

Supplementary Table 1. 2011 US GEOTRACES cruise aerosol particulate sample identifications, sampling dates, sampling locations, and volumes of air filtered.

GEOTRACES ID	Air Mass Classification ID	Sampling Dates	Start Location (Lat, Long)	End Location (Lat, Long)
6250	N Am1	11/7-8/2011	39.71, -69.87	39.70, -69.80
6319	N Am2	11/8-9/2011	39.70, -69.80	39.35, -69.54
6452	N Am3	11/9-11/2011	39.35, -69.54	38.65, -69.20
6546	N Am4	11/12-13/2011	38.33, -68.87	38.36, -68.86
6677	N Am5	11/13-15/2011	38.36, -68.86	37.58, -68.40
6788	Mar4	11/15-17/2011	37.62, -68.38	37.62, -68.38
6903	N Am 6	11/19-20/2011	32.02, -64.44	31.75, -64.17
6964	N Am 7	11/20-21/2011	31.75, -64.17	31.55, -63.43
7156	Mar5	11/21-24/2011	31.53, -63.37	29.70, -56.82
7245	Mar6	11/24-26/2011	29.70, -56.82	27.58, -49.63
7316	Mar7	11/26-27/2011	27.58, -49.63	27.55, -49.55
7357	Mar8	11/27-28/2011	27.55, -49.55	26.31, -45.39
7426	Mar9	11/28-29/2011	26.28, -45.30	26.14, -44.83
7509	Mar10	11/29-30/2011	26.14, -44.83	25.58, -43.60
7587	Mar11	11/30-12/1/2011	25.55, -43.54	24.15, -40.22
7655	N Am8	12/1-2/2011	24.15, -40.22	24.15, -40.22
7697	Mar12	12/2-3/2011	24.15, -40.22	22.70, -36.73
7791	N Afr9	12/3-4/2011	22.70, -36.73	22.36, -35.87

GEOTRACES ID	Air Mass Classification ID	Sampling Dates	Start Location (Lat, Long)	End Location (Lat, Long)
7860	N Afr10	12/4-5/2011	22.36, -35.87	22.38, -35.87
7899	N Afr11	12/5-6/2011	22.37, -35.62	20.88, -32.62
7946	N Afr12	12/6-7/2011	20.88, -32.62	19.43, -29.38
8004	N Afr13	12/7-8/2011	19.43, -29.38	19.43, -29.38
8044	N Afr14	12/8-9/2011	19.43, -29.38	18.13, -26.13
8045	N Afr15	12/9/2011	17.75, -25.31	17.40, -24.53

Supplementary Table 2. Average organic matter molecular characteristics for the 2011 US GEOTRACES cruise aerosol particulate samples by number and weighted by spectral intensity.

Sample		O/C	H/C	AI _{mod}		CHO	CHON	CHOS	CHONS	CHOP
N Am1	Number				Number	1523	842	902	229	130
	Number Ave	0.49	1.49	0.12	Number %	41%	23%	25%	6.2%	3.5%
	Weighted Ave	0.49	1.53	0.10	Weighted %	48%	16%	29%	4.6%	2.0%
N Am2	Number				Number	1686	949	1089	425	129
	Number Ave	0.53	1.42	0.16	Number %	39%	22%	25%	9.8%	3.0%
	Weighted Ave	0.55	1.47	0.12	Weighted %	44%	14%	32%	8.1%	1.3%
N Am3	Number				Number	1190	444	881	239	145
	Number Ave	0.46	1.52	0.12	Number %	41%	15%	30%	8.2%	5.0%
	Weighted Ave	0.46	1.55	0.11	Weighted %	40%	9.3%	36%	7.0%	6.7%
N Am4	Number				Number	2142	1298	649	187	190
	Number Ave	0.51	1.34	0.19	Number %	47%	29%	14%	4.1%	4.2%
	Weighted Ave	0.51	1.35	0.18	Weighted %	59%	21%	14%	2.5%	2.2%
N Am5	Number				Number	1419	417	599	31	236
	Number Ave	0.47	1.39	0.18	Number %	52%	16%	21%	1.0%	8.3%
	Weighted Ave	0.47	1.40	0.17	Weighted %	60%	11%	20%	0.7%	6.1%
Mar4	Number				Number	545	61	140	41	76
	Number Ave	0.37	1.45	0.20	Number %	58%	6.5%	15%	4.3%	8.0%
	Weighted Ave	0.37	1.41	0.22	Weighted %	58%	5.9%	13%	4.5%	8.2%
N Am 6	Number				Number	917	933	199	32	67
	Number Ave	0.35	1.59	0.11	Number %	41%	41%	8.8%	1.4%	3.0%
	Weighted Ave	0.34	1.64	0.10	Weighted %	36%	49%	5.7%	1.2%	2.1%
N Am 7	Number				Number	843	1418	474	103	176
	Number Ave	0.33	1.65	0.10	Number %	26%	44%	15%	3.2%	5.5%
	Weighted Ave	0.30	1.69	0.08	Weighted %	24%	58%	8.0%	2.6%	2.9%
Mar5	Number				Number	885	233	629	56	259
	Number Ave	0.35	1.56	0.14	Number %	41%	11%	29%	2.6%	12%
	Weighted Ave	0.34	1.56	0.14	Weighted %	44%	7.5%	32%	2.2%	9.4%
Mar6	Number				Number	599	109	552	66	71
	Number Ave	0.36	1.54	0.15	Number %	41%	7.3%	38%	4.6%	4.9%
	Weighted Ave	0.37	1.56	0.15	Weighted %	33%	4.4%	46%	7.7%	3.9%
Mar7	Number				Number	769	147	683	47	200
	Number Ave	0.33	1.60	0.12	Number %	40%	7.7%	36%	2.5%	10%
	Weighted Ave	0.33	1.60	0.12	Weighted %	40%	5.2%	42%	2.4%	7.9%
Mar8	Number				Number	640	23	328	23	61
	Number Ave	0.41	1.53	0.14	Number %	58%	2.1%	30%	2.1%	5.5%
	Weighted Ave	0.41	1.55	0.13	Weighted %	58%	1.7%	32%	1.6%	4.4%
Mar9	Number				Number	528	43	305	20	47
	Number Ave	0.37	1.54	0.15	Number %	54%	4.4%	31%	2.1%	4.8%
	Weighted Ave	0.37	1.54	0.15	Weighted %	56%	3.8%	32%	2.0%	4.1%
Mar10	Number				Number	597	68	347	38	97

	Number Ave	0.34	1.55	0.15	Number %	49%	5.6%	29%	31%	8.0%
	Weighted Ave	0.33	1.52	0.16	Weighted %	45%	6.8%	32%	26%	8.2%
Mar11	Number				Number	768	229	264	48	205
	Number Ave	0.34	1.60	0.11	Number %	48%	14%	16%	3.0%	13%
	Weighted Ave	0.33	1.61	0.11	Weighted %	51%	14%	15%	3.2%	10%
N Am8	Number				Number	829	62	412	16	175
	Number Ave	0.39	1.53	0.13	Number %	55%	4.1%	27%	1.1%	12%
	Weighted Ave	0.39	1.52	0.14	Weighted %	59%	2.9%	26%	1.7%	8.8%
Mar12	Number				Number	565	69	327	25	45
	Number Ave	0.39	1.57	0.13	Number %	53%	6.4%	31%	2.3%	4.2%
	Weighted Ave	0.40	1.60	0.12	Weighted %	33%	4.4%	46%	7.7%	3.9%
N Afr9	Number				Number	1023	222	182	6	105
	Number Ave	0.38	1.51	0.14	Number %	65%	14%	12%	0.4%	6.7%
	Weighted Ave	0.37	1.51	0.15	Weighted %	69%	13%	10%	0.3%	5.0%
N Afr10	Number				Number	1615	404	299	24	188
	Number Ave	0.46	1.41	0.18	Number %	64%	16%	12%	0.9%	7.4%
	Weighted Ave	0.45	1.41	0.17	Weighted %	75%	11%	8.5%	0.7%	4.6%
N Afr11	Number				Number	1480	558	300	4	95
	Number Ave	0.46	1.36	0.20	Number %	60%	23%	12%	0.2%	3.9%
	Weighted Ave	0.48	1.35	0.20	Weighted %	72%	16%	9.3%	0.1%	2.2%
N Afr12	Number				Number	1370	173	301	13	161
	Number Ave	0.45	1.41	0.18	Number %	67%	8.5%	15%	0.6%	7.9%
	Weighted Ave	0.45	1.41	0.18	Weighted %	77%	5.4%	11%	0.5%	5.5%
N Afr13	Number				Number	1521	247	169	19	141
	Number Ave	0.47	1.38	0.20	Number %	72%	12%	8.0%	0.9%	6.7%
	Weighted Ave	0.47	1.37	0.19	Weighted %	81%	7.5%	6.0%	0.6%	4.5%
N Afr14	Number				Number	1627	277	262	16	162
	Number Ave	0.49	1.38	0.19	Number %	69%	12%	11%	0.7%	6.9%
	Weighted Ave	0.49	1.38	0.18	Weighted %	79%	7.3%	8.2%	0.4%	4.6%
N Afr15	Number				Number	984	66	62	17	88
	Number Ave	0.46	1.38	0.20	Number %	79%	5.3%	5.0%	1.4%	7.0%
	Weighted Ave	0.46	1.38	0.20	Weighted %	80%	4.5%	4.9%	1.3%	6.8%
All Samples					Number	3282	3441	1910	971	1355
					Number %	28%	29%	16%	8.2%	11%