

## ***Interactive comment on “Laboratory measurements of trace gas emissions from biomass burning of fuel types from the Southeastern and Southwestern United States” by I. R. Burling et al.***

**Anonymous Referee #1**

Received and published: 11 August 2010

This paper presents emission factors for a suite of gases measured using an open-path Fourier transform infrared (OP-FTIR) spectrometer from controlled burns performed at the Fire Science Lab for vegetation that is managed by prescribed burning on military bases in the Southeastern and Southwestern U.S. Differences in the emissions factors based on being an organic, nitrogen, sulfur, and chloride-containing gas are discussed. How factors such as fuel type, burning condition, and geographical sampling location also affect the emission factors are presented.

This paper would definitely be of interest to the atmospheric community since it con-

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cerns biomass burning. Biomass burning is an important topic since its impact is still not well understood. This work is also providing emission factors that are useful for biomass burning modeling efforts. Additionally, data for very reactive gas phase species that likely affect plume chemistry and secondary process are being provided.

This is a very good paper. It is well written and easy to follow. You can tell that the authors really put a lot of thought and work into how it should be laid out. I really just have a handful of minor comments outlined below that the authors should consider addressing before submitting the final version.

Comments: 2.3 Open-path Fourier transform infrared spectrometer details Page 16433, lines 12-14 – Is the search mentioned referring to a literature search or a search within the OP-FTIR data?

2.4 Additional instrumentation details Page 16433, line 17 – Should there be a hyphen between reaction and mass?

Page 16433, line 20 – Should there be a hyphen between ion and proton as well as transfer and chemical?

Page 16433, line 22 – Should there be a hyphen between chromatography and mass?

Page 16434, lines 3-4 – Order of references should be alphabetical

3 Results and discussion Page 16435, line 18 – Suggest changing fuels for burning to fuel on the bed

Page 16436, lines 27-28 - Order of references should be alphabetical

3.1 Emission factors of organic compounds Page 16438, line 27 – Abbreviation NMHC is not defined

3.2 Emissions of nitrogen-containing species Page 16439, line 10 – Chemical name for N<sub>2</sub>O is not provided

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Page 16441, line 17 – Should it be R2?

Page 16441, line 20 – Suggest changing an N2 to a N2

Page 16441, line 27 – Suggest adding species (NO<sub>3</sub><sup>-</sup>) into units for average value of 0.2 +/- 0.4, adding the phrase and this work before including, and changing including to included

3.4 Emissions of HCl Page 16445, line 10 – The emission factor for AK Duff is not actually shown in Figure 10, maybe this should be mentioned

Acknowledgements Page 16450, line 4 – Suggest removing the word agreement before Forest

Tables Table 2 -The word location on top line of table could be removed to be consistent with Table 3 -To be consistent with equation 1 in the text, should the emission ratios for NMOC and OVOC be the reverse of what is shown and have CO<sub>2</sub> in the denominator?

Table 3 -In the caption the footnote should be a instead of 1 -The “other fuels” tested are included in the table, but this is not mentioned in the caption -For the fuels tested from CL, what do trt and utr stand for? These abbreviations are not used in Table 1. -To be consistent with equation 1 in the text, should the emission ratios for NMOC and OVOC be the reverse of what is shown and have CO<sub>2</sub> in the denominator?

Figures Figure 7 -The numbers on the top half of the y-axis are missing

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 16425, 2010.

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