

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 #3

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The manuscript details two measurement techniques to sample fungal spores both in field and in the laboratory. The manuscript itself is well written and the topic is of high scientific relevance, considered the potential impact of primary biological particulate matter on climatic feedback cycles. The referee, however, finds some shortcomings in the methodology that keep the results of the manuscript at the level of speculation, at least for the field sampling part. For these reasons, the referee suggests that the manuscript is not published in the present form, but also strongly suggests a resubmission of the present work when these shortcomings are addressed due to the interest of the addressed topic and the potentialities shown by the experimental set-up.

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Specific Comments:

Page 5, Lines 5-6: The measurements have been done only for a single specimen in the field and another one in the laboratory. The lack of replicates makes it hard to determine if the results from the measurement methodology are overall consistent.

Page 5, Lines 14-15: While heuristically speaking the referee agrees with the authors that at such a short distance the main contributions should come from the fungal spores, there's no confirmation of that. The OPS cannot discriminate between spores, other biological particles and inorganic aerosols and therefore it is hard to discriminate between the background that's not due to the fungus' spore discharge and the spore release itself. This could have been made more robust either, as the authors themselves acknowledge at page 9 lines 16-18, by sampling the OPS filter or by adding an impactor in cascade to the OPS and examining the impacted particles via microscopy. As a first approximation it could have been also enough to sample multiple fungi or characterize the background by measuring in a relative fungi-free area. As it is, with a single specimen measured in the field and no kind of downstream validation, the results are speculative.

Page 6, Paragraph 2.5: The authors' state that impaction sampling has been done "from each investigated organism". This means that it has been done both in the field and in the lab? How? By putting the specimen into the metallic capsule? If yes how was this performed in the field? The impactor studies, as the authors's state themselves, could have been used to give much more weight to the OPS measurements if they have been performed on the field specimen itself (see also previous comment).

Page 8-9, Paragraph 3.2 (and relative discussion): While the authors state throughout the paper about the importance of the combined laboratory/on-site approach, the results and discussion do not really highlight this linkage. How are the results of the laboratory experiments linked with the concentrations measured in the field? The lack of emissions in the fine mode and the linkage between spore release and moisture/water

C2

content is consistent with known literature data, which confirms the validity of the laboratory set-up, but how does it relate with the findings in the field? The referee suggests to clarify this aspect in order to make more robust the usage of a parallel on-site/in-lab set-up.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-238, 2019.