



## Supplement of

## Impacts of short-term mitigation measures on PM<sub>2.5</sub> and radiative effects: a case study at a regional background site near Beijing, China

Qiyuan Wang et al.

Correspondence to: Qiyuan Wang (wangqy@ieecas.cn) and Junji Cao (cao@loess.llqg.ac.cn)

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Species <sup>a</sup>	Intercept	Slope	r
OC	0.92	0.88	0.97
EC	-0.05	1.01	0.98
Cl-	0.54	0.67	0.96
NO <sub>3</sub> -	-0.10	0.99	0.98
SO4 <sup>2-</sup>	0.33	0.89	0.88
$\mathrm{NH_4}^+$	0.002	0.99	0.99
$K^+$	-0.001	1.00	0.99
Al	0.11	0.72	0.75
Si	0.09	0.88	0.97
Ca	-0.002	1.00	0.99
Ti	0.005	0.83	0.87
Cr	0.002	0.75	0.76
Mn	0.003	0.94	0.95
Fe	0.02	0.98	0.99
Cu	0.007	0.78	0.84
Zn	0.0004	0.99	0.99
As	0.001	0.54	0.68
Br	0.003	0.49	0.80
Pb	0.01	0.86	0.90

**Table S1.** Linear regression (y = a + bx) between the observed and PMF-predicted mass concentrations for each measured chemical species in PM<sub>2.5</sub>.

<sup>a</sup>OC and EC stand for organic and elemental carbon, respectively.



Figure S1. Linear regression of the reconstructed versus observed  $PM_{2.5}$  mass concentrations.



**Figure S2.** Linear regression of the measured light absorption coefficient versus elemental carbon (EC).



**Figure S3.** Spatial distribution of PM<sub>2.5</sub> mass concentrations in the Beijing-Tianjin-Hebei region during (a) 19th National Congress of the Communist Party of China (NCCPC) control period and (b) the ensuing non-control period.



Figure S4. Daily variations of the concentrations of NOx (NO + NO<sub>2</sub>), SO<sub>2</sub>, Ox (NO<sub>2</sub> +  $O_3$ ), relative humidity (RH), wind speed (WS), and mixed layer height (MLH).



**Figure S5.** Surface weather charts for 08:00 (local time) over East Asia during the five days with stable atmospheric conditions. The black triangles represent Xianghe.



**Figure S6.** Linear regression of the  $PM_{2.5}$  mass concentrations estimated from the positive matrix factorization model versus measured values.



Figure S7. Linear regression of the traffic-related  $PM_{2.5}$  mass concentration versus NOx concentration.



Figure S8. Linear regression of the  $PM_{2.5}$  mass concentration from mineral dust versus wind speed.



**Figure S9.** Daily variations of the measured mass concentrations of  $PM_{2.5}$ , organic carbon (OC), elemental carbon (EC),  $SO_4^{2-}$ ,  $NO_3^{-}$ , and  $NH_4^+$  and the corresponding values simulated with the WRF-Chem model.



Figure S10. Linear regression of the calculated chemical light scattering coefficient  $(b_{scat})$  versus measured  $b_{scat}$ .



Figure S11. Linear regression of aerosol optical depth versus light extinction coefficient.