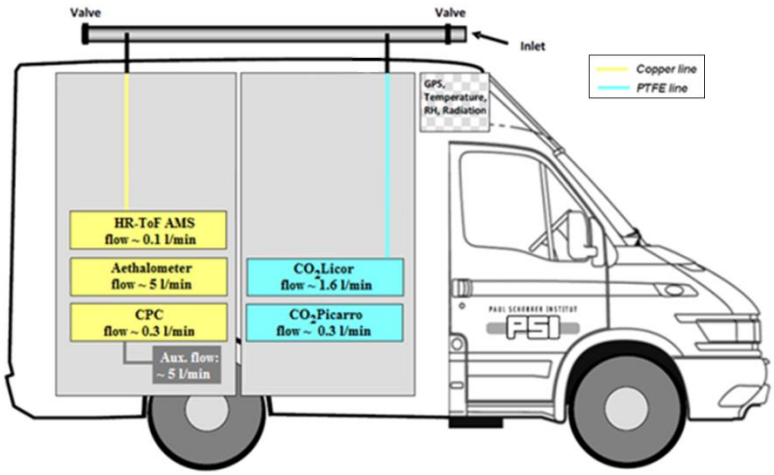

Figure S1: Schematic of the mobile laboratory instrumental set-up.

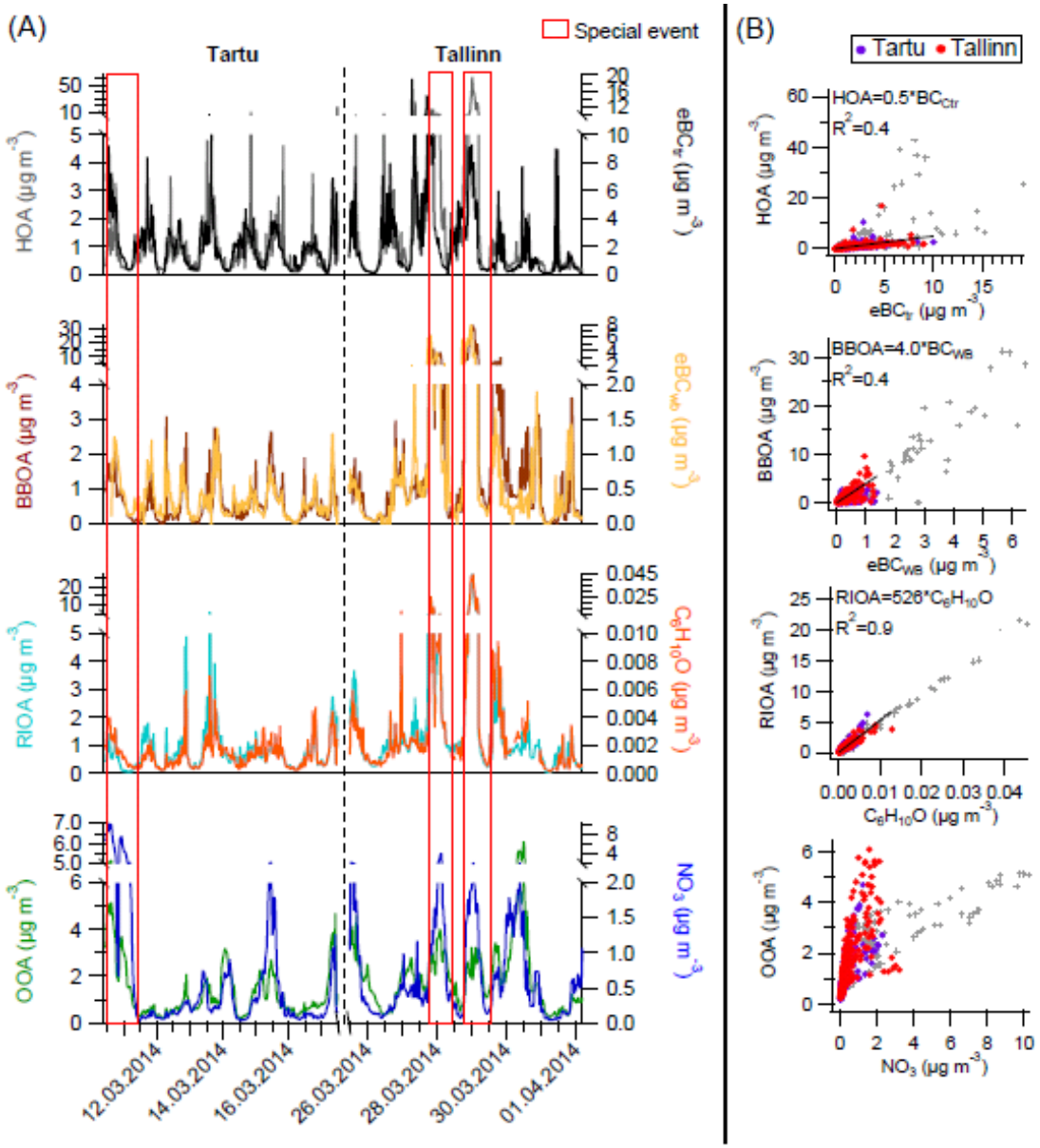

Figure S2: (a) Temporal evolution of the OA sources (left axis) and the external tracers (right axis) over the full measurements period. (b) Correlations of the OA sources with their external tracers. Grey points are relative to periods considered as special events and were not considered for the linear fits. Note: All data was averaged to 30 minutes resolution, for which the separation eBC_{tr} and eBC_{wb} was possible.

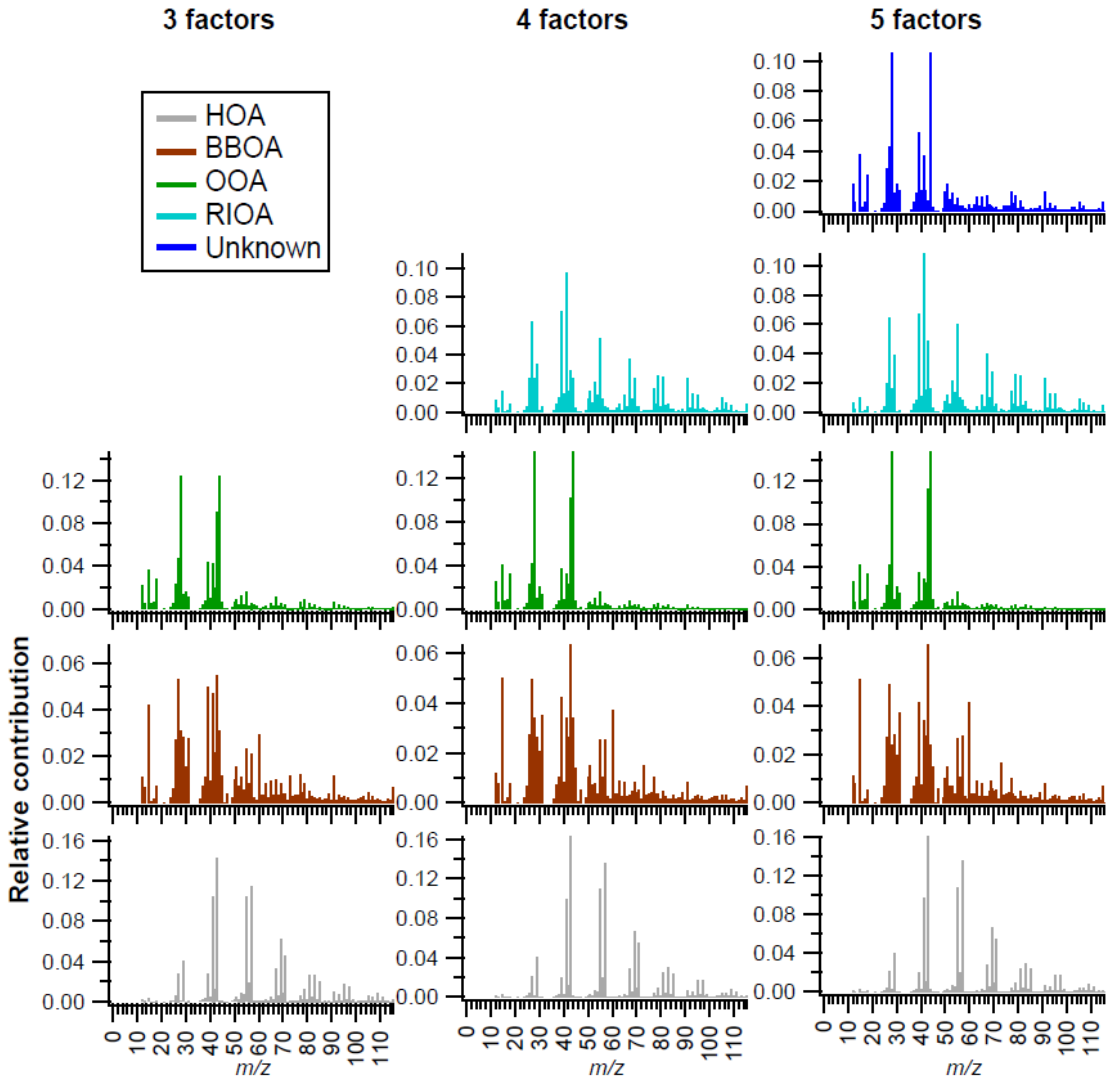

Figure S3: PMF factor mass spectra for three-, four- and five-factor solutions (from left to right).

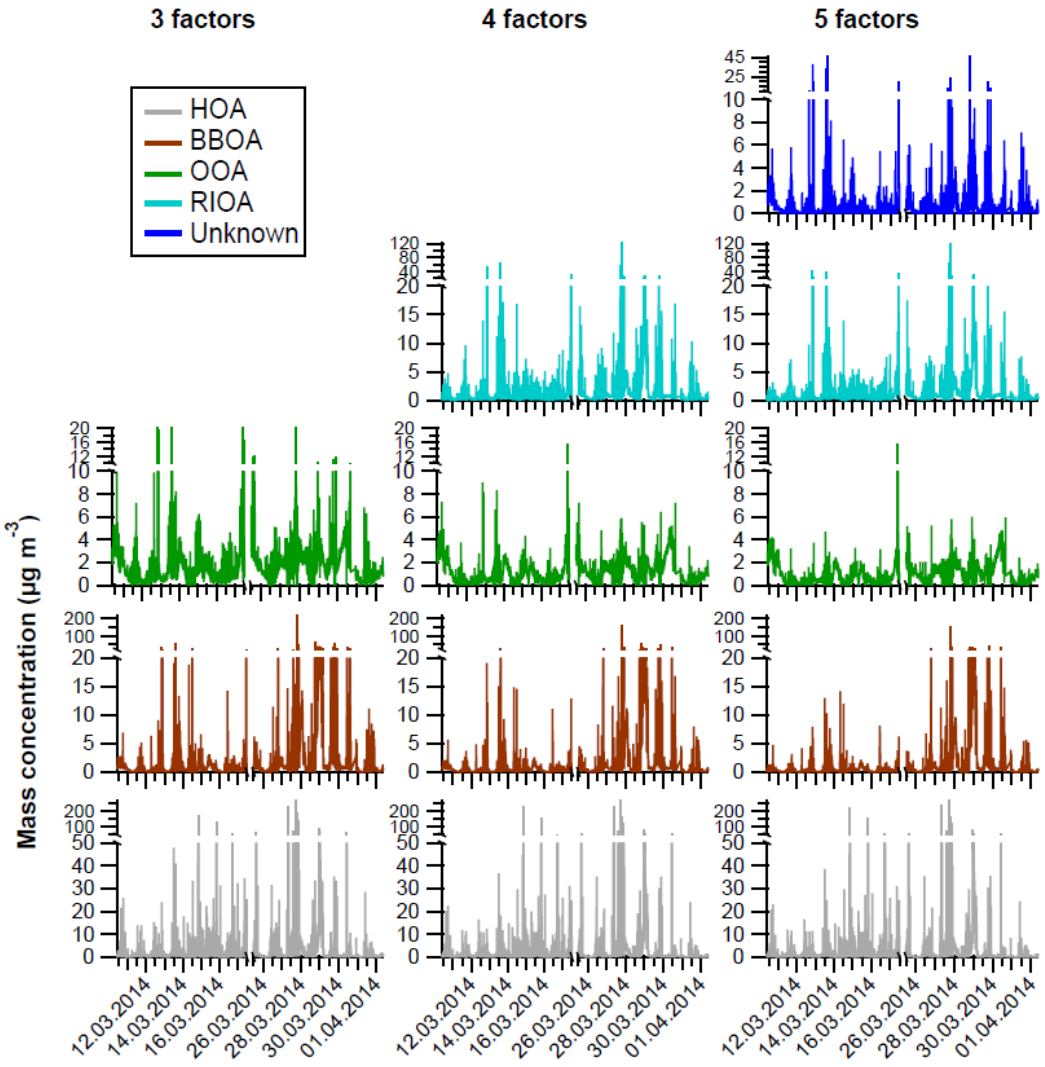

Figure S4: PMF factor temporal evolution for three-, four- and five-factor solutions (from left to right).

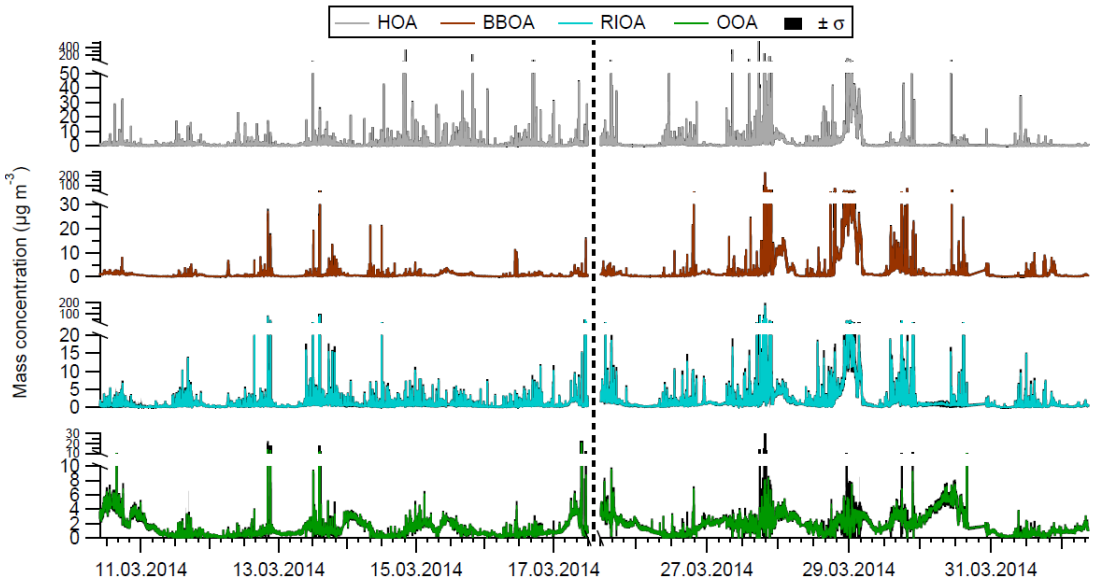

Figure S5: Temporal evolution of mass concentration of the four identified OA sources over the full measurement period. Black shaded area represents the standard deviation among 100 bootstrap runs.

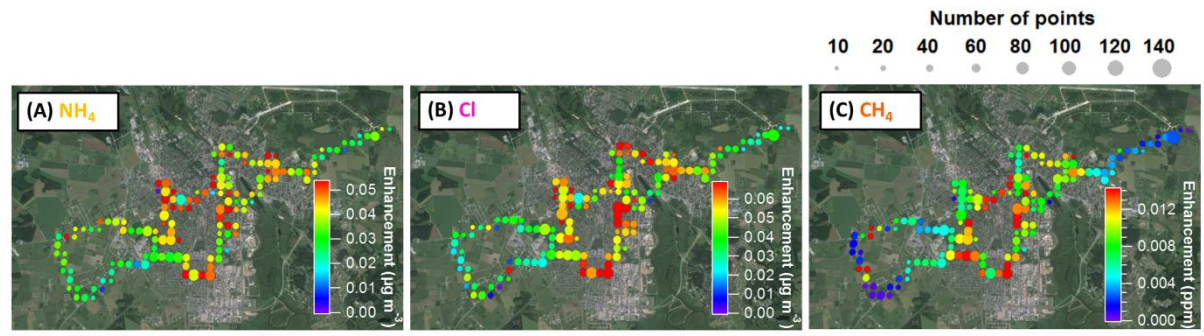

Figure S6: Average spatial distributions of (a) NH_4, (b) Cl and (c) CH_4 in Tartu. The color scales represent enhancement over the background concentrations; the maximum have been fixed to the 75^{th} percentile of the average enhancement of each component. The sizes of the points represent the number of points that have been averaged in each case.

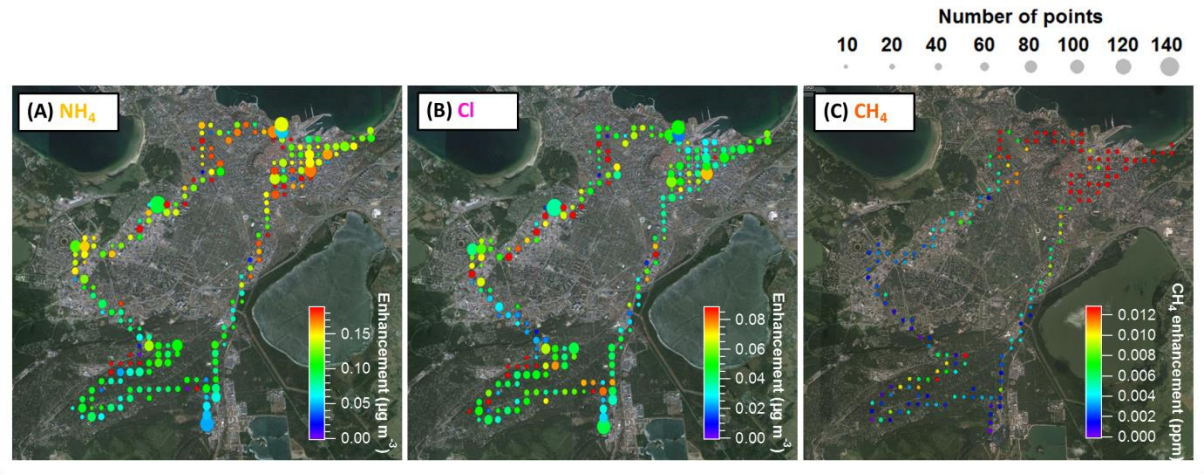

Figure S7: Average spatial distributions of (a) NH_4, (b) Cl and (c) CH_4 in Tallinn. The color scales represent enhancement over the background concentrations; the maximum have been fixed to the 75th percentile of the average enhancement of each component. The sizes of the points represent the number of points that have been averaged in each case (Note: less data available for CH_4).

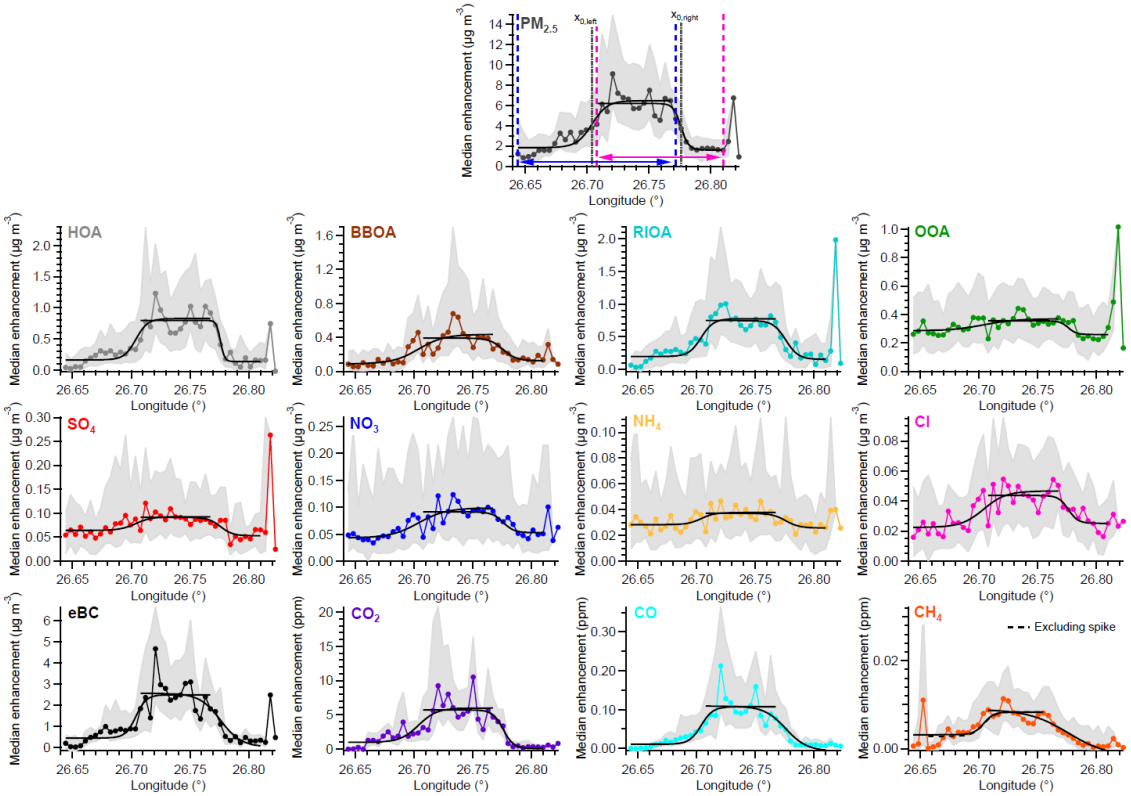

Figure S8: Median longitude profiles of the enhancements of all measured components and sources in Tartu. Colored curves represent the median enhancement of each component/ source over 26 loops and the grey shaded area represents the first and third quantiles (Q1 and Q3). The median enhancements were fitted with sigmoid functions (black curves). The fitting limits (pink and blue arrows in top panel) and the sigmoid's midpoint (X_0) were determined from the fit of the total $PM_{2.5}$ mass (NR-$PM_{2.5}$ plus eBC) and then imposed to the other components/sources. The dashed black lines indicate a non-standard fit (described in each case in the plot) and the results of these fits are represented in parenthesis and grey color in Table 2b. Notes: The spike found in the east for RIOA, OOA and SO_4 is not representative, as it is related to one single measurement point. The spike in CH_4 in the west side is related to consistent increases of this component nearby a cowshed and will be further investigated in a future publication.

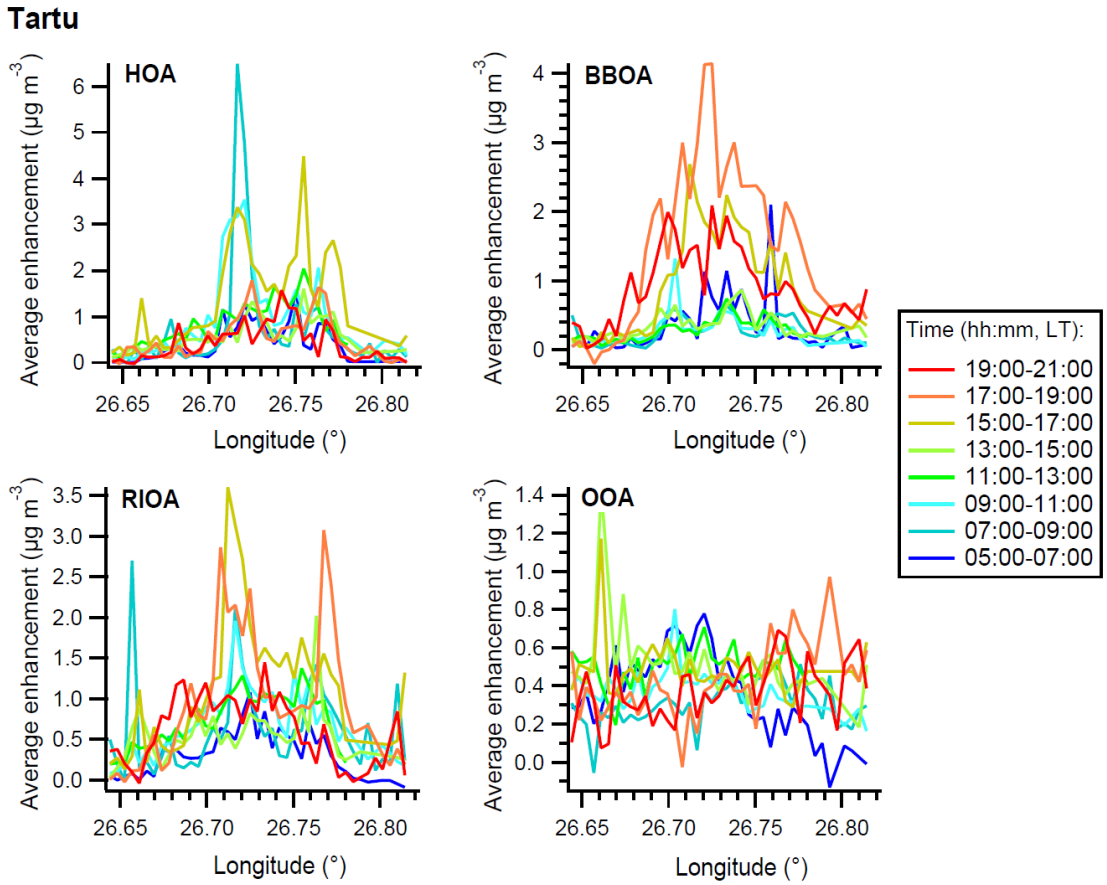

Figure S9: Average longitude profiles of the enhancements of the OA sources in Tartu separated into time-bins of two hours of local time (LT).