

Supplementary Materials:

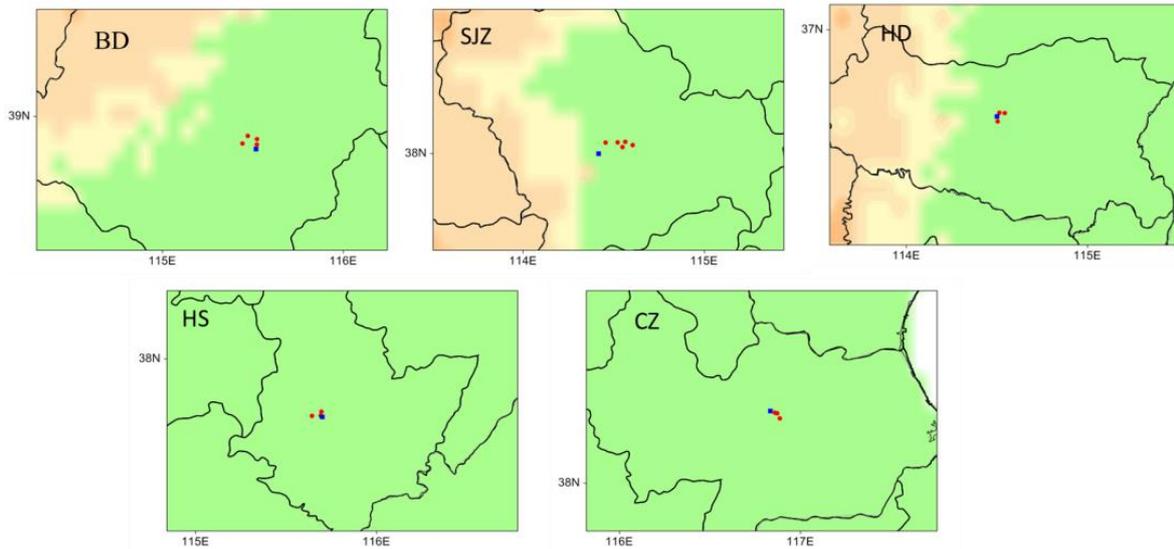


Figure S1. Locations of the observation sites (red for PM_{2.5} and blue for meteorological observation) and the prefectural boundary layer in 5 cities in the south of North China Plain.

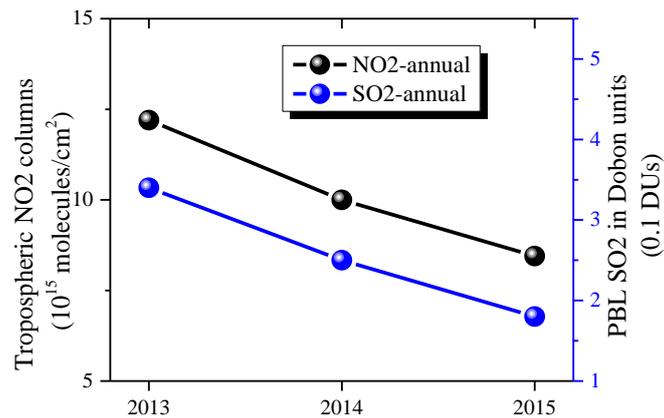


Figure S2. The annual average variations of the NO₂ tropospheric column and SO₂ column amounts (planetary boundary layer) from the OMI satellite during 2013–2015 in NC (34–40°N, 110–120°E). (These data based on OMI level 3 products (OMSO2e.003 and OMNO2d) were provided by GES DISC (Goddard Earth Sciences Data and Information Services Center)).

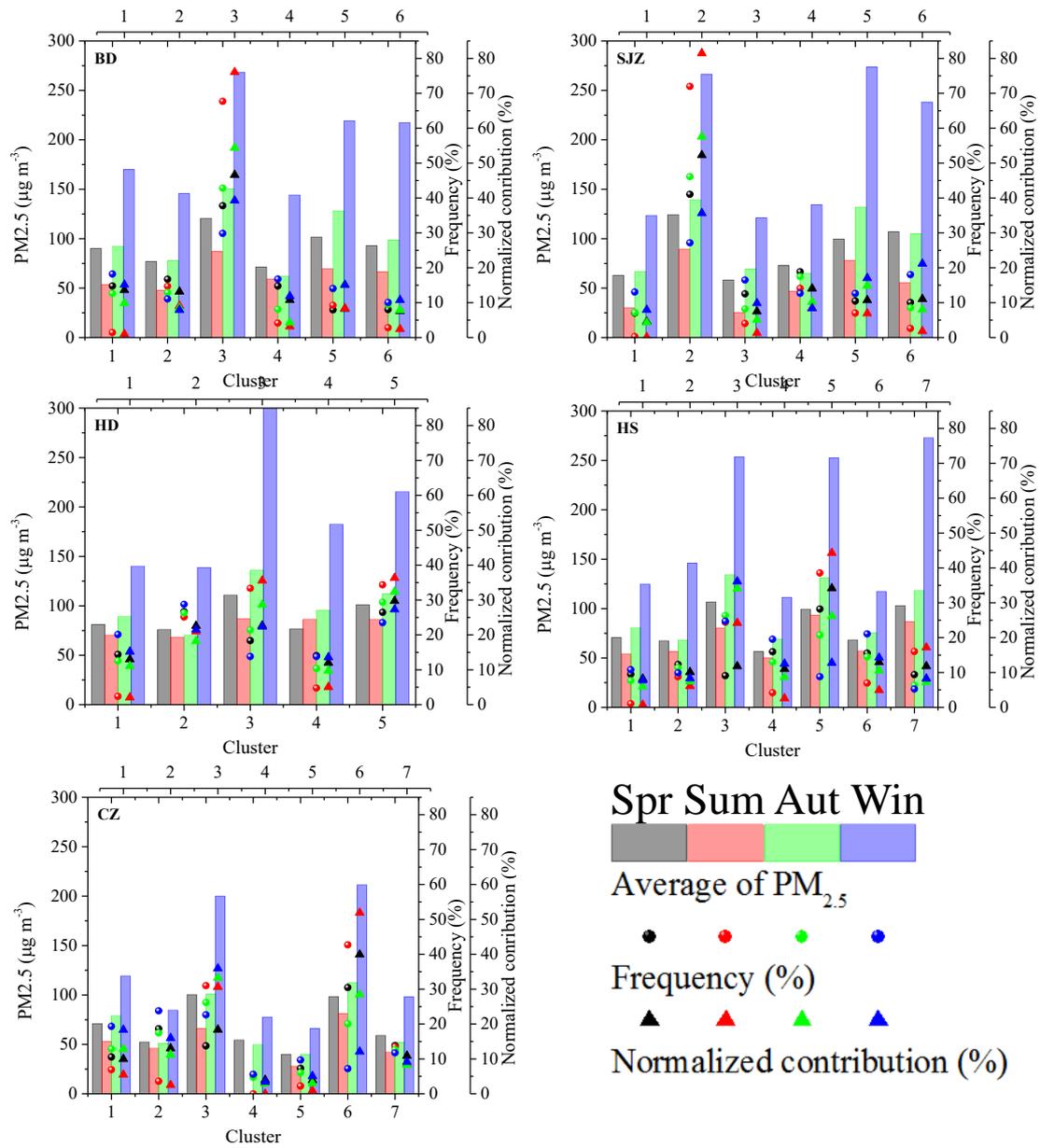


Figure S3. Statistical summary of cluster frequency, $PM_{2.5}$ concentrations associated with different trajectory clusters, and normalized contribution for different clusters to $PM_{2.5}$ concentration in 5 cities during 2013–2015 for different seasons.

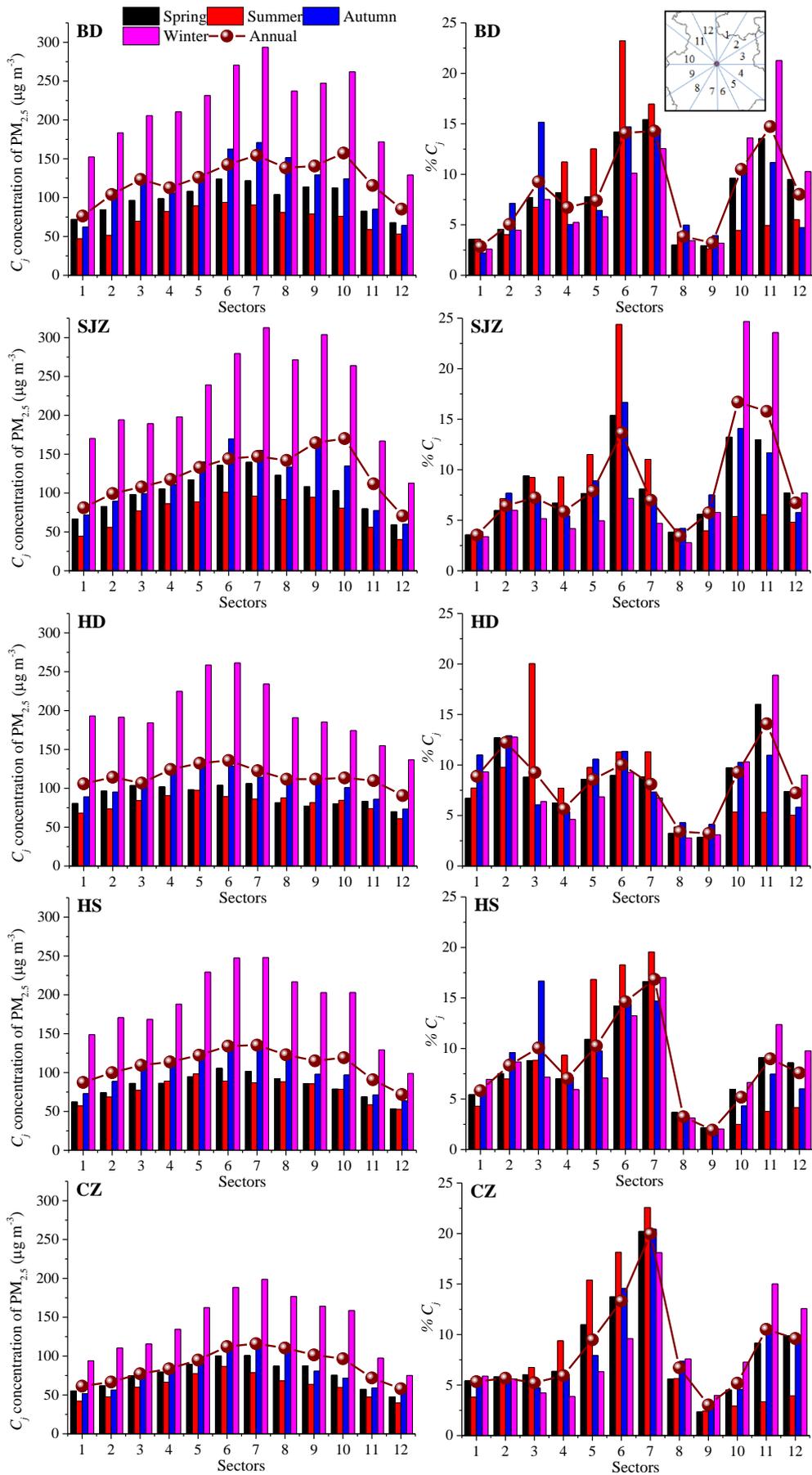


Figure S4. Annual and seasonal sector concentrations (C_j) and percentages ($\%C_j$) for $PM_{2.5}$ in 5 cities during 2013–2015.

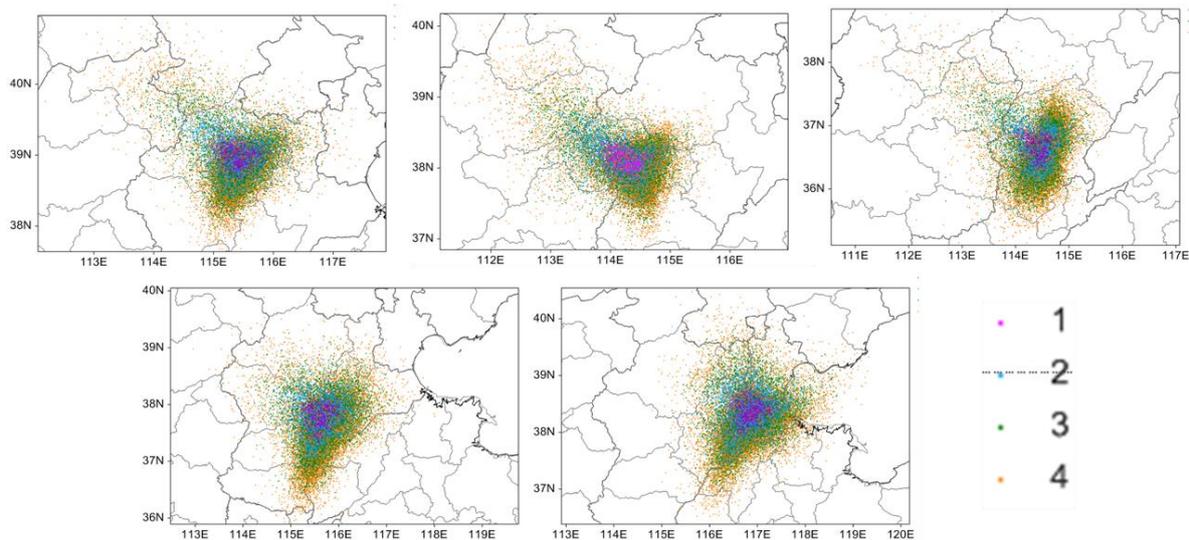


Figure S5. The locations of the trajectories during the first 4 hours in the 5 cities during 2013-2015.

Table S1. The domain zone and the threshold values for 5 cities during 2013-2015.

	Domain zone		Threshold Value ($\mu\text{g m}^{-3}$)
BD	28–70°N	60–130°E	160
SJZ	28–70°N	60–130°E	158
HD	25–65°N	60–130°E	143
HS	25–65°N	60–130°E	138
CZ	28–70°N	70–135°E	112