

Interactive comment on “Fungi Diversity in PM₁ and PM_{2.5} at the summit of Mt. Tai: Abundance, Size Distribution, and Seasonal Variation” by Caihong Xu et al.

Anonymous Referee #2

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The authors have studied the fungal diversity in PM₁ and PM_{2.5} collected from M. Tai in China using gene sequence method. While some of the results are certainly useful, however the scientific questions they were addressing were not clear, or at least not focused. Its current form more or less looks like a technical report, with most figures developed from commercialized gene sequence method. In their work, it seems they addressed a variety of issues, e.g., health effects (fungal pathogens), fungal contents in PM₁, seasonal effects, etc., but they did not have a clear scientific question to address. The reason why they have selected M. Tai as a sampling site, but not ground, was not discussed in details. It is hard to use their data to derive its impact on current understanding of the aerobiology, at least not from its current form.

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In addition, they did not do the culturing for their PM samples which is simple. I believe that there will be more fungal spores in PM_{2.5} than PM₁ since fungal species are in general bigger. They only detected sequence copies not the whole fungal spores. It would be much better if they could provide optical images of their detected fungal spores both for PM₁ and PM_{2.5}. For their sequence data, it seems they did not perform a robust statistical analysis. Gene sequence results could be very different sometimes if not in the same batch of experiments. How did they address the QC issues in their work? For the guideline values (800 CFU/m³), usually they refer to culturable bacterial CFU, while in their report they detected sequences. For fungal concentration levels, 800 CFU/m³ is a lot higher for most places. Last, some sentences were too verbal, e.g., "got" bigger. What does <typically «100) mean? Also it is "cultuirng" not cultured" method.

One suggestion to improve their paper is to try differentiate M. Tai from ground as a less human impact location (although there are also a lot of visitors). In this way, they might argue that what is fungal level and composition in less polluted higher atmosphere, and further derive potential conclusion about their presence and impact on climate or other things.

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