

The manuscript reports a study on the connection between microbial communities and sugar compounds in atmospheric aerosols. The offline filter-based samples of total suspended particles (TSP) were collected in a one-week campaign. DNA sequencing data and sugar compounds were obtained to investigate their relationships. The study gives an attempt to capture and compare bioaerosol characteristics with different techniques. The manuscript fits the scope of the journal and could be considered for publication after revision. My concerns and suggestions are shown as follows:

(1) It is a good idea to create a linkage between microbial communities and organic tracers. It should always be aware that these connections can be sensitively affected by the sources of bioaerosols as well as environmental factors. Therefore, the nearby sources and other related activities should be mentioned in the manuscript and their influence should be carefully considered. A well-defined sampling area/site and the period should largely reduce the unexpected interference.

(2) Source Tracker method was used to distinguish the sources. The details of this method should be provided especially giving more information such as how the source data were combined (soil, leaves ...).

(3) The shown RDA analysis for bacteria seems less confident than that for fungi. Can you explain why this happens? Due to the small dataset or just the more complicated sources and influencing factors of bacteria in ambient environment? The Source Tracker method did not work very well for bacteria with large percentage of unresolved sources as shown in Line 214. I expect that it should be a quite common phenomenon in ambient air which has been suggested by some other studies. But still, a discussion is necessary here.

(4) Section 3.2 can be shortened. Some discussions/claims are not necessarily true due to the small dataset presented here. In another word, it is not your job to investigate the influence other possible factors. I would suggest putting more efforts on the diurnal difference of fungal aerosols which has been clearly demonstrated by the community structure and sugar tracers. It is very interesting and needs more data analysis to generate in-depth generalizations.

(5) In general, I would suggest shortening the part of results which only presents data and describes the variation. More importantly, Section 3.4.2 should be polished with the emphasis on the used method and details of interaction. I do not fully understand how the interaction happened. How about the sensitivity of the interaction? For example, did the nighttime processes give more weight on the interaction?