

Accept, minor revisions

The manuscript entitled "Seasonal Investigation of Ultrafine Particle Composition in an Eastern Amazonian Rainforest" by Thomas et al. presents an analysis of the composition of ultrafine particles (<100 nm) in the Tapajós National Forest during three seasonal periods. The authors collected size-selected particles (5-70 nm) and analysed them using high-resolution mass spectrometry. The results show that isoprene organosulfate chemistry consistently influenced ultrafine particles throughout the seasons, while biological spore fragmentation influenced particle composition in the late wet season. Biomass combustion and secondary aerosol chemistry were prominent during the dry season, leading to higher oxidation states in the particles. Organic sulfur species, due to their low volatility, are suggested to be the main drivers of new particle growth in the region.

The findings in this manuscript are certainly a valuable addition to the existing literature and my recommendation is that the manuscript should be published after some minor changes and improvements. From a scientific perspective, the manuscript clearly fits the scope of ACP. It is a thorough and interesting study, relevant for the field of atmospheric research and beyond. From a formal perspective, the quality of the manuscript is high - it is well-written, the figures and tables are clear, and all arguments and aspects are presented clearly.

Below, you will find some general comments that the authors may want to consider:

Page 2, line 33: the term "aerosol reservoirs" seem misleading here – I suggest to look for a more appropriate word.

Page 2, line 38: Please cite some more and ideally more recent studies on the absence of NPF in the Amazon here.

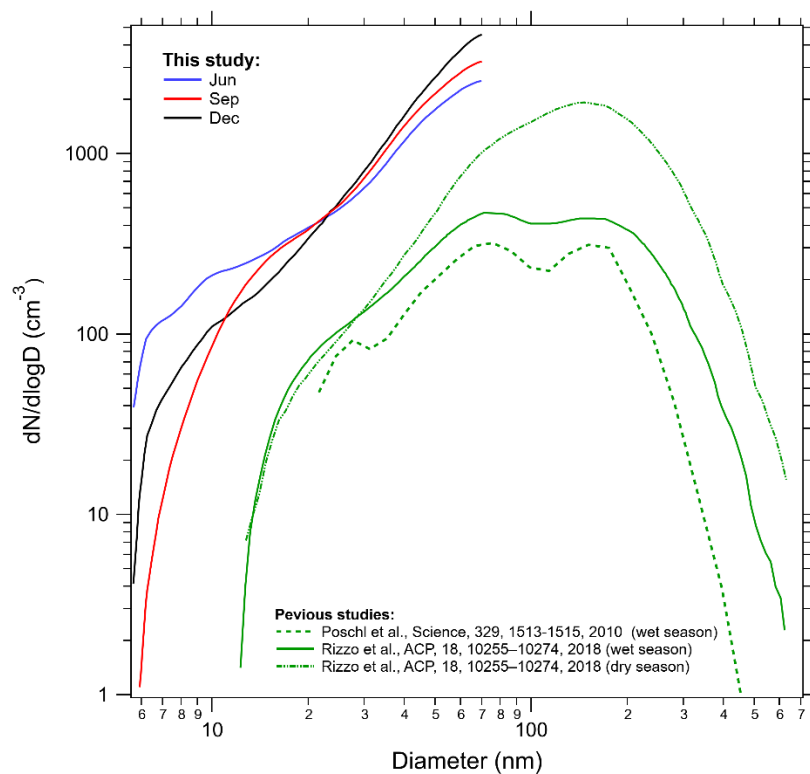
Page 6, line 176f.: Are there any indication for sesquiterpene-derived SOA in the data?

Page 4, line 89: The measurement site is west (= downwind) from the rather heavily used highway BR163. What does this mean for the measurements and data? How would signals from traffic or other human-made emissions along the highway show up in the aerosol sizing data? How can potential fossil fuel combustion be excluded as contamination for the chemical signatures? Further, how representative is this site for UFA processes in the Amazon?

Page 4, line 97: how can it be excluded that multiply charged particles are also collected in the size range from 5 to 70 nm? Could this mix larger-sized particles in the ultrafine size range?

The collection of aerosol particles down to 5 nm can be experimentally challenging. How was the inlet at the tower designed and what does the transmission curve look like for the flow rate and sampling conditions chosen here?

The aerosol number size distributions seem a bit high – I created an overplot of the size distributions of the present study and selected previous Amazonian studies (see figure below). How can the discrepancy in $dN/d\log D$ be interpreted?



Page 15, line 346ff: Cite also Franco et al. ACP, 22, 3469–3492, <https://doi.org/10.5194/acp-22-3469-2022>, 2022 here.