

Interactive comment on “Primary emissions of glyoxal and methylglyoxal from laboratory measurements of open biomass burning” by Kyle J. Zarzana et al.

Anonymous Referee #1

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This paper summarizes the measurements of glyoxal and methylglyoxal made during 75 burns carried out at the Missoula Fire Sciences Laboratory in 2016 as part of the NOAA FIREX campaign. Cavity-enhanced spectroscopy was used to measure both compounds, although the presence of 2,3-butanedione in the smoke may have interfered with the methylglyoxal measurement. The authors find that methylglyoxal emissions were generally 2-3 times larger than glyoxal, in contrast to previous studies which reported higher glyoxal emissions. The authors believe this is due to the interference with other species in the previous glyoxal measurements made by derivatizing the species, using HPLC to separate them, and then measuring the UV absorption. They also find that glyoxal and formaldehyde emissions are highly correlated with each other

C1

and that the ratio of glyoxal to formaldehyde in the fresh emissions is fairly constant for all fuel types.

This is a well written paper on a well performed study focused on an important topic in the chemistry of biomass burning emissions. The uncertainties and possible biases in the measurements are all adequately discussed and their potential impact on the conclusions is noted. The discussion puts the new measurements into the context of previous laboratory and aircraft studies. The figures are clear and the captions are sufficiently detailed.

Honestly, I'm having a hard time finding much to criticize, so I'm going to make a big deal out of some minor typos I found:

P2, L23: Since this is a new paragraph, I'd say "glyoxal and formaldehyde" instead of "these two molecules"

P2, L26: Remove close parenthesis after "~3 hours"

P15, L4: "duff and littler" should be "duff and litter"

P17, L17: When I go to the website it requests a username and password - you should add how interested researchers can obtain one to the text, or note when the password protection will be removed.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-521>, 2018.

C2