Response to referee comment on acp-2016-743 by Gosselin et al.

Anonymous Referee #4
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Note regarding document formatting: black text shows original referee comment, blue text shows author response, and red text shows quoted manuscript text. Changes to manuscript text are shown as *italicized and underlined*. All line numbers refer to discussion/review manuscript.

General Comments: The article is of high quality providing a novel information relevant to the ACP addressing the atmospheric biological (fungal) tracers. The novelty is in correlations reported for periods affected by rain between fungal biomarkers obtained from offline measurements and fluorescent aerosol particle concentrations obtained by direct online measurements. The description of experimental work is sound and detailed supporting the good quality of the paper.

Author response: We thank the referee for his/her positive assessment and summary.

Specific Comments:

(Note that referee comments have been labeled by number and chopped by individual referee-thought so they can be dealt with in a clear sequence)

Comment 1: In my opinion, the article would gain if additional data with regard to total PM mass concentrations were reported. For example Table 3 presents % contribution of biomarkers with regard to particulate matter and spore mass. The estimated PM mass data presented along with the rest of the data would help to clarify relationship to overall chemical characterization of PM if The data reported are comprehensive.

Total particle mass (µg m^{-3}) was added to Table S4.

Comment 2: Still are there also data available for the same period reporting on the occurrence of organic carbon and thus allowing for discussion of traditionally reported chemical characterization of organic particulate matter?

Total organic carbon measurements for the same sampling periods are not available. We asked several BEACHON-RoMBAS collaborators, but did not find such data available.

Comment 3: Authors report on taxonomic differences in fungal DNA during wet and dry periods. Could such differences be attributed to the ability of different fungal species to survive in different humidity conditions?

It is certainly plausible that certain fungal species are more likely to survive in wet conditions, or vice versa, and that the rate of emission of a given species will be lower during conditions unfavorable for survivability. However, unless the DNA were to become damaged, which is unlikely, the molecular genomic analyses will still detect the presence of the species. So this process could be involved on a small level, but it is unlikely that survivability would directly impact the observations.