

***Interactive comment on* “Biomass burning aerosol emissions from vegetation fires: particle number and mass emission factors and size distributions” by S. Janhäll et al.**

Anonymous Referee #1

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The authors present an extensive compilation and analysis of literature data on particle emissions from vegetation fires. They apply a number of fitting procedures to develop regressions for particle number and -mass emission factors. The authors had to include a number of assumptions to this analysis, which they state very clearly. As with all assumptions one could perhaps object to some of them, but in my view this is not really the most important issue for such an initial approach as presented in this work.

The manuscript is an extremely useful contribution to the way we can model particle emissions from biomass burning. It is clear that we need to develop a more dynamic approach to burning emissions which takes burn condition into account and this is an

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important way forward. I have only minor issues with the manuscript and once these are addressed recommend the work to be published in ACP.

My main quibbles are with the overall readability of the text. It is in places full of lists of numbers, all of which can also be found in the tables, and this makes the main story hard to follow. I understand that this kind of work is hard to present otherwise. But I really urge the authors to carefully go through the text again and see if some of these number lists could not be removed, or simplified. For instance, results of statistics do not need to be necessarily repeated in the text, reference to the table should suffice. I also don't quite understand why some of the material is presented as "supplementary material", rather than simply as an Appendix to the manuscript. Obviously lengthy tables should not end up in the main body of the manuscript, but they could be attached at the end. This would remove the need for a repeated reference to the supplementary material, and the associate awkwardly long URL referenced in the text. Again, this would aid to make the text more pleasant to read.

Please specify how you define your fuel types. Forest and grass are kind of clear, but savanna can encompass a wide range of woody and grass fuel mixes. Did you simply adopt classifications from the various studies?

In general it would have been nice if the authors could speculate here and there a bit further about the possible reasons for presence/absence of differences in relationships e.g., to fuel type. Also, what could be the overall effect on a region's particulate emission if a dynamic emission factor is used compared to the fixed ones? Where do the authors expect the greatest differences to occur?

Table 2: EFPM, use subscript for PM.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 17183, 2009.

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