

1 **Figures for:**

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3 **Seasonal and diurnal variations of particulate nitrate and**  
4 **organic matter at the IfT research station Melpitz**

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9 [2]{German Weather Service, Hohenpeissenberg, Germany}

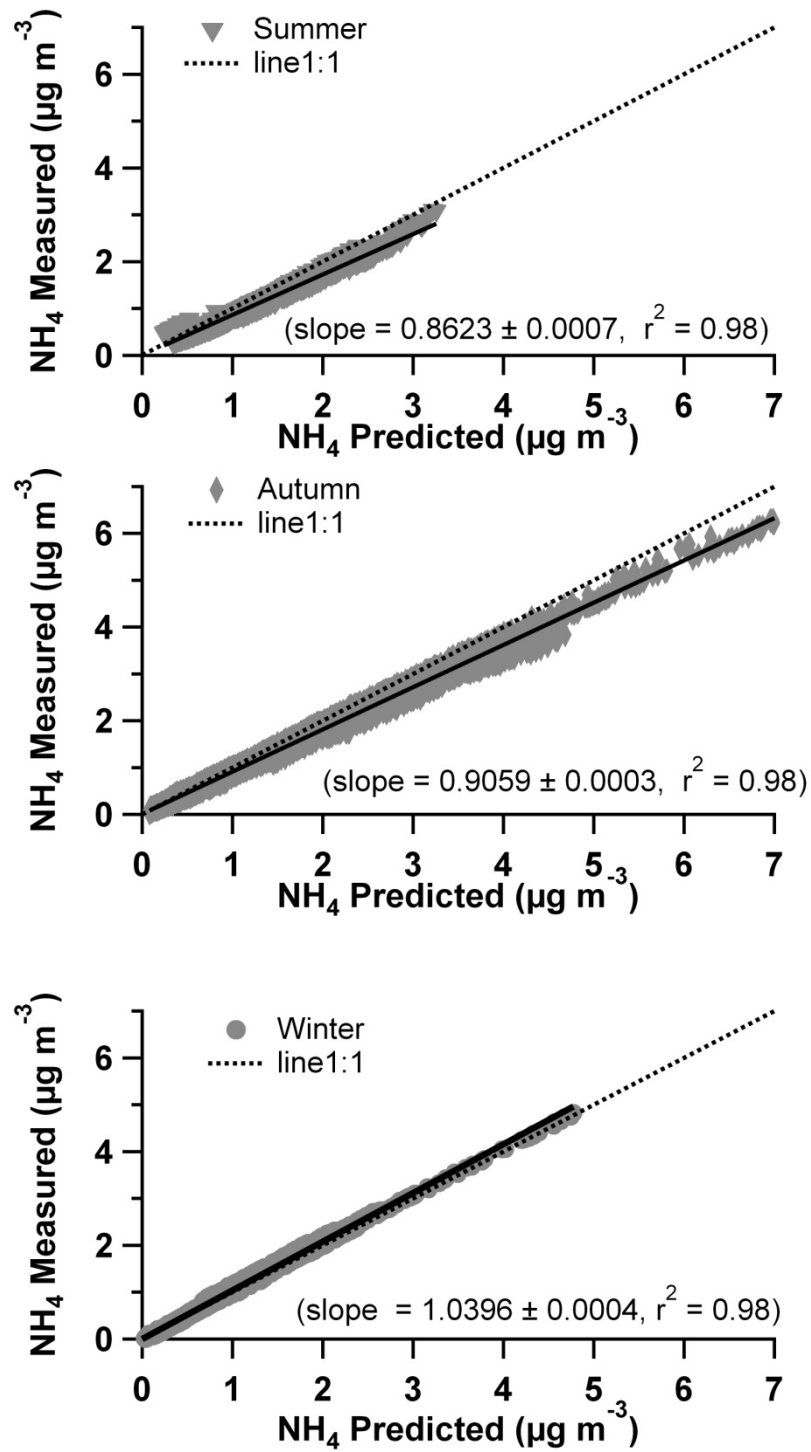
10 Correspondence to: H. Herrmann (herrmann@tropos.de)

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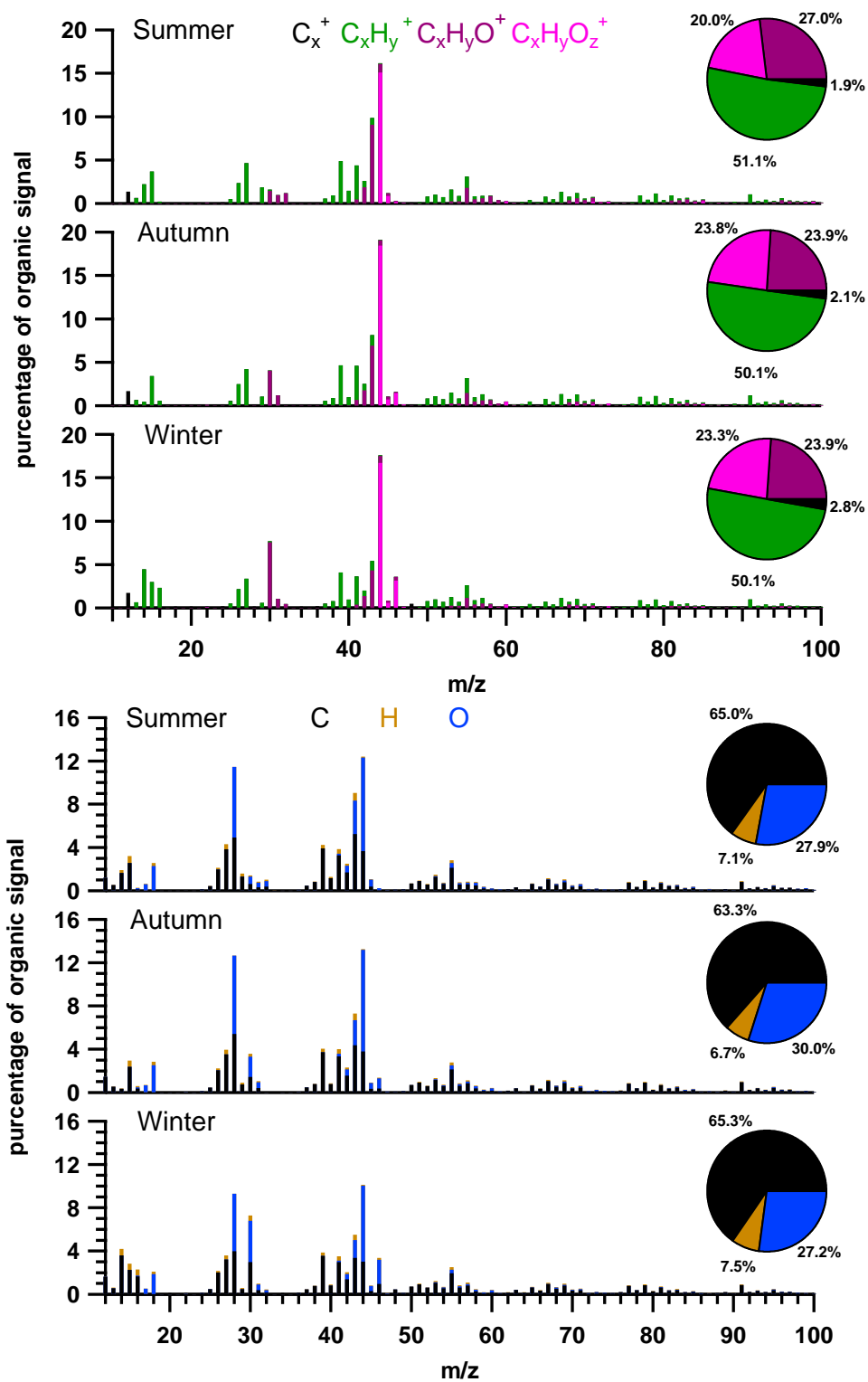
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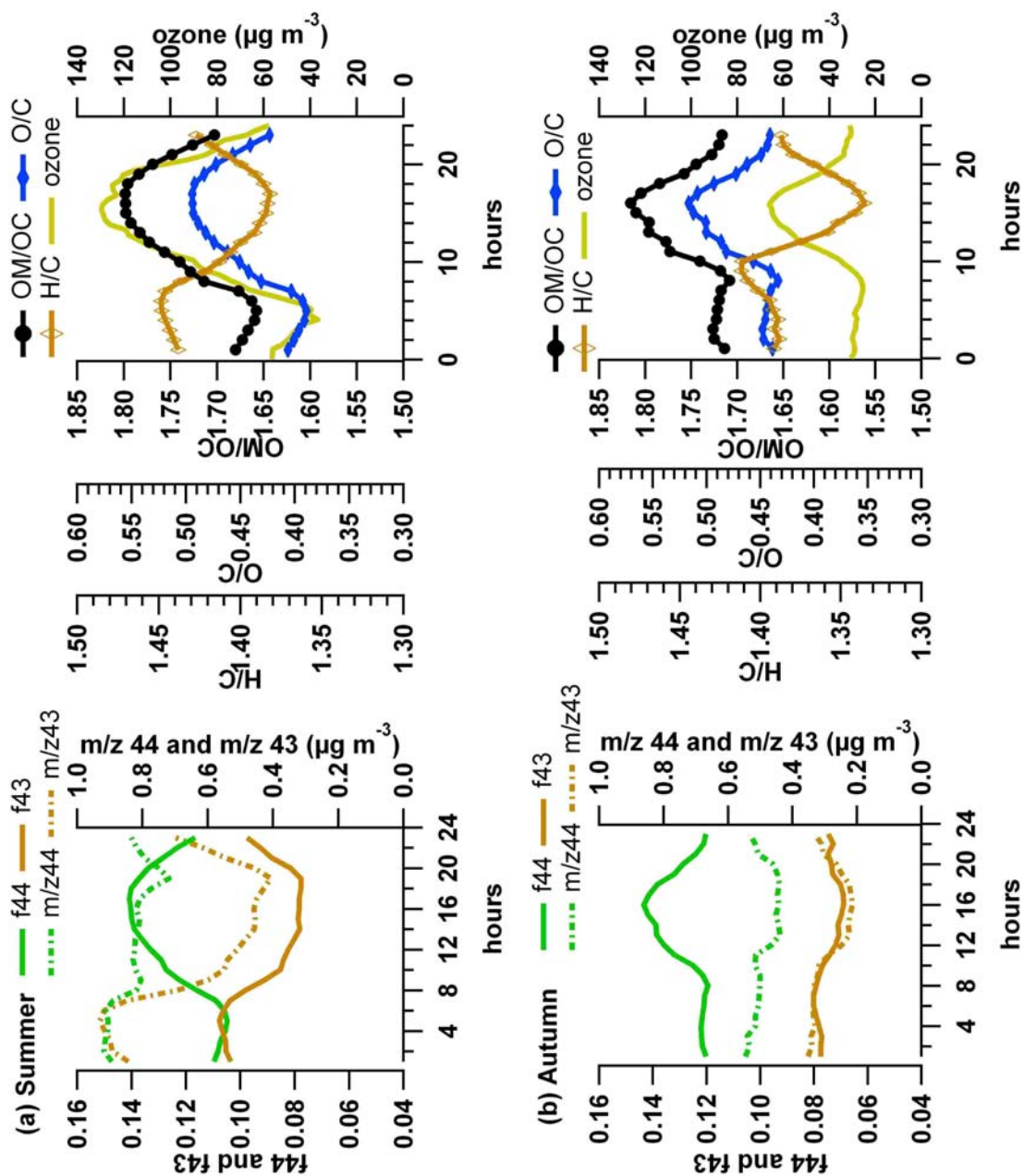


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2 Figure 1. Comparison of the measured ammonium with the predicted ammonium  
 3 concentration assuming a fully neutralization by nitrate, sulfate and chloride for the three  
 4 different campaigns.

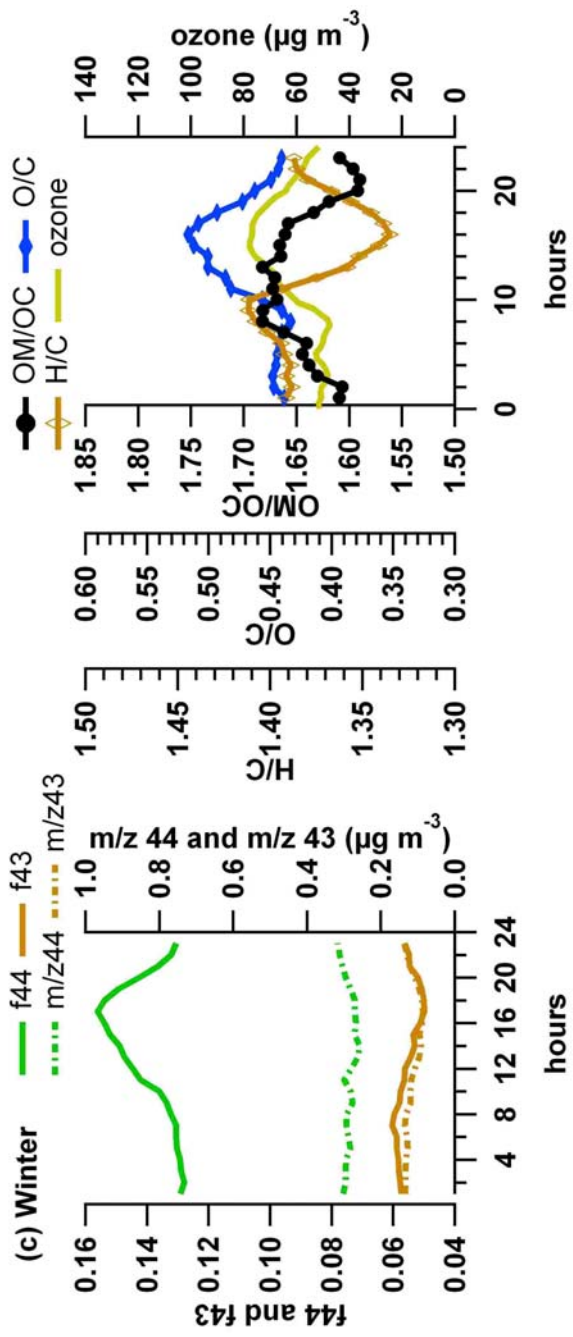


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 2 Figure 2. Comparison of the average organic mass spectra for each season, color code stand  
 3 for the main organic categories (Top) and the main elements (C, H, and O) (bottom). The pie  
 4 charts represent the average mass fraction of the different ion categories and elemental  
 5 composition of each mass spectrum.



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2 Figure 3. Diurnal variations of the organic aerosol tracers ( $m/z$  44,  $m/z$  43, f44, f43), OM/OC,  
 3 O/C and H/C ratios and ozone concentration for (a) summer, (b) autumn and (c) winter.

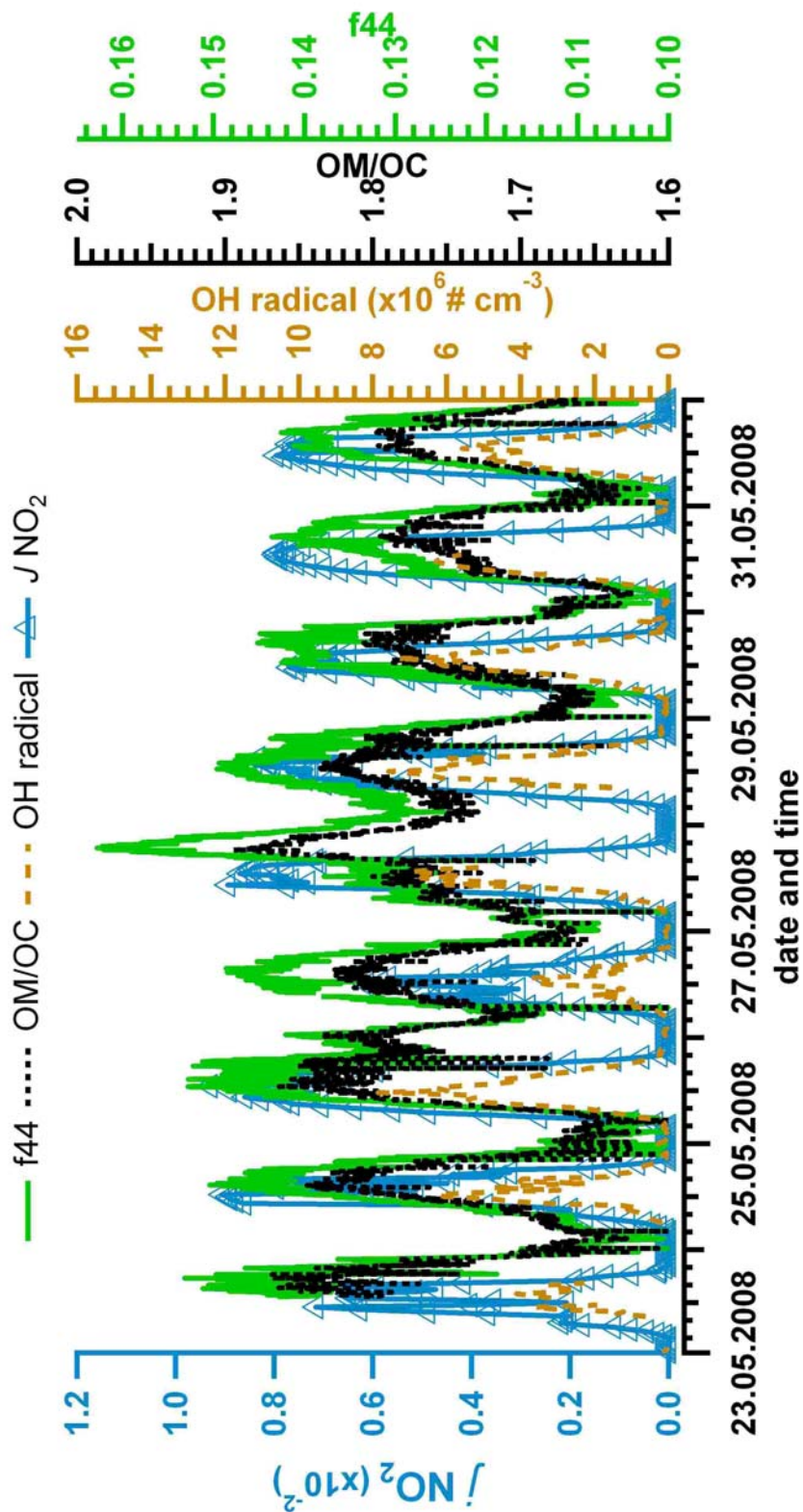


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2 Figure 3. (continued)

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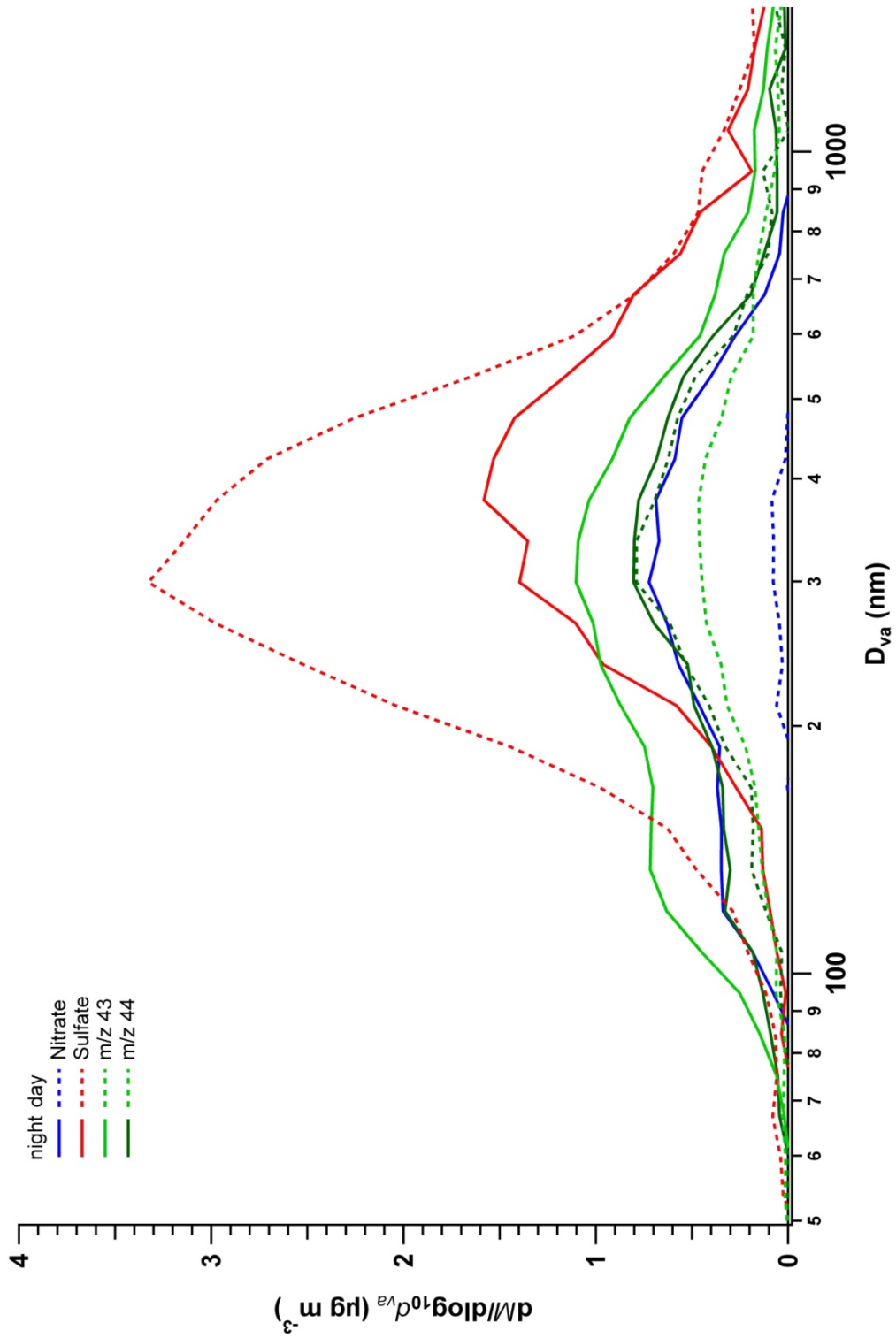
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2 Figure 4. Comparison of the f44 and OM/OC time series with the OH radical concentration  
 3 and NO<sub>2</sub> photolysis rate for the summer campaign.

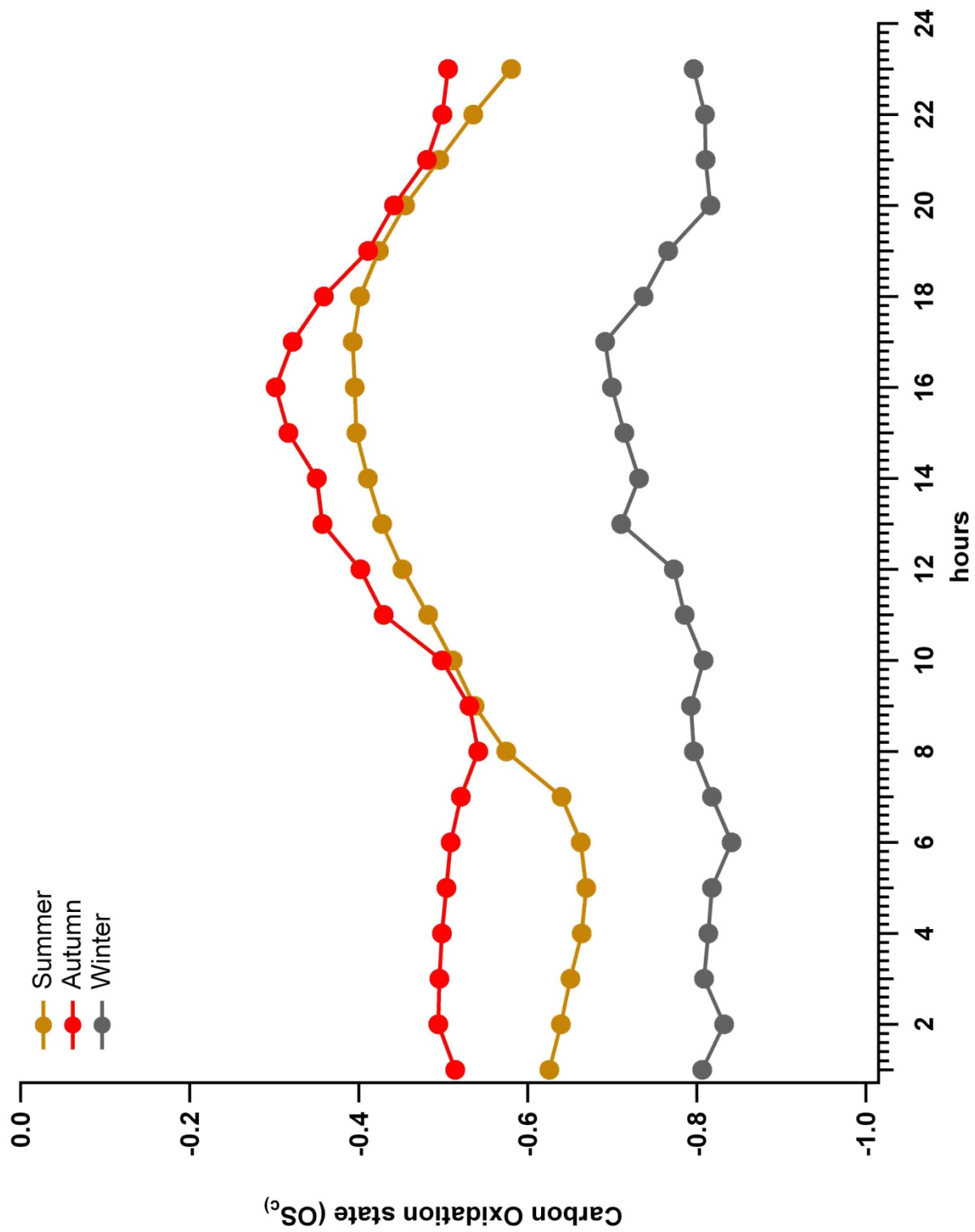
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2 Figure 5. An example of a typical summer night and day particle size distribution as measured  
 3 on 7 June 2008. Night referred from midnight to 04:00 and day from noon to 18:00.

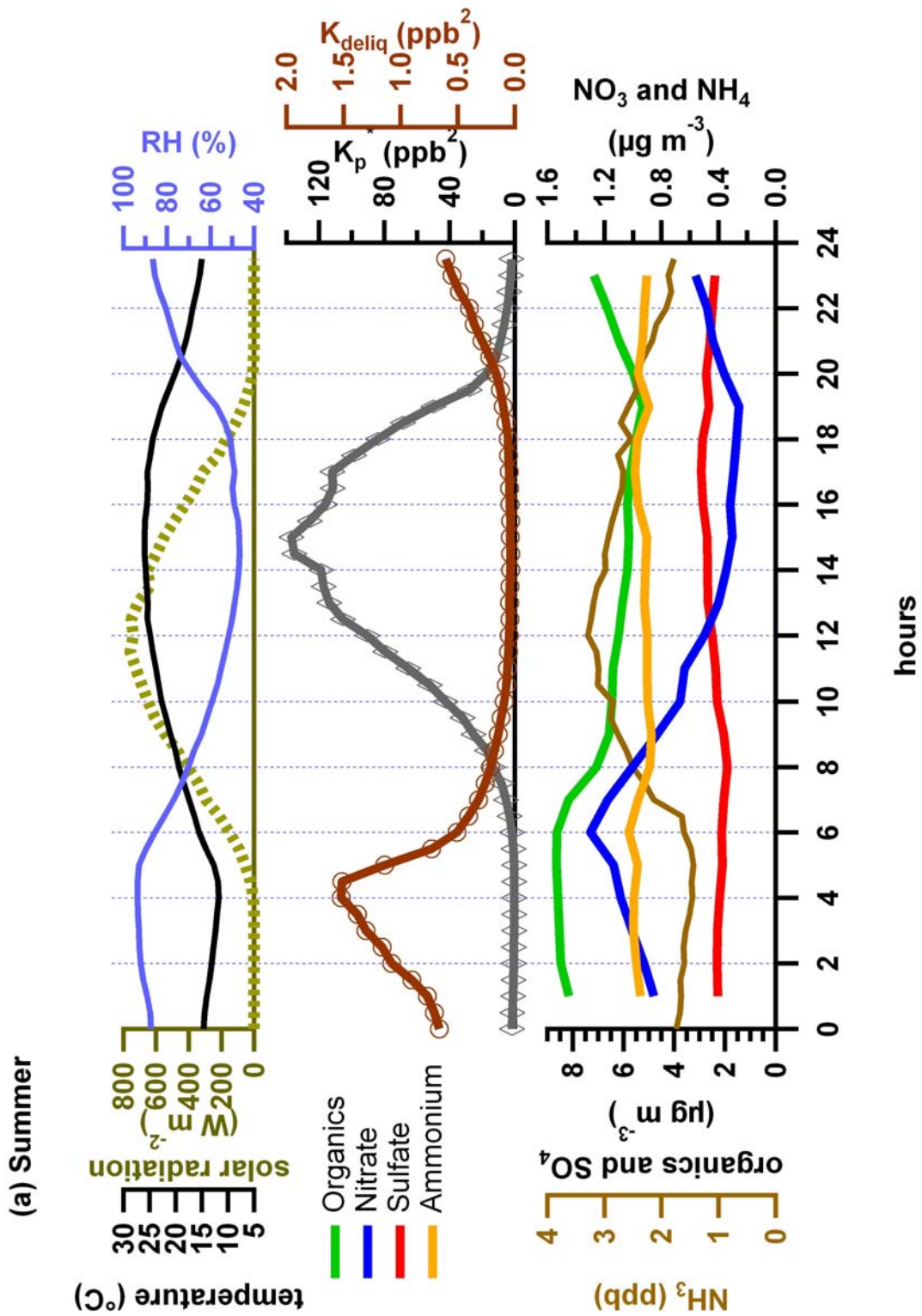
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2 Figure 6. Diurnal cycle of the carbon oxidation state for each season.

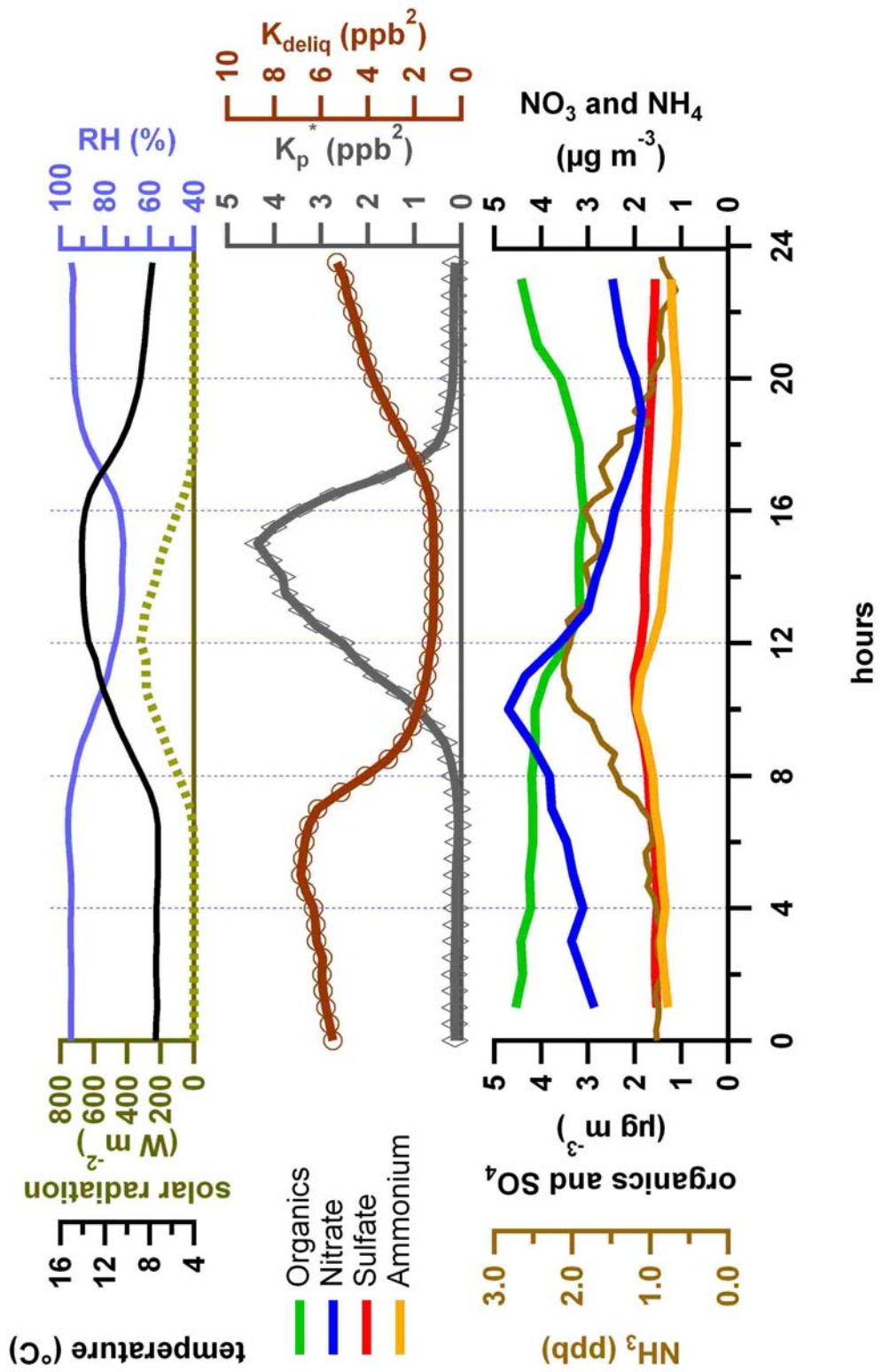




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2 Figure 7. Diurnal variations of the nitrate concentration and its thermodynamic constants for  
 3 (a) summer, (b) autumn and (c) winter.

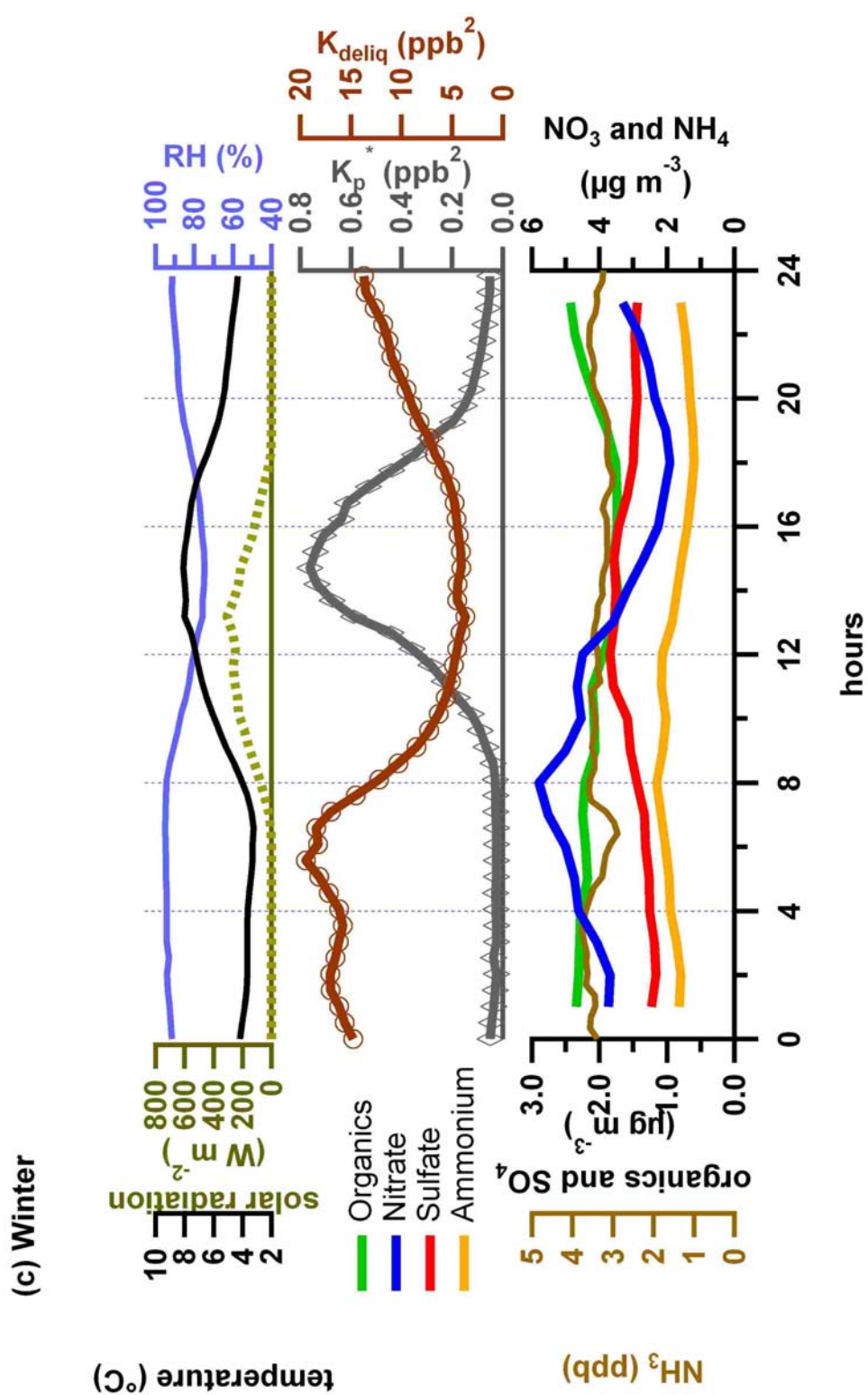
(b) Autumn



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2 Figure 7. (continued)

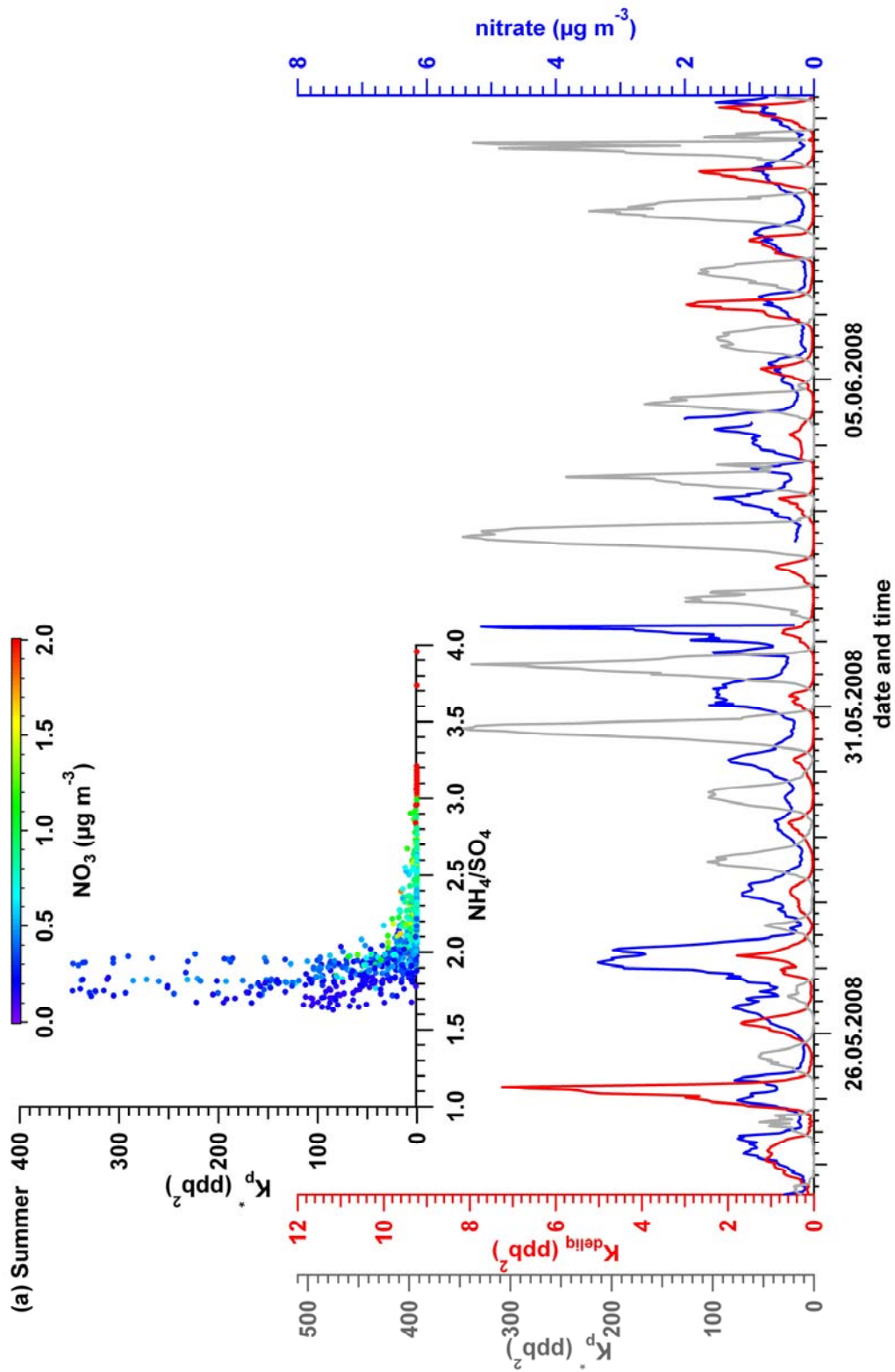
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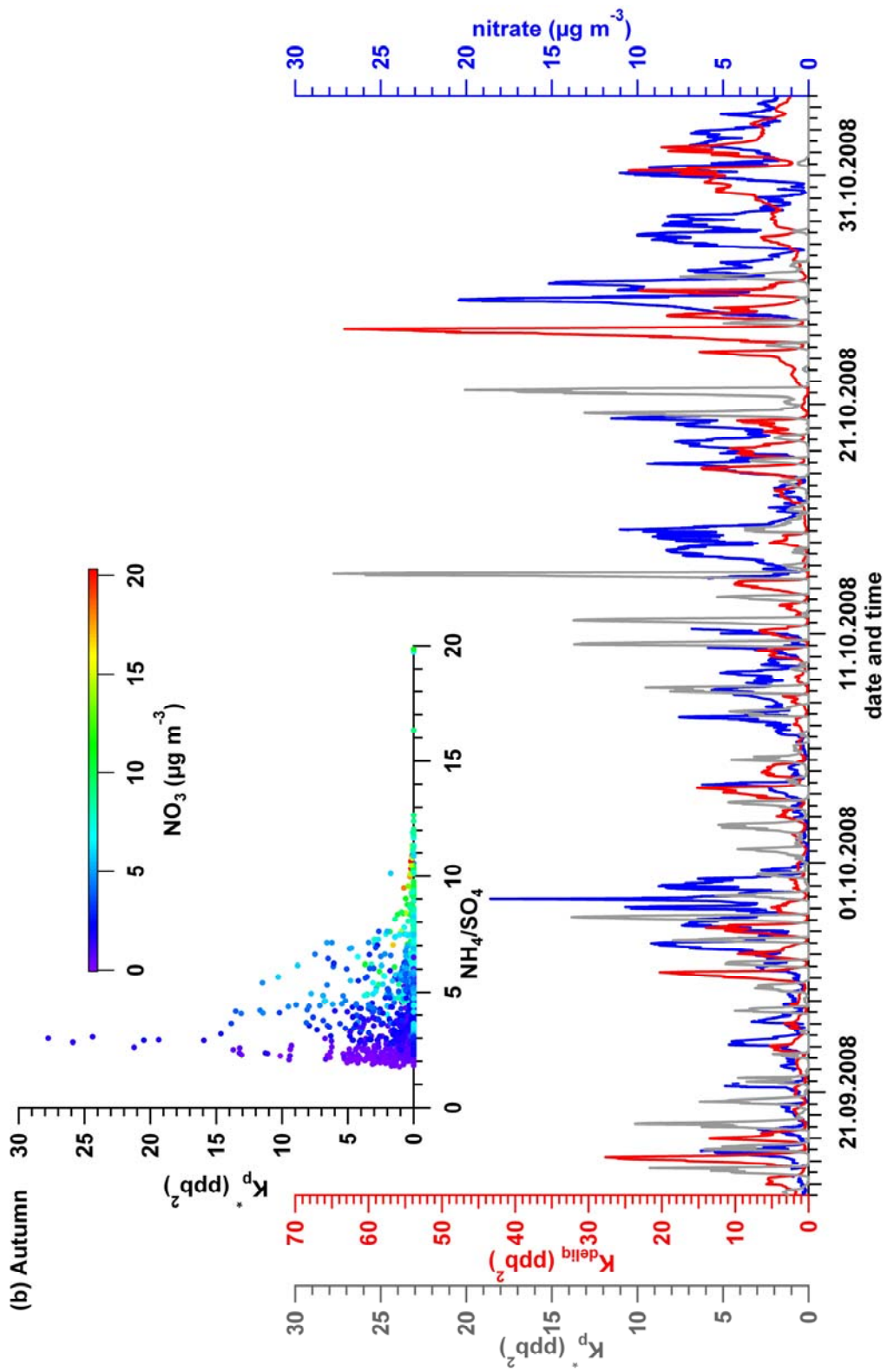
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2 Figure 7. (continued)

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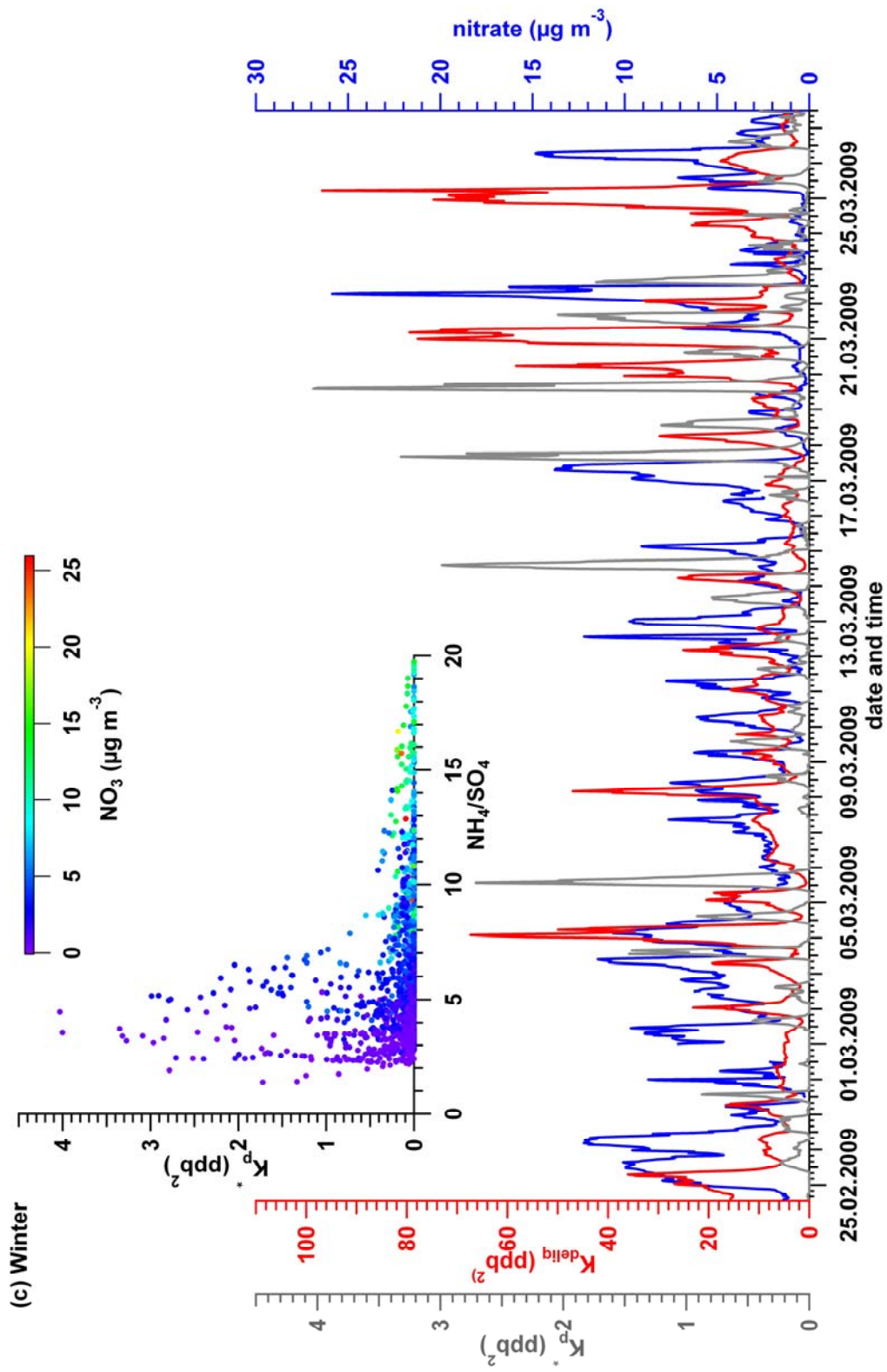
1  
 2 Figure 8. Time series of the nitrate concentration and the theoretical equilibrium constants  
 3 ( $K_p^*(T)$  and  $K_{deliq}(T)$ ) for pure ammonium during the three measurement periods ((a) summer,  
 4 (b) autumn and (c) Winter). The insert scatter plots is the relation between  $K_p^*(T)$  and the  
 5 particulate ammonium to sulfate ratio colored by the nitrate concentration.



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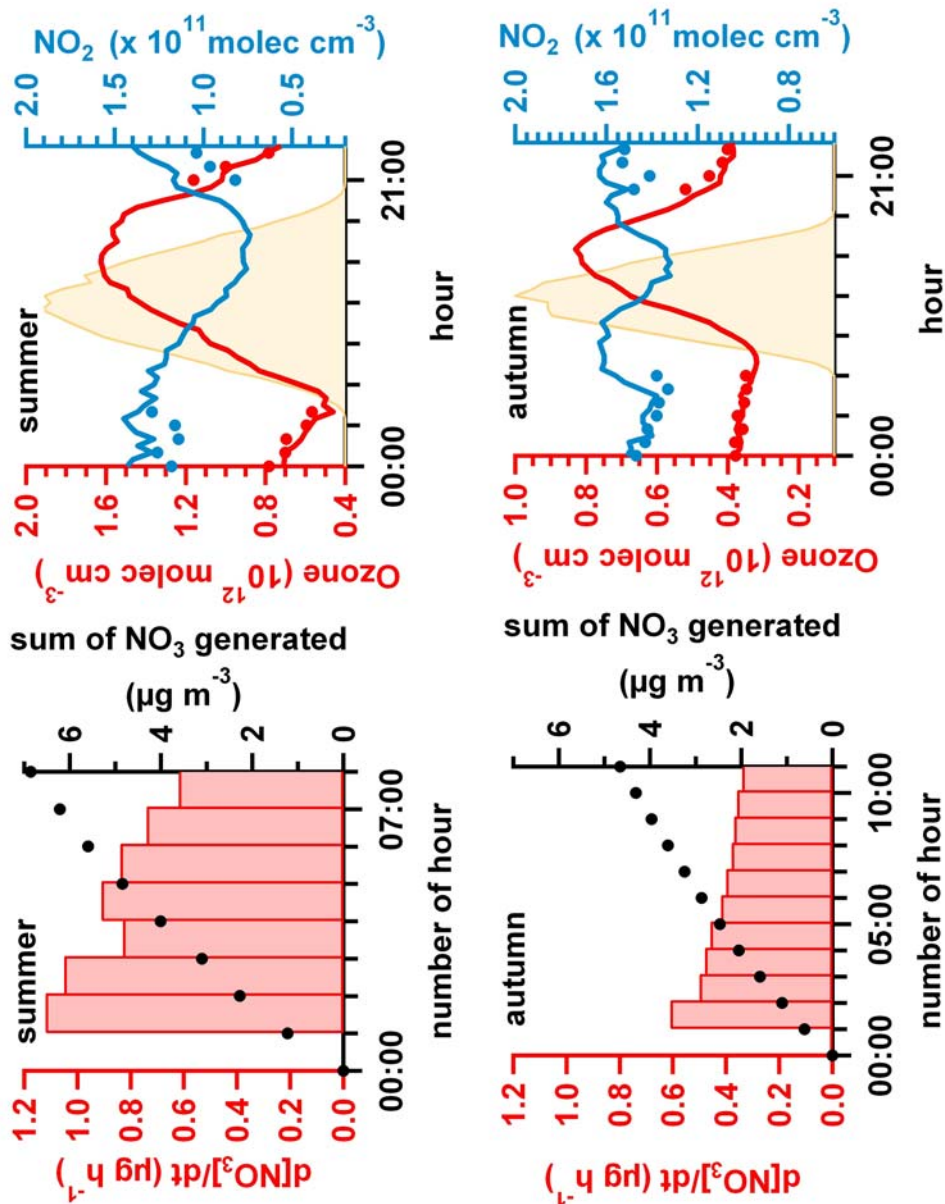
2 Figure 8. (continued)



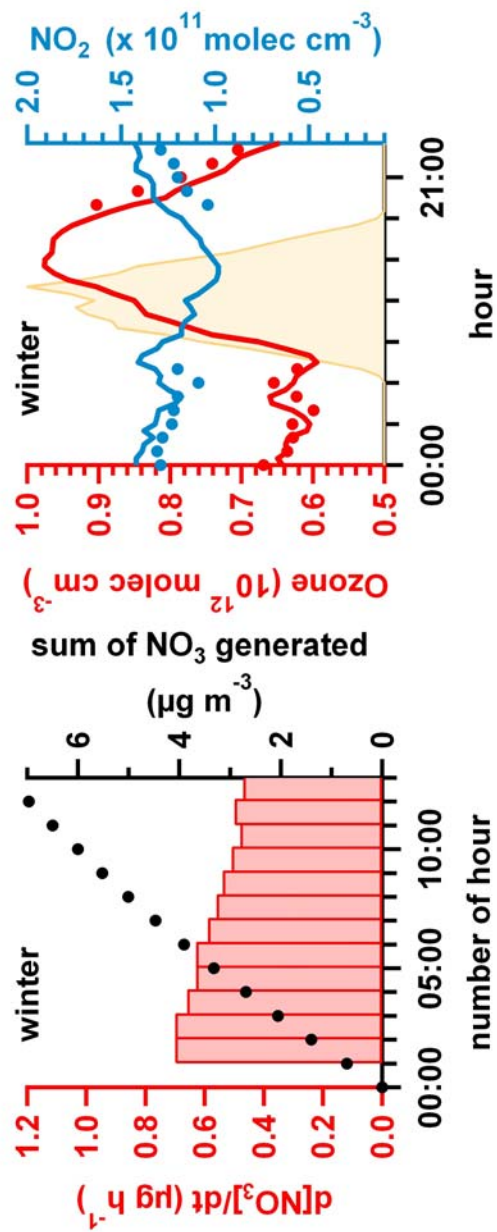


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2 Figure 8. (continued)



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 2 Figure 9. Maximum nitrate formation rate and concentration expected from nighttime  
 3 chemistry simulation for each season (left) and the comparison between the measured (line)  
 4 and the simulated (dots) ozone and NO<sub>2</sub> concentrations (right). The colored surface area on  
 5 the right side corresponds to the solar radiation and can be used to distinguish nighttime from  
 6 daytime chemistry.

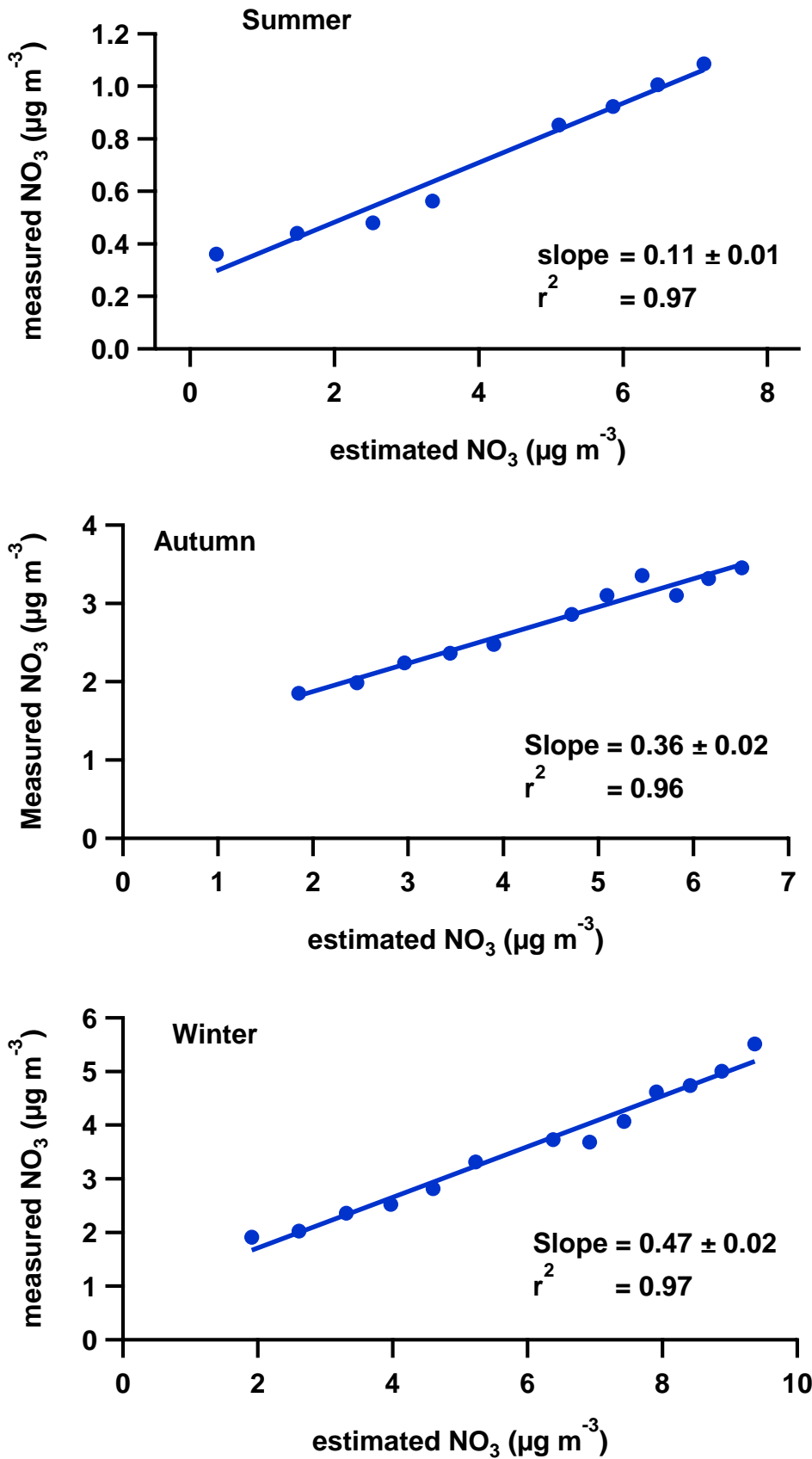


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3 Figure 9. (continued)

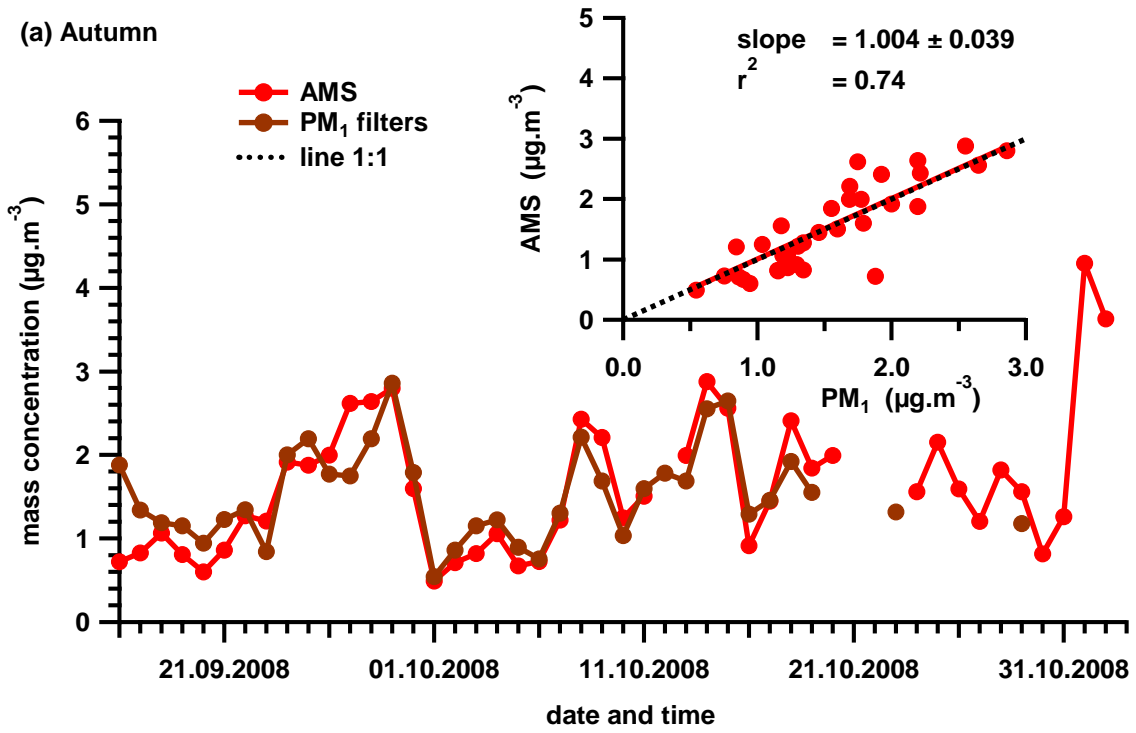




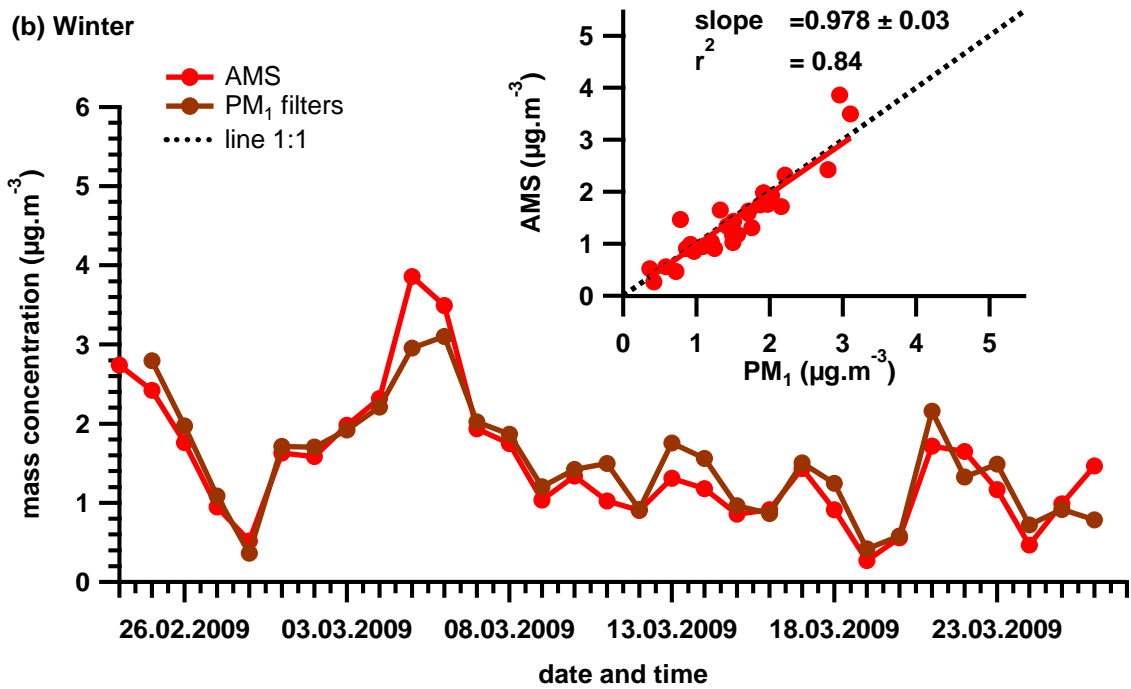
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2 Figure 10. The comparison of measured and simulated nitrate concentrations for each season.

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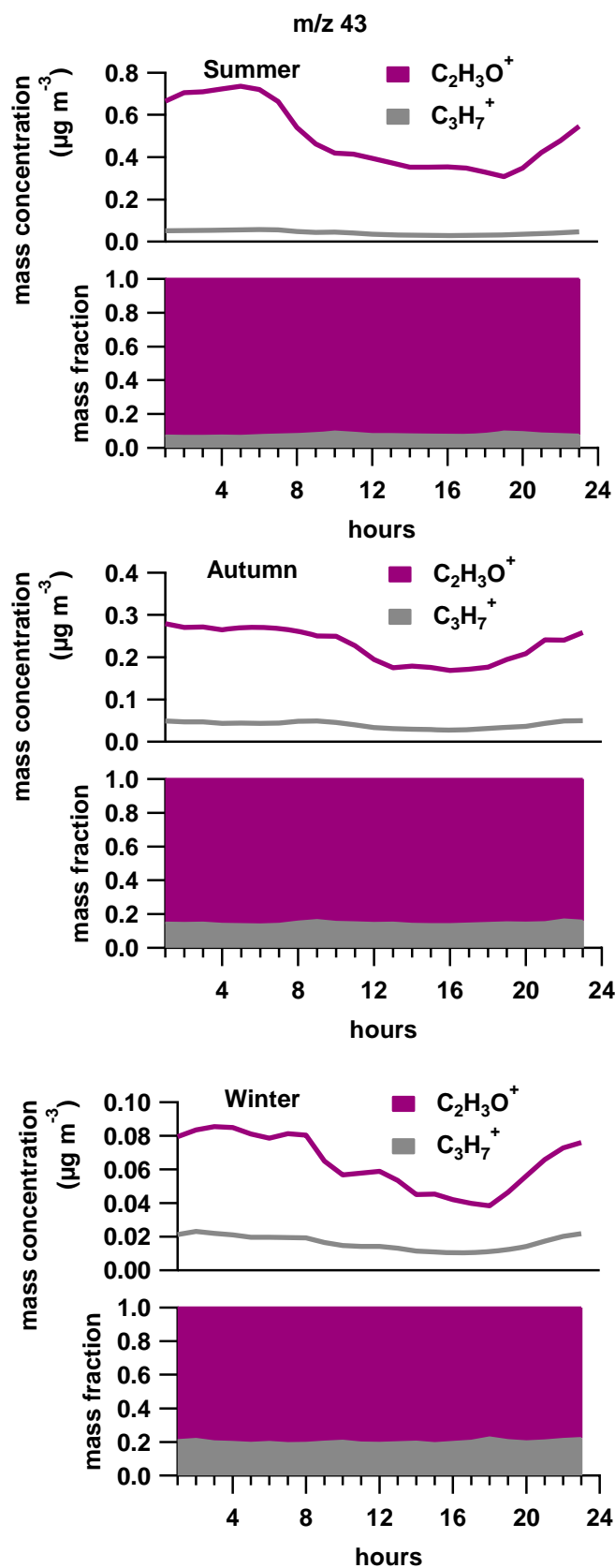
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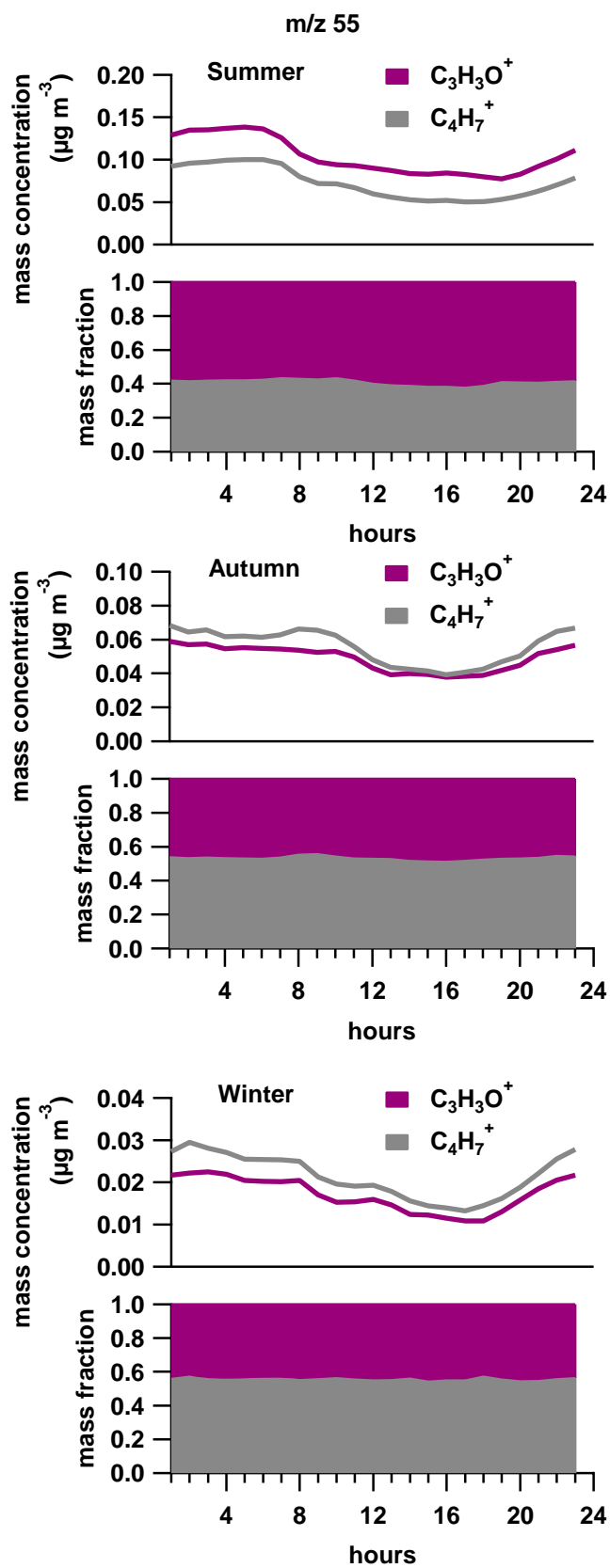
4 Figure SI 1. Comparison of the AMS sulfate concentration and daily PM<sub>1</sub> filters samples.

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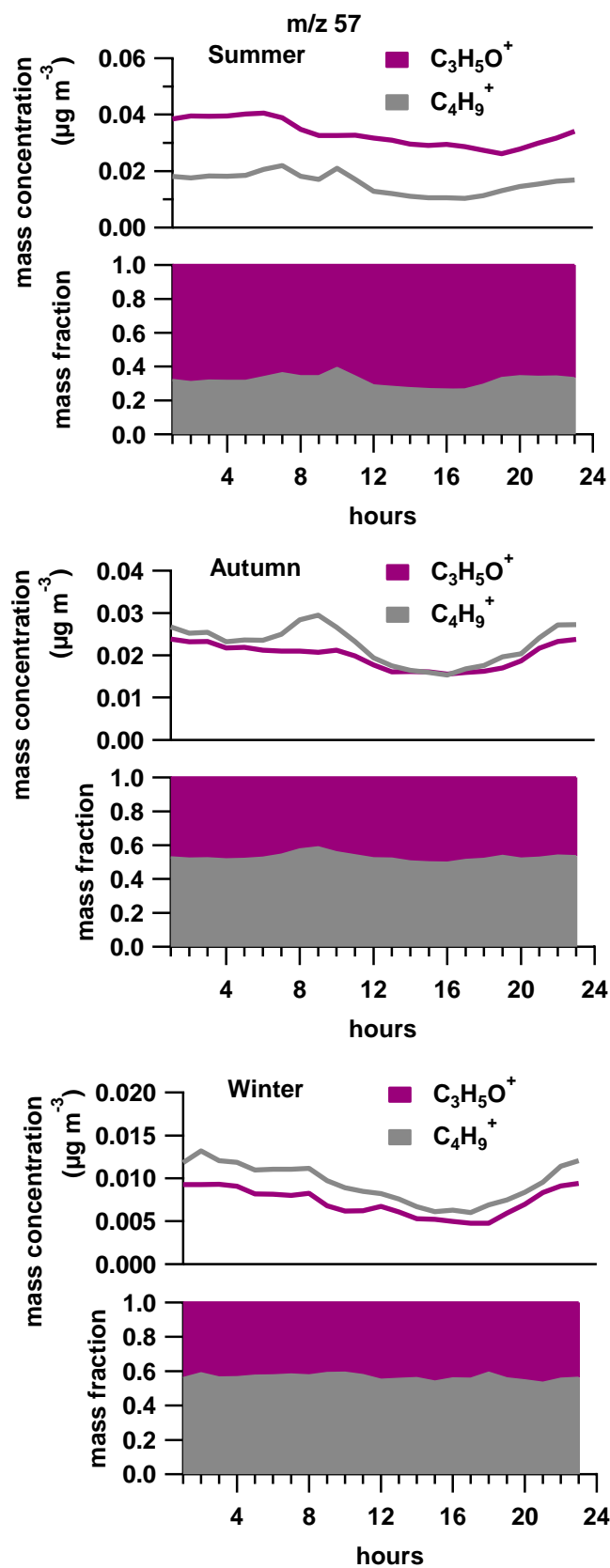
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2 Figure SI 2. Diurnal profiles and mass fractions of the high resolution organic fragments  
 3 composing m/z 43, 55 and 57.



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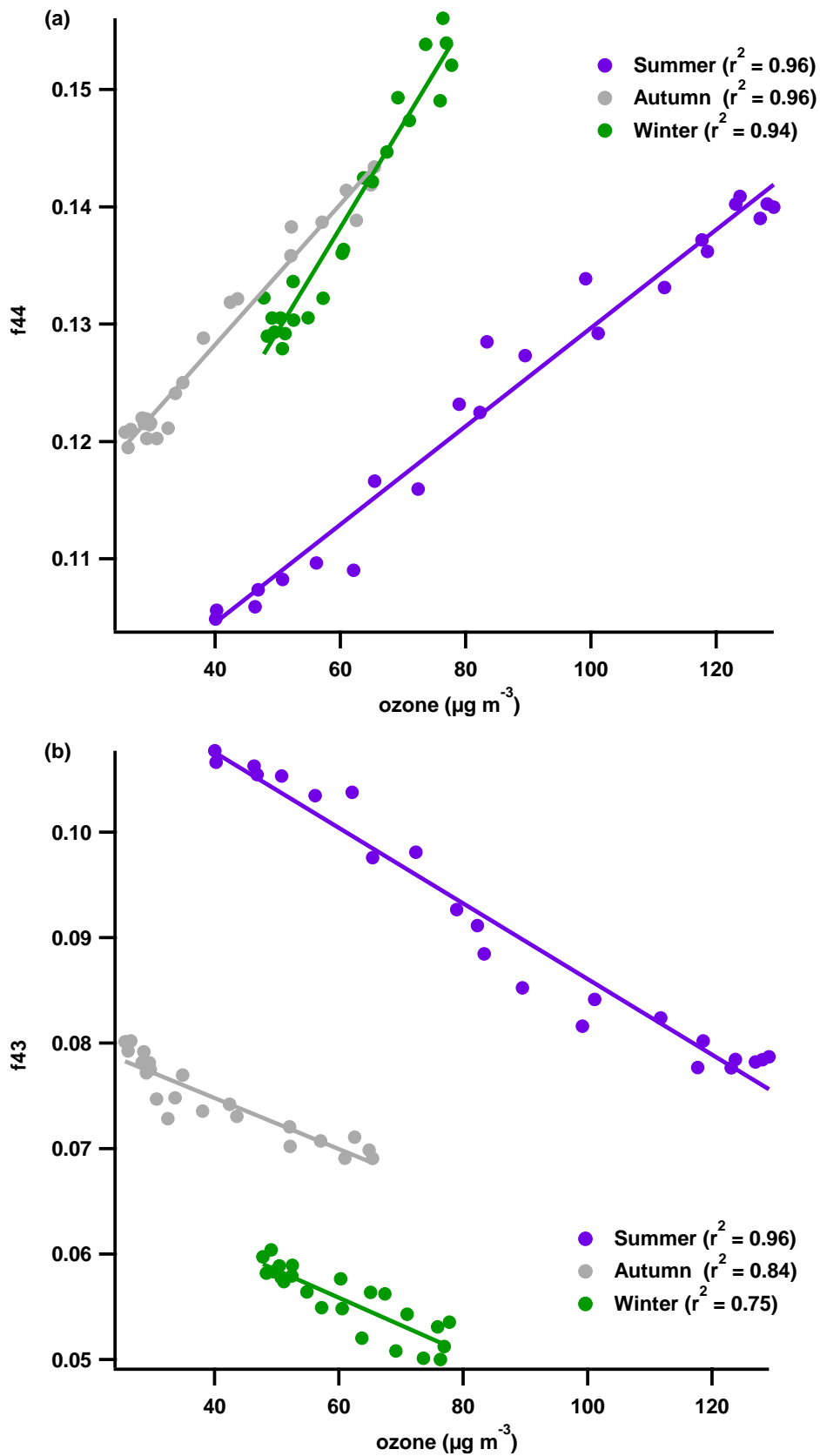
2 Figure SI 2. (continued)



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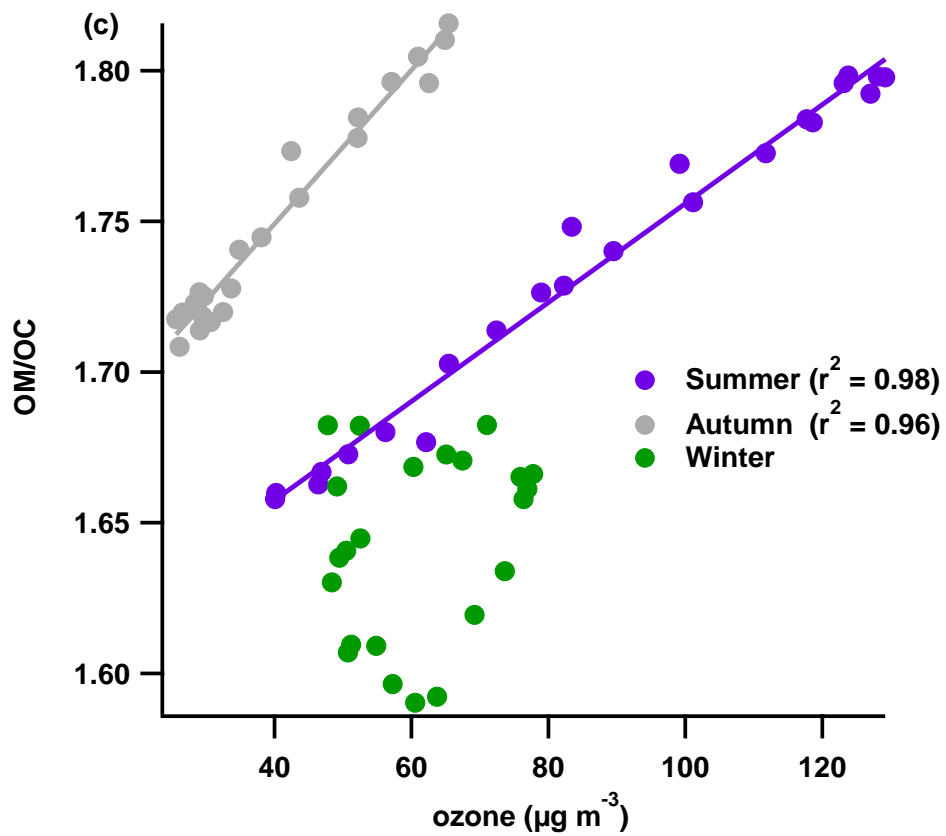
2 Figure SI 2. (continued)

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2 Figure SI 3. Correlation plots of the diurnal organic tracers (a: f44, b: f43 and c: OM/OC) and  
 3 ozone for the different seasons.



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2 Figure SI 3. (continued)

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