Supporting Information for

Meteorological parameters and gaseous pollutant concentrations as predictors of ground-level PM2.5 concentrations in the Beijing–Tianjin–Hebei Region, China

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Table S1. Correlation statistics between $PM_{2.5}$ and predictors under different $PM_{2.5}$ concentrations

Observed $PM_{2.5}$(μg m^{-3})	AOD	CO	NO2	SO2	O3
>0	0.6	0.697	0.748	0.565	-0.12
>35	0.434	0.626	0.671	0.469	-0.27
>75	0.312	0.572	0.623	0.405	-0.31
>100	0.261	0.553	0.611	0.374	-0.339
>200	0.107	0.452	0.489	0.205	-0.278

Table S2. Fixed effects of linear mixed model variables

Variable	Fixed effects	Variable	Fixed effects
Intercept	-240.15	PRS	0.21
NO_2	0.78	WD	0.003
SO_2	0.08	WS	-0.73
O_3	0.16	TMP	0.50
CO	11.04	RH	0.11
AOD	30.88	ALT	0.02

Note: PRS、WD、WS、TMP、RH、ALT are pressure, wind direction, wind speed, temperature, humidity, elevation, respectively. Fixed effects represent the fixed slope of each variable.

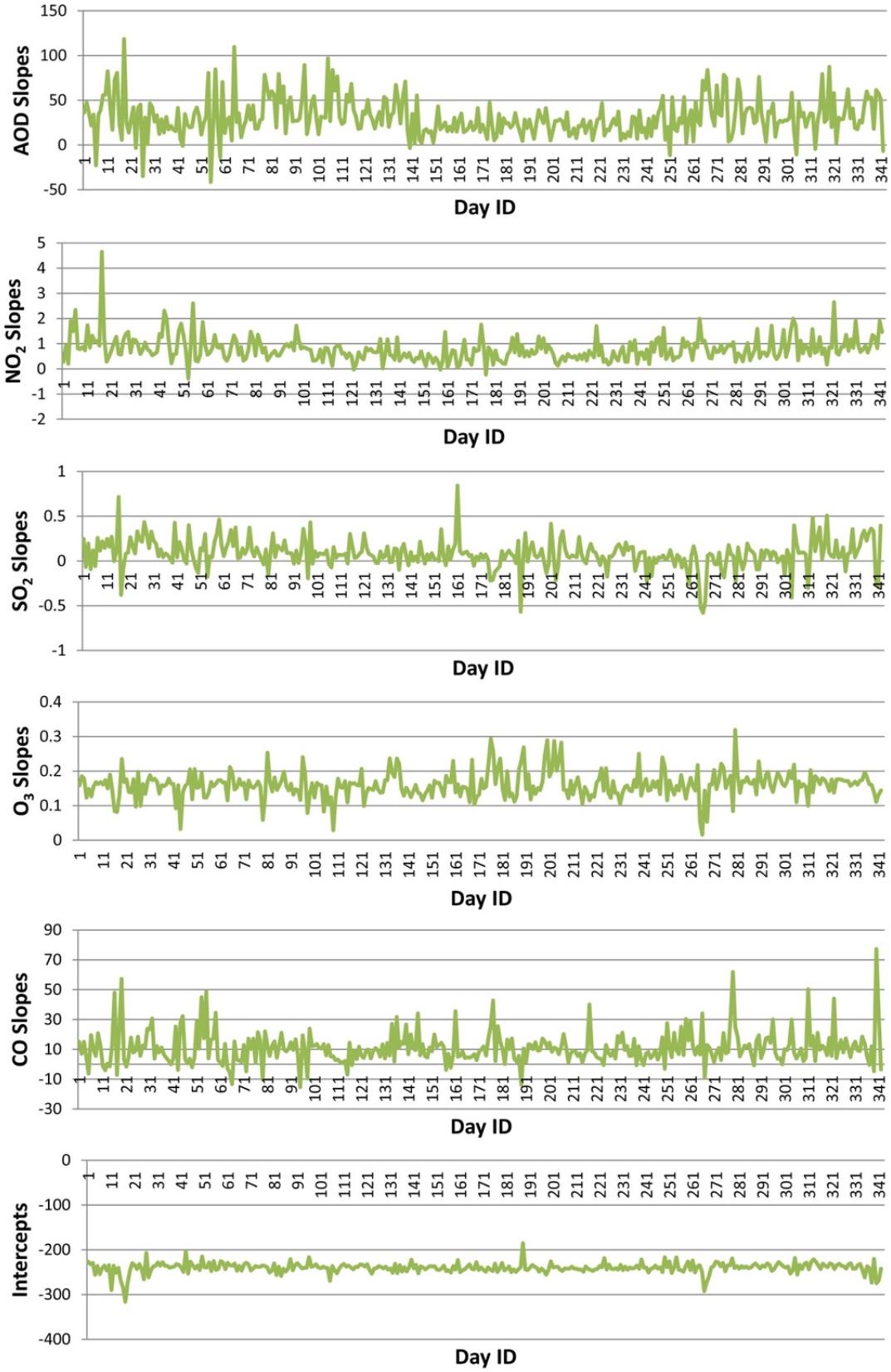

Figure S1. Daily variations of slope and intercept of each variable of linear mixed model.

Text S1:

Figs. 3(a1) and (a2) show that on October 6, the air condition in JingJinJi was good, and the $PM_{2.5}$ concentration in most areas was less than 30 μg m^{-3} and met the primary standards for $PM_{2.5}$ concentrations set by the Ministry of Environment Protection of China. $PM_{2.5}$ concentrations in Shijiazhuang, Xingtai, and Handan were 30–60 μg m^{-3}, which met the secondary standards for $PM_{2.5}$ concentration. On October 7th, the local $PM_{2.5}$ concentrations in Baoding, eastern part of Shijiazhuang, Xingtai, and Handan, and other areas began to exceed secondary standards and reached 90–150 μg m^{-3} (Figs. 3[b1] and [b2]). On October 8th, air quality in the JingJinJi Region furthered deteriorated, and two heavy-pollution zones centered on Xingtai and southeastern part of Beijing developed. $PM_{2.5}$ concentrations reached 330–360 μg m^{-3}, and pollution gradually radiated to cover the entirety of the Beijing, Baoding, Shijiazhuang, and Handan areas (Fig. 3[c1] and [c2]). $PM_{2.5}$ concentrations peaked on October 9th and exceeded 420 μg m^{-3} in Baoding, Shijiazhuang, Xingtai, and southern part of Beijing and 500 μg m^{-3} in Xingtai (Figs. 3[d1] and [d2]). On October 10th, air pollution gradually ameliorated, and the highest $PM_{2.5}$ concentration was less than 360 μg m^{-3}. Some areas in the southwestern part of Beijing, the northwest of Baoding, and Shijiazhuang remained heavily polluted. $PM_{2.5}$ concentrations in these areas fell in the range of 270–330 μg m^{-3} (Fig. 3[e1] and [e2]). On October 11th, air pollution further improved. $PM_{2.5}$ concentrations in most areas were less than 240 μg m^{-3}. Nevertheless, $PM_{2.5}$ concentrations remained in the range of 270–300 μg m^{-3} in some regions of southern Beijing (Figs. 3[f1] and [f2]). On October 12th, pollution in the JingJinJi Region disappeared, air quality improved, and $PM_{2.5}$ concentrations decreased to less than 30 μg m^{-3} and satisfied primary standards (Figs. 3[g1] and [g2]).

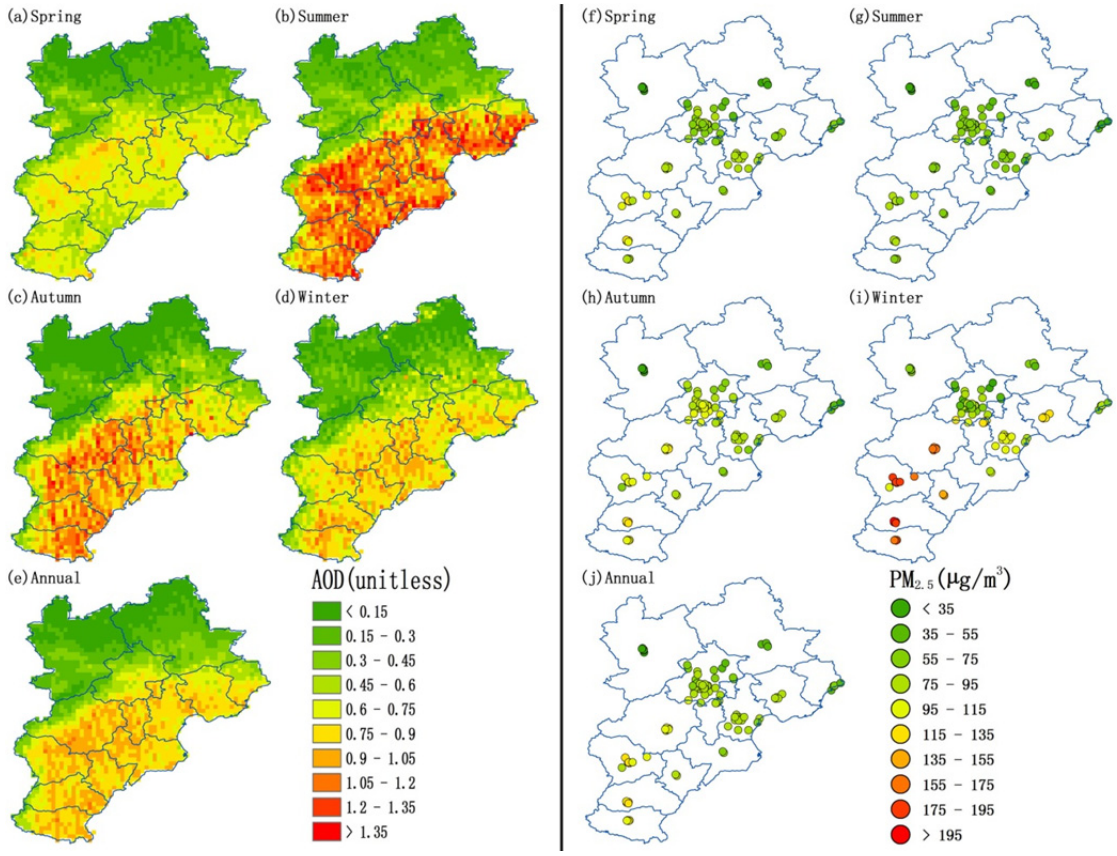

Figure S2. Annual and seasonal mean values of AOD and PM2.5.