



Supplement of

African dust transported to Barbados in the wintertime lacks indicators of chemical aging

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Figure S1 – Daily soluble ion content for supermicron nitrate (left axis; green), non-sea salt sulfate (left axis; yellow), and oxalate (right axis; purple) with correlation plots for each ion as a function of dust mass concentrations a) and daily supermicron dust mass concentrations b) determined for the entire sampling period. Correlation plots include all data, including data from samples with undetectable ions. Trendlines are plotted only for data with detectable dust and ions.



Figure S2 - Daily soluble ion content for submicron nitrate (left axis; green), non-sea salt sulfate (left axis; yellow), and oxalate (right axis; purple) with correlation plots for each ion as a function of dust mass concentrations a) and daily submicron dust mass concentrations b) determined for the entire sampling period. Correlation plots include all data, including data from samples with undetectable ions. Trendlines are plotted only for data with detectable dust and soluble ions.

	Average N (%)		
Particle Type	Submicron	Supermicron	Total
Dust	1.9 <u>+</u> 0.6	2.1 <u>+</u> 0.3	2.0 <u>+</u> 0.5
Dust+Smoke	2.5 <u>+</u> 0.4	2.6 <u>+</u> 0.3	2.6 <u>+</u> 0.4
Dust+SeaSalt	1.9 <u>+</u> 0.7	2.2 <u>+</u> 0.1	2.0 <u>+</u> 0.5
Sea Salt	1.9 <u>+</u> 0.7	3.0 <u>+</u> 0.9	2.4 <u>+</u> 0.9

Table S1 – Values of average N content in individual particles of dust, internally mixed dust & smoke, internally mixed dust and sea salt, and sea salt particles in the submicron, supermicron, and total size distribution.

	Average Particle Fraction w/ Detectable N (%)		
Particle Type	Submicron	Supermicron	Total
Dust	36 <u>+</u> 25	76 <u>+</u> 12	52 <u>+</u> 28
Dust+Smoke	70 <u>+</u> 17	95 <u>+</u> 5	79 <u>+</u> 19
Dust+SeaSalt	43 <u>+</u> 19	75 <u>+</u> 14	59 <u>+</u> 23
Sea Salt	23 <u>+</u> 16	38 <u>+</u> 9	30 <u>+</u> 15

Table S2 – Values of Average particle fractions with detectable N in dust, internally mixed dust & smoke, internally mixed dust and sea salt, and sea salt particles in the submicron, supermicron, and total size distribution.

	Average S (%)		
Particle Type	Submicron	Supermicron	Total
Dust	3.3 <u>+</u> 2.8	1.9 <u>+</u> 1.0	2.7 <u>+</u> 0.5
Dust+Smoke	1.9 <u>+</u> 0.3	1.5 <u>+</u> 0.8	1.7 <u>+</u> 0.5
Dust+SeaSalt	2.7 <u>+</u> 1.0	2.0 <u>+</u> 0.2	2.4 <u>+</u> 0.9
Sea Salt	2.8 <u>+</u> 1.3	2.3 <u>+</u> 0.2	2.6 <u>+</u> 1.1

Table S3 - Values of average S content in individual particles of dust, internally mixed dust & smoke, internally mixed dust and sea salt, and sea salt particles in the submicron, supermicron, and total size distribution.

	Average Particle Fraction w/ Detectable S (%)		
Particle Type	Submicron	Supermicron	Total
Dust	8 <u>+</u> 7	14 <u>+</u> 15	10 <u>+</u> 12
Dust+Smoke	44 <u>+</u> 15	20 <u>+</u> 11	35 <u>+</u> 18
Dust+SeaSalt	28 <u>+</u> 9	35 <u>+</u> 19	31 <u>+</u> 16
Sea Salt	36 <u>+</u> 22	87 <u>+</u> 10	58 <u>+</u> 31

Table S4 – Values of Average particle fractions with detectable S in dust, internally mixed dust & smoke, internally mixed dust and sea salt, and sea salt particles in the submicron, supermicron, and total size distribution.



Figure S3 – Elemental maps of internally mixed dust and sea salt particles determined using SEM/EDX. Red box represents where EDX analysis occurred on the particle.





Figure S4 – Elemental maps and corresponding EDX spectra for a dust particle, smoke particle, sea salt particle, and internally mixed dust and sea salt particle.