



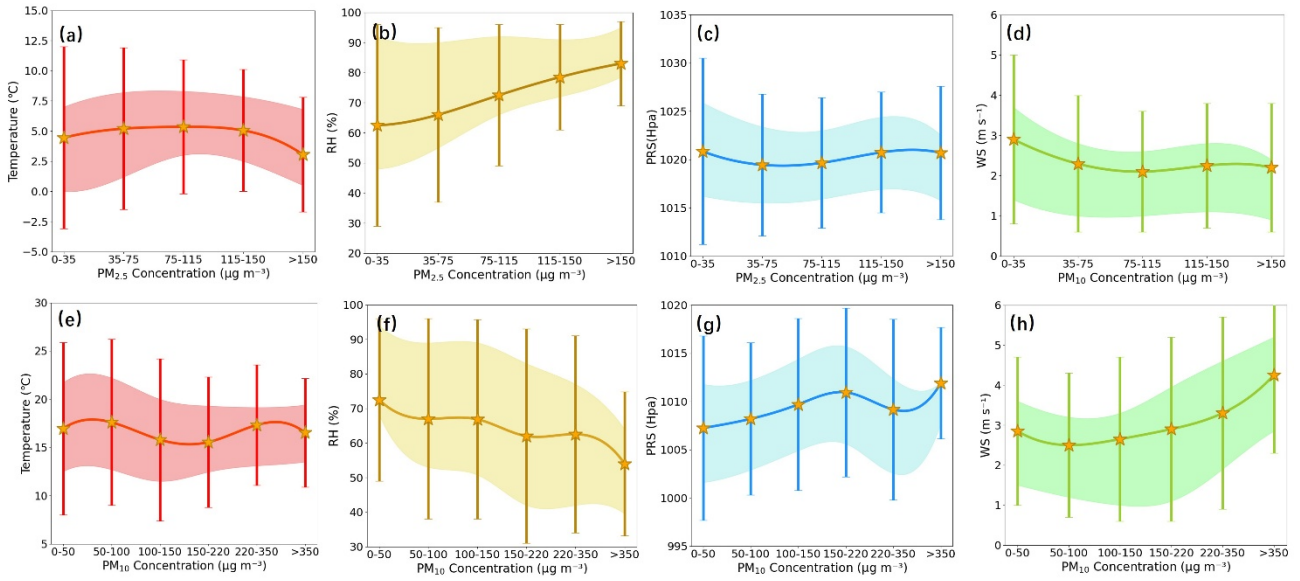
*Supplement of*

**Vertical structure and driving mechanism of  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  aerosols in Hefei based on LiDAR observations (2021–2023)**

**Yan Yan et al.**

*Correspondence to:* Xueliang Deng ([dengxueliang9989@aliyun.com](mailto:dengxueliang9989@aliyun.com))

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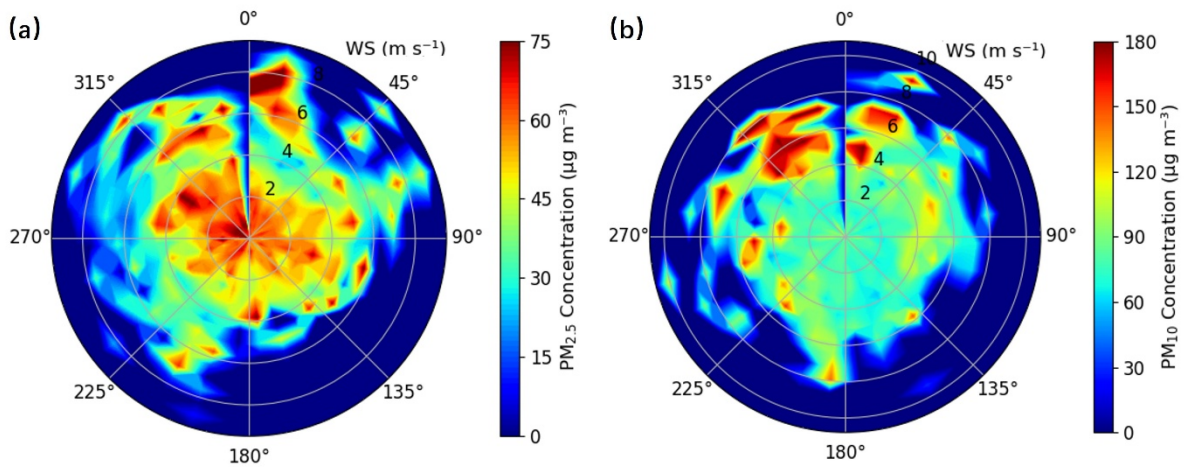


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9 **Figure S1.** Boxplots of (a-d)  $PM_{2.5}$  and (e-h)  $PM_{10}$  concentrations under varied meteorological factors (a&e:  
 10 Temperature, b&f: Relative humidity, c&g: Surface pressure, d&h: Wind speed). The whiskers represent the  
 11 90th and 10th percentiles, respectively. The shaded areas represent the 25th-75th percentiles. The stars represent  
 12 the mean values of the meteorological factors, and the lines connecting the stars depict the trend of mean values  
 13 across different PM concentration intervals.

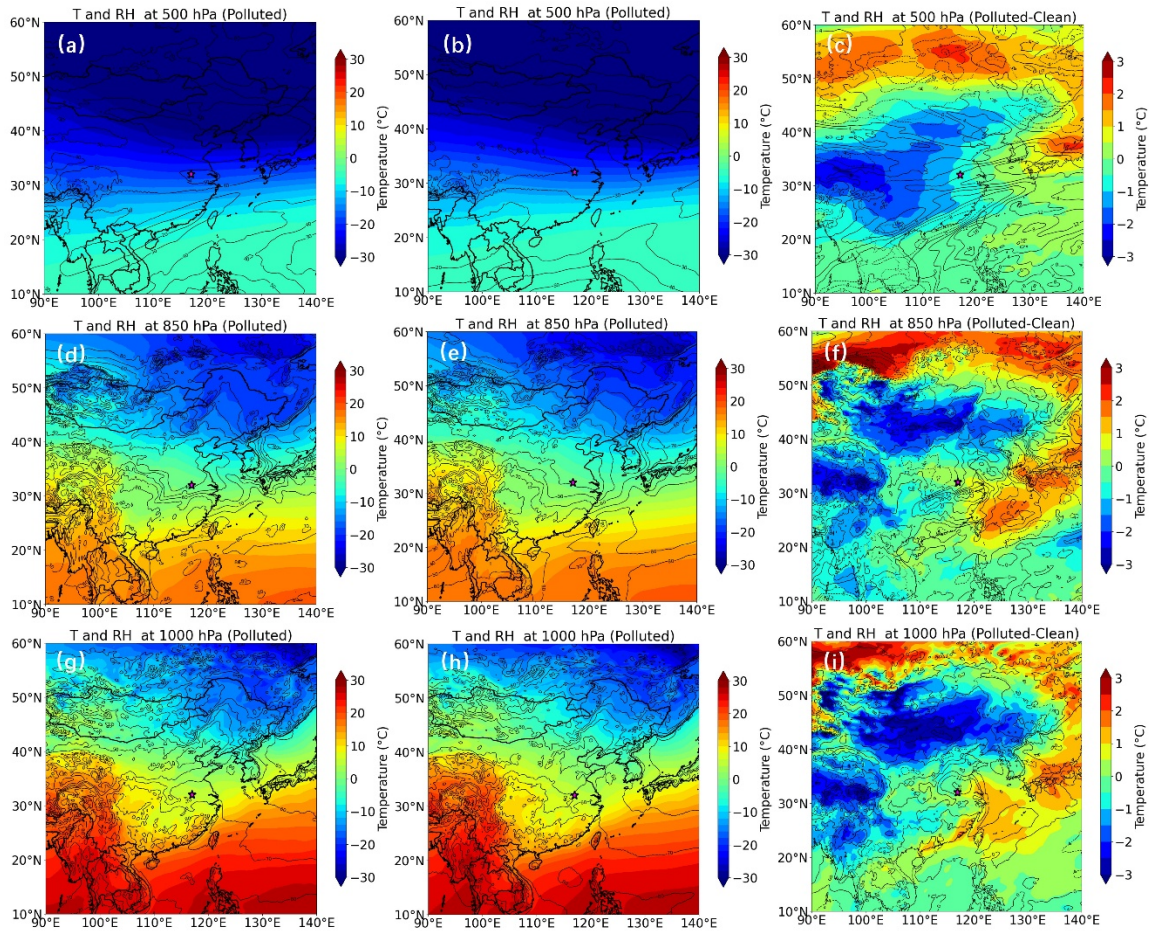
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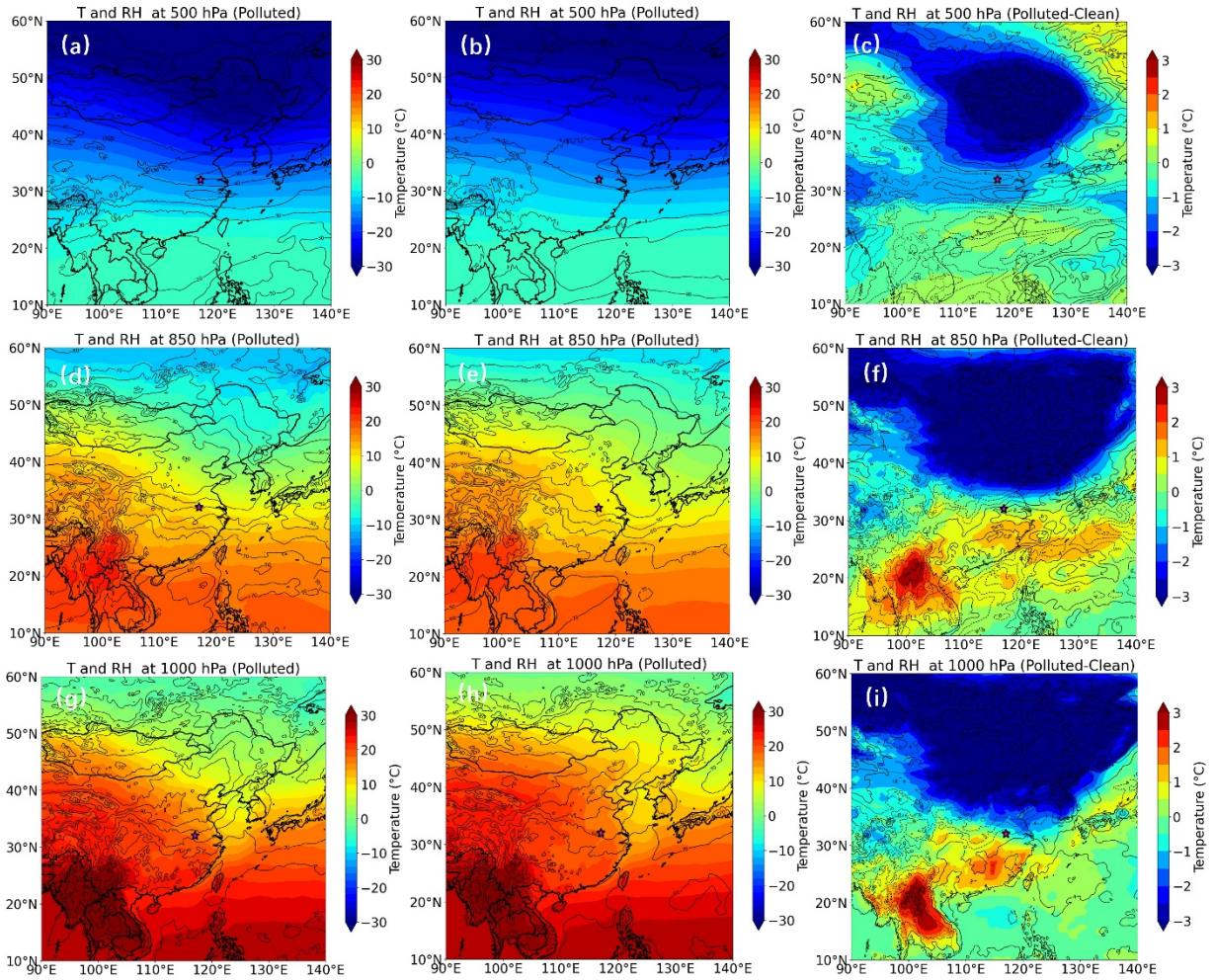
17 **Figure S2.** Comparison of (a)  $PM_{2.5}$  and (b)  $PM_{10}$  concentration distributions with wind direction based on the  
 18 ground-level observations in Hefei. The radial axis represents wind speed (WS, m/s) with a tick interval of 2  
 19 m/s, and the angular axis indicates wind direction (degrees,  $^{\circ}$ ).



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21 **Figure S3.** Spatial distribution of the relative humidity (black contour), superimposed by temperature (shaded)  
 22 at three pressure level (500 hPa: a–c; 850 hPa: d–f; 1000 hPa: g–i) on PM<sub>2.5</sub>-polluted (left column), clean (middle  
 23 column) days and the difference between them (right column), respectively. The areas highlighted with a red  
 24 star represents the location of Hefei.

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27 **Figure S4.** Same as Fig. S3, but on PM<sub>10</sub>-polluted (left column), clean (middle column) days and the difference  
 28 between them (right column), respectively.

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