



Supplement of

A homogenized daily in situ $PM_{\rm 2.5}$ concentration dataset from the national air quality monitoring network in China

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Name	Latitude (°N)	Longitude (°E)
Beijing	39.95	116.47
Shanghai	31.21	121.45
Chengdu	30.62	104.07
Shenyang	41.78	123.43
Guangzhou	23.12	113.32

Table S1. Geographic locations of the 5 United States embassy and consulates in China.



Figure S1. Spatial patterns of (a) correlation coefficient and (b) root mean square error between
 PM_{2.5} concentration records failing to pass the homogeneity test and their corresponding

 $\label{eq:28} \mbox{reference series. Statistics were calculated on the basis of daily PM_{2.5} concentration time series.}$



Figure S2. Comparisons of monthly mean frequency of missing values in hourly PM_{2.5}
concentration records during 2015–2019.



Figure S3. Comparisons of the average spatial distance between the base and neighboring

 $PM_{2.5}$ series.



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44 Figure S4. Geographic locations of five regions of interest (ROIs). HJL, BTH, YRD, SGN,

- 45 CC, SCB, XJ, and PRD denote regions of Heilongjiang-Jilin-Liaoning, Beijing-Tianjin-Hebei,
- 46 Yangtze River Delta, Shannxi-Gansu-Ningxia, Central China, Sichuan Basin, Northern
- 47 Xinjiang, Pearl River Delta, respectively.
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