Atmospheric
Chemistry
and Physics

Supplement of

Atmospheric organic vapors in two European pine forests measured by a Vocus PTR-TOF: insights into monoterpene and sesquiterpene oxidation processes

Haiyan Li et al.

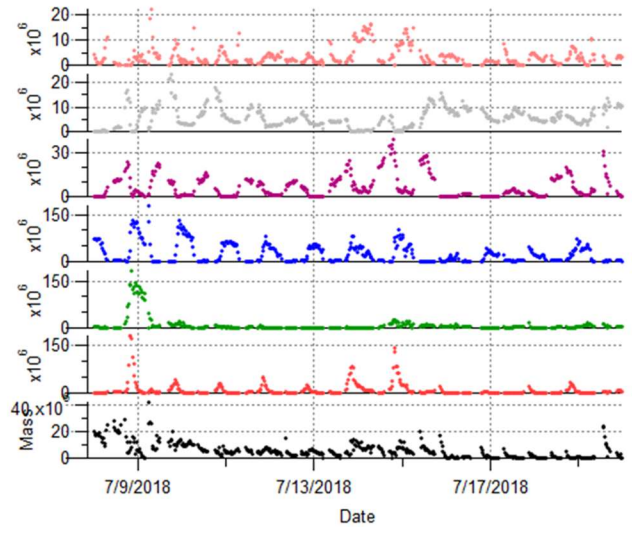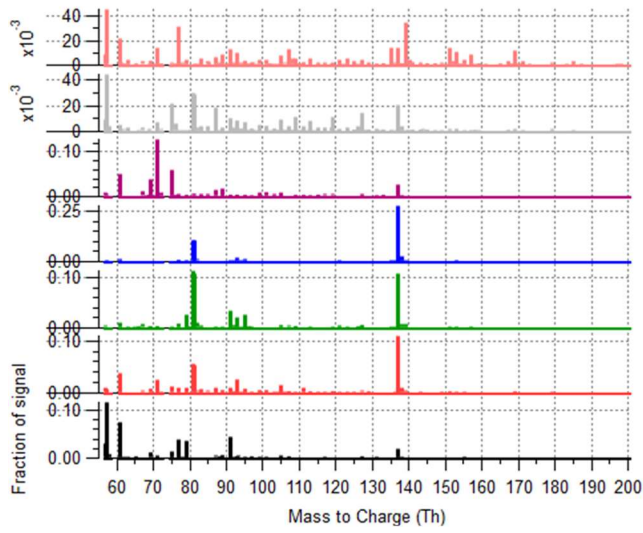*Correspondence to:* Haiyan Li (haiyan.li@helsinki.fi)

Figure S1. The mass profiles and time series of the seven-factor solution for the low mass range in the Landes forest with the inclusion of the signals at *m/z* 81 Th and *m/z* 137 Th.
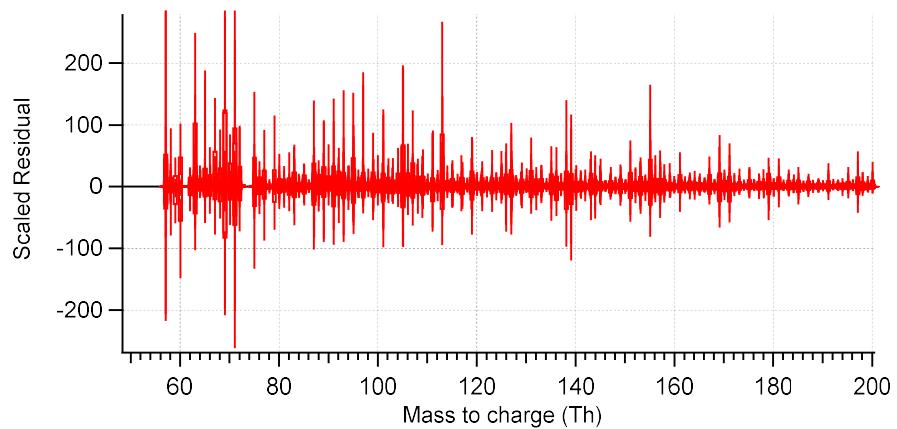
Figure S2. The distribution of scaled residuals as a function of *m/z* of the seven-factor solution for the low mass range in the Landes forest.
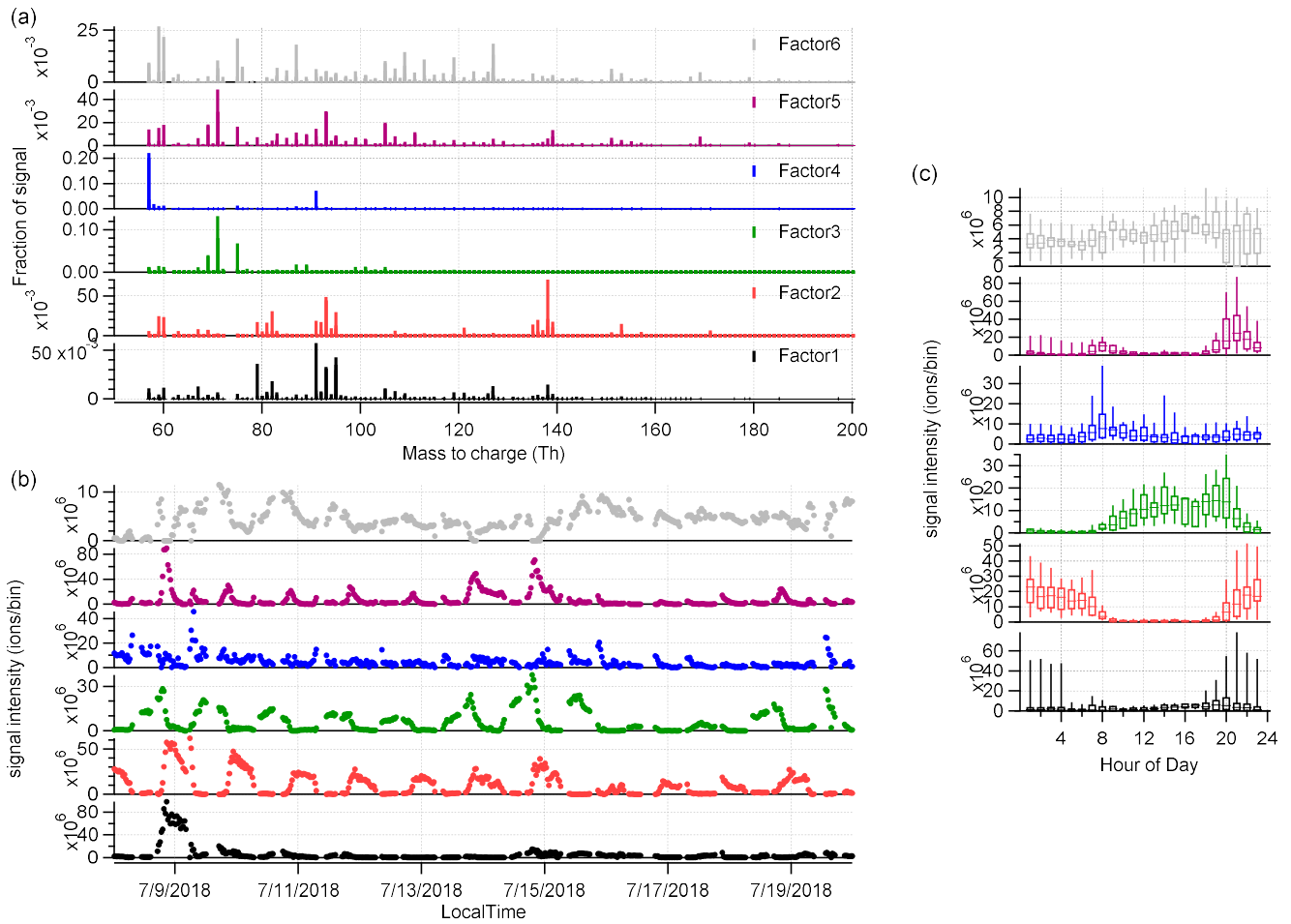
Figure S3. The six-factor solution for the low mass range in the Landes forest, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal cycles of different factors.
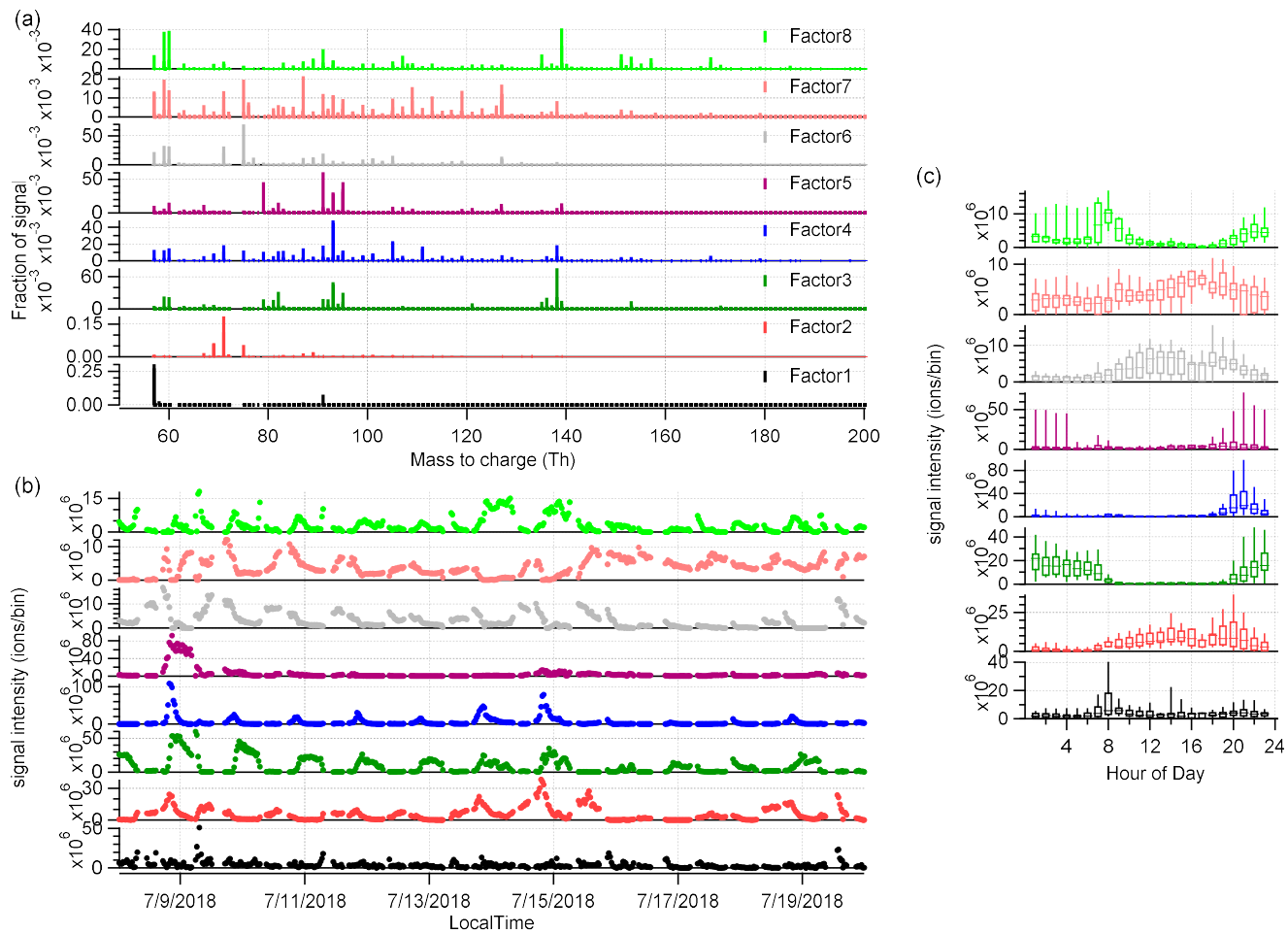
Figure S4. The eight-factor solution for the low mass range in the Landes forest, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal cycles of different factors.
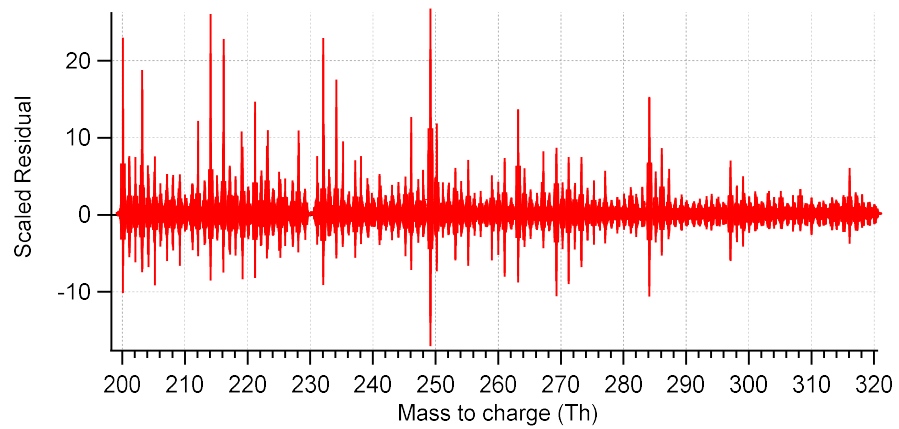
Figure S5. The distribution of scaled residuals as a function of *m/z* of the eight-factor solution for the high mass range in the Landes forest.
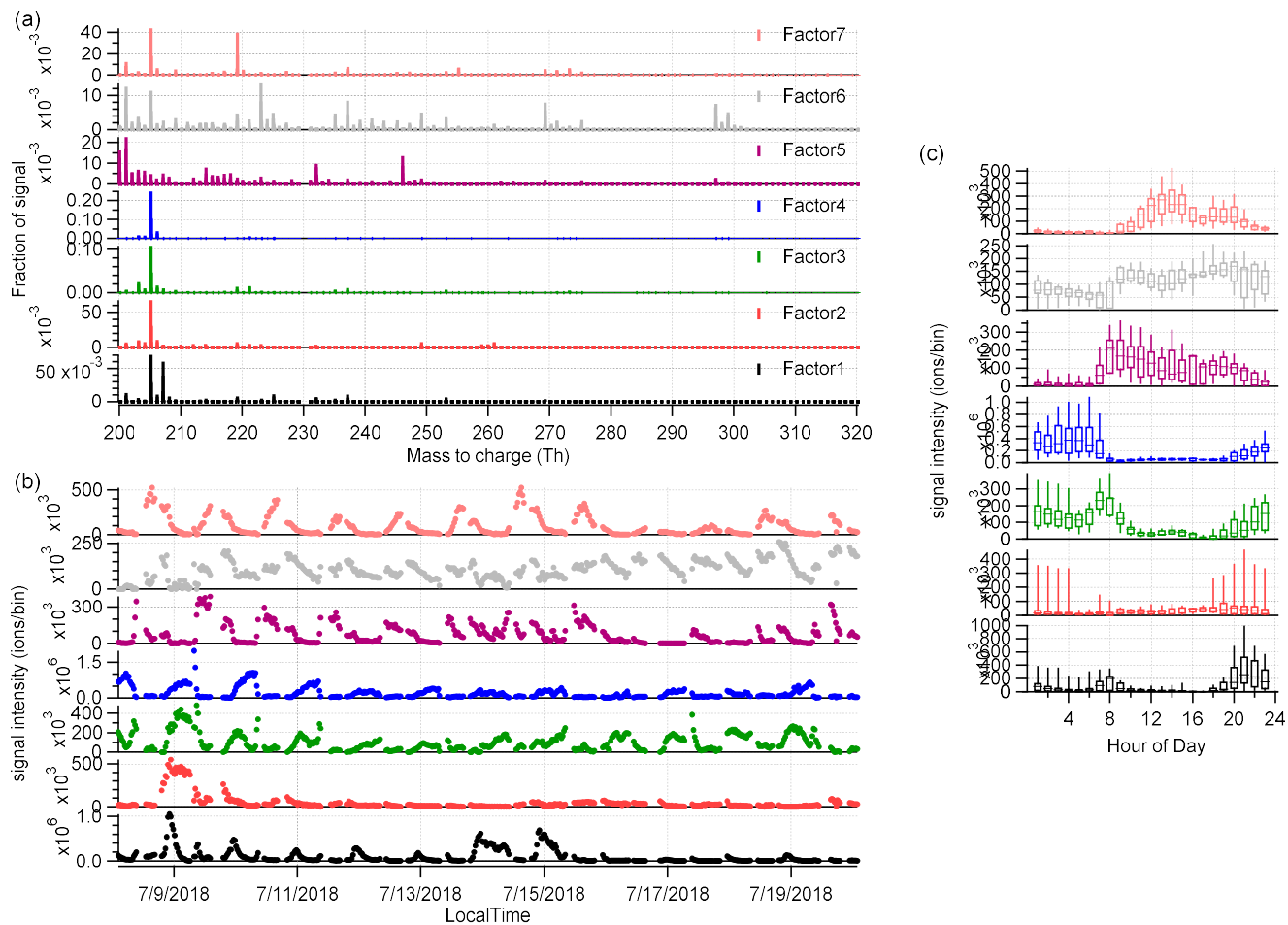
Figure S6. The seven-factor solution for the high mass range in the Landes forest, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal trends of different factors.
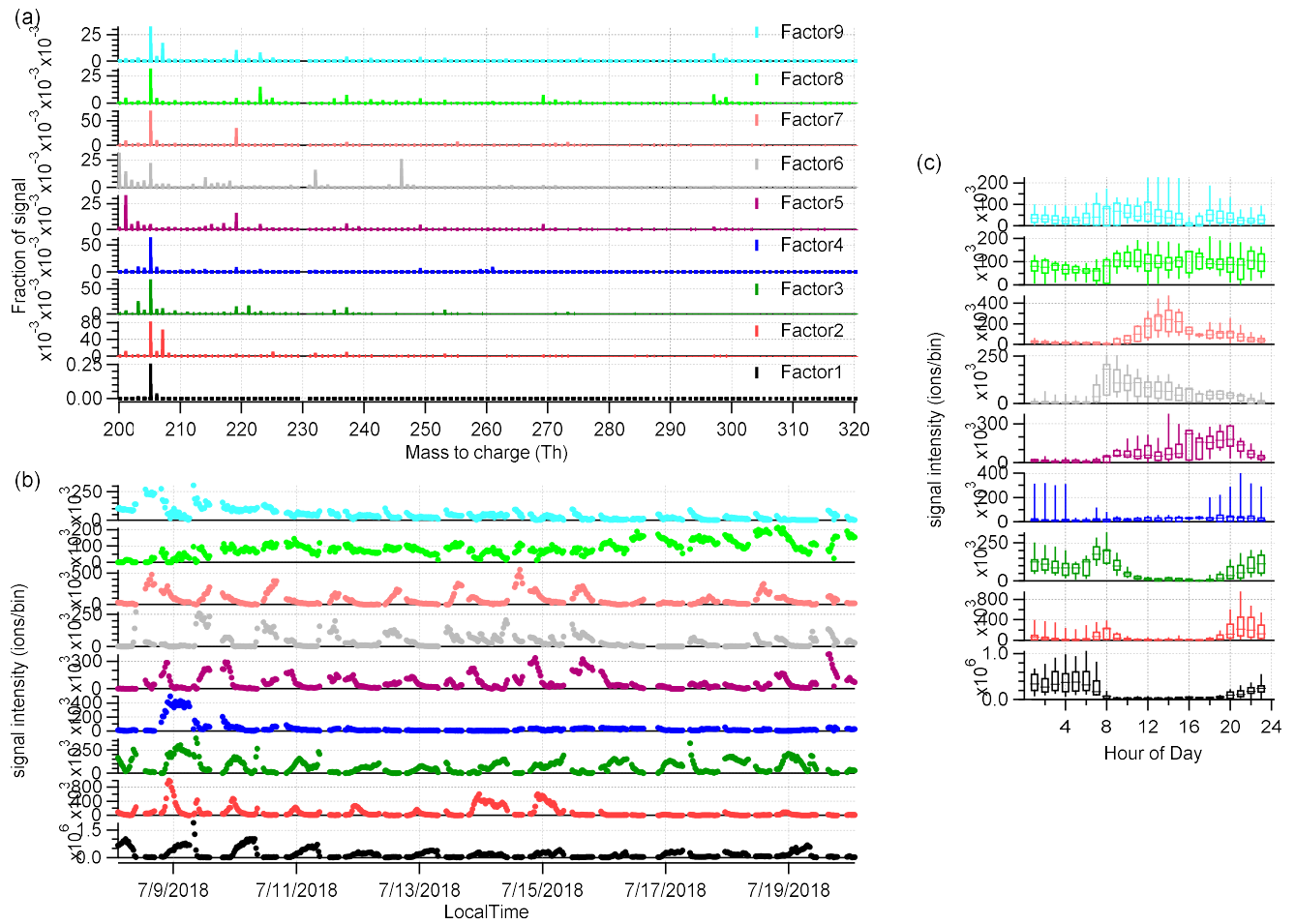
Figure S7. The nine-factor solution for the high mass range in the Landes forest, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal trends of different factors.
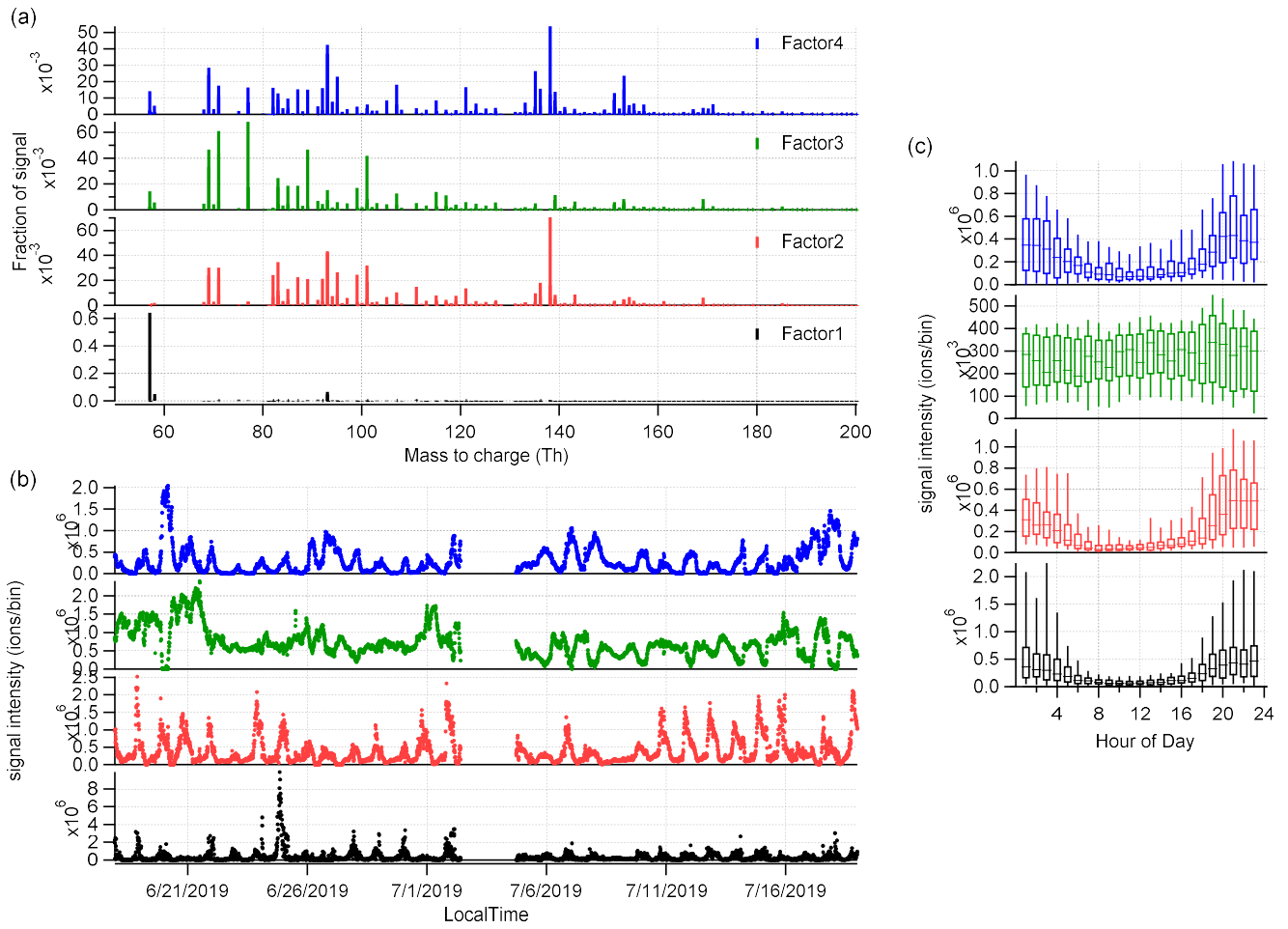
Figure S8. The four-factor solution for the low mass range at SMEAR II station, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal trends of different factors.
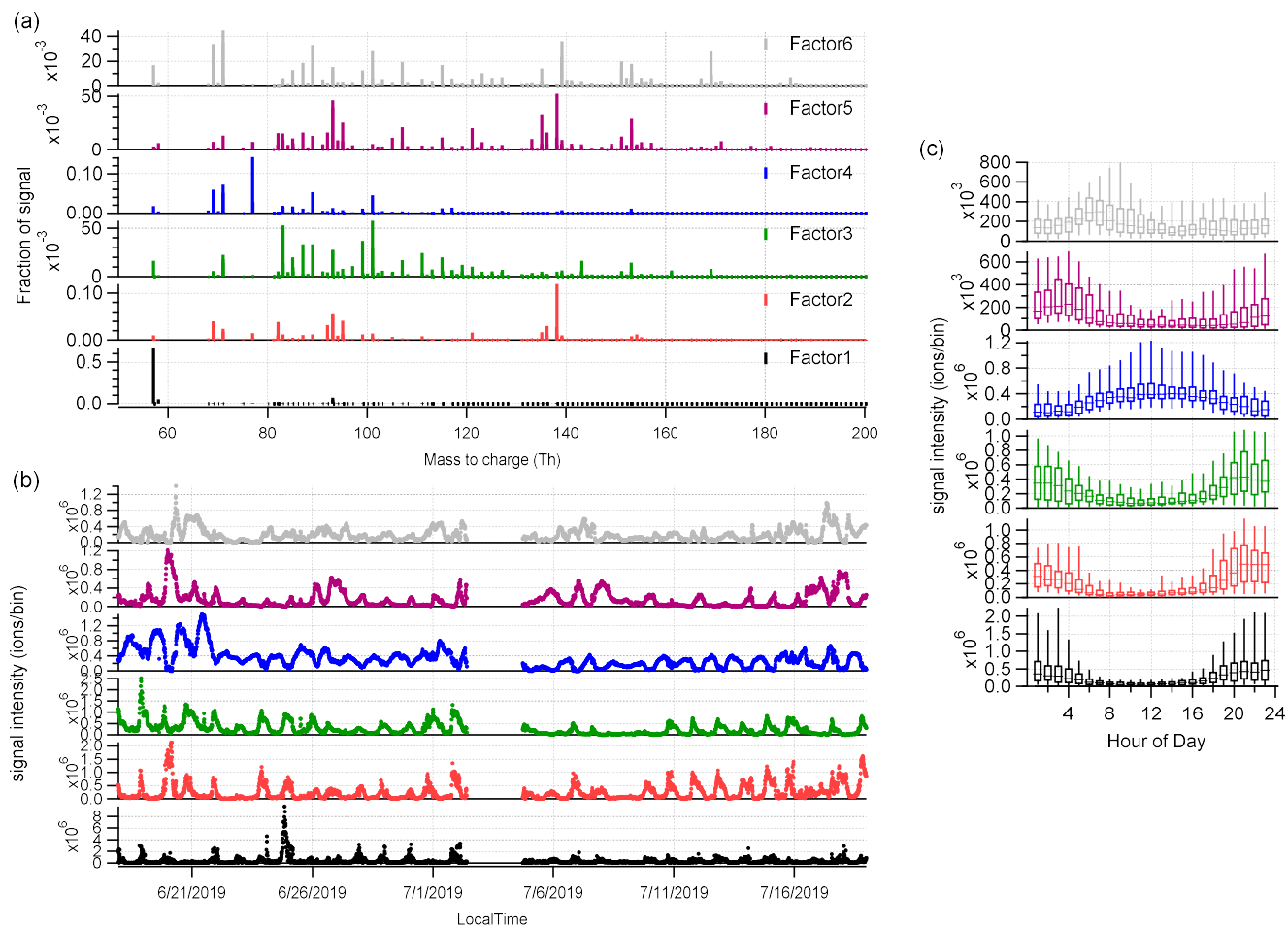
Figure S9. The six-factor solution for the low mass range at SMEAR II station, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal trends of different factors.
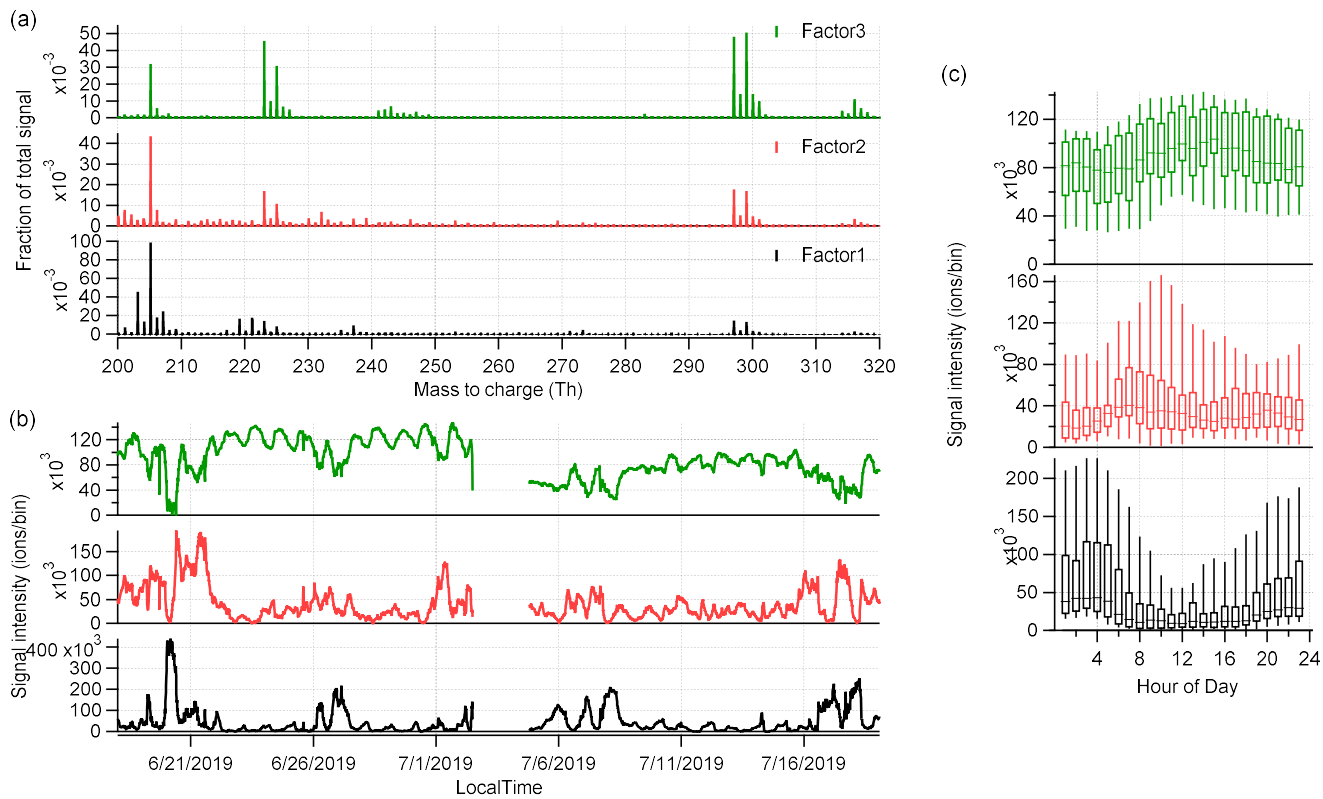
Figure S10. The three-factor solution for the high mass range at SMEAR II station, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal cycles of different factors.
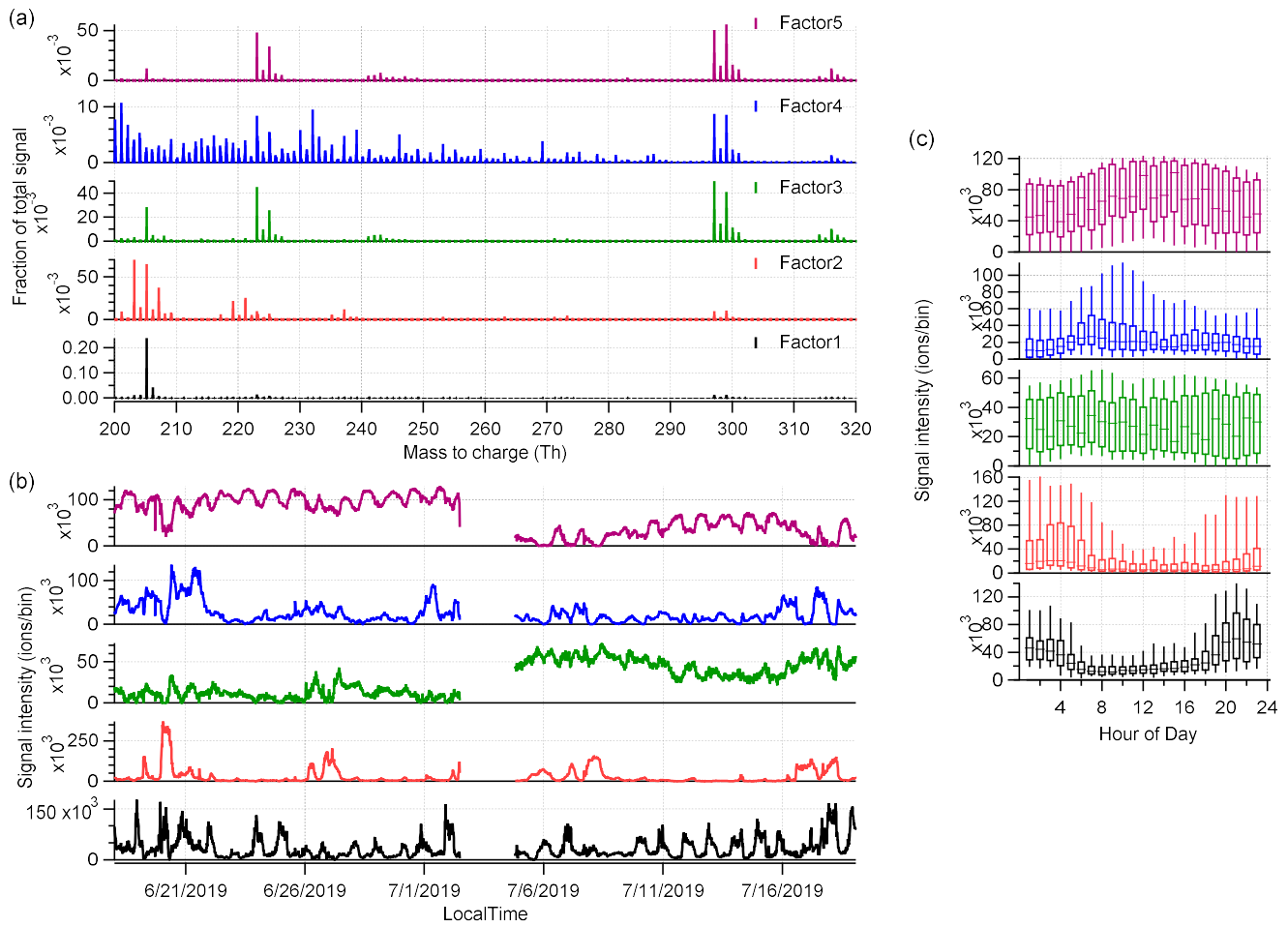
Figure S11. The five-factor solution for the high mass range at SMEAR II station, showing (a) factor mass profiles, (b) factor time series, and (c) diurnal cycles of different factors.
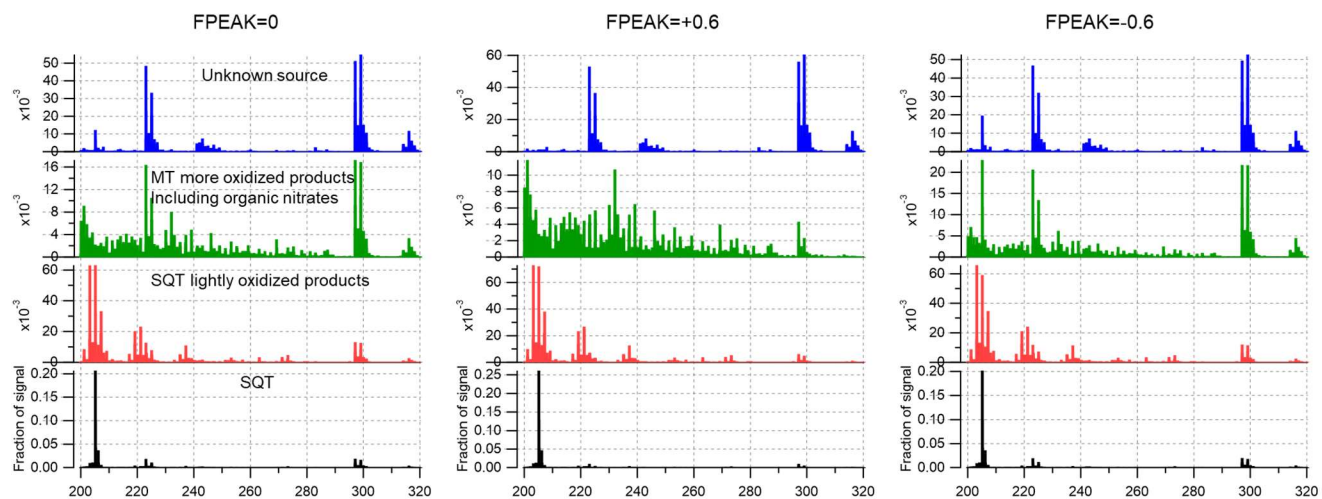
Figure S12. The factor profiles of the four-factor solution for the high mass range of the SMEAR II measurements with FPEAK = 0, +0.6, and -0.6.
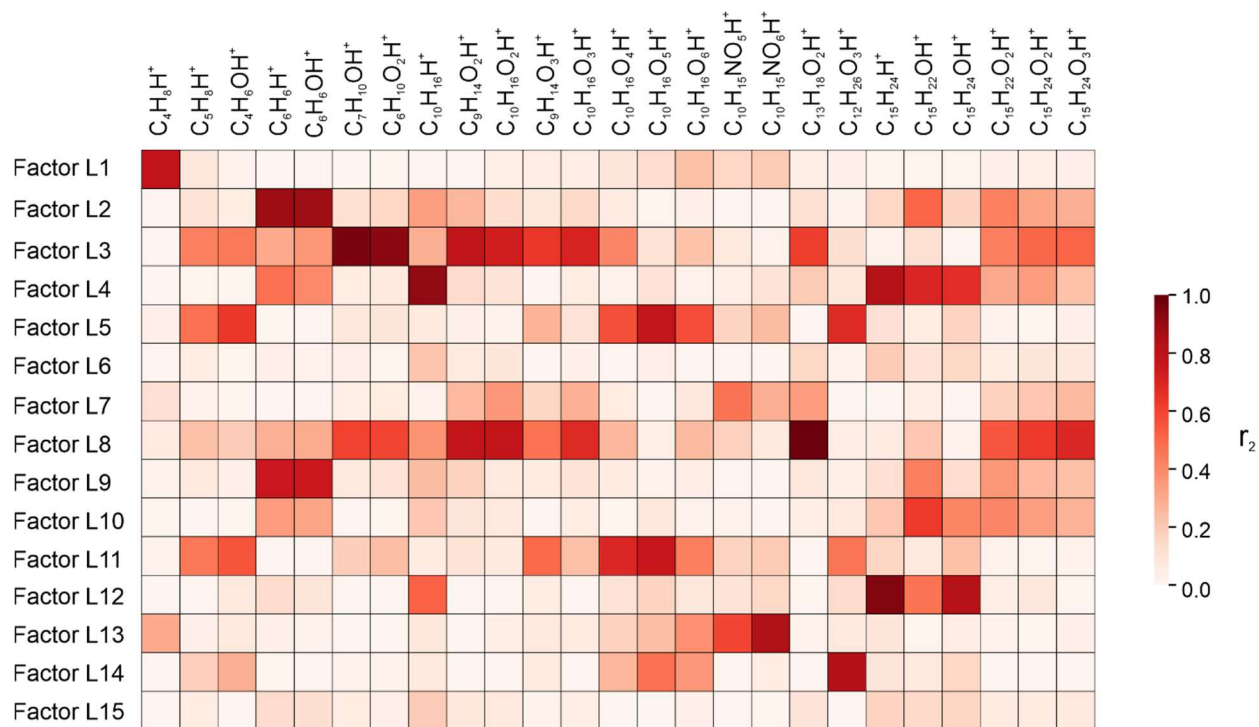
Figure S13. Correlations between PMF factors and marker molecules in the Landes forest, with the color representing the correlation coefficients (r^2).
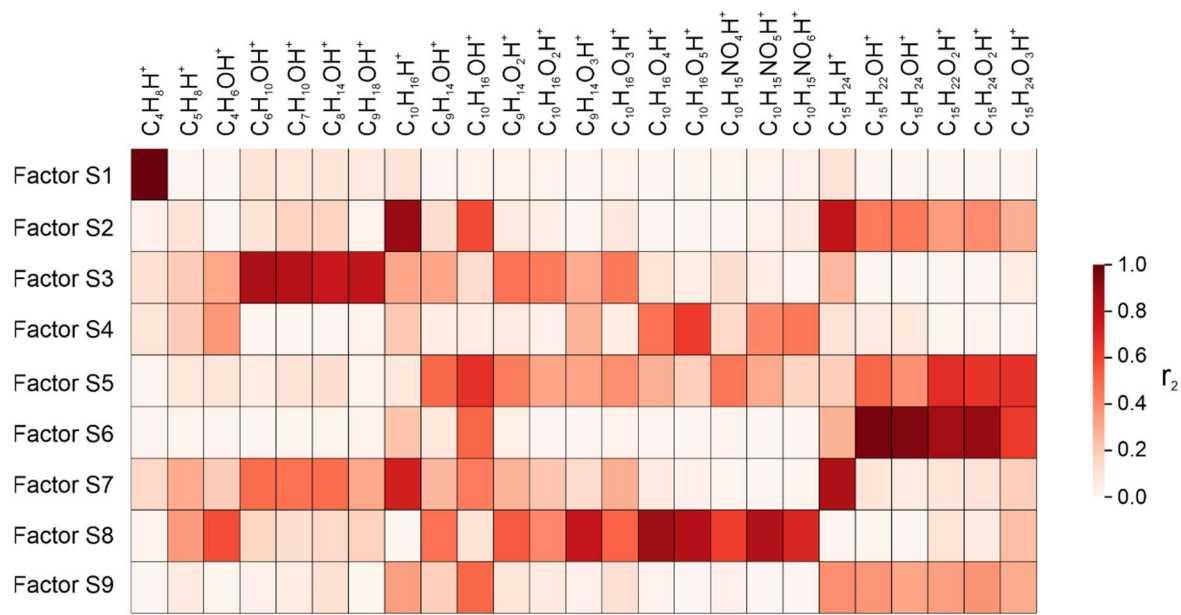
Figure S14. Correlations between PMF factors and marker molecules at the SMEAR II station, with the color indicating the correlation coefficients (r^2).
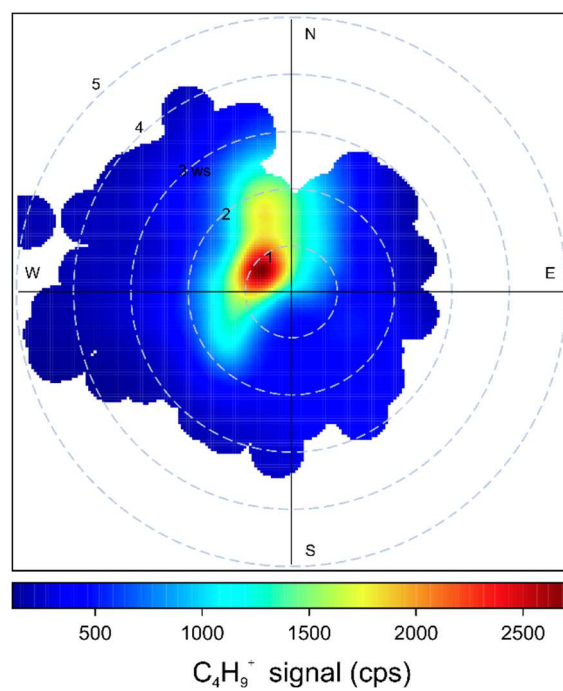
Figure S15. Bivariate polar plot of $C_4H_9^+$ signal measured at SMEAR II station as a function of wind speed and wind direction using the OpenAir software (Carslaw and Ropkins, 2012).
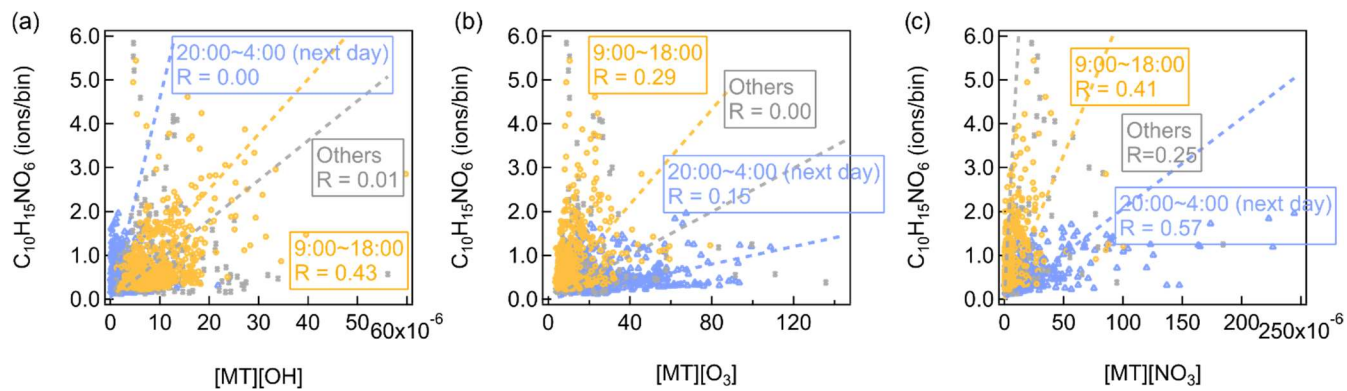
Figure S16. Scatter plots of $C_{10}H_{15}NO_6$ versus the product of (a) [OH] × [monoterpenes], (b) [O_3] × [monoterpenes], and (c) [NO_3] × [monoterpenes]. Different colours represent different periods of the day.
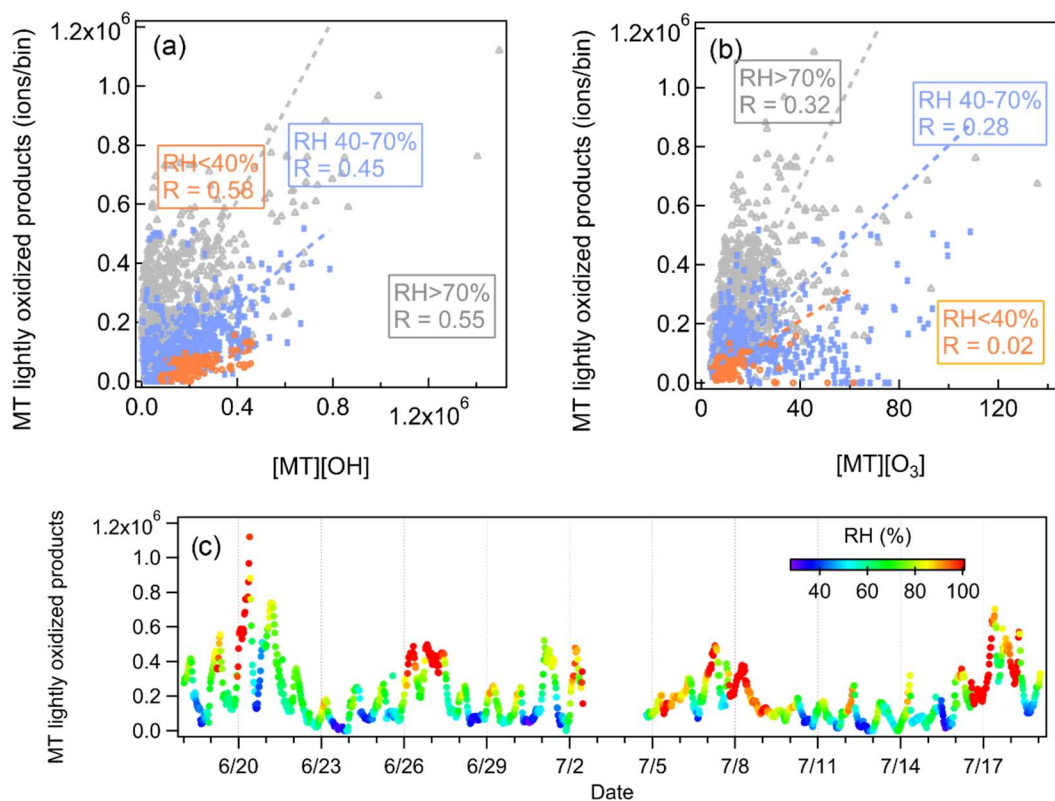
Figure S17. Scatter plots of monoterpene lightly oxidized products versus the product of (a) [OH] × [monoterpenes], and (b) [O₃] × [monoterpenes]. Different colours indicate different ranges of RH. (c) Time series of monoterpene lightly oxidized products colored by RH.

References

Carslaw, D. C. and Ropkins, K.: openair – An R package for air quality data analysis, Environ. Modell. Softw., 27–28, 52–61, 2012.