Supplemental material

Fine particle pH and sensitivity to NH_3 and HNO_3 over summertime South Korea during KORUS-AQ

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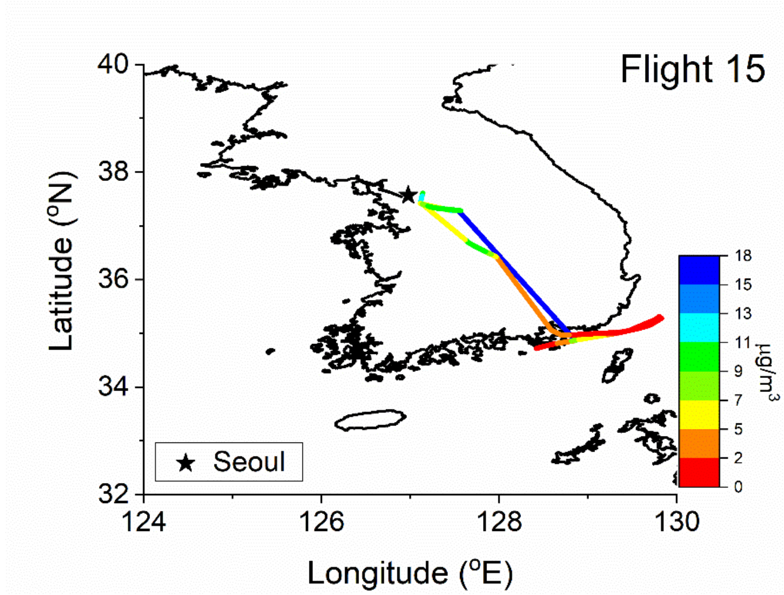
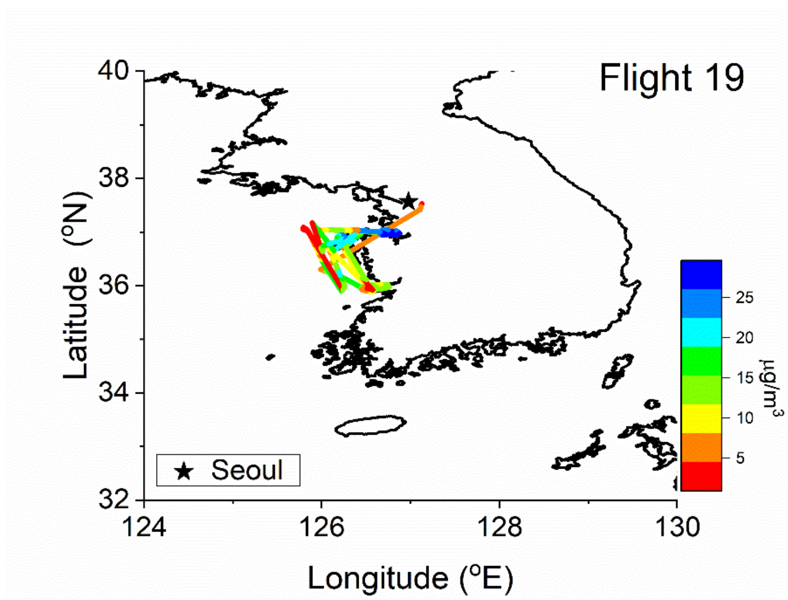
Table S1: Major inorganic nitrogen species average by flight (µg m^{-3}). The uncertainty corresponds to 1 standard deviation about the mean.

Flight	HNO_3	NO_3^-	NH_4^+	pH
3	1.84±0.68	1.82±1.00	1.50±0.59	2.28 ± 0.28
7	5.05±1.95	4.09±2.88	2.84±1.59	2.08 ± 0.59
9	1.97±1.04	8.24±5.16	4.45±2.08	2.77 ± 0.31
13	4.37±1.56	6.54±2.84	5.97±2.11	2.08 ± 0.28
15	7.56±2.52	4.80±4.41	4.07±1.93	1.74 ± 0.75
16	6.20±3.02	4.36±4.18	3.85±2.25	1.82 ± 0.66
17	3.42±2.22	11.88±6.71	6.49±3.11	2.77 ± 0.41
18	4.10±1.88	8.40±4.25	4.46±1.69	2.74 ± 0.37
19	6.57±3.11	14.61±7.29	6.55±2.38	2.90 ± 0.41
20	3.04±1.85	7.12±3.63	3.97±1.55	2.88 ± 0.41
21	5.09±2.63	8.43±7.25	5.71±3.09	2.08 ± 0.89



(a)



(b)

Figure S1: Flight 15 and flight 19 boundary layer trajectories color mapped by PM_1 NO_3^-. Portions of flights only shown for which the altitude is less than 1 km.

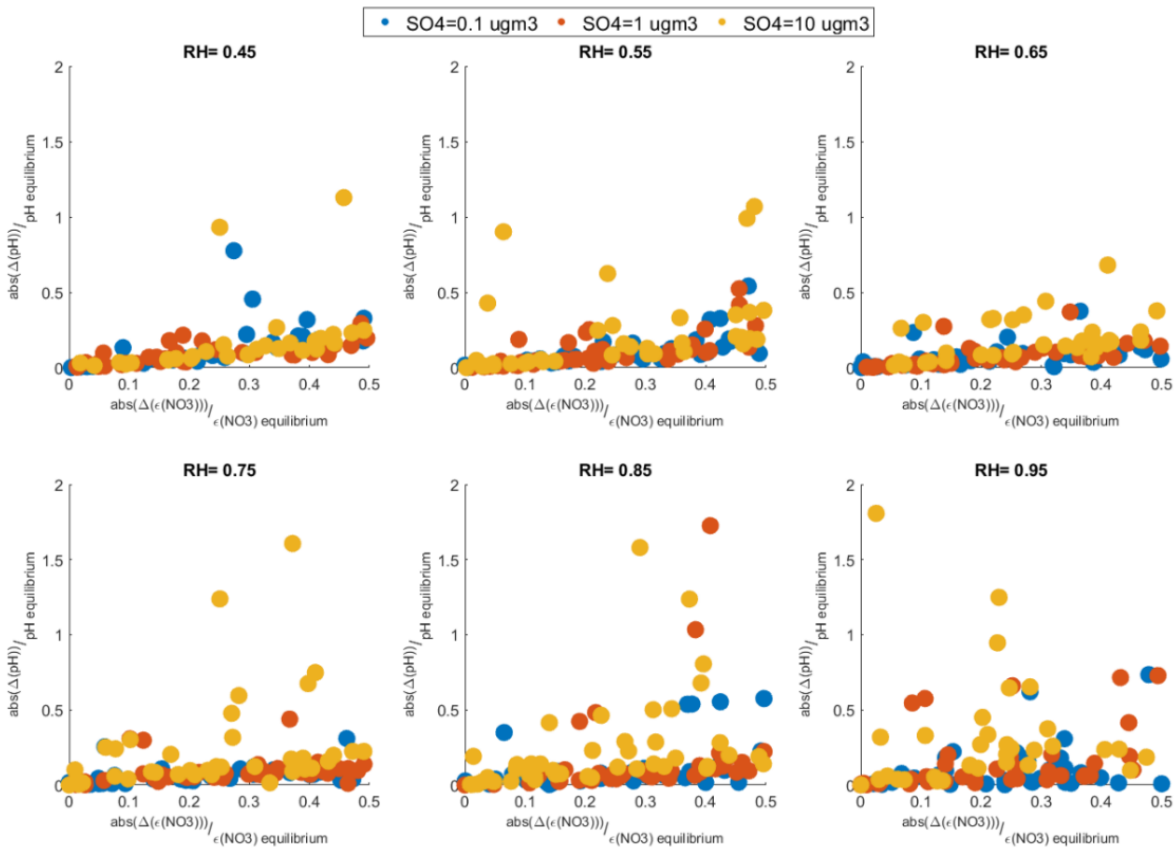


Figure S2: Sensitivity of pH to uncertainty in ε(NO_3), as a function of sulfate level and relative humidity. Calculations carried out with the synthetic dataset presented in Section 3.1 of the main manuscript.

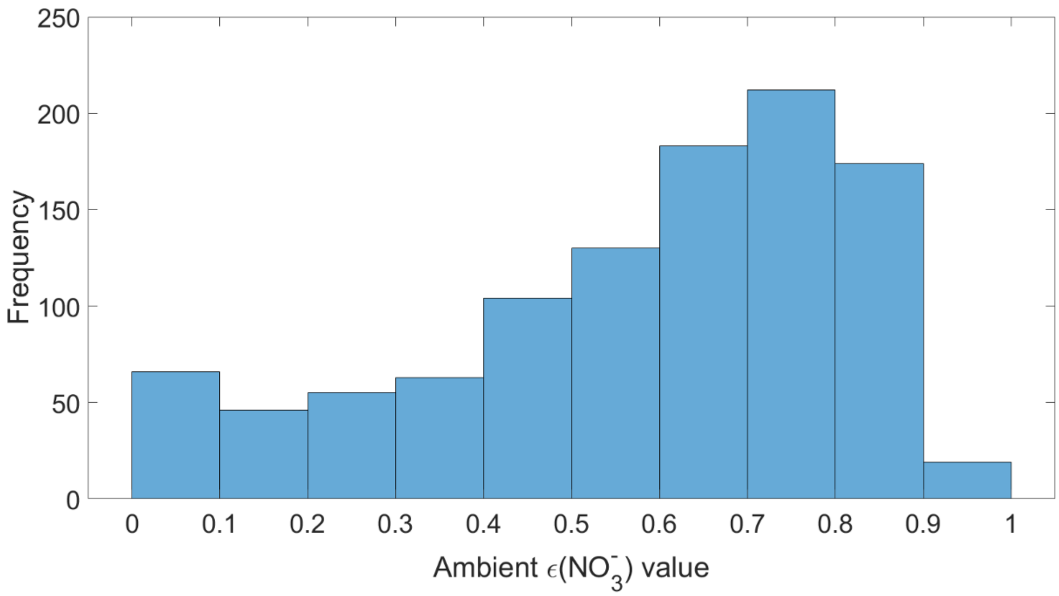
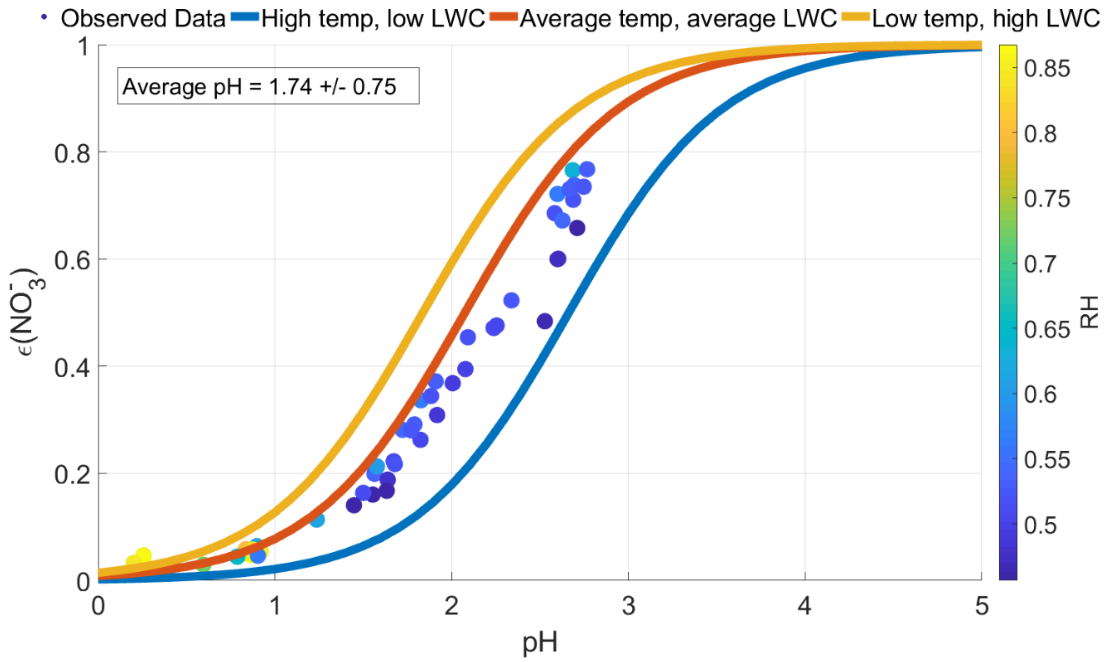
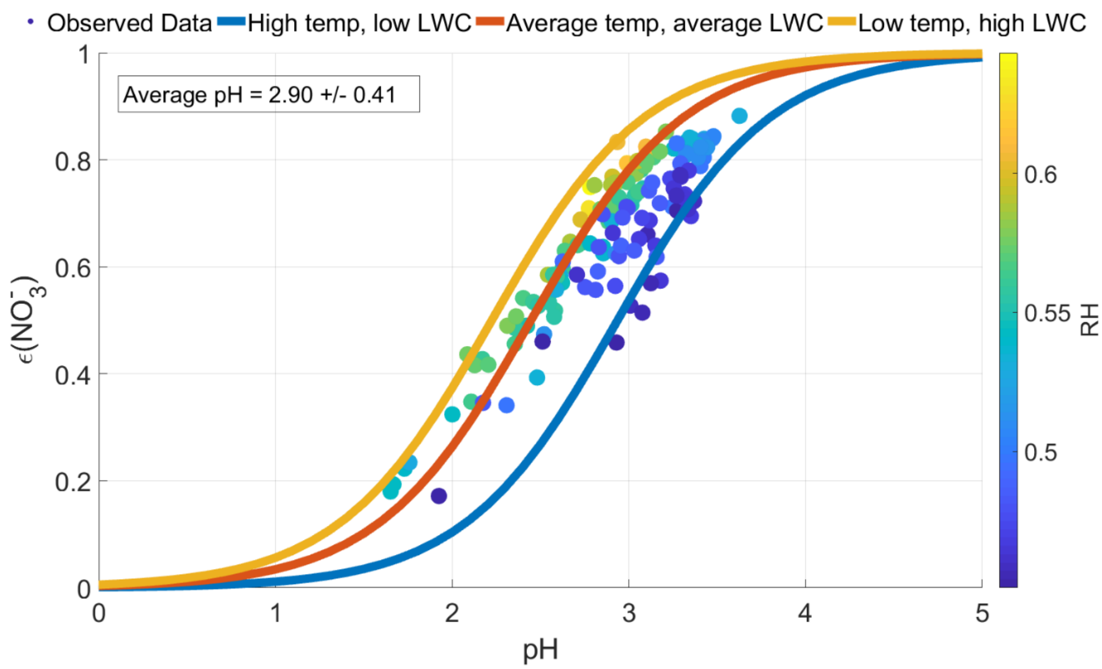


Figure S3: $\varepsilon(NO_3)$ frequency distribution for data collected from all flights listed in Table 1.



(a)



(b)

Figure S4: Nitrate partitioning ($\varepsilon(NO_3^-)$) vs. pH for (a) flight 15 and (b) flight 19 for low, average, and high liquid water content (LWC) and Temperature. Low values are one standard deviation below the average while high values are one standard deviation above the average.