

Response to editor comments

We thank the editor Maria Kanakidou for her careful reading of our manuscript and guiding the review process. We revised the text as suggested below and also corrected a few typos etc in the final revised manuscript version.

Editor comment 1- In your reply to my earlier comment 1 you have added in page 8, lines 19-22: “This visual approach to derive cloud fractions from the average maps neglects details on the variability of cloud fractions among the same ecosystem category in different geographic regions. For such categories (e.g. forests), we estimated a single average value based on the surface-weighted fractions of the different regions.”

How you can use ‘visual approach’ and also calculate ‘surface-weighted fractions’? Some rephrasing is here needed.

Authors’ response: This text was changed as follows (p. 6, l. 24ff)

This visual approach to derive cloud fractions from the average maps neglects details on the variability of cloud fractions among the same ecosystem category in different geographic regions. For such categories (e.g. forests), the approximate surface contributions of the various regions were taken into account and averaged. fractions of the different regions.

Editor comment 2- Page 14, lines 10-18 do not read well any more. To address my comment 5 you have added discussion in lines 10-14 that is now disconnected from what follows leading also to repetitions. I suggest you add all emission estimates for fungal spores (with appropriate discussion and references) together in line 11 and remove lines 15-18. Then start line 19 by: ‘In addition none of the above mentioned fungal spore emission estimates includes...’

Authors’ response: We reorganized this paragraph as follows (p. 9, l. 28ff)

It was suggested that the global emissions of fungal spores (25 Tg yr^{-1}) comprise 23% of total primary organic aerosol (Heald and Spracklen, 2009). A study based on tracer compounds resulted in an emission estimate for fungal spores of 50 Tg yr^{-1} (Elbert et al., 2007). None of these estimates include microbial activity as a source of biological mass. Our predicted SBA source of 3.7 Tg yr^{-1} is restricted to the mass production by bacteria but is similar to predictions for primary bacteria emissions.

Editor comment 3- Page 19, line 2: ‘into the same difference’ do you mean ‘into a proportional change’?

Authors’ response: Yes, that what we meant. We changed it accordingly (p. 13, l. 13/14):

...a change in any of the parameters will translate into a proportional change in predicted WSOC loss.