Supporting information on

Aerosol hygroscopicity and its link to chemical composition in coastal atmosphere of Mace Head: Marine and continental air masses

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Figure S3. Examples of GF-PDFs with GF spread factor > 0.2: (a) GF spread factor 0.21; (b)GF spread factor 0.27.

Figure S4. Comparison of chemical composition between C & M events and those data with GF spread factor > 0.2. Lines represent median concentration, boxes represent 25- 75% percentile, and whiskers represent 10 -90% percentile.

Table S1. Summary of start and end time of each event.

Event	Starting date& time	End date& time
C1	2009.01.01 00:00	2009.01.10 18:00
C2	2009.03.17 00:00	2009.03.22 12:00
M1	2009.01.15 16:00	2009.01.24 12:00
M2	2009.03.06 18:00	2009.03.12 12:00

Table S2. Averaged chemical composition during each event.

	C1	C2	M1	M2
Sea-salt ($\mu g\ m^{-3}$)	0.17±0.22	0.13±0.17	0.63 ±0.28	0.58 ±0.23
Organics ($\mu g\ m^{-3}$)	1.99±1.54	6.00±8.57	0.02 ±0.02	0.08 ±0.07
Nitrate ($\mu g\ m^{-3}$)	0.92±1.03	4.06±3.90	0.01 ±0.007	0.01 ±0.006
nss-sulfate ($\mu g\ m^{-3}$)	1.47±0.70	2.04±1.64	0.08 ± 0.05	0.16 ±0.17
Ammonium ($\mu g\ m^{-3}$)	0.72±0.49	1.82±1.52	0.002 ±0.004	0.003 ±0.03
MSA ($\mu g\ m^{-3}$)	0.007±0.007	0.006±0.004	0.001± 0.001	0.002 ±0.002
Black carbon ($ng\ m^{-3}$)	500±377	518±499	10.1±3.3	9.9±3.7

Table S3. Hygroscopicity GF (mean ± standard deviation) for each event.

D0	C1	C2	M1	M2
35 nm	1.32±0.09	1.42±0.13	1.87±0.17	1.85±0.18
50 nm	1.34±0.08	1.47±0.12	2.00±0.14	1.97±0.20
75 nm	1.38±0.12	1.53±0.12	2.04±0.09	2.00±0.19
110 nm	1.45±0.14	1.59±0.13	2.07±0.08	2.00±0.15
165 nm	1.53±0.14	1.65±0.13	2.11±0.07	2.05±0.15
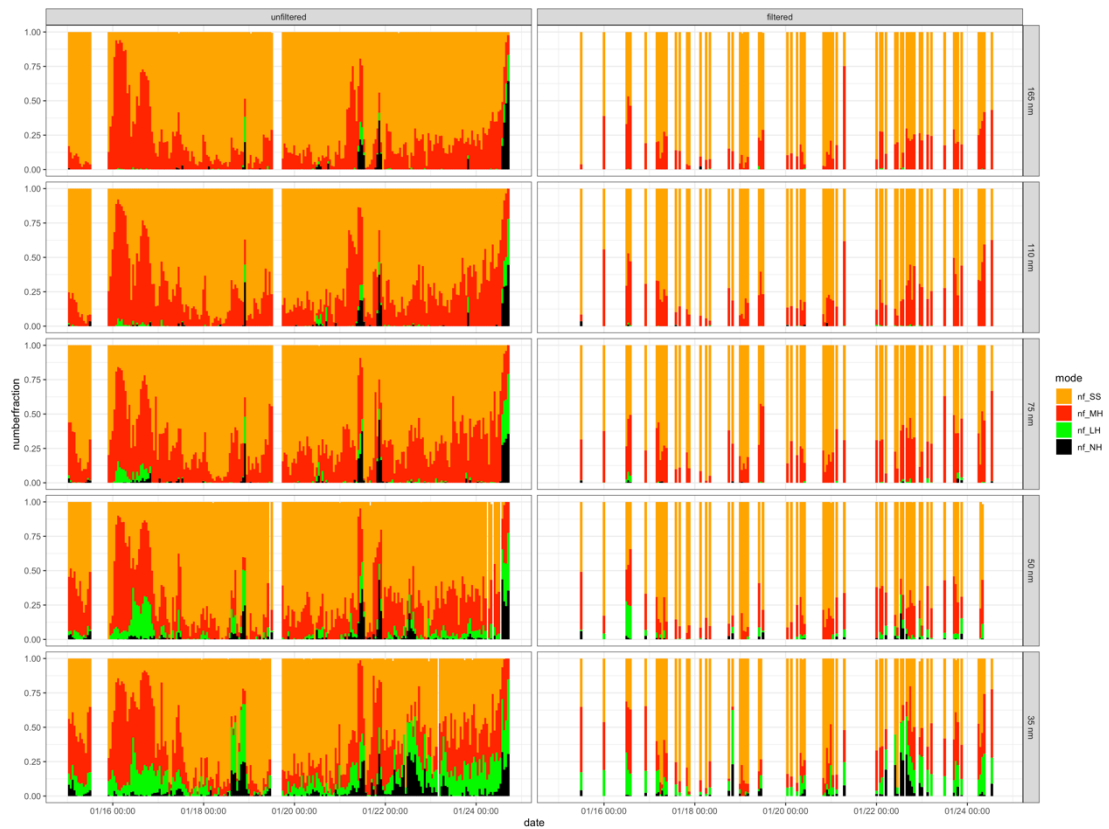
Figure S1. Time series of the number fraction of NH mode in black (GF<1.11), LH mode in green, (1.11<GF<1.33), MH mode in red(1.33<GF<1.85) and SS mode in brown (GF>1.85) of aerosols with pre-selected dry diameter of unfiltered and filtered M1 events.
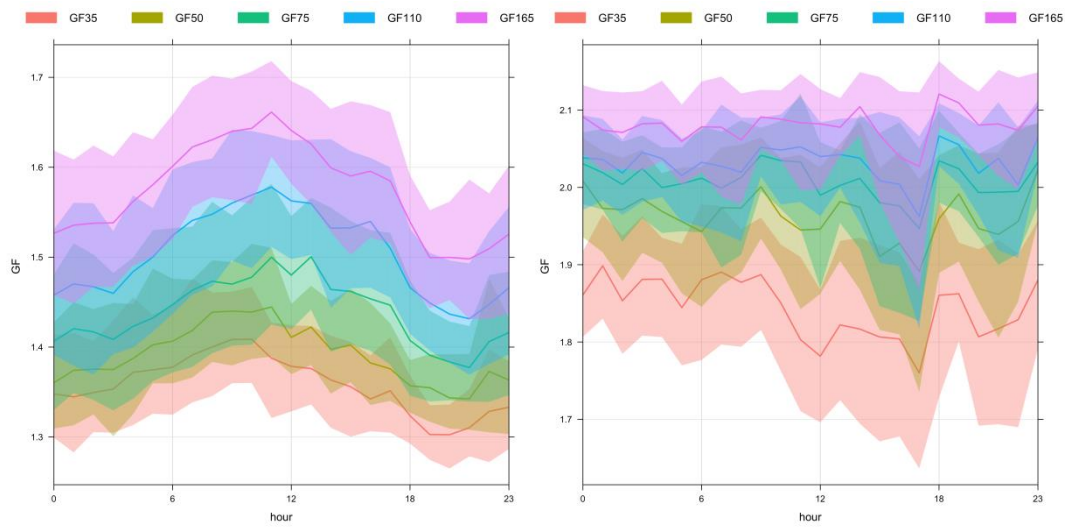
Figure S2. Diurnal variation of GF of C1&C2 air masses (left), M1&M2 (right).
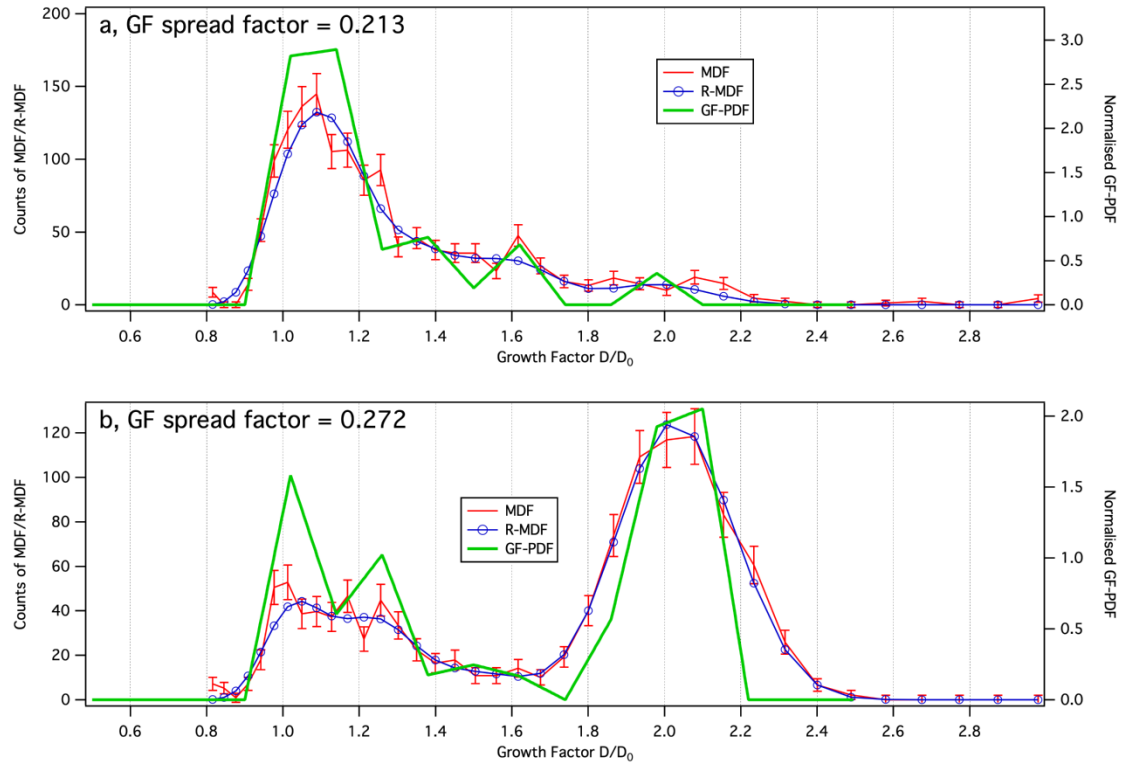
Figure S3. Examples of GF-PDFs with GF spread factor > 0.2: (a) GF spread factor 0.213; (b)GF spread factor 0.272.
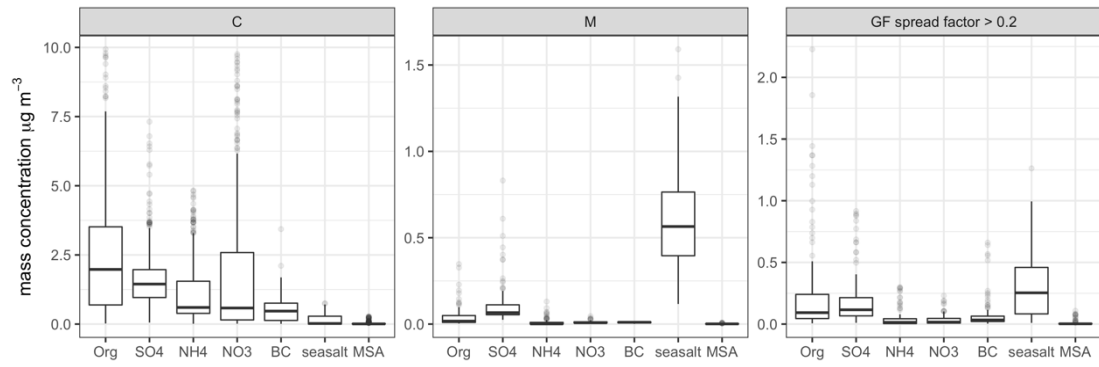
Figure S4. Comparison of chemical composition between C, M and those data with GF spread factor > 0.2. Lines represent median concentration, boxes represent 25 - 75 % percentile, whiskers represent 1.5*IQR from the boxes (where the IQR is the interquartile range). Data beyond the end of whisker are plotted individually.