

## ***Interactive comment on “Microbiology and atmospheric processes: an upcoming era of research on bio-meteorology” by C. E. Morris et al.***

### **Anonymous Referee #3**

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The manuscript serves as an introduction to a series of papers in a special issue, which is dedicated to the sources, distribution and the various roles of micro-organisms in the atmosphere, affecting topics such as atmospheric chemistry, cloud formation and radiative forcing. The topics debated are important and several examples of their relevance have been brought up, e.g. how and to what extent are micro-organisms involved in processes that could mitigate undesirable effects of climate change and how does human activity affect such processes. Besides acting as a mini review, the paper points towards a future where the joint effort of several scientific disciplines are needed to better understand the topics raised.

In my opinion, the wide variety of different terms used by the authors makes the text less available to the non-expert reader. An overarching paper such as the one in ques-

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tion would benefit from a more stringent use of terminology. Micro-organisms are mentioned in the definition of PBAP from 1993, but in which way differs biological particles from Primary biological aerosol particles (PBAP)? The authors state that although this paper covers the potential role of micro-organisms pr. se., biological particles at large are likely to play many of the roles evoked here. This statement might very well be true, but in my opinion it doesnt allow for a somewhat sloppy use of terminology.

Under chapter 2, Biological aerosol particles are omnipresent in the atmosphere, the quantitative aspect is related to PBAP and not to micro-organisms, which only is a part of the PBAP. As micro-organisms are the focus of the present paper, the levels/relative levels of these should be included as well. In addition, more detailed information about the size distribution of selected micro-organisms could have been included.

Having searched the literature, Im not sure if I feel confident about the authors statement that there are numerous observations/studies behind the estimate that approximately 20-25% of the total aerosol mass suspended in air actually are PBAP. I believe that more studies are required to make this statement, and that complimentary techniques including 14C-analysis combined with selected tracers, e.g. cellulose and selected sugars, should be taken into service on a broader scale to learn more about the quantitative aspect of PBAP (See e.g. results from the recent EU funded project CARBOSOL). Given the focus the authors have on PBAP, also the recent emission estimate for PBAP for Europe, provided by Winiwarter et al. (in press Atmospheric Environment) could be worth including.

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