	0.40	1.31	0.68	0.03	0.49	0.90	-27.3
Baiying	Gansu	NW	0.76	0.04	0.48	1.06	0.71	0.02	0.59	0.83	-6.7
Dingxi	Gansu	NW	0.53	0.04	0.30	1.02	0.43	0.03	0.30	0.64	-17.9
Gannan	Gansu	NW	0.64	0.05	0.10	1.02	0.62	0.04	0.34	0.91	-2.4
Jiayuguan	Gansu	NW	0.67	0.04	0.37	1.01	0.60	0.03	0.44	0.88	-10.3
Jiuquan	Gansu	NW	0.55	0.03	0.23	0.80	0.56	0.04	0.31	0.94	2.4
Lanzhou	Gansu	NW	0.89	0.04	0.56	1.18	1.05	0.04	0.81	1.26	18.2
Linxia	Gansu	NW	0.76	0.01	0.67	0.92	0.82	0.03	0.71	0.99	7.6
Pingliang	Gansu	NW	0.71	0.06	0.36	1.64	0.80	0.03	0.65	0.97	12.4
Qingyang	Gansu	NW	0.78	0.02	0.65	0.97	0.87	0.03	0.75	1.07	11.5
Tianshui	Gansu	NW	0.46	0.01	0.38	0.62	0.51	0.02	0.37	0.69	11.2
Wuwei	Gansu	NW	2.68	0.04	2.37	3.02	2.56	0.11	2.16	3.22	-4.6
Zhangye	Gansu	NW	0.42	0.03	0.28	0.82	0.41	0.02	0.29	0.51	-4.4
Guyuan	Ningxia	NW	0.60	0.02	0.48	0.81	0.59	0.04	0.39	0.85	-2.7
Shizuishan	Ningxia	NW	0.52	0.04	0.26	1.02	0.59	0.04	0.38	0.85	14.9
Wuzhong	Ningxia	NW	0.93	0.05	0.73	1.59	0.89	0.02	0.73	1.07	-4.1
Yinchuan	Ningxia	NW	0.83	0.04	0.52	1.12	0.87	0.03	0.69	1.10	4.1

Zhongwei	Ningxia	NW	1.02	0.01	0.95	1.19	1.07	0.04	0.84	1.34	4.3
Aksu	Sinkiang	NW	0.80	0.10	0.37	1.76	1.32	0.14	0.36	2.35	64.6
Hami	Sinkiang	NW	0.97	0.06	0.58	1.42	0.71	0.05	0.40	1.02	-27.3
Hotan	Sinkiang	NW	0.60	0.05	0.24	1.08	0.99	0.06	0.65	1.40	63.5
Kashgar	Sinkiang	NW	0.57	0.03	0.30	0.87	0.55	0.04	0.35	0.85	-4.2
Karamay	Sinkiang	NW	1.12	0.03	0.88	1.36	1.21	0.03	1.06	1.36	8.5
Kizilsu	Sinkiang	NW	1.06	0.06	0.61	1.56	1.23	0.12	0.59	1.79	16.0
Shihezi	Sinkiang	NW	0.67	0.05	0.44	1.27	0.84	0.04	0.61	1.11	25.2
Urumchi	Sinkiang	NW	0.74	0.03	0.51	1.03	0.66	0.03	0.47	0.93	-11.5
Wujiaqu	Sinkiang	NW	0.63	0.04	0.29	0.97	0.52	0.06	0.20	0.86	-17.8
Yili	Sinkiang	NW	1.16	0.03	0.87	1.39	1.34	0.06	0.89	1.74	15.7
Ezhou	Hubei	SE	1.03	0.06	0.77	1.79	1.10	0.03	0.95	1.29	6.8
Huanggang	Hubei	SE	0.87	0.05	0.36	1.18	1.05	0.03	0.75	1.15	21.2
Jingmen	Hubei	SE	0.65	0.04	0.44	1.07	0.82	0.02	0.65	0.96	27.5
Shiyan	Hubei	SE	0.94	0.04	0.65	1.39	0.86	0.05	0.53	1.30	-8.6
Wuhan	Hubei	SE	0.66	0.05	0.42	1.07	0.93	0.05	0.54	1.16	40.4
Xianning	Hubei	SE	1.10	0.05	0.74	1.48	1.44	0.03	1.11	1.63	30.6
Xiangyang	Hubei	SE	0.75	0.04	0.60	1.14	0.87	0.03	0.72	1.13	15.4
Xiaogan	Hubei	SE	1.40	0.06	1.11	1.92	1.72	0.05	1.40	2.14	23.2
Yichang	Hubei	SE	0.82	0.04	0.54	1.13	0.97	0.02	0.86	1.17	17.4
Anqing	Anhui	SE	0.45	0.05	0.16	0.78	0.62	0.03	0.43	0.81	37.8
Bengbu	Anhui	SE	0.65	0.04	0.30	0.92	0.85	0.03	0.69	1.10	31.1
Bozhou	Anhui	SE	0.48	0.04	0.25	0.78	0.88	0.04	0.60	1.15	84.4
Chuzhou	Anhui	SE	0.54	0.06	0.28	1.00	0.74	0.04	0.48	0.96	37.5
Fuyang	Anhui	SE	0.53	0.07	0.18	1.13	0.72	0.04	0.50	1.02	37.0
Hefei	Anhui	SE	0.75	0.04	0.45	1.06	0.85	0.04	0.66	1.15	12.9

Huaibei	Anhui	SE	0.85	0.05	0.57	1.24	1.20	0.03	1.01	1.44	39.9
Huainan	Anhui	SE	0.64	0.06	0.24	1.07	0.89	0.03	0.67	1.16	37.8
Huangshan	Anhui	SE	0.12	0.01	0.07	0.18	0.17	0.02	0.11	0.36	36.9
Lu'an	Anhui	SE	0.68	0.04	0.36	1.07	0.56	0.03	0.39	0.76	-17.5
Ma'anshan	Anhui	SE	1.10	0.03	0.84	1.36	1.34	0.05	1.02	1.58	21.1
Suzhou	Anhui	SE	0.57	0.07	0.23	1.14	0.97	0.06	0.71	1.41	69.1
Tongling	Anhui	SE	0.82	0.05	0.53	1.23	1.05	0.06	0.76	1.53	28.1
Wuhu	Anhui	SE	0.65	0.05	0.33	1.00	0.81	0.04	0.63	1.19	24.6
Changzhou	Jiangsu	SE	0.80	0.03	0.59	1.15	0.85	0.06	0.43	1.18	6.5
Huaian	Jiangsu	SE	0.69	0.05	0.32	1.07	0.89	0.06	0.46	1.29	30.5
Lianyungang	Jiangsu	SE	0.62	0.04	0.30	0.96	0.87	0.05	0.52	1.24	41.9
Nanjing	Jiangsu	SE	0.69	0.04	0.40	0.98	0.84	0.05	0.50	1.19	20.6
Nantong	Jiangsu	SE	0.54	0.05	0.32	1.18	0.72	0.06	0.43	1.37	33.0
Suzhou	Jiangsu	SE	0.69	0.03	0.43	0.85	0.94	0.05	0.60	1.32	35.6
Suqian	Jiangsu	SE	0.64	0.04	0.33	0.97	1.01	0.05	0.68	1.46	58.3
Taizhou	Jiangsu	SE	0.84	0.05	0.52	1.30	0.92	0.04	0.66	1.16	9.3
Wuxi	Jiangsu	SE	0.84	0.03	0.66	1.32	1.18	0.05	0.96	1.65	40.5
Xuzhou	Jiangsu	SE	0.98	0.05	0.66	1.33	1.31	0.06	1.00	1.75	33.4
Yanchen	Jiangsu	SE	0.59	0.04	0.33	1.06	0.68	0.04	0.44	0.93	15.2
Yangzhou	Jiangsu	SE	0.62	0.05	0.26	1.01	0.60	0.03	0.39	0.74	-2.8
Zhenjiang	Jiangsu	SE	0.74	0.03	0.47	1.05	0.80	0.04	0.52	1.00	9.1
Shanghai	Municipality	SE	0.65	0.02	0.50	0.76	0.89	0.05	0.67	1.26	36.9
Hangzhou	Zhejiang	SE	0.68	0.03	0.44	0.87	0.90	0.03	0.68	1.16	31.0
Huzhou	Zhejiang	SE	0.63	0.03	0.43	0.86	0.87	0.03	0.69	1.05	38.0
Jiaxing	Zhejiang	SE	0.56	0.02	0.39	0.74	0.76	0.04	0.47	1.02	36.7
Jinhua	Zhejiang	SE	0.67	0.03	0.47	0.85	0.85	0.07	0.63	1.45	26.7

Lishui	Zhejiang	SE	0.52	0.02	0.39	0.66	0.58	0.02	0.44	0.71	11.6
Ningbo	Zhejiang	SE	0.71	0.02	0.58	0.88	0.87	0.04	0.67	1.14	22.2
Quzhou	Zhejiang	SE	0.67	0.03	0.47	0.85	0.87	0.06	0.63	1.45	29.5
Shaoxing	Zhejiang	SE	0.64	0.04	0.42	0.92	0.86	0.05	0.54	1.23	34.3
Taizhou	Zhejiang	SE	0.61	0.02	0.41	0.82	0.70	0.04	0.46	0.88	14.9
Wenjiang	Zhejiang	SE	0.71	0.03	0.52	0.92	0.72	0.03	0.53	0.92	1.4
Zhoushan	Zhejiang	SE	0.50	0.03	0.34	0.82	0.64	0.04	0.42	0.93	29.3
Fuzhou	Jiangxi	SE	0.75	0.02	0.65	0.88	0.83	0.03	0.59	0.96	10.5
Ganzhou	Jiangxi	SE	1.22	0.02	1.06	1.32	1.29	0.04	1.09	1.53	5.6
Ji'an	Jiangxi	SE	0.69	0.02	0.52	0.82	0.89	0.02	0.75	1.05	28.3
Jingdezhen	Jiangxi	SE	0.59	0.02	0.41	0.75	0.75	0.04	0.52	1.09	27.7
Jiujiang	Jiangxi	SE	0.61	0.02	0.40	0.82	0.69	0.03	0.48	0.86	11.9
Nanchang	Jiangxi	SE	0.81	0.02	0.69	1.00	0.89	0.04	0.67	1.06	9.5
Pingxiang	Jiangxi	SE	0.60	0.04	0.40	1.10	0.95	0.07	0.58	1.76	58.2
Shangrao	Jiangxi	SE	0.49	0.04	0.31	0.74	0.48	0.04	0.33	0.81	-3.1
Xinyu	Jiangxi	SE	1.38	0.05	1.01	1.96	1.36	0.05	1.07	1.67	-1.3
Yichun	Jiangxi	SE	0.87	0.03	0.62	1.08	0.94	0.03	0.67	1.13	7.5
Yingtan	Jiangxi	SE	0.55	0.02	0.41	0.73	0.70	0.02	0.60	0.81	26.9
Changsha	Hunan	SE	0.64	0.02	0.53	0.78	0.82	0.03	0.63	1.02	27.0
Changde	Hunan	SE	1.15	0.05	0.60	1.52	1.16	0.04	0.87	1.42	0.8
Chenzhou	Hunan	SE	0.82	0.04	0.54	1.18	1.10	0.05	0.86	1.44	34.9
Huaihua	Hunan	SE	1.33	0.03	1.08	1.54	1.36	0.03	1.05	1.54	2.2
Loudi	Hunan	SE	1.20	0.08	0.65	1.75	1.76	0.05	1.49	2.09	47.4
Xiangtan	Hunan	SE	1.01	0.03	0.72	1.18	1.06	0.04	0.80	1.31	4.7
Yiyang	Hunan	SE	0.53	0.05	0.24	0.90	0.85	0.03	0.65	1.06	58.9
Yongzhou	Hunan	SE	0.46	0.02	0.33	0.62	0.63	0.03	0.37	0.74	37.2

Zhangjiajie	Hunan	SE	1.23	0.05	0.76	1.58	1.58	0.06	1.27	2.02	28.9
Zhuzhou	Hunan	SE	0.60	0.03	0.45	0.79	0.85	0.04	0.62	1.10	42.6
Dongguan	Guangdong	SE	0.68	0.02	0.55	0.95	0.82	0.01	0.72	0.94	21.5
Foshan	Guangdong	SE	0.75	0.02	0.63	0.96	0.86	0.02	0.72	1.00	15.7
Guangzhou	Guangdong	SE	0.83	0.02	0.62	0.98	0.90	0.02	0.75	0.98	8.8
Heyuan	Guangdong	SE	0.77	0.02	0.56	0.94	0.83	0.01	0.77	0.93	7.5
Huizhou	Guangdong	SE	0.72	0.02	0.60	0.86	0.78	0.03	0.62	0.97	8.2
Jiangmen	Guangdong	SE	0.78	0.02	0.62	0.98	0.99	0.04	0.80	1.26	27.5
Maoming	Guangdong	SE	0.79	0.02	0.67	0.96	0.93	0.04	0.73	1.18	16.7
Meizhou	Guangdong	SE	0.72	0.02	0.58	0.91	0.88	0.01	0.79	0.97	22.3
Qingyuan	Guangdong	SE	0.87	0.03	0.60	1.11	0.93	0.02	0.83	1.07	7.5
Shantou	Guangdong	SE	0.85	0.03	0.67	1.15	0.86	0.02	0.74	1.09	1.0
Shaoguan	Guangdong	SE	0.89	0.02	0.73	1.00	0.81	0.03	0.61	0.97	-8.9
Shenzhen	Guangdong	SE	0.83	0.02	0.69	0.95	0.82	0.03	0.67	1.01	-1.3
Zhujiang	Guangdong	SE	0.74	0.03	0.44	0.90	0.70	0.02	0.55	0.84	-5.6
Zhaoqing	Guangdong	SE	0.62	0.02	0.50	0.81	0.84	0.04	0.55	1.11	34.4
Zhongshan	Guangdong	SE	0.88	0.03	0.59	1.11	1.00	0.07	0.59	1.28	14.2
Zhuhai	Guangdong	SE	0.72	0.02	0.53	0.87	0.83	0.04	0.60	1.00	16.1
Fuzhou	Fujian	SE	0.57	0.02	0.43	0.80	0.62	0.03	0.41	0.79	9.3
Longyan	Fujian	SE	0.68	0.02	0.47	0.84	0.71	0.03	0.54	0.88	4.8
Nanping	Fujian	SE	0.78	0.02	0.60	0.92	0.77	0.01	0.67	0.84	-1.6
Ningde	Fujian	SE	0.65	0.04	0.27	1.08	0.60	0.05	0.34	0.85	-8.2
Putian	Fujian	SE	0.63	0.03	0.46	0.97	0.59	0.03	0.38	0.75	-7.6
Quanzhou	Fujian	SE	0.55	0.02	0.36	0.70	0.59	0.02	0.44	0.72	6.8
Sanming	Fujian	SE	1.17	0.05	0.82	1.46	1.04	0.06	0.74	1.41	-11.2
Xiamen	Fujian	SE	0.44	0.02	0.31	0.64	0.56	0.03	0.33	0.72	26.7

Zhangzhou	Fujian	SE	0.55	0.02	0.37	0.71	0.57	0.02	0.45	0.64	3.7
Haikou	Hainan	SE	0.52	0.02	0.35	0.72	0.63	0.03	0.48	0.79	21.4
Sanya	Hainan	SE	0.57	0.02	0.44	0.75	0.64	0.04	0.46	0.89	13.8
Chongqing	Municipality	SW	0.84	0.04	0.57	1.12	1.11	0.03	0.86	1.28	31.1
Bazhong	Sichuan	SW	0.67	0.02	0.55	0.79	0.82	0.02	0.64	0.93	21.5
Chengdu	Sichuan	SW	0.84	0.03	0.52	1.06	1.07	0.05	0.79	1.44	27.2
Dazhou	Sichuan	SW	0.66	0.05	0.40	1.06	0.96	0.05	0.60	1.23	44.6
Deyang	Sichuan	SW	0.90	0.03	0.67	1.08	1.24	0.04	0.94	1.51	38.0
Guangyuan	Sichuan	SW	0.26	0.01	0.18	0.37	0.37	0.02	0.26	0.45	45.7
Leshan	Sichuan	SW	0.81	0.03	0.64	1.03	1.03	0.06	0.70	1.45	27.2
Luzhou	Sichuan	SW	0.52	0.03	0.32	0.82	0.66	0.03	0.42	0.90	27.3
Meishan	Sichuan	SW	0.46	0.02	0.29	0.63	0.67	0.03	0.43	0.90	45.7
Mianyang	Sichuan	SW	0.80	0.03	0.60	1.00	0.90	0.03	0.73	1.12	11.5
Nanchong	Sichuan	SW	0.64	0.03	0.48	0.92	0.73	0.02	0.59	0.88	14.0
Panzhihua	Sichuan	SW	1.43	0.05	1.12	1.83	1.47	0.06	1.13	1.93	2.4
Suining	Sichuan	SW	0.82	0.02	0.69	1.02	0.78	0.02	0.69	0.91	-4.4
Ya'an	Sichuan	SW	0.65	0.03	0.50	0.98	0.74	0.02	0.56	0.89	13.7
Ziyang	Sichuan	SW	0.50	0.02	0.38	0.72	0.62	0.02	0.44	0.75	24.8
Zigong	Sichuan	SW	0.51	0.04	0.29	0.85	0.78	0.04	0.52	1.07	54.2
Baoshan	Yunnan	SW	0.71	0.02	0.59	0.94	0.88	0.04	0.67	1.16	24.5
Chuxiong	Yunnan	SW	0.70	0.03	0.53	0.94	0.83	0.04	0.57	1.13	17.7
Dali	Yunnan	SW	0.41	0.02	0.27	0.58	0.45	0.04	0.25	0.79	10.9
Dehong	Yunnan	SW	0.49	0.02	0.35	0.67	0.63	0.02	0.53	0.75	28.4
Honghe	Yunnan	SW	0.46	0.04	0.28	0.95	0.54	0.05	0.31	0.86	18.0
Kunming	Yunnan	SW	0.77	0.04	0.47	1.05	0.85	0.03	0.64	1.04	10.9
Lijiang	Yunnan	SW	0.98	0.03	0.71	1.17	0.84	0.02	0.72	0.97	-14.7

Lincang	Yunnan	SW	0.30	0.04	0.11	0.91	0.49	0.02	0.36	0.63	61.4
Nujiang	Yunnan	SW	0.62	0.04	0.30	0.95	0.54	0.02	0.43	0.66	-14.0
Qujing	Yunnan	SW	0.76	0.03	0.56	1.10	1.06	0.04	0.81	1.38	39.1
Wenshan	Yunnan	SW	0.57	0.02	0.40	0.82	0.58	0.02	0.49	0.73	1.4
Xishuangbanna	Yunnan	SW	0.59	0.02	0.47	0.82	0.64	0.02	0.54	0.79	8.7
Tuxi	Yunnan	SW	0.97	0.07	0.68	1.97	1.29	0.06	0.99	1.70	32.4
Zhaotong	Yunnan	SW	0.71	0.04	0.40	1.08	0.98	0.04	0.74	1.23	37.9
Anshun	Guizhou	SW	0.31	0.02	0.20	0.47	0.49	0.03	0.37	0.70	60.7
Bijie	Guizhou	SW	0.80	0.05	0.45	1.21	1.10	0.05	0.77	1.42	38.4
Guiyang	Guizhou	SW	0.53	0.02	0.39	0.73	0.71	0.02	0.63	0.89	34.9
Liupanshui	Guizhou	SW	0.46	0.06	0.14	1.30	0.61	0.04	0.41	0.98	33.8
Tongren	Guizhou	SW	0.48	0.02	0.33	0.68	0.67	0.01	0.60	0.72	37.4
Zunyi	Guizhou	SW	0.63	0.02	0.50	0.80	0.80	0.03	0.56	1.00	25.9
Baise	Guangxi	SW	1.00	0.03	0.75	1.20	0.48	0.03	0.31	0.78	-51.9
Beihai	Guangxi	SW	0.81	0.03	0.63	0.99	1.08	0.03	0.87	1.25	34.3
Chongzuo	Guangxi	SW	0.76	0.02	0.62	0.93	0.87	0.03	0.68	1.04	14.6
Fangchenggang	Guangxi	SW	0.65	0.01	0.60	0.72	0.85	0.03	0.65	1.03	29.4
Guigang	Guangxi	SW	0.79	0.02	0.65	1.03	0.92	0.04	0.66	1.21	16.5
Guilin	Guangxi	SW	0.77	0.01	0.68	0.85	0.83	0.02	0.69	0.99	7.6
Hechi	Guangxi	SW	1.10	0.05	0.76	1.60	1.09	0.06	0.71	1.50	-0.7
Hezhou	Guangxi	SW	1.06	0.09	0.60	2.33	0.84	0.04	0.43	1.09	-20.8
Laibin	Guangxi	SW	0.82	0.02	0.65	0.98	0.94	0.04	0.76	1.17	14.8
Liuzhou	Guangxi	SW	0.91	0.02	0.77	1.11	0.98	0.03	0.75	1.15	7.4
Nanning	Guangxi	SW	0.77	0.02	0.58	0.96	0.89	0.03	0.71	1.02	15.4
Qinzhou	Guangxi	SW	1.16	0.04	0.87	1.57	1.11	0.03	0.90	1.39	-4.7
Wuzhou	Guangxi	SW	0.75	0.02	0.66	0.94	0.88	0.06	0.63	1.33	16.9

Yulin	Guangxi	SW	0.90	0.04	0.61	1.23	0.76	0.02	0.57	0.89	-15.8
Golog	Qinghai	TP	0.55	0.01	0.42	0.63	0.64	0.03	0.47	0.92	15.3
Haidong	Qinghai	TP	0.82	0.04	0.56	1.22	0.90	0.04	0.66	1.15	9.4
Xining	Qinghai	TP	1.08	0.04	0.82	1.54	1.09	0.05	0.80	1.46	1.4
Ali	Tibet	TP	0.35	0.01	0.23	0.42	0.20	0.03	0.13	0.63	-41.5
Qamdo	Tibet	TP	0.80	0.03	0.53	1.03	1.13	0.03	0.92	1.31	41.5
Lhasa	Tibet	TP	0.57	0.01	0.46	0.68	0.50	0.02	0.41	0.61	-12.6
Nyingchi	Tibet	TP	0.41	0.01	0.34	0.50	0.44	0.01	0.39	0.53	7.4
Naqu	Tibet	TP	0.96	0.04	0.60	1.22	1.41	0.02	1.30	1.56	46.9
Shigatse	Tibet	TP	0.40	0.02	0.27	0.55	0.34	0.01	0.29	0.41	-14.3
Lhoka	Tibet	TP	0.48	0.02	0.31	0.66	0.64	0.02	0.49	0.76	32.0

153 ^a NC, NE, NW, SE, SW, TP represent north China, northeast China, northwest China, southeast China, southwest China, and the Tibetan Plateau,
154 respectively.

155 ^b Negative values with red color mean significant ($p < 0.05$ or 0.01) reduction, and positive values mean increase.

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164 **Table S5.** Summary statistical of daily average NO₂ concentrations (µg m⁻³) during the pre-Parade Blue and Parade Blue periods in the 291 cities
 165 across China.

City	Province	Region	The Pre-Parade Blue period				The Parade Blue period				Reduction or Increase
			Mean	Standard Error	Min	Max	Mean	Standard Error	Min	Max	
Beijing	Municipality	NC	34	1	26	44	21	1	17	24	-39
Tianjing	Municipality	NC	26	2	14	45	21	2	12	33	-19
Baoding	Hebei	NC	34	2	23	51	25	2	15	40	-26
Cangzhou	Hebei	NC	34	1	26	44	21	1	17	24	-39
Chengde	Hebei	NC	27	1	21	35	21	1	14	26	-23
Handan	Hebei	NC	38	3	22	70	36	3	20	54	-5
Hengshui	Hebei	NC	29	2	18	59	27	1	18	33	-8
Langfang	Hebei	NC	42	1	30	55	36	2	21	55	-15
Qinhuangdao	Hebei	NC	41	2	17	53	35	3	18	52	-16
Shijiazhuang	Hebei	NC	29	2	15	56	22	3	7	37	-23
Tangshan	Hebei	NC	44	2	32	76	45	4	10	74	1
Xingtai	Hebei	NC	50	2	34	63	38	4	14	74	-24
Zhangjiakou	Hebei	NC	17	1	11	24	24	2	14	32	47
Changzhi	Shanxi	NC	25	2	10	41	31	1	22	41	25
Datong	Shanxi	NC	19	1	9	30	16	1	11	23	-16
Jincheng	Shanxi	NC	29	2	10	46	29	2	15	38	2
Jinzhong	Shanxi	NC	22	1	15	31	20	1	12	29	-12
Linfen	Shanxi	NC	20	1	14	25	19	1	12	32	-3
Lvliang	Shanxi	NC	22	1	14	34	18	1	13	23	-18
Shuozhou	Shanxi	NC	31	2	13	45	31	1	20	39	-1

Taiyuan	Shanxi	NC	30	1	22	41	28	2	20	41	-5
Xinzhou	Shanxi	NC	33	2	16	48	29	2	16	37	-14
Yangquan	Shanxi	NC	24	1	12	32	23	2	11	32	-5
Yuncheng	Shanxi	NC	13	2	4	30	20	2	10	33	56
Binzhou	Shandong	NC	27	2	16	49	28	3	15	55	4
Dezhou	Shandong	NC	29	2	19	46	30	2	16	42	2
Dongying	Shandong	NC	27	2	9	43	22	3	8	40	-18
Jinan	Shandong	NC	35	2	20	49	41	2	26	54	16
Jining	Shandong	NC	31	2	13	50	37	3	24	67	22
Laiwu	Shandong	NC	29	2	12	47	38	2	23	54	31
Liaocheng	Shandong	NC	29	2	18	43	27	3	10	44	-6
Linyi	Shandong	NC	33	2	16	54	39	3	27	62	21
Qingdao	Shandong	NC	19	1	11	35	28	1	16	36	43
Rizhao	Shandong	NC	20	2	5	39	28	3	16	44	38
Tai'an	Shandong	NC	30	2	17	47	38	2	22	50	27
Weihai	Shandong	NC	15	1	6	28	14	1	7	22	-5
Weifang	Shandong	NC	25	2	14	41	33	2	22	48	33
Yantai	Shandong	NC	23	1	12	33	27	2	17	42	19
Zaozhuang	Shandong	NC	26	2	15	42	29	1	19	38	12
Zibo	Shandong	NC	52	2	31	68	55	3	38	70	6
Alxa League	Inner Mongolia	NC	7	0	5	10	8	1	4	11	18
Bayannur	Inner Mongolia	NC	19	1	14	24	22	2	13	39	14
Baotou	Inner Mongolia	NC	34	2	20	49	33	2	18	43	-2
Chifeng	Inner Mongolia	NC	16	1	10	27	17	0	14	20	3
Ordos	Inner Mongolia	NC	19	1	9	30	18	1	12	26	-5
Hohhot	Inner Mongolia	NC	32	1	21	43	32	2	18	42	1

Hulun Buir	Inner Mongolia	NC	20	2	7	37	19	1	11	27	-4
Tongliao	Inner Mongolia	NC	16	1	10	25	13	1	8	20	-20
Wuhai	Inner Mongolia	NC	17	1	11	24	17	1	11	24	-1
Hinggan League	Inner Mongolia	NC	14	1	6	22	10	1	7	16	-25
Anyang	Henan	NC	30	2	18	47	32	2	20	42	5
Hebi	Henan	NC	27	3	9	48	24	2	16	39	-11
Jiaozuo	Henan	NC	29	2	21	47	30	2	17	40	6
Kaifeng	Henan	NC	25	2	15	49	24	2	14	36	-2
Luoyang	Henan	NC	23	1	15	41	25	2	13	33	8
Luohe	Henan	NC	18	2	9	33	23	2	12	35	31
Nanyang	Henan	NC	16	1	8	25	21	1	14	28	33
Pingdingshan	Henan	NC	27	2	14	41	33	2	23	43	19
Sanmenxia	Henan	NC	23	2	15	43	23	3	14	49	-1
Shangqiu	Henan	NC	16	1	8	31	21	2	11	39	29
Xinyang	Henan	NC	19	1	12	30	28	1	22	32	46
Zhengzhou	Henan	NC	39	3	23	73	45	3	24	69	15
Zhoukou	Henan	NC	11	1	7	17	13	1	8	19	11
Zhumadian	Henan	NC	22	2	8	34	24	1	16	32	11
Anshan	Liaoning	NE	18	2	11	33	27	1	16	31	49
Benxi	Liaoning	NE	19	1	11	30	25	1	14	34	33
Chaoyang	Liaoning	NE	12	1	7	16	13	1	8	17	2
Dalian	Liaoning	NE	20	1	14	25	23	1	17	31	18
Dandong	Liaoning	NE	29	8	1	108	15	1	7	20	-49
Fushun	Liaoning	NE	15	1	10	22	18	1	8	24	20
Fuxin	Liaoning	NE	28	1	18	38	25	1	15	35	-8
Huludao	Liaoning	NE	23	2	11	44	28	2	15	41	20

Jinzhou	Liaoning	NE	26	1	18	36	28	1	21	36	6
Liaoyang	Liaoning	NE	15	1	6	31	26	1	15	32	77
Panjin	Liaoning	NE	13	2	4	32	24	1	17	32	80
Shenyang	Liaoning	NE	31	2	20	49	35	2	27	48	11
Tieling	Liaoning	NE	20	1	13	26	23	1	14	29	19
Wafangdian	Liaoning	NE	17	1	11	24	21	1	15	33	27
Yingkou	Liaoning	NE	16	1	8	27	22	1	15	33	37
Baicheng	Jilin	NE	12	1	8	21	9	1	4	13	-27
Baishan	Jilin	NE	14	0	9	18	16	1	12	19	16
Changchun	Jilin	NE	28	2	17	44	33	2	22	45	19
Jilin	Jilin	NE	20	1	13	28	24	1	16	31	18
Liaoyuan	Jilin	NE	15	2	3	30	15	1	8	24	1
Siping	Jilin	NE	17	2	4	33	23	3	13	62	40
Songyuan	Jilin	NE	16	1	9	24	14	1	6	22	-14
Daqing	Heilongjiang	NE	16	1	12	23	16	1	11	24	0
Daxinganling	Heilongjiang	NE	11	1	8	15	15	1	10	20	44
Harbin	Heilongjiang	NE	31	2	21	51	31	2	20	42	2
Hegang	Heilongjiang	NE	6	1	3	10	4	0	2	6	-39
Heihe	Heilongjiang	NE	11	1	5	15	9	1	7	14	-18
Jixi	Heilongjiang	NE	16	1	11	21	13	1	8	19	-19
Jiamusi	Heilongjiang	NE	18	1	8	27	15	2	8	31	-13
Mudanjiang	Heilongjiang	NE	24	1	16	33	19	1	12	25	-21
Qitaihe	Heilongjiang	NE	12	0	10	16	11	1	7	15	-12
Qiqihar	Heilongjiang	NE	15	1	8	19	11	1	7	16	-24
Shuangyashan	Heilongjiang	NE	15	0	12	19	15	1	9	18	2
Suihua	Heilongjiang	NE	20	2	10	41	15	1	10	24	-26

Ankang	Shaanxi	NW	6	1	3	11	7	1	3	11	20
Baoji	Shaanxi	NW	23	1	16	34	28	1	16	33	19
Hanzhong	Shaanxi	NW	15	1	9	22	22	1	13	27	46
Shangluo	Shaanxi	NW	15	1	10	22	19	1	13	24	23
Tongchuan	Shaanxi	NW	24	2	15	47	26	1	17	32	10
Weinan	Shaanxi	NW	29	1	22	43	39	2	29	54	31
Xi'an	Shaanxi	NW	36	2	24	55	44	2	29	57	21
Xianyang	Shaanxi	NW	23	1	13	36	27	1	19	34	20
Yan'an	Shaanxi	NW	35	1	23	40	40	1	33	53	15
Yulin	Shaanxi	NW	27	2	12	43	33	3	14	56	21
Baiying	Gansu	NW	25	2	12	40	28	3	4	42	11
Dingxi	Gansu	NW	20	2	9	40	20	1	12	30	-3
Gannan	Gansu	NW	17	2	8	40	14	1	10	19	-15
Jiayuguan	Gansu	NW	25	1	13	37	19	1	13	29	-23
Jiuquan	Gansu	NW	23	2	8	37	25	2	12	38	9
Lanzhou	Gansu	NW	38	2	20	53	42	3	25	59	10
Linxia	Gansu	NW	26	2	12	49	31	2	20	49	16
Pingliang	Gansu	NW	41	1	28	50	50	2	38	62	23
Qingyang	Gansu	NW	10	1	5	16	14	1	9	20	46
Tianshui	Gansu	NW	16	1	10	22	14	1	6	19	-12
Wuwei	Gansu	NW	22	1	13	36	23	2	14	35	5
Zhangye	Gansu	NW	18	1	10	26	15	1	8	21	-19
Guyuan	Ningxia	NW	18	2	9	30	22	2	11	31	17
Shizuishan	Ningxia	NW	17	1	12	33	20	1	13	30	13
Wuzhong	Ningxia	NW	17	1	9	29	18	2	5	28	11
Yinchuan	Ningxia	NW	27	2	13	48	29	3	16	45	7

Zhongwei	Ningxia	NW	13	1	7	18	17	1	9	22	36
Aksu	Sinkiang	NW	23	2	12	42	21	2	11	38	-9
Hami	Sinkiang	NW	11	1	4	21	9	1	4	19	-16
Hotan	Sinkiang	NW	21	2	11	35	18	2	10	29	-16
Kashgar	Sinkiang	NW	22	2	10	36	19	2	9	36	-13
Karamay	Sinkiang	NW	15	1	5	28	14	1	6	28	-8
Kizilsu	Sinkiang	NW	9	1	1	19	9	1	6	15	4
Shihezi	Sinkiang	NW	28	3	7	64	22	3	6	38	-21
Urumchi	Sinkiang	NW	41	2	20	58	38	2	24	50	-9
Wujiaqu	Sinkiang	NW	30	3	9	53	24	3	10	49	-20
Yili	Sinkiang	NW	25	2	11	34	24	2	12	34	-6
Ezhou	Hubei	SE	13	1	8	24	19	1	11	30	49
Huanggang	Hubei	SE	14	2	4	23	14	1	6	26	2
Jingmen	Hubei	SE	18	1	12	38	27	2	17	38	45
Shiyan	Hubei	SE	12	1	8	19	13	0	10	16	3
Wuhan	Hubei	SE	27	2	11	52	41	4	18	64	50
Xianning	Hubei	SE	12	0	9	16	15	1	11	19	28
Xiangyang	Hubei	SE	17	1	10	34	23	1	16	31	35
Xiaogan	Hubei	SE	5	1	2	12	9	1	4	20	91
Yichang	Hubei	SE	24	1	19	32	26	1	23	32	11
Anqing	Anhui	SE	21	2	12	37	21	2	14	46	-2
Bengbu	Anhui	SE	24	2	11	40	32	2	20	42	29
Bozhou	Anhui	SE	33	1	24	45	46	2	35	72	41
Chuzhou	Anhui	SE	29	2	18	41	22	1	11	30	-24
Fuyang	Anhui	SE	28	1	21	46	43	3	30	64	52
Hefei	Anhui	SE	24	2	14	38	31	3	19	58	27

Huaibei	Anhui	SE	19	1	14	25	24	1	18	32	24
Huainan	Anhui	SE	18	1	11	29	20	1	13	26	11
Huangshan	Anhui	SE	9	0	8	10	9	0	8	10	0
Lu'an	Anhui	SE	15	1	8	27	15	1	9	21	6
Ma'anshan	Anhui	SE	20	1	10	30	21	1	15	28	5
Suzhou	Anhui	SE	18	0	15	21	19	1	16	26	3
Tongling	Anhui	SE	25	2	15	35	31	2	18	47	26
Wuhu	Anhui	SE	38	1	30	51	38	2	29	49	2
Changzhou	Jiangsu	SE	33	3	16	70	34	3	15	51	2
Huaian	Jiangsu	SE	12	1	3	22	15	2	5	30	19
Lianyungang	Jiangsu	SE	17	1	9	27	24	1	16	32	41
Nanjing	Jiangsu	SE	36	2	19	54	39	3	25	61	10
Nantong	Jiangsu	SE	24	3	7	49	25	3	8	50	4
Suzhou	Jiangsu	SE	31	2	18	46	42	2	32	57	35
Suqian	Jiangsu	SE	26	2	8	38	27	1	20	39	3
Taizhou	Jiangsu	SE	19	2	8	33	20	1	14	34	5
Wuxi	Jiangsu	SE	27	2	15	51	34	1	27	48	24
Xuzhou	Jiangsu	SE	26	2	12	43	33	2	21	48	26
Yanchen	Jiangsu	SE	17	1	8	26	22	1	14	32	29
Yangzhou	Jiangsu	SE	23	2	7	48	18	1	12	28	-24
Zhenjiang	Jiangsu	SE	27	2	16	44	35	2	18	49	27
Shanghai	Municipality	SE	21	2	9	33	36	3	19	54	69
Hangzhou	Zhejiang	SE	29	2	11	48	33	2	20	45	16
Huzhou	Zhejiang	SE	25	2	9	40	32	2	22	49	27
Jiaxing	Zhejiang	SE	19	2	6	30	29	2	19	51	57
Jinhua	Zhejiang	SE	20	1	9	31	25	2	8	38	23

Lishui	Zhejiang	SE	14	1	5	20	14	1	10	19	-3
Ningbo	Zhejiang	SE	21	2	8	38	29	2	14	42	39
Quzhou	Zhejiang	SE	20	1	9	31	26	2	8	41	32
Shaoxing	Zhejiang	SE	26	2	11	39	38	1	28	49	45
Taizhou	Zhejiang	SE	11	1	1	20	15	2	7	25	36
Wenjiang	Zhejiang	SE	25	3	2	44	29	3	10	45	18
Zhoushan	Zhejiang	SE	11	1	3	24	14	1	5	20	27
Fuzhou	Jiangxi	SE	10	1	5	14	12	1	6	19	17
Ganzhou	Jiangxi	SE	13	1	7	18	15	1	10	20	15
Ji'an	Jiangxi	SE	9	1	5	18	14	1	8	22	56
Jingdezhen	Jiangxi	SE	12	1	5	32	12	1	6	18	-2
Jiujiang	Jiangxi	SE	15	1	8	25	19	1	12	29	25
Nanchang	Jiangxi	SE	20	2	8	35	21	2	14	40	4
Pingxiang	Jiangxi	SE	10	1	5	15	15	1	10	18	57
Shangrao	Jiangxi	SE	14	1	8	21	18	1	12	28	25
Xinyu	Jiangxi	SE	11	1	5	16	12	1	7	18	2
Yichun	Jiangxi	SE	13	0	9	17	14	1	10	19	4
Yingtian	Jiangxi	SE	10	0	6	14	13	1	9	18	36
Changsha	Hunan	SE	19	1	9	31	27	1	16	33	38
Changde	Hunan	SE	13	1	6	24	11	1	8	16	-17
Chenzhou	Hunan	SE	18	1	9	26	20	1	12	25	11
Huaihua	Hunan	SE	8	1	4	14	14	1	5	22	66
Loudi	Hunan	SE	11	1	6	16	12	1	8	18	12
Xiangtan	Hunan	SE	24	1	13	34	30	2	17	42	26
Yiyang	Hunan	SE	15	1	9	22	18	1	12	27	17
Yongzhou	Hunan	SE	19	1	14	25	21	1	14	28	12

Zhangjiajie	Hunan	SE	18	1	11	29	22	1	18	26	23
Zhuzhou	Hunan	SE	17	1	12	25	25	1	18	30	45
Dongguan	Guangdong	SE	31	2	20	45	31	2	24	49	1
Foshan	Guangdong	SE	32	2	20	44	41	1	33	49	27
Guangzhou	Guangdong	SE	35	1	23	47	38	2	28	48	6
Heyuan	Guangdong	SE	18	1	10	27	19	1	11	26	7
Huizhou	Guangdong	SE	19	1	10	27	17	1	13	25	-10
Jiangmen	Guangdong	SE	14	1	9	20	25	1	19	34	82
Maoming	Guangdong	SE	10	1	6	14	12	1	9	15	17
Meizhou	Guangdong	SE	15	1	10	19	16	1	11	25	4
Qingyuan	Guangdong	SE	33	1	22	44	24	2	14	40	-26
Shantou	Guangdong	SE	16	1	10	26	16	1	12	19	-2
Shaoguan	Guangdong	SE	19	1	12	25	15	1	10	18	-22
Shenzhen	Guangdong	SE	34	2	22	47	33	2	24	48	-4
Zhujiang	Guangdong	SE	14	1	6	20	16	1	8	22	19
Zhaoqing	Guangdong	SE	20	1	13	30	26	2	12	41	31
Zhongshan	Guangdong	SE	15	1	8	31	24	2	14	33	61
Zhuhai	Guangdong	SE	17	1	10	28	25	1	19	31	46
Fuzhou	Fujian	SE	21	1	4	30	22	2	8	36	5
Longyan	Fujian	SE	17	1	9	28	17	1	13	20	-2
Nanping	Fujian	SE	10	1	7	15	9	1	6	13	-10
Ningde	Fujian	SE	13	1	3	22	14	1	8	19	6
Putian	Fujian	SE	15	1	3	23	13	1	5	19	-16
Quanzhou	Fujian	SE	18	2	2	27	14	1	6	23	-22
Sanming	Fujian	SE	22	1	12	29	20	1	11	31	-8
Xiamen	Fujian	SE	26	1	15	41	22	1	17	28	-15

Zhangzhou	Fujian	SE	18	1	10	22	19	1	16	24	10
Haikou	Hainan	SE	13	1	8	21	16	1	12	21	23
Sanya	Hainan	SE	11	1	7	19	14	1	9	20	30
Chongqing	Municipality	SW	29	2	20	48	46	2	35	57	55
Bazhong	Sichuan	SW	18	1	11	23	22	1	17	27	24
Chengdu	Sichuan	SW	39	3	15	63	54	4	25	81	37
Dazhou	Sichuan	SW	31	1	21	38	35	1	26	45	15
Deyang	Sichuan	SW	25	2	9	39	30	2	17	48	22
Guangyuan	Sichuan	SW	24	1	19	39	26	2	18	40	9
Leshan	Sichuan	SW	23	1	15	35	28	2	17	42	20
Luzhou	Sichuan	SW	20	1	11	30	28	2	12	41	39
Meishan	Sichuan	SW	19	1	10	34	25	2	15	39	33
Mianyang	Sichuan	SW	32	2	17	43	37	2	21	51	17
Nanchong	Sichuan	SW	20	2	11	31	29	1	18	36	43
Panzhihua	Sichuan	SW	25	1	21	35	27	1	23	35	7
Suining	Sichuan	SW	11	1	4	19	16	1	7	27	43
Ya'an	Sichuan	SW	22	1	16	35	21	1	16	23	-6
Ziyang	Sichuan	SW	13	1	9	23	20	1	15	29	48
Zigong	Sichuan	SW	22	1	15	34	28	2	16	38	27
Baoshan	Yunnan	SW	14	0	10	18	15	1	10	19	9
Chuxiong	Yunnan	SW	16	1	8	22	23	2	7	34	39
Dali	Yunnan	SW	11	1	6	19	12	1	4	20	10
Dehong	Yunnan	SW	10	0	7	13	10	0	8	13	5
Honghe	Yunnan	SW	10	1	5	19	14	1	10	20	44
Kunming	Yunnan	SW	20	1	13	27	28	2	16	39	36
Lijiang	Yunnan	SW	11	0	8	15	13	0	11	17	17

Lincang	Yunnan	SW	10	0	7	15	11	1	9	17	13
Nujiang	Yunnan	SW	7	0	5	11	9	0	7	11	21
Qujing	Yunnan	SW	17	1	11	24	20	1	15	31	19
Wenshan	Yunnan	SW	12	1	7	19	17	1	11	25	48
Xishuangbanna	Yunnan	SW	9	0	7	14	11	1	7	14	12
Tuxi	Yunnan	SW	15	1	8	21	19	1	14	25	32
Zhaotong	Yunnan	SW	17	1	11	26	22	1	12	30	28
Anshun	Guizhou	SW	9	1	4	24	15	2	5	29	65
Bijie	Guizhou	SW	23	2	11	36	27	2	18	39	19
Guiyang	Guizhou	SW	20	1	13	32	29	2	16	44	40
Liupanshui	Guizhou	SW	23	1	16	40	31	2	19	49	35
Tongren	Guizhou	SW	14	1	9	18	18	1	13	21	32
Zunyi	Guizhou	SW	20	1	16	27	32	2	15	42	55
Baise	Guangxi	SW	12	1	8	19	9	1	3	18	-24
Beihai	Guangxi	SW	10	1	6	16	9	1	6	14	-9
Chongzuo	Guangxi	SW	13	1	6	24	16	1	8	25	17
Fangchenggang	Guangxi	SW	11	0	7	14	12	1	8	16	6
Guigang	Guangxi	SW	20	1	13	25	20	1	12	27	0
Guilin	Guangxi	SW	15	1	10	20	17	1	13	22	9
Hechi	Guangxi	SW	13	1	9	21	15	1	9	21	14
Hezhou	Guangxi	SW	9	0	5	13	8	1	5	14	-5
Laibin	Guangxi	SW	14	1	8	20	16	1	8	26	11
Liuzhou	Guangxi	SW	19	1	13	30	18	1	9	27	-8
Nanning	Guangxi	SW	25	2	15	45	28	2	17	45	11
Qinzhou	Guangxi	SW	15	1	8	22	16	1	11	24	9
Wuzhou	Guangxi	SW	19	1	14	24	17	1	11	28	-11

Yulin	Guangxi	SW	15	1	9	25	17	1	10	27	11
Golog	Qinghai	TP	32	1	22	40	38	1	30	49	18
Haidong	Qinghai	TP	31	2	19	45	37	2	24	60	20
Xining	Qinghai	TP	28	1	17	38	28	1	20	42	2
Ali	Tibet	TP	3	0	2	5	4	0	3	7	37
Qamdo	Tibet	TP	16	1	11	32	14	1	10	24	-12
Lhasa	Tibet	TP	20	1	13	32	18	1	12	23	-10
Nyingchi	Tibet	TP	6	0	3	8	6	0	4	8	10
Naqu	Tibet	TP	12	0	9	16	14	1	10	19	21
Shigatse	Tibet	TP	15	3	7	52	11	0	9	14	-30
Lhoka	Tibet	TP	8	0	3	10	9	1	5	14	14

166 ^a NC, NE, NW, SE, SW, TP represent north China, northeast China, northwest China, southeast China, southwest China, and the Tibetan Plateau,
167 respectively.

168 ^b Negative values with red color mean significant ($p < 0.05$ or 0.01) reduction, and positive values mean increase.

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177 **Table S6.** Summary statistical of daily average SO₂ concentrations (µg m⁻³) during the pre-Parade Blue and Parade Blue periods in the 291 cities
 178 across China.

City	Province	Region	The Pre-Parade Blue period				The Parade Blue period				Reduction or Increase
			Standard		Min	Max	Standard		Min	Max	
			Mean	Error			Mean	Error			
Beijing	Municipality	NC	3	0	2	7	2	0	2	3	-34
Tianjing	Municipality	NC	10	1	4	16	10	1	4	23	-2
Baoding	Hebei	NC	17	1	11	25	10	1	6	16	-41
Cangzhou	Hebei	NC	3	0	2	7	2	0	2	3	-34
Chengde	Hebei	NC	9	1	5	18	6	1	3	18	-27
Handan	Hebei	NC	28	2	16	48	34	5	9	62	21
Hengshui	Hebei	NC	17	1	10	23	12	1	3	20	-32
Langfang	Hebei	NC	9	1	4	19	4	0	2	8	-56
Qinhuangdao	Hebei	NC	32	3	17	48	18	2	10	46	-43
Shijiazhuang	Hebei	NC	19	2	7	39	13	1	6	19	-33
Tangshan	Hebei	NC	29	3	12	64	29	4	13	68	1
Xingtai	Hebei	NC	25	4	8	74	18	4	3	45	-27
Zhangjiakou	Hebei	NC	12	1	7	19	12	1	9	22	0
Changzhi	Shanxi	NC	32	2	18	59	28	3	10	50	-12
Datong	Shanxi	NC	20	2	12	37	18	1	12	28	-9
Jincheng	Shanxi	NC	29	2	14	46	25	2	12	38	-12
Jinzhong	Shanxi	NC	13	3	3	37	16	2	7	29	21
Linfen	Shanxi	NC	17	1	7	32	14	1	8	23	-14
Lvliang	Shanxi	NC	43	2	31	56	24	2	13	42	-45
Shuozhou	Shanxi	NC	39	3	18	60	37	3	17	52	-3

Taiyuan	Shanxi	NC	21	2	9	43	18	1	11	24	-13
Xinzhou	Shanxi	NC	41	3	23	58	32	1	21	39	-22
Yangquan	Shanxi	NC	24	2	7	36	21	2	7	35	-11
Yuncheng	Shanxi	NC	19	1	9	34	45	6	20	101	140
Binzhou	Shandong	NC	30	4	9	87	26	3	11	60	-15
Dezhou	Shandong	NC	18	2	5	35	21	2	11	41	13
Dongying	Shandong	NC	45	3	21	81	31	3	16	57	-31
Jinan	Shandong	NC	21	1	12	32	20	2	12	33	-2
Jining	Shandong	NC	36	3	21	88	43	3	21	66	19
Laiwu	Shandong	NC	22	3	6	46	32	2	15	42	46
Liaocheng	Shandong	NC	20	2	7	36	21	2	12	45	6
Linyi	Shandong	NC	15	2	5	42	20	1	13	32	33
Qingdao	Shandong	NC	17	1	12	28	20	1	14	33	16
Rizhao	Shandong	NC	13	1	8	23	16	1	11	26	20
Tai'an	Shandong	NC	20	2	8	34	28	2	14	46	42
Weihai	Shandong	NC	10	1	3	20	13	1	8	18	29
Weifang	Shandong	NC	19	2	11	38	27	3	13	62	41
Yantai	Shandong	NC	11	1	5	18	12	1	7	15	15
Zaozhuang	Shandong	NC	36	3	14	57	60	3	43	82	66
Zibo	Shandong	NC	54	6	21	94	61	8	22	114	14
Alxa League	Inner Mongolia	NC	5	1	1	11	7	1	2	13	45
Bayannur	Inner Mongolia	NC	12	1	5	21	18	1	10	27	46
Baotou	Inner Mongolia	NC	25	2	11	37	20	2	9	29	-22
Chifeng	Inner Mongolia	NC	14	1	9	25	12	1	8	18	-15
Ordos	Inner Mongolia	NC	11	1	4	22	14	1	7	26	26
Hohhot	Inner Mongolia	NC	12	1	9	18	8	0	5	12	-30

Hulun Buir	Inner Mongolia	NC	2	0	1	4	3	0	1	7	45
Tongliao	Inner Mongolia	NC	12	1	6	19	8	1	4	15	-29
Wuhai	Inner Mongolia	NC	48	7	6	122	34	7	4	95	-29
Hinggan League	Inner Mongolia	NC	5	0	2	9	3	0	2	6	-32
Anyang	Henan	NC	14	2	5	31	26	3	13	40	87
Hebi	Henan	NC	18	1	12	30	17	2	9	28	-7
Jiaozuo	Henan	NC	20	2	5	33	23	2	10	37	15
Kaifeng	Henan	NC	13	1	10	19	16	1	10	28	24
Luoyang	Henan	NC	24	3	7	50	20	2	8	30	-15
Luohe	Henan	NC	13	1	7	30	16	1	12	21	22
Nanyang	Henan	NC	22	1	10	33	22	1	15	29	3
Pingdingshan	Henan	NC	32	2	15	49	32	2	23	46	1
Sanmenxia	Henan	NC	18	1	8	28	25	2	13	42	41
Shangqiu	Henan	NC	10	1	5	15	18	1	13	22	74
Xinyang	Henan	NC	17	1	9	25	16	1	11	21	-7
Zhengzhou	Henan	NC	5	1	2	12	9	1	5	15	73
Zhoukou	Henan	NC	7	0	6	9	9	0	6	11	21
Zhumadian	Henan	NC	26	2	7	45	45	8	16	141	70
Anshan	Liaoning	NE	14	1	7	25	19	1	12	26	35
Benxi	Liaoning	NE	7	0	6	12	12	1	7	18	60
Chaoyang	Liaoning	NE	9	1	4	13	10	1	7	15	15
Dalian	Liaoning	NE	8	1	3	16	10	1	6	16	22
Dandong	Liaoning	NE	7	0	5	9	9	1	7	13	28
Fushun	Liaoning	NE	7	1	3	12	8	1	5	13	15
Fuxin	Liaoning	NE	29	3	12	64	30	2	22	49	4
Huludao	Liaoning	NE	20	3	7	56	29	2	20	43	42

Jinzhou	Liaoning	NE	25	1	18	39	17	1	12	27	-30
Liaoyang	Liaoning	NE	8	1	4	13	13	1	8	22	58
Panjin	Liaoning	NE	12	1	6	21	18	1	13	27	51
Shenyang	Liaoning	NE	12	1	4	24	10	1	6	16	-18
Tieling	Liaoning	NE	10	1	5	19	10	1	6	13	6
Wafangdian	Liaoning	NE	2	0	1	4	3	0	2	7	51
Yingkou	Liaoning	NE	11	1	6	16	11	1	8	18	3
Baicheng	Jilin	NE	6	0	4	12	6	0	2	9	-1
Baishan	Jilin	NE	10	1	5	23	8	1	4	12	-25
Changchun	Jilin	NE	6	0	3	8	6	1	4	10	8
Jilin	Jilin	NE	10	1	7	19	14	1	9	26	41
Liaoyuan	Jilin	NE	6	1	4	23	9	1	4	18	51
Siping	Jilin	NE	10	2	3	43	6	1	1	12	-35
Songyuan	Jilin	NE	5	1	2	26	2	0	1	4	-46
Daqing	Heilongjiang	NE	9	1	7	15	9	1	7	16	8
Daxinganling	Heilongjiang	NE	15	1	10	24	14	0	12	17	-6
Harbin	Heilongjiang	NE	5	0	3	7	5	0	4	6	1
Hegang	Heilongjiang	NE	2	0	1	3	2	0	1	5	7
Heihe	Heilongjiang	NE	10	0	8	12	12	1	8	24	21
Jixi	Heilongjiang	NE	8	1	4	14	15	0	13	20	88
Jiamusi	Heilongjiang	NE	7	1	3	23	5	0	3	7	-39
Mudanjiang	Heilongjiang	NE	7	0	5	10	8	0	5	10	18
Qitaihe	Heilongjiang	NE	18	0	16	21	17	1	14	29	-1
Qiqihar	Heilongjiang	NE	13	2	8	32	5	1	1	11	-61
Shuangyashan	Heilongjiang	NE	14	1	9	31	10	1	6	18	-28
Suihua	Heilongjiang	NE	9	1	3	18	9	1	4	14	5

Ankang	Shaanxi	NW	11	1	3	23	11	1	6	16	2
Baoji	Shaanxi	NW	3	0	2	4	5	0	3	7	78
Hanzhong	Shaanxi	NW	7	0	3	10	10	1	3	13	50
Shangluo	Shaanxi	NW	21	4	4	61	19	3	5	44	-8
Tongchuan	Shaanxi	NW	4	0	2	7	9	1	6	14	144
Weinan	Shaanxi	NW	10	1	4	15	13	1	6	23	36
Xi'an	Shaanxi	NW	7	0	2	10	13	1	8	18	95
Xianyang	Shaanxi	NW	11	0	8	16	14	1	7	20	20
Yan'an	Shaanxi	NW	7	0	6	9	10	0	8	12	35
Yulin	Shaanxi	NW	5	1	2	10	8	1	3	11	41
Baiying	Gansu	NW	24	5	3	97	71	12	14	161	193
Dingxi	Gansu	NW	8	2	3	33	7	1	3	10	-21
Gannan	Gansu	NW	9	2	3	33	7	0	5	9	-24
Jiayuguan	Gansu	NW	21	2	11	39	11	2	6	31	-45
Jiuquan	Gansu	NW	9	1	3	27	7	2	2	24	-20
Lanzhou	Gansu	NW	12	1	6	23	11	1	5	17	-2
Linxia	Gansu	NW	8	1	2	12	10	0	8	13	29
Pingliang	Gansu	NW	9	1	3	23	9	1	1	15	0
Qingyang	Gansu	NW	5	0	3	8	6	0	2	9	26
Tianshui	Gansu	NW	8	0	5	14	6	0	4	9	-21
Wuwei	Gansu	NW	7	0	5	10	9	0	7	13	28
Zhangye	Gansu	NW	13	0	10	16	15	1	11	20	17
Guyuan	Ningxia	NW	7	1	3	13	8	1	3	15	21
Shizuishan	Ningxia	NW	55	4	27	90	37	4	12	62	-33
Wuzhong	Ningxia	NW	11	2	2	24	18	2	3	30	62
Yinchuan	Ningxia	NW	15	2	3	29	21	2	5	30	41

Zhongwei	Ningxia	NW	11	2	5	27	18	2	2	29	64
Aksu	Sinkiang	NW	6	1	1	13	5	1	2	15	-20
Hami	Sinkiang	NW	6	1	1	16	5	1	1	14	-6
Hotan	Sinkiang	NW	38	4	9	74	27	4	8	55	-30
Kashgar	Sinkiang	NW	10	1	5	16	9	1	6	14	-12
Karamay	Sinkiang	NW	7	0	4	11	9	1	4	20	19
Kizilsu	Sinkiang	NW	5	2	0	27	6	1	2	16	8
Shihezi	Sinkiang	NW	9	1	2	25	8	1	2	14	-8
Urumchi	Sinkiang	NW	10	1	2	18	9	1	2	15	-6
Wujiaqu	Sinkiang	NW	9	3	1	56	13	3	4	44	48
Yili	Sinkiang	NW	7	0	4	9	7	0	4	10	11
Ezhou	Hubei	SE	16	2	5	34	15	1	9	25	-9
Huanggang	Hubei	SE	10	2	1	29	7	1	3	15	-28
Jingmen	Hubei	SE	14	1	7	27	17	1	10	21	18
Shiyan	Hubei	SE	18	1	10	23	22	1	15	33	25
Wuhan	Hubei	SE	12	1	8	18	14	1	9	18	17
Xianning	Hubei	SE	14	1	9	22	14	1	10	19	0
Xiangyang	Hubei	SE	10	1	3	20	12	1	7	18	21
Xiaogan	Hubei	SE	5	1	1	23	6	1	2	19	3
Yichang	Hubei	SE	9	1	5	24	11	1	8	19	17
Anqing	Anhui	SE	14	1	10	18	15	0	13	17	10
Bengbu	Anhui	SE	14	1	5	23	18	1	14	23	28
Bozhou	Anhui	SE	40	2	27	59	40	3	15	61	-2
Chuzhou	Anhui	SE	16	1	12	22	12	1	6	18	-24
Fuyang	Anhui	SE	16	1	13	23	19	1	14	34	17
Hefei	Anhui	SE	8	1	6	14	7	0	4	9	-18

Huaibei	Anhui	SE	28	2	18	48	25	1	16	34	-11
Huainan	Anhui	SE	9	1	5	16	9	0	6	12	8
Huangshan	Anhui	SE	7	0	5	8	8	0	7	9	19
Lu'an	Anhui	SE	21	5	5	68	10	0	9	13	-50
Ma'anshan	Anhui	SE	14	2	5	31	19	2	11	29	37
Suzhou	Anhui	SE	9	1	5	14	11	1	7	18	32
Tongling	Anhui	SE	29	3	10	69	36	3	18	64	26
Wuhu	Anhui	SE	22	1	17	31	18	1	14	24	-17
Changzhou	Jiangsu	SE	22	2	10	36	23	2	10	36	4
Huaian	Jiangsu	SE	20	2	8	41	13	1	8	18	-33
Lianyungang	Jiangsu	SE	12	1	5	21	19	1	12	27	60
Nanjing	Jiangsu	SE	14	2	5	26	12	1	7	18	-18
Nantong	Jiangsu	SE	25	2	12	43	25	3	9	46	1
Suzhou	Jiangsu	SE	14	1	6	21	18	2	9	39	31
Suqian	Jiangsu	SE	12	2	3	35	15	1	5	24	28
Taizhou	Jiangsu	SE	17	1	11	28	18	1	12	24	8
Wuxi	Jiangsu	SE	19	1	11	29	24	1	16	36	29
Xuzhou	Jiangsu	SE	26	1	20	41	34	3	18	57	30
Yanchen	Jiangsu	SE	14	2	5	27	14	1	10	18	-3
Yangzhou	Jiangsu	SE	25	3	8	58	19	1	13	23	-25
Zhenjiang	Jiangsu	SE	22	2	10	35	19	1	10	25	-15
Shanghai	Municipality	SE	11	1	6	17	13	1	8	24	24
Hangzhou	Zhejiang	SE	11	1	6	17	11	1	7	19	0
Huzhou	Zhejiang	SE	10	1	4	18	14	2	4	31	44
Jiaxing	Zhejiang	SE	11	1	3	19	18	2	8	34	74
Jinhua	Zhejiang	SE	15	2	3	32	16	1	9	26	8

Lishui	Zhejiang	SE	6	1	1	12	10	1	2	21	63
Ningbo	Zhejiang	SE	10	1	6	16	13	1	9	20	25
Quzhou	Zhejiang	SE	15	2	3	32	18	2	9	34	22
Shaoxing	Zhejiang	SE	13	1	6	24	23	2	14	37	77
Taizhou	Zhejiang	SE	6	1	1	11	6	1	3	11	-6
Wenjiang	Zhejiang	SE	8	1	2	12	9	1	5	13	10
Zhoushan	Zhejiang	SE	5	1	2	15	6	0	3	9	10
Fuzhou	Jiangxi	SE	14	1	3	23	18	3	6	37	33
Ganzhou	Jiangxi	SE	17	2	10	33	20	2	10	37	13
Ji'an	Jiangxi	SE	23	3	8	43	24	2	11	40	4
Jingdezhen	Jiangxi	SE	7	1	2	17	10	1	2	20	29
Jiujiang	Jiangxi	SE	40	1	27	52	39	2	29	49	-3
Nanchang	Jiangxi	SE	26	2	12	50	26	1	20	33	0
Pingxiang	Jiangxi	SE	20	2	12	47	25	2	14	33	27
Shangrao	Jiangxi	SE	44	4	10	72	44	5	20	99	0
Xinyu	Jiangxi	SE	25	3	5	53	22	2	8	30	-11
Yichun	Jiangxi	SE	11	1	5	21	15	1	9	19	33
Yingtian	Jiangxi	SE	21	2	13	41	26	3	15	48	26
Changsha	Hunan	SE	14	1	8	20	14	1	7	20	-1
Changde	Hunan	SE	17	1	6	22	14	1	10	20	-18
Chenzhou	Hunan	SE	11	1	7	19	17	2	9	35	55
Huaihua	Hunan	SE	11	1	4	24	13	1	6	22	18
Loudi	Hunan	SE	29	1	16	37	33	1	26	42	16
Xiangtan	Hunan	SE	14	1	6	22	16	1	9	29	10
Yiyang	Hunan	SE	17	1	8	25	23	1	17	31	38
Yongzhou	Hunan	SE	39	2	17	57	27	2	9	41	-30

Zhangjiajie	Hunan	SE	6	0	4	9	6	0	4	7	-5
Zhuzhou	Hunan	SE	17	2	8	36	18	1	7	27	4
Dongguan	Guangdong	SE	11	1	6	19	11	1	7	17	3
Foshan	Guangdong	SE	16	1	11	22	17	1	9	26	4
Guangzhou	Guangdong	SE	12	0	8	17	11	1	6	17	-8
Heyuan	Guangdong	SE	7	0	4	12	7	1	3	13	-5
Huizhou	Guangdong	SE	10	1	7	14	9	1	7	16	-4
Jiangmen	Guangdong	SE	12	1	9	17	18	1	8	28	55
Maoming	Guangdong	SE	12	2	5	33	16	2	9	30	32
Meizhou	Guangdong	SE	7	0	5	9	6	0	4	8	-11
Qingyuan	Guangdong	SE	18	1	12	25	10	1	5	15	-44
Shantou	Guangdong	SE	14	1	9	18	13	1	8	18	-10
Shaoguan	Guangdong	SE	19	1	11	28	16	1	9	24	-18
Shenzhen	Guangdong	SE	9	0	6	13	8	1	6	12	-11
Zhanjiang	Guangdong	SE	9	1	5	14	6	1	2	9	-33
Zhaoqing	Guangdong	SE	19	1	10	28	17	2	9	28	-8
Zhongshan	Guangdong	SE	7	1	4	17	8	1	4	17	20
Zhuhai	Guangdong	SE	5	1	2	14	8	1	3	15	45
Fuzhou	Fujian	SE	5	0	3	6	4	0	3	6	-19
Longyan	Fujian	SE	7	1	3	12	6	0	4	9	-6
Nanping	Fujian	SE	12	0	8	15	15	1	11	21	23
Ningde	Fujian	SE	2	0	1	5	3	0	1	5	17
Putian	Fujian	SE	5	1	2	11	4	0	2	7	-15
Quanzhou	Fujian	SE	13	1	3	25	9	1	6	17	-36
Sanming	Fujian	SE	13	1	4	19	10	1	4	19	-20
Xiamen	Fujian	SE	9	1	3	16	6	1	2	12	-38

Zhangzhou	Fujian	SE	9	1	5	16	11	1	7	19	23
Haikou	Hainan	SE	5	0	3	10	5	0	3	8	10
Sanya	Hainan	SE	3	0	2	7	2	0	2	3	-15
Chongqing	Municipality	SW	10	1	4	16	12	1	7	16	16
Bazhong	Sichuan	SW	2	0	1	5	2	0	1	5	5
Chengdu	Sichuan	SW	13	1	7	20	15	1	7	24	10
Dazhou	Sichuan	SW	15	1	6	31	12	1	7	19	-19
Deyang	Sichuan	SW	17	1	7	30	14	1	4	23	-16
Guangyuan	Sichuan	SW	17	1	12	22	16	1	13	23	-5
Leshan	Sichuan	SW	14	1	6	25	19	3	6	38	36
Luzhou	Sichuan	SW	12	1	6	20	15	2	6	27	25
Meishan	Sichuan	SW	15	1	8	26	13	2	2	30	-17
Mianyang	Sichuan	SW	10	1	4	21	11	1	5	18	13
Nanchong	Sichuan	SW	12	1	5	18	10	1	5	22	-17
Panzhihua	Sichuan	SW	23	2	12	44	30	2	19	44	29
Suining	Sichuan	SW	10	1	3	19	7	1	4	17	-27
Ya'an	Sichuan	SW	14	2	6	56	8	0	6	10	-46
Ziyang	Sichuan	SW	21	2	12	36	22	1	17	30	2
Zigong	Sichuan	SW	16	1	9	27	19	1	11	27	20
Baoshan	Yunnan	SW	12	1	2	22	5	1	1	10	-61
Chuxiong	Yunnan	SW	23	2	12	42	27	3	12	56	17
Dali	Yunnan	SW	6	0	4	9	6	1	3	10	-1
Dehong	Yunnan	SW	20	2	6	32	12	2	2	19	-39
Honghe	Yunnan	SW	19	4	4	66	31	7	9	97	62
Kunming	Yunnan	SW	13	1	6	20	16	2	7	38	21
Lijiang	Yunnan	SW	11	1	5	17	8	0	6	11	-23

Lincang	Yunnan	SW	17	3	4	50	18	3	3	43	7
Nujiang	Yunnan	SW	8	1	4	13	7	0	5	9	-3
Qujing	Yunnan	SW	20	2	9	35	24	2	17	37	25
Wenshan	Yunnan	SW	10	1	3	23	8	1	4	14	-14
Xishuangbanna	Yunnan	SW	10	1	6	19	8	0	6	10	-25
Tuxi	Yunnan	SW	13	1	6	18	17	1	9	26	34
Zhaotong	Yunnan	SW	32	5	4	60	47	7	15	103	48
Anshun	Guizhou	SW	25	2	13	51	32	4	18	69	30
Bijie	Guizhou	SW	10	1	3	17	11	1	7	16	15
Guiyang	Guizhou	SW	7	0	5	13	8	1	4	12	9
Liupanshui	Guizhou	SW	10	1	6	19	13	1	7	22	38
Tongren	Guizhou	SW	7	1	3	16	8	1	5	16	25
Zunyi	Guizhou	SW	7	1	2	15	6	1	2	9	-9
Baise	Guangxi	SW	10	1	5	18	7	0	5	10	-32
Beihai	Guangxi	SW	8	1	5	16	9	1	6	14	5
Chongzuo	Guangxi	SW	8	1	5	14	14	2	5	24	62
Fangchenggang	Guangxi	SW	4	0	2	7	3	0	2	6	-14
Guigang	Guangxi	SW	22	2	6	42	17	2	7	30	-23
Guilin	Guangxi	SW	18	2	9	32	19	2	10	32	9
Hechi	Guangxi	SW	33	5	9	77	31	4	5	57	-6
Hezhou	Guangxi	SW	15	1	11	22	20	1	13	30	30
Laibin	Guangxi	SW	25	4	6	68	14	2	5	32	-43
Liuzhou	Guangxi	SW	20	2	10	36	26	2	12	37	31
Nanning	Guangxi	SW	11	1	8	18	13	1	8	21	18
Qinzhou	Guangxi	SW	13	1	8	18	14	1	8	21	8
Wuzhou	Guangxi	SW	16	1	9	22	15	1	7	23	-7

Yulin	Guangxi	SW	15	2	6	36	15	2	6	34	4
Golog	Qinghai	TP	23	1	18	26	16	1	12	26	-28
Haidong	Qinghai	TP	21	2	7	44	34	2	25	51	65
Xining	Qinghai	TP	17	2	7	38	26	2	9	37	51
Ali	Tibet	TP	13	0	7	15	9	0	8	11	-31
Qamdo	Tibet	TP	4	0	3	5	4	0	3	4	6
Lhasa	Tibet	TP	7	0	5	9	7	0	5	9	-4
Nyingchi	Tibet	TP	3	0	2	3	3	0	3	3	3
Naqu	Tibet	TP	25	0	21	29	27	0	24	30	8
Shigatse	Tibet	TP	6	0	3	7	6	0	6	7	9
Lhoka	Tibet	TP	4	0	3	5	3	0	3	4	-16

179 ^a NC, NE, NW, SE, SW, TP represent north China, northeast China, northwest China, southeast China, southwest China, and the Tibetan Plateau,
180 respectively.

181 ^b Negative values with red color mean significant ($p < 0.05$ or 0.01) reduction, and positive values mean increase.

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