**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Evaluating the influences of biomass burning during 2006 BASE-ASIA: a regional chemical transport modeling" *by* J. S. Fu et al.

Anonymous Referee #2

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(1) Introduction part: It is expected that introduction part should shows the purpose of this study, though peers' studies are listed, what is the new science in this study is not clear.

(2) Line 171: During converting carbon emission into more detailed pollutant species, only Andreae and Merlet (2001)'s emission factor are applied. This step is quite critical for later results. Have other EF methods been considered?

(3) Line 202: For other researchers to repeat this study, please introduce this interesting part with more detail. Computing plume vertical dispersion, exhaust temperature might be necessary, how to define the exhaust temperature in this study?

(4) Figure 2, font size and font name are so different with others. Also to work better with the caption, please use Gregorian date instead of Julian date. Fractional bias and gross error look better when peaks are better predicted. Some average value comparison should be give? Only then we shall know which emission inventory is better.

(5) Figure 4, it is "unit less". Line 325-326, calculating AOD with CMAQ, IMPROVE is used, since Mie theory also provide light extinction data, why not use it?

(6) Section 4.3 it is not clear and concise. It is long, and I do not know where Fujian, Jiangxi and Hunan provinces are. One more figure describing pollutant transporting path might be helpful.

(7) In Figure 7, it can be seen that pollutant is vertically transported as high as 3 km. This pollutant vertical profile seems very unphysical. Is it possible to compare model result with sounding data.

This study is quite helpful to understand biomass burning characteristic in Asia, and its transport mechanism, but the authors failed to calculate uncertainties of biomass burning emission factors, biomass burning emission inventory, biomass burning emission spatial and temporal profile. Emission temporal and spatial profile could be compared with MODIS infrared channel. Mont Carlo method might be helpful to evaluate total emission amount.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 32205, 2011.