

Table S1. Potential Sources and Characteristics of Pollutants

Potential sources	Different chemical compositions
Dust [1]	27(Al^+), 40(Ca^+), 56(CaO^+ or Fe^+), -60(SiO_2^-), -76(SiO_3^-), 48(Ti^+), 64(TiO^+), 96(Ca_2O^+), -79(PO_3^-)
BB [2]	39(K^+), 12(C^+), 36(C_3^+), 37(C_3H^+), -26(CN^-), 113/115(K_2Cl^+), 27(C_2H_3^+)
Mobile sources [1]	-79(PO_3^-), -62(NO_3^-), -46(NO_2^-), C_n^\pm ($n > 0$)
Stationary sources [3]	27(C_2H_3^+), 39(K^+), -32(S^-), -64(SO_2^-), -80(SO_3^-), C_n^\pm (n = 1,3,4,5)
Industry [1]	63/65(Cu^+), 64/66/68(Zn^+), 99/101/103(ZnCl^+), 206/207/208(Pb^+), -35(Cl^-), -76(SiO^-), -79(PO^-)
Secondary aerosol [3]	-97(HSO_4^-), -62(NO_3^-), -46(NO_2^-), 18(NH_4^+)
Other	

References

1. Tao S, Wang X, Chen H, et al. Single particle analysis of ambient aerosols in Shanghai during the World Exposition, 2010: Two case studies. *Front. Environ. Sci. Eng. China* 2011;5:391.
2. Lang Y, Wang W, Zhang L, et al. Characteristics of atmospheric single particles during haze periods in a typical urban area of Beijing: A case study in October, 2014. *J. Environ. Sci.* 2016;40:145-153.
3. Li YJ, Sun Y, Zhang Q, et al. Real-time chemical characterization of atmospheric particulate matter in China: A review. *Atmos. Environ.* 2017;158:270-304.

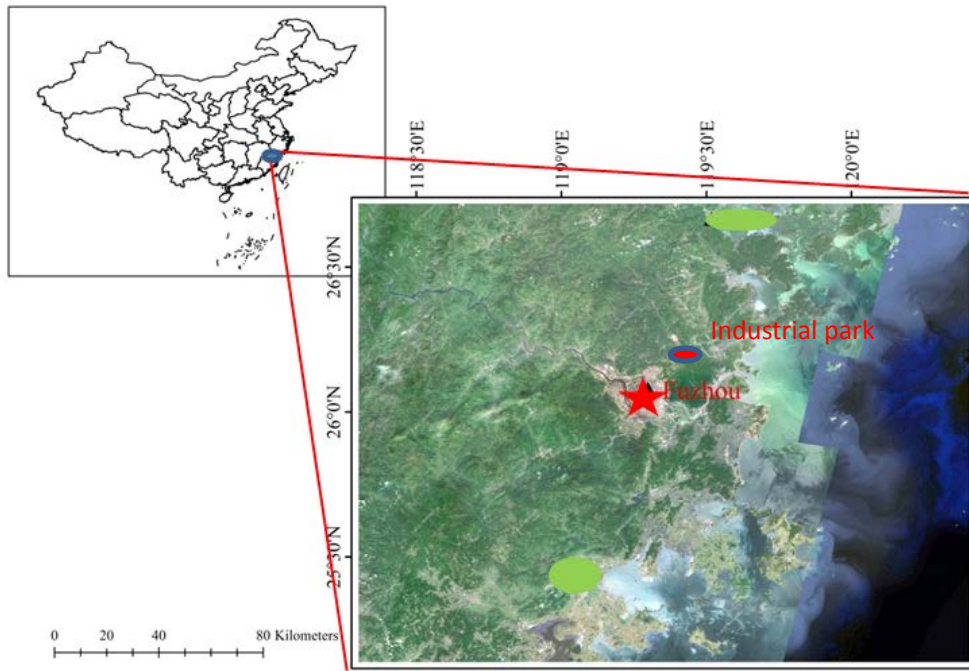


Fig. S1. Sampling site in Fuzhou.

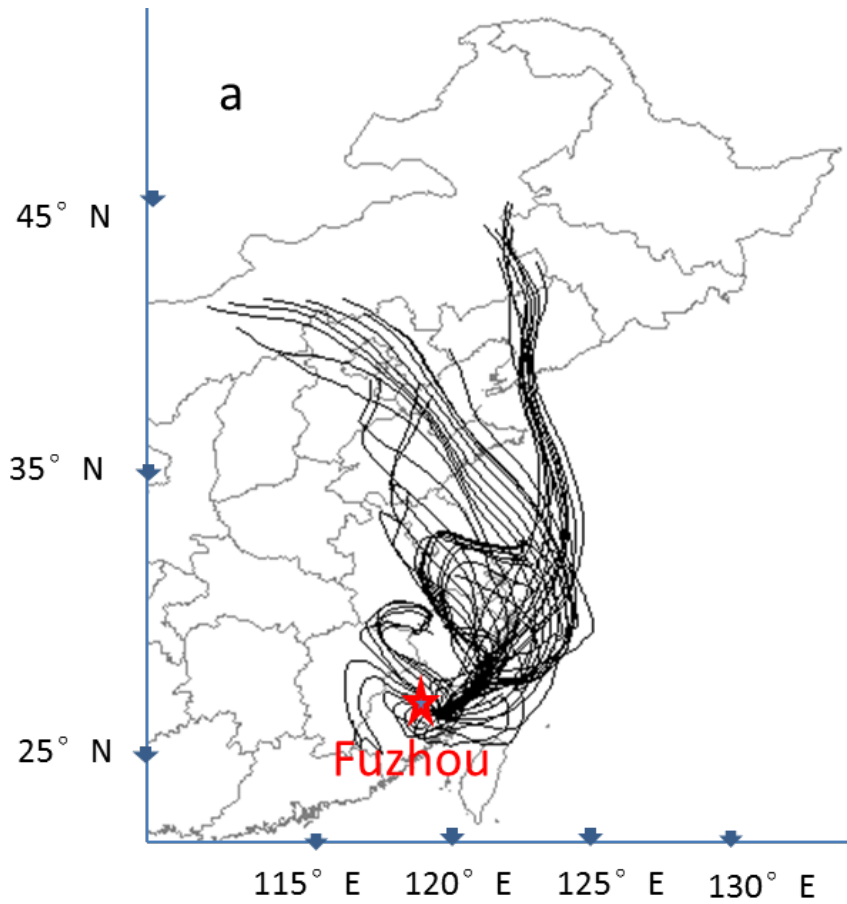


Fig. S2. Air mass (based on the 72-h backward trajectories) calculated by the HYSPLIT4 model and TrajStat in Fuzhou (119.29°E, 26.11°N) at the height of 500 m AGL.

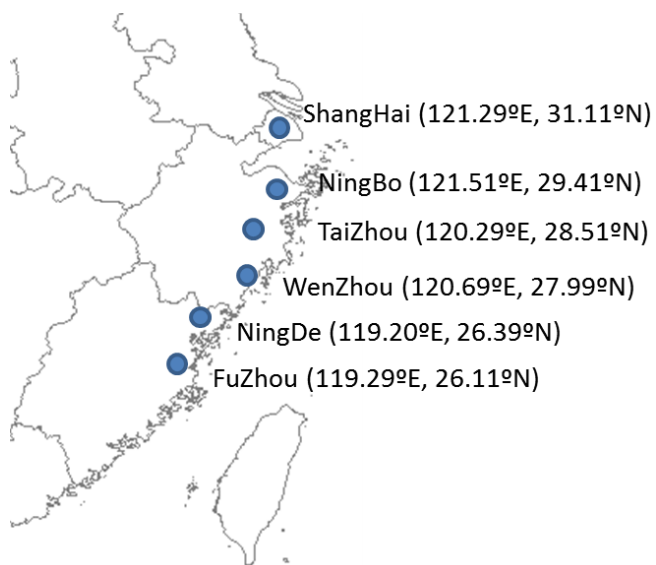
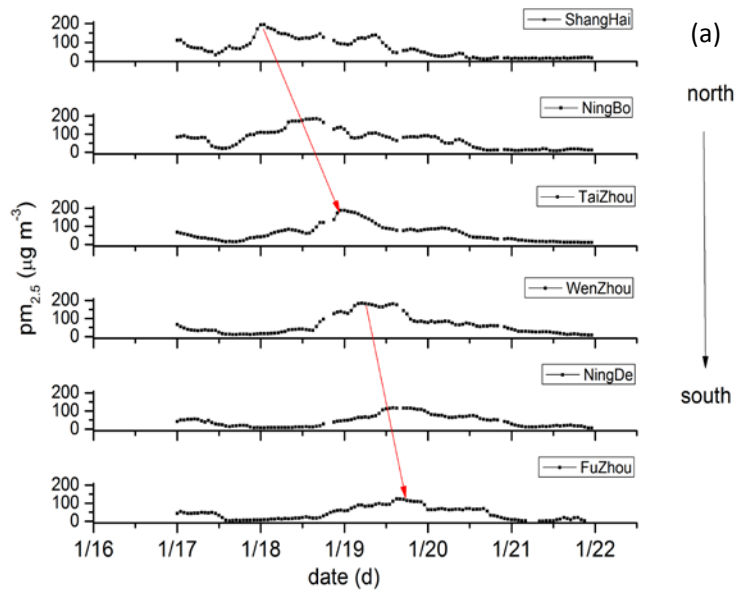


Fig. S3. PM_{2.5} mass concentration with time series in different cities and specific longitude and latitude in the different cities.

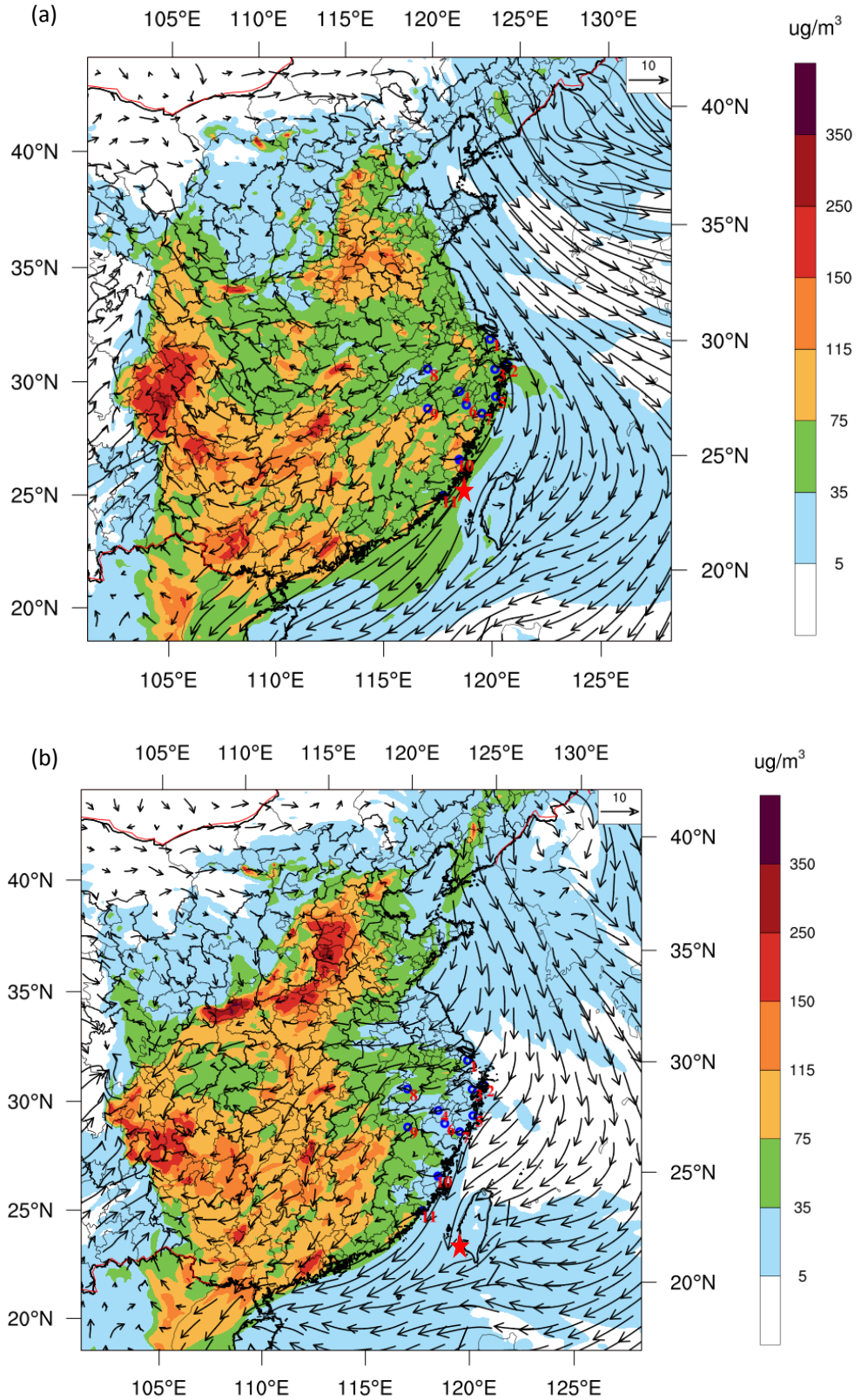


Fig. S4. The simulated results using the Nested Air Quality Predicting Modeling System, which clearly showed daily average concentrations of PM_{2.5} and surface wind fields in the East China on (a) 19th, (b) 20th January, 2016.

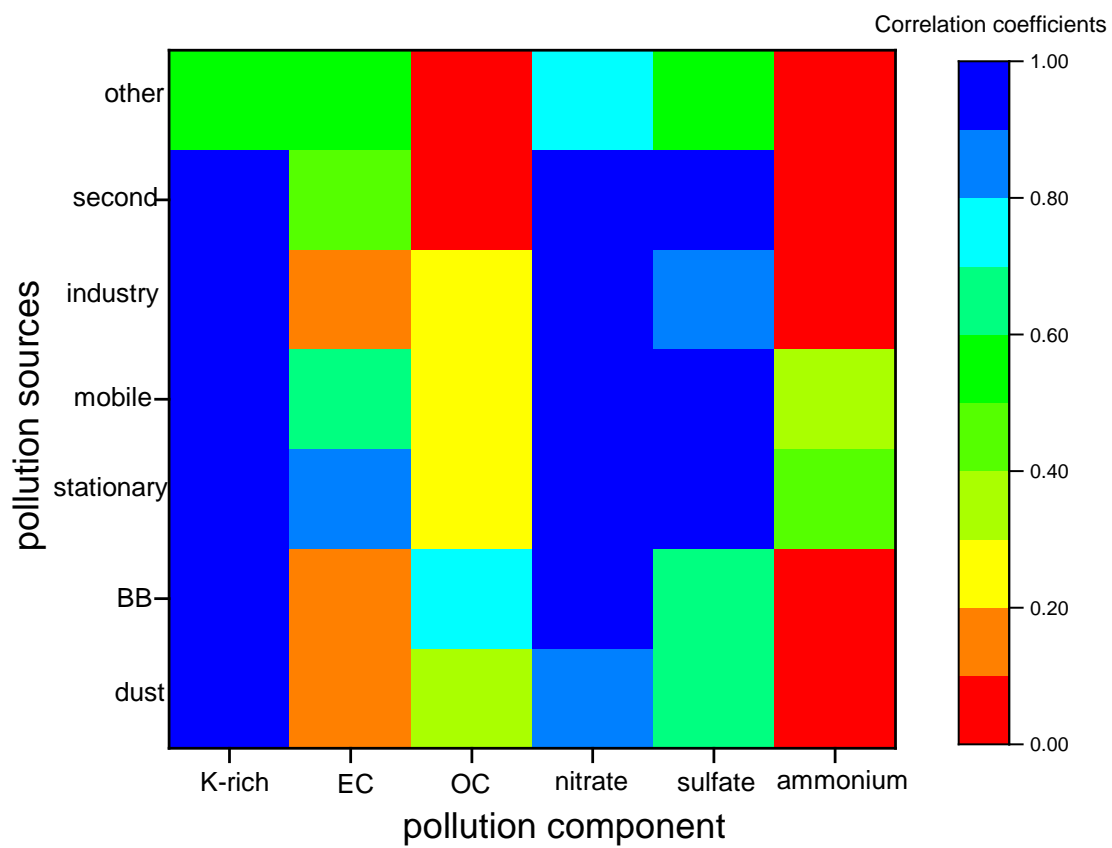


Fig. S5. Correlation between potential sources and chemical component.

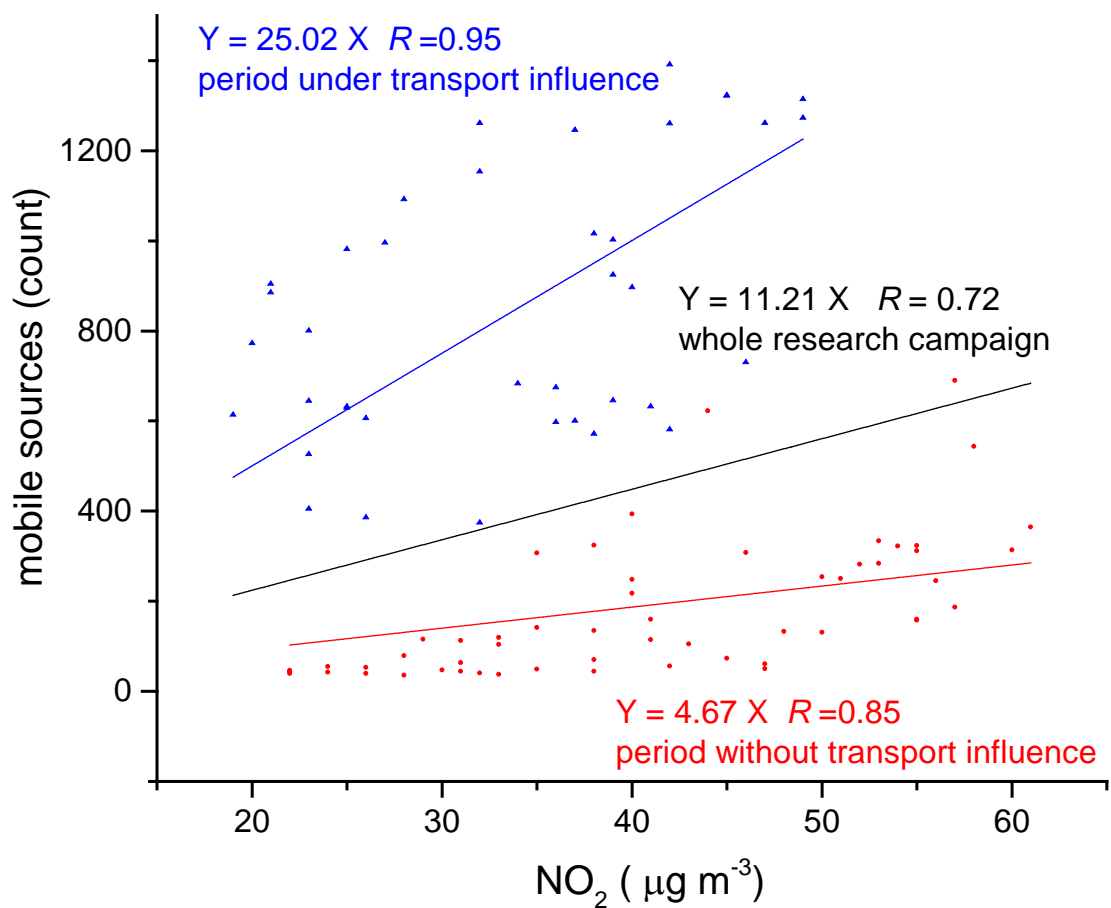


Fig. S6. Correlations between number concentration of mobile sources and mass concentration of NO₂ during the periods with and without transport influence, and the whole research campaign.