

SUPPLEMENTARY INFORMATION

An inter-laboratory comparison of aerosol inorganic ion measurements by Ion Chromatography: implications for estimation of aerosol pH

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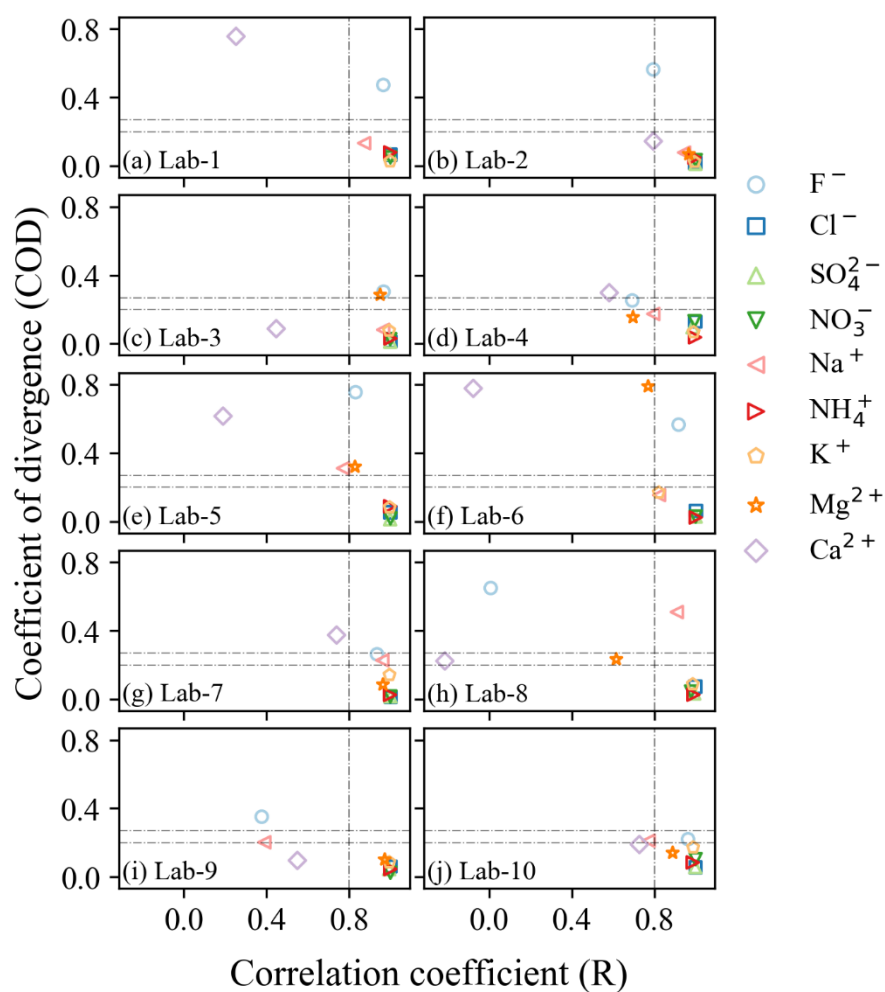


Fig. S1 Coefficient of divergence (COD) plotted against correlation coefficient (R) for all ions in each lab with the mean ionic concentrations of 10 labs. (Note: vertical line indicates an R value of 0.8, and horizontal lines indicate COD values of 0.2 and 0.269, respectively.)

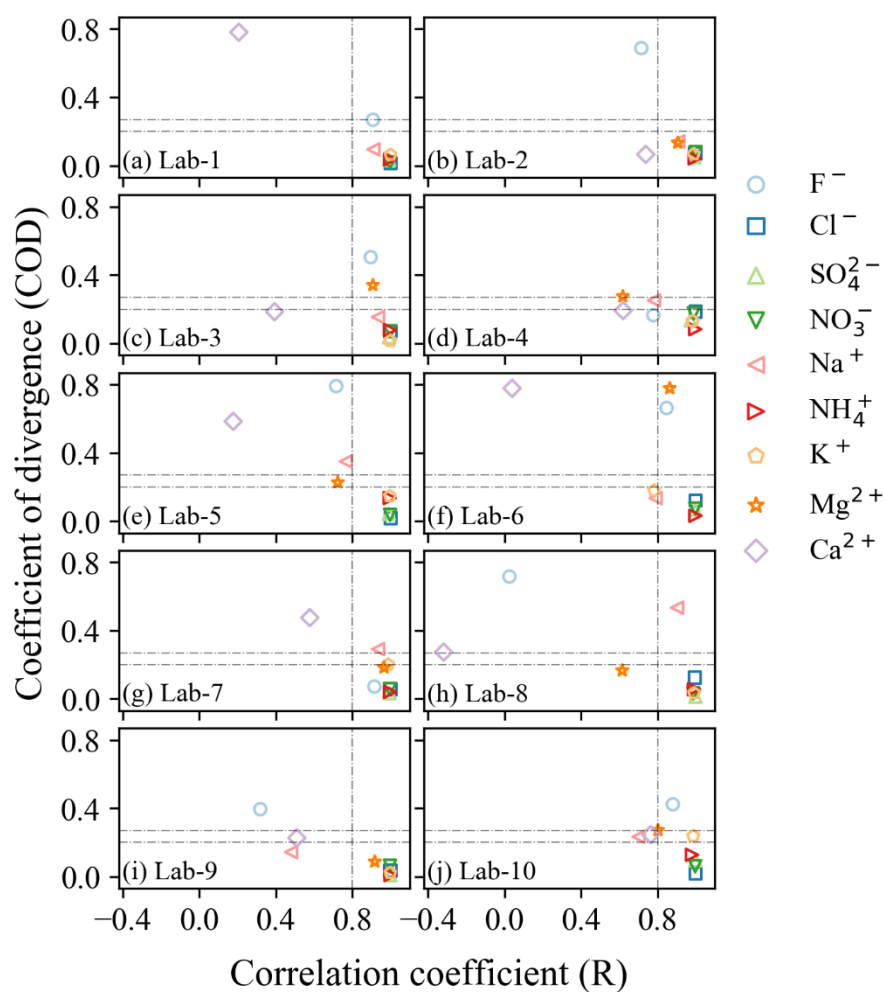


Fig. S2 Coefficient of divergence (COD) plotted against correlation coefficient (R) for all ions in each lab with the upper values (84% percentile) of ionic concentrations of 10 labs. (Note: vertical line indicates an R value of 0.8, and horizontal lines indicate COD values of 0.2 and 0.269, respectively.)

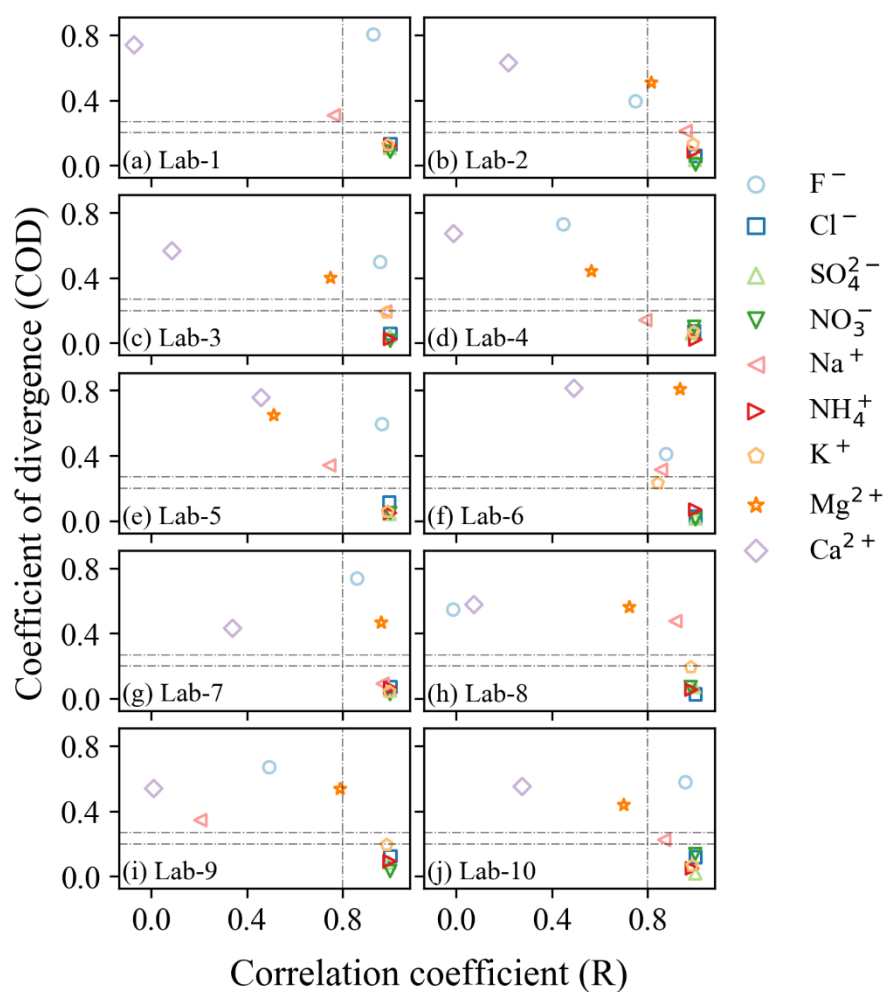


Fig. S3 Coefficient of divergence (COD) plotted against correlation coefficient (R) for all ions in each lab with the lower values (16% percentile) of 10 labs. (Note: vertical line indicates an R value of 0.8, and horizontal lines indicate COD values of 0.2 and 0.269, respectively.)

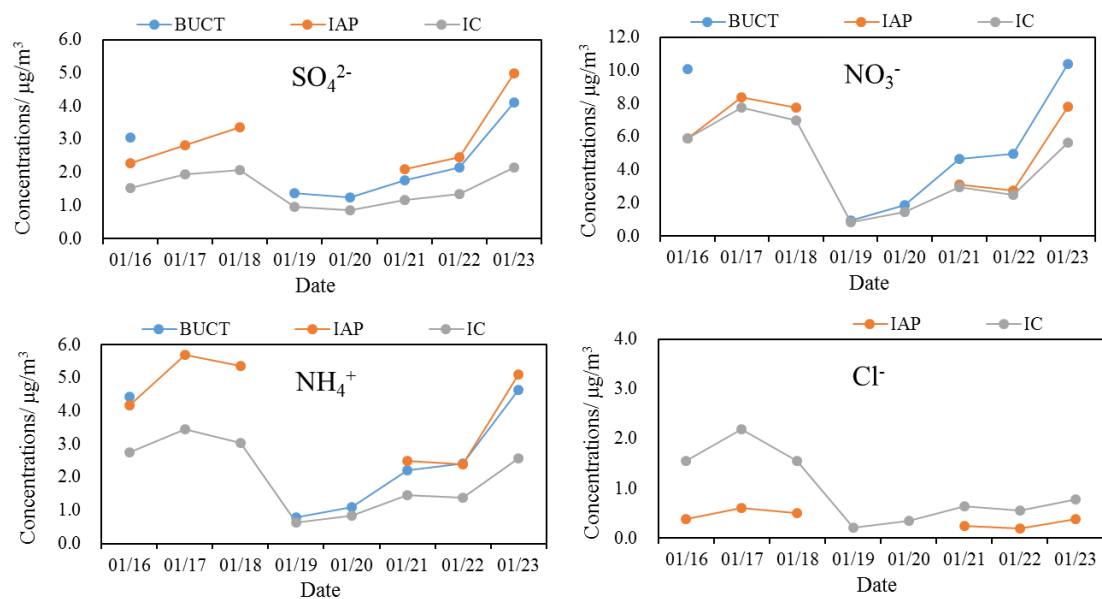


Fig. S4 Time series of ion species measured by IC (median values measured by 10 labs) in this study and ACSM at IAP and BUCT

Table S1 Uncorrected and CRM-corrected ion concentrations ($\mu\text{g}/\text{m}^3$) and their corresponding coefficient of variations (CV/ %)

	Uncorrected		Corrected			Uncorrected		Corrected	
	Mean (min-max)	CV/%	Mean (min-max)	CV/%		Mean (min-max)	CV/%	Mean (min-max)	CV/%
	Chloride					Sulfate			
2019/1/16	1.5 (1.2-1.8)	11.0	1.5 (1.2-1.7)	10.5		1.5 (1.1-1.7)	10.7	1.5 (1.2-1.7)	11.7
2019/1/17	2.2 (1.8-2.6)	11.7	2.2 (1.7-2.6)	11.1		2.0 (1.6-2.3)	9.1	2.0 (1.5-2.2)	10.6
2019/1/18	1.5 (1.2-1.8)	11.3	1.5 (1.2-1.8)	11.2		2.0 (1.6-2.4)	9.6	2.0 (1.6-2.3)	11.0
2019/1/19	0.2 (0.1-0.3)	18.2	0.2 (0.2-0.2)	16.1		1.0 (0.9-1.1)	7.5	1.0 (0.8-1.1)	9.0
2019/1/20	0.3 (0.2-0.4)	18.0	0.3 (0.3-0.4)	16.8		0.9 (0.8-1.1)	10.1	0.9 (0.7-1.0)	10.8
2019/1/21	0.6 (0.5-0.8)	11.9	0.6 (0.5-0.7)	11.0		1.2 (1.1-1.4)	8.3	1.2 (0.9-1.3)	8.9
2019/1/22	0.5 (0.4-0.7)	12.6	0.5 (0.4-0.6)	11.2		1.4 (1.0-1.6)	11.8	1.4 (1.0-1.6)	12.2
2019/1/23	0.8 (0.5-0.9)	13.1	0.7 (0.6-0.8)	11.7		2.2 (1.7-2.5)	11.0	2.2 (1.6-2.4)	12.6
Average		13.5		12.4			9.8		10.9
	Ammonium								
2019/1/16	2.7 (2.1-3.2)	12.0	2.6 (2.0-3.2)	15.2					
2019/1/17	3.6 (2.6-4.5)	14.3	3.5 (2.5-4.2)	15.6					
2019/1/18	3.1 (2.7-3.8)	10.3	3.1 (2.2-3.8)	13.8					
2019/1/19	0.6 (0.5-0.8)	11.5	0.6 (0.5-0.7)	10.6					
2019/1/20	0.9 (0.6-1.0)	13.5	0.8 (0.7-1.1)	13.4					
2019/1/21	1.5 (1.1-1.8)	13.5	1.5 (1.3-1.7)	9.6					
2019/1/22	1.3 (1.0-1.5)	12.2	1.3 (1.1-1.6)	12.5					
2019/1/23	2.5 (2.0-3.0)	12.9	2.5 (1.8-3.0)	15.2					
Average		12.5		13.2					

Table S2 Temperature (T), relative humidity (RH) and gas-phase NH_3 concentrations during the study period

Date	T/ $^{\circ}\text{C}$	RH/%	NH_3/ppb
2019/1/16	-4.4	23.8	20.1
2019/1/17	-1.8	21.9	19.0
2019/1/18	0.6	21.0	19.6
2019/1/19	1.2	21.7	16.0
2019/1/20	2.5	14.3	13.9
2019/1/21	4.3	13.8	15.0
2019/1/22	2.8	22.7	17.3
2019/1/23	2.9	40.1	17.2

Table S3 Aerosol water content (AWC, $\mu\text{g}/\text{m}^3$) estimated by ISORROPIA II model using temperature, RH and aerosol-phase ion concentrations

Lab NO.	1	2	3	4	5	6	7	8	9	10
2019/1/16	0.93	0.78	0.80	0.40	0.92	0.80	0.85	0.96	0.83	0.89
2019/1/17	1.04	0.83	0.87	0.60	1.13	1.04	0.95	0.89	0.92	1.00
2019/1/18	0.93	0.81	0.82	0.55	0.99	0.79	0.86	0.83	0.86	0.88
2019/1/19	0.31	0.24	0.24	0.23	0.27	0.19	0.28	0.24	0.30	0.31
2019/1/20	0.22	0.15	0.14	0.12	0.18	0.15	0.15	0.15	0.31	0.14
2019/1/21	0.26	0.25	0.24	0.19	0.24	0.23	0.24	0.22	0.27	0.25
2019/1/22	0.61	0.46	0.49	0.38	0.46	0.53	0.52	0.50	0.58	0.54
2019/1/23	3.13	2.51	2.55	1.85	2.53	2.55	2.75	2.75	2.86	2.92