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Biogeosciences Discussions

Interactive comment on "Lifestyle dependent occurrence of airborne fungi" *by* Daniel A. Pickersgill et al.

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Dear Referee #2,

We would like to thank you for taking the time to comment on our manuscript as well as your positive overall assessment. Below you will find that we have included both your comments (RC #2) as well as our author comments (AC) where necessary.

Sincerely,

Daniel Pickersgill and all co-authors

(RC #2): Review of Pickersgill et al.: This paper builds on previous work by Froehlich-Nowoisky et al. and examines seasonal variations in fungal spore behavior. The exten-

sion in this work is to examine the size-dependent fractionation and seasonal behavior of different fungal taxa identified by lifestyle similarities in addition to genetic similarities. The authors find that herbaceous spores, which tend to show strong seasonality, segregate into two categories whereby surface and pathogenic fungi are dominantly in the coarse mode while saprophytic fungi are dominantly at smaller sizes. Woody fungi show minimal seasonality and are more evenly divided between the fine and coarse mode. Some evidence is presented for time of year changes in the onset of sporulation in response to an anomalously warm winter.

This paper presents both a useful methodology and compilation of literature information on various types of spores which can be applied in other studies and arrives at some interesting conclusions regarding behaviors for different types of spores depending on their lifestyle. I think the topic will be of interest to the readership of this journal and have no major concerns with the paper. Some of the explanations for the patterns are a little bit hand-wavey but I don't know that it's possible to say more definitively what is driving the behavior and the patterns are interesting even if the explanation may not prove to be as hypothesized.

(AC): We agree that we have a few presumptive statements in the results & discussion section. Even if they may not necessarily be false, we plan to remove these to facilitate the overall readability of the manuscript.

(RC #2): I think it would be helpful to have a brief conclusions section highlighting the main findings of the paper even if it is simply a more detailed version of the abstract. As written the reader is left trying to piece together all of the different patterns and explanations into some kind of story and it would be kinder to help them synthesize the information.

(AC): We agree that a brief conclusion section will help the reader and thus we will include it in the revised manuscript.

(RC #2): A few small comments:

(AC): Apart from point 5, we fully agree with the following proposed changes and will gladly include them in the revised manuscript.

(RC #2): 1. P2, line 3, “processes is also subject”-! processes is also the subject”

2. P2,lines 17-19, I find this sentence very confusing. I would at least break it into two sentences. Different evolutionary pressures will affect sporulation strategies. Pathogens vs decomposers, for example, may respond to very different spatial distributions and abundances of nutrients with different sporulation strategies. Or something like that.

3. P2, line 30, recommend rewording to “we take a novel approach, introducing a. . .”

4. P7, lines 4-11, this seems out of place here and might fit better in the methods section.

5. P7, line 4, I don’t understand this sentence. What is a 97% identity? I believe you mean inter-species variability rather than inner?

(AC): In this case we do mean the inner-species variability of the ITS region DNA sequence. Within a species there are of course small differences in their DNA. To account for this in microbial diversity rDNA (ribosomal DNA) studies, the workaround is to group DNA sequences that are 97% identical into an operational taxonomic unit, which can be seen as a hypothetical species. The inter-species variation of ITS DNA sequences is much larger (Schoch et al., 2012).

To avoid misunderstandings, we suggest changing the sentence as follows:

“The 97% similarity of DNA sequences within an OTU”

(RC #2): 6. P11, line 32, close parenthesis is missing.

7. P12, line 1: References are not numbered and should be referred to as “XXX et al. and references therein”

8. P12, line 19: omit author name in parenthetical when name is referred to in regular text.

Literature

Schoch CL, Seifert KA, Huhndorf S, Robert V, Spouge JL, Levesque CA, Chen W, Bolchacova E, Voigt K, Crous PW, et al. 2012. Nuclear ribosomal internal transcribed spacer (ITS) region as a universal DNA barcode marker for Fungi. Proc. Natl. Acad. Sci. 109:6241–6246. doi:10.1073/pnas.1117018109.

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