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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Variability of OH reactivity in the Landes maritime Pine forest: Results from the LANDEX campaign 2017" *by* Sandy Bsaibes et al.

Anonymous Referee #1

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This study shows very interesting results on reactivity and reactive compounds from pine forest in France. There is very nice measurement set-up and huge set of instruments to characterize reactive compounds in the forest air. Intercomparison of two totally different reactivity measurements showed good results and calculation of OH reactivity is well done and presented. Results are well presented and interpreted. I had mainly some concerns on the method for measuring mono- and sesquiterpenes and I hope some more information on the suitability of the GC method for these compounds can be provided. However, these were just ancillary measurements and I would recommend publishing with minor changes.

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Discussion paper

Specific comments:

Abstract lines 29-30: Could you also add a comment or a value how big fraction was missing?

Page 6, lines 15-20: How about O3? Did you apply any O3 correction? Have you detected any effect of O3 in your CRM system?

Page7, lines 27-28: Please, be more specific. What was the concentration range of isoprene and a-pinene?

Page 9, lines 28-29: Copper tubing impregnated with KI is commonly used for the DNPH measurements of aldehydes and ketones, but is it suitable for monoterpenes? Did you test the recovery of terpenes? What about particle filter? Do you see losses of terpenes in them? Maybe you could provide some reference on an earlier study where they have been tested.

Page 10, line 2 and 14: You used Carbotrap B and C for collecting terpenes. I am worried that they are not very good for mono- and sesquiterpenes and you may have some losses of them? Did you do some recovery tests? Have you detected any losses or isomerization while testing those? I would recommend for example Tenax TA cold trap for mono- and sesquiterpenes.

Page 10, line 12: In some of the MARKES Unity systems b-pinene and some other monoterpenes are isomerized and concentrations of some monoterpenes, for example p-cymene, are increasing over the time. Did you detect low response for b-pinene or for some other monoterpenes or increase of p-cymene?

Section 3.3.: Was the mean missing fraction higher inside or above canopy? I would guess there are more reaction products above the canopy.

Page 26, line 12: Is the typical B-value (0.057) for the monoterpene emissions or for the reactivity? Often B-value 0.09 is used for the monoterpene emissions.

Page 31, 14-15: I think that also for monoterpenes reactions with ozone can be very significant. Do you have any idea of OH radical concentrations at the site? It would be nice to know how much lower the lifetimes of VOCs were during the day and how important ozone reactions were. Sometimes ozone reactions can be very important also during the day.

Technical comments:

Table 1: Please, add an explanation to K' max

Page 10, line 13: You mention B-caryophyllene here, but it is not included into table 2 You have lots of time series plots, but they are a bit hard to follow and it would be also nice to get some quick and easy to look at average plots or tables (for example mean reactivity and mean missing reactivity during night and day, inside and above canopy and during cold and warm nights).

Page 28, line 16: ')' is missing

Page 28, line 21: Should this be 'This compound showed a diurnal cycle similar to that of isoprene (Fig 4.c) and was not used to calculate. . .'?

Page 29, line 5: What is '(S9)'?

Page 31, lines 8-10: I did not understand this sentence 'Complementary measurements performed inside (O3, NOx) and above the canopy (OVOCs,NMHCs, O3, NOx and butanol),explained with methane and carbon monoxide, part of the missing OH reactivity, that remained significant for warm days and stable/ warm nights.'

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