

Interactive comment on “Methane plume over South Asia during the monsoon season: satellite observation and model simulation” by X. Xiong et al.

Anonymous Referee #2

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This paper presents interesting new satellite data coupled with data from one of the best methane models but like many papers of this nature it suffers due to the lack of observation stations in these parts of southern Asia for ground truthing. Hawaii and Rarotonga are not really appropriate for the identification of continental background levels of methane in this region. But saying this there are stations in the NOAA network at the periphery of the region under investigation which could have been used to better understand the excess emissions in southern Asia. These are Mt Waliguan, China; Ulaan Uul, Mongolia; Bukit Koto Tabang, Indonesia, and the station in Kazakhstan. By comparing the new data with these it might have given a better idea of the excess and the phase cycle compared to background.

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Page 13464 Lines 11-16 The text suggests a consistency of the CO and CH₄ maxima, but these should have very different dominant sources. It would be useful to state the maximum emission month for CH₄ from rice. Does this coincide with the end August maximum?

Page 13465 Line 11 Transport of CH₄ during the monsoon season may constitute an important EMISSION pathway, not a source pathway.

Page 13466 Line 5 Is subtracting the mean mixing ratio over the high southern hemispheric ocean representative of background? I would have liked to see this difference measured by comparison with one of the Asian continental background stations listed above.

Page 13466 Line 10 4-5 or 8-9% have little meaning alone. Would be useful to include also the change that this represents in ppb. The paragraph beyond this point is also unclear.

Figure 3 It is mentioned in the text that at higher atmospheric pressures the data rapidly deteriorates. This figure shows the AIRS CH₄ data all the way to 800 hPa, so it would be good if the area for which the data is good could be highlighted by a box (150-300 hPa?).

Figure 4 This figure could also be plotted with the oceanic or continental background removed. Then we would really have some idea of the months of maximum emissions, rather than a cycle heavily influenced by OH activity.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 13453, 2008.

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