

Interactive comment on “Trace gas and particle emissions from open biomass burning in Mexico” by R. J. Yokelson et al.

Anonymous Referee #1

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This manuscript presents previously unpublished data for several types of open burning made during the 2006 airborne campaign in Mexico and completes the presentation of the emission factor (EF) measurements made during the MILAGRO campaign. The study improves the existing knowledge of the biomass burning emissions in the Northern tropics, by providing EFs integrated by various fire types relevant for Mexico. This work also provides some interesting insights into factors other than vegetation types that may control EFs of NO_x and possibly other species. By combining EFs with estimates of fuel consumption, the authors estimate the typical annual emissions from biomass burning, garbage burning and biofuel use in Mexico. They find that these sources combined can be comparable to or exceed emissions from fossil fuel combustion for a number of species, thus having a great impact on the atmospheric composition in the tropics.

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This is a valuable study, well researched and presented in a clear manner. The covered material is relevant to Atmospheric Chemistry and Physics and can be of great interest to its readers. I certainly recommend this manuscript for publication. A few comments and questions are listed below.

Page 7331, Lines 13 - Page 7332, Line 15: These two paragraphs describe the derivation of average EFs relevant for all types of fires, not just crop residue burning, therefore I would suggest moving them to the “Experimental details” section.

Page 7332: The last paragraph in Section 3.1.1 seems to be out of place here. I suggest moving it to the “Experimental details” section.

Page 7335, lines 14-16: Please clarify the possible link between the surface windspeed and emission factors of NO_x. (Is it because windspeed affects the type of combustion?)

Page 7365, Table 7: Please correct syntax in the footnote to the Table 7, e.g., “In this work PM_{2.5} was estimated..”

Page 7366, Table 8: EF for NMOC for biofuel and the resulting NMOC emissions in Table 7 of Christian et al. 2010 are ~12 times higher than the numbers in Table 8 of this work (e.g., EF of 54 vs. 4.34 g/kg). Why is this difference?

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 7321, 2011.

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