



Supplement of

Organic aerosol evolution and transport observed at Mt. Cimone (2165 m a.s.l.), Italy, during the PEGASOS campaign

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Supporting information

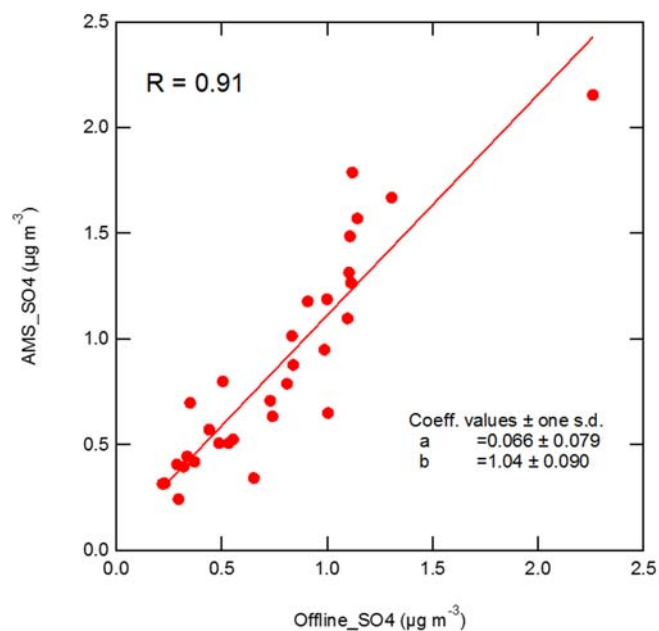


Figure S1. AMS sulphate (after CE correction) vs. offline PM1 sulphate. R = Pearson's correlation coefficient, a = intercept, b = slope.

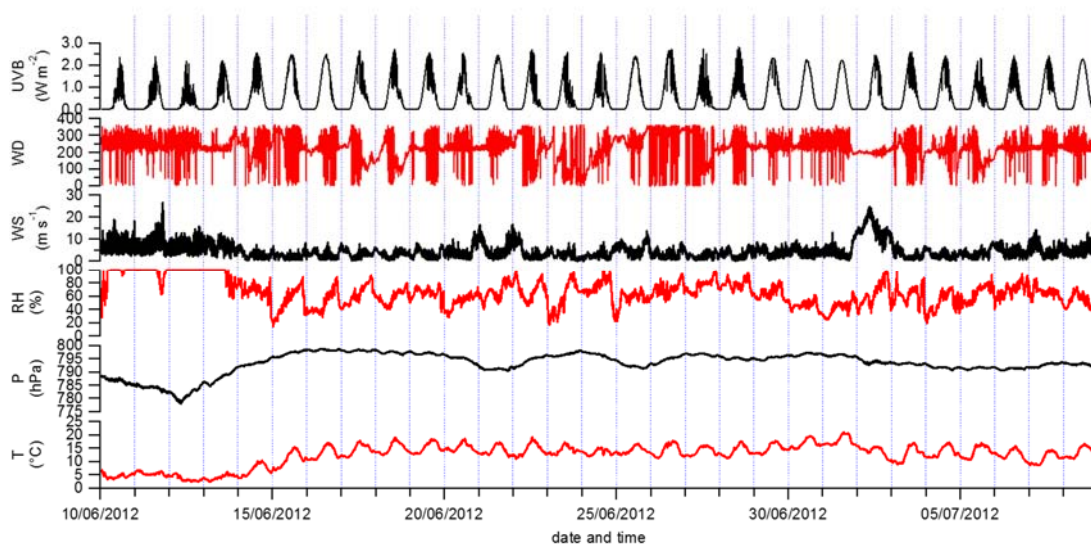


Figure S2. Meteorological parameter measured during the campaign. T = air temperature, P = atmospheric pressure, RH = relative humidity, WS = wind speed, WD = wind direction, UVB = UV-B radiation flux.

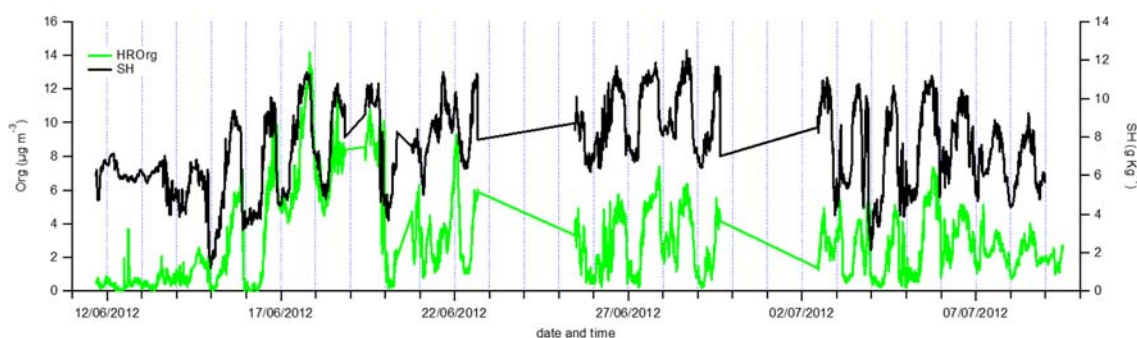


Figure S3. Time trends of AMS organics (green) and SH (black).

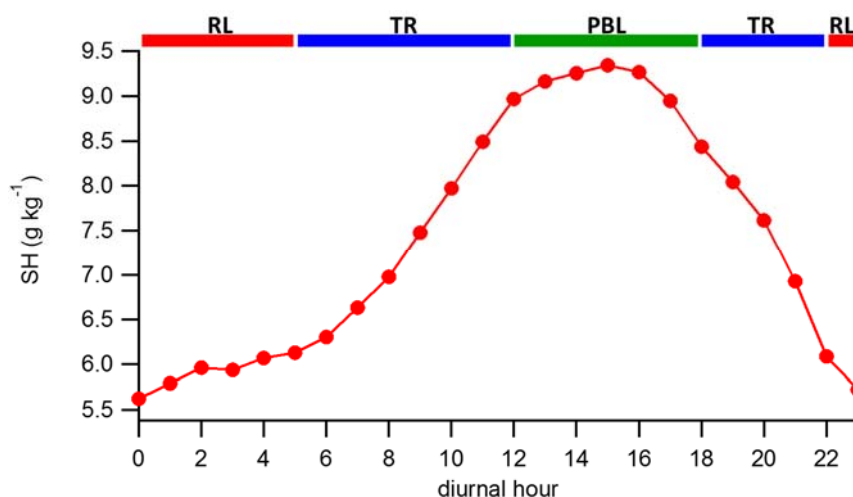


Figure S4. Average daily trend of SH measured at Mt. Cimone. Colored bars indicate the reference periods for the definition of RL, TR and PBL samples.

PMF analysis

Figure S5 shows Positive Matrix Factorization (PMF) key diagnostic plots for the HR-TOF-AMS measurements performed at Mt. Cimone during the campaign (June-July 2012). Q/Q_{exp} is shown as a function of the number of factors P (Figure S5, panel a) and f_{peak} values (Figure S5, panel c). Panel b) and d) show the distribution of scaled residuals and Q/Q_{exp} for each m/z , respectively. For this dataset we chose a 4-factor solution ($P=4$) yielding four different OOAs, with $Q/Q_{exp} = 2.3$. Two of the OOAs (Factor 1 and Factor 4 in Figure S6) were recombined into one factor, because of coincident time series and profiles, yielding the factor labelled OOAa in the paper. This solution was chosen

instead of the 3-factor solution ($P=3$) because it reduced Q/Q_{exp} and residuals. The addition of a factor ($P=5$) does not further decrease significantly the Q/Q_{exp} (2.2), meaning that most of the data variability can be explained by the selected solution. The rotational ambiguity of the 4-factor solution was explored by varying f_{peak} between -1.0 and +1.0. Since we did not observe significant changes in Q/Q_{exp} with f_{peak} (panel c) and both the mass spectra (MS) and temporal series (TS) did not change with varying f_{peak} (not shown here), a $f_{peak} = 0$ was chosen for this solution.

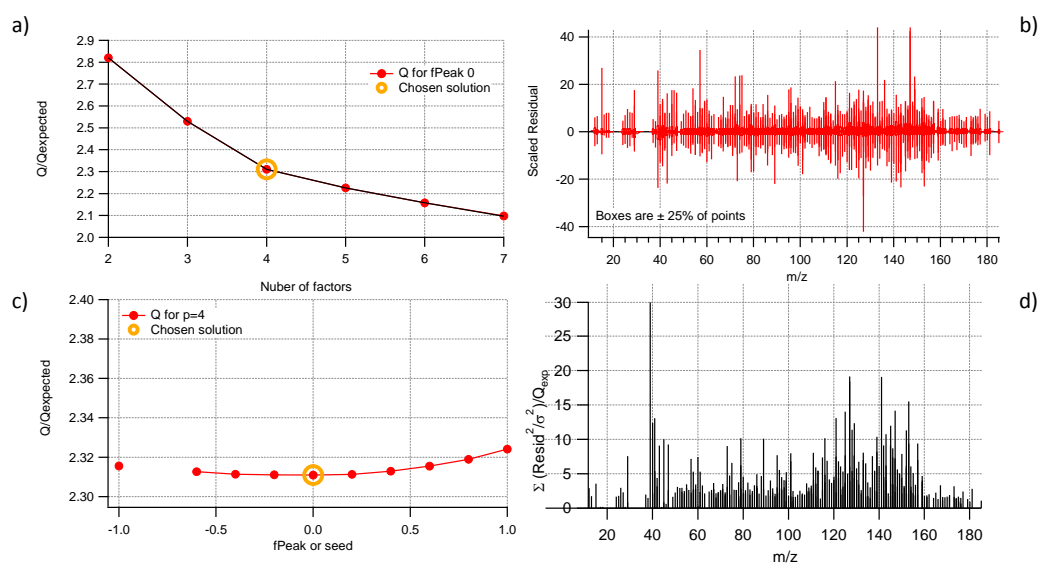


Figure S5. Summary of PMF key diagnostic plots (panels a, b, c, d) for the HR-TOFAMS data collected during the campaign. Panel a) shows the Q/Q_{exp} as a function of the number of factors P and panel c) shows the Q/Q_{exp} as a function of f_{peak} for the 4-factor solution. Panels b) and d) show the distribution of scaled residuals and Q/Q_{exp} as a function of m/z .

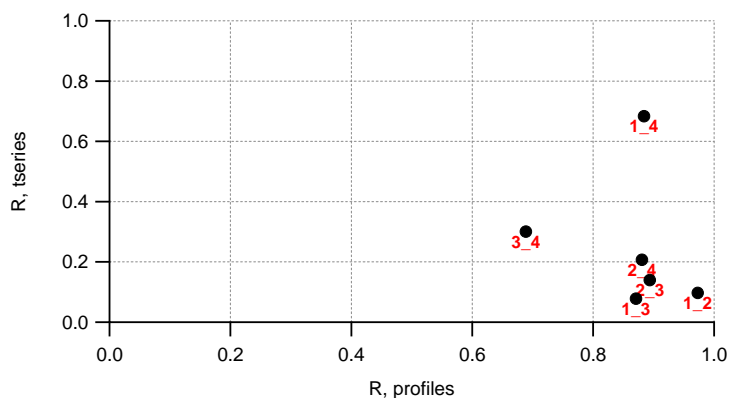


Figure S6. Comparison of time series and profile between the factors resulting from the $P=4$ solution. The plot shows high similarity for both time series and profile between Factor 1 and Factor 4.

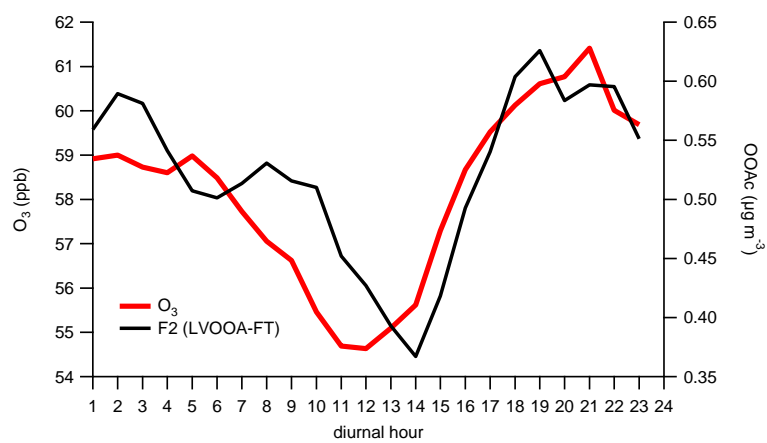


Figure S7. Average daily trend of ozone and OOAc at Mt. Cimone during the campaign.