



Supplement of

The impact of large-scale circulation on daily fine particulate matter (PM_{2.5}) over major populated regions of China in winter

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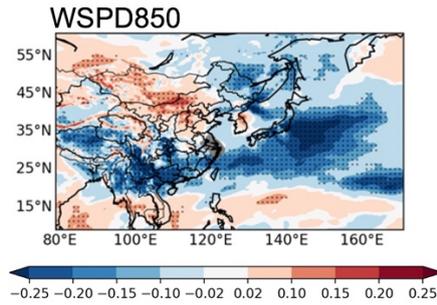


Figure S1: Correlation coefficients of daily PM_{2.5} concentrations in YRD with one day before wind speed at 850 hPa (WSPD850) during DJF 2013–2017 (dotted regions indicate significant correlations at the 95% level from the two-tailed Student's *t* test). Grey shading represents the YRD region.

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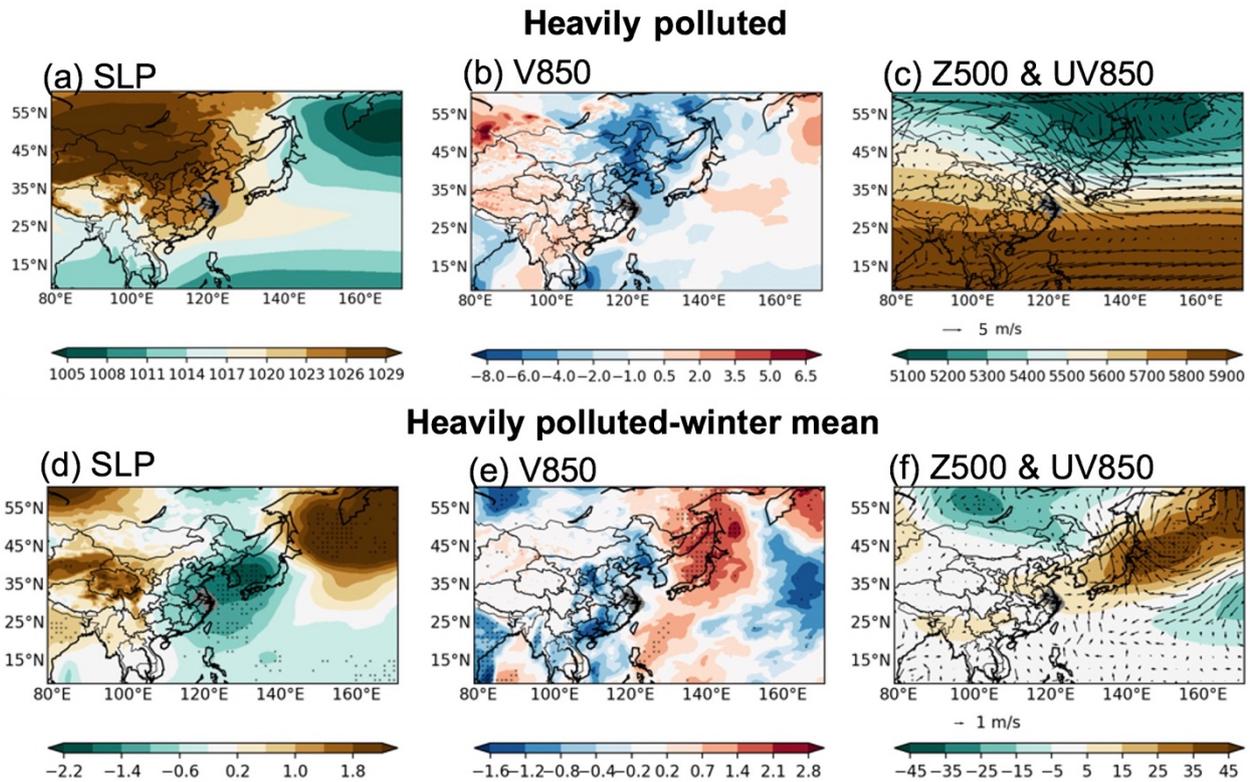


Figure S2: As Figure 6 of the main text, but without a time lag.

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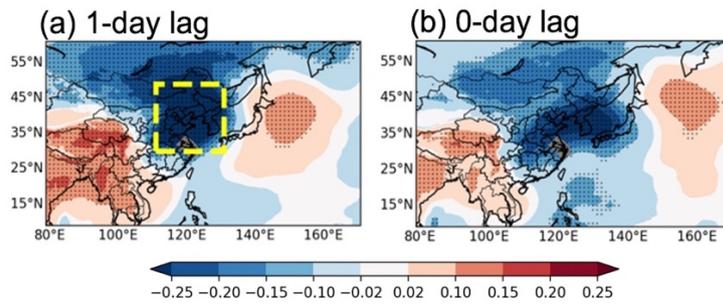


Figure S3: Correlation coefficients of daily PM_{2.5} concentrations in YRD with (a) one day before SLP (Figure 7a of the main text) and (b) the same day SLP during DJF 2013–2017 (dotted regions indicate significant correlations at the 95% level from the two-tailed Student's *t* test). Grey shading represents the YRD region.

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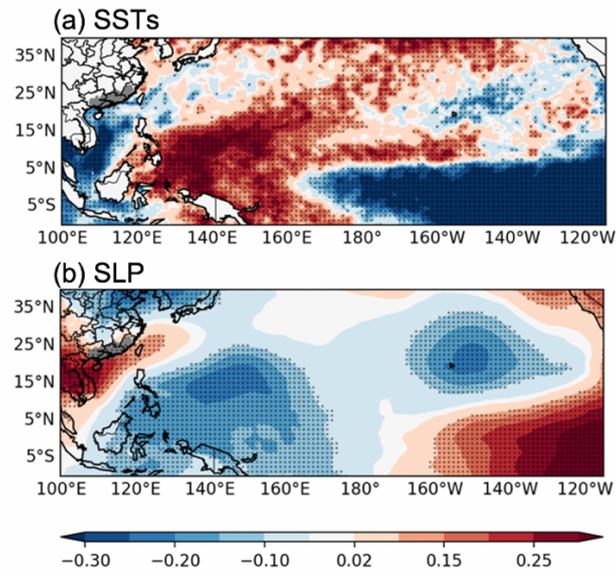


Figure S4: Correlation coefficients of daily PM_{2.5} concentrations in PRD with two days before (a) SSTs and (b) SLP during DJF 2013–2017 (dotted regions indicate significant correlations at the 95% level from the two-tailed Student's *t* test). Grey shading represents the PRD region.

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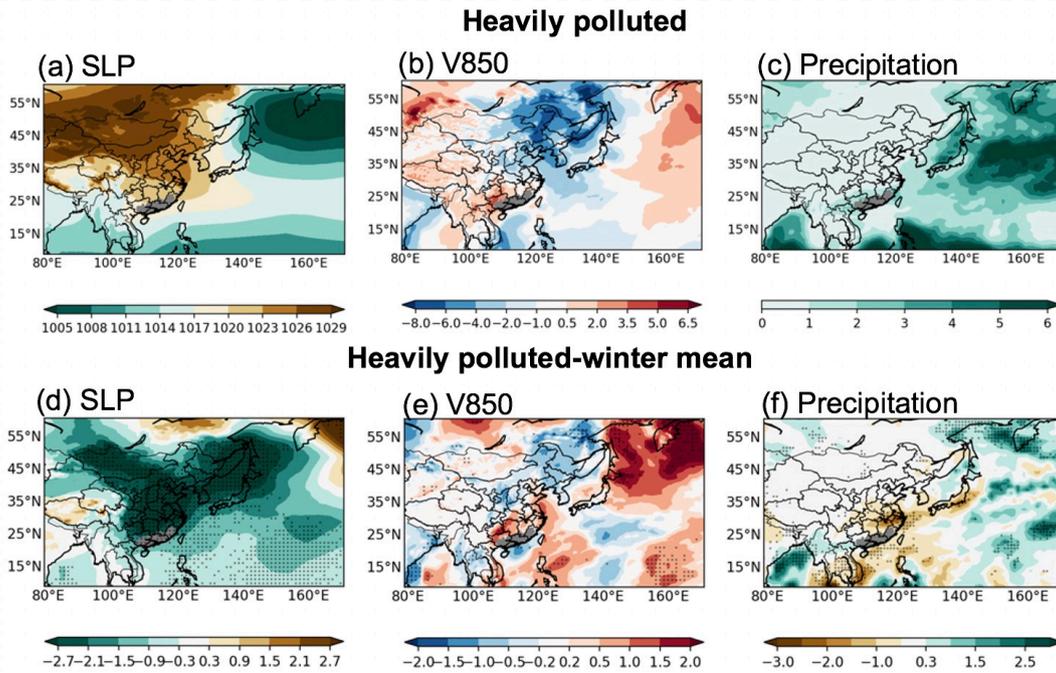


Figure S5: As Figure 8 of the main text, but without a time lag.

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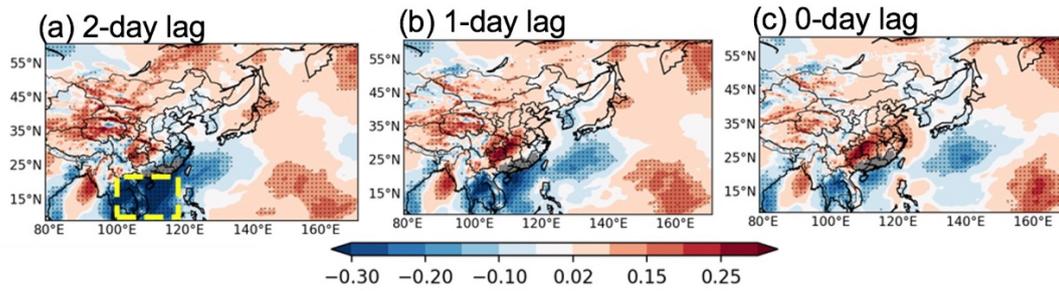


Figure S6: Correlation coefficients of daily PM_{2.5} concentrations in PRD with (a) two days before V850 (Figure 9b of the main text), (b) one day before V850, and (c) the same day V850 during DJF 2013–2017 (dotted regions indicate significant correlations at the 95% level from the two-tailed Student's *t* test). Grey shading represents the PRD region.

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Table S1: Correlation of daily PM_{2.5} concentrations over BTH, YRD and PRD with three EAWM indices (I_{Yang} (V850): Yang et al., 2002; I_{Sun} (Z500): Sun and Li, 1997; I_{Jhun} (U300): Jhun and Lee, 2004) and a Siberian high index (I_{SH} (SLP): Wu and Wang, 2002) from the literature during DJF 2013–2017. Correlations at the 99% confidence level are shown in bold.

Correlation coefficient (450 days)	$-I_{Yang}$ (V850)	$-I_{Sun}$ (Z500)	I_{Jhun} (U300)	I_{SH} (SLP)
PM_{2.5} (BTH)	-0.46	-0.54	-0.36	-0.13
PM_{2.5} (YRD)	0.03	-0.02	-0.08	-0.15
PM_{2.5} (PRD)	-0.01	0.12	-0.03	-0.19

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Table S2: Regression coefficients for the multiple linear fit of daily PM_{2.5} concentrations on the large-scale circulation index and the most important regional meteorological field in each region during DJF 2013–2017. All the regression coefficients are significant at the 99% confidence level.

	BTH	<i>I_{Z500_BTH}</i>	RH
	Regression coefficient with PM_{2.5}	-0.02 μg m ⁻³	0.25 μg m ⁻³ % ⁻¹
	YRD	<i>I_{SLP_YRD}</i>	WSPD
	Regression coefficient with PM_{2.5}	-0.01 μg m ⁻³	-0.02 μg m ⁻⁴ s
	PRD	<i>I_{V850_PRD}</i>	RH
	Regression coefficient with PM_{2.5}	-0.02 μg m ⁻³	-0.37 μg m ⁻³ % ⁻¹