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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Contributions of biomass-burning, urban, and biogenic emissions to the concentrations and light-absorbing properties of particulate matter in central Amazonia during the dry season" *by* Suzane S. de Sá et al.

Anonymous Referee #2

Received and published: 19 February 2019

De Sá et al. have studied concentrations and light absorption properties of PM during the dry season in central Amazonia, as part of the GoAmazon2014/15 campaign. They present a wealth of data and analyze it in a comprehensive and detailed fashion to derive some interesting insights on anthropogenic impacts on PM and OA concentrations as well as light absorption properties over Amazonia. The paper is well written, the Figures are numerous, but clear and mostly justified (see comment below) and the conclusions are well-based on the measured data. The abstract could be improved

(see comment below) and I have a few more comments listed below. I recommend publication of the paper after these have been addressed.

Comments:

- The abstract is rather descriptive and would benefit from more detailed quantitative results, e.g. on the measured concentrations, PMF factor contributions to OA, and contribution to BrC. Quantitative results would also be important to better understand some of the core findings mentioned in the abstract, e.g. on the BrC bleaching (L13), the relevance of sources other than BB (L17-19), and the suggested different oxidation pathways in the different clusters (L29-31). In turn, the parts that just describe what has been done could be condensed (e.g. L5-10, L13-15, L22-26, . . .)

- L142: Calculating a new trajectory every 12 min seems like quite a high frequency to me. Do they change at all within such short time? Also, here it says that 48 h back trajectories were calculated while the caption of Figure 9 says 10 h.

- L171-174: I cannot follow here. Are all the parameter subscripts correct? If so, please be more specific.

- L209: "highly correlated" is not very precise. Please provide Persons r. Also, if OA and sulfate are really "highly correlated", does it imply common sources?

- L211-212: I have difficulties resolving timescales of less than a day in Figure 2. Please also give r.

- L409: It is only at the very end of the discussion on possible drivers of lower concentrations during the wet season, that wet deposition is cautiously mentioned. To me this seems to be the most obvious and maybe also most relevant factor, as it efficiently removes both particles and precursor gases. Are there studies quantifying the effect of wet deposition in the area?

- L729-743: These paragraphs in the Summary seem to add new aspects to the discussion of BrC that were not addressed before. I think they would fit better into the

Results section, which would also help to shorten the quite long Summary section.

- Table 3: Statistical significance is mentioned in the caption, please include the significance level used (alpha = 0.05?) and ideally also the p-values of the model coefficients (i.e. Eabs).

- Figure 12: Please indicate the binwidth used for the boxes.

- In order to somewhat reduce the quite high number of Figures, the authors could consider to move Figure 3 to the SI, as it does not present any results, and to remove Figure 15, which just seems to be a visual repetition of Table 4.

- SI: As the SI will not get further typesetting I recommend giving captions together with the Figures, instead of listing them separately.

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