

Supplementary Information for Aiken et al. “Mexico City Aerosol Analysis during MILAGRO using High Resolution Aerosol Mass Spectrometry at the Urban Supersite (T0). Part 2: Analysis of the Biomass Burning Contribution and the Modern Carbon Fraction.”

Figure S-1. Maps of Central Mexico showing circles centered around T0 for six different radii: (a) 60 km, 120 km, 250 km, (b) 250 km, 500 km, 1000 km. Daily MODIS fire counts from March to April of 2006 for each radius: (c) 60 km, 120 km, 250 km, (d) 500 km, 750 km, 1000 km; (e) Yucatan Peninsula (The area for which fire counts are integrated around the Yucatan Peninsula is also indicated in (b)); (f) GOES fire counts for 60 km.

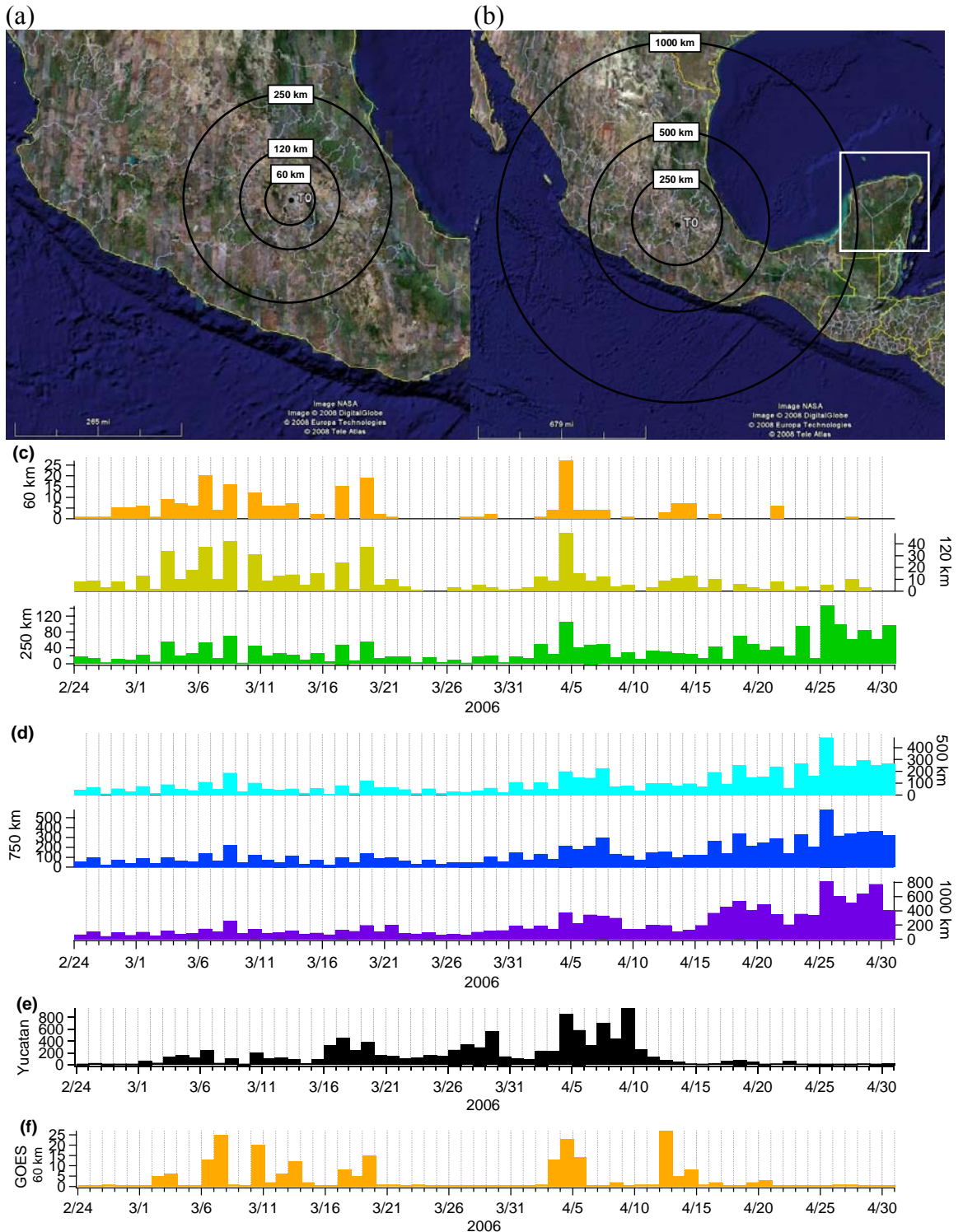


Figure S-2. Scatter plots of BBOA concentrations at T0 vs. vs MODIS fire counts (average from day plus the previous day) for five different regions: (a-d): circles of radii 250, 500, 750, and 1000 km centered at T0; (e) Yucatan peninsula. Symbols are the day of the month during March 2006.

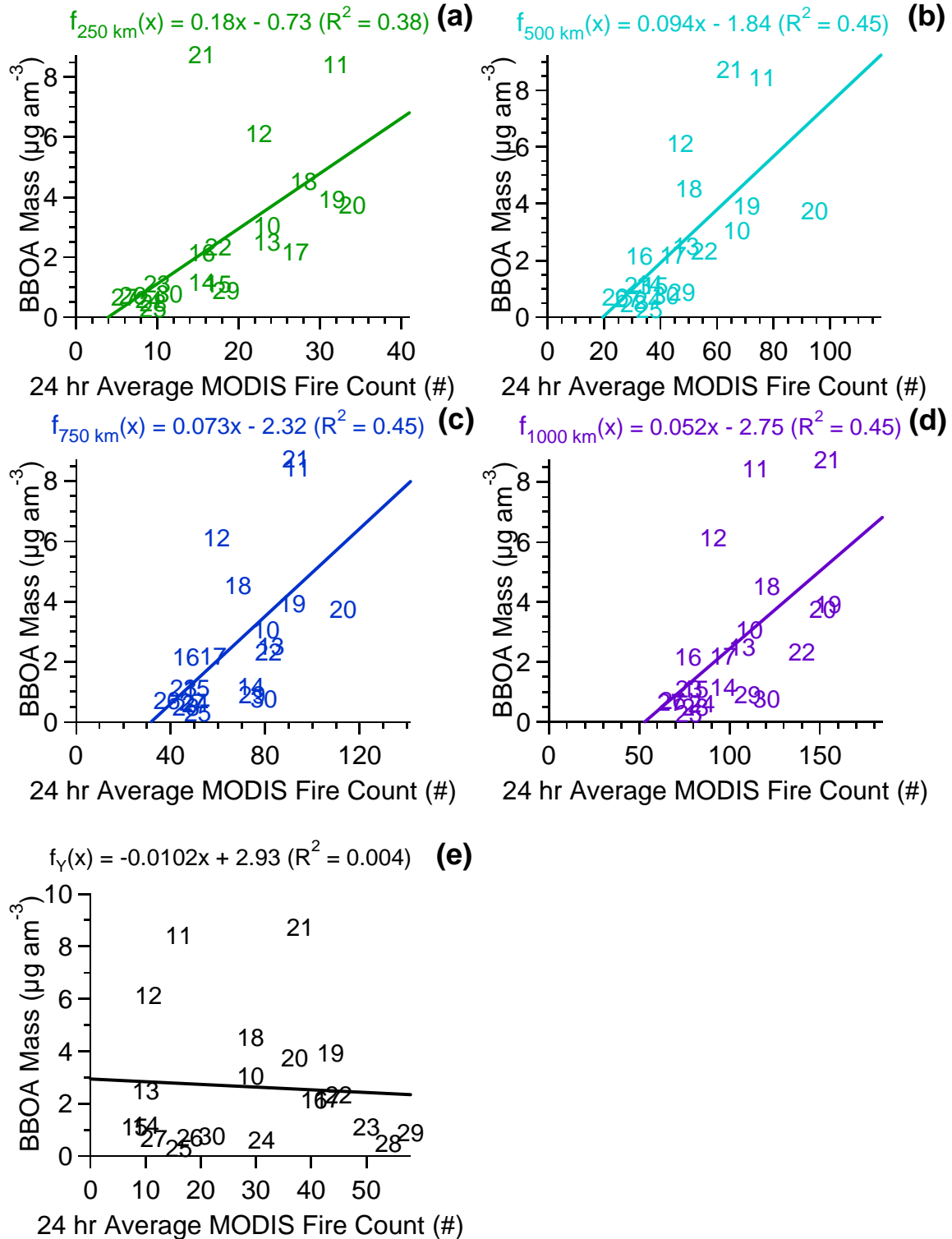


Figure S-3. Scatter plots of daily AMS-PMF OA component mass concentrations versus MODIS fire counts (average from day plus the previous day) for circles of radii 60 and 120 km centered on T0 plotted by day of the month in March 2006: (a) HOA, (b) OOA, (c) background OOA (8pm-4am), (d) OA, (e) LOA.

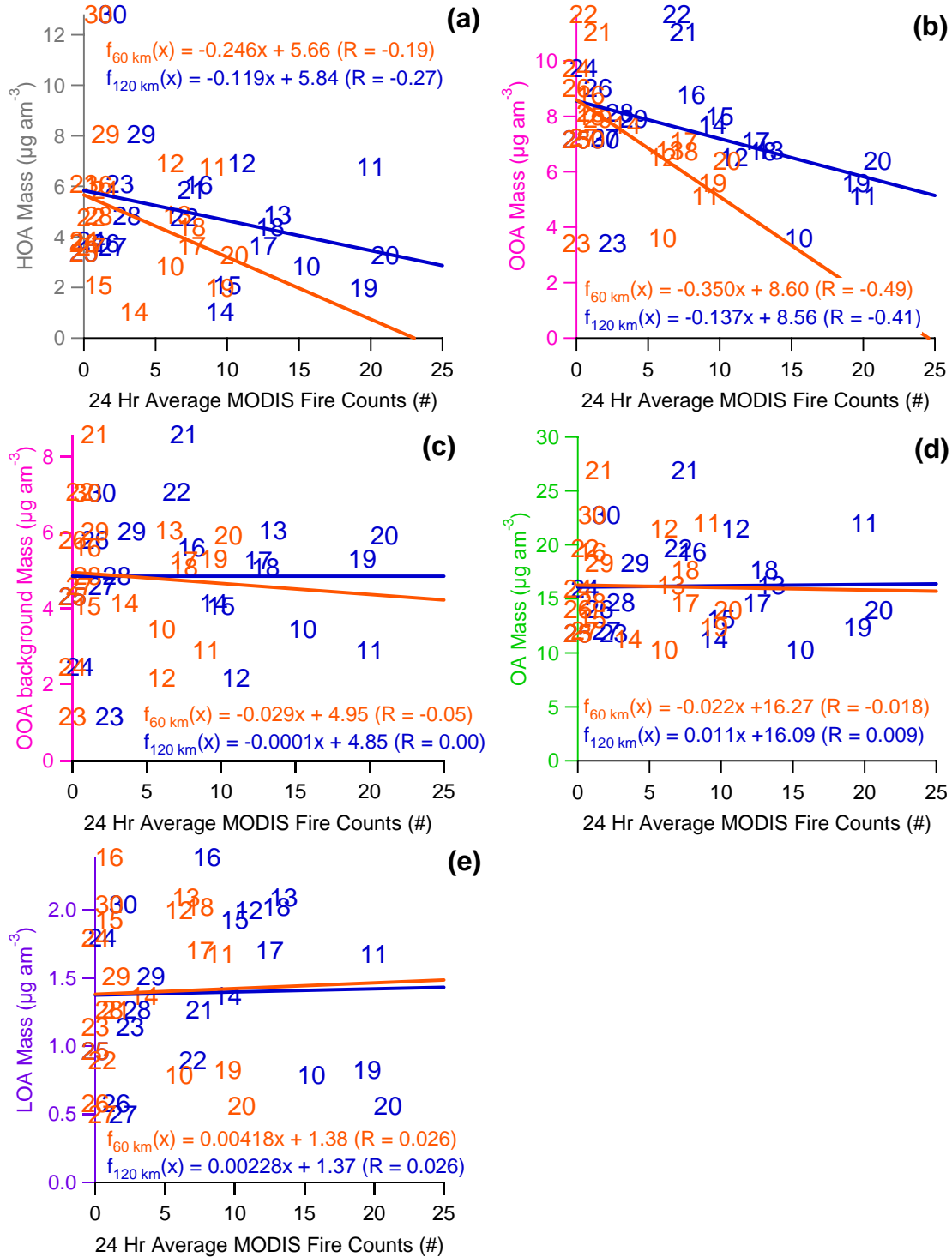


Figure S-4. Fire Index (FIF) calculated over a 40 km by 40 km square centered on the city compared to the FIF calculated using the 9 km square for T0.

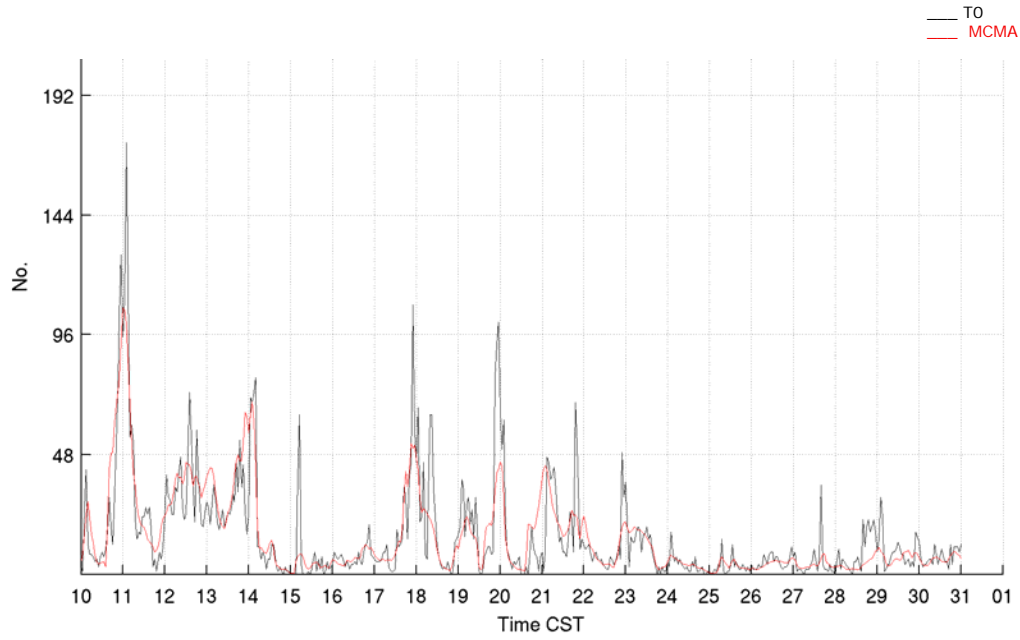


Figure S-5. Scatter plots of daily-average FIF₁₄₋₂₄ vs PMF-AMS factors: (a) BBOA, (b) HOA, (c) LOA, (d) OOA, (e) total OA.

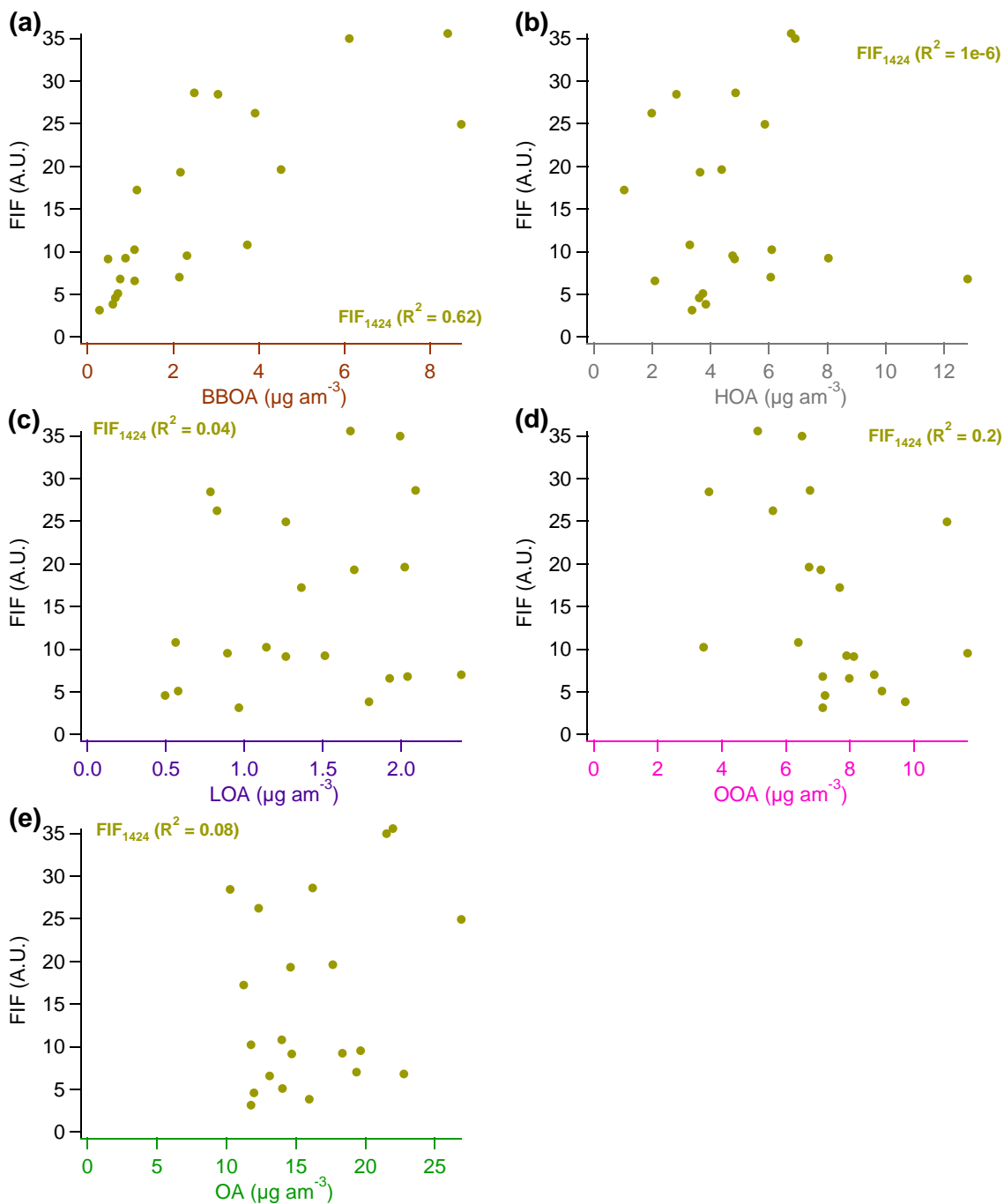


Figure S-6. Diurnal cycles of PM₁ K for the three fire impact periods.

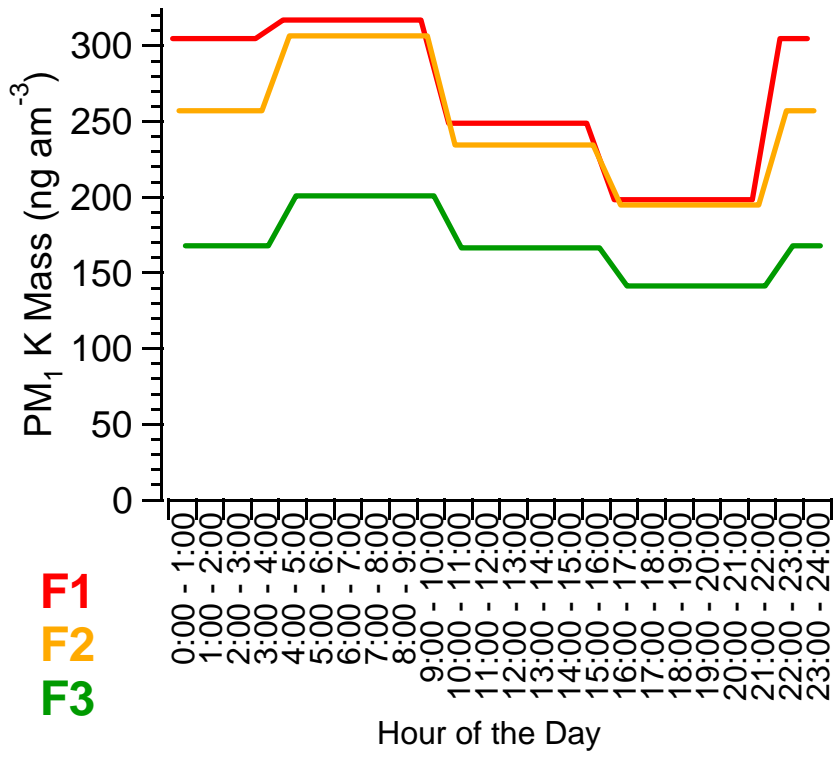


Figure S-7. Scatter plots of total K in approx. PM₁ from PIXE vs AMS factors: (a) BBOA, (b) HOA, (c) LOA, (d) OOA, (e) total OA.

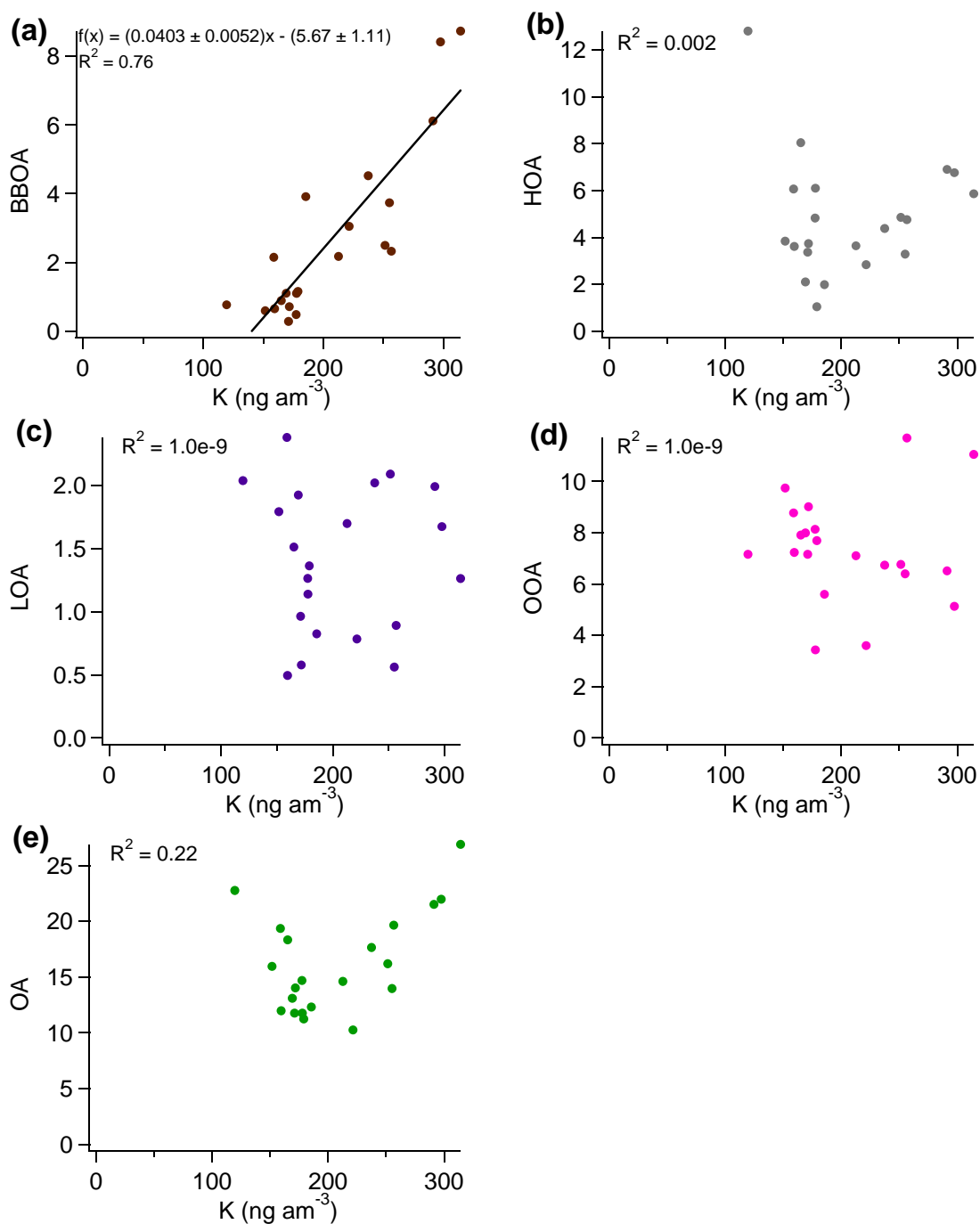


Figure S-8. Fire impact period analysis graphs, comparing the average values of different parameters for the high fire (F1, F2) and low fire (F3) periods for (a) Daily MODIS fire counts at 500 km, 750 km, 1000 km, (b) $\Delta\text{CH}_3\text{CN}/\Delta\text{CO}$ and aerosol optical properties, and (c-e) gas-phase species at T0.

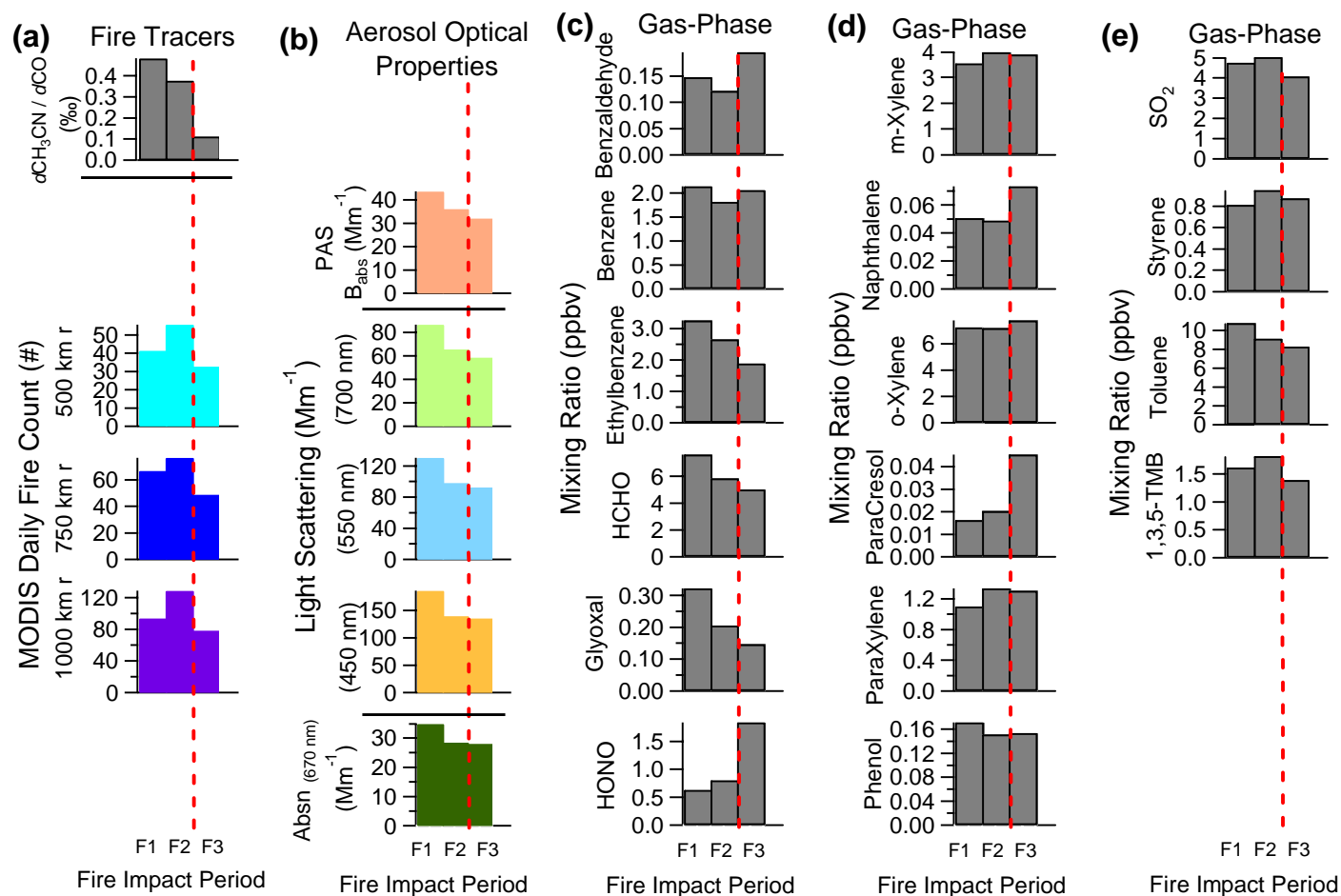
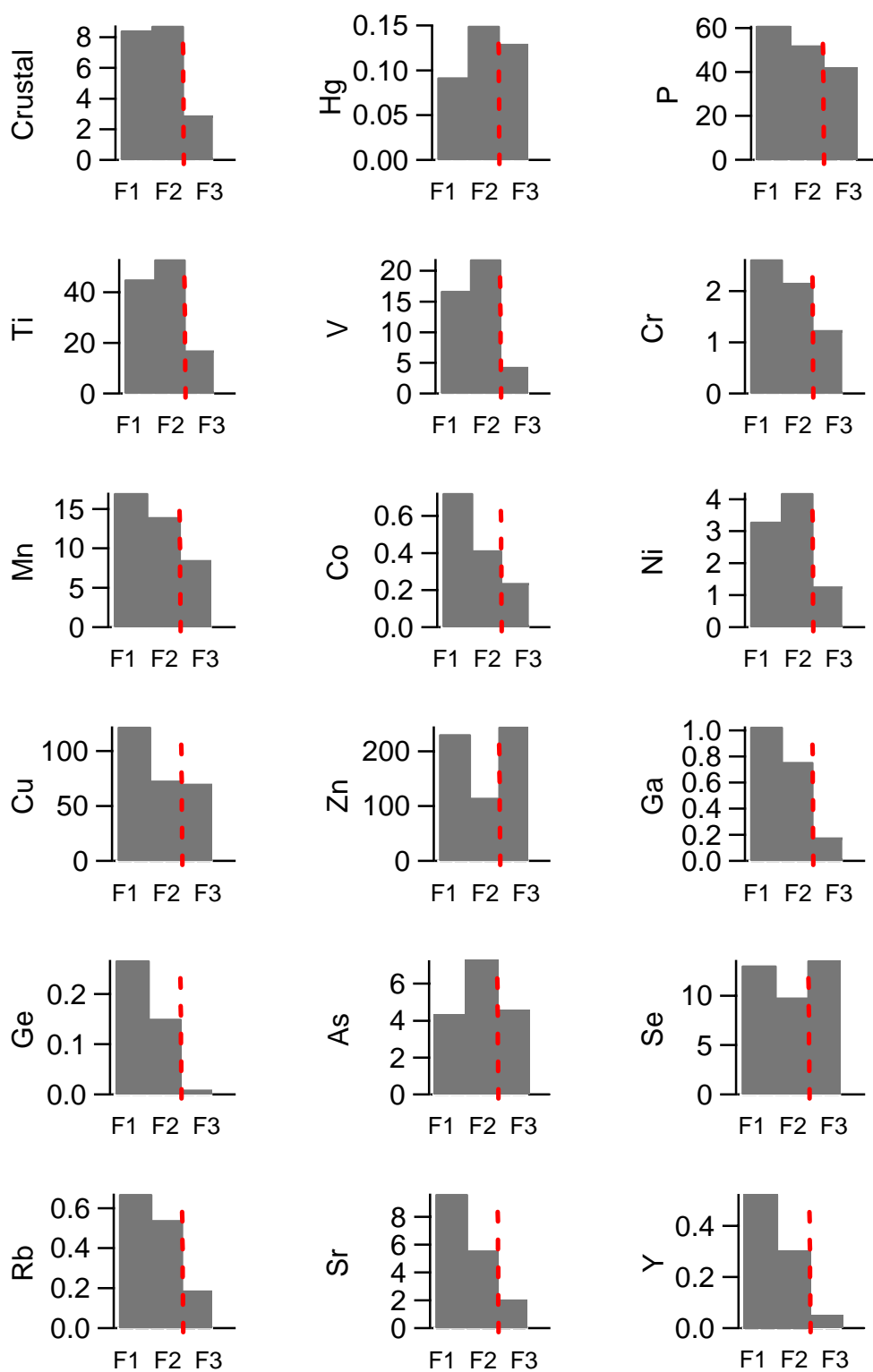
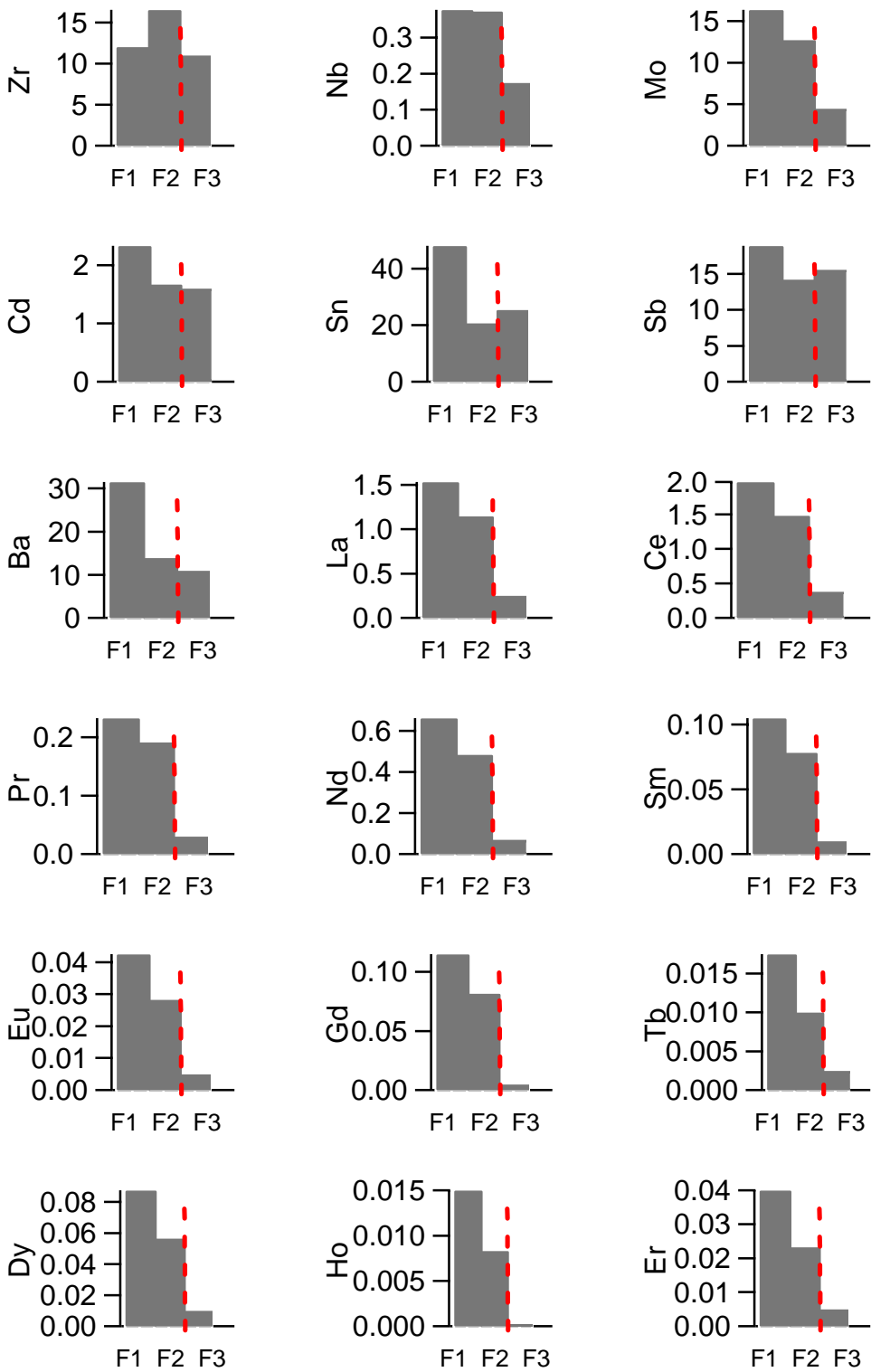


Figure S-9. Fire impact period graphs, comparing the average values of different parameters for the high fire (F1, F2) and low fire (F3) period for crustal material in PM₁₀ (μg am⁻³) and trace metals (ng am⁻³), from the data of Querol et al. (2008).





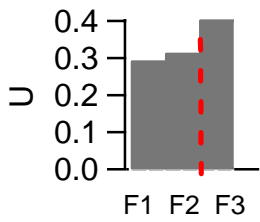
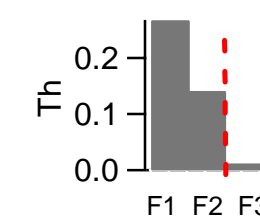
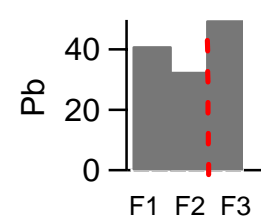
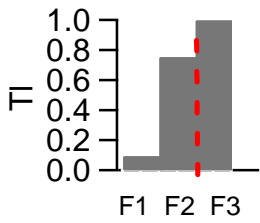
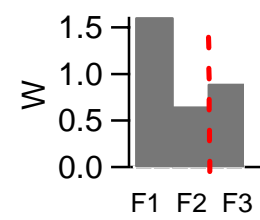
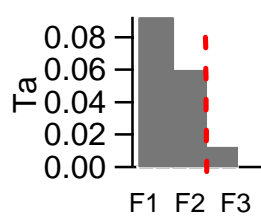
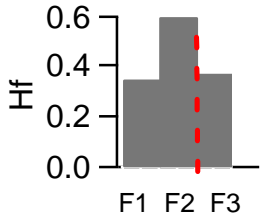
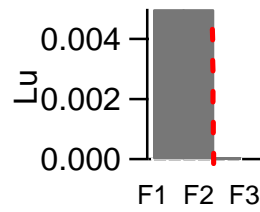
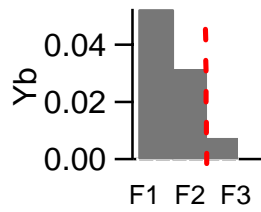
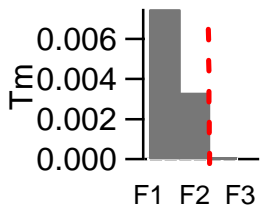


Figure S-10. Time series of mass concentrations of AMS BBOA and coarse mass (between $PM_{2.5}$ and PM_{10}) as measured by the OPC.

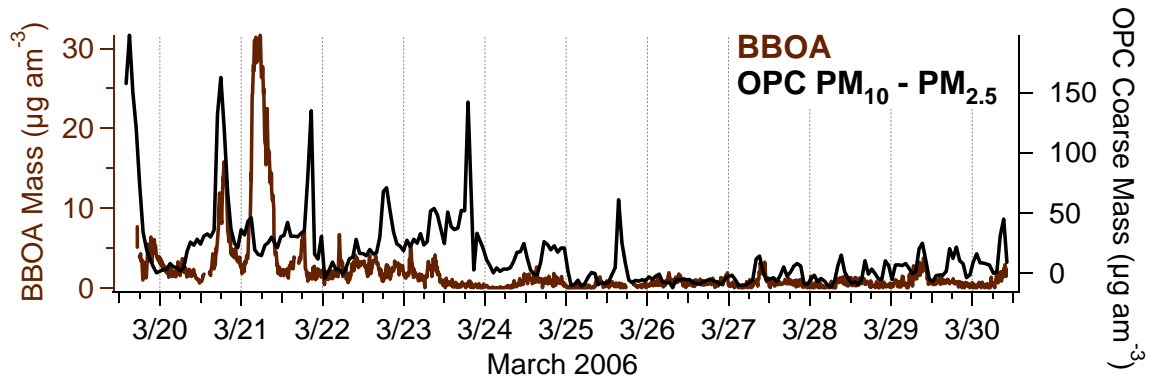


Figure S-11.

Comparison of OC measurements: (a) OC calculated from AMS OA vs CMB OC, (b) OC from ¹⁴C filters (Swiss team) from this study (PM₁₀) vs CMB OC (PM_{2.5}). (L = low fire period, H = high fire period)

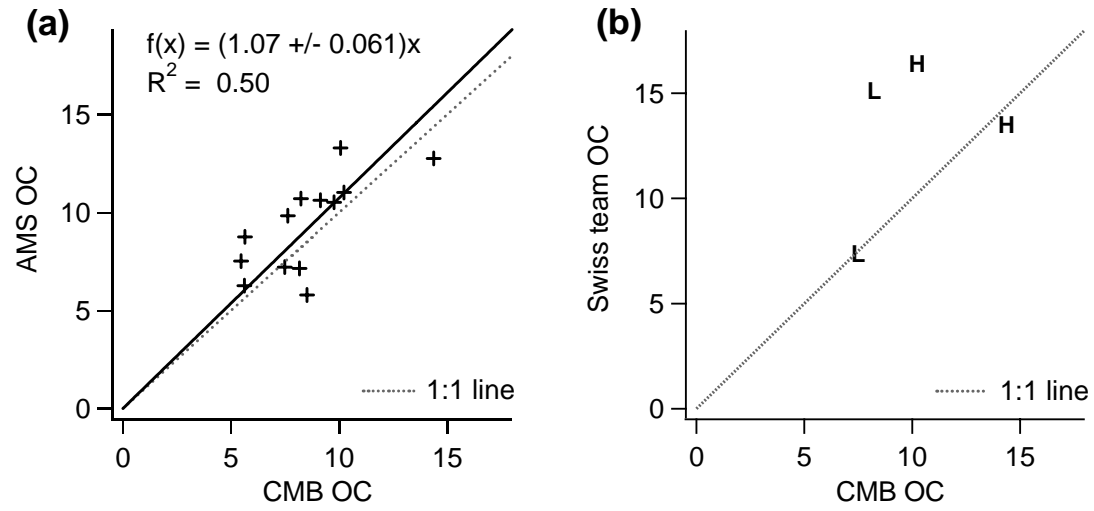


Figure S-12. (a) Stacked plot of the diurnal cycles of the concentrations of PM components; (b) stacked plot of the diurnal cycles of the estimated column amounts of the PM components.

