

**Article: How weather events modify aerosol particle size distributions in the Amazon boundary layer by Luiz A. T. Machado et al.- ACPD 2021314.**

Dear Editor Prof. Ken Carslaw,

The authors would like to thank the reviewers for their comments and suggestions. We have changed the manuscript accordingly to the reviewer and Editor's comments. Our point-to-point responses follow below:

- 1) Fig 3c and 3d: If UTC is used for time, indicating local noon on the figure would be very helpful to get an idea of the variation.

*Changed as suggested, the Noontime is indicated in both Figures.*

- 2) Fig 4: I still consider the separate figures much better. For example, the bi-modal nature of the PSD in the wet season becomes clearly apparent in the new version. I suggest using the new version (with legends corrected for the wet season). The increased opportunity for intercomparison is at least in my mind completely lost to the irritation of trying to understand what the lines are about.

*I couldn't convince the reviewer that the combined figure is better, so I changed it to two figures as suggested.*

- 3) I also recommend another careful language check and fix typos, e.g.: Line. 161: frequency-b- altitude -> frequency-by-altitude. Line 464 "... Wang et al. (2018) compute" -> computed. Line 476 "...Pleiades of processes" -> maybe you mean a myriad or something similar?

The manuscript was carefully checked again, and the correction was done as recommended.

- 4) Comment from the Editor - I would also like to see some clarification on the altitude range over which you believe the downdrafts are occurring. In a few places, it reads as if you think that downdrafts can travel from an altitude of 10-14 km down to the surface. The energetics of that (in terms of potential temperature) would need to be explained. I appreciate that cloud dynamics is not the topic of your paper, but such implied air motion as an explanation for your aerosol observations should be energetically plausible. There are many places in the paper where you are quite vague about the altitude range of downdrafts, so please carefully review your assertions or suggestions.

I am sorry if it reads as downdrafts travels from the top of the upper troposphere in some parts of the text. This hypothesis makes no sense, and I show the radar wind profile statistics to demonstrate that the vertical motion is behind this layer. Many papers mention this downward transport from this 14-10 km layer, and it has no reason as the downdrafts are much lower. I read the manuscript again and clarified the part of the text where could have a different interpretation.