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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Sesquiterpenes identified as key species for atmospheric chemistry in boreal forest by terpenoid and OVOC measurements" *by* Heidi Hellén et al.

Anonymous Referee #3

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The authors present seasonal measurements of monoterpenes, sesquiterpenes, and various oxygenated VOCs at a boreal forest site in Finland in 2011, 2015, and 2016. This study details summertime and monthly mean concentrations (April to Nov. 2016) of these species and monthly averages of their diurnal variabilities. The production of oxygenated species is investigated, and correlation of biogenic emissions with temperature are characterized. Lastly, the reactivities of these species with OH, O3, and NO3 are calculated.

This is a valuable dataset of underreported species including sesquiterpenes, small organic acids, and C6-C9 aldehydes in a forested environment. The paper is well or-

ganized, but the text will need to be carefully copy edited prior to publication. I recommend publication after the other detailed reviewer comments and the following points are addressed:

Section 3: Was there any dependence on humidity or an increase in MT or SQT emissions after rain events? Also, a time series and more complete summary of relevant statistics would be a great addition, even if it is in the supplement. P3 L17: Better to directly state that the GC's used in this study had technical difficulties rather than stating that all VOC measurements are "susceptible to technical failures." P4 L32: The use of "followed by" and "following" should be replaced by the more accurate terminology "characterized" and "measuring," respectively. P5 L1: Are the MT sum from GCMS2 presented? If so, a comparison to the individually summed MT from GCMS3 should be presented in the supplement. Also, with no ozone trap described for this instrument, I would suspect that the measurements will suffer from artifacts. P6 L10-15: Why is NO3 not included in these calculations? P7 L7: Equation (5) P9 L10: Avoid using "level" in place of the more accurate terms "mixing ratio" or "concentration." P11 L26: "trees" are listed twice P12 L9: Why was methyl vinyl ketone (MVK) not measured? P15 Table 1: Is MLH0-4 and MLH12-16 in local time? P24 L25 and P26 L30: I'm not sure that "deposition" is the correct term here. I think that "destruction" is the proper term.

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