# Evaluation of the performance of a particle concentrator for on-line instrumentation

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## Supplements

**Table S1.** The shift of particles size for monodisperse AS and DOS particles in the m-VACES.

| Particle size (nm) | AS % (nm) | DOS % (nm) |
|---|---|---|
| 50 | 20 (10) | 30 (5.9) |
| 70 | 7.7 (5.4) | 7.7 (5.4) |
| 100 | 4.0 (4.0) | 4.0 (4.0) |
| 200 | 3.5 (7.0) | 3.5 (7.0) |
| 300 | 0.0 (0.0) | 0.0 (0.0) |

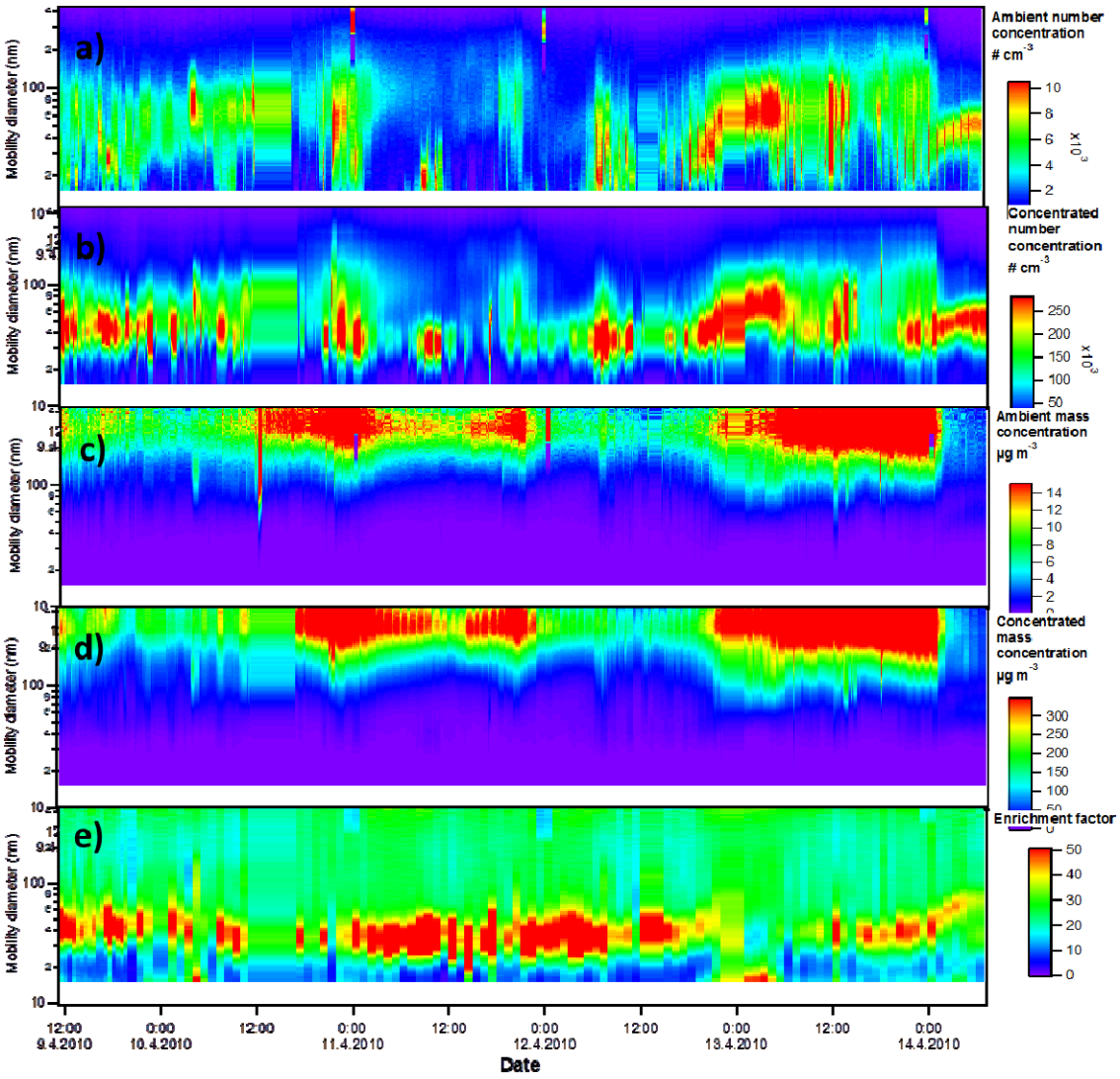


**Fig. S1.** Time series for the size distributions of particle number (a-b), mass (c-d) and enrichment factor. (a) and (c) are for ambient and (b) and (d) for concentrated aerosol. Particle mass was calculated by using the density of 1.48 g $cm^{-3}$.

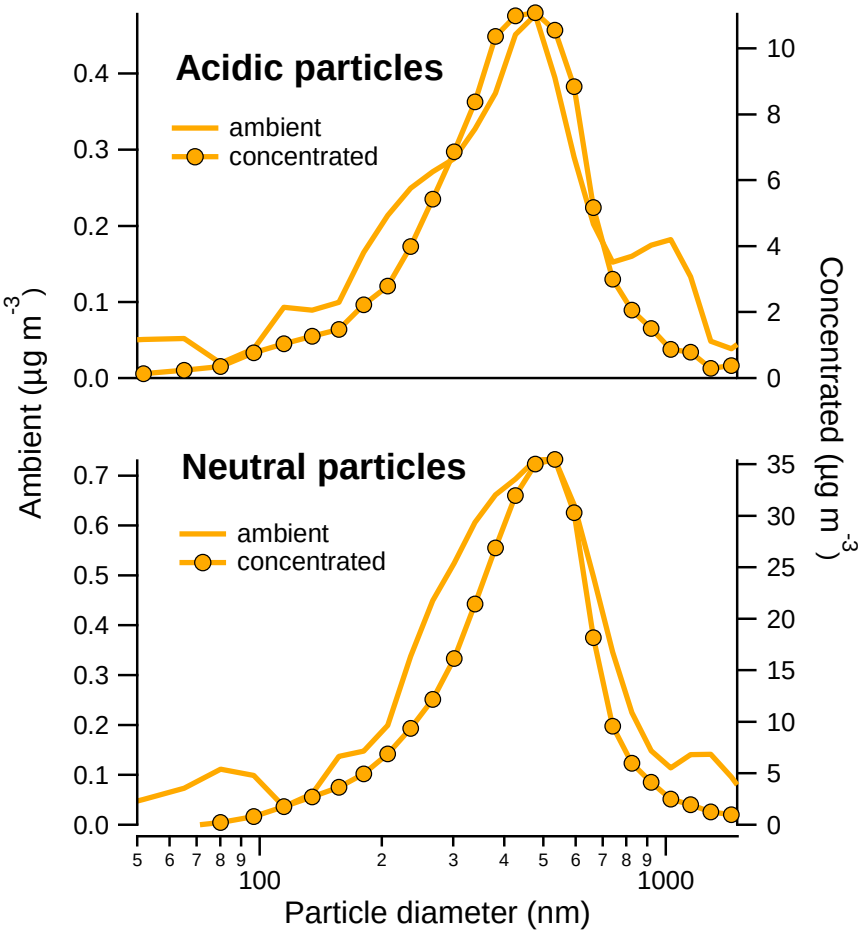


**Fig. S2.** Size distribution of ammonium during the period when the particles were acidic (April 12, 2010) and nearly neutral (April 13, 2010; 6 am to midnight). Ambient size distributions were smoothed by one point.

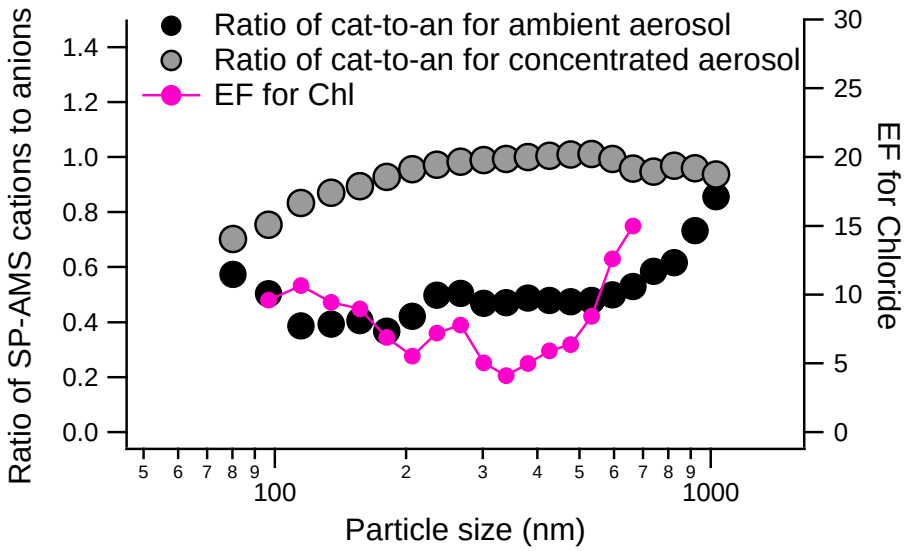


**Fig. S3.** Ratio of SP-AMS cations to anions for ambient and concentrated particles and EF for chloride as a function of particle size. Average for the whole measurement period. Ratios have been smoothed by 1 point.

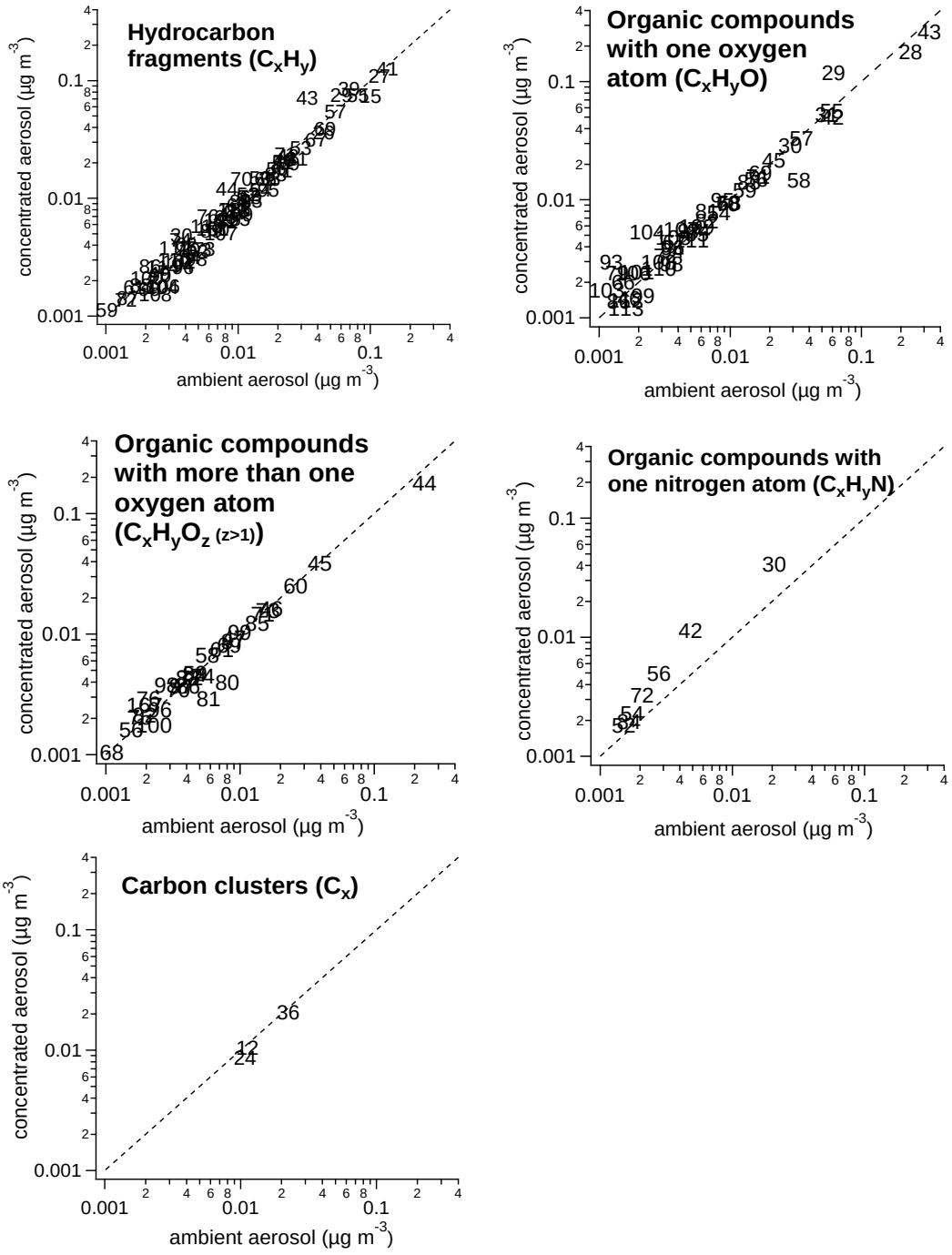


**Fig. S4.** Scatter plots of the mass fragments in ambient and concentrated OA separated into different compound classes. Carbon clusters ($C_x$) were measured only with the laser on and the concentration of $C_1$ (m/z 12) according to the fragmentation Table in Onasch et al. (2012). Concentrated aerosol is divided by the average EF for organics (27.08; a, c-e) and r-BC (37.61; b) (Table 2). One to one ratio is shown by dash lines.

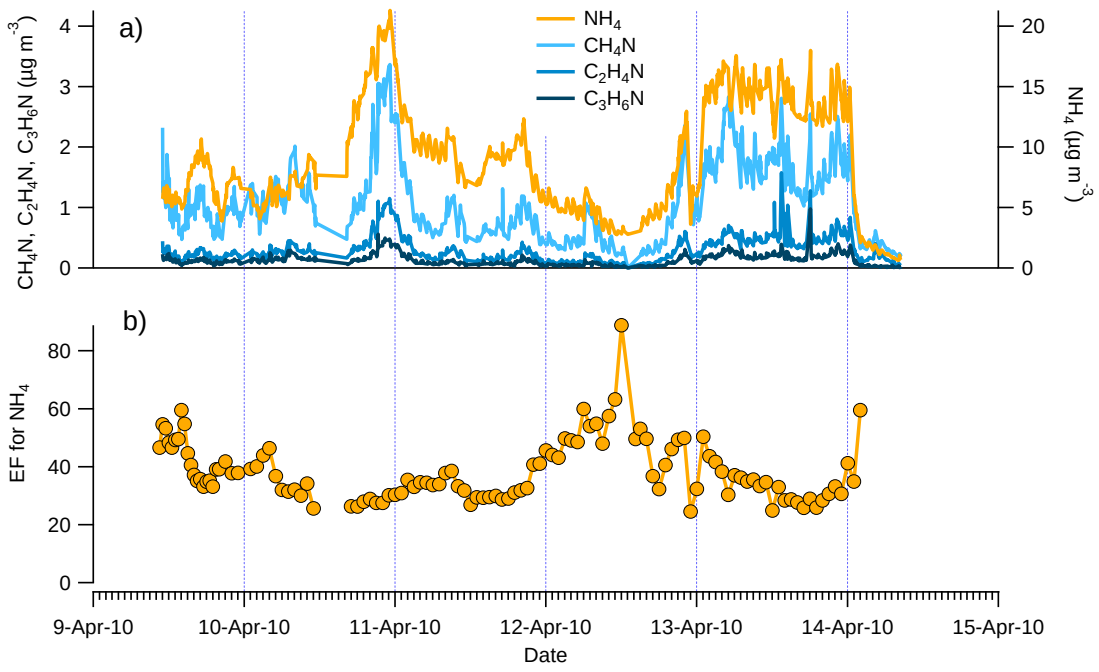


**Fig. S5.** Time series of ammonium and amines for the concentrated aerosol (a) and the enrichment factor for ammonium (b).

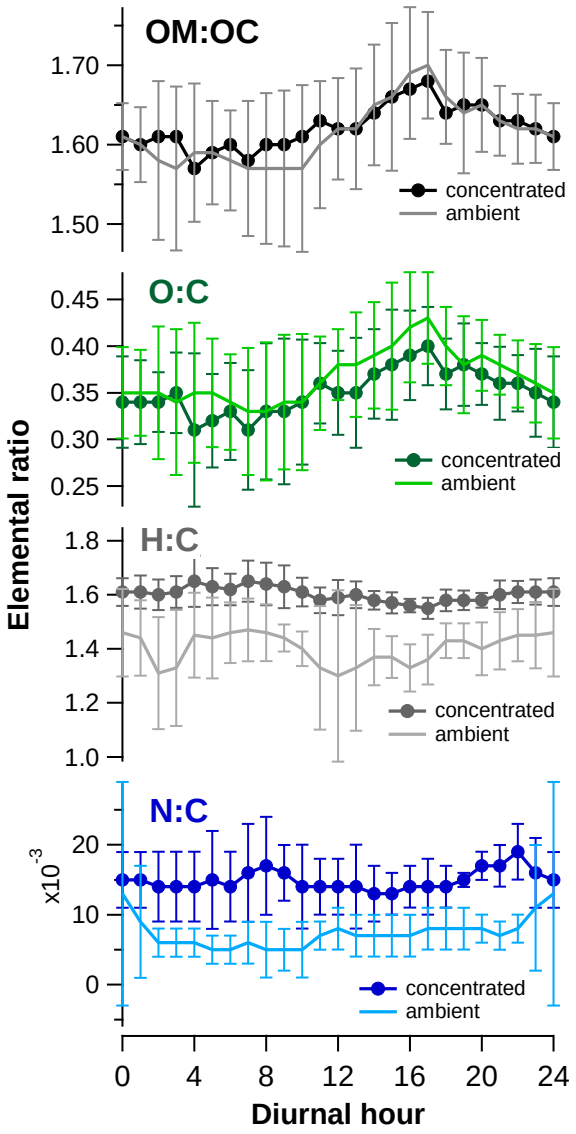


**Fig. S6.** Diurnal trends for OM:OC, O:C, H:C and N:C for concentrated and ambient OA.

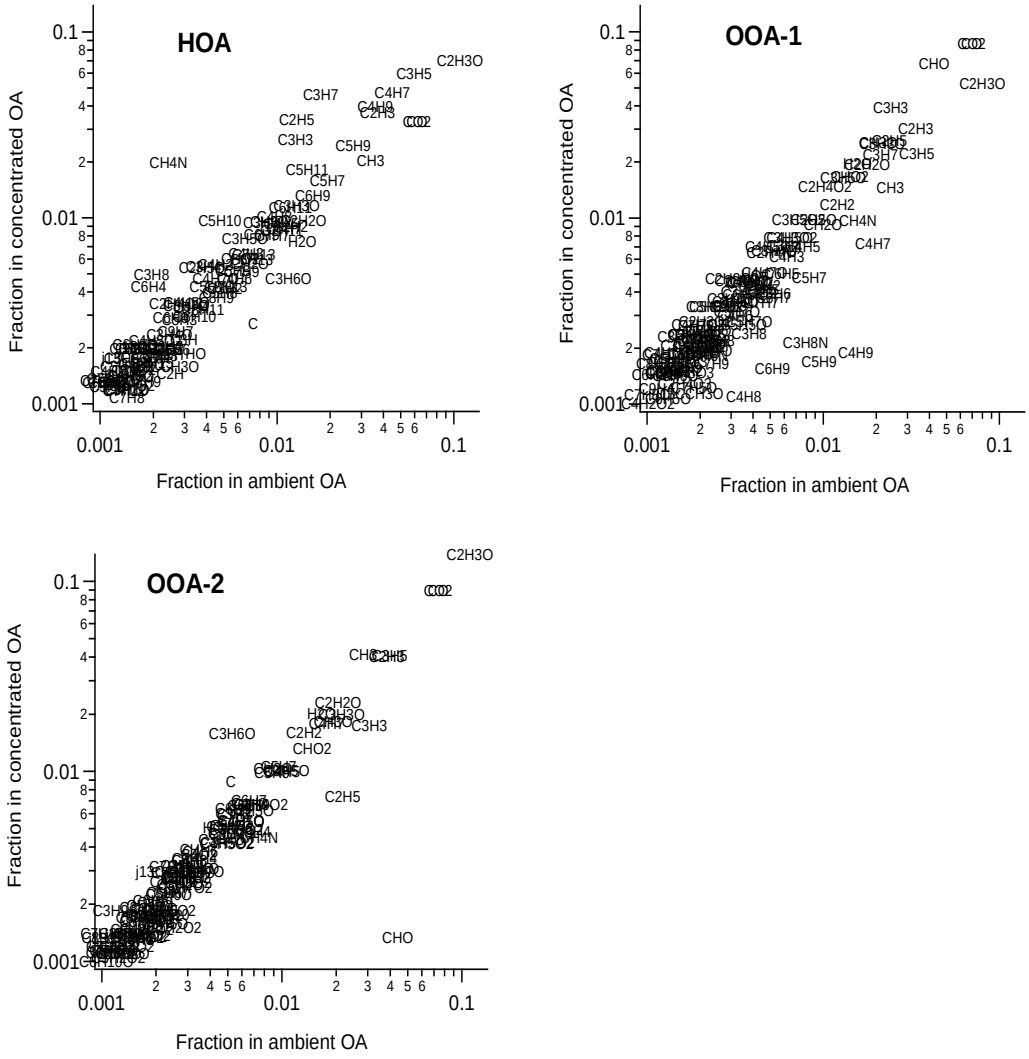


**Fig. S7.** Correlation of mass spectra for PMF factors for ambient and concentrated OA.

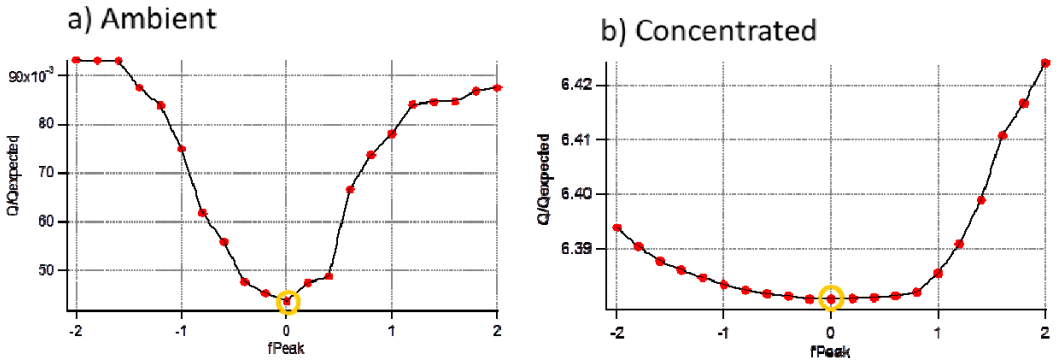


**Fig. S8.** The variation of Q/Qexpected with the value of fPEAK for ambient (a) and concentrated (b) PMF solution.

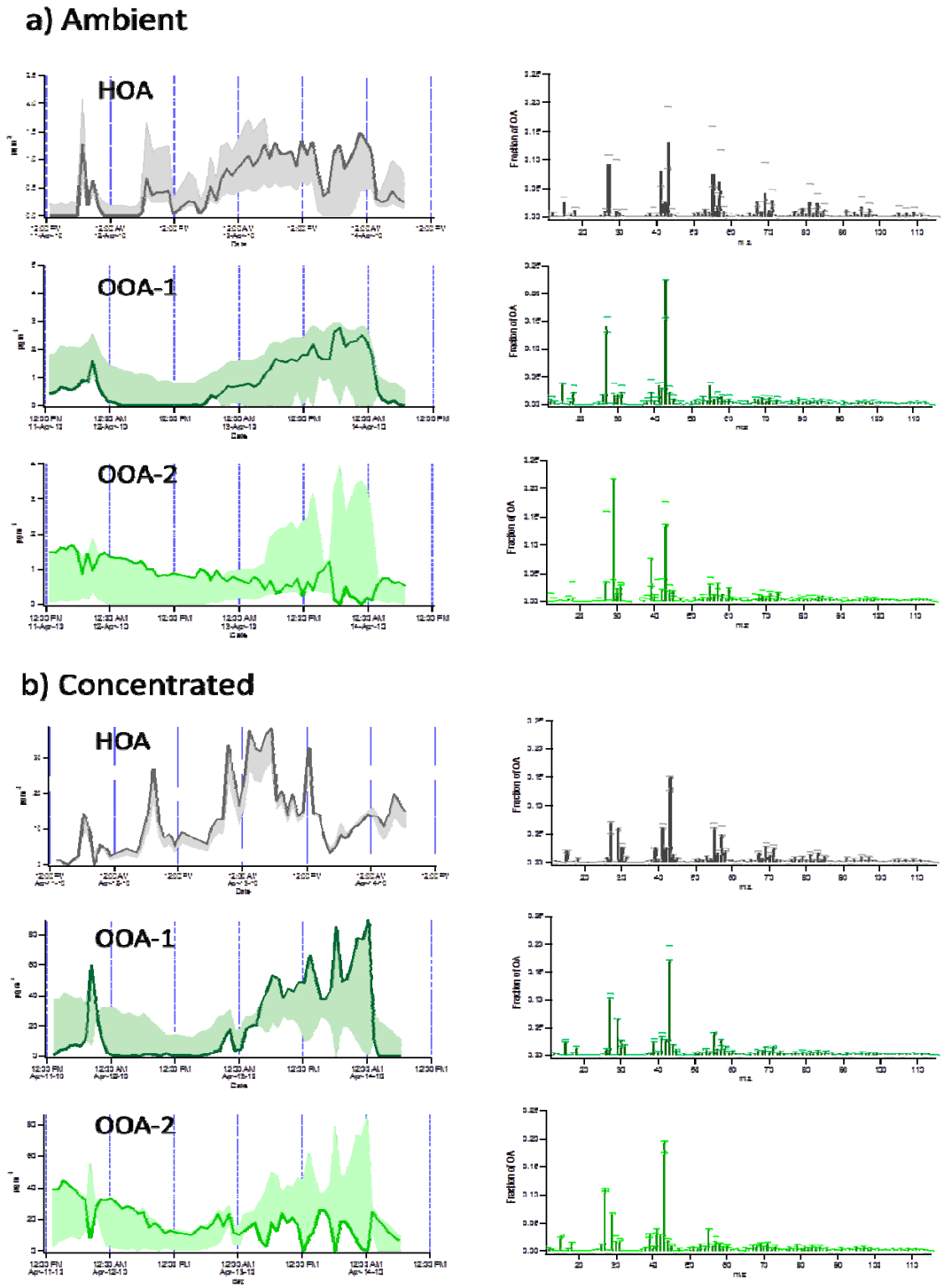


**Fig. S9.** The variation of time series and mass spectra for the PMF factors with the fPEAK values from -0.4 to 1.6. Ambient (a) and concentrated (b) OA.

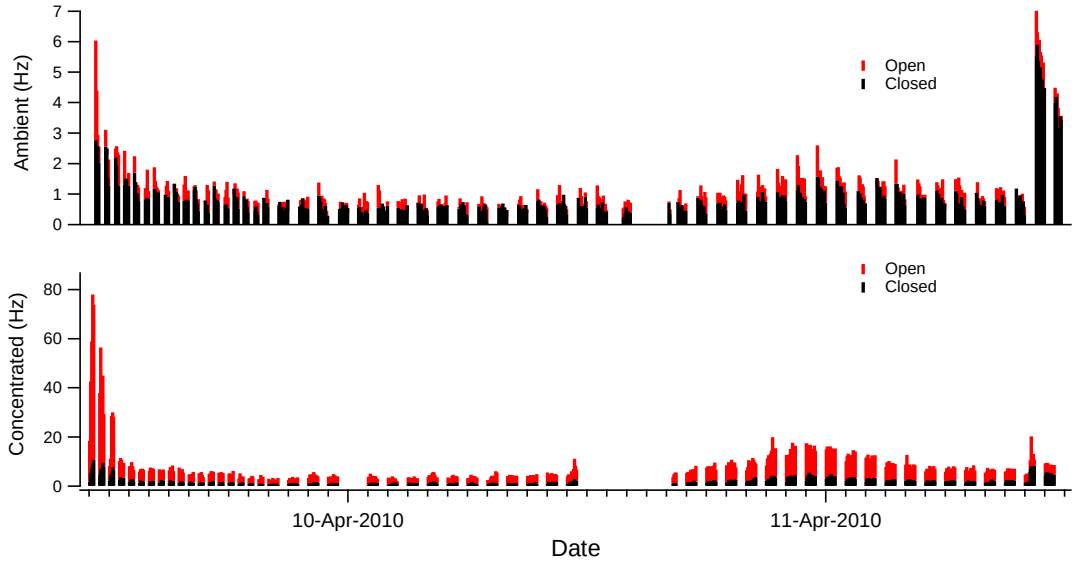


**Fig. S10.** Slow evaporation of zinc. Open and closed signal for ambient and concentrated aerosol.

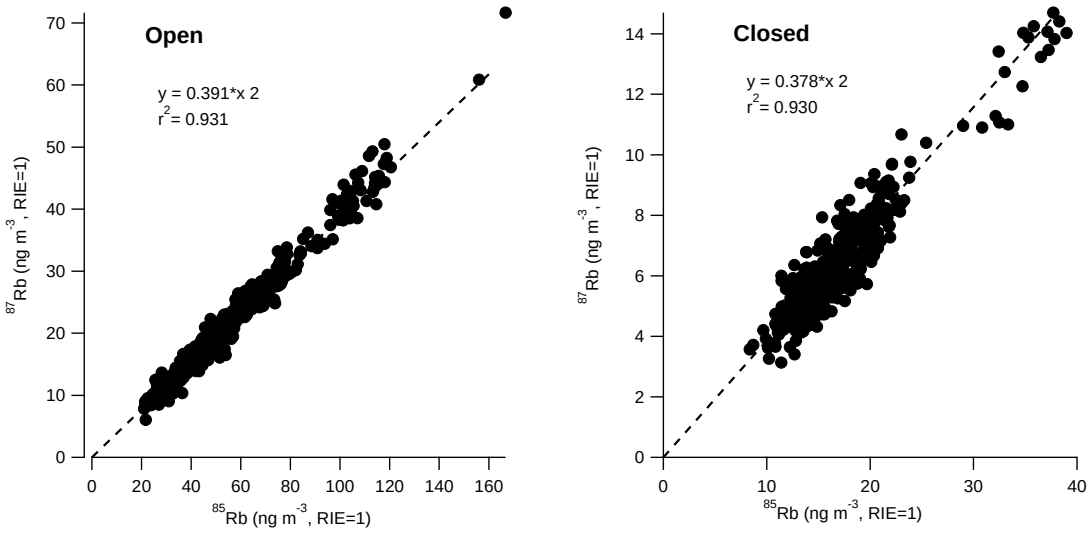


**Fig. S11.** Scatterplot of signal from $^{87}$Rb and $^{85}$Rb for open and closed modes. Expected natural isotopic ratio is shown by a dash line.

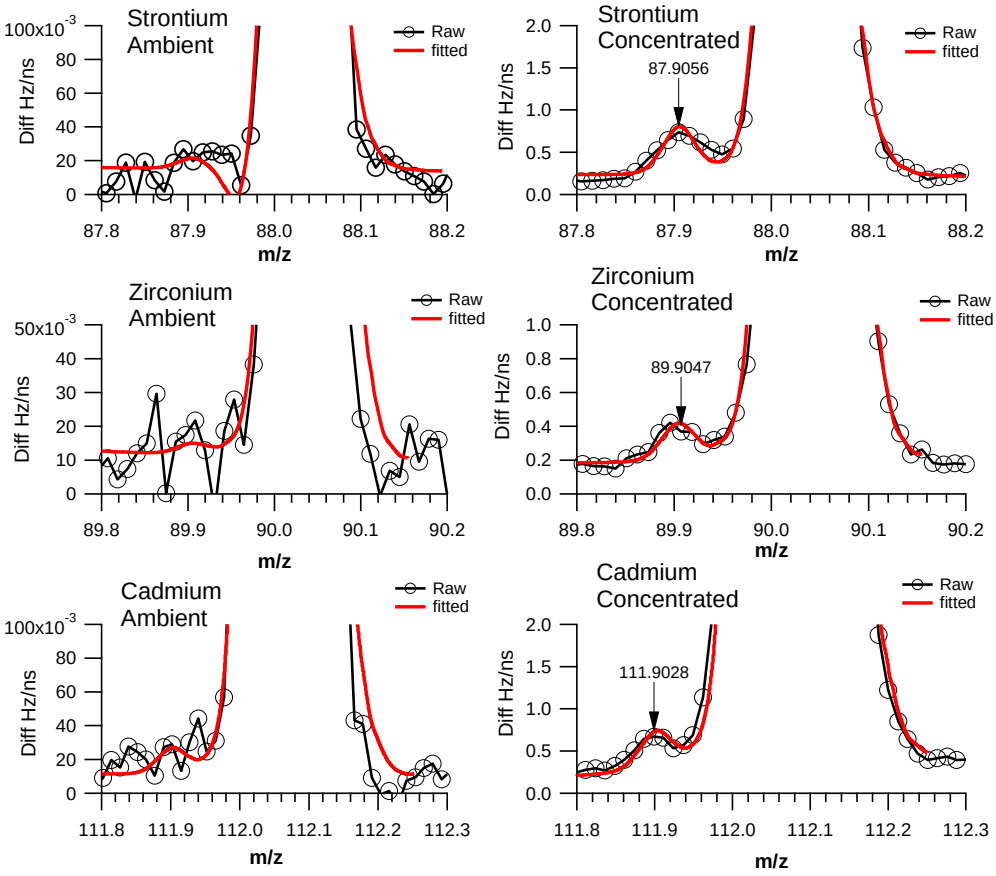


**Fig. S12.** Strontium, zirconium and cadmium peaks for ambient and concentrated aerosol. Additional isotopes of these ions could not be detected.