[Reviewer Comment; RC1] This manuscript presents measurements from a 5 month study of fluorescing biological aerosol particles (FBAP) at an elevated, moderately remote site in southern India. The data quality appears to be very good and the scientific significance is potentially high. The problem is that the paper is probably twice as long as it needs to be and the conclusions drawn are much too speculative with not enough concrete statistics to support the hypotheses put forth regarding either the source of the FBAPs or the physical mechanisms underlying the observed trends. When discussing the results, the objective is to highlight the main points without trying to describe each and every peak and wiggle. Let the Tables list all the statistical details and focus on the most important variations that will then be used to drive the discussion. At the moment there are probably twice as many pages of results and twice as many figures as needed.

[Author Response; AR1] We would like to thank Dr. Baumgartner for his positive evaluation of our results mentioning, "The data quality appears to be very good and the scientific significance is potentially high". The comments provided by the reviewer and corrections suggested in the manuscript have greatly helped us to improve the quality of the manuscript. The suggestions have been meticulously implemented wherever appropriate and we believe changes will be acceptable. As suggested by the Reviewer manuscript is shortened by cutting short the description on of monthly plots and supplementary figures and also by rearranging the text wherever appropriate. We have also revised the figures by combining few of them and moving one to the supplement. The description on size distribution is also shortened and modified accordingly, to highlight the main points.

What is missing:

[RC2]A topographical map of the research site and surrounding area, preferably something like a Google Earth rendition that would show the surrounding vegetation as well as areas with no vegetation such as is referred to in the text. Given the very low wind speeds, it is likely that most of the trends that are seen can be linked to more local sources.

[AR2] We have now provided a land-use map of the southern India in the supplement clearly indicating the significance of the chosen site. As for the topography, note that Fig. 1 in the main text is scaled by the altitude. Relation between low wind speed and local source is explained in the manuscript (L726 – L730)

[RC3] A more in depth analysis of the periods with rain, taking a much closer look at the properties of the FBAP just before, during and after each event.

[AR3] We have performed the in-depth analysis exploring the relation between rainfall and FBAP number concentration just before, during, and after rainfall and the result indicated no significant effect on FBAP number concentration. Hence, it was very difficult to make any sound and conclusive statement pertaining to effect of rainfall on FBAP number concentration. One reason, as

pointed out by Reviewer#3, could be the persistent and heavy rainfall. However, during the second part of the campaign carried out during winter season, we did observe impact of rainfall on the FBAP number concentrations. These results will be discussed in detail in follow up study. In addition we have given a hypothesis explaining the absence of effect of rainfall on FBAP number concentration at this particular location (L850 – L863).

[RC4] A cross-correlational analysis between the FPAB properties and the meteorological conditions. One would not necessarily expect a one to one correlation between the meteorology and the FPAB concentrations, particularly if the spore production is local. Only for advected aerosols would they be linked one to one.

[AR4] We agree with Reviewer that one cannot expect one to one correlation between meteorology and FBAP concentration, however, it may not be true in all the cases and not necessary be always linked for advected bioaerosols. For example, FBAP concentration, depending up on the type of spore, is known to have varied response/relationship with relative humidity (RH). The emissions of few specific types of spores emitted locally are positively related with relative humidity whereas some have shown decrease in concentration with increasing RH (Oliveira et al., 2010; Herrero et al., 1996; Kurkela, 1997; Oh et al., 1998; Healy et al., 2014., Quintero et al., 2010; Hjelmroos, 1993; Ho et al., 2005., Sabariego et al., 2000., Calderon et al., 1995). This has been clearly mentioned in the manuscript (L764 – L774). The relation of wind speed and direction may be useful to further study the impact of advected bioaerosols, which has been detailed in the manuscript (L731 – L738; Hameed et al., 2012; Almaguer et al., 2013; Lyon et al., 1984; Quintero et al., 2010; Huffman et al., 2012; Jones and Harrison, 2004; Troutt and Levetin, 2001; Kurkela, 1997).

[RC5] It is impossible to compare the shapes of size distributions when they are on different figures. Since the concentrations are quite different, normalize them to a unit area then put only the means or medians on the same figure so that any differences in the shapes can be clearly seen. These differences can then be evaluated quantitatively and linked to the hypothesis.

[AR5] Based on Reviewer's suggestion we attempted to prepare a figure comparing the mean FBAP number and mass size distribution for each focus period in single panel. We have replaced Fig. 10 and 11 (original manuscript) with the new figure (Fig.8, revised manuscript). We have also added the prepared figure below for Reviewer's kind read-through.

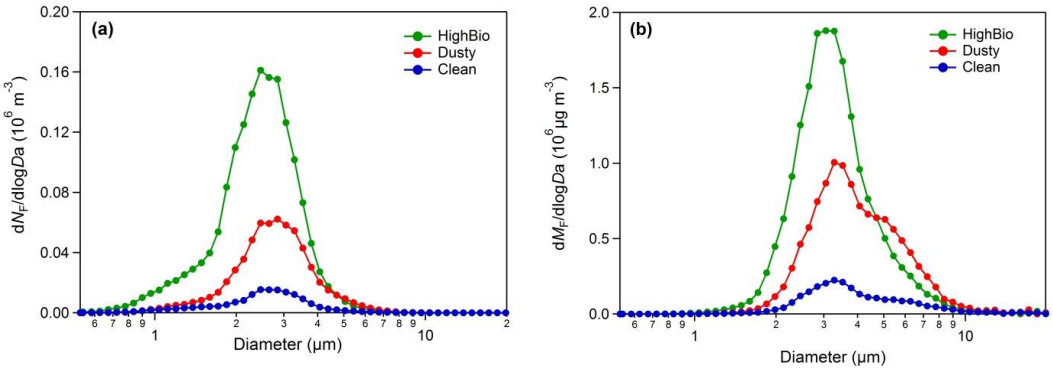

Figure R1.1: *FBAP number size distributions ($dN_F/dlog\ D_a$) and mass size distribution ($dM_F/dlog\ D_a$) averaged over each distinct focus periods during the measurement campaign carried out at Munnar.*

[RC6] The back trajectory analysis is useless as currently given. There needs to be an analysis of not only where the air came from horizontally, but vertically as well. Questions to be asked: a) How long had the air been close to the surface before reaching the site? b) What were the meteorological conditions along the trajectory, i.e. precipitation and humidity and c) How long had the air been close to the site? These all will impact the history of the particle as well as the air and whether particles had been removed after leaving their source.

[AR6] Indeed, the back trajectory plots shown in Figure 1 are color-scaled by pressure (altitude) to highlight the vertical component of the air motion. We chose not to discuss this in great detail in the paper, because it would make the already long manuscript even longer and we felt this analysis would be beyond the scope of the manuscript. We also felt that it would not be helpful in improving the primary scientific conclusion specifically that during the monsoon season over Indian region, and could lead to further confusion. Further, our sole aim with this figure is to show the back trajectory is only to provide an orientation to reader that this site experiences very contrasting winds during contrasting seasons (monsoon vs. winter), and a broader picture of air mass origin with rough estimates about air mass composition (Vinoj and Satheesh, 2003; Li and Ramanathan, 2002; Satheesh and Srinivasan, 2002; Vinoj et al., 2010, 2014; Prospero, 1979; Moorthy et al, 1991.). To investigate the relation of impact of wind direction and speed separate meteorological measurement in high time resolution were performed and were reported. In any case, we believe that Referee has overlooked the fact that back trajectories are already color scaled by pressure.

[RC7] An error analysis of the measurements. What is the expected error in size and concentration based on error propagation that no doubt has already be detailed in earlier publications. Nothing is said about FBAPs that are not complete particles but are fragments. There needs to be an estimate of the size dependent losses in the sampling system. Even with no bends, there will be diffusion and turbulence losses that can easily be calculated with Aerocalc (Baron and Willeke).

[AR7] Reviewer may be aware of the fact that UV-APS cannot differentiate the particle type; instead it only measures the aerodynamic diameter and spectrally integrated fluorescence. Under this scenario, a plant/animal fragment sampled will be treated as a complete particle where instrument will assign the equivalent aerodynamic diameter. We have calculated the equivalent aerodynamic diameter of a non-spherical particle. For example an ellipsoid particle with length of 4 μm long and width of 2 μm will be treated as particle with aerodynamic diameter of 3.6 μm. As suggested by Reviewer a sentence (average penetration efficiency of 99.8% at 290K and 840 hPa) discussing about the size dependent losses in the sampling system is now added based on Aerocalc/previous literature.

I have attached an annotaed version of the paper that includes many more questions and comments, The paper is relatively readable, given that the first author is not a native English; however, I am annoyed whenever I read a paper written by a non-English speaker but who has co-authors that are but who obviously have not read the paper, otherwise the numerous grammatical errors would have been corrected.

The suggestions provided in the annotated version of the manuscript have been implemented wherever appropriate and we thank Reviewer for his valuable edits.

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