

Supplement of

## **Contrasting the effect of aerosol properties on the planetary boundary layer height in Beijing and Nanjing**

**Xin Huang<sup>1,\*</sup>, Yuying Wang<sup>1,\*</sup>, Yi Shang<sup>1</sup>, Xiaorui Song<sup>1</sup>, Rui Zhang<sup>1</sup>, Yuxiang Wang<sup>1</sup>, Zhanqing Li<sup>2</sup>, Yuanjian Yang<sup>1</sup>**

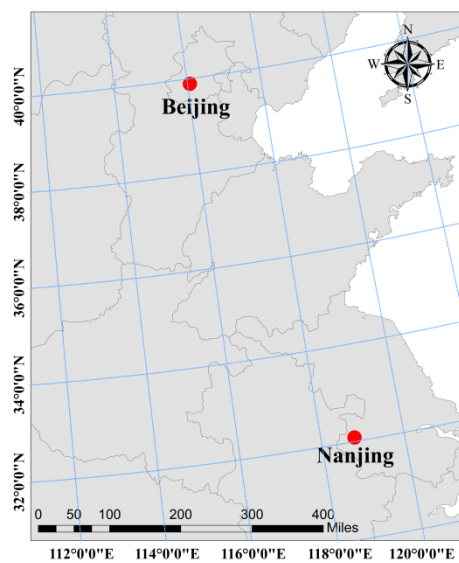
<sup>1</sup>Key Laboratory for Aerosol-Cloud-Precipitation of China Meteorological Administration/Special Test Field of National Integrated Meteorological Observation, School of Atmospheric Physics, Nanjing University of Information Science & Technology, Nanjing 210044, China

<sup>2</sup> Earth System Science Interdisciplinary Center, Department of Atmospheric and Oceanic Science, University of Maryland, College Park, MD 20740, USA

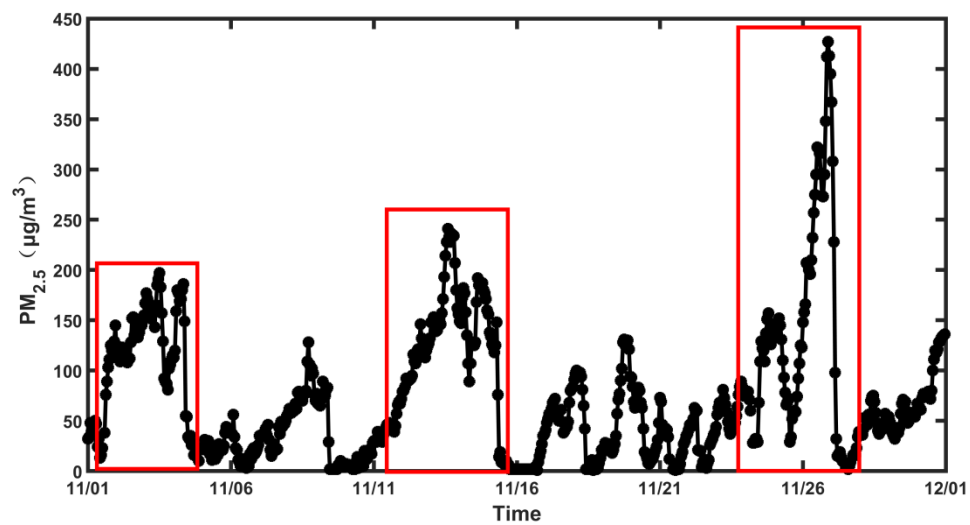
\* The authors contributed equally.

Corresponding author: Yuying Wang (yuyingwang@nuist.edu.cn)

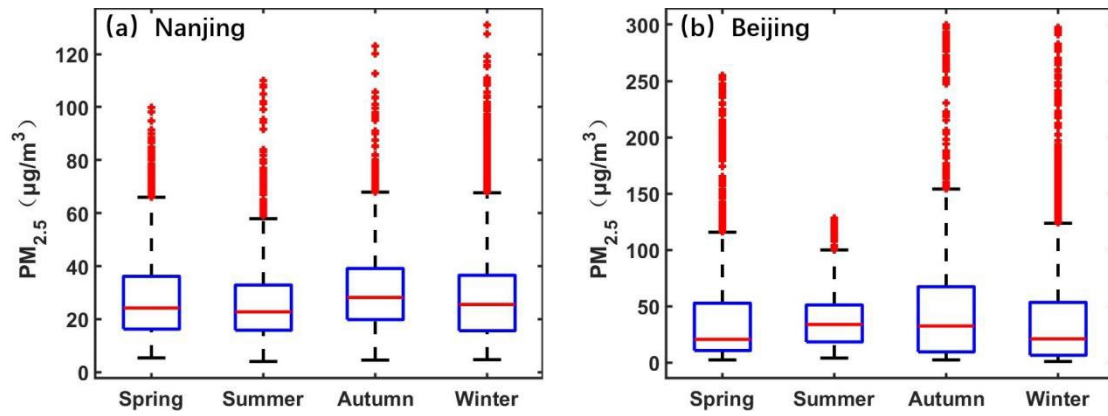
**Figure**



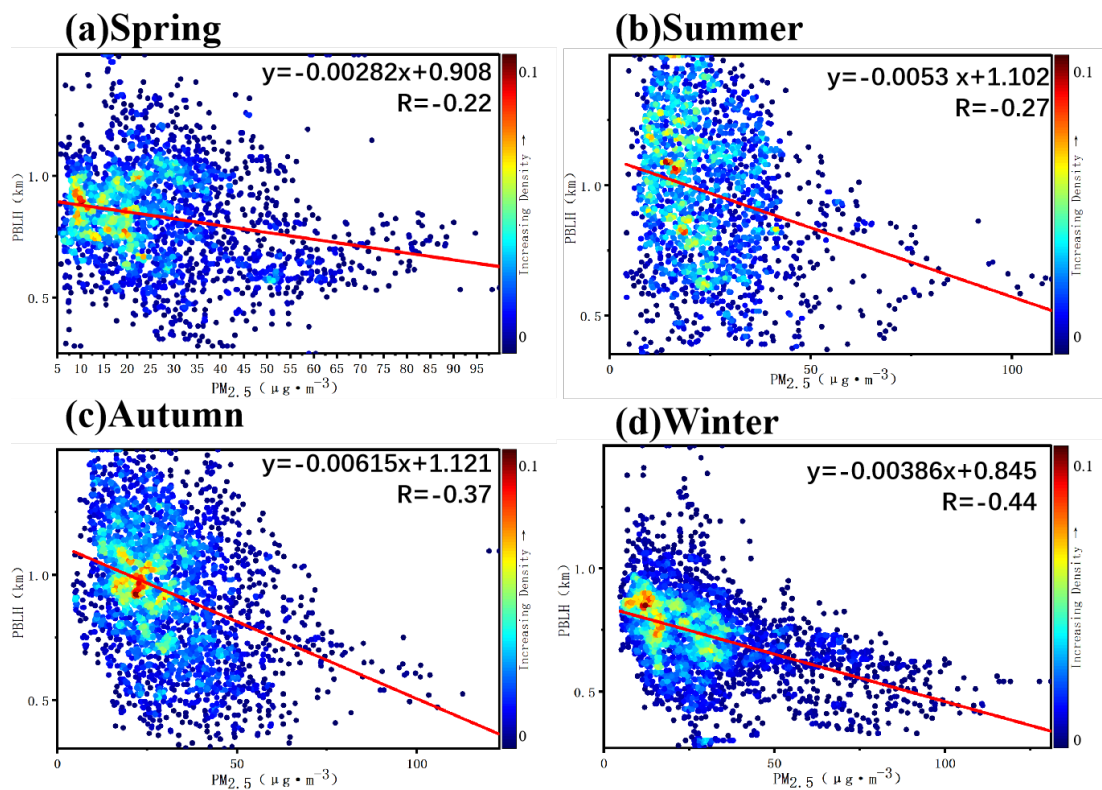
**Figure S1.** Locations of the two sampling sites in this study.



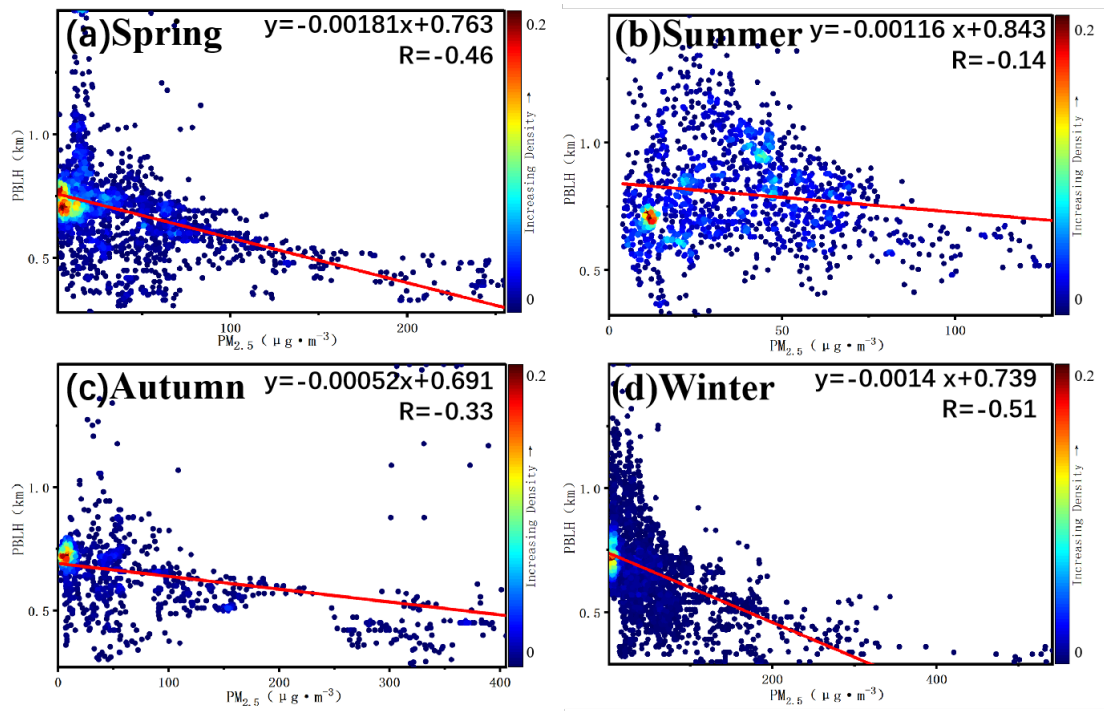
**Figure S2.** Time series of PM<sub>2.5</sub> mass concentration in Beijing in November 2018. Red rectangles outline three heavy pollution episodes.



**Figure S3.** Same as Fig. 2 but for PM<sub>2.5</sub>.



**Figure S4.** Density diagrams of the relationships between PBLH and PM<sub>2.5</sub> mass concentration in (a) spring, (b) summer, (c) autumn, and (d) winter in Nanjing. The color of the dot represents the probability, and red lines are fitted lines through the data. Linear relations and correlation coefficients are given in each panel.



**Figure S5.** Same as Figure S4 but in Beijing.