

## ***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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### **General comments:**

Haase et al. investigate the details of monoterpene emissions under storm conditions. These are rather important issues since those storms do not only infer abrupt monoterpene emissions but also to continuous emissions over some time after wind speed decline. This is certainly an important factor of monoterpene emission budgets, local air quality and SOA related aspects. The authors measured about a quadruple of the original value of the emissions during stormy episodes compared to previous conditions.

They intercompared this to the common simple empirical formula of Guenther et al. C7850

(1995). which is used because of this and its rather good match to observations, relating emission to biomass temperature mainly and second the available dry weight biomass. Since the latter doesn't change too much over a period of measurements except in springtime the temperature effect dominates and relates the volatility and evaporation of monoterpenes from plant cellular storage pools. Because they cannot easily diffuse through the plant outer walls in contrast to isoprene, the release is strongly dependent on available storage pool magnitudes, stomata opening and vapour pressure difference. We have seen similar things but aren't that far in analysis. It looks like the plants get injured/damaged by the storm, i.e. small branches get ripped off or some biomaterial loosens and if this effects become notable for the entire ecosystem it starts emitting as being bitten by e.g. a bark beetle. Since these monoterpenes have protective properties for the plants, herbivore damage and wound sealing. This can take several days of operation and is certainly a good point to investigate.

The way of analysis is done very carefully and classification of storm events done in an exemplary way which could serve as example for others. The scope of the journal is well covered. Thanks.

### **Specific comments**

A. The only thing on a potential which list might be the direct emission measurements from enclosures to figure out if the plants act independently or as ecosystem. but that's for beyond the possibilities in this case.

B. I can only recommend putting in a figure displaying the duration of the storm episode driven emission to indicate the length as a function of storm intensity. In case the editor favors that as I do please include this. Otherwise please publish right away.