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Interactive comment on "Observations of sesquiterpenes and their oxidation products in central Amazonia during the wet and dry seasons" *by* Lindsay D. Yee et al.

Anonymous Referee #1

Received and published: 17 April 2018

This manuscript describes observations of sesquiterpenes and their oxidation products in gas- and particle-phase samples during a field campaign in the Amazon. This is a topic of interest to the readership of Atmospheric Chemistry and Physics due to recent focus on the contribution of biogenic volatile organic compounds (BVOCs) to ozone and secondary organic aerosol formation, 'missing' BVOC reactivity in forest environments, and the processes that occur when BVOCs are emitted into air that has been influenced by anthropogenic emissions.

The paper is appropriately cited, and the abstract clearly conveys the content of the manuscript. All figures and tables are necessary and appropriate.

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Discussion paper

The manuscript is clearly written. Only minor editing is required; minor comments of this nature are included below the Technical Comments.

There are relatively minor technical changes/clarifications that are needed before this manuscript can be published. These also are listed below.

Technical Comments

1. In section 2.2, what was done to ensure that the denuder efficiency was 100%? Or was this efficiency calculated in previous publications? If so, please provide the number and appropriate citation - and if appropriate, discuss how this efficiency was taken into account during quantification.

2. In section 2.2.1, please define the match statistic. It is clear that a maximum value is 999, but it is not clear how the values are obtained.

3. In some cases, abbreviations/acronyms/chemical symbols are defined prior to use. In others, they are not. In some cases, they are not used consistently. Please make this consistent.

4. In section 2.2.3, Tables S4 and S5 are cited – but Tables S1-S3 have not been called out yet. This is simply a matter of reordering the tables in the SI.

5. On page 7, line 14. Can the authors explain why dry season filter samples are not included here? It seems odd that wet and dry season SVTAG output is included, but only wet season filter samples are. Do these samples not exist? It would strengthen the paper greatly if both season's filter results were included, allowing comparison of seasons and discussion of 'representativeness.'

6. On page 10, line 8, the statement 'or obtained from the literature where available' seems to contradict the previous statement about lack of availability of rate constant data. I could simply be misunderstanding, but please clarify?

7. On page 10, line 17, where transport to the site is discussed as the reason for lack of

observation of more quickly reacting sesquiterpenes, please discuss what the typical transport time to the site from the canopy is.

8. On Figure 5, what is the maximum to which the concentrations are normalized? The aldehyde product? The acid product? Both have values that are ∼1 around sundown.

9. In the SI, is Figure S3 called out/cited anywhere?

Editorial Corrections/Recommendations (other very minor typos should be found when proofs are reviewed)

1. In several places throughout the manuscript, the authors need to format citations that appear in the main text (as opposed to in the parentheses). For example, page 3, line 20, 'Khan et al., 2017' should be 'Khan et al. (2017)'.

2. On page 8, lines 34+, numbers in chemical formulae should be subscripted.

3. I would recommend replacing '%' with 'percentage' in several places where it appears as part of the text – for example, page 13, line 39. This is simply preference.

4. Caption to Table S3 in SI. There appears to be an extra 'in'

Caption to Figure S1 in SI. There appears to be an 'in' at the end that is not necessary.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-191, 2018.