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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Estimates of biomass burning emissions in tropical Asia based on satellite-derived data" *by* D. Chang and Y. Song

Anonymous Referee #2

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This paper describes the estimates of emissions from fires in southeastern Asia. The methods combine various datasets, including satellite burn area products to determine the emissions. The information provided in the paper is valuable, since the emissions from fires, particularly in this region of the world, is of great importance because they can impact air quality and climate. The authors compare the results when two different burned area products are used to estimate the emissions, highlighting the uncertainty in using such products for However, there are some changes and details that need to be included in the paper to make it eligible for publication. Most importantly are more specific descriptions about the uncertainties in the estimation process. I might suggest a new section in the manuscript which highlights the various uncertainties in the processes and datasets applied.

Some more specific comments are here: Exactly what were the spatial and temporal resolutions of the emission estimates? For what purpose can they be used? (e.g., modeling?)

Page 19605, line 8: what is the GlobCarbon product? Is there a reference for this?

Section 2.2.3: much of the data used to determine fuel loading is older (the references are from the early-mid 1990's. How might this impact the results? How much has land cover changed in that region of the world since then? Also, what is the biomass expansion factor (Page 19607, line 1)?

Section 3.1: Why weren't years after 2006 analyzed?

Page 19610, line 15: What is meant by "Indonesia processes about 80.4% of the total peatland.." ?

Page 19610, line 29: reword to "... when India experiences high summer temperatures and dry weather conditions..."

Page 19611, line 3: Change to "... January through March, which is the local dry season..."

Section 3.2.1: Is it that surprising that the MCD45A! and the GFEDv2.1 products compare well, since they are both based on MODIS observations? And on page 19612, line 11, what is meant by the line "It is noted that we did not include constant in equation"?

Page 19613, line 12: this sentence is unclear and should be reworded.

Page 19613, lines 20-end (and again in section 3.2.5): Can the L3JRC see through clouds/smoke? Also, are boreal forests similar to those in India?

Page 19614, line 10: Exchange "which" with "that"

Sections 3.2: the authors looked at differences in area burned between the two satellite products. Did they look at the differences in fuel burned from each? This could be

ACPD

9, C9078–C9081, 2009

valuable.

Page 19616, lines 15-18: I am surprised that a similar percentage of CO emissions come from peat in Indonesia for each input dataset, even though the MCD45A1 inventory showed much less peat burned than the L3JRC product. Can the authors explain this?

Page 19616, line 22: reword sentence.

Page 19616, lines 27-29: There is a very large difference in the fuel loadings used for this study and those from other studies. Why is that?

Page 19617, line 10: reword. Here is a suggestion: "Inventories of biomass burning emissions for all of Asia, representative of the mid-1990's, have been . . .."

Page 19617, line 13: Change "theirs" to "these". And remove "respectively" on line 14.

Page 19617, line 23: Change "undoubted" to "estimated"

Page 19618, lines 1-3: This is mentioned several times in the paper and should be removed.

Page 19618, lines 12-18: More detail is needed here. Can the authors explain why the emissions are lower than other studies. Why were the fuel loadings so much lower? What happens when the fuel loadings from Hoelzemann et al. are applied?

Page 19619, line 6: Why would the combustion factor increase as burning progresses? How does this impact your results when you are using a burn area?

Table 2: Can fuel burned be added to this table?

Tables 4-5: How reliable are the datasets to which the satellite estimates are compared (e.g., data from the Forest Fire Control Division)?

Table 6: there are a lot of significant figures included in this table. Do you think that the values estimated should have 4 significant figures? I think two is more appropriate.

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9, C9078–C9081, 2009

(Same comment for Tables 7 and 8).

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 19599, 2009.