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2 **Supplemental Information for**

3 **Formation and occurrence of dimer esters of**  
4 **pinene oxidation products in atmospheric**  
5 **aerosols**

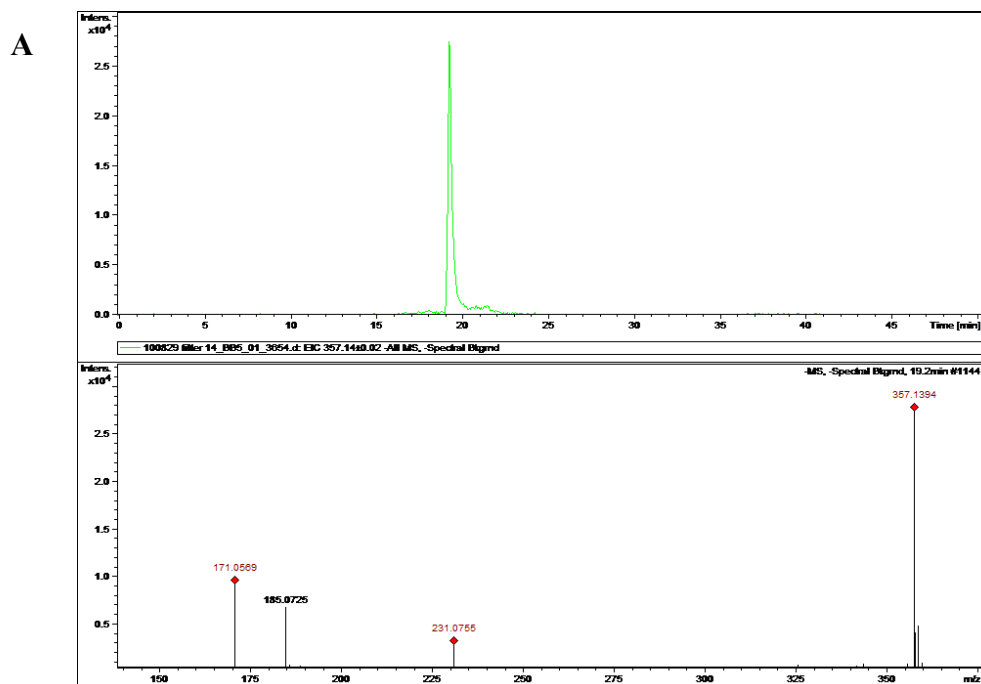
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7 **Mortensen<sup>2\*\*</sup>, T. Rosenoern<sup>2\*\*\*</sup>, J.D. Surratt<sup>5</sup>, M. Bilde<sup>2</sup>, A.H. Goldstein<sup>3</sup> and M.**  
8 **Glasius<sup>1</sup>**

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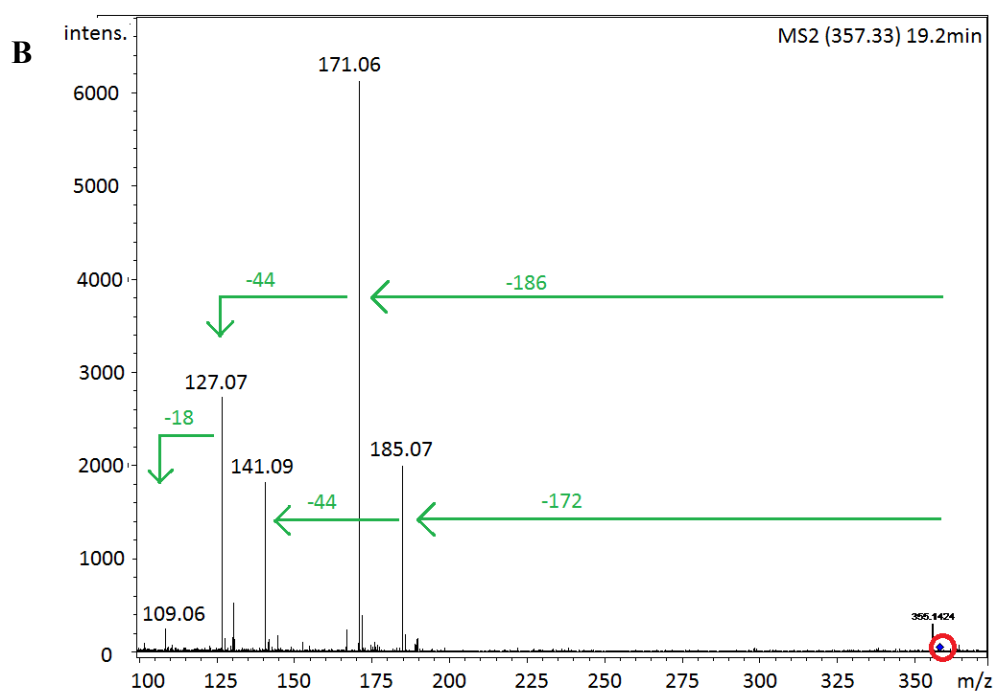
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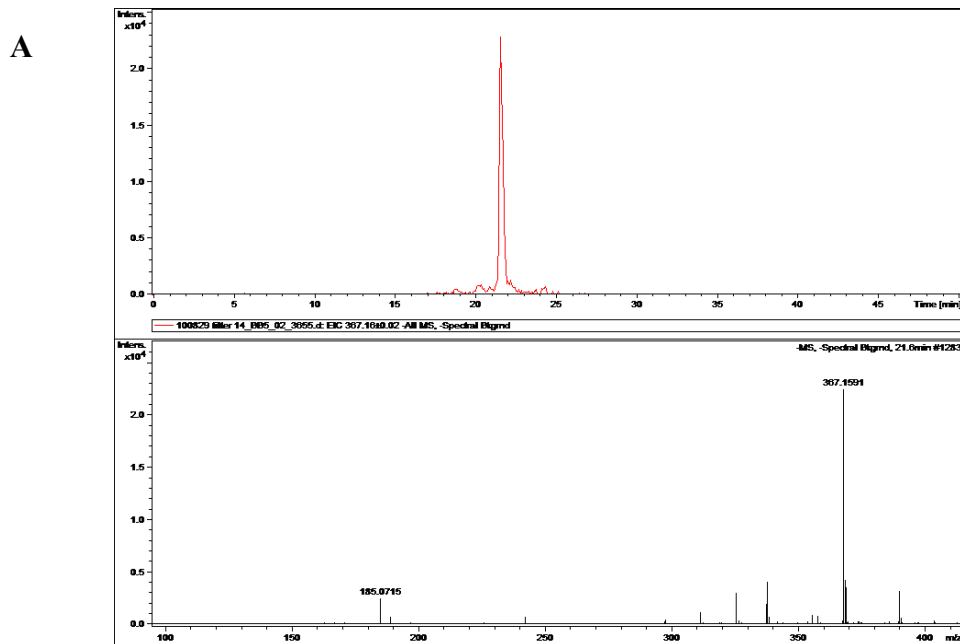
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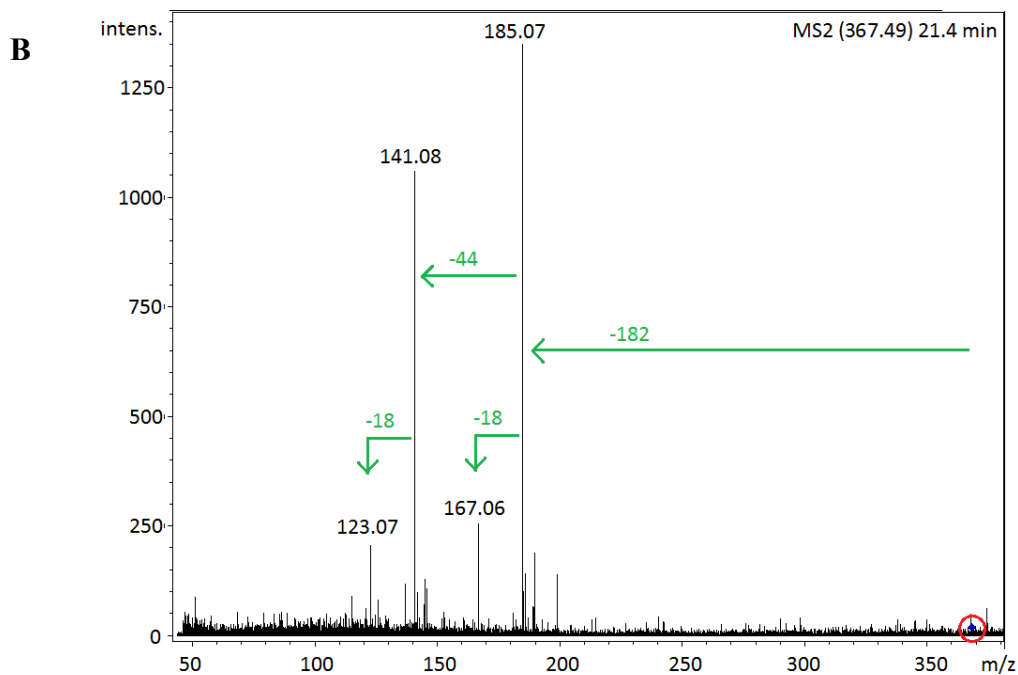
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16 Figure S1: Extracted ion chromatogram (EIC) for m/z 357 together with the mass spectrum  
17 (A) and MS-MS fragmentation pattern (B) used to identify the compound as pinyl-  
18 diaterpenyl ester.

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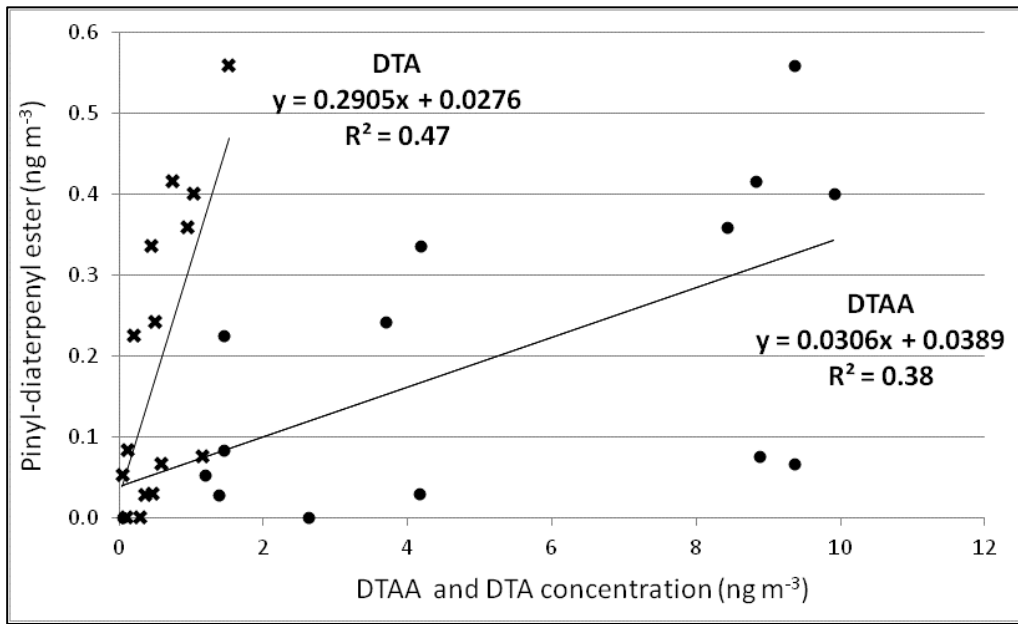


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Figure S2: EIC of m/z 367 together with the mass spectrum (A) and MS-MS fragmentation pattern of m/z 367 (B) used to identify the compound as pinonyl-pinyl ester.

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A



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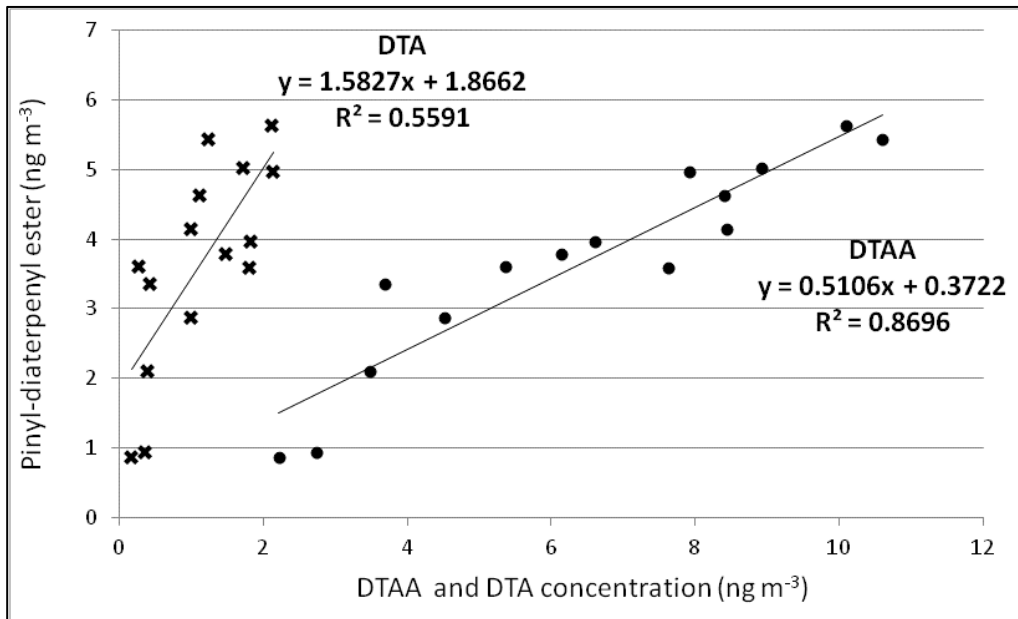
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B



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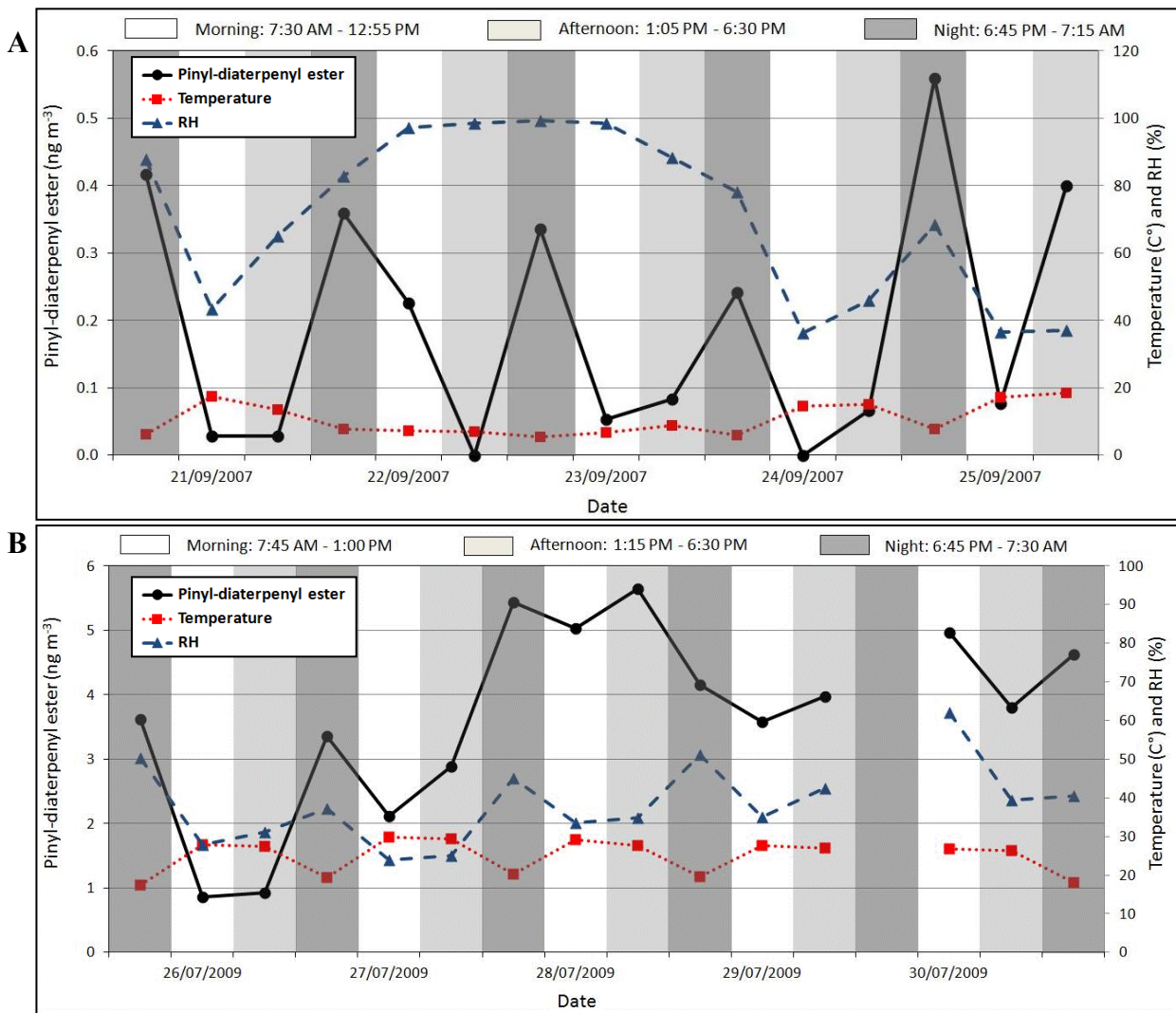
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43 Figure S3: Scatterplots and linear correlation values ( $R^2$ ) of piny-diterpenyl ester (ng m<sup>-3</sup>)

44 against diaterpenylic acid acetate (DTAA ●, in ng m<sup>-3</sup>) and against diaterpenylic acid (DTA

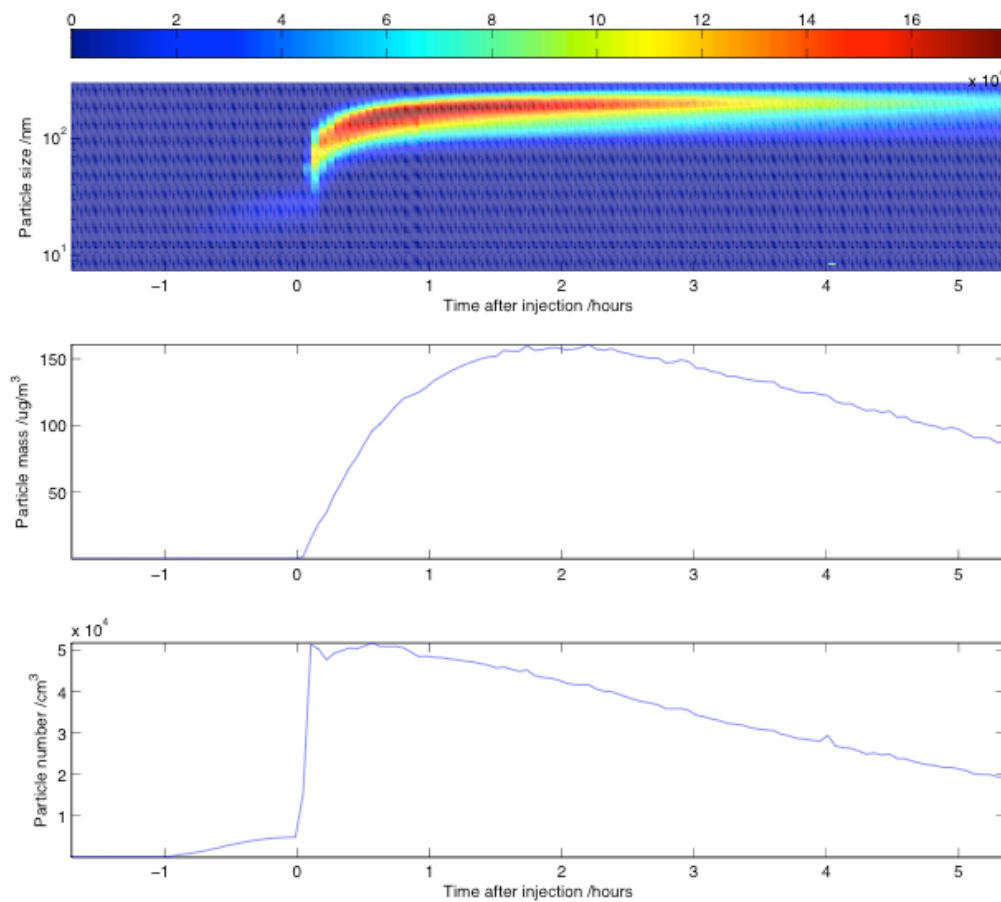
45 ×, in ng m<sup>-3</sup>) during the 2007 (A) and 2009 (B) campaigns.

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 47 Figure S4: Diurnal variation of the piny-diterpenyl ester ● (ng m<sup>-3</sup>) and temperature ■ (C°)  
 48 and relative humidity (RH)▲ (%) during the 2007 (A) and 2009 (B) campaigns (note  
 49 different scales). Night-time samples are highlighted in dark grey.

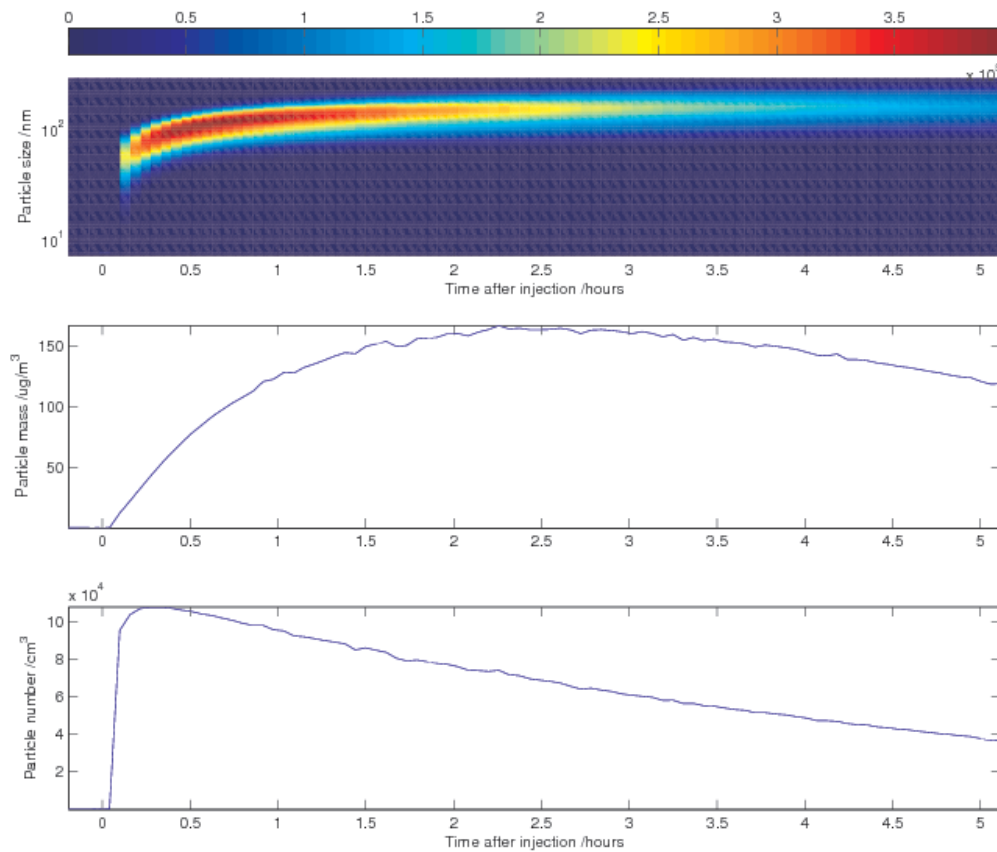
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52 Figure S5: Panel A shows the particle size distribution as a function of time measured with  
53 the SMPS system during smog chamber experiment #1. Panel B shows the inferred particle  
54 mass and panel C shows the integrated number concentration as a function of time.

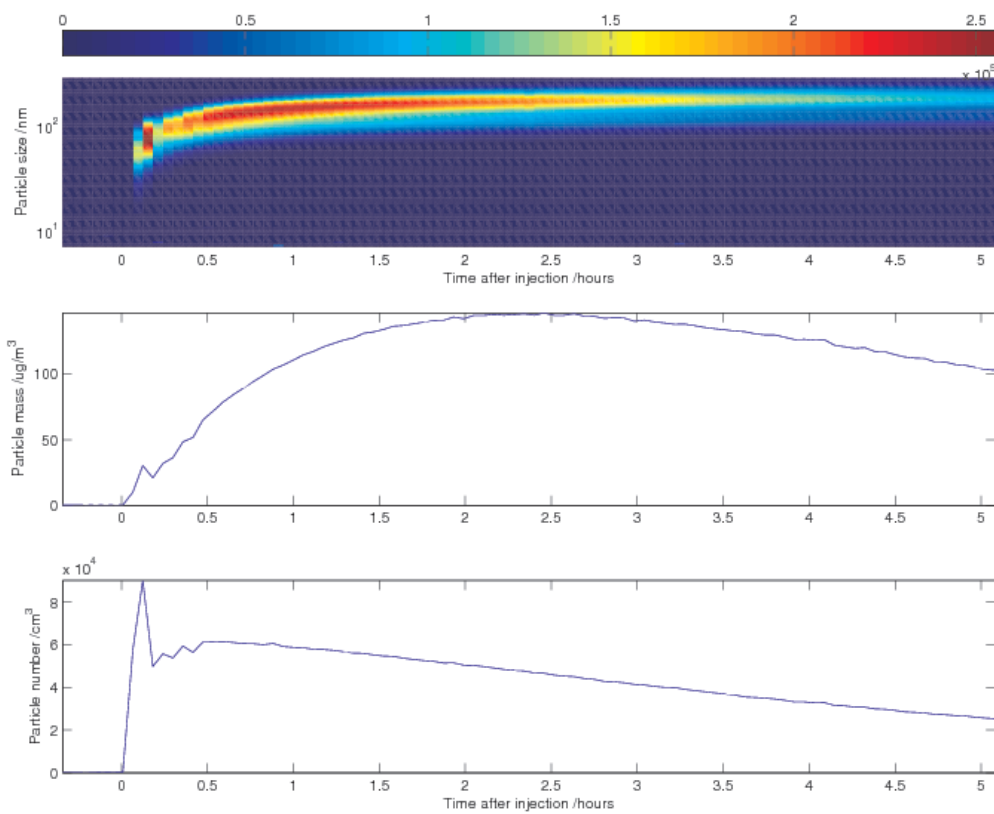
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57 Figure S6: Panel A shows the particle size distribution as a function of time measured with  
58 the SMPS system during smog chamber experiment #3. Panel B shows the inferred particle  
59 mass and panel C shows the integrated number concentration as a function of time.

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62 Figure S7: Panel A shows the particle size distribution as a function of time measured with  
63 the SMPS system during smog chamber experiment #4. Panel B shows the inferred particle  
64 mass and panel C shows the integrated number concentration as a function of time.

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Experiment 2 (24 °C)		Experiment 3 (15 °C)	
Time after injection of $\alpha$ -pinene (min)	Critical diameter (nm)	Time after injection of $\alpha$ -pinene (min)	Critical diameter (nm)
32	165	48	164
64	172	80	162
96	176	112	163
128	179	144	164
160	178	176	171
192	180	208	177
224	168	240	178
256	171	272	175
288	168	-	-

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67 Table S1: Critical diameters as a function of time for Experiments 2 and 3 at a  
68 supersaturation of 0.19%.

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