

Interactive comment on “Aerosol measurement methods to quantify spore emissions from fungi and cryptogamic covers in the Amazon” by Nina Löbs et al.

Anonymous Referee #4

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This manuscript presents experimental results from an interesting study examining the effect of environmental conditions on fungal spore release, using a novel approach based on both, controlled laboratory experiments and measurement of these bioaerosol species in the field under real-world conditions. Although the study addressed only one type of fungi, the findings of the study are of interest not only to the bioaerosol community but the atmospheric aerosol community at large, as the characteristics of biological aerosol components are still poorly constrained, partly because of the immense variety of species but mainly because of the challenges in obtaining representative measurement results. Therefore, this manuscript is highly relevant to the advancement of understanding bioaerosol sources and characteristics, and should

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be published in AMT, upon consideration of a few comments listed below.

Specific comments:

1. Page 8, Lines 3-9: The authors state that the lower night-time levels of fine mode particles might be due to scavenging by the forest canopy, off-setting the typical increase in concentrations during boundary layer development. However, the authors also mention biomass burning as a potential source of the fine mode particles, which could be produced at a higher rate during night-time smoldering burns. It would be interesting to see information about the burning activities in the area that might have impacted the sampling site, which could be added here, if available.
2. Page 9, Lines 22-27: The authors mention detailed observation of the particles, including microscopic examination, but how about measurement of molecular markers, such as sugar alcohols (e.g., arabitol and mannitol), sterols (e.g., ergosterol), or others, as well as total protein – were any attempts made to do a more detailed chemical characterization of the observed particles?
3. Page 10, Lines 8-9: How does the fact that only coarse mode particles were emitted indicate that mainly basidiospores were released?
4. Page 10, Lines 21-24: Indeed, various environmental parameters may affect the release patterns of fungal spores, including solar radiation, although some studies (e.g., Liang et al., JAS, 66, 179–186, 2013) did not observe any relationship between ambient spore concentrations and solar radiation. As mentioned here, relative humidity is an important factor, specifically for fungal species utilizing wet spore discharge mechanisms. This has been seen in other ambient measurements as well, such as those reported by Gosselin et al. (ACP, 16, 15165–15184, 2016), Liang et al. (JAS, 66, 179–186, 2013), or Zhang et al. (ERL, 5, 024010, 2010).