Supplementary Information of

Highly time resolved chemical characterization of submicron organic aerosols at a polluted urban location

Authors: N.V.S Bharath Kumar [1], Abhishek Chakraborty [1], S.N.Tripathi[1, 2*] and Deepika Bhattu[1]

Author affiliation: 1. Department of Civil Engineering Indian Institute of Technology, Kanpur

2. Centre of Environmental Science and Engineering, CESE, IIT Kanpur

*Corresponding author(s) E-mail: snt@iitk.ac.in

Figures: S1-S9

Page: S1-S8

Tables: S1

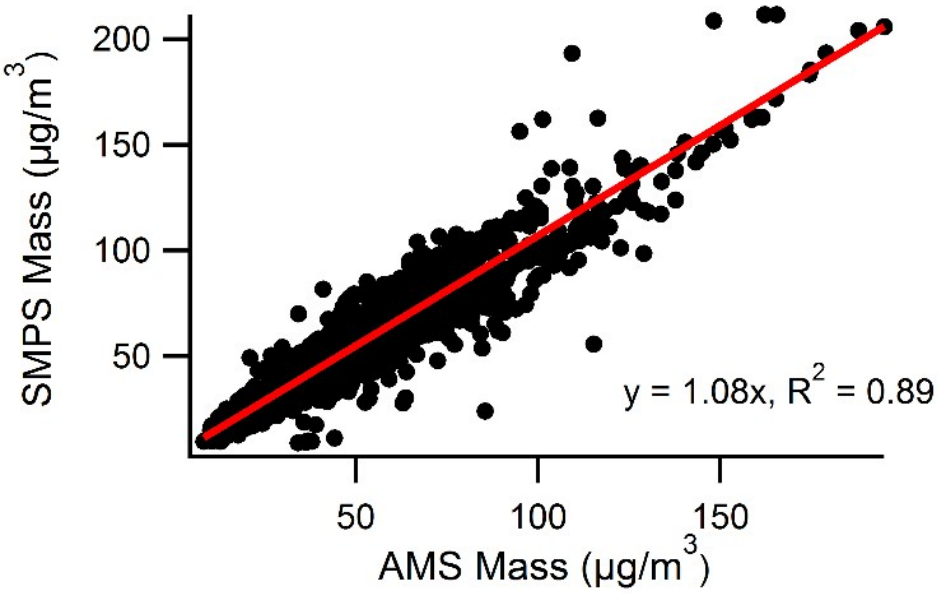


Fig. S1: AMS vs SMPS mass concentration plot to justify the choice of CE value of 0.5. SMPS mass is obtained from volume concentration by assuming a density of 1.4 g/cc as reported in previous studies [1,2] from this location.

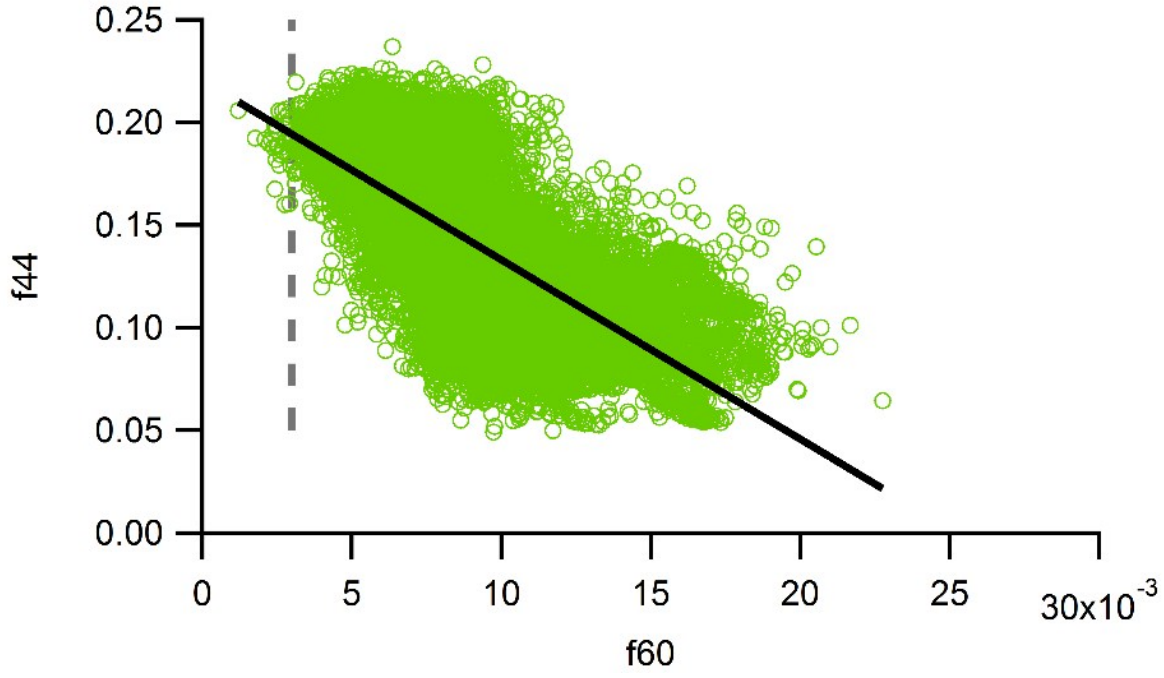
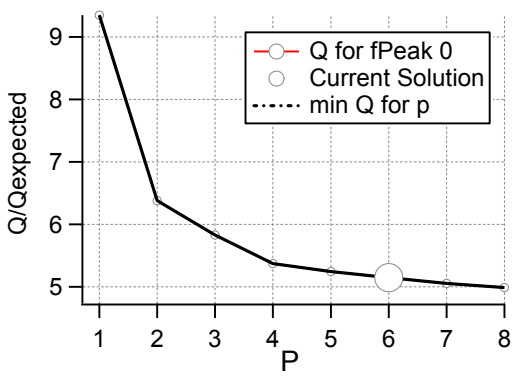
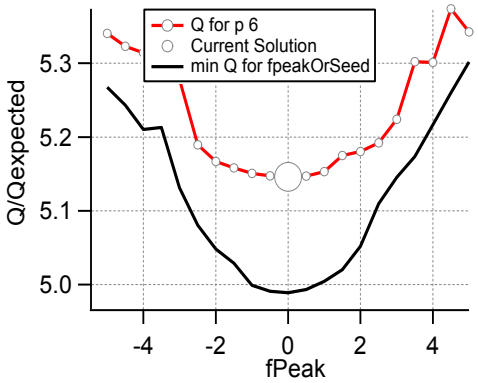
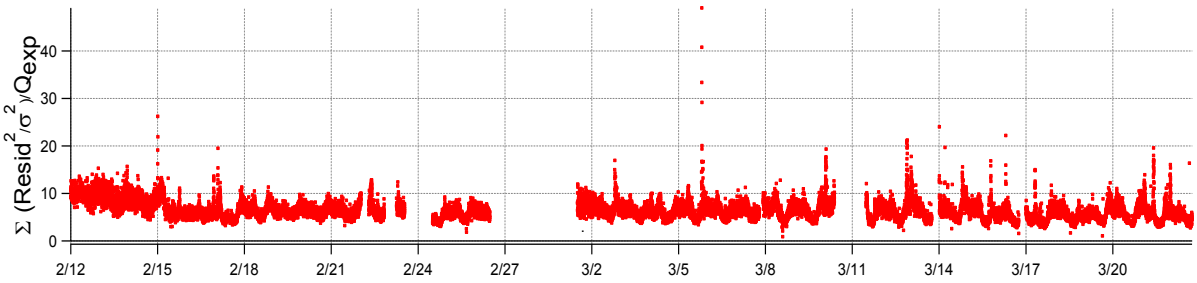


Fig. S2: *f*44 vs *f*60 plot to demonstrate the oxidation of biomass burning organic aerosol. Grey dashed line denotes the background *f*60 value taken from Cubison et al., (2011)[3].

1. Organic PMF Diagnostics:







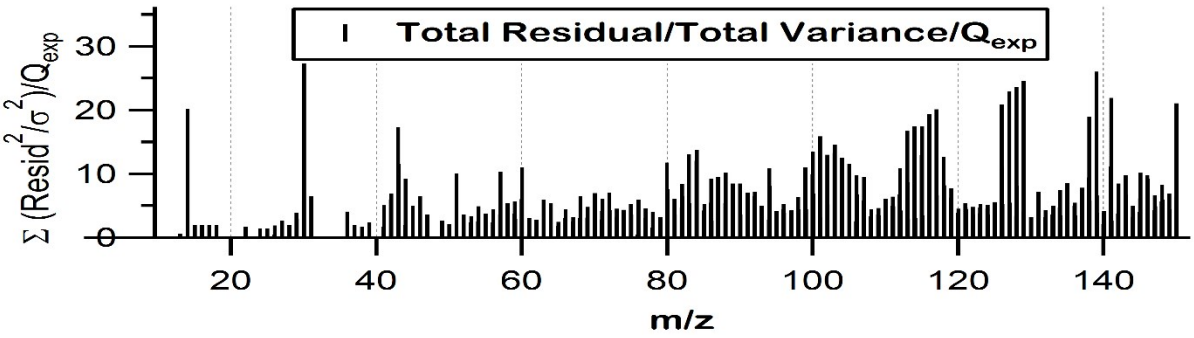


Fig.S3: Diagnostic information for the PMF analysis.

No. of factors	Remarks
<5	No HOA or SVOOA factor was identified, one HOA like factor with hydrocarbon dominated mass spectra also has higher *m/z* 60 signals. Several factors have identical mass spectra with very similar O/C ratios. Some key *m/z*'s like, 43,44 and 60 have high residuals.
5	Still, no clear HOA and SVOOA factors were seen. One HOA looks alike factor has high O/C ratio and *m/z* 44 signals. *m/z* 60 still have a high residual in spite of 3 BBOA factors.
6 (Chosen solution)	One clear HOA factor was identified along with one oxygenated POA factor. Types of primary BBOA factors were now reduced to 2. Significant reduction in residuals of key *m/z*'s was observed.
7	BBOA factors now started splitting but without any change in *m/z*'s

	residuals or diurnal patterns
> 8	Now, OOA factors were also started splitting.

Table S1: Rationale of choosing optimum PMF factors.

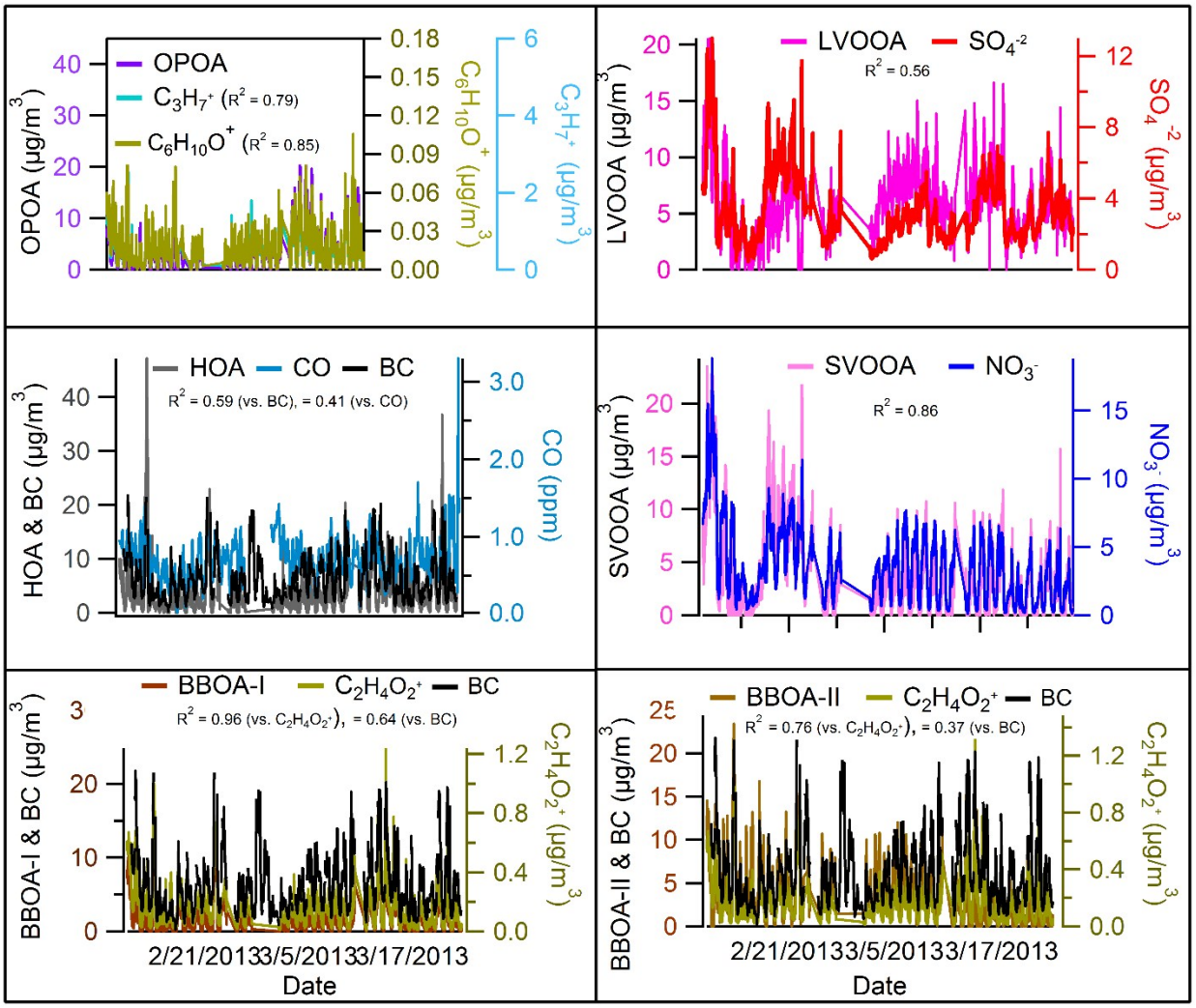
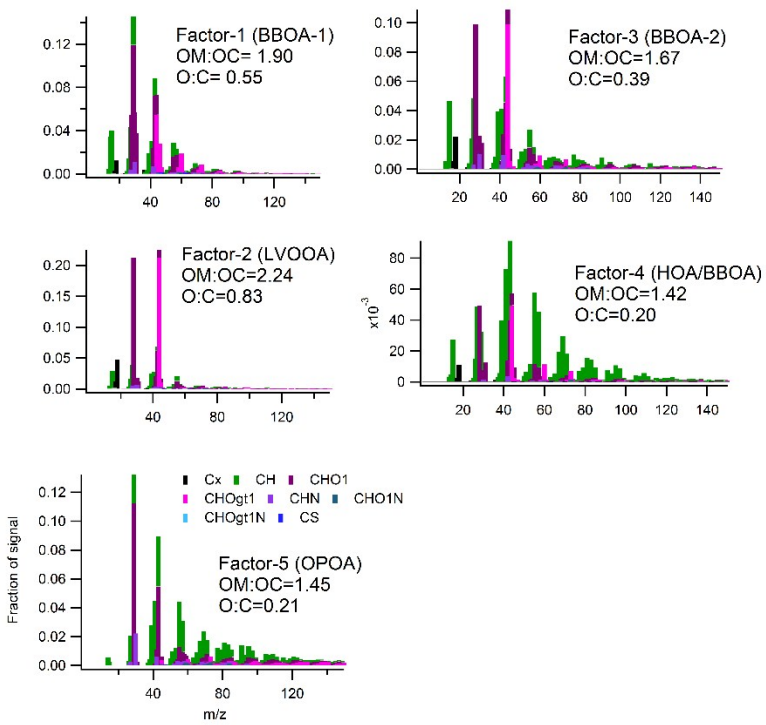


Fig. S4: Comparison between inter/external tracers and the different OA factors.



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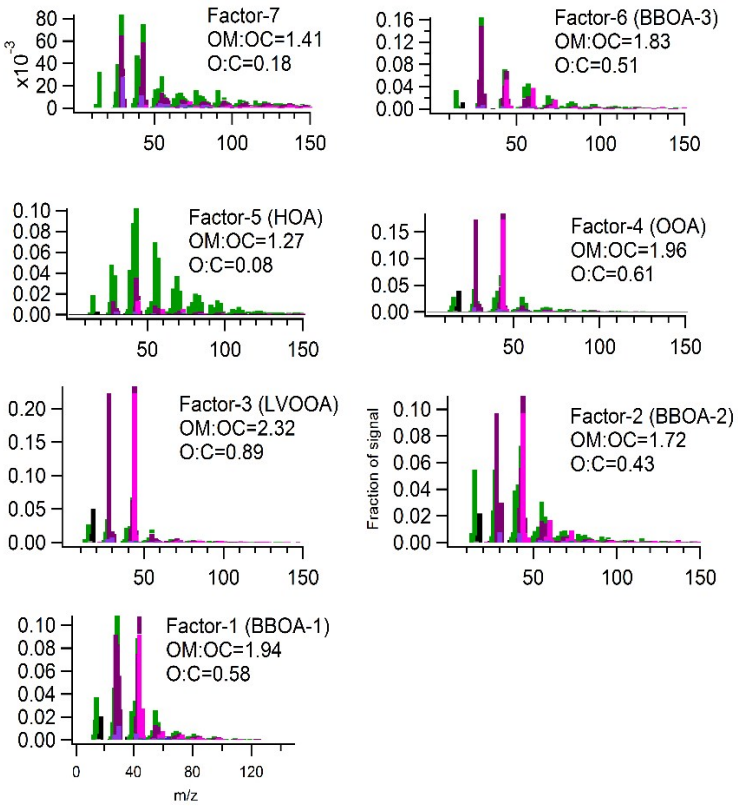
62 Figure S5 (a): Factor profiles of 5 factor PMF solution.



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64 Figure S5 (b): Factor profiles of 5 7 factor PMF solution.

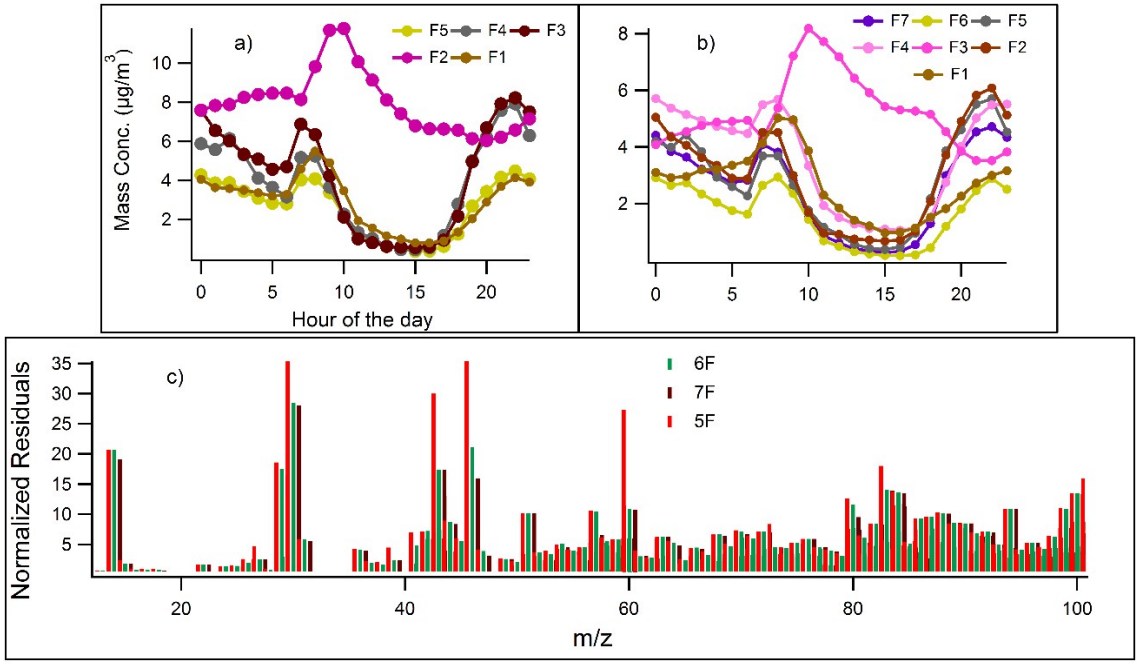

Fig. S6: Diurnal pattern for a) 5 factor and b) 7 factor PMF solution, c) residuals for 5,6 and 7 factor PMF solutions.

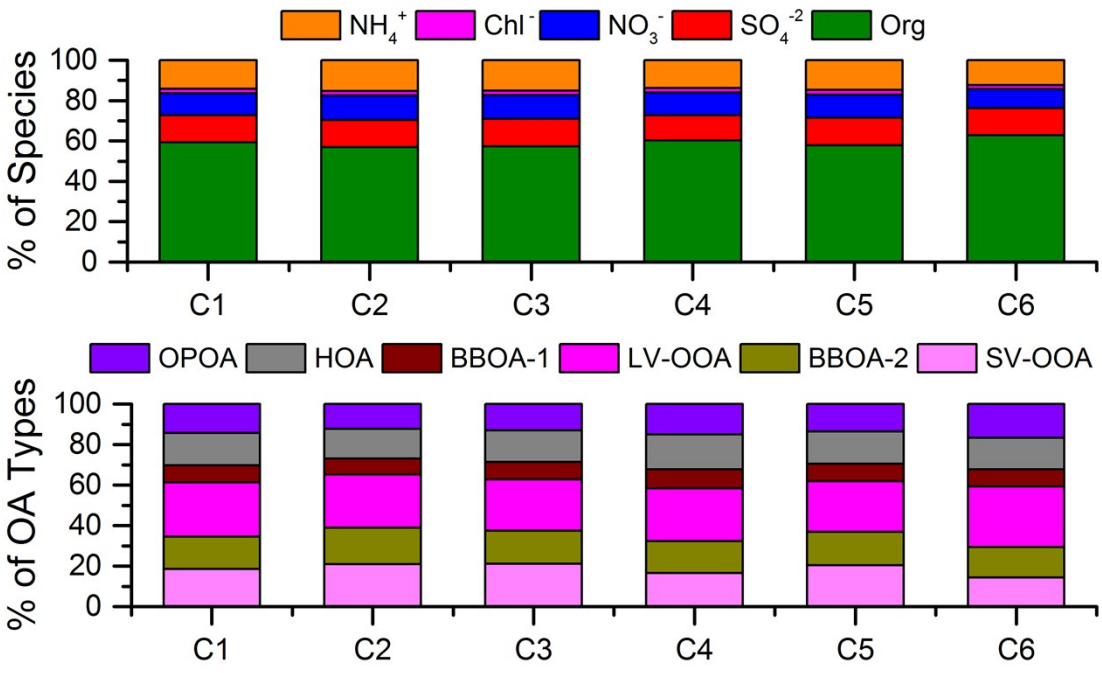

Fig. S7: Relative contributions of different NR-PM_1 aerosol species and various OAs in the different air masses. C1..C6 are denoting back trajectory air masses cluster 1 to 6 (Fig. 5).

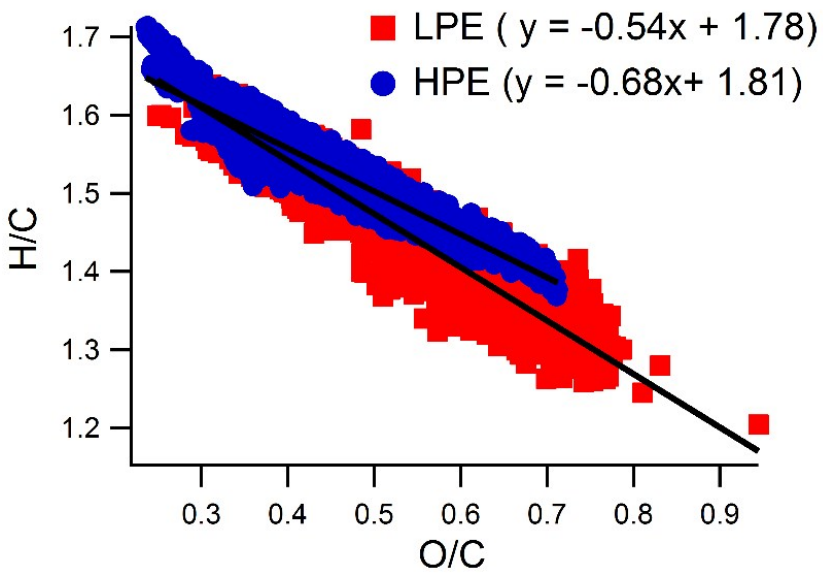

Fig. S8: Van Krevelen diagram (H/C vs. O/C plot) showing the difference in the slopes of OA evolution from HPE (High pollution events) and LPE (Low pollution events).

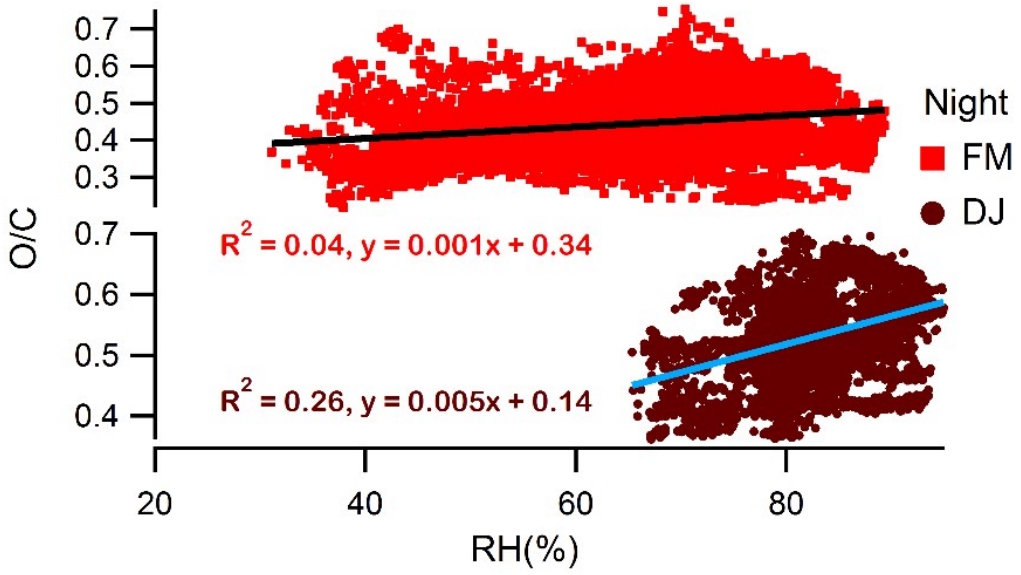

Fig. S9: RH vs O/C correlation during DJ & FM nights.