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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Including the sub-grid scale plume rise of vegetation fires in low resolution atmospheric transport models" *by* S. R. Freitas et al.

S. R. Freitas et al.

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General Comments of Dr. Charles Ichoku: The paper: Including the sub-grid scale plume rise of vegetation fires in low resolution atmospheric transport models by S. Freitas et al, did what the title says. A 1-D cloud-resolving model was used to simulate plume rise from vegetation fires, based on boundary conditions of heat-release and ambient meteorological parameters provided by a host low-resolution 3-D model, into which the 1-D model is embedded. In turn, the simulated plume rise enables the 3-D model to place the smoke at a realistic injection height, thereby improving its source emission field, and consequently the overall model performance. Correct representation of emissions (particularly those of biomass-burning origin) in models has always been a critical issue. This work, therefore, represents an important contribution toward

improving that situation. The paper is very well written: with sound concepts, mathematics, methodology, and illustrations presented with clarity. In my opinion, the subject matter is appropriate for ACPD and the paper is acceptable for publication with only minor revision as highlighted below.

We thank the referee for his kind words, the replies (A) to the specific comments (Q) are given below.

Technical Corrections: Q1) Page 11522, Line 26: Carbon dioxide is repeated here and needs to be removed, and (CO2) attached to the first mention of carbon dioxide in line 24.

A1) Done

Q2)Page 11533, Line17: The word not is missing at the end of this line. I think you meant to say E we could not E .

A2) Yes, thanks.

Q3)Page 11533, Line 22: The acronym RAMS needs to be written after the full name Regional Atmospheric Modeling System before being used in subsequent sentences.

A3)Done

Q4) Page 11534, Line 19: CPTEC and 4DDA should each be written out in full because this is the only place they were mentioned in the entire text.

A4) Done.

Q5) Page 11535, Line 4: remove the last s from thoses.

A5) Done.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 11521, 2006.

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