



Supplement of

Ammonium nitrate promotes sulfate formation through uptake kinetic regime

Yongchun Liu et al.

Correspondence to: Yongchun Liu (liuyc@buct.edu.cn) and Xiaolei Bao (bxl5@163.com)

The copyright of individual parts of the supplement might differ from the article licence.

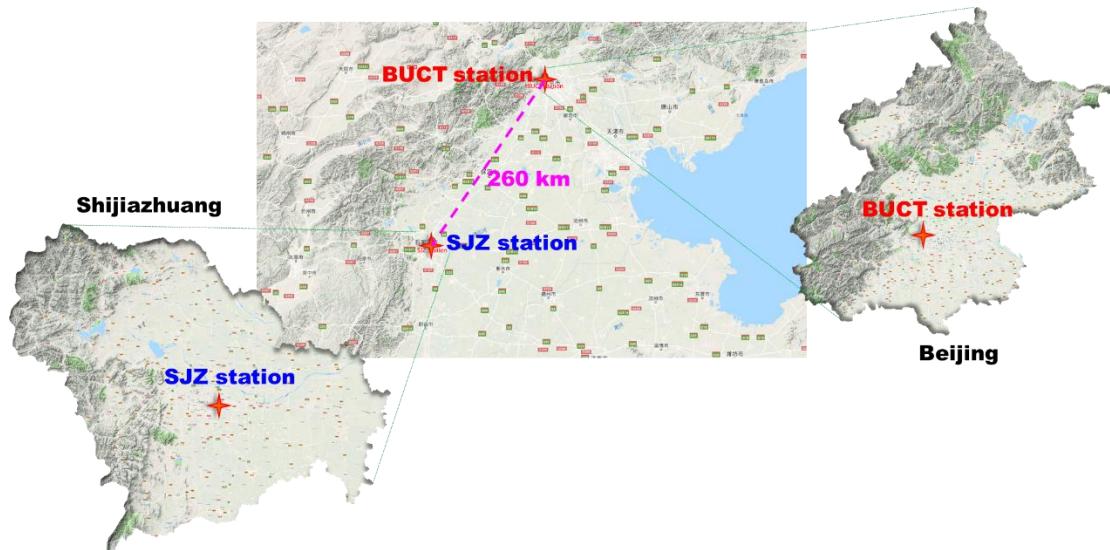
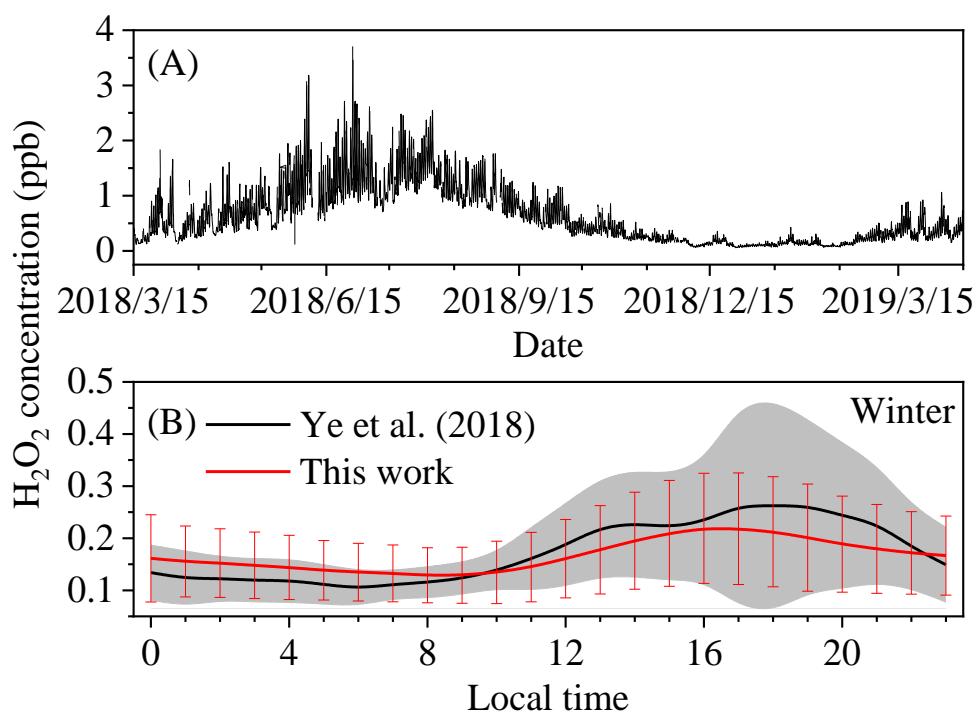


Fig. S1. The locations of the observation stations. The maps are originated from
© Google Maps.



5

Fig. S2. (A) the derived H_2O_2 concentrations and (B) the diurnal variations of H_2O_2 in winter in Shijiazhuang.

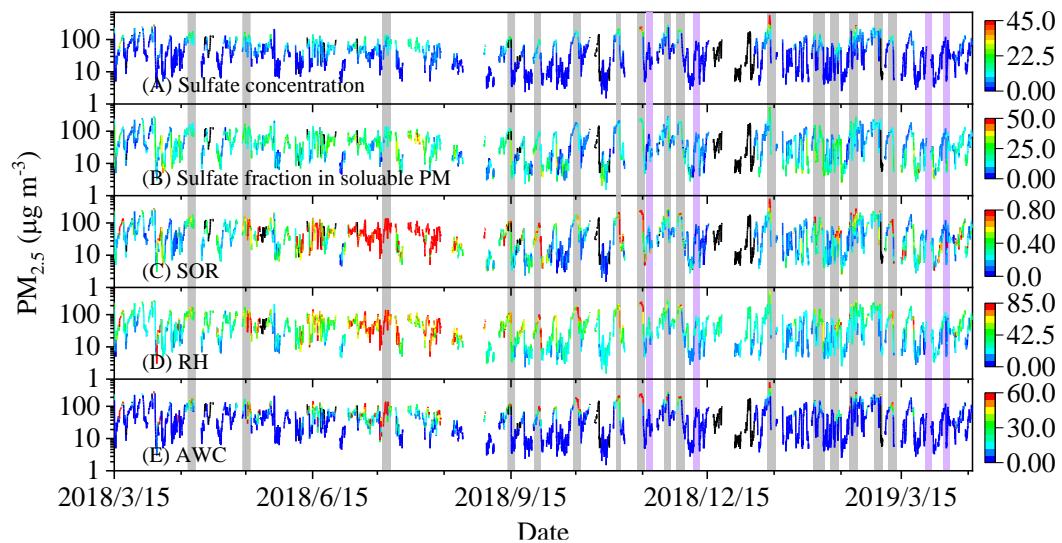
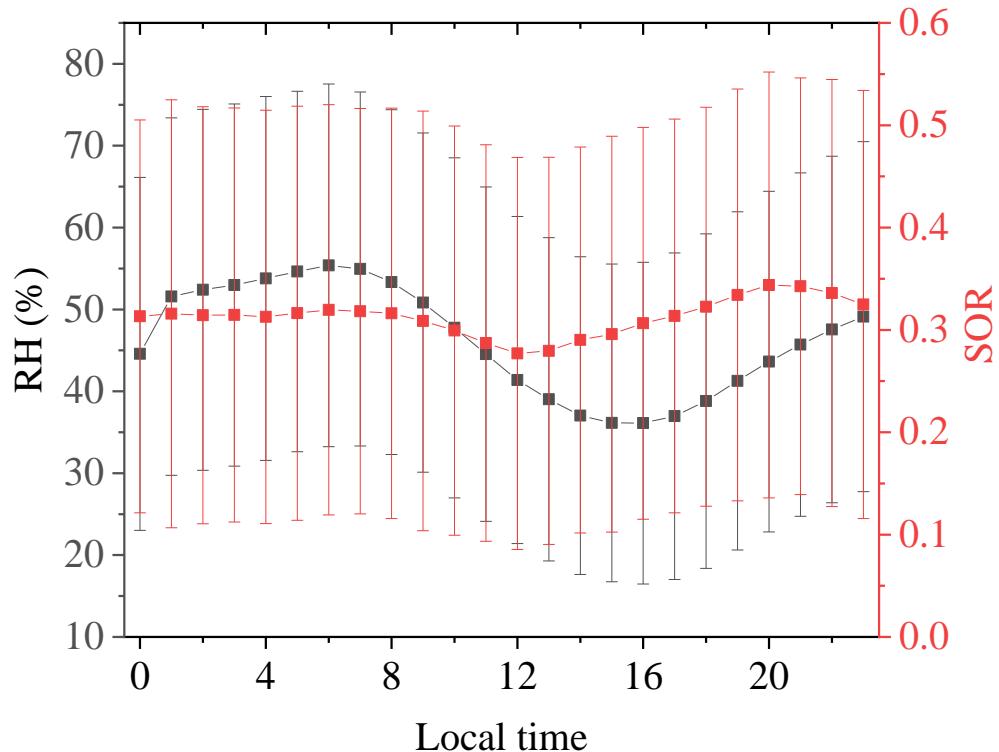


Fig. S3. Mass concentration of $\text{PM}_{2.5}$ colored according to (A) sulfate concentration, (B) sulfate fraction in soluble PM, (C) SOR, (D) RH and (E) AWC in Beijing.



5

Fig. S4. The diurnal curve of RH and SOR in Shijiazhuang.

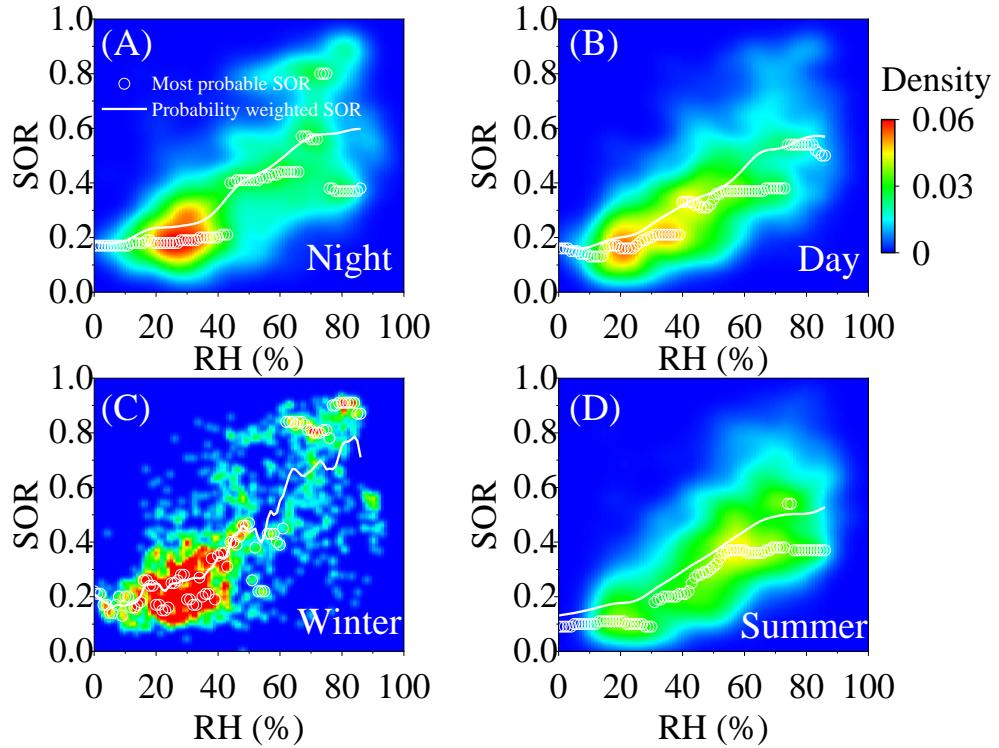
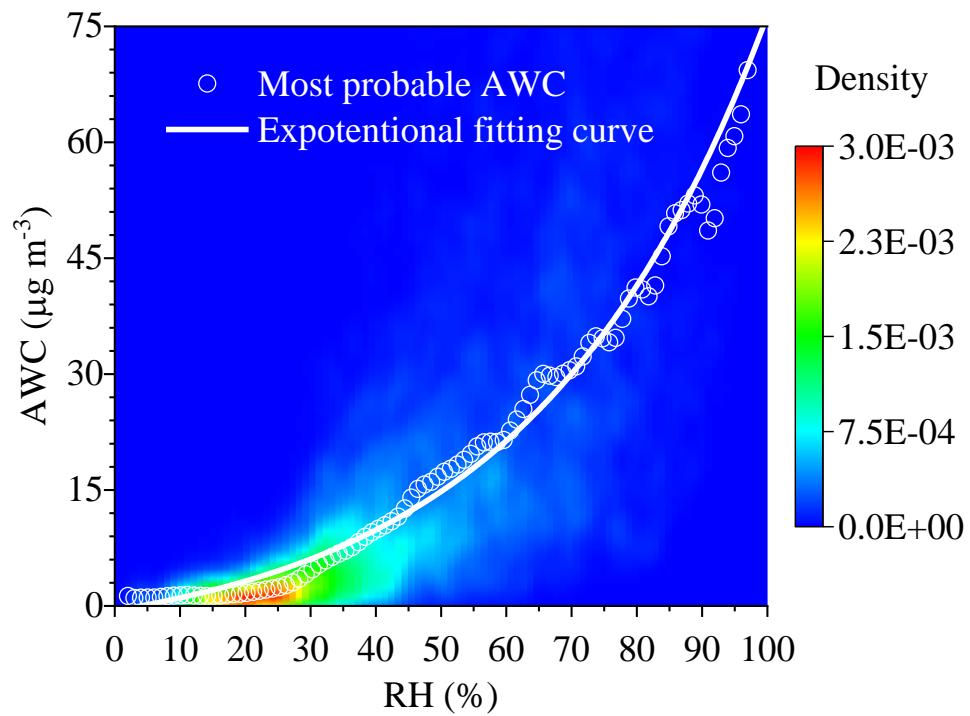


Fig. S5. The dependency of SOR on RH in Shijiazhuang (A) in the night, (B) in the day, (C) in winter and (D) in summer.



5

Fig. S6. The relationship between the AWC and RH in Shijiazhuang.

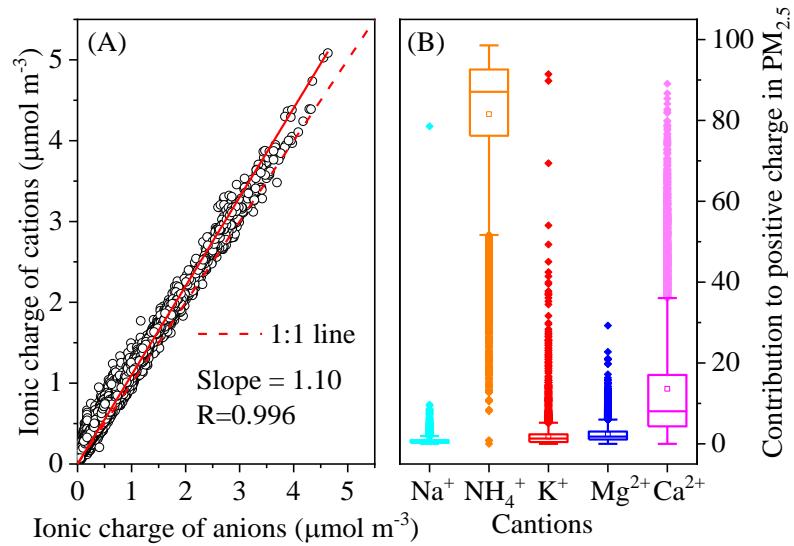


Fig. S7. (A) Correlation of the ionic charge between inorganic anions (NO_3^- , SO_4^{2-} , Cl^-) and cations (Ca^{2+} , Mg^{2+} , K^+ , Na^+ , NH_4^+) and (B) the relative contribution of cations to the total positive charges in soluble $\text{PM}_{2.5}$.

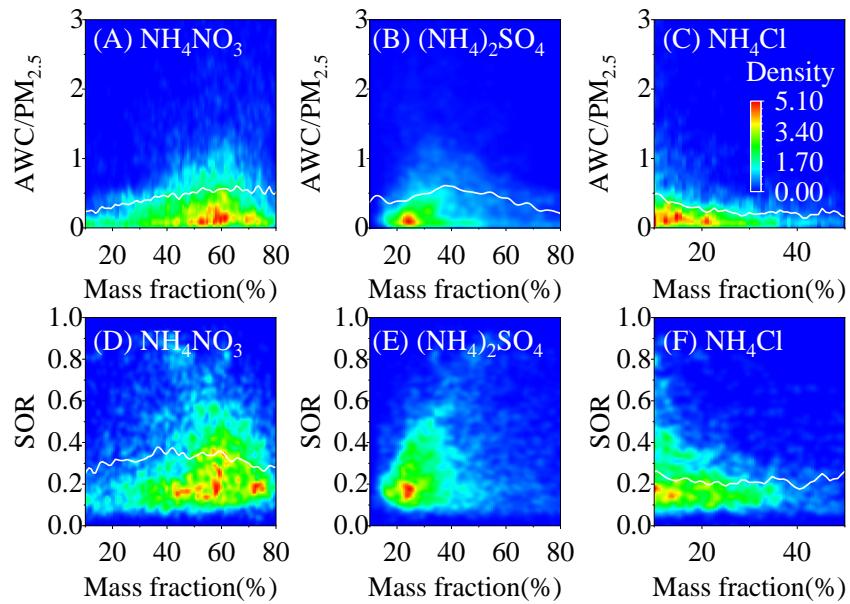


Fig. S8. Correlation of (A)-(C) the AWC/ $\text{PM}_{2.5}$ and (D)-(F) the SOR with the mass fraction NH_4NO_3 , $(\text{NH}_4)_2\text{SO}_4$ and NH_4Cl . The lines are probability weighted values.

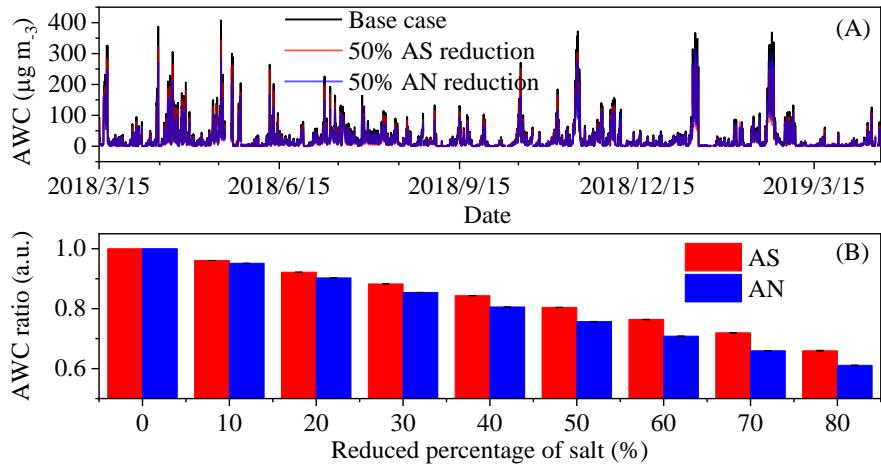


Fig. S9. (A) The time series of AWC calculated under different episodes and (B) the relative change of AWC due to reduction of ammonium nitrate (AN) and ammonium sulfate (AS) in $\text{PM}_{2.5}$.

5

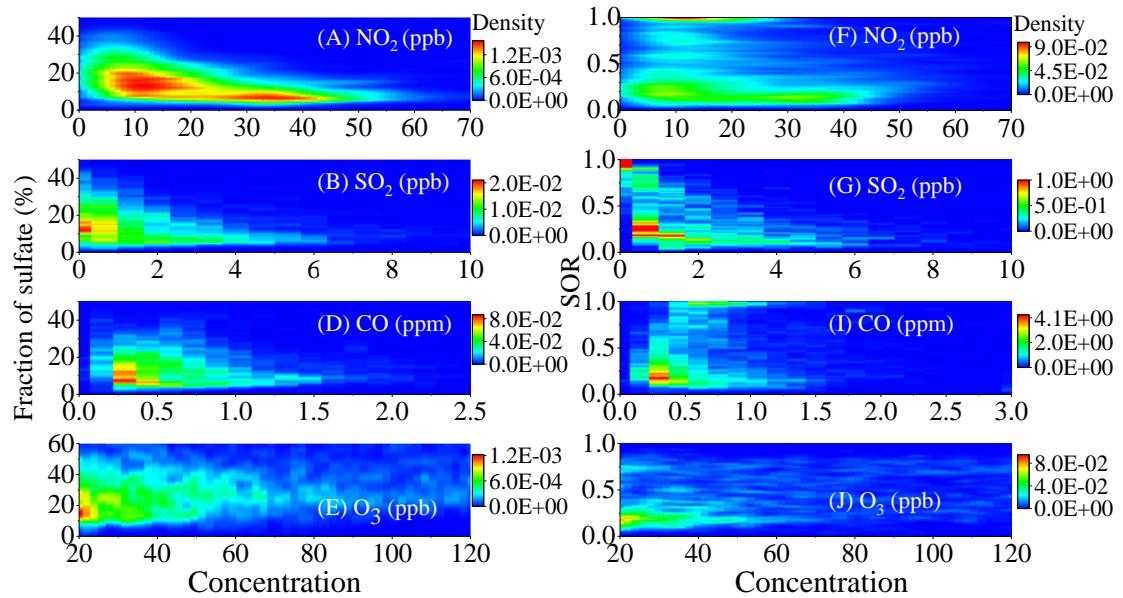


Fig. S10. Dependence of the sulfate fraction in soluble PM and the SOR on different gaseous pollutant concentration in Beijing.

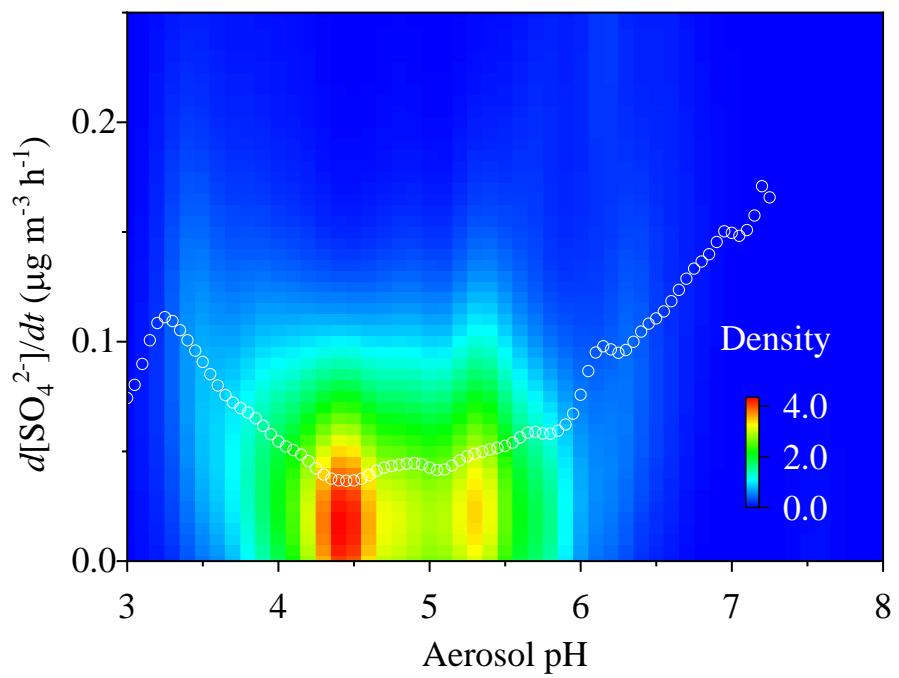


Fig. S11. The dependence of the oxidation rate of S(IV) in aerosol liquid phase on aerosol pH in Shijiazhuang. The white circles are the probability weighted values.