

Table S1. List of dust measurement sites

Dust deposition measurements						Dust concentration measurements		
Latitude	Longitude	$\frac{\text{mg}}{\text{m}^{-2} \text{ yr}^{-1}}$	Latitude	Longitude	$\frac{\text{mg}}{\text{m}^{-2} \text{ yr}^{-1}}$	Latitude	Longitude	$\frac{\mu\text{g}}{\text{m}^{-3}}$
Ginoux et al. (2001)			18.50	-21.08	18.74	Stier et al. (2005)		
52.92	174.06	0.60	19.00	-20.17	21.55	-34.3	18.5	2.20
45.50	6.50	2.10	20.92	-19.75	21.92	-62.2	-58.3	0.52
41.80	2.30	5.30	20.92	-19.74	27.20	-67.6	62.5	0.10
28.20	-177.35	0.60	20.92	-19.74	11.39	-64.8	-64.1	0.35
25.75	-80.25	1.62	21.15	-20.68	19.70	-22.1	167.0	0.17
21.30	-157.6	0.42	21.15	-20.69	20.48	-8.5	-179.2	0.19
11.30	162.30	0.44	21.15	-31.17	3.73	-0.5	166.9	0.10
3.90	-159.30	0.09	21.93	-25.23	6.70	-29.1	168.0	0.84
-0.53	166.95	0.23	24.55	-22.83	5.21	-21.2	-159.8	0.11
-14.25	-170.60	0.15	28.00	-21.98	2.40	-14.2	-170.6	0.16
-21.25	-159.75	0.21	29.11	-15.45	4.15	28.2	-177.4	0.72
-22.15	167.00	0.37	31.55	-24.67	2.36	21.3	-157.7	0.66
-29.08	167.98	0.64	32.08	-64.25	1.90	33.5	126.5	14.14
-34.50	172.75	0.14	33.15	-21.98	1.76	26.9	128.2	8.37
40.00	85.00	450.00	33.82	-21.02	4.75	3.9	-159.3	0.10
32.00	34.50	30.00	47.72	-20.87	3.10	11.3	162.3	0.24
Tegen et al. (2002)			47.83	-19.50	2.80	13.2	-59.4	14.48
-64.93	-2.59	0.52	Mahowald et al. (2009)			28.3	-16.5	30.18
5.37	-85.58	4.80	42.00	9.0	15.43	32.3	-64.9	3.36
50.00	-144.98	0.30	-69.52	170.6	0.002	53.3	-9.9	1.00
-20.07	9.17	5.80	-75.00	-170.6	0.003	25.8	-80.2	4.59
-20.05	9.16	2.50	-76.45	-175.5	0.003	Mahowald et al. (2009)		
-20.05	9.16	3.80	-64.60	140.3	0.001	-21.5	165.0	0.18
-35.52	161.00	1.24	-64.88	141.0	0.001	-28.2	-177.4	0.84
-17.76	154.83	0.40	-64.97	141.4	0.001	21.3	-157.7	0.66
-12.99	155.99	0.73	-64.93	141.2	0.001	11.3	-162.3	0.31
0.00	175.00	0.92	-65.57	74.9	0.002	3.9	159.3	0.06
0.00	175.16	0.73	-64.90	75.0	0.003	43.1	141.3	1.20
1.22	160.57	0.84	-66.12	75.3	0.002	37.9	139.1	0.75
5.01	138.83	0.57	-66.30	75.7	0.002	52.7	174.0	0.86
12.02	134.29	0.11	-70.57	76.9	0.002	30.0	-176.0	0.91
30.00	175.00	3.00	-73.43	76.2	0.002	21.5	-158.0	0.74
34.42	177.74	3.25	-74.90	74.5	0.001	11.5	162.0	0.28
37.40	174.95	8.77	-75.85	71.5	0.001	3.9	-159.3	0.11
40.00	145.43	7.32	-66.77	112.8	0.001	-0.5	166.9	0.11
46.12	175.03	4.09	29.52	34.9	5.83	-13.5	-172.5	0.02
46.82	162.12	0.86	43.10	141.3	5.20	-21.5	165.0	0.18
10.00	65.00	1.50	31.50	35.3	44.57	-29.0	168.0	0.44
14.48	64.77	4.30	32.70	35.5	285.71	13.2	-59.4	8.74
15.47	68.75	7.40	35.20	24.8	21.26	32.3	-64.9	3.45
15.98	61.50	4.50	43.50	4.8	11.31	-40.7	144.7	0.51
16.25	60.47	6.10	43.60	7.3	1.80	16.7	-22.9	76.87
17.40	58.80	12.40	36.30	-5.4	22.80	33.5	126.5	4.15
-2.18	-9.90	1.20	54.42	-7.2	2.09	-8.5	179.2	0.17
1.79	-11.13	4.30	54.30	-8.6	1.57	26.9	128.3	4.76
11.48	-21.02	22.62	43.60	7.3	32.00	28.3	-16.5	22.27
						53.3	-9.9	0.51
						27.8	-80.3	5.57