**Atmospheric
Chemistry
and Physics
Discussions**

Interactive
Comment

Interactive comment on "2003 megafires in Australia: impact on tropospheric ozone and aerosols" *by* G. Guerova and N. Jones

Anonymous Referee #1

Received and published: 10 February 2009

The authors perform a model study to quantify the impact of the 2003 wildfires in south-eastern Australia. While interesting, I believe that the study would greatly benefit from a fine resolution nested model as the authors state in the conclusion. There are too many problems of the model reproducing observations as shown by the authors. Therefore, I do not believe that the manuscript should be accepted in its present form. However, I do encourage the authors to use the nested grid option in GEOS-Chem for their study. If I am not mistaken, GEOS-Chem already has the nested grid option. Why not use it?

Major Comment

It is very difficult to simulate ozone properly with such a coarse resolution, especially as compared to ozone stations. Ozone within a small area can vary dramatically, such

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Interactive Discussion

Discussion Paper

as upwind and downwind of wildfires or an urban plume. Why not show all the ozone data in a graph to show the variability within your region?

You would benefit from reading:

Wild, O. and M.J. Prather, Global tropospheric ozone modelling: Quantifying errors due to grid resolution, J. Geophys. Res., 111(D11), D11305, doi:10.1029/2005JD006605, 2006.

Minor Comments

Abstract. 1st sentence: How was 2003 a record year for wildfires worldwide? The annual biomass burning emissions were actually lower than normal that year according to the GFEDv2 database. Maybe it was a record year for Australia?

Introduction. Line 2: You cite that 80% of the total land area burned in Africa and Australia, but that is mainly savannas with low fuel loads. How much of the total biomass was burned in Australia?

Introduction: I recommend that you shorten this section as it is wordy.

I believe that you call Figure 4 before Figures 1-3.

Figure 1: Why not zoom in on southeastern Australia and add cities and regions?

Figure 3b: Why show it at all? Just say it is low.

Figure 4: Please use color! And I am confused by the last sentence of the figure caption.

4 case studies: Why show figures for all since they are quite similar?

Summary and Conclusions: line 26: Do you mean 6.5 ppb as a monthly mean? Or 26.5?

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 3007, 2009.