**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Changes in monoterpene mixing ratios during summer storms in rural New Hampshire (USA)" *by* K. B. Haase et al.

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Dr. Yasaaa, Thank you very much for your kind review of our manuscript. Below, you will find our responses to the questions you have raised.

-If the measurement cycle with PTR-MS is 7.25 minutes (page 20636, line 7), how could the data be averaged over a 5 min time period (page 20637, line 12)

This statement was meant refer to the data from instrumentation other than the PTR-MS. This sentence will be clarified in the final manuscript to read, "All other chemical and meteorological data were averaged over a 5 min time period that is on the approximate time scale as the PTR-MS dataset."

-Page 20637, line 14-15, I am not sure if Talbot et al., 2011 is it the right reference

as the cited reference deals with particulate mercury

The relevant section of Talbot et al., 2011 (http://www.mdpi.com/2073-4433/2/1/1/) is the experimental discussion on pages 15 and 16. This reference contains the most up-to-date information regarding the suite of measurements at Thompson Farm. While the focus of this reference is particulate phase mercury (Hgp), it incorporates relationships with other volatile organic compounds (VOCs) in order to associate Hgp with different sources to the atmosphere and to analyze the scenarios where Hgp by filter differed from Hgp by Tekran analyzer. Measurements made with our PTR-MS, as well as several other VOC and meteorological analyzers are featured in the paper.

-Since the authors have evaluated the change of the atmospheric monoterpene mixing ratios and not the emission rates from branch enclosure systems under storm inïňĆuence, the eventual burst of the soil and leaf litter monoterpene emissions under these conditions should also be considered and discussed.

We allude to ground litter emissions of monoterpenes in the introduction, but do not explicitly explore that that source again in the paper, as we lack any gradient measurements to inform the exact source of the compounds. If the monoterpene release was from ground litter, the estimates of total emissions would be much larger, as the distance from the ground to the inlet (20 meters) is much larger than the height from the canopy to the inlet (5 meters), which would result in an estimated monoterpene emission rate of 480-4960 g km^{-1} hr^{-1}.

- By looking to Fig. 3 it looks like the storm-induced monoterpene coincided with low ozone, how can thus the formation of SOA by oxidation of induced monoterpenes be important.

We did not mean to imply that SOA was immediately formed during the storm event, rather that there is an increase in monoterpene levels resulting from severe storm events. Because monoterpenes are potent SOA precursors, they could eventually form or influence aerosol formation at a later time/down wind. Under the conditions of

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low-ozone and greatly reduced sunlight present during many of the storm events, the oxidative capacity of the local atmosphere was very low, and monoterpene oxidation was therefore quite limited. The formation and growth of SOA during these events was not evident, based on particle count (via cpc) and extinction (nephelometer) thought it is possible that some combination of washout and growth occurred. While oxidation of the monoterpenes during the storm events was likely limited, the fate of the monoterpenes after the storms dissipated and the availability of OH and O_3 returned could be the formation of additional SOA beyond what was normally present before to the storm.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 20631, 2011.

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