Supplement of Atmos. Chem. Phys., 23, 13853–13868, 2023
https://doi.org/10.5194/acp-23-13853-2023-supplement

Atmospheric Chemistry and Physics
Open Access

Supplement of

Secondary aerosol formation during a special dust transport event: impacts from unusually enhanced ozone and dust backflows over the ocean

Da Lu et al.

Correspondence to: Kan Huang (huangkan@fudan.edu.cn)

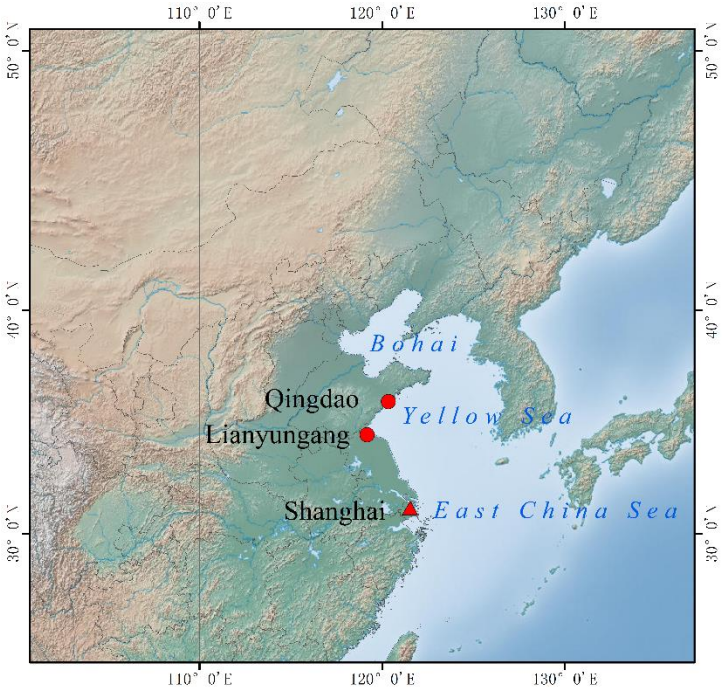


Figure S1. The observational sites in this study, including Shanghai, Qingdao, and Lianyungang. The map is created by ArcGIS 10.2.

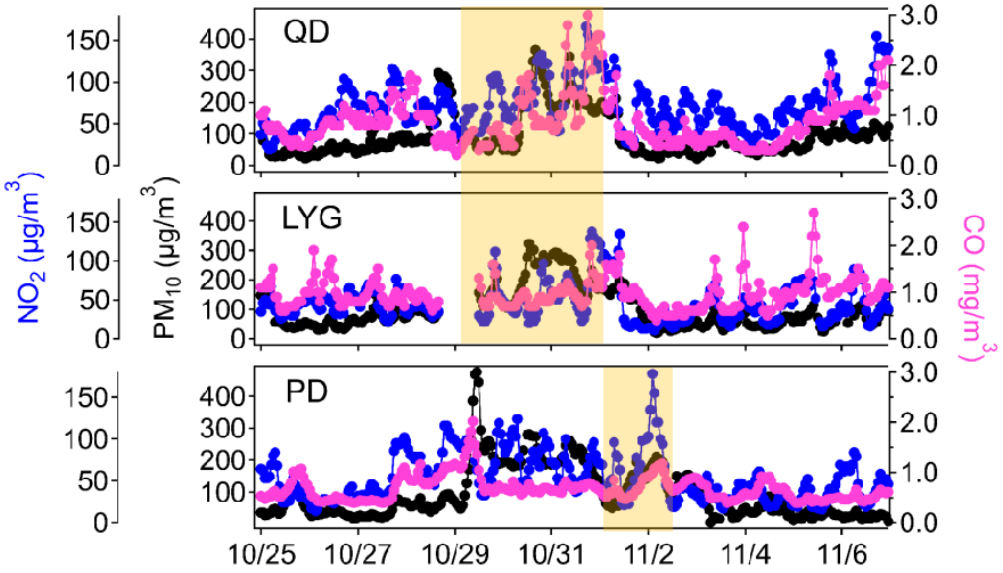


Figure S2. Time-series of PM_{10}, NO_2, and CO at Qingdao, Lianyungang, and Pudong. The dust periods at these three sites are highlighted.

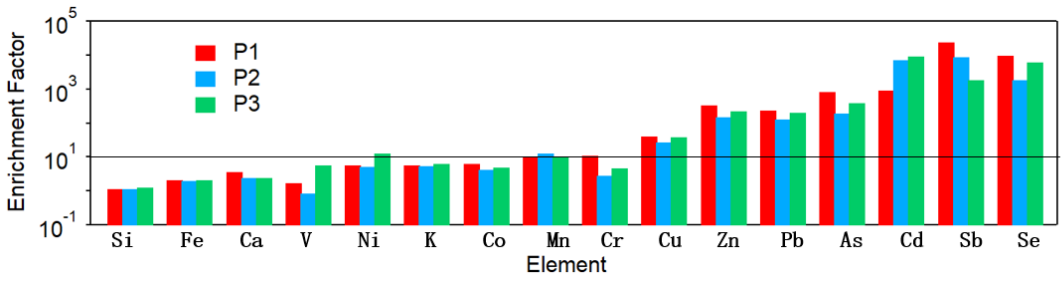
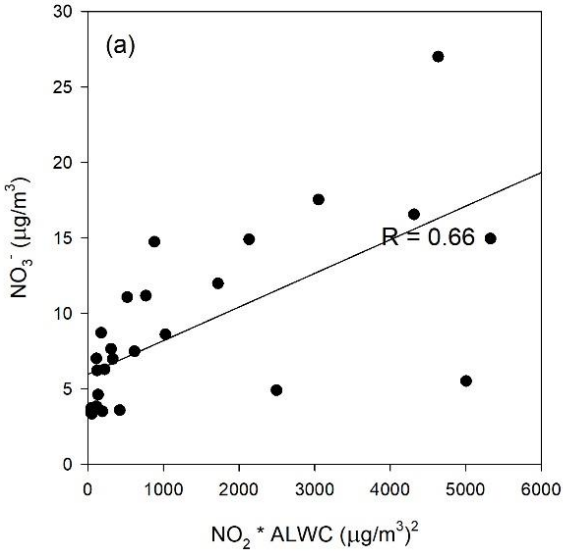
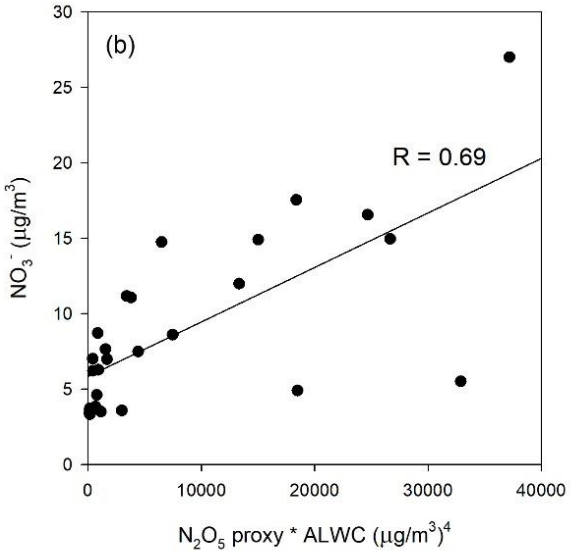


Figure S3. Enrichment factors of elements in $PM_{2.5}$ during the three dust stages.


(a)
R = 0.66
NO_3^- (μg/m^3)
NO_2 * ALWC (μg/m^3)^2
0
5
10
15
20
25
30
0
1000
2000
3000
4000
5000
6000


(b)
R = 0.69
NO_3^- (μg/m^3)
N_2O_5 proxy * ALWC (μg/m^3)^4
0
5
10
15
20
25
30
0
10000
20000
30000
40000

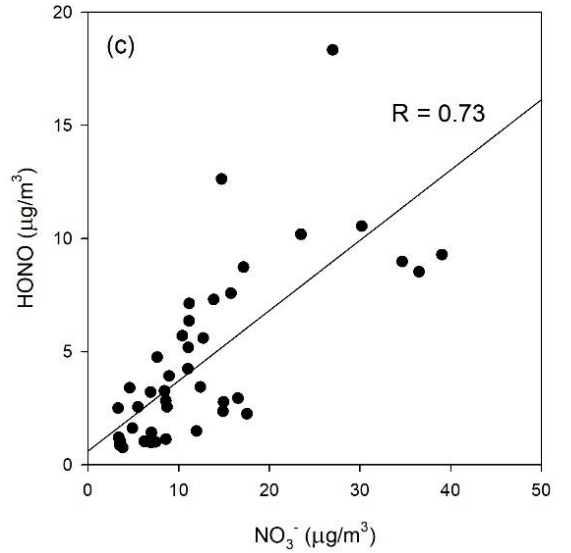

(c)
R = 0.73
HONO (μg/m^3)
NO_3^- (μg/m^3)
0
5
10
15
20
0
10
20
30
40
50

Figure S4. Correlation between NO_3^- and (a) NO_2*ALWC, (b) N_2O_5 proxy*ALWC, and (c) HONO

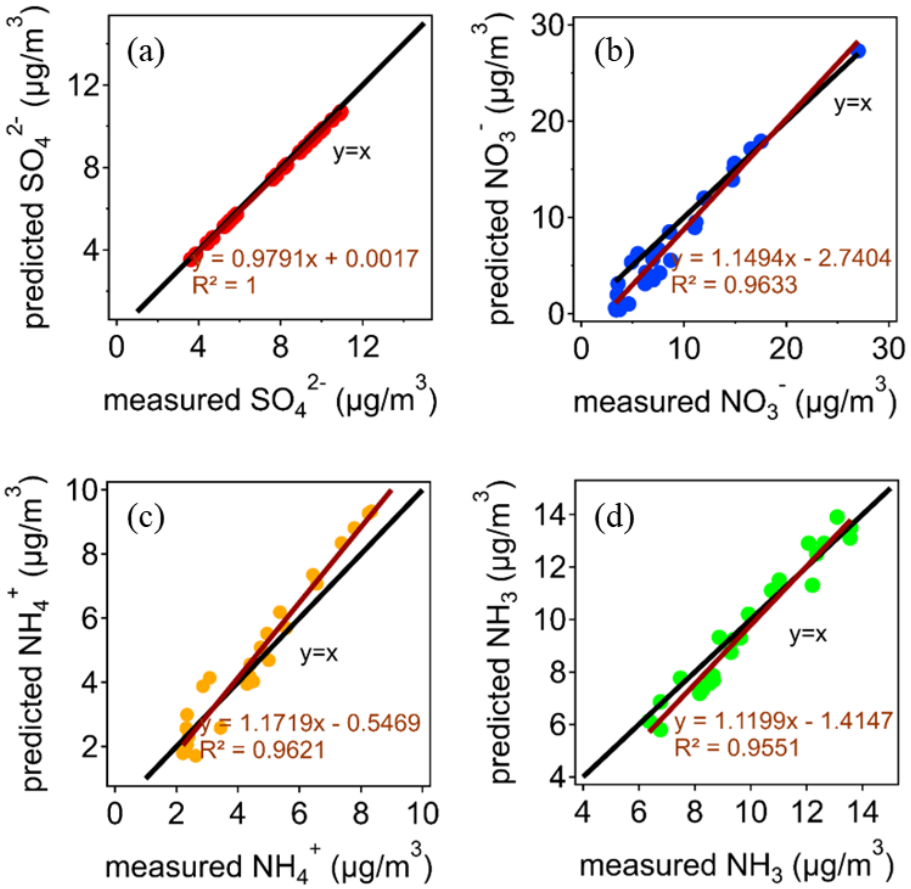


Figure S5. Correlations between the ISORROPIA – II predicted and measured species of (a) SO_4^{2-}, (b) NO_3^-, (c) NH_4^+, and (d) NH_3 for the SO_4^{2-}–NO_3^-–NH_4^+–Cl^-–NH_3–HCl–HNO_3 system during P3

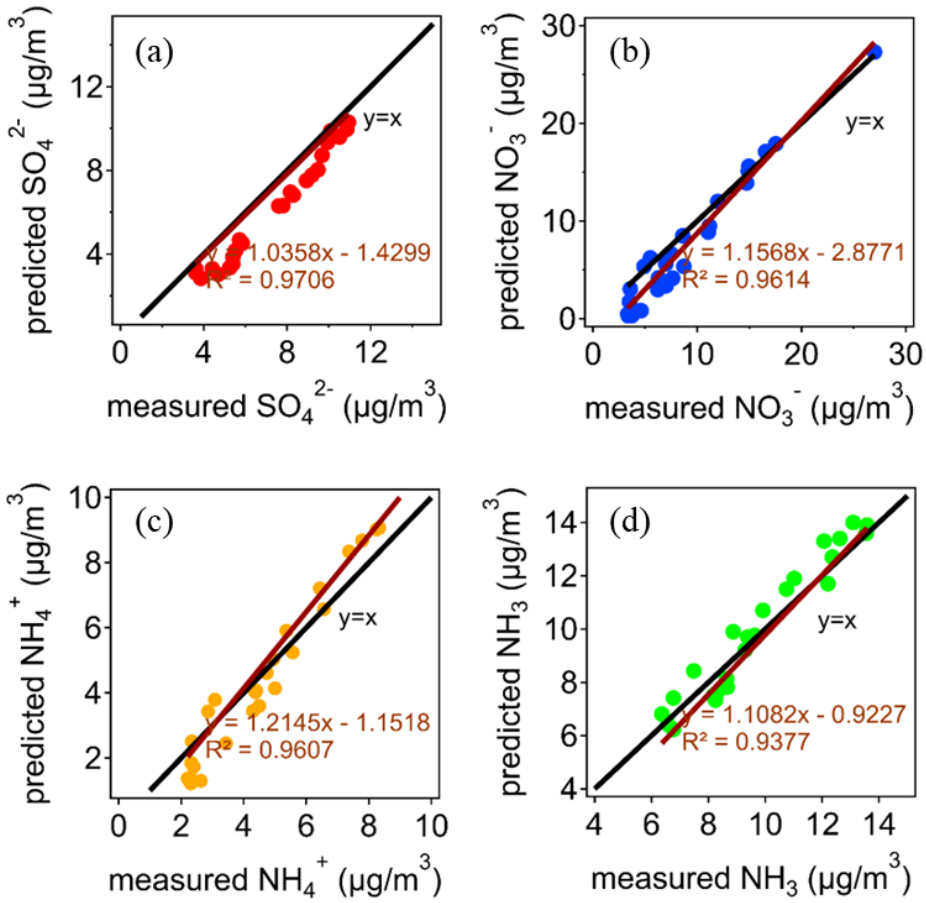


Figure S6. Correlations between the ISORROPIA–II predicted and measured species of (a) SO_4^{2-}, (b) NO_3^-, (c) NH_4^+, and (d) NH_3 for the SO_4^{2-}–NO_3^-–NH_4^+–Cl^-–Ca^{2+}–NH_3–HCl–HNO_3 system during P3

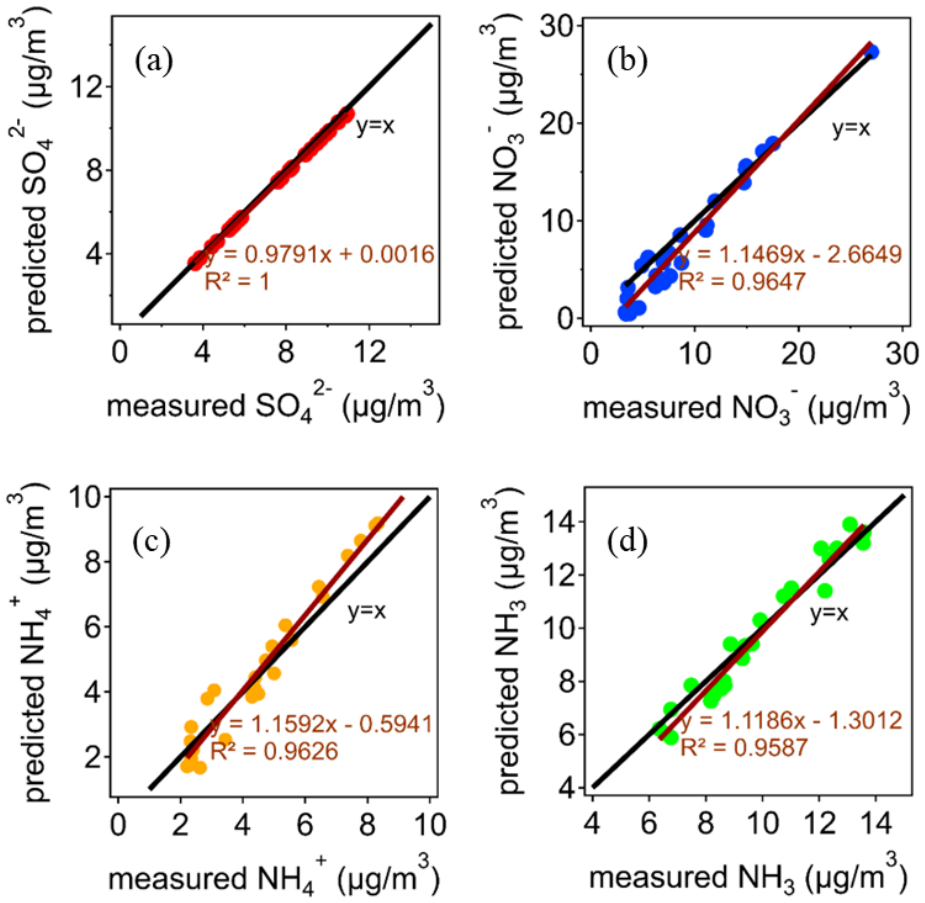


Figure S7. Correlations between the ISORROPIA–II predicted and measured species of (a) SO_4^{2-}, (b) NO_3^-, (c) NH_4^+, and (d) NH_3 for the SO_4^{2-}–NO_3^-–NH_4^+–Cl^-–Na^+–NH_3–HCl–HNO_3 system during P3

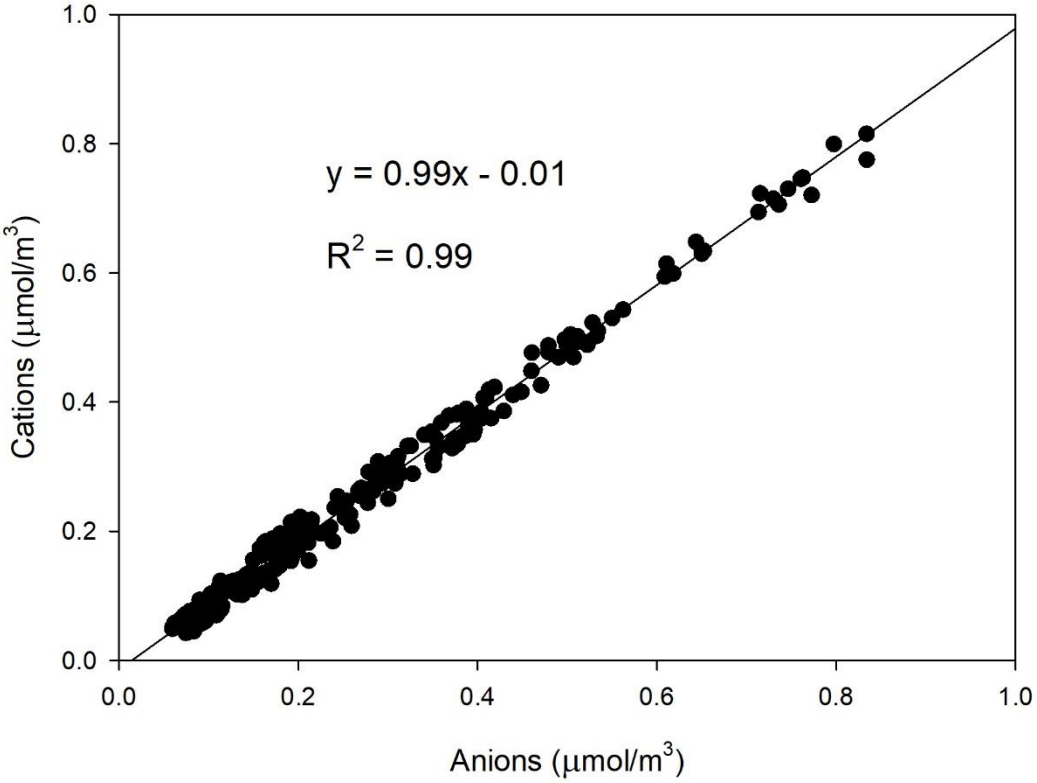


Figure S8. Ion balance during the whole study period.

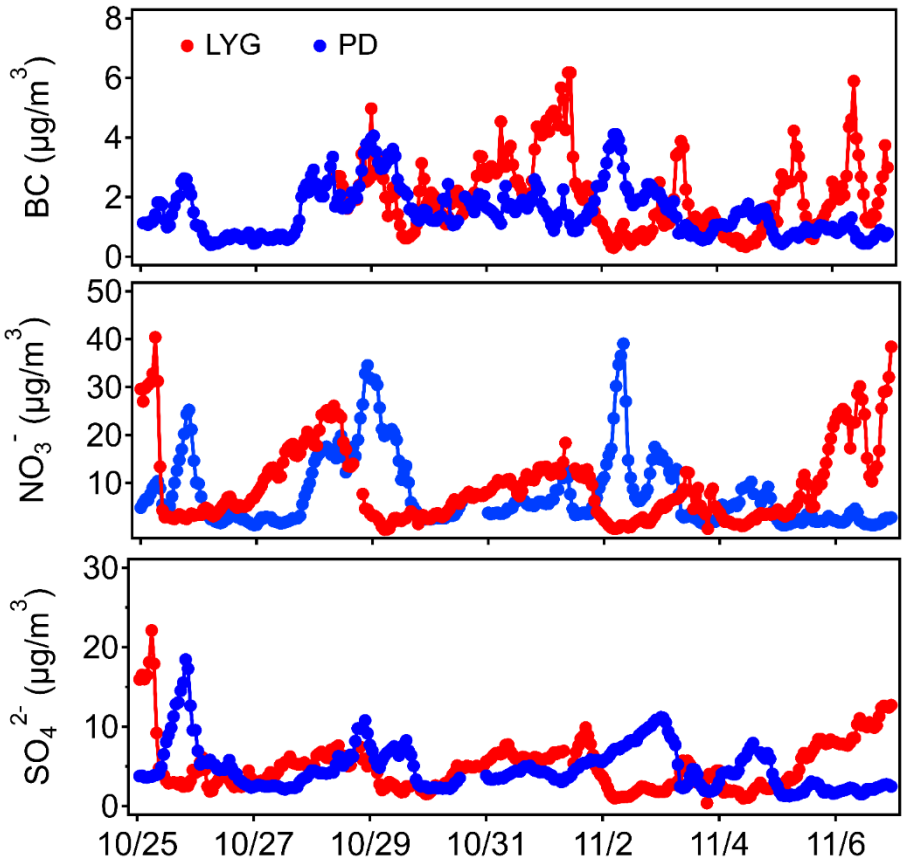


Figure S9. Time-series of BC, nitrate, and sulfate measured at LYG and PD during the study period.