

Supporting Information

1. Public Health Emergencies Response (PHER)

Table S1. Public health emergency levels, designations and response government levels (Sun *et al.*, 2018; Cao *et al.*, 2020)

Event level	Designation	Response government level
I	Public health emergencies of special significance	State council, P.R.C.
II	Major public health emergencies	Province-level
III	Larger public health emergencies	Prefecture-level
IV	General public health emergencies	County-level

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2. Table S2

Table S2. The capital cities in the prefectures of Xinjiang included in this study and their geo-locations (can also be referred to in Figure 1).

Prefecture	Capital city	Longitude (°E)	Latitude (°N)
Urumqi	Urumqi	87.62	43.82
Ili Kazak Autonomous Prefecture	Yining	81.32	43.92
Karamay	Karamay	84.87	45.6
Altay	Altay	88.13	47.85
Hotan	Hotan	79.92	37.12
Hami	Hami	93.52	42.83
Kashgar	Kashgar	75.98	39.47
Aksu	Aksu	80.27	41.17
Shihezi	Shihezi	86.03	44.3
Turpan	Turpan	89.17	42.95
Bortala Mongol Autonomous Prefecture	Bole	82.07	44.9
Bayingolin Mongolia Autonomous Prefecture	Korla	86.15	41.77
Tacheng	Tacheng	82.98	46.75
Kizilsu Kirgiz Autonomous Prefecture	Atux	76.17	39.71
Wuji aqu	Wuji aqu	87.53	44.17
Changji Hui Autonomous Prefecture	Changji	87.3	44.02

10 3. Figure S1

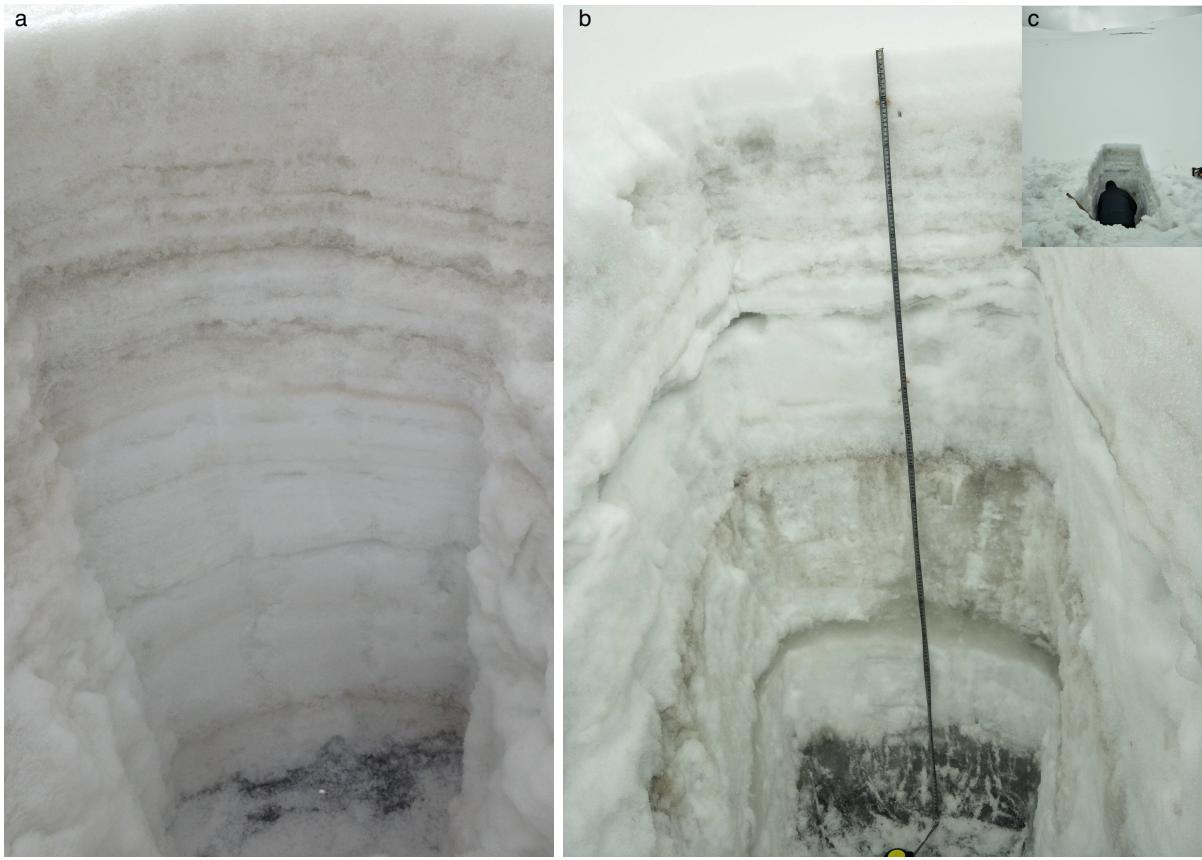


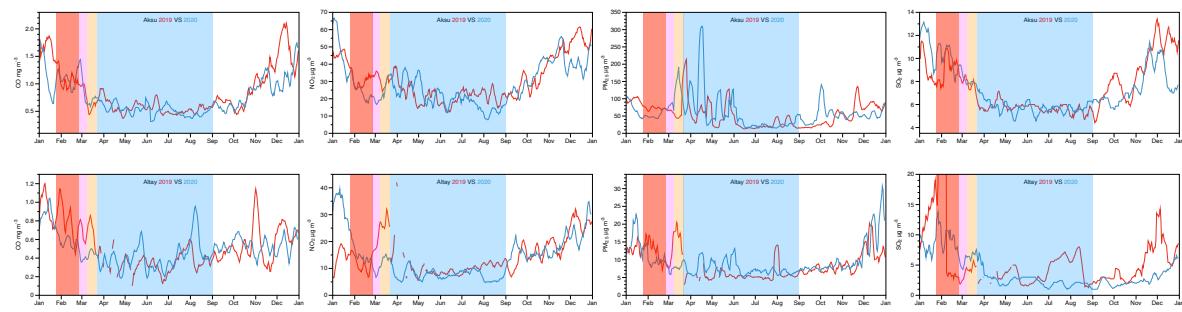
Figure S1. Snow sampling in the snow pits in UG1 on a) Jun 4 of 2019 and b) Jun 14 of 2020, and c) the sampling scene in the snow pit of 2020.

15 4. Table S3

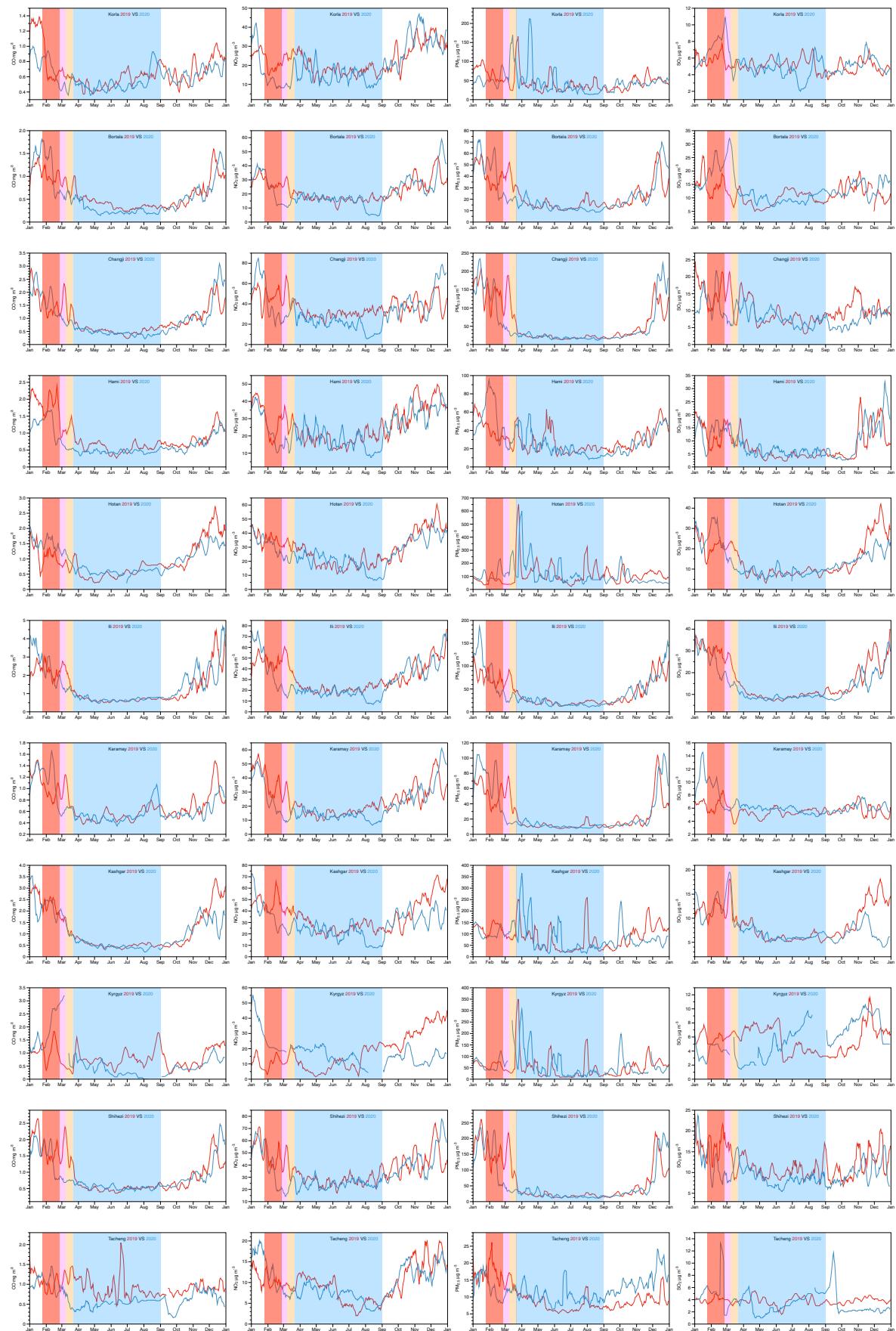
Table S3. The ions measured in the snow samples and their detection limits and respective standard deviations.

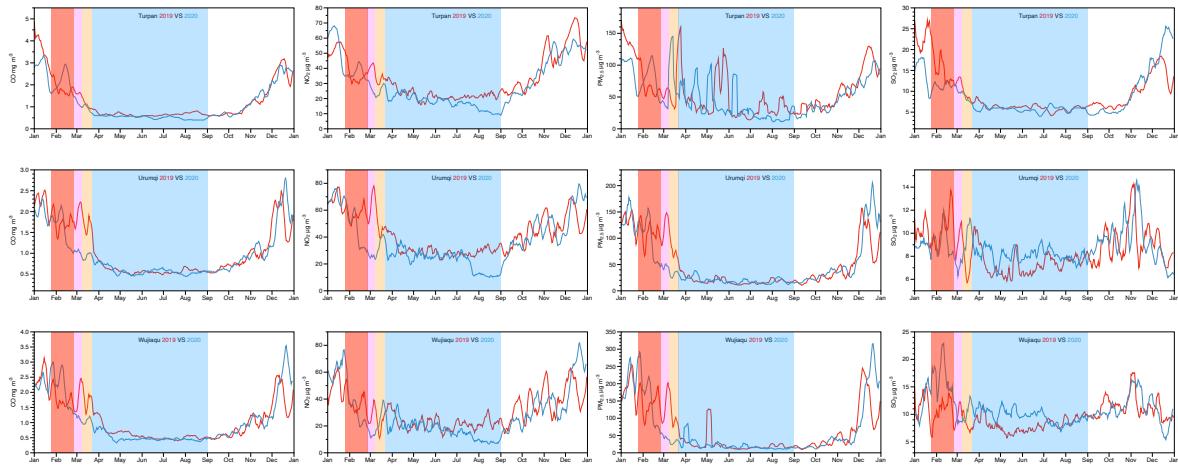
	K ⁺	Ca ²⁺	Na ⁺	Mg ²⁺	NH ₄ ⁺	SO ₄ ²⁻	NO ₃ ⁻	Cl ⁻
Instrument	DX-320	DX-320	DX-320	DX-320	DX-320	ICS-1500	ICS-1500	ICS-1500
Detection limit $\mu\text{g kg}^{-1}$	0.63	1.70	0.52	0.10	0.60	3.68	4.51	1.58
Standard Deviation $\mu\text{g kg}^{-1}$	0.17	0.46	0.14	0.03	0.16	0.99	1.22	0.43

5. Figure S2



20





35 Figure S2. The seven-day smoothed concentrations of CO, NO₂, PM_{2.5} and SO₂ in the sixteen prefectures of Xinjiang in 2019 (red lines) and 2020 (blue lines), where the red, magenta, yellow and blue shades represent restriction stage I, II, III and IV applied by the Xinjiang government, respectively; and the white areas are pre-pandemic and back-to-normal stage announced by the government on Sep 1, 2020.

40 References

- Cao Y, Shan J, Gong Z, Kuang J and Gao Y 2020 Status and Challenges of Public Health Emergency Management in China Related to COVID-19 *Frontiers in Public Health* 8
- Sun M, Xu N, Li C, Wu D, Zou J, Wang Y, Luo L, Yu M, Zhang Y, Wang H, Shi P, Chen Z, Wang J, Lu Y, Li Q, Wang X, Bi Z, Fan M, Fu L, Yu J and Hao M 2018 The public health emergency management system in China: trends from 2002 to 2012 *BMC Public Health* 18 474