



Supplement of

Long-term real-time chemical characterization of submicron aerosols at Montsec (southern Pyrenees, 1570 m a.s.l.)

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Supplementary Material

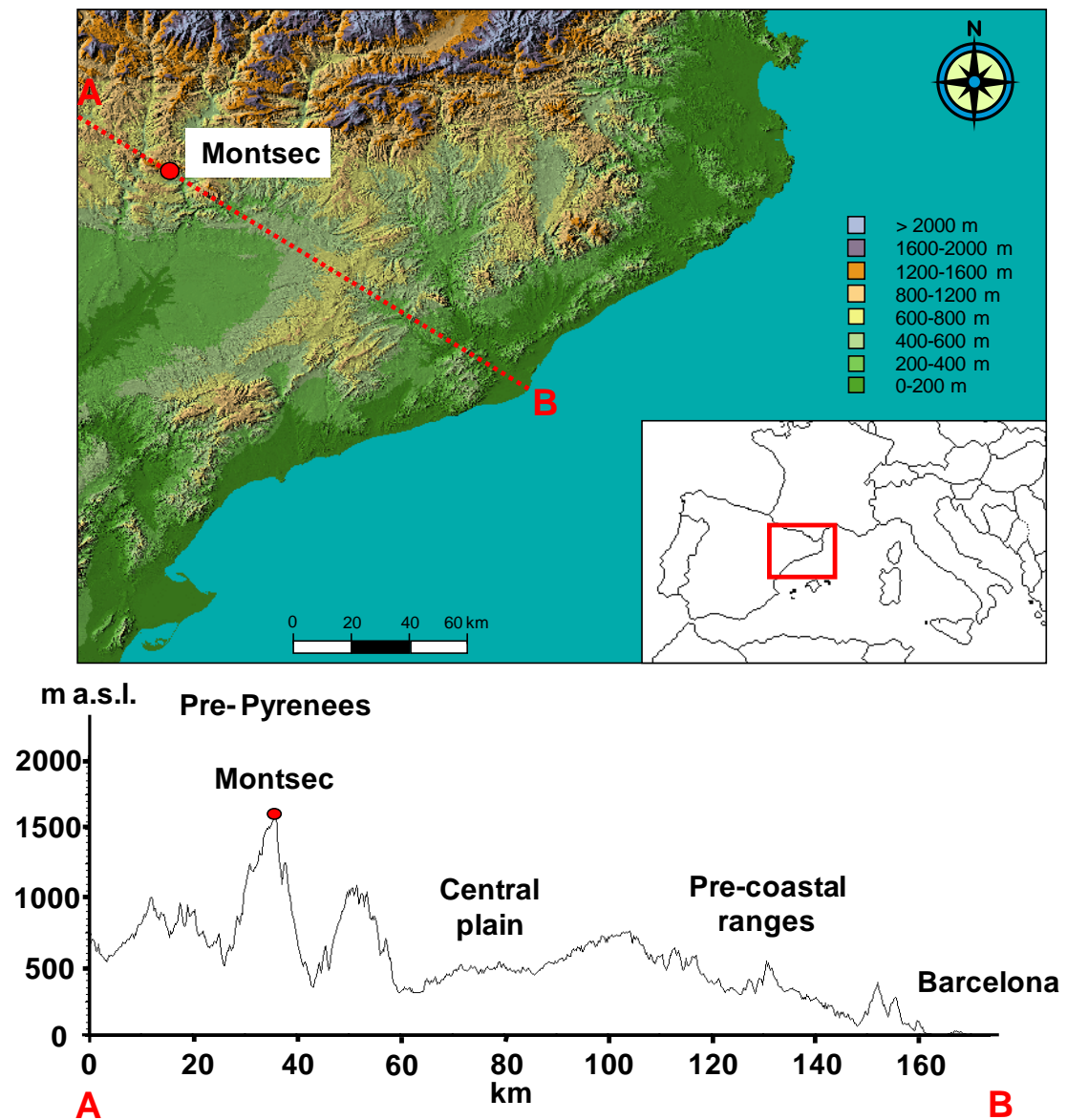


Fig.S1 Top: location of the Montsec sampling site. Bottom: topography of Montsec area following the red line.

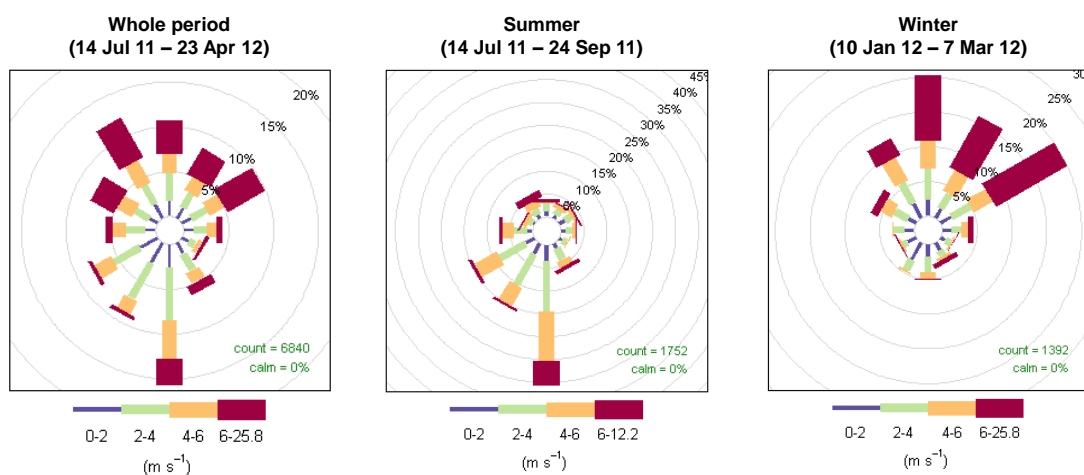


Fig.S2 Wind rose frequency at Montsec during the study.

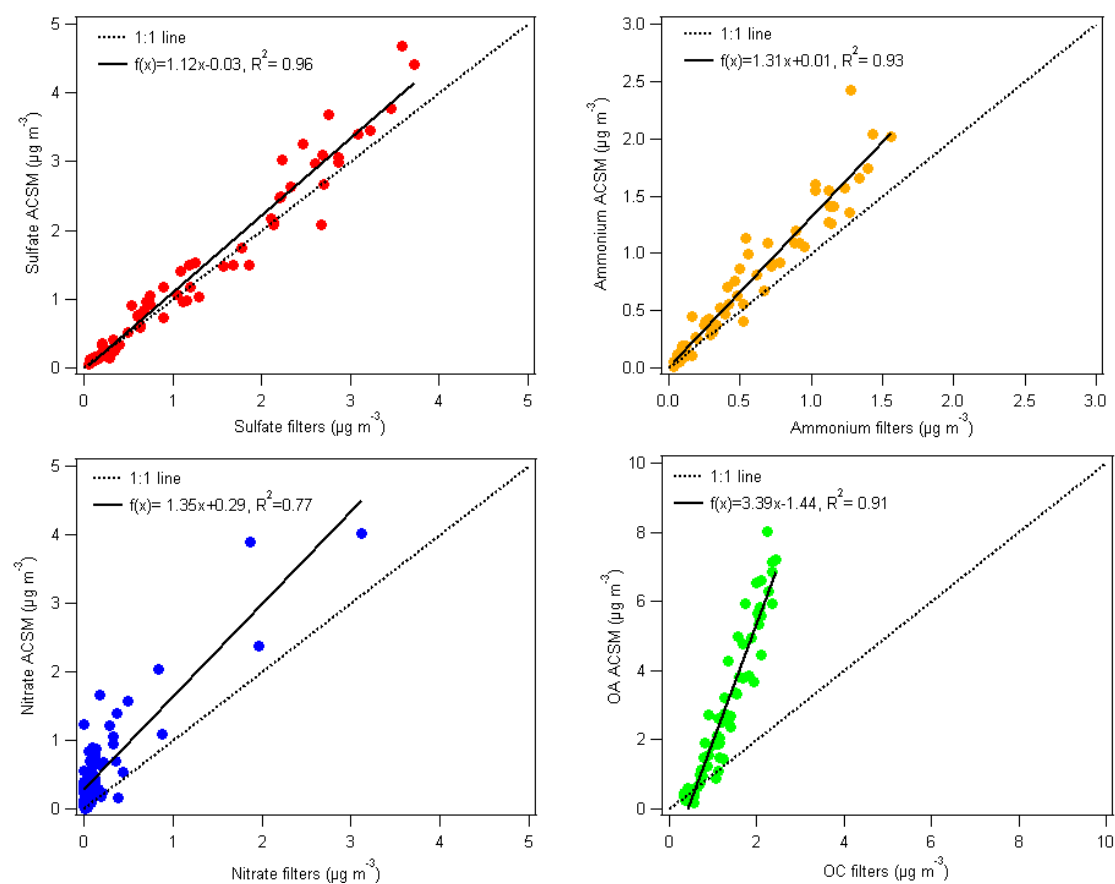


Fig.S3 Scatter plots of chemical species concentrations measured by the ACSM versus those measured off-line in 24-h PM₁ filter samples.

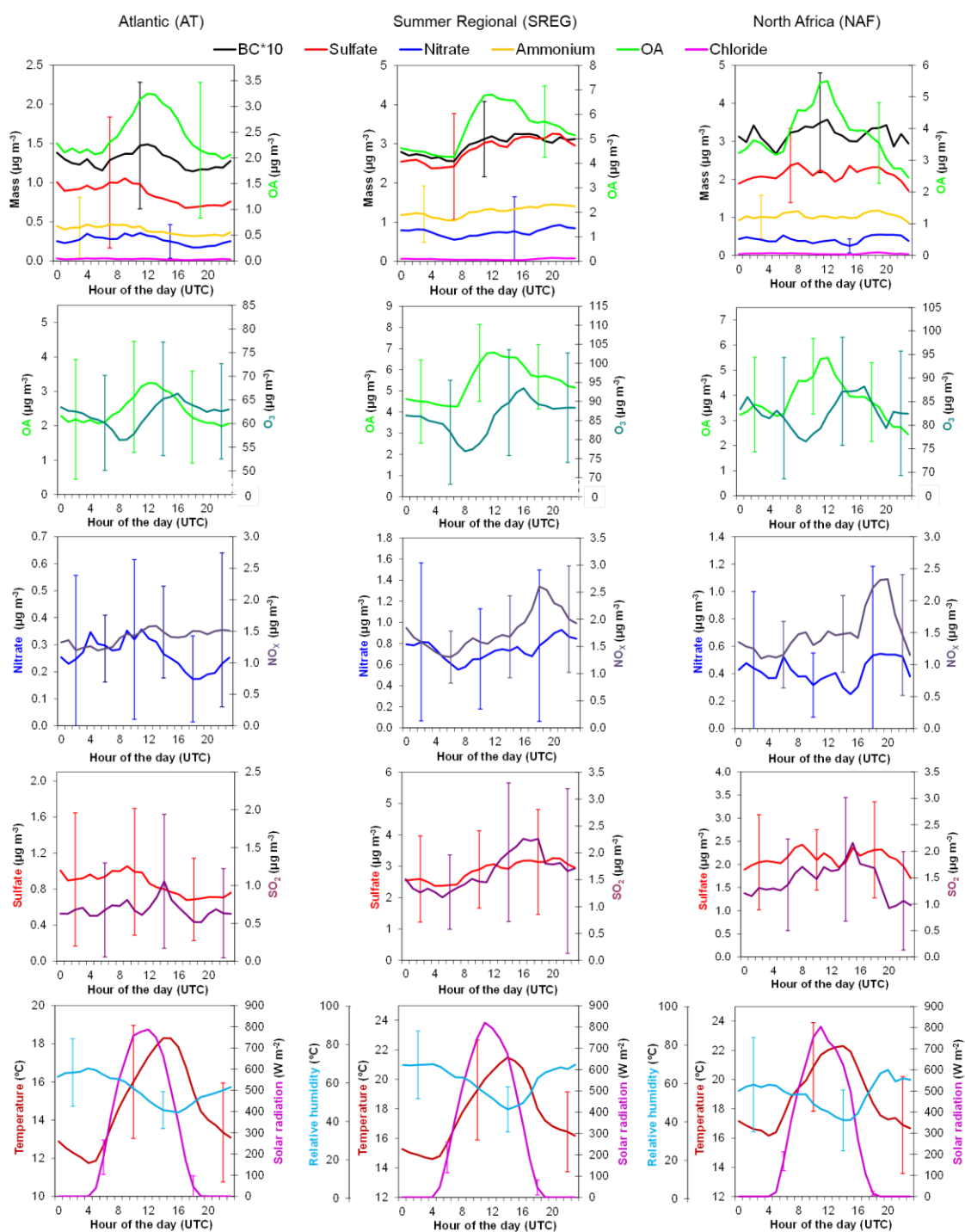


Fig.S4 Diurnal cycles of PM_{10} chemical species (black carbon (BC), sulfate, nitrate, ammonium, chloride and OA), gaseous pollutants (ozone (O_3), nitrogen oxides (NO_x), and sulfur dioxide (SO_2)), and meteorological parameters (relative humidity, temperature and solar radiation) averaged as a function of meteorological episode for the summer period (14 Jul 11 – 24 Sep 11). Variation bars indicate \pm standard deviation.

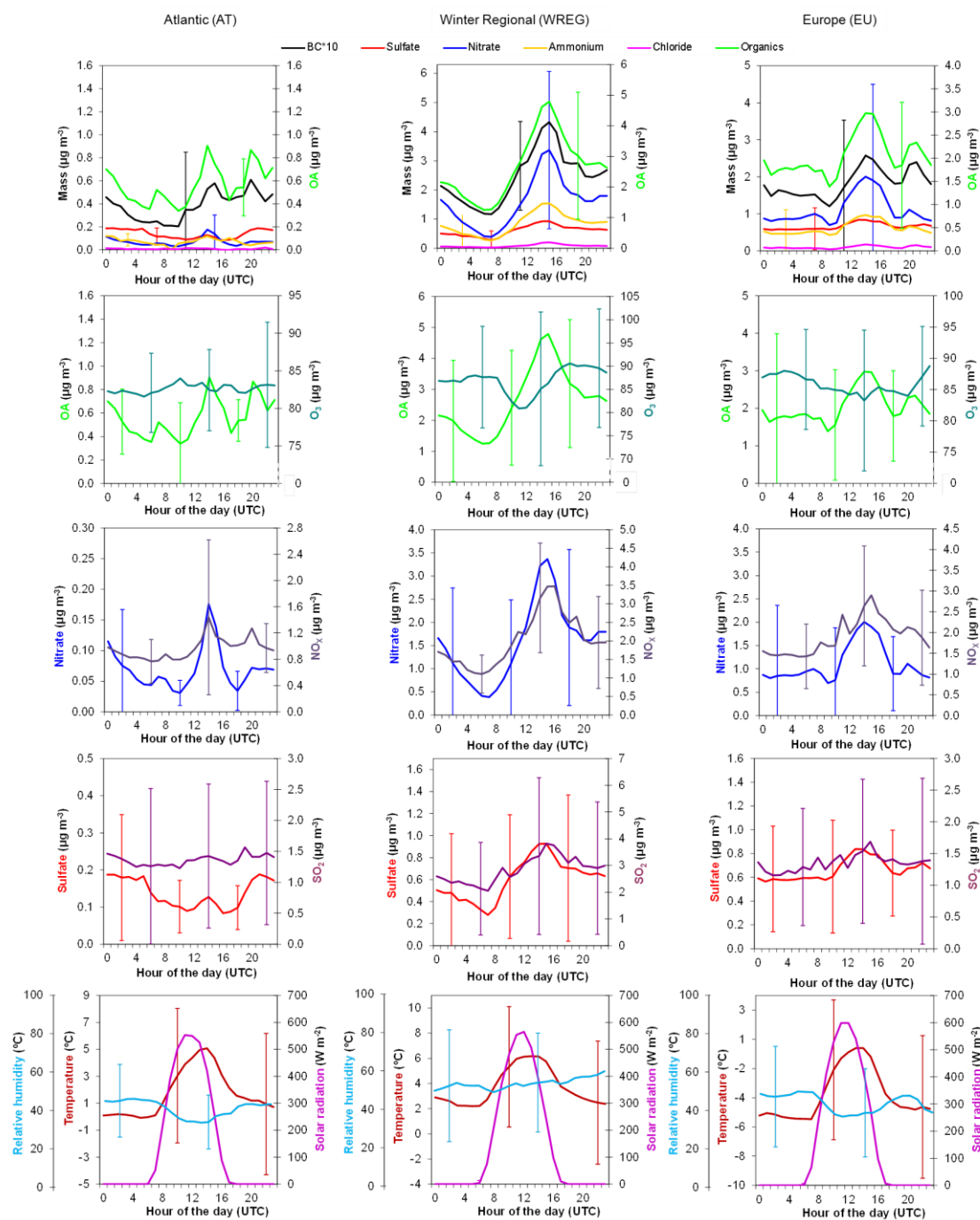


Fig.S5 Diurnal cycles of PM₁ chemical species (black carbon (BC), sulfate, nitrate, ammonium, chloride and OA), gaseous pollutants (ozone (O₃), nitrogen oxides (NO_x), and sulfur dioxide (SO₂)), and meteorological parameters (relative humidity, temperature and solar radiation) averaged as a function of meteorological episode for the winter period (10 Jan 12 – 7 Mar 12). Variation bars indicate \pm standard deviation.

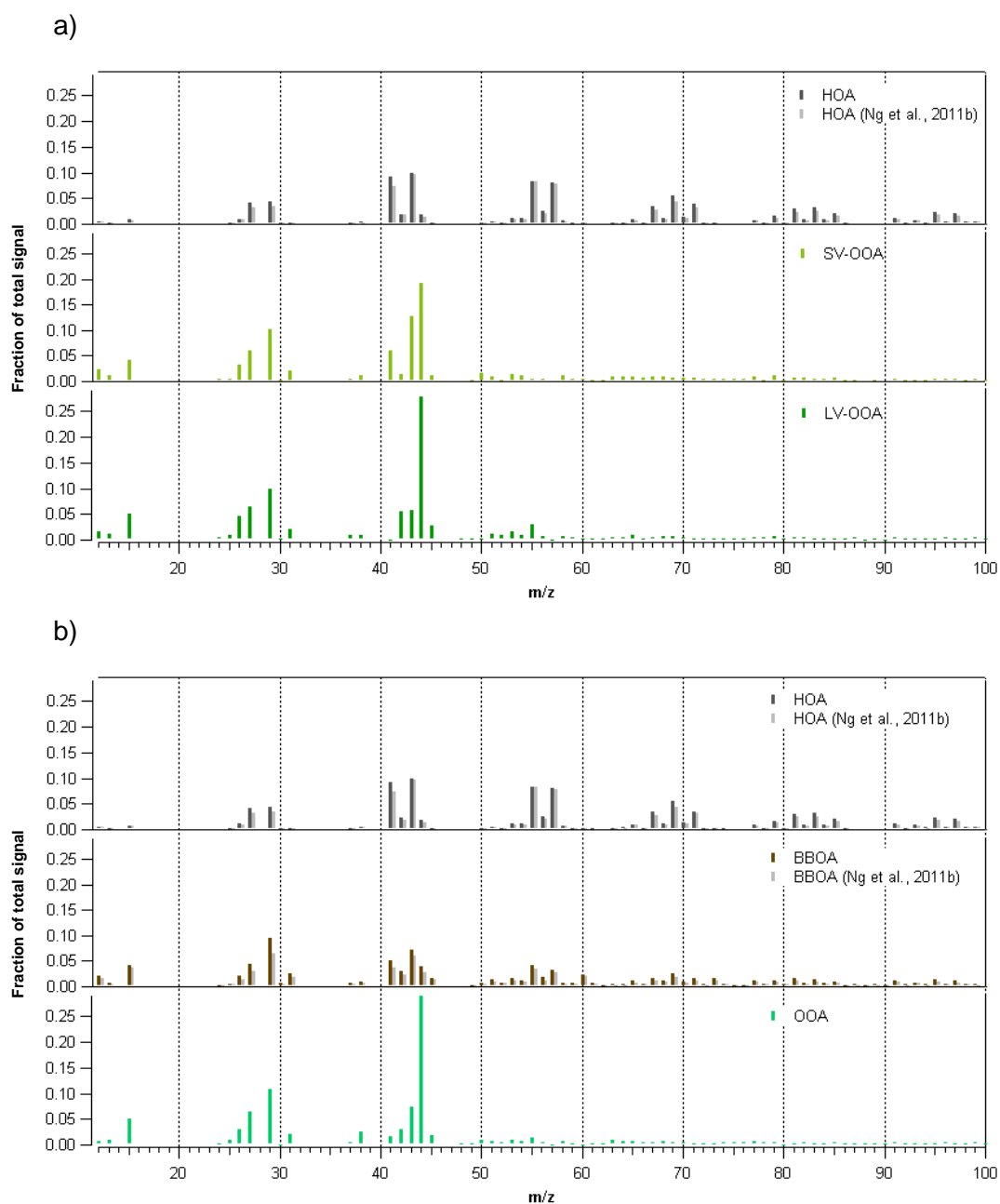


Fig.S6 Organic species profiles extracted from the ME-2 analysis for (a) the summer period (14 Jul 11 – 24 Sep 11) and for the winter period (10 Jan 12 – 7 Mar 12). The hydrocarbon-like organic aerosol (HOA) and the biomass burning organic aerosol (BBOA) were constrained using an average HOA and BBOA factors from different datasets (Ng et al., 2011b), with an α -value of 0.1.

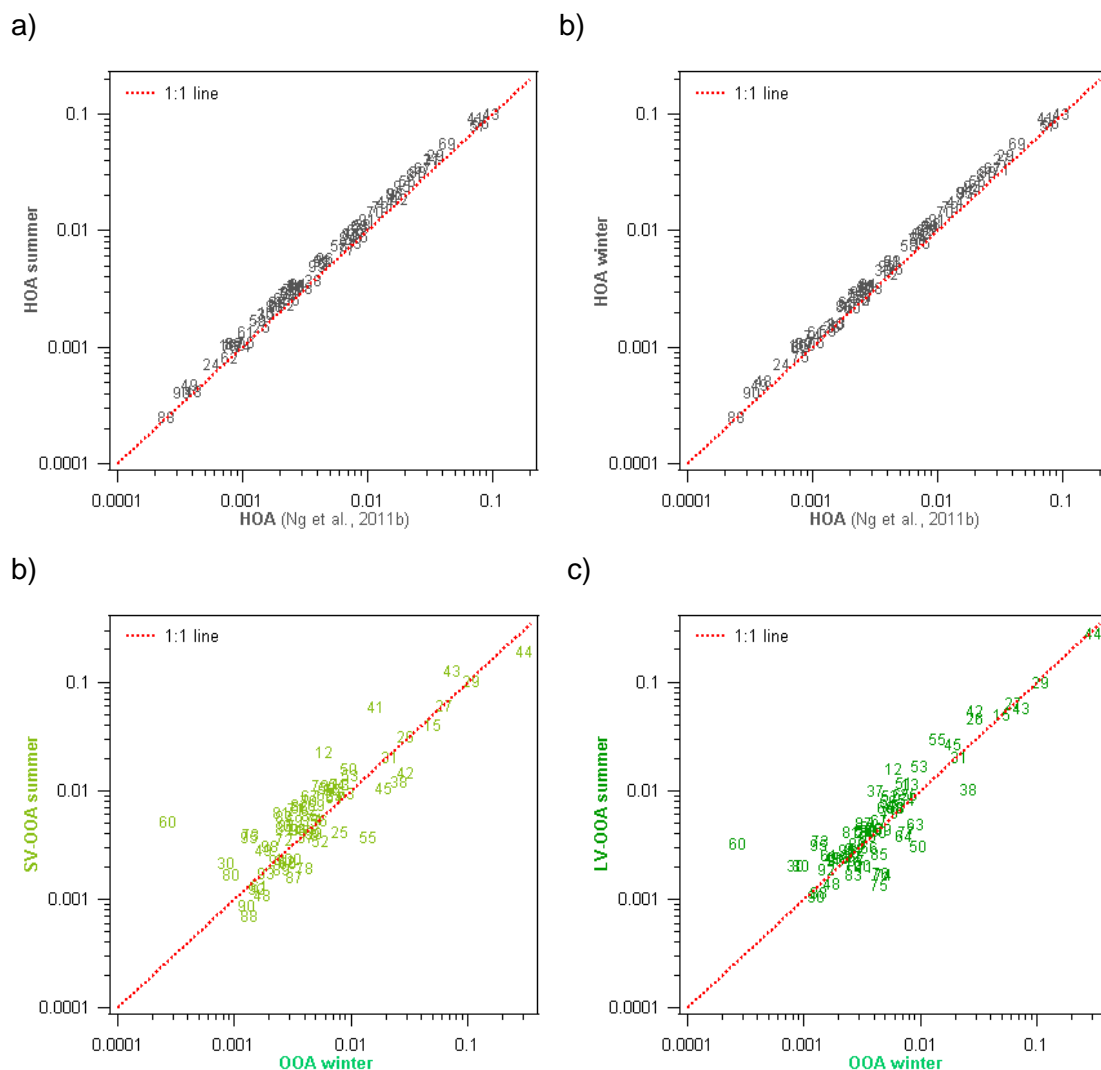


Fig.S7 Scatter plot of organic species profiles, (a) hydrocarbon-like organic aerosol (HOA) for the summer period (14 Jul 11 – 24 Sep 11) versus HOA from Ng et al. (2011b), (b) HOA for the winter period (10 Jan 12 – 7 Mar 12) versus HOA from Ng et al. (2011b), (c) semi-volatile oxygenated organic aerosol (SV-OOA) for the summer period versus oxygenated organic aerosol (OOA) for the winter period, and (d) low-volatility oxygenated organic aerosol (LV-OOA) for the summer period versus OOA for the winter period. The numerical markers correspond to m/z values.

Table S1 Average of meteorological parameters recorded at Montsec during the study.
Note that the whole period averages include also spring and fall.

	Whole period	Summer	Winter
Period	14 Jul11 - 23 Apr 12	14 Jul 11 - 24 Sep 11	10 Jan 12 - 7 Mar 12
Tavg (°C)	7.9	16.6	1.1
Tmax (°C)	28.8	28.8	13.5
Tmin (°C)	-13.5	5.5	-13.5
RH (%)	59	58	45
TAP* (mm)	422	51	3
WS** (m s ⁻¹)	0.8	2.0	3.6
WD** (degrees)	347	206	22
P (hPa)	852	853	852
SR (W m ⁻²)	180	273	152

*Total Accumulated precipitation

**Vector average