

Interactive comment on “Emission factors for open and domestic biomass burning for use in atmospheric models” by S. K. Akagi et al.

Anonymous Referee #1

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This paper synthesizes a vast quantity of recent measurements of “fresh” biomass burning emission factors for different many species classified by vegetation and biofuel types. This paper is certainly a great resource to the community, both for a clear definition of the major terms used in discussions of biomass burning and as a compilation reference of EFs. The description of the methods is very clear, and it’s extremely beneficial to have access to the original data in Supplementary Materials for further interpretation by the interested reader. The main weakness of the paper is the lack of any detailed comparison with previous literature values, in particular Andreae & Merlet and Yovich & Logan which are currently the literature standards for estimating BB and

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biofuel emissions. A detailed discussion of where these new estimates differ significantly from these earlier works is required to put this study in context and to inform the reader who might apply these values in their model or data analysis. Other more minor comments are included below.

Minor comments

1. Section 3.3 is lengthy and essentially a review of previous work – I recommend trimming to keep the overall manuscript length reasonable when the comparison with previous studies is added (as per above comment).
2. Both “emission factor” and “emission factors” are abbreviated as EF throughout the text. The later should be given as EFs
3. Page 27543, line 21: typo double brackets after TROFFEE
4. Page 27555, line 7: why is the lower estimate of garbage burning (33 Tg/yr) not included in Table 4 and the average value for garbage burning?
5. Section 3.2: The discussion of missing/unmeasured NMOC is essential, however it is misleading to include such uncertain values in your tables. It’s not clear what the value of such a non-specific overall class of compound emission estimate would be given the likely range in reactivity of all the individual species included. I recommend limiting this discussion to the text and removing these values from the table.
6. Page 27560, line 26: Do your estimates differ from Andreae & Merlet because these authors did not include unmeasured NMOC as you did (scaling up by a factor of 2-3)?
7. Table 1 caption does not explain what values are given in brackets.

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