

## ***Interactive comment on “Black and brown carbon over central Amazonia: Long-term aerosol measurements at the ATTO site” by Jorge Saturno et al.***

### **Anonymous Referee #1**

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At first, I want to apologise for the delay of my review.

The paper investigates the occurrence and optical properties of black and brown carbon during a five-year period based on ground-based observations at the ATTO site in the Amazon forest. In particular, the impact of different air mass dynamics and El Niño conditions on the optical properties and relative contribution of black and brown species is investigated. I find the paper well structured and clearly written, and the data presented of great value. In my opinion the paper deserve publication only after minor revisions. Main comments are detailed in the following.

Comments

C1

The introduction is quite long and introduces to many concepts. I do not know if it would be better to split it in sub-paragraphs giving a theoretical background on the topic. Anyhow, it is a good state-of-the art of black and brown carbon studies.

Page 14, line 362 : what do you mean with characteristic size distribution ? the average size ? Please be more precise.

Section 3.1, page 19, line 482 : you state that dry and wet periods are related to different aerosols influences (biomass burning and dust/sea salt respectively). However different signatures are not present in the temporal absorption angstrom exponent (Fig. 3, panel e). Can you comment on this point ?

Line 492-526 : probably this part can be moved in a single paragraph focusing on the MAC

Line 529-530 : many time the authors state, but do not prove, that the dry season is affected by BB particles. Is this assumption made based on previous studies at the site ? The same for the dust influence during the wet season. I think this point should be better addressed in the paper before analyzing in more detail the optical properties of the different aerosol types in different periods. This was the only part that I found not clear at all in the paper.

Line 565 : you state that is the contribution of sulfate that increases scattering. Why not the mixing with other compounds or species ?

Lines 568-570 : how do you select and eliminate from the dataset the BB and mineral dust events, and what "extreme event" means (AOD higher than a threshold ?). Please be more precise.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-1097>, 2017.

C2