

Characterization of active and total fungal communities in the atmosphere over the Amazon rainforest

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Responses to editor comments

Detailed responses and revisions are given below. Editor text is in black and our responses are in blue.

Responses to Editor Comments

I find the manuscript as written to be methodologically sound and a nice contribution to an understudied area of Earth science. I would prefer that the authors provide references for the following recently-added statement: Research has shown, for example, that concentrations of fungal spores in the atmosphere vary diurnally and seasonally.

We added a citation for Ingold 1971.

I would also remove the distinction between wet and dry season in this case; rainfall is abundant during both seasons but dry season storms tend to be more intermittent and energetic. This counters the previous statement about convective instability before thunderstorms as they influence atmospheric spore concentration and composition.

We agree and have removed the text discussing potential changes in Ascomycota abundance during the wet season.

Likewise, the following statement needs references and less speculation: 'This result makes sense in light of the natural histories of many of the Ascomycota, which have single-celled or filamentous vegetative growth forms that are small enough to become aerosolized, whereas many of the Basidiomycota are too large to be easily aerosolized, other than in the form of metabolically inactive spores. It is possible that if we had sampled at night rather than during the day, we would have observed a higher relative abundance of Basidiomycota in the active community. The abundance of vegetative Ascomycota fragments may peak during the day when wind speeds are high, assuming they are passively dispersed by wind and convection (as opposed to active mechanisms many fungi use to disperse spores).' Such dynamics depend on the ability of the canopy to be flushed by turbulence and is the topic of an in review paper for the ZF2 tower: Gerken, T., Chamecki, M., Fuentes J.D.: Air parcel residence times and chemical processing of biogenic hydrocarbons within forest canopies. In review for: Agricultural and Forest Meteorology

We have edited the second paragraph of results section 3.2 to reduce speculative language. As suggested, we added text to acknowledge that temporal dynamics of fungi in the atmosphere above the canopy likely depend on the residence times of air parcels within and below the canopy as well as the ability of fungi to disperse through the canopy.