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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Origin, variability and age of biomass burning plumes intercepted during BORTAS-B" *by* D. P. Finch et al.

Anonymous Referee #1

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The purpose of this manuscript is to estimate the actual age of biomass burning emissions as opposed to the photochemical age using the BORTAS-B campaign data.

While I believe that there are some potentially interesting results in this research, the manuscript requires major revisions to be acceptable for publication. I hope that the authors will address my two major concerns:

1) The introduction does not adequately pose the scientific question nor state the importance of this research. Since it is known that aerosols retard the production of ozone, why is it important to calculate the actual age of the emissions as opposed to the photochemical age? That is, I recommend that you explicitly state the scientific importance of your new method in the introduction. Please consider moving some of the

discussion in the “concluding remarks” section to the introduction. It seems that you should discuss the results of Parrington et al. (2010, 2013), including the limitations of the methods employed. Then say why you want to try the new method that you present and discuss the benefit of the method.

2) Since the BORTAS period is only a few months and you are simulating biomass burning plumes, wouldn’t it make more sense to use a finer spatial resolution in the model? It seems counterproductive to degrade the fine spatial resolution to such a coarse resolution. Can you speculate on the impact to your conclusions? R = 0.45? I would like to see a few actual data-model comparisons along the flight tracks. It sounds like you’re saying that even though your model has very little skill (r2 =0.2) at reproducing individual observations, I should believe your conclusions since your median and mean are similar. I recommend that you provide a more convincing justification.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 8723, 2014.