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Atmospheric Chemistry and Physics Discussions

Supplement of

Inverse relationship between the degree of oxidation of OOA (oxygenated organic aerosol) and the oxidant OX (O_3 + NO_2) due to biogenic emissions

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Supplementary material

Winter 2011

The solution of the source apportionment for the winter 2011 is summarized in Fig. S.1, Fig. S.2 and Fig. S.3. Similar as for the solution over the full year, the diurnal cycle of HOA is similar to that of NO_x, the cooking factor manifests a peak a noon and in the early evening, BBOA is slightly higher at night due to domestic heating in winter and SV-OOA is temperature-driven.

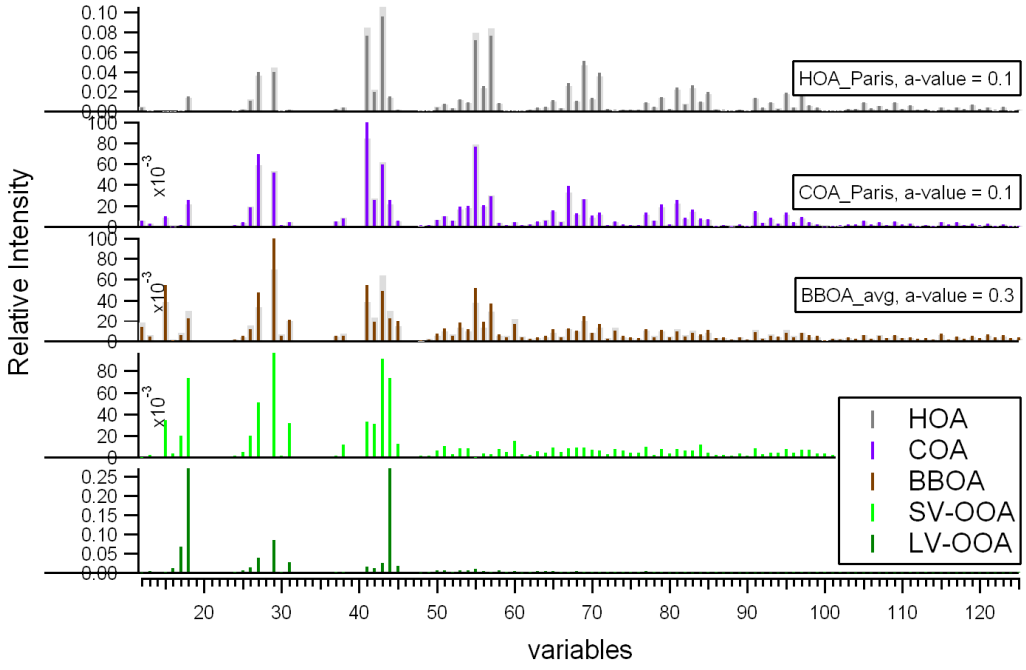

Fig. S.1 The factor profiles for the source apportionment for the winter 2011. The gray bars in the back represent the constrained mass spectra employed, i.e. HOA_Paris and COA_Paris from Crippa et al. (2013) and the averaged BBOA_avg from Ng et al. (2011).

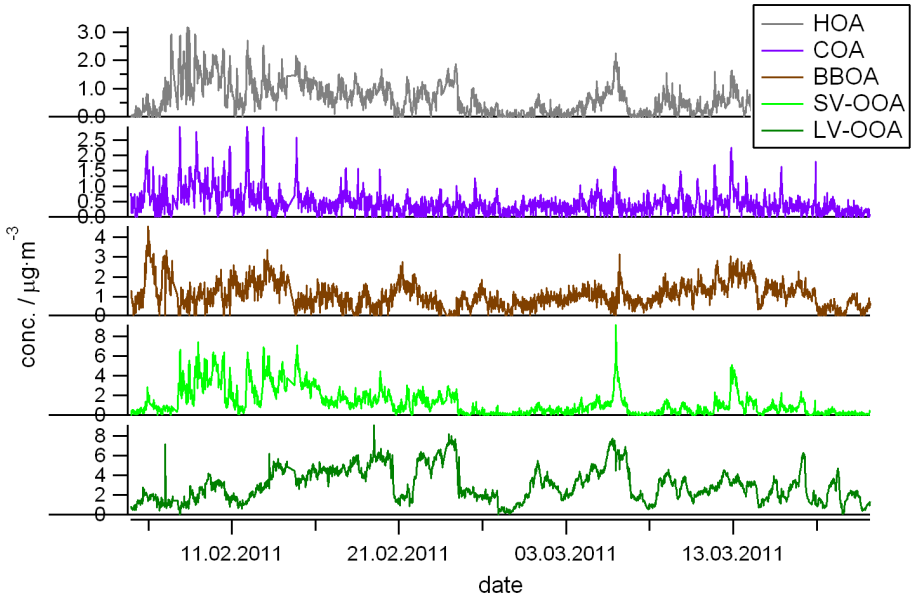

Fig. S.2 The factor time series for the source apportionment for the winter 2011.

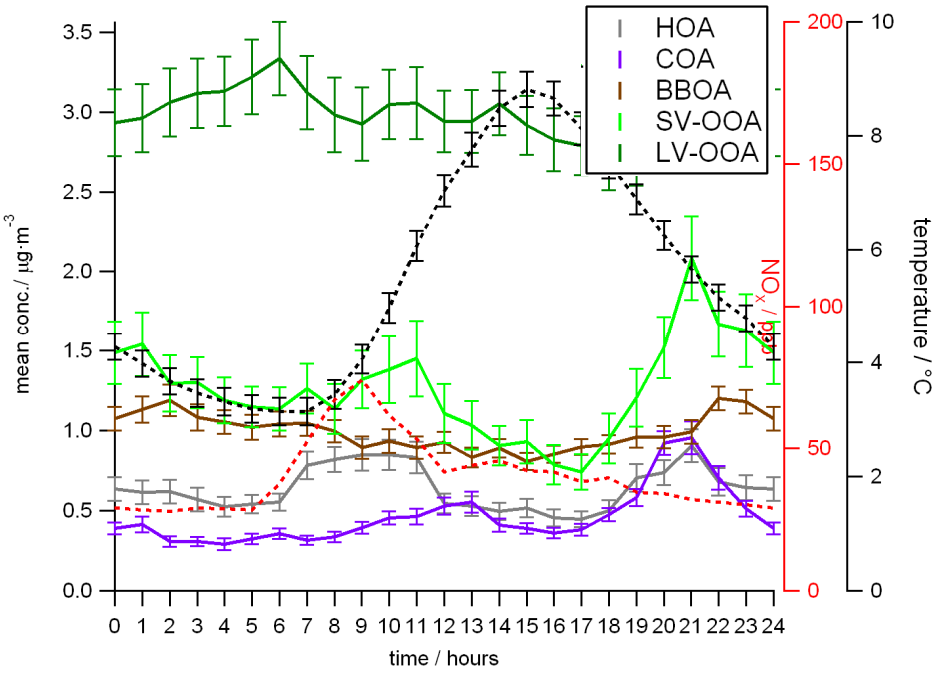

Fig. S.3 The week-days diurnal cycles of the five factors of the source apportionment for winter 2011. The black dashed line is the diurnal cycle of the temperature and the red dashed line the one of NO_x. The error bars represent the standard deviation of the mean.

Summer 2011

The solution of the source apportionment for the summer 2011 is summarized in Fig. S.4, Fig. S.5 and Fig. S.6. Similar as for the solution over the full year, the diurnal cycle of HOA is similar to that of EC, the cooking factor manifests a peak at noon and in the early evening, BBOA is slightly higher during the evening due to most probably barbequing activities in summer and SV-OOA is temperature-driven.

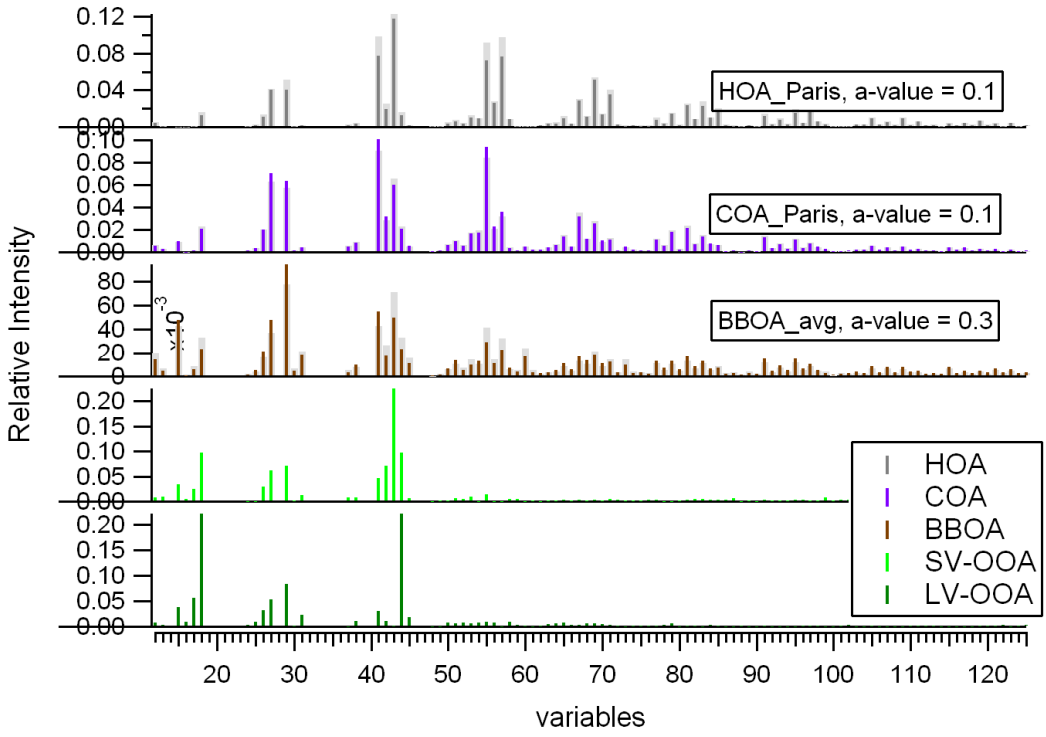

Fig. S.4 The factor profiles for the source apportionment over the winter 2011. The gray bars in the back represent the constrained mass spectra employed, i.e. HOA_Paris and COA_Paris from Crippa et al. (2013) and the averaged BBOA_avg from Ng et al. (2011).

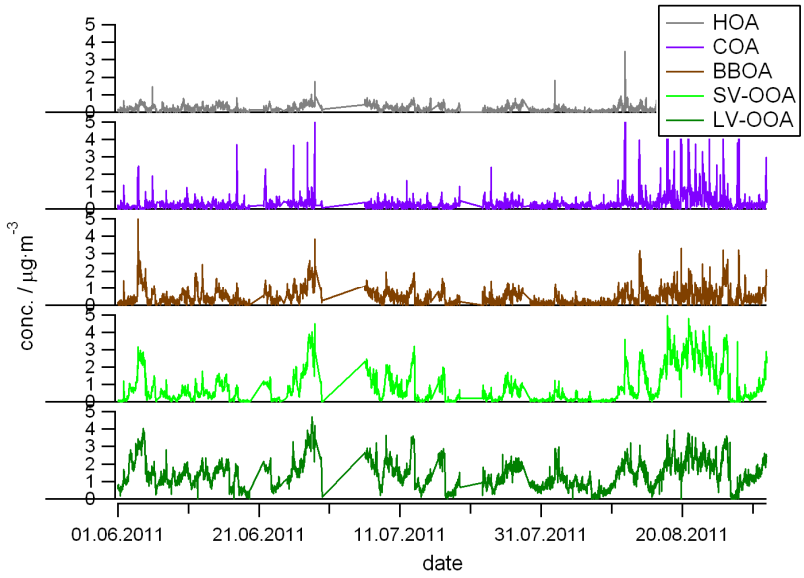

Fig. S.5 The factor time series for the source apportionment over the summer 2011.

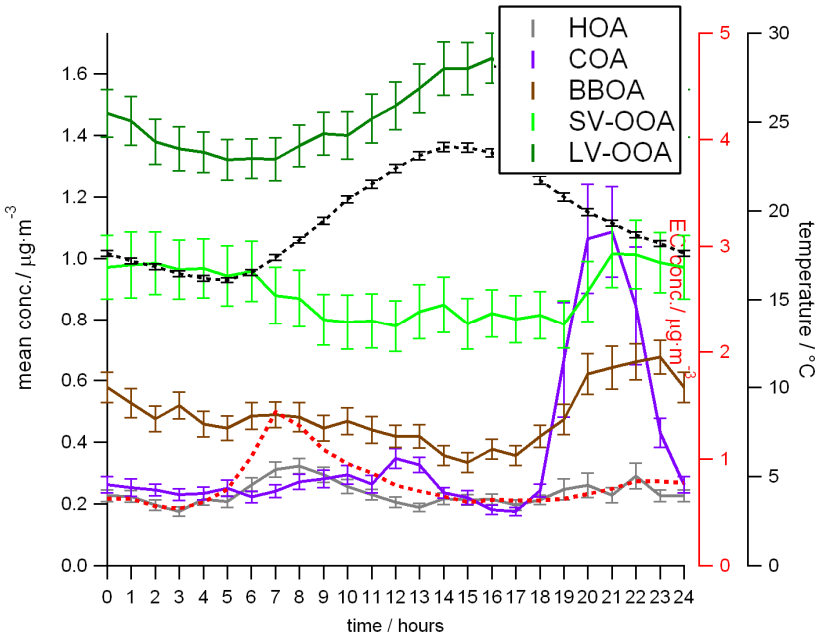

Fig. S.6 The week-days diurnal cycles of the five factors of the source apportionment for summer 2011. The black dashed line is the diurnal cycle of the temperature and the red dashed line the one of EC, since NO_x wasn't measured during summer 2011 due to technical issues. The error bars represent the standard deviation of the mean.

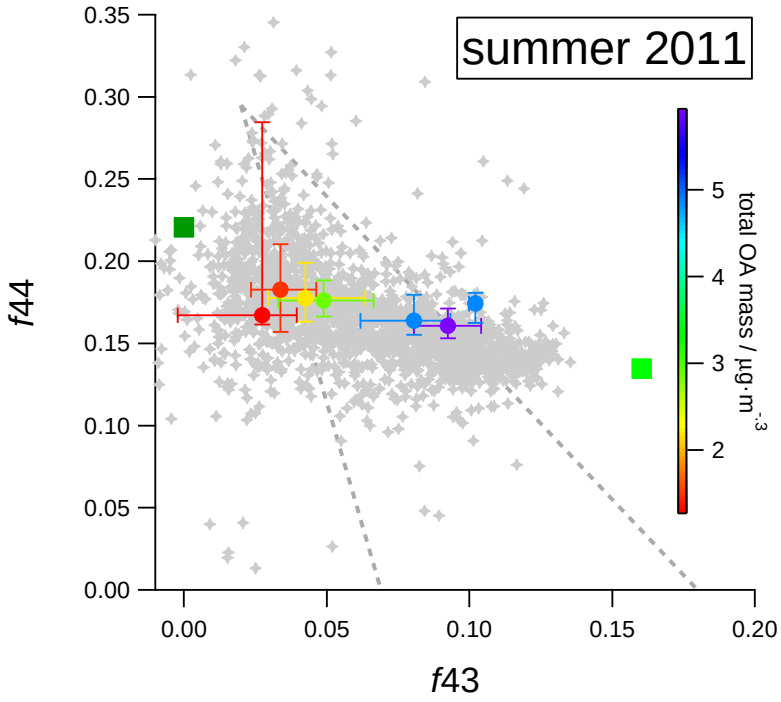

Fig. S.7 SOA *f*44/*f*43 for all data points in summer 2011 (gray points) and LV-OOA/SV-OOA factors (green squares). Color-coded circles denote averages at the daily maximum temperature (T_{max}) ± 2 hours for the total OA mass.

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