Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-548-RC2, 2019

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 #2

Received and published: 21 July 2019

The authors report OH reactivity measurements in a forested environment with measurements in and above the canopy. The contribution of measured and potentially unmeasured organic compounds is analysed. Results of this campaign are similar to previous observations at other locations and mainly confirm earlier conclusions. This is still interesting and within in the scope of ACP after addressing the following points: The readability of the manuscript could be improved. For example, for non-specialists of the measurement techniques, it will be hard to follow the description of instruments. Characterization experiments are not well described and results are not clear (for example, units are missing for slopes derived in linear regressions).

The characterization experiments for the CRM are described, but it remains unclear, how large corrections were. The authors should consider give some numbers, how big corrections were for typical chemical conditions of this campaign. A discussion about consequences for the accuracy of measurements would be beneficial.

The authors mention that one of the conclusions from previous campaigns were that potential loss of reactive VOCs could be a problem in CRM instruments. Did they quantitatively test this for example when they did the characterization experiment for the deviation from a pseudo-first order reaction system?

Similarly, did the authors test, if VOCs were quantitatively transmitted through inlet lines for the GC and PTR-MS analysis? How often were filters in inlet lines exchanged and did they authors test, if the transmission of VOC through filters decreased with time? The authors should mention early in the paper, how they deal with contributions of NO2 / NO to the OH reactivity.

Page 14 Point 3). It would be useful to give some numbers for the estimate of OH reactivity from species only measured at 12m height in the main text.

Figure 3: In a correlation plot, error bars of measurements are needed. Did the regression procedure take into account errors of the measurements?

P17 L19: How is the "higher vertical mixing leading to similar concentrations" quantified? The yellow frame (15 to 17 July) shows also large differences in monoterpene concentrations at different heights.

P17 L21: Which data are used for the linear regression discussed in this section? It does not sound likely that inhomogeneities of air masses result in a change in the intercept, but would increase the scatter of data in the correlation.

P18 L6: The reference Lou et al 2010 is not appropriate, because measurements in that paper were done in a mixed environment. P18 L20 / P20 L22: The authors may want to mention already here that it is well known that plant emissions are increasing

with increasing temperature.

Section 3.3/3.5.: The discussion would benefit, if the accuracy of calculated OH reactivity were taken into account (maybe also shown in Fig. 5). Is there an estimate of OH reactivity from oxidation products not taken into account here (for example from oxidation products like MVK/MACR)? Is there any estimate, if transportation from other sources could have been impacted the location?

Section 3.4.: Would the authors expect a difference in the distribution of OH reactants? Was there any attempt to estimate how much of the emissions were oxidized inside the canopy?

P29: Sesquiterpene oxidation products are likely not measured. Could the authors still estimate how much reactivity would be expected, if the difference between in and above canopy was due to oxidation?

Figures in the main text and supplementary material: Font sizes are very small. It would be easier for the reader, if they were larger. The position of legend below the x-axis label is unusual. Errors bars of measurements would be helpful to judge differences, if quantities are compared.

Technical: The authors should follow the style of the journal for example how figures are referenced, dates are given and SI units should be used.

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