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Supplement of

Predicting the mineral composition of dust aerosols – Part 2: Model evaluation and identification of key processes with observations

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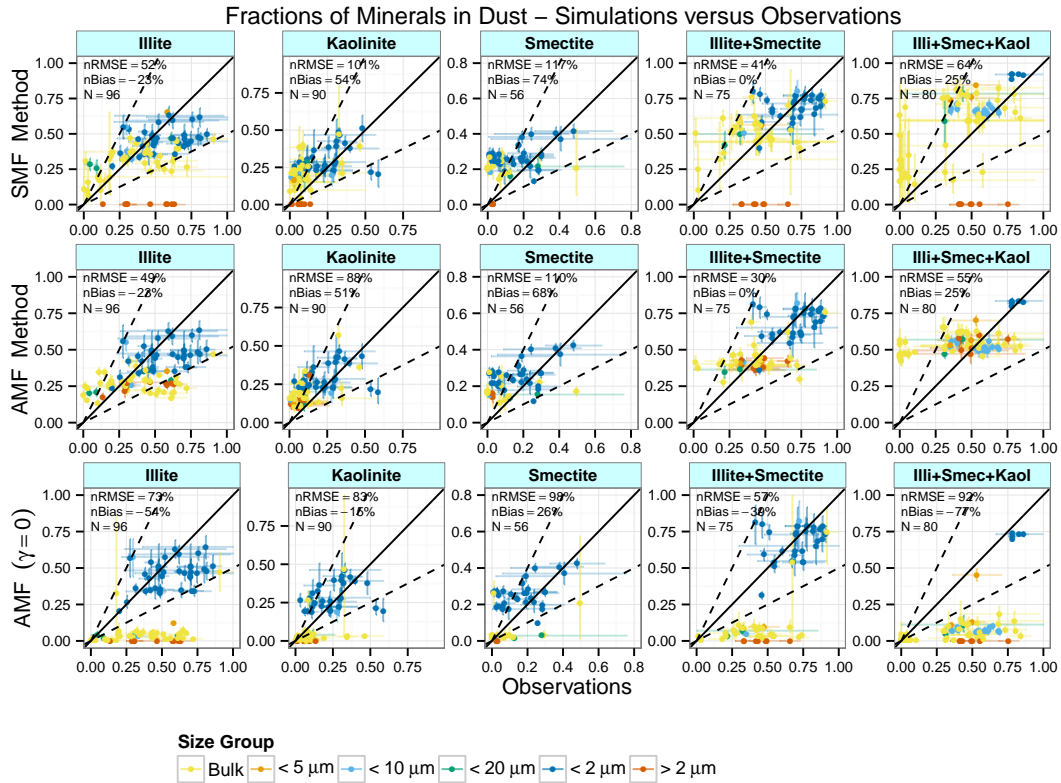


Figure S1. Scatter plot of mineral fractions of illite, kaolinite, smectite, the sum of illite and smectite, and the sum of illite, kaolinite, and smectite for all size groups together, as simulated with soil mineral fraction (SMF) method, aerosol mineral fraction (AMF) method, and in the simulation without soil reaggregation (AMF ($\gamma = 0$)) versus observations. The dashed lines mark a ratio of 2:1 and 1:2 between simulated and observed mineral fractions. The horizontal and vertical error bars show the 95% confidence intervals of the observation and simulation data, respectively, based on an assumed beta distribution using the method of moments, when sufficient data were available for the calculation.

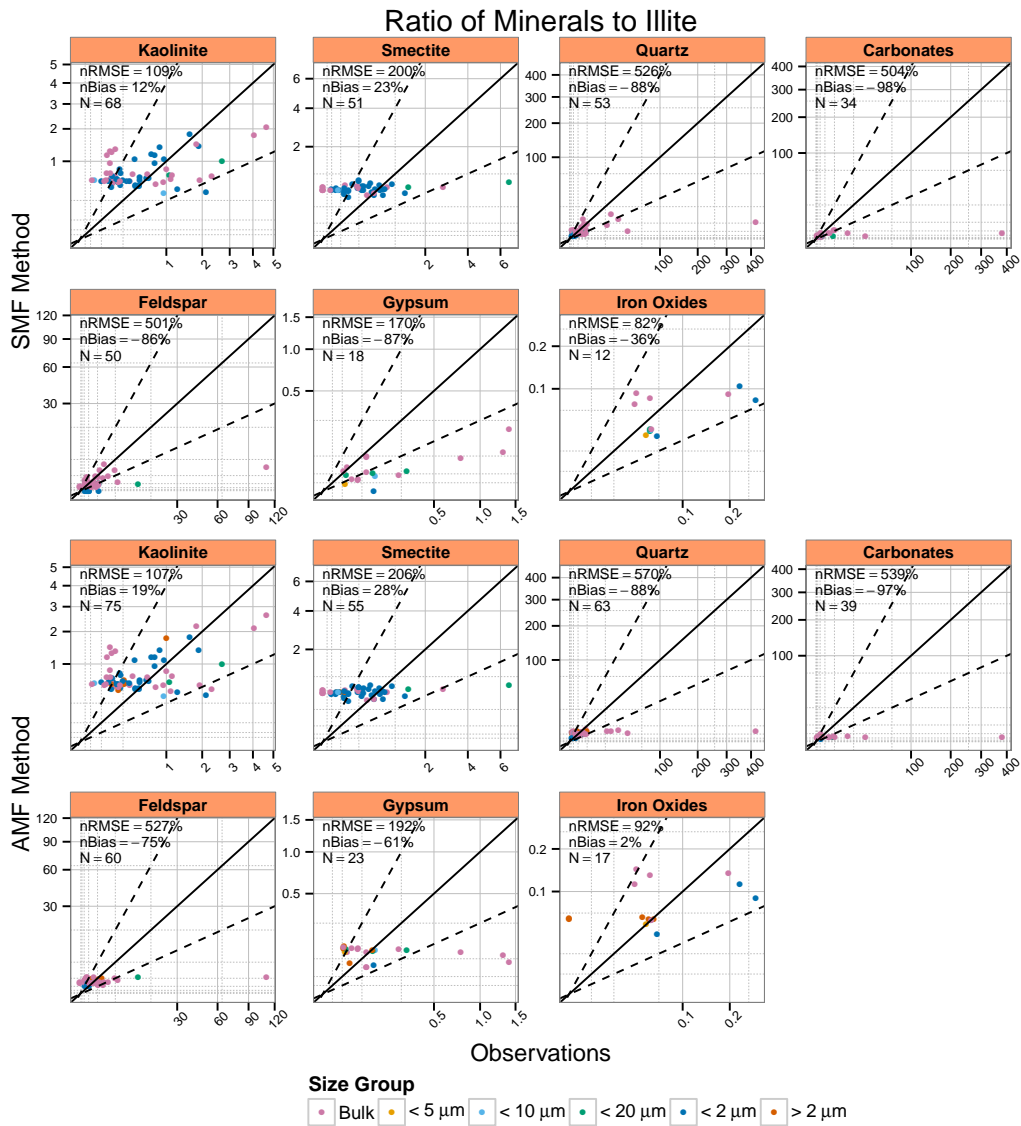


Figure S2. Measured versus simulated ratios between various mineral phases and illite for the soil mineral fraction (SMF) method and the aerosol mineral fraction (AMF) method. The dashed lines mark a ratio of 2:1 and 1:2 between simulated and observed mineral ratios.

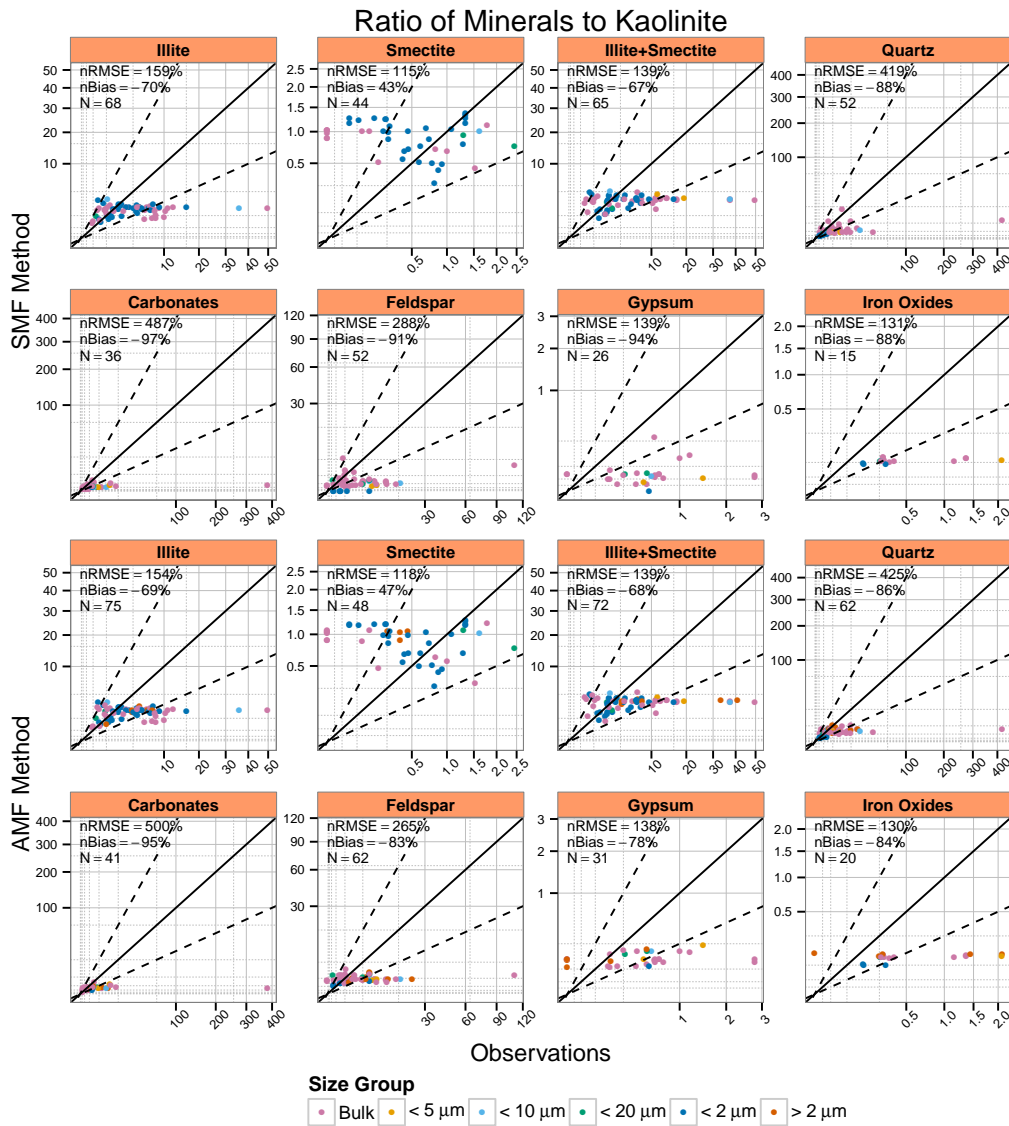


Figure S3. Measured versus simulated ratios between various mineral phases and kaolinite for the soil mineral fraction (SMF) method and the aerosol mineral fraction (AMF) method. The dashed lines mark a ratio of 2:1 and 1:2 between simulated and observed mineral ratios.

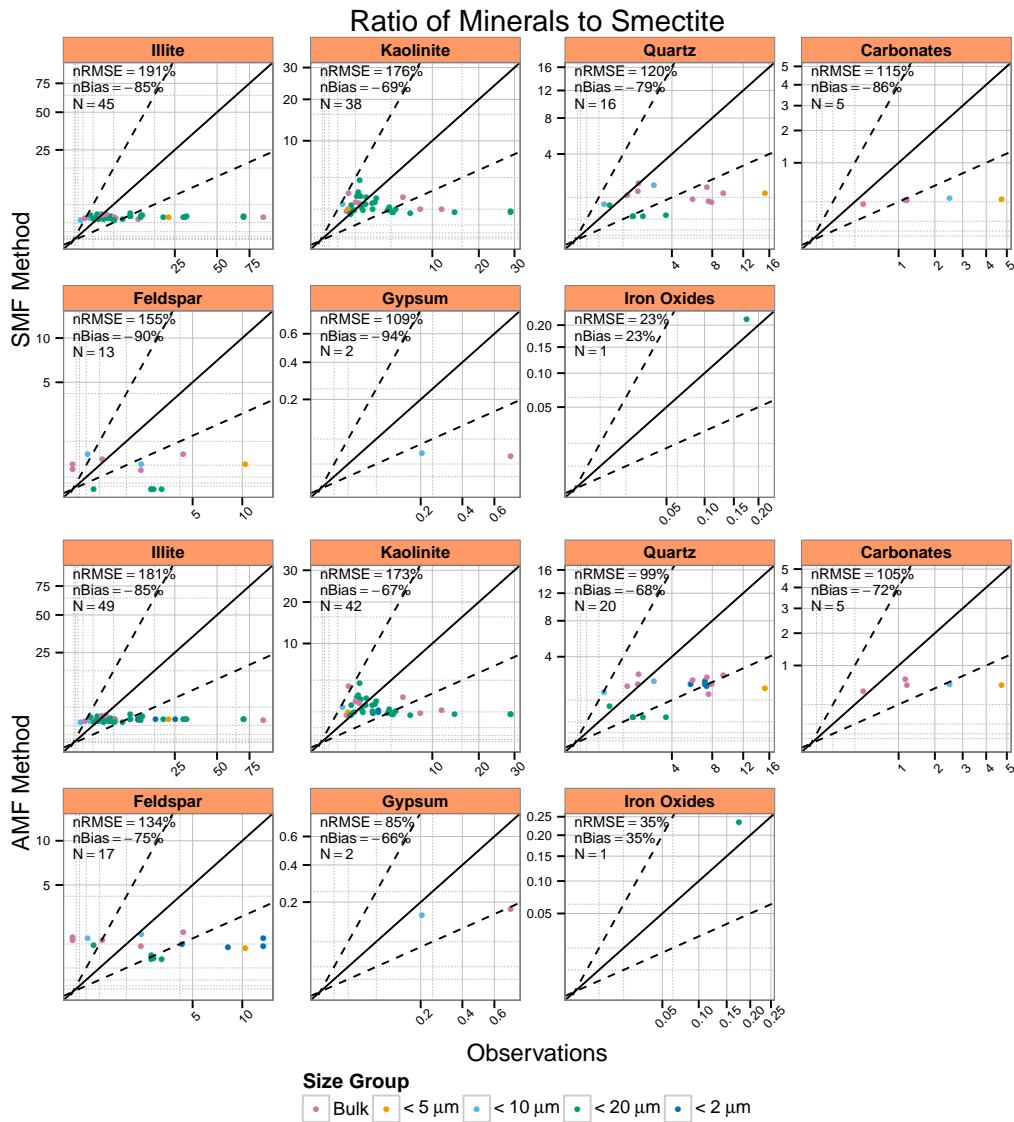


Figure S4. Measured versus simulated ratios between various mineral phases and smectite for the soil mineral fraction (SMF) method and the aerosol mineral fraction (AMF) method. The dashed lines mark a ratio of 2:1 and 1:2 between simulated and observed mineral ratios.

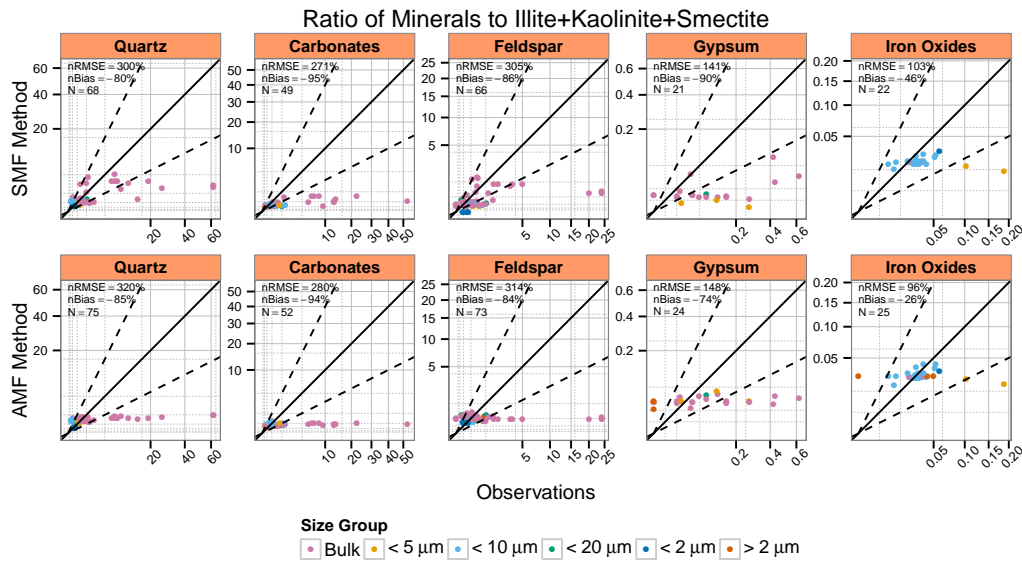


Figure S5. Measured versus simulated ratios between various mineral phases and the sum of illite, kaolinite, and smectite for the soil mineral fraction (SMF) method and the aerosol mineral fraction (AMF) method. The dashed lines mark a ratio of 2:1 and 1:2 between simulated and observed mineral ratios.

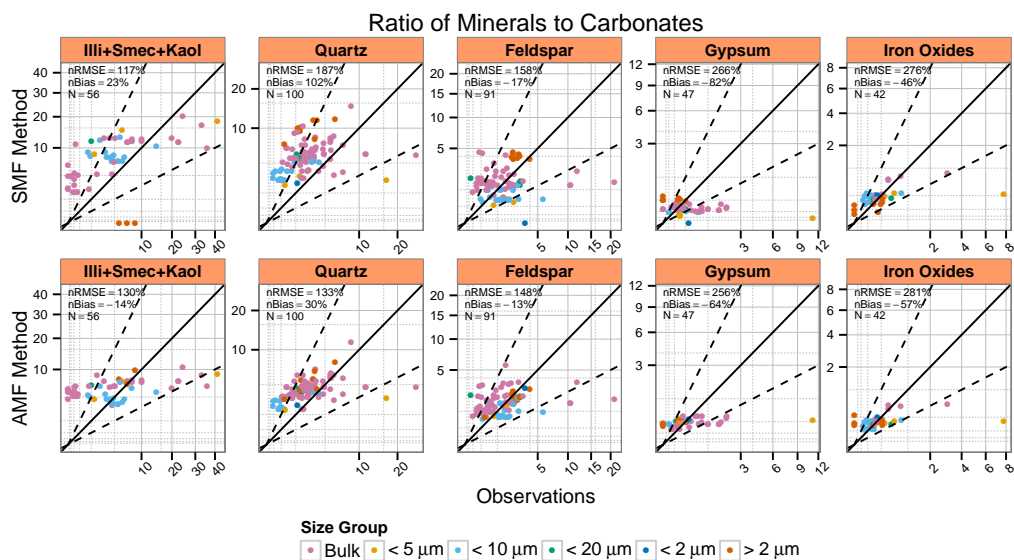


Figure S6. Measured versus simulated ratios between various mineral phases and carbonates for the soil mineral fraction (SMF) method and the aerosol mineral fraction (AMF) method. The dashed lines mark a ratio of 2:1 and 1:2 between simulated and observed mineral ratios.

2 Supplementary Tables

Table S1: Mineral fraction data used in evaluation of the model. Mean and standard deviation (StdDev) are calculated from temporal data in the reference or are provided by the reference. N_O is the number of data points as reported by the reference (e.g., the average). Bold faced minerals are used for the comparison with the ModelE minerals.

Reference: Adedokum et al. (1989)			Size Range: Bulk
Ile-Ife, Nigeria (Lat: 7°17'N, Lon: 4°20'E)			
Sample time range: 01–02/1984, 01–02/1985			
Variable: Total Dry Deposition			
Note: Average of 12 sites			
Mineral	Mean (%)	StdDev (%)	N_O
Halloysite	1.45	na	1
Kaolinite	10.28	na	1
Mica	2.54	na	1
Microcline	9.74	na	1
Quartz	74.78	na	1
Reference: Alastuey et al. (2005)			Size Range: Bulk
Izaña, Tenerife, Spain (Lat: 28°19'N, Lon: 16°30'W)			
Sample time range: 07/29/2002			
Variable: Concentration			
Note: Dust event			
Mineral	Mean (%)	StdDev (%)	N_O
Albite	5.00	na	1
Calcite	9.00	na	1
Clinochlore	8.00	na	1
Gypsum	3.50	na	1
Halite	0.00	na	1
Illite	15.00	na	1
Kaolinite	14.00	na	1
Mascagnite	6.00	na	1
Microcline	4.00	na	1
Palygorskite	10.00	na	1
Quartz	23.00	na	1
Reference: Alastuey et al. (2005)			Size Range: Bulk
Santa Cruz de Tenerife, Spain (Lat: 28°28'N, Lon: 16°15'W)			
Sample time range: 07/29/2002			
Variable: Surface Concentration			
Note: Dust event			
Mineral	Mean (%)	StdDev (%)	N_O
Albite	5.00	na	1
Calcite	6.00	na	1
Clinochlore	9.00	na	1

Gypsum	10.00	na	1
Halite	2.00	na	1
Illite	13.00	na	1
Kaolinite	10.00	na	1
Mascagnite	5.00	na	1
Microcline	5.00	na	1
Palygorskite	9.00	na	1
Quartz	23.00	na	1

Reference: Al-Awadhi and AlShuaibi (2013) Size Range: Bulk

Kuwait City, Kuwait (Lat: 29°22'11"N, Lon: 47°58'42"E)

Sample time range: 03/2011–02/2012 (monthly)

Variable: Total deposition

Note: Spatial-temporal sampling

Mineral	Mean (%)	StdDev (%)	N_O
Albite	9.38	2.51	10
Calcite	37.76	6.12	10
Dolomite	5.88	1.87	10
Illite	11.63	1.67	10
Orthoclase	5.27	4.79	10
Quartz	28.37	11.89	10

Reference: Al-Dousari and Al-Awadhi (2012) Size Range: Bulk

Ain, West U.A.E. (Lat: 24°12'27"N, Lon: 55°44'41"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	34.00	na	1
Clay	1.00	na	1
Dolomite	19.00	na	1
Feldspar	20.00	na	1
Others	0.00	na	1
Quartz	26.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012) Size Range: Bulk

Amman, Jordan (Lat: 31°56'59"N, Lon: 35°55'58"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	52.00	na	1
Clay	0.00	na	1
Dolomite	16.00	na	1
Feldspar	4.00	na	1
Others	7.00	na	1
Quartz	21.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012) Size Range: Bulk

Bubiyah, East Kuwait (Lat: 29°46'11"N, Lon: 48°15'20"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	20.00	na	1
Clay	5.00	na	1
Dolomite	14.00	na	1
Feldspar	18.00	na	1
Others	14.00	na	1
Quartz	28.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

Doha, Qatar (Lat: 25°17'12"N, Lon: 51°32'0"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	21.00	na	1
Clay	0.00	na	1
Dolomite	7.00	na	1
Feldspar	24.00	na	1
Others	0.00	na	1
Quartz	48.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

Dubai, East U.A.E. (Lat: 24°57'N, Lon: 55°20'E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	25.00	na	1
Clay	0.00	na	1
Dolomite	21.00	na	1
Feldspar	6.00	na	1
Others	27.00	na	1
Quartz	21.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

Manama, Bahrain (Lat: 26°13'0"N, Lon: 50°35'0"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	25.00	na	1
Clay	3.00	na	1
Dolomite	16.00	na	1
Feldspar	10.00	na	1
Others	15.00	na	1
Quartz	32.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

National Park, North Kuwait (Lat: 29°30'46"N, Lon: 47°48'27"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	38.00	na	1
Clay	2.00	na	1
Dolomite	7.00	na	1
Feldspar	10.00	na	1
Others	5.00	na	1
Quartz	38.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

Sabiya, East Kuwait (Lat: 29°34'24"N, Lon: 48°10'17"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	26.00	na	1
Clay	6.00	na	1
Dolomite	11.00	na	1
Feldspar	12.00	na	1
Others	5.00	na	1
Quartz	39.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

Wadi Dawasir, Saudi Arabia (Lat: 20°27'52"N, Lon: 44°47'14"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	13.00	na	1
Clay	1.00	na	1
Dolomite	0.00	na	1
Feldspar	24.00	na	1
Others	0.00	na	1
Quartz	62.00	na	1

Reference: Al-Dousari and Al-Awadhi (2012)

Size Range: Bulk

Warba, NE Kuwait (Lat: 29°59'38"N, Lon: 48°4'0"E)

Sample time range: 11/2006–12/2007 (monthly)

Variable: Total deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	30.00	na	1
Clay	5.00	na	1
Dolomite	11.00	na	1
Feldspar	8.00	na	1
Others	9.00	na	1
Quartz	36.00	na	1

Reference: Al-Dousari et al. (2013)			Size Range: Bulk
Cairo, Egypt (Lat: 30°03'N, Lon: 31°14'E)			
Sample time range: 01/2007–12/2007 (monthly)			
Variable: Total deposition			
Mineral	Mean (%)	StdDev (%)	N_O
Calcite	20.00	na	1
Clay	0.00	na	1
Dolomite	14.00	na	1
Feldspar	15.00	na	1
Others	0.00	na	1
Quartz	51.00	na	1
Reference: Al-Dousari et al. (2013)			Size Range: Bulk
Cartagena, Colombia (Lat: 10°24'N, Lon: 75°30'W)			
Sample time range: 01/2007–12/2007 (monthly)			
Variable: Total deposition			
Mineral	Mean (%)	StdDev (%)	N_O
Calcite	0.00	na	1
Clay	0.00	na	1
Dolomite	0.00	na	1
Feldspar	33.00	na	1
Others	1.00	na	1
Quartz	66.00	na	1
Reference: Al-Dousari et al. (2013)			Size Range: Bulk
Zelfi, Saudi Arabia (Lat: 26°17'N, Lon: 44°48'E)			
Sample time range: 01/2007–12/2007 (monthly)			
Variable: Total deposition			
Mineral	Mean (%)	StdDev (%)	N_O
Calcite	13.00	na	1
Clay	1.00	na	1
Dolomite	0.00	na	1
Feldspar	24.00	na	1
Others	0.00	na	1
Quartz	62.00	na	1
Reference: Arnold et al. (1998)			Size Range: < 2 μm
ADIOS Experiment, North of Hawaii (Lat: 26°00'N, Lon: 155°00'W)			
Sample time range: 05/1986			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	4.86	1.72	12
Illite	68.88	9.97	12
Kaolinite	10.31	7.06	12
Plagioclase	5.19	5.23	12
Quartz	8.05	1.73	12

Smectite	2.28	0.75	12
Reference: Arnold et al. (1998) Size Range: 2 – 20 μm			
ADIOS Experiment, North of Hawaii (Lat: 26°00'N, Lon: 155°00'W)			
Sample time range: 05/1986			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	4.66	1.26	12
Illite	60.20	11.76	12
Kaolinite	9.35	5.72	12
Plagioclase	9.88	6.74	12
Quartz	13.53	6.61	12
Smectite	2.37	0.77	12
Reference: Arnold et al. (1998) Size Range: < 2 μm			
Moana Wave Cruise, Northeastern Pacific (Lat: Various, Lon: Various)			
Sample time range: 03–04/1987			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	4.44	1.71	10
Illite	51.12	15.65	10
Kaolinite	5.70	4.71	10
Plagioclase	7.16	6.55	10
Quartz	5.15	2.44	10
Smectite	2.60	1.24	10
Reference: Arnold et al. (1998) Size Range: 2 – 20 μm			
Moana Wave Cruise, Northeastern Pacific (Lat: Various, Lon: Various)			
Sample time range: 03–04/1987			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	4.72	2.65	10
Illite	33.37	14.22	10
Kaolinite	4.49	4.91	10
Plagioclase	17.02	11.09	10
Quartz	14.90	6.14	10
Smectite	2.03	0.99	10
Reference: Aston et al. (1973) Size Range: < 2 μm			
Telamon/Hector Cruise, Off West African Coast (Lat: Various, Lon: Various)			
Sample time range: 07–11/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	12.00	na	1
Illite	34.00	na	1
Kaolinite	29.00	na	1
Montmorillonite	25.00	na	1

Reference: Aston et al. (1973)			Size Range: Bulk
Telamon/Hector Cruise, Off West African Coast (Lat: Various, Lon: Various)			
Sample time range: 07–11/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	1.05	0.24	10
Carbon	8.21	4.17	10
Quartz	7.18	5.21	10
Reference: Aston et al. (1973)			Size Range: $< 2 \mu\text{m}$
Telamon/Hector Cruise, Northern Indian Ocean (Lat: Various, Lon: Various)			
Sample time range: 07–11/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	19.33	1.15	3
Illite	65.67	5.03	3
Kaolinite	9.33	0.58	3
Montmorillonite	5.67	4.04	3
Reference: Aston et al. (1973)			Size Range: Bulk
Telamon/Hector Cruise, Northern Indian Ocean (Lat: Various, Lon: Various)			
Sample time range: 07–11/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	1.00	0.00	6
Carbon	16.67	14.26	6
Quartz	5.33	5.00	6
Reference: Aston et al. (1973)			Size Range: Bulk
S. S. Telamon Cruise, Sea of China (Lat: Various, Lon: Various)			
Sample time range: 07–11/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	2.00	0.00	3
Carbon	16.60	5.40	3
Quartz	3.90	3.47	3
Reference: Aston et al. (1973)			Size Range: $< 2 \mu\text{m}$
Telamon/Hector Cruise, Southeastern Atlantic (Lat: Various, Lon: Various)			
Sample time range: 07–11/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	13.33	2.08	3
Illite	41.33	18.50	3
Kaolinite	26.33	14.57	3
Montmorillonite	19.00	2.65	3
Reference: Aston et al. (1973)			Size Range: Bulk

Telamon/Hector Cruise, Southeastern Atlantic (Lat: Various, Lon: Various)
 Sample time range: 07–11/1971
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	1.00	0.00	6
Carbon	12.64	9.71	6
Quartz	3.18	2.18	6

Reference: Aston et al. (1973) Size Range: < 2 μm

Telamon/Hector Cruise, Southeast Africa Coast (Lat: Various, Lon: Various)

Sample time range: 07–11/1971

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	29.00	22.00	2
Illite	53.00	22.00	2
Kaolinite	11.33	5.33	2
Montmorillonite	6.67	5.33	2

Reference: Aston et al. (1973) Size Range: Bulk

Telamon/Hector Cruise, Southeast Africa Coast (Lat: Various, Lon: Various)

Sample time range: 07–11/1971

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	1.00	0.00	5
Carbon	21.22	17.39	5
Quartz	4.78	5.72	5

Reference: Avila et al. (1997) Size Range: Bulk

Montseny Mountains, Spain (Lat: 41°46'N, Lon: 2°21'W)

Sample time range: 11/1984–03/1992

Variable: Bulk Deposition

Note: Red Rain events

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	8.68	7.37	13
Dolomite	4.54	2.56	13
Feldspar	3.38	2.43	13
Illite	38.96	11.17	13
Kaolinite	6.18	3.87	13
Palygorskite	8.85	2.38	13
Quartz	18.73	3.57	13
Smectite	11.00	9.00	12

Reference: Awadh (2012) Size Range: Bulk

Baghdad, Iraq (Lat: 33°20'N, Lon: 44°26'E)

Sample time range: 03/2008–06/2008

Variable: Total Dry Deposition

Note: No clays in samples; dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	35.56	12.22	5
Dolomite	0.80	0.30	5
Feldspar	4.98	2.26	5
Gypsum	4.88	2.39	5
Heavy Minerals	3.20	0.88	5
Quartz	48.96	8.75	5

Reference: Chester and Johnson (1971a) Size Range: < 2 μm

M. V. Surveyor Cruise, Off Moroccan Coast (Lat: Various, Lon: Various)

Sample time range: 11/06/1970–11/13/1970

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	13.20	1.39	2
Illite	42.40	2.77	2
Kaolinite	25.20	2.08	2
Montmorillonite	17.20	5.54	2

Reference: Chester and Johnson (1971b) Size Range: < 2 μm

R. R. S. Discovery Cruise, Off West African Coast (Lat: Various, Lon: Various)

Sample time range: 04/22/1969–05/05/1969

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	15.67	3.06	3
Illite	53.67	6.66	3
Kaolinite	21.67	2.31	3
Montmorillonite	9.00	6.24	3

Reference: Chester et al. (1971) Size Range: < 2 μm

RMMV Good Hope Castle Cruise, Eastern Atlantic (Lat: Various, Lon: Various)

Sample time range: 07/1970–08/1970

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	18.00	7.68	5
Illite	34.40	10.41	5
Kaolinite	32.60	17.26	5
Montmorillonite	15.00	17.52	5

Reference: Chester et al. (1972) Size Range: < 2 μm

M. V. Elpenor Cruise, Southeastern Atlantic (Lat: Various, Lon: Various)

Sample time range: 03/17/1971–03/28/1971

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	15.24	5.91	13
Illite	41.28	14.00	13
Kaolinite	30.98	12.01	13

Montmorillonite	12.29	8.59	10
Reference: Chester et al. (1977)			Size Range: < 2 μm
R. R. S. Shackleton Cruise, Eastern Mediterranean (Lat: Various, Lon: Various)			
Sample time range: Summer 1972			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	6.81	5.05	16
Illite	44.50	10.17	16
Kaolinite	20.88	6.50	16
Smectite	27.81	12.20	16
Reference: Chester et al. (1977)			Size Range: Bulk
R. R. S. Shackleton Cruise, Eastern Mediterranean (Lat: Various, Lon: Various)			
Sample time range: Summer 1972			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	6.16	4.05	16
Quartz	9.06	1.69	16
Reference: Chester et al. (1977)			Size Range: < 2 μm
R. V. Chain Cruise, Eastern Mediterranean (Lat: Various, Lon: Various)			
Sample time range: Spring 1975			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	6.40	3.91	10
Illite	39.70	6.63	10
Kaolinite	50.40	3.89	10
Smectite	3.50	0.62	10
Reference: Chester et al. (1977)			Size Range: Bulk
R. V. Chain Cruise, Eastern Mediterranean (Lat: Various, Lon: Various)			
Sample time range: Spring 1975			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	25.80	11.62	10
Quartz	20.00	2.31	10
Reference: Chester et al. (1984)			Size Range: < 2 μm
R. R. S. Shackleton Cruise, Tyrrhenian Sea (Lat: Various, Lon: Various)			
Sample time range: 10/08/1979–10/25/1979			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	12.50	6.55	8
Illite	61.38	12.00	8
Kaolinite	25.25	15.28	8
Montmorillonite	0.88	1.25	8
Reference: Delany et al. (1967)			Size Range: < 2 μm

Kitridge Point, Barbados, Caribbean (Lat: 13°10'N, Lon: 59°25'W)

Sample time range: 10/1965–01/1966

Variable: Surface Concentration

Note: PM2: On a CaCO₃ free base

Mineral	Mean (%)	StdDev (%)	<i>N_O</i>
Chlorite	7.17	4.77	10
Illite	35.95	7.63	10
Kaolinite	24.64	16.13	10
Montmorillonite	18.85	3.94	10

Reference: Díaz-Hernández et al. (2011)

Size Range: < 20 μm

Granada Depression, Spain (Lat: 37°10'N, Lon: 3°31'W)

Sample time range: 1992

Variable: Bulk Deposition

Note: Illite and Muscovite together

Mineral	Mean (%)	StdDev (%)	<i>N_O</i>
Amorphous Material	3.37	0.62	43
Bassanite	2.39	0.71	43
Calcite	12.46	5.41	43
Chlorite	3.73	1.15	43
Dolomite	13.53	6.15	43
Feldspar	0.81	0.32	43
Graphite	1.04	0.42	43
Gypsum	2.12	0.99	43
Halite	4.43	1.59	43
Illite	7.44	2.63	43
Kaolinite	8.00	2.83	43
Paragonite	2.58	0.85	43
Quartz	27.73	8.50	43
Smectite	10.35	3.36	43

Reference: Enete et al. (2012)

Size Range: < 2 μm

Enugu, Nigeria (Lat: Various, Lon: Various)

Sample time range: 10/2009–04/2010, 10/2010–04/2011 (weekly)

Variable: Total deposition

Note: Average of maximum and minimum

Mineral	Mean (%)	StdDev (%)	<i>N_O</i>
Al-Chloride	11.00	na	1
Ca-Na-feldspar	1.50	na	1
Fe-Al Oxyhydroxide	3.50	na	1
Fe-illite	13.00	na	1
Illite	13.00	na	1
Kaolinite	24.50	na	1
K-feldspar	1.50	na	1
Quartz	7.00	na	1
Vermiculite	7.00	na	1

Reference: Enete et al. (2012) Size Range: 2 – 50 μm

Enugu, Nigeria (Lat: Various, Lon: Various)

Sample time range: 10/2009–04/2010, 10/2010–04/2011 (weekly)

Variable: Total deposition

Note: Average of maximum and minimum

Mineral	Mean (%)	StdDev (%)	N_O
Ca-Na-feldspar	2.00	na	1
Kaolinite	15.00	na	1
K-feldspar	21.00	na	1
Mica	15.00	na	1
Quartz	58.00	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Bagram, Afghanistan (Lat: 34°57'N, Lon: 69°16'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	13.20	na	1
Calcite	8.40	na	1
Carbon	0.50	na	1
Ca-Si	12.70	na	1
Clay	31.80	na	1
Dolomite	8.50	na	1
Iron oxides	1.30	na	1
K-feldspar	11.00	na	1
Lead	0.40	na	1
Misc	2.10	na	1
Na-feldspar	1.70	na	1
Quartz	4.60	na	1
Salts	1.60	na	1
Si-Mg	2.10	na	1
Sulfates	0.10	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Khowst, Afghanistan (Lat: 33°22'N, Lon: 69°58'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	5.10	na	1
Calcite	5.50	na	1
Carbon	1.66	na	1
Ca-Si	6.80	na	1
Clay	50.90	na	1
Dolomite	1.30	na	1
Iron oxides	0.40	na	1

K-feldspar	11.00	na	1
Lead	0.02	na	1
Misc	0.02	na	1
Na-feldspar	2.50	na	1
Quartz	5.10	na	1
Salts	1.30	na	1
Si-Mg	8.00	na	1
Sulfates	0.40	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Djibouti (Lat: 11°33'N, Lon: 43°09'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	12.70	na	1
Calcite	2.50	na	1
Carbon	0.80	na	1
Ca-Si	10.20	na	1
Clay	49.20	na	1
Dolomite	0.90	na	1
Iron oxides	2.60	na	1
K-feldspar	5.50	na	1
Lead	0.90	na	1
Misc	0.80	na	1
Na-feldspar	1.30	na	1
Quartz	1.70	na	1
Salts	7.60	na	1
Si-Mg	1.60	na	1
Sulfates	1.70	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Tallil, Iraq (Lat: 30°56'N, Lon: 46°5'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	6.80	na	1
Calcite	7.60	na	1
Carbon	0.10	na	1
Ca-Si	14.80	na	1
Clay	55.50	na	1
Dolomite	2.50	na	1
Iron oxides	0.70	na	1
K-feldspar	4.20	na	1
Lead	0.60	na	1
Misc	0.60	na	1
Na-feldspar	1.30	na	1

Quartz	1.70	na	1
Salts	1.70	na	1
Si-Mg	0.60	na	1
Sulfates	1.30	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm
 Al Asad, Iraq (Lat: 33°48'N, Lon: 42°26'E)
 Sample time range: 2005 to 2007 (irregularly)
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	5.90	na	1
Calcite	13.10	na	1
Carbon	0.40	na	1
Ca-Si	14.00	na	1
Clay	31.80	na	1
Dolomite	21.20	na	1
Iron oxides	0.90	na	1
K-feldspar	3.20	na	1
Lead	0.80	na	1
Misc	1.30	na	1
Na-feldspar	1.30	na	1
Quartz	1.70	na	1
Salts	1.30	na	1
Si-Mg	0.40	na	1
Sulfates	2.50	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm
 Balad, Iraq (Lat: 33°56'N, Lon: 44°22'E)
 Sample time range: 2005 to 2007 (irregularly)
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	10.60	na	1
Calcite	8.10	na	1
Carbon	0.80	na	1
Ca-Si	15.70	na	1
Clay	45.30	na	1
Dolomite	1.70	na	1
Iron oxides	1.30	na	1
K-feldspar	5.50	na	1
Lead	1.29	na	1
Misc	0.01	na	1
Na-feldspar	1.30	na	1
Quartz	3.80	na	1
Salts	1.70	na	1
Si-Mg	2.10	na	1
Sulfates	0.80	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Tikrit, Iraq (Lat: 34°41'N, Lon: 43°33'E)
 Sample time range: 2005 to 2007 (irregularly)
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	13.50	na	1
Calcite	9.40	na	1
Carbon	0.80	na	1
Ca-Si	23.40	na	1
Clay	35.60	na	1
Dolomite	0.40	na	1
Iron oxides	0.40	na	1
K-feldspar	4.20	na	1
Lead	1.20	na	1
Misc	0.10	na	1
Na-feldspar	0.90	na	1
Quartz	3.40	na	1
Salts	0.10	na	1
Si-Mg	1.20	na	1
Sulfates	5.40	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Taji, Iraq (Lat: 33°32'N, Lon: 44°17'E)
 Sample time range: 2005 to 2007 (irregularly)
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	9.70	na	1
Calcite	6.80	na	1
Carbon	0.60	na	1
Ca-Si	17.00	na	1
Clay	44.90	na	1
Dolomite	3.00	na	1
Iron oxides	1.20	na	1
K-feldspar	4.20	na	1
Lead	0.70	na	1
Misc	0.80	na	1
Na-feldspar	1.30	na	1
Quartz	2.60	na	1
Salts	3.40	na	1
Si-Mg	1.30	na	1
Sulfates	2.50	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Baghdad, Iraq (Lat: 33°18'N, Lon: 44°15'E)
 Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	12.30	na	1
Calcite	8.50	na	1
Carbon	1.29	na	1
Ca-Si	17.30	na	1
Clay	39.90	na	1
Dolomite	2.90	na	1
Iron oxides	1.30	na	1
K-feldspar	3.80	na	1
Lead	0.01	na	1
Misc	0.80	na	1
Na-feldspar	1.20	na	1
Quartz	2.60	na	1
Salts	3.00	na	1
Si-Mg	1.70	na	1
Sulfates	3.40	na	1

Reference: Engelbrecht et al. (2009)

Size Range: < 10 μm

Central Kuwait (Lat: 29°21'N, Lon: 47°31'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	7.60	na	1
Calcite	6.80	na	1
Carbon	0.20	na	1
Ca-Si	13.60	na	1
Clay	55.50	na	1
Dolomite	2.60	na	1
Iron oxides	1.20	na	1
K-feldspar	3.80	na	1
Lead	0.30	na	1
Misc	0.80	na	1
Na-feldspar	1.30	na	1
Quartz	2.50	na	1
Salts	1.30	na	1
Si-Mg	1.30	na	1
Sulfates	1.20	na	1

Reference: Engelbrecht et al. (2009)

Size Range: < 10 μm

Southern Kuwait (Lat: 28°53'N, Lon: 48°10'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	8.90	na	1
Calcite	9.30	na	1

Carbon	0.40	na	1
Ca-Si	12.30	na	1
Clay	40.70	na	1
Dolomite	5.50	na	1
Iron oxides	1.30	na	1
K-feldspar	5.10	na	1
Lead	0.40	na	1
Misc	1.70	na	1
Na-feldspar	1.30	na	1
Quartz	3.40	na	1
Salts	1.70	na	1
Si-Mg	6.70	na	1
Sulfates	1.30	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Northern Kuwait (Lat: 29°42'N, Lon: 47°25'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	7.20	na	1
Calcite	9.30	na	1
Carbon	0.90	na	1
Ca-Si	18.20	na	1
Clay	44.10	na	1
Dolomite	2.10	na	1
Iron oxides	1.30	na	1
K-feldspar	3.90	na	1
Lead	0.70	na	1
Misc	0.10	na	1
Na-feldspar	1.20	na	1
Quartz	2.50	na	1
Salts	1.30	na	1
Si-Mg	1.70	na	1
Sulfates	5.50	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Coastal Kuwait (Lat: 29°3'N, Lon: 48°9'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	7.60	na	1
Calcite	7.20	na	1
Carbon	0.60	na	1
Ca-Si	12.30	na	1
Clay	44.90	na	1
Dolomite	6.40	na	1

Iron oxides	1.70	na	1
K-feldspar	3.80	na	1
Lead	0.70	na	1
Misc	0.80	na	1
Na-feldspar	1.30	na	1
Quartz	3.00	na	1
Salts	3.40	na	1
Si-Mg	3.80	na	1
Sulfates	2.50	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

Qatar (Lat: 25°7'N, Lon: 51°19'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	5.50	na	1
Calcite	11.00	na	1
Carbon	0.40	na	1
Ca-Si	11.10	na	1
Clay	45.70	na	1
Dolomite	6.80	na	1
Iron oxides	1.70	na	1
K-feldspar	4.20	na	1
Lead	0.50	na	1
Misc	0.80	na	1
Na-feldspar	0.90	na	1
Quartz	1.70	na	1
Salts	1.30	na	1
Si-Mg	2.50	na	1
Sulfates	5.90	na	1

Reference: Engelbrecht et al. (2009) Size Range: < 10 μm

United Arab Emirates (Lat: 24°15'N, Lon: 54°33'E)

Sample time range: 2005 to 2007 (irregularly)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ca-feldspar	4.20	na	1
Calcite	16.60	na	1
Carbon	0.90	na	1
Ca-Si	8.90	na	1
Clay	23.30	na	1
Dolomite	15.20	na	1
Iron oxides	1.20	na	1
K-feldspar	2.50	na	1
Lead	0.80	na	1
Misc	1.70	na	1

Na-feldspar	0.90	na	1
Quartz	1.70	na	1
Salts	3.40	na	1
Si-Mg	15.30	na	1
Sulfates	3.40	na	1

Reference: Engelbrecht et al. (2014) Size Range: < 2.5 μm
Las Palmas de Gran Canaria, Spain (Lat: 28°04'26.28"N, Lon: 15°27'08.57"W)
Sample time range: 01/12/2010–11/27/2010 (2 to 13 days)
Variable: Surface concentration

Mineral	Mean (%)	StdDev (%)	N_O
Ammonium sulfate	13.10	10.20	16
Calcite	0.59	1.02	16
Clay	24.33	15.77	16
Elemental carbon	4.46	4.16	16
Iron oxides	4.56	3.20	16
Gypsum	6.54	3.69	16
Halite	3.70	2.51	16
Organic carbon	14.95	8.36	16
Other evaporites	17.92	13.12	16
Quartz	9.84	9.60	16

Reference: Falkovich et al. (2001) Size Range: Bulk
Tel-Aviv, Israel (Lat: 32°5'N, Lon: 34°48'E)
Sample time range: 03/16/1998
Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	29.00	na	1
Dolomite	26.00	na	1
Feldspar	8.00	na	1
Gypsum	5.00	na	1
Quartz	29.00	na	1

Reference: Ferguson et al. (1970) Size Range: < 2 μm
USCGC Acushnet Cruise, Northeastern Pacific (Lat: Various, Lon: Various)
Sample time range: April 1969
Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	19.25	6.91	10
Illite	49.05	4.81	10
Kaolinite	14.35	3.08	10
Montmorillonite	15.45	7.03	10

Reference: Fiol et al. (2005) Size Range: Bulk
Palma de Mallorca, Spain (Lat: 39°38'N, Lon: 2°39'E)
Sample time range: 05/06/1988–04/27/1999
Variable: Bulk Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	26.10	2.54	9
Dolomite	9.40	6.94	9
Illite	1.30	1.89	9
Kaolinite	2.50	2.10	9
K-feldspar	1.90	2.27	9
Palygorskite	1.00	1.28	9
Plagioclase	4.00	2.99	9
Quartz	54.10	13.69	9

Reference: Formenti et al. (2008)

Size Range: < 40 μm

Banizoumbou, Niger (Lat: 13°30'N, Lon: 2°36'E)

Sample time range: 01/13/2006–02/13/2006

Variable: Surface Concentration

Note: Percent of diffractive surface

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	2.59	1.84	22
Dolomite	1.41	0.75	22
Illite	9.98	1.65	22
Kaolinite	46.34	5.10	22
Other feldspar	2.32	1.03	22
Plagioclase	3.98	0.88	22
Quartz	33.39	4.13	22

Reference: Game (1964)

Size Range: Bulk

S. S. Duncan, Eastern Atlantic (Lat: 25°04'N, Lon: 20°44'W)

Sample time range: 02/06/1962

Variable: Total Dry Deposition

Note: Only non-aggregated

Mineral	Mean (%)	StdDev (%)	N_O
Aggregates	32.00	na	1
Amphibole	2.00	na	1
Biotite	2.00	na	1
Carbonates	20.00	na	1
Feldspar	4.00	na	1
Iron oxides	3.50	na	1
Organics	17.50	na	1
Others	1.00	na	1
Quartz	18.00	na	1

Reference: Ganor (1991)

Size Range: < 10 μm

Jerusalem, Israel (Lat: 31°47'N, Lon: 35°13'E)

Sample time range: 1967–1988

Variable: Total Dry Deposition

Note: 28 heavy dust storms

Mineral	Mean (%)	StdDev (%)	N_O
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Illite	28.64	na	28
Kaolinite	26.82	na	28
Montmorillonite and mixed layer	40.96	na	28
Palygorskite	3.57	na	28
Reference: Ganor et al. (2000)			Size Range: < 2 μm
Lake Kinneret, Israel (Lat: Various, Lon: Various)			
Sample time range: 01/1993–05/1997			
Variable: Total Deposition			
Note: Mean of 16 locations			
Mineral	Mean (%)	StdDev (%)	N_O
Illite	16.00	0.00	1
Kaolinite	34.00	0.00	1
Palygorskite	42.00	0.00	1
Smectite	8.00	0.00	1
Reference: Ganor et al. (2000)			Size Range: > 2 μm
Lake Kinneret, Israel (Lat: Various, Lon: Various)			
Sample time range: 01/1993–05/1997			
Variable: Total Deposition			
Note: Average Mean, StdDev, and N_O of 16 locations			
Mineral	Mean (%)	StdDev (%)	N_O
Calcite	21.09	13.98	42
Dolomite	16.67	8.26	42
Feldspar	32.89	14.05	42
Quartz	27.61	12.93	42
Reference: Gaudichet et al. (1989)			Size Range: Bulk
Amsterdam Island, TAAF (Lat: 37°47'S, Lon: 77°31'E)			
Sample time range: 05/15/1994–05/26/1984, 07/07/1984–07/30/1984, 09/05/1984–09/29/1984			
Variable: Surface Concentration			
Note: From Number Fractions Assuming Model Densities			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	3.43	2.27	3
Feldspar	4.78	5.10	3
Illite	30.65	9.34	3
Kaolinite	34.71	20.81	3
Quartz	23.48	16.90	3
Smectite	2.96	7.49	3
Reference: Gaudichet et al. (1992)			Size Range: < 2 μm
South Pole, Antarctica (Lat: 90°S, Lon: 0°)			
Sample time range: 1955			
Variable: Total dry deposition			
Note: from deposits in snow			

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	6.00	na	1
Illite	65.00	na	1
Kaolinite	12.00	na	1
Smectite	16.00	na	1
Vermiculite	1.00	na	1

Reference: Gaudichet et al. (1992)

Size Range: < 2 μm

Vostok, Antarctica (Lat: 78°27.87'S, Lon: 106°50.24E)

Sample time range: 1927

Variable: Total dry deposition

Note: from deposits in snow

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	6.00	na	1
Illite	65.00	na	1
Kaolinite	12.00	na	1
Smectite	16.00	na	1
Vermiculite	1.00	na	1

Reference: Glaccum and Prospero (1980)

Size Range: Bulk

Barbados (Lat: 13°10'N, Lon: 59°25'W)

Sample time range: 07/1974–08/1974

Variable: Surface Concentration

Note: Assumed conversion Calcite to Gypsum

Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	3.68	0.69	3
Chlorite	4.15	0.28	3
Kaolinite	8.39	0.75	3
Mica	64.28	0.97	3
Microcline	1.53	0.06	3
Plagioclase	4.07	0.54	3
Quartz	13.89	1.29	3

Reference: Glaccum and Prospero (1980)

Size Range: Bulk

Miami, Florida (Lat: 25°47'N, Lon: 80°13'W)

Sample time range: 07/1974–08/1974

Variable: Surface Concentration

Note: Assumed conversion Calcite to Gypsum

Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	6.97	0.76	3
Chlorite	4.30	0.36	3
Kaolinite	7.03	1.65	3
Mica	62.10	1.85	3
Microcline	1.10	0.20	3
Plagioclase	4.40	0.46	3
Quartz	14.27	0.95	3

Reference: Glaccum and Prospero (1980)			Size Range: Bulk
Sal Island, Cape Verde (Lat: 16°45'N, Lon: 22°57'W)			
Sample time range: 07/1974–08/1974			
Variable: Surface Concentration			
Note: Assumed conversion Galcite to Gypsum			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	8.11	1.21	3
Chlorite	4.35	0.21	3
Kaolinite	6.56	0.06	3
Mica	53.50	1.32	3
Microcline	2.17	0.24	3
Plagioclase	5.35	0.21	3
Quartz	19.53	1.15	3
Reference: Goldberg and Griffin (1970)			Size Range: < 2 μm
CIRCE Cruise, Bay of Bengal (Lat: Various, Lon: Various)			
Sample time range: 05/1968			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	27.05	3.92	23
Illite	48.45	4.61	23
Kaolinite	10.88	3.10	23
Montmorillonite	14.00	3.93	23
Reference: Goldberg and Griffin (1970)			Size Range: < 2 μm
Waltair, Eastern India (Lat: 17°45'N, Lon: 83°25'E)			
Sample time range: 01/1969			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	11.16	3.72	16
Illite	36.42	13.11	16
Kaolinite	27.29	3.63	16
Montmorillonite	25.16	14.81	16
Reference: Jeong (2008)			Size Range: < 10 μm
Seoul, South Korea (Lat: 37°30'N, Lon: 126°55'E)			
Sample time range: Spring 2003, 2004, 2005			
Variable: Surface Concentration			
Note: Mixed Layer Illite/Smectite added to Illite and Smectite			
Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	8.62	5.18	8
Chlorite	2.38	0.52	8
Kaolinite	1.12	0.35	8
K-feldspar	8.25	1.04	8
Interstratified illite-smectite	21.62	5.68	8
Plagioclase	10.62	2.07	8

Illite	19.50	5.04	8
Smectite	0.88	0.35	8
Quartz	27.88	5.44	8

Reference: Jeong and Achterberg (2014) Size Range: < 60 μm

Andong, South Korea (Lat: 36°32'34"N, Lon: 128°47'56"E)

Sample time range: 03/16/2009–03/17/2009, 03/20/2010, 03/18/2014

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	1.33	1.15	3
Calcite	5.33	0.58	3
Chlorite	5.67	2.31	3
Gypsum	8.33	4.04	3
Kaolinite	3.00	1.73	3
K-feldspar	1.00	1.00	3
Interstratified illite-smectite	50.67	9.02	3
Plagioclase	11.00	1.00	3
Quartz	14.00	1.00	3

Reference: Jeong and Achterberg (2014) Size Range: < 60 μm

Deokjeok Island, South Korea (Lat: 37°13'59"N, Lon: 126°08'57"E)

Sample time range: 03/31/2012

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	1.00	na	1
Calcite	2.00	na	1
Chlorite	6.00	na	1
Gypsum	2.00	na	1
Kaolinite	3.00	na	1
K-feldspar	6.00	na	1
Interstratified illite-smectite	42.00	na	1
Plagioclase	15.00	na	1
Quartz	23.00	na	1

Reference: Jeong and Achterberg (2014) Size Range: < 60 μm

Sao Vicente, Cap Verde (Lat: 16°51'50"N, Lon: 24°52'03"W)

Sample time range: 12/28/2007–12/31/2007, 01/18/2008, 01/23/2008

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.00	0.00	2
Calcite	2.38	0.68	2
Chlorite	3.00	0.00	2
Gypsum	4.75	1.37	2
Kaolinite	6.50	2.74	2

K-feldspar	1.00	0.00	2
Interstratified illite-smectite	72.12	2.05	2
Plagioclase	2.00	0.00	2
Quartz	8.88	2.05	2

Reference: Jeong et al. (2014)

Size Range: < 60 μm

Andong, South Korea (Lat: 36°32'34"N, Lon: 128°47'56"E)

Sample time range: 03/20/2010, 05/01/2014

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.60	0.17	2
Apatite	0.24	0.17	2
Barite	0.08	0.12	2
Biotite	4.06	1.81	2
Calcite	5.84	0.07	2
Chlorite	5.63	0.94	2
Dolomite	0.59	0.53	2
Fe-Ti oxides	0.36	0.25	2
Gypsum	0.78	0.25	2
Illite, smectite, mixed layers	47.02	0.82	2
Kaolinite	1.27	0.05	2
K-feldspar	3.54	0.89	2
Muscovite	0.64	0.45	2
Plagioclase	10.33	0.35	2
Pyrite	0.18	0.26	2
Pyroxene	0.00	0.00	2
Quartz	16.76	0.07	2
Talc	0.10	0.14	2
Ti oxides	0.24	0.11	2
Titanite	0.00	0.00	2
Zoisite	0.36	0.17	2

Reference: Jeong et al. (2014)

Size Range: 10 – 20 μm

Deokjeok Island, South Korea (Lat: 37°13'59"N, Lon: 126°08'57"E)

Sample time range: 03/31/2012–04/01/2012

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.84	na	1
Apatite	0.12	na	1
Biotite	4.97	na	1
Calcite	7.17	na	1
Chlorite	3.85	na	1
Dolomite	0.85	na	1
Fe-Ti oxides	0.35	na	1

Gypsum	0.00	na	1
Illite, smectite, mixed layers	36.35	na	1
Kaolinite	0.92	na	1
K-feldspar	6.95	na	1
Muscovite	1.37	na	1
Plagioclase	13.84	na	1
Pyrite	0.00	na	1
Pyroxene	0.00	na	1
Quartz	20.59	na	1
Talc	0.00	na	1
Ti oxides	0.00	na	1
Titanite	0.00	na	1
Zoisite	0.24	na	1

Reference: Jeong et al. (2014) Size Range: 20 – 60 μm
 Deokjeok Island, South Korea (Lat: 37°13'59"N, Lon: 126°08'57"E)
 Sample time range: 03/31/2012–04/01/2012
 Variable: Surface concentration
 Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.97	na	1
Apatite	0.00	na	1
Biotite	7.61	na	1
Calcite	5.22	na	1
Chlorite	1.89	na	1
Dolomite	0.00	na	1
Fe-Ti oxides	0.00	na	1
Gypsum	0.00	na	1
Illite, smectite, mixed layers	32.62	na	1
Kaolinite	5.45	na	1
K-feldspar	2.83	na	1
Muscovite	5.45	na	1
Plagioclase	7.92	na	1
Pyrite	0.00	na	1
Pyroxene	0.67	na	1
Quartz	28.56	na	1
Talc	0.00	na	1
Ti oxides	0.00	na	1
Titanite	0.80	na	1
Zoisite	0.00	na	1

Reference: Jeong et al. (2014) Size Range: < 5 μm
 Deokjeok Island, South Korea (Lat: 37°13'59"N, Lon: 126°08'57"E)
 Sample time range: 03/31/2012–04/01/2012
 Variable: Surface concentration
 Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.95	na	1
Apatite	0.24	na	1
Biotite	3.21	na	1
Calcite	6.51	na	1
Chlorite	4.03	na	1
Dolomite	1.79	na	1
Fe-Ti oxides	0.70	na	1
Gypsum	1.02	na	1
Illite, smectite, mixed layers	41.90	na	1
Kaolinite	2.21	na	1
K-feldspar	4.88	na	1
Muscovite	0.73	na	1
Plagioclase	9.04	na	1
Pyrite	0.36	na	1
Pyroxene	0.00	na	1
Quartz	17.35	na	1
Talc	0.10	na	1
Ti oxides	0.47	na	1
Titanite	0.39	na	1
Zoisite	0.24	na	1

Reference: Jeong et al. (2014)

Size Range: 5 – 10 μm

Deokjeok Island, South Korea (Lat: 37°13'59"N, Lon: 126°08'57"E)

Sample time range: 03/31/2012–04/01/2012

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	1.08	na	1
Apatite	0.12	na	1
Biotite	3.93	na	1
Calcite	6.16	na	1
Chlorite	4.62	na	1
Dolomite	0.74	na	1
Fe-Ti oxides	0.71	na	1
Gypsum	0.00	na	1
Illite, smectite, mixed layers	40.74	na	1
Kaolinite	1.31	na	1
K-feldspar	3.86	na	1
Muscovite	2.64	na	1
Plagioclase	11.43	na	1
Pyrite	0.00	na	1
Pyroxene	0.13	na	1
Quartz	20.48	na	1
Talc	0.00	na	1

Ti oxides	0.16	na	1
Titanite	0.13	na	1
Zoisite	0.60	na	1

Reference: Jeong et al. (2014) Size Range: < 60 μm

Deokjeok Island, South Korea (Lat: 37°13'59"N, Lon: 126°08'57"E)

Sample time range: 03/31/2012–04/01/2012

Variable: Surface concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.97	na	1
Apatite	0.00	na	1
Biotite	6.29	na	1
Calcite	6.01	na	1
Chlorite	2.88	na	1
Dolomite	0.43	na	1
Fe-Ti oxides	0.18	na	1
Gypsum	0.00	na	1
Illite, smectite, mixed layers	34.89	na	1
Kaolinite	3.49	na	1
K-feldspar	4.28	na	1
Muscovite	3.72	na	1
Plagioclase	10.21	na	1
Pyrite	0.00	na	1
Pyroxene	0.40	na	1
Quartz	24.94	na	1
Talc	0.00	na	1
Ti oxides	0.00	na	1
Titanite	0.40	na	1
Zoisite	0.12	na	1

Reference: Johnson (1976) Size Range: < 2 μm

BM,1969,0,87, Barbados (Lat: 13°10'N, Lon: 59°25'W)

Sample time range: 10/1965

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Illite	35.00	na	1
Kaolinite+chlorite	41.00	na	1
Montmorillonite	24.00	na	1

Reference: Johnson (1976) Size Range: Bulk

BM,1969,0,87, Barbados (Lat: 13°10'N, Lon: 59°25'W)

Sample time range: 10/1965

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Clay	62.00	na	1
K-feldspar	1.50	na	1

Plagioclase	3.40	na	1
Quartz	11.00	na	1

Reference: Johnson (1976) Size Range: < 2 μm

BM,1973,0,288, Eastern Atlantic (Lat: 12°35'N, Lon: 17°35'W)

Sample time range: 06/1973

Variable: Total Dry Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Illite	37.00	na	1
Kaolinite+chlorite	29.00	na	1
Montmorillonite	34.00	na	1

Reference: Johnson (1976) Size Range: Bulk

BM,1973,0,288, Eastern Atlantic (Lat: 12°35'N, Lon: 17°35'W)

Sample time range: 06/1973

Variable: Total Dry Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Clay	27.00	na	1
K-feldspar	5.50	na	1
Plagioclase	8.20	na	1
Quartz	32.30	na	1

Reference: Johnson (1976) Size Range: < 2 μm

BM,M7398, Eastern Atlantic (Lat: 21°00'N, Lon: 21°00'W)

Sample time range: 12/1898

Variable: Total Dry Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Illite	49.00	na	1
Kaolinite+chlorite	21.00	na	1
Montmorillonite	30.00	na	1

Reference: Johnson (1976) Size Range: Bulk

BM,M7398, Eastern Atlantic (Lat: 21°00'N, Lon: 21°00'W)

Sample time range: 12/1898

Variable: Total Dry Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Clay	40.00	na	1
K-feldspar	1.90	na	1
Plagioclase	9.50	na	1
Quartz	17.80	na	1

Reference: Johnson (1976) Size Range: < 2 μm

E3, Central Atlantic (Lat: 11°37'S, Lon: 16°55'W)

Sample time range: 03/1971

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Illite	55.00	na	1
Kaolinite+chlorite	34.00	na	1

Montmorillonite	13.00	na	1
Reference: Johnson (1976)			Size Range: Bulk
E3, Central Atlantic (Lat: 11°37'S, Lon: 16°55'W)			
Sample time range: 03/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Clay	48.00	na	1
K-feldspar	1.10	na	1
Plagioclase	5.50	na	1
Quartz	15.00	na	1
Reference: Johnson (1976)			Size Range: < 2 μm
EG25, Eastern Atlantic (Lat: 14°22'N, Lon: 26°24'W)			
Sample time range: 03/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Illite	56.00	na	1
Kaolinite+chlorite	26.00	na	1
Montmorillonite	18.00	na	1
Reference: Johnson (1976)			Size Range: Bulk
EG25, Eastern Atlantic (Lat: 14°22'N, Lon: 26°24'W)			
Sample time range: 03/1971			
Variable: Surface Concentration			
Mineral	Mean (%)	StdDev (%)	N_O
Clay	44.00	na	1
K-feldspar	1.40	na	1
Plagioclase	4.70	na	1
Quartz	10.00	na	1
Reference: Kandler et al. (2007)			Size Range: 10 – 20 μm
Izaña, Tenerife, Spain (Lat: 28°19'N, Lon: 16°30'W)			
Sample time range: 07/13/2005–07/23/2005, 08/06/2005–08/08/2005			
Variable: Concentration			
Note: From volume fractions times assumed densities			
Mineral	Mean (%)	StdDev (%)	N_O
Albite	14.56	na	1
Bloedite	0.77	na	1
Calcite	5.64	na	1
Carbonaceous	0.00	na	1
Chloritoid	23.71	na	1
Dolomite	0.99	na	1
Glauberite	0.00	na	1
Gypsum	0.80	na	1
Halite	0.75	na	1
Hematite	0.00	na	1

Illite	43.59	na	1
Ilmenite	0.00	na	1
Quartz	9.20	na	1
Rutile	0.00	na	1

Reference: Kandler et al. (2007) Size Range: 1 – 2.5 μm

Izaña, Tenerife, Spain (Lat: 28°19'N, Lon: 16°30'W)

Sample time range: 07/13/2005–07/23/2005, 08/06/2005–08/08/2005

Variable: Concentration

Note: From volume fractions times assumed densities

Mineral	Mean (%)	StdDev (%)	N_O
Albite	13.17	na	1
Bloedite	2.40	na	1
Calcite	4.86	na	1
Carbonaceous	1.15	na	1
Chloritoid	23.22	na	1
Dolomite	1.02	na	1
Glauberite	2.01	na	1
Gypsum	0.83	na	1
Halite	0.78	na	1
Hematite	1.89	na	1
Illite	41.07	na	1
Ilmenite	0.00	na	1
Quartz	7.61	na	1
Rutile	0.00	na	1

Reference: Kandler et al. (2007) Size Range: < 20 μm

Izaña, Tenerife, Spain (Lat: 28°19'N, Lon: 16°30'W)

Sample time range: 07/13/2005–07/23/2005, 08/06/2005–08/08/2005

Variable: Concentration

Note: From volume fractions times assumed densities

Mineral	Mean (%)	StdDev (%)	N_O
Albite	11.90	na	1
Bloedite	7.58	na	1
Calcite	3.07	na	1
Carbonaceous	2.72	na	1
Chloritoid	20.40	na	1
Dolomite	1.08	na	1
Glauberite	5.29	na	1
Gypsum	0.87	na	1
Halite	0.00	na	0
Hematite	1.99	na	1
Illite	39.07	na	1
Ilmenite	0.00	na	0
Quartz	6.02	na	1
Rutile	0.00	na	0

Reference: Kandler et al. (2007) Size Range: 2.5 – 5 μm

Izaña, Tenerife, Spain (Lat: 28°19'N, Lon: 16°30'W)

Sample time range: 07/13/2005–07/23/2005, 08/06/2005–08/08/2005

Variable: Concentration

Note: From volume fractions times assumed densities

Mineral	Mean (%)	StdDev (%)	N_O
Albite	14.39	na	1
Bloedite	0.76	na	1
Calcite	5.57	na	1
Carbonaceous	0.27	na	1
Chloritoid	23.43	na	1
Dolomite	0.98	na	1
Glauberite	0.00	na	1
Gypsum	0.79	na	1
Halite	0.74	na	1
Hematite	1.80	na	1
Illite	43.08	na	1
Ilmenite	0.00	na	1
Quartz	8.18	na	1
Rutile	0.00	na	1

Reference: Kandler et al. (2007) Size Range: 5 – 10 μm

Izaña, Tenerife, Spain (Lat: 28°19'N, Lon: 16°30'W)

Sample time range: 07/13/2005–07/23/2005, 08/06/2005–08/08/2005

Variable: Concentration

Note: From volume fractions times assumed densities

Mineral	Mean (%)	StdDev (%)	N_O
Albite	15.45	na	1
Bloedite	0.00	na	1
Calcite	4.69	na	1
Carbonaceous	0.00	na	1
Chloritoid	26.17	na	1
Dolomite	0.99	na	1
Glauberite	0.00	na	1
Gypsum	0.80	na	1
Halite	0.00	na	1
Hematite	0.00	na	1
Illite	45.47	na	1
Ilmenite	0.00	na	1
Quartz	6.43	na	1
Rutile	0.00	na	1

Reference: Kandler et al. (2009) Size Range: < 10 μm

Tinfou, Morocco (Lat: 30.24°N, Lon: 5.6°W)

Sample time range: 05/13/2006–06/07/2006

Variable: Surface Concentration

Note: calc. from volume and dust distr.

Mineral	Mean (%)	StdDev (%)	N_O
Calcite+Dolomite	12.64	na	1
Feldspar	33.85	na	1
Hematite	1.56	na	1
Gypsum	3.38	na	1
Illite	30.21	na	1
Kaolinite	6.01	na	1
Quartz	12.35	na	1

Reference: Kandler et al. (2009)

Size Range: $< 2 \mu\text{m}$

Tinfou, Morocco (Lat: 30.24°N , Lon: 5.6°W)

Sample time range: 05/13/2006–06/07/2006

Variable: Surface Concentration

Note: calc. from volume and dust distr.

Mineral	Mean (%)	StdDev (%)	N_O
Calcite+Dolomite	10.31	na	1
Feldspar	35.27	na	1
Hematite	1.88	na	1
Gypsum	3.32	na	1
Illite	31.49	na	1
Kaolinite	6.26	na	1
Quartz	11.47	na	1

Reference: Kandler et al. (2009)

Size Range: $< 20 \mu\text{m}$

Tinfou, Morocco (Lat: 30.24°N , Lon: 5.6°W)

Sample time range: 05/13/2006–06/07/2006

Variable: Surface Concentration

Note: calc. from volume and dust distr.

Mineral	Mean (%)	StdDev (%)	N_O
Calcite+Dolomite	11.51	na	1
Feldspar	33.42	na	1
Hematite	1.52	na	1
Gypsum	3.01	na	1
Illite	29.86	na	1
Kaolinite	5.95	na	1
Quartz	14.73	na	1

Reference: Kandler et al. (2009)

Size Range: $20 - 32 \mu\text{m}$

Tinfou, Morocco (Lat: 30.24°N , Lon: 5.6°W)

Sample time range: 05/13/2006–06/07/2006

Variable: Surface Concentration

Note: calc. from volume and dust distr.

Mineral	Mean (%)	StdDev (%)	N_O
Calcite+Dolomite	8.16	na	1
Feldspar	32.39	na	1

Hematite	1.60	na	1
Gypsum	0.87	na	1
Illite	28.96	na	1
Kaolinite	5.78	na	1
Quartz	22.23	na	1

Reference: Kandler et al. (2009) Size Range: 2 – 20 μm

Tinfou, Morocco (Lat: 30.24°N, Lon: 5.6°W)

Sample time range: 05/13/2006–06/07/2006

Variable: Surface Concentration

Note: calc. from volume and dust distr.

Mineral	Mean (%)	StdDev (%)	N_O
Calcite+Dolomite	11.72	na	1
Feldspar	33.10	na	1
Hematite	1.45	na	1
Gypsum	2.96	na	1
Illite	29.58	na	1
Kaolinite	5.90	na	1
Quartz	15.30	na	1

Reference: Kandler et al. (2009) Size Range: < 32 μm

Tinfou, Morocco (Lat: 30.24°N, Lon: 5.6°W)

Sample time range: 05/13/2006–06/07/2006

Variable: Surface Concentration

Note: calc. from volume and dust distr.

Mineral	Mean (%)	StdDev (%)	N_O
Calcite+Dolomite	10.35	na	1
Feldspar	33.06	na	1
Hematite	1.55	na	1
Gypsum	2.27	na	1
Illite	29.55	na	1
Kaolinite	5.89	na	1
Quartz	17.33	na	1

Reference: Kandler et al. (2011) Size Range: Bulk

Praia, Cape Verde (Lat: 14°56'50.89"N, Lon: 23°29'4.31"W)

Sample time range: 01/14/2008–02/09/2008

Variable: Surface concentration

Note: Weighted average of maritime and dust episodes means

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	2.18	0.41	2
Gypsum	4.37	1.47	2
Halite	4.02	7.13	2
Kaolinite	33.15	4.26	2
K-feldspar	20.65	2.38	2
Mixed-layer illite-smectite	13.88	2.21	2
Plagioclase	5.23	2.30	2

Quartz	10.63	1.47	2
Smectite	6.09	1.06	2

Reference: Khalaf et al. (1985) Size Range: < 4 μm

Kuwait (Lat: Various, Lon: Various)
 Sample time range: 04/1979–03/1980
 Variable: Total Dry Deposition
 Note: Average of 7 sites

Mineral	Mean (%)	StdDev (%)	N_O
Albite	7.17	na	1
Calcite	14.62	na	1
Chlorite	5.07	na	1
Dolomite	4.57	na	1
Gypsum	2.88	na	1
Illite+mixed-layer illite-smectite	22.60	na	1
Kaolinite	1.98	na	1
K-feldspar	8.09	na	1
Palygorskite	25.35	na	1
Quartz	7.66	na	1

Reference: Leinen et al. (1994) Size Range: < 2 μm

Glomar Challenger Cruise, Eastern Pacific (Lat: Various, Lon: Various)
 Sample time range: 10/28/1978–10/17/1979 (33.5–117 hour samples)
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	2.33	0.89	16
Illite	38.02	5.09	16
Kaolinite	18.20	5.11	16
Plagioclase	10.20	3.19	16
Quartz	6.89	2.05	16
Smectite	4.76	3.19	16

Reference: Leinen et al. (1994) Size Range: 2 – 20 μm

Glomar Challenger Cruise, Eastern Pacific (Lat: Various, Lon: Various)
 Sample time range: 10/28/1978–10/17/1979 (33.5–117 hour samples)
 Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	2.65	1.30	14
Illite	29.69	10.41	14
Kaolinite	7.73	3.17	14
Plagioclase	36.42	15.21	14
Quartz	20.64	4.04	14
Smectite	2.88	1.86	14

Reference: Leinen et al. (1994) Size Range: < 2 μm

Glomar Challenger Cruise, Northwestern Pacific (Lat: Various, Lon: Various)
 Sample time range: 09/23/1977–04/01/1978 (25.5–84 hour samples)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	2.33	0.89	16
Illite	38.02	5.09	16
Kaolinite	18.20	5.11	16
Plagioclase	10.20	3.19	16
Quartz	6.89	2.05	16
Smectite	4.76	3.19	16

Reference: Leinen et al. (1994)

Size Range: 2 – 20 μm

Glomar Challenger Cruise, Northwestern Pacific (Lat: Various, Lon: Various)

Sample time range: 09/23/1977–04/01/1978 (25.5–84 hour samples)

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	2.65	1.30	14
Illite	29.69	10.41	14
Kaolinite	7.73	3.17	14
Plagioclase	36.42	15.21	14
Quartz	20.64	4.04	14
Smectite	2.88	1.86	14

Reference: Lu et al. (2006)

Size Range: < 10 μm

BeijingI, China (Lat: 40°00'N, Lon: 116°46'E)

Sample time range: 04/2002–03/2003

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	10.91	9.30	12
Carbon particles	10.31	9.90	12
Compounds	11.95	8.23	12
Dolomite	3.79	1.85	12
Feldspar	7.55	4.36	12
Gypsum	9.49	9.91	12
Other minerals	2.65	4.07	12
Phyllosilicates	30.07	14.11	12
Quartz	13.54	3.36	12

Reference: Menéndez et al. (2007)

Size Range: Bulk

Gran Canaria, Spain (Lat: 27°58'N, Lon: 15°36'W)

Sample time range: 10/31/2002–10/23/2003

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Aragonite	2.00	5.00	52
Calcite	11.00	8.00	52
Dolomite	8.00	6.00	52
Feldspar	11.00	8.00	52
Halite	1.10	1.80	52
Illite	0.10	0.10	52

Kaolinite-chlorite	0.10	0.10	52
Magnetite	7.00	8.00	52
Mg calcite	19.00	13.00	52
Palygorskite	0.02	0.07	52
Quartz	42.00	22.00	52

Reference: Møberg et al. (1991) Size Range: < 2 μm

Zaria, Nigeria (Lat: 11°04'N, Lon: 7°42'E)

Sample time range: 11/1984–03/1985

Variable: Total Dry Deposition

Note: Average of maximum and minimum

Mineral	Mean (%)	StdDev (%)	N_O
Al-chlorite	11.50	na	1
Al-Fe Oxyhydroxides	3.50	na	1
Ca-Na-feldspar	1.50	na	1
Fe-rich illite	15.50	na	1
Kaolinite	25.00	na	1
K-feldspar	1.50	na	1
Quartz	10.50	na	1
Smectite	20.00	na	1
Vermiculite	7.00	na	1

Reference: O'Hara et al. (2006) Size Range: Bulk

Libya North (Lat: Various, Lon: Various)

Sample time range: 06/2000—05/2001

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Albite	1.89	1.78	12
Anorthocite	1.55	1.70	12
Calcite	24.67	5.96	12
Chlorite	2.06	2.55	12
Dolomite	3.12	1.42	12
Gypsum	3.20	1.46	12
Halite	11.49	7.40	12
Illite	2.43	1.69	12
Kaolinite	2.69	0.97	12
Orthoclase	2.66	2.64	12
Palygorskite	1.65	0.87	12
Quartz	42.27	11.17	12

Reference: O'Hara et al. (2006) Size Range: Bulk

Libya South (Lat: Various, Lon: Various)

Sample time range: 06/2000—05/2001

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Albite	2.05	2.50	12
Anorthocite	1.00	1.27	12

Calcite	9.84	6.56	12
Chlorite	2.80	2.03	12
Dolomite	1.65	1.33	12
Gypsum	3.99	2.47	12
Halite	4.18	2.30	12
Illite	2.84	1.79	12
Kaolinite	6.61	2.49	12
Orthoclase	2.17	2.35	12
Palygorskite	2.35	1.30	12
Quartz	60.31	14.49	12

Reference: Parkin et al. (1970) Size Range: Bulk

M. V. Nova Scotia (Lat: Various, Lon: Various)

Sample time range: 01/1969

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Illite	13.17	1.39	2
Kaolinite+chlorite	41.42	7.67	2
Montmorillonite	10.42	0.70	2
Quartz	12.25	2.09	2
Talc	22.75	6.27	2

Reference: Parkin et al. (1970) Size Range: Bulk

M. V. Samaria (Lat: Various, Lon: Various)

Sample time range: 08/1969

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Illite	22.41	5.97	10
Kaolinite+chlorite	24.83	8.37	10
Montmorillonite	5.43	2.26	10
Quartz	41.19	11.64	10
Talc	5.99	5.07	10

Reference: Parkin et al. (1972) Size Range: Bulk

S. S. Hardwicke Grange (Lat: Various, Lon: Various)

Sample time range: 02/1971–03/1971

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Illite	21.78	8.04	28
Kaolinite+chlorite	32.99	12.21	28
Montmorillonite	4.95	3.45	28
Quartz	36.61	11.20	28
Talc	4.09	11.39	28

Reference: Prospero and Bonatti (1969) Size Range: < 20 μm

R.V. Pillsbury (Lat: Various, Lon: Various)

Sample time range: Spring 1967

Variable: Surface Concentration

Note: Legs 3/1 and 11/2

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	2.00	1.41	2
Illite	2.50	2.12	2
Kaolinite	6.75	6.01	2
Muscovite	2.50	2.12	2
Plagioclase	26.95	28.07	2
Quartz	6.05	3.61	2
Smectite	16.50	19.80	2

Reference: Prospero et al. (1981)

Size Range: Bulk

Barbados (Lat: 13°10'N, Lon: 59°30'W)

Sample time range: 03/25/1978–03/27/1978

Variable: Surface Concentration

Note: Mica includes illite

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	5.00	na	1
Chlorite	4.00	na	1
Gibbsite	0.00	na	1
Goethite	2.00	na	1
Gypsum	3.00	na	1
Kaolinite	6.00	na	1
Mica	60.00	na	1
Microcline	3.00	na	1
Plagioclase	6.00	na	1
Quartz	10.00	na	1

Reference: Prospero et al. (1981)

Size Range: Bulk

Cayenne, French Guiana (Lat: 4°50'N, Lon: 52°22'W)

Sample time range: 03/25/1978–03/26/1978

Variable: Surface Concentration

Note: Mica includes illite

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	4.00	na	1
Chlorite	5.00	na	1
Gibbsite	1.00	na	1
Goethite	3.00	na	1
Gypsum	3.00	na	1
Kaolinite	8.00	na	1
Mica	59.00	na	1
Microcline	3.00	na	1
Plagioclase	5.00	na	1
Quartz	10.00	na	1

Reference: Prospero et al. (1981)

Size Range: Bulk

Cayenne Mult, French Guiana (Lat: 4°50'N, Lon: 52°22'W)

Sample time range: 12/1977–04/1980

Variable: Surface Concentration

Note: Mica includes illite

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	2.92	2.83	25
Chlorite	4.52	0.71	25
Gibbsite	7.72	9.89	25
Goethite	8.80	7.07	25
Gypsum	1.52	0.71	25
Kaolinite	7.60	3.53	25
Mica	44.72	25.44	25
Microcline	1.52	0.71	25
Plagioclase	6.44	2.12	25
Quartz	14.24	9.19	25

Reference: Prospero et al. (1981)

Size Range: Bulk

Dakar, Senegal (Lat: 14°44'N, Lon: 17°33'W)

Sample time range: 03/21/1978–03/22/1978

Variable: Surface Concentration

Note: Mica includes illite

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	5.00	na	1
Chlorite	7.00	na	1
Gibbsite	0.00	na	1
Goethite	2.00	na	1
Gypsum	1.00	na	1
Kaolinite	7.00	na	1
Mica	57.00	na	1
Microcline	2.00	na	1
Plagioclase	5.00	na	1
Quartz	14.00	na	1

Reference: Queralt-Mitjans et al. (1993)

Size Range: Bulk

Filabres Range, Spain (Lat: Various, Lon: Various)

Sample time range: 11/1989–12/1989, 03/1990–05/1990

Variable: Bulk Deposition

Note: Rain events. Date for event 6 guessed

Mineral	Mean (%)	StdDev (%)	N_O
Aragonite	0.26	0.61	25
Calcite	0.58	1.00	25
Chlorite	13.52	9.24	25
Dolomite	0.94	1.33	25
Feldspar	4.04	2.17	25
Gypsum	1.32	2.49	25
Kaolinite	9.16	8.63	25
Mica-illite	54.60	12.80	25
Palygorskite	3.68	5.84	25

Paragonite	6.92	7.53	25
Quartz	4.92	2.93	25

Reference: Rashki et al. (2013) Size Range: < 75 μm

Hamoun A, Iran (Lat: 31.10°N, Lon: 61.51°E)

Sample time range: 08/2009–08/2010

Variable: Total Dry Deposition

Note: derived from figures; dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	22.07	2.63	15
Chlorite	6.33	1.40	15
Diopside	0.67	1.11	15
Dolomite	2.13	1.68	15
Enstatite	3.33	3.54	15
Gypsum	1.00	1.60	15
Halite	1.60	1.88	15
Hornblende	0.80	0.77	15
Illite	12.93	3.49	15
Microcline	1.33	1.50	15
Orthoclase	1.13	1.25	15
Plagioclase	11.20	1.32	15
Quartz	35.27	3.97	15

Reference: Rashki et al. (2013) Size Range: < 75 μm

Hamoun B, Iran (Lat: 31.20°N, Lon: 61.61°E)

Sample time range: 08/2009–08/2010

Variable: Total Dry Deposition

Note: derived from figures; dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	18.56	3.78	9
Chlorite	5.89	0.93	9
Diopside	0.17	0.35	9
Dolomite	4.22	1.56	9
Enstatite	1.22	1.46	9
Gypsum	0.78	0.71	9
Halite	0.83	0.61	9
Hornblende	0.83	0.87	9
Illite	10.00	3.50	9
Microcline	1.39	0.82	9
Orthoclase	3.17	2.63	9
Plagioclase	12.72	1.64	9
Quartz	40.22	4.41	9

Reference: Shao et al. (2008) Size Range: < 2 μm

Beijing, China (Lat: 39°59'37.1"N, Lon: 116°20'45.6"E)

Sample time range: 04/17/2006, Spring 2006

Variable: Total dry deposition

Note: Dust events

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	9.50	0.71	2
Illite	34.50	0.71	2
Kaolinite	8.50	0.71	2
Interstratified illite-smectite	47.50	2.12	2

Reference: Shao et al. (2008)

Size Range: Bulk

Beijing, China (Lat: 39°59'37.1"N, Lon: 116°20'45.6"E)

Sample time range: Spring 2004, 2005

Variable: Total dry deposition

Note: Dust events

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	12.88	4.07	4
Clay	31.02	2.10	4
Dolomite	6.88	3.29	4
Gypsum	1.25	0.65	4
Hornblende	1.18	0.76	4
K-feldspar	3.82	0.88	4
Plagioclase	11.95	1.70	4
Quartz	31.02	4.31	4

Reference: Shen et al. (2006)

Size Range: Bulk

Dunhuang, China (Lat: 40°30'N, Lon: 94°49'E)

Sample time range: Spring 2001 and 2002

Variable: Surface Concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	8.64	2.71	11
Chlorite	11.66	1.47	11
Dolomite	4.57	1.17	11
Illite	41.17	5.68	11
Kaolinite	5.94	1.11	11
K-feldspar	1.14	0.37	11
Plagioclase	5.29	1.65	11
Quartz	21.50	2.93	11

Reference: Shen et al. (2009)

Size Range: Bulk

Aksu, China (Lat: 40°16'N, Lon: 80°28'E)

Sample time range: Spring 2001 and 2002

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	11.00	1.00	11
Dolomite	3.00	1.00	11
Illite	38.00	3.00	11
Kaolinite+chlorite	15.00	2.00	11
K-feldspar	2.00	1.00	11

Plagioclase	7.00	2.00	11
Quartz	24.00	3.00	11

Reference: Shen et al. (2009) Size Range: Bulk

Changwu, China (Lat: 35°12'N, Lon: 107°40'30"N)

Sample time range: Spring 2001 and 2002

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	5.00	2.00	16
Dolomite	2.00	1.00	16
Illite	50.00	3.00	16
Kaolinite+chlorite	23.00	2.00	16
K-feldspar	1.00	1.00	16
Plagioclase	4.00	2.00	16
Quartz	15.00	3.00	16

Reference: Shen et al. (2009) Size Range: Bulk

Dunhuang, China (Lat: 40°30'N, Lon: 94°49'E)

Sample time range: Spring 2001 and 2002

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	9.00	3.00	35
Dolomite	4.00	4.00	35
Illite	43.00	2.00	35
Kaolinite+chlorite	18.00	2.00	35
K-feldspar	1.00	1.00	35
Plagioclase	6.00	2.00	35
Quartz	19.00	4.00	35

Reference: Shen et al. (2009) Size Range: Bulk

Tongliao, China (Lat: 43°14'20"N, Lon: 122°14'E)

Sample time range: Spring 2001 and 2002

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	1.00	1.00	11
Dolomite	0.00	1.00	11
Illite	37.00	7.00	11
Kaolinite+chlorite	13.00	2.00	11
K-feldspar	6.00	2.00	11
Plagioclase	15.00	8.00	11
Quartz	26.00	6.00	11

Reference: Shen et al. (2009) Size Range: Bulk

Zhenbeitai, China (Lat: 38°17'23"N, Lon: 109°42'18"E)

Sample time range: Spring 2001 and 2002

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
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Calcite	5.00	3.00	37
Dolomite	2.00	1.00	37
Illite	43.00	5.00	37
Kaolinite+chlorite	20.00	2.00	37
K-feldspar	3.00	1.00	37
Plagioclase	8.00	2.00	37
Quartz	20.00	5.00	37

Reference: Shi et al. (2005)

Size Range: < 10 μm

Beijing, China (Lat: 40°00'N, Lon: 116°46'E)

Sample time range: 04/06/2000, 03/20/2002

Variable: Surface Concentration

Note: Dust storms

Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	8.30	1.13	2
Iron oxides	0.45	0.64	2
Gypsum	0.15	0.21	2
Hornblende	0.35	0.07	2
K-feldspar	1.80	0.42	2
Noncrystal	20.25	0.35	2
Phyllosilicates	39.55	0.78	2
Plagioclase	8.10	0.42	2
Pyrite	0.95	0.07	2
Quartz	20.10	0.85	2

Reference: Shi et al. (2005)

Size Range: < 2 μm

Beijing, China (Lat: 40°00'N, Lon: 116°46'E)

Sample time range: 04/06/2000, 03/20/2002

Variable: Surface Concentration

Note: Dust storms; PM2: clays only

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	6.50	0.71	2
Kaolinite	5.50	0.71	2
Mixed-layer illite-smectite	78.50	0.71	2
Illite	9.50	0.71	2

Reference: Shi et al. (2005)

Size Range: Bulk

Beijing, China (Lat: 40°00'N, Lon: 116°46'E)

Sample time range: 04/06/2000

Variable: Surface Concentration

Note: Dust storm

Mineral	Mean (%)	StdDev (%)	N_O
Carbonates	14.00	na	1
K-feldspar	1.70	na	1
Noncrystal	10.10	na	1
Phyllosilicates	35.50	na	1

Plagioclase	7.00	na	1
Pyrite	1.00	na	1
Quartz	30.30	na	1

Reference: Skonieczny et al. (2013) Size Range: < 30 μm

Mbour, Senegal (Lat: 14°24'38"N, Lon: 16°57'32"W)

Sample time range: 02/23/2006–03/27/2009 (weekly)

Variable: Total deposition

Note: Al-Si mineralogy

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	13.91	3.86	139
Illite	14.30	5.47	139
Kaolinite	25.95	5.34	139
Palygorskite	6.38	2.48	139
Smectite	39.47	10.39	139

Reference: Tomadin et al. (1984) Size Range: < 2 μm

Adria to Strait of Messina (Lat: Various, Lon: Various)

Sample time range: 03/28/1981–03/30/1981

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	16.86	7.59	5
Illite	63.28	5.17	5
Kaolinite	13.89	4.58	5
Serpentine	3.67	3.41	5
Smectite	2.15	3.96	5

Reference: Tomadin et al. (1984) Size Range: < 2 μm

Gulf of Saronikis to Adria (Lat: Various, Lon: Various)

Sample time range: 10/31/1981–11/03/1981

Variable: Surface Concentration

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	13.44	5.01	8
Illite	68.79	6.42	8
Kaolinite	9.11	2.15	8
Serpentine	6.45	4.01	8
Smectite	2.21	3.94	8

Reference: Tomadin et al. (1984) Size Range: < 2 μm

Italy (Lat: Various, Lon: Various)

Sample time range: 03/30/1981

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	11.00	6.56	3
Illite	62.67	8.62	3
Kaolinite	20.67	13.32	3
Serpentine	0.00	0.00	3

Smectite 5.67 2.08 3

Reference: Windom (1969) Size Range: Bulk

Camp Century, Greenland (Lat: 77°10'N, Lon: 61°08'W)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	6.00	na	1
Chlorite	11.00	na	1
Feldspar	23.00	na	1
Kaolinite	9.00	na	1
Mica	27.00	na	1
Montmorillonite	0.00	na	1
Quartz	24.00	na	1

Reference: Windom (1969) Size Range: Bulk

Franz Josef Glacier, New Zealand (Lat: 43°28'N, Lon: 170°11'E)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.00	na	1
Chlorite	5.00	na	1
Feldspar	28.14	na	1
Kaolinite	2.51	na	1
Mica	25.94	na	1
Montmorillonite	0.00	na	1
Quartz	38.40	na	1

Reference: Windom (1969) Size Range: Bulk

Mt. Olympus, Washington (Lat: 47°52'N, Lon: 123°35'W)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.85	na	1
Chlorite	7.71	na	1
Feldspar	12.73	na	1
Kaolinite	0.85	na	1
Mica	42.24	na	1
Montmorillonite	0.00	na	1
Quartz	35.04	na	1

Reference: Windom (1969) Size Range: Bulk

Mt. Orizaba, Mexico (Lat: 19°01'N, Lon: 97°15'W)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	11.00	na	1

Chlorite	3.00	na	1
Feldspar	0.00	na	1
Kaolinite	6.00	na	1
Mica	16.00	na	1
Montmorillonite	6.00	na	1
Quartz	56.00	na	1

Reference: Windom (1969) Size Range: Bulk

Mt. Popocatepetl, Mexico (Lat: 19°01'N, Lon: 98°37'W)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	8.00	na	1
Chlorite	0.00	na	1
Feldspar	0.00	na	1
Kaolinite	11.00	na	1
Mica	18.00	na	1
Montmorillonite	9.00	na	1
Quartz	53.00	na	1

Reference: Windom (1969) Size Range: Bulk

Site 2, Greenland (Lat: 76°59'N, Lon: 56°04'W)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	5.00	na	1
Chlorite	11.00	na	1
Feldspar	16.00	na	1
Kaolinite	8.00	na	1
Mica	37.00	na	1
Montmorillonite	0.00	na	1
Quartz	23.00	na	1

Reference: Windom (1969) Size Range: Bulk

St. Elias Range, Canada (Lat: 60°45'N, Lon: 139°30'W)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	13.45	na	1
Chlorite	5.81	na	1
Feldspar	10.10	na	1
Kaolinite	2.77	na	1
Mica	34.06	na	1
Montmorillonite	0.00	na	1
Quartz	32.84	na	1

Reference: Windom (1969) Size Range: Bulk

Tasman Glacier, New Zealand (Lat: 43°31'S, Lon: 170°20'E)

Sample time range: Before 1969

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Amphibole	0.00	na	1
Chlorite	4.32	na	1
Feldspar	25.32	na	1
Kaolinite	3.34	na	1
Mica	26.50	na	1
Montmorillonite	0.00	na	1
Quartz	40.72	na	1

Reference: Zdanowicz et al. (2006)

Size Range: Bulk

St. Elias Mountains, Canada (Lat: Various, Lon: Various)

Sample time range: 04/16/2001

Variable: Total Deposition

Mineral	Mean (%)	StdDev (%)	N_O
Chlorite	27.00	0.00	2
Illite	65.50	7.78	2
Kaolinite	6.00	8.49	2
Smectite	0.75	0.35	2

Reference: Zhou and Tazaki (1996)

Size Range: Bulk

Matsue, Shimane Prefecture, Japan (Lat: 35°29'N, Lon: 133°04'E)

Sample time range: 10/1992–09/1993 (weekly)

Variable: Surface concentration

Mineral	Mean (%)	StdDev (%)	N_O
Calcite	5.53	1.58	4
Clay	13.33	5.23	4
Gypsum	3.60	1.40	4
Halite	10.12	3.50	4
Quartz	10.35	6.81	4

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