Atmos. Chem. Phys. Discuss., 10, C14972–C14976, 2011
www.atmos-chem-phys-discuss.net/10/C14972/2011/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Inclusion of biomass burning in WRF-Chem: impact of wildfires on weather forecasts" *by* G. Grell et al.

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Q: Figs. 2 & 3: In Fig. 2 (Fig. 3), MODIS satellite picture for 2123 (2223) UTC is compared with the model result for 2100 (0000) UTC. What is the reason for delayed time evolution of simulated smoke compared to the observation?

A:There is no delayed time evolution. We do not have model output at the time there was a Satellite picture. For the coarser domain we only have 3-hourly output.

Q:Fig. 10: It seems that there is a time lag of about 1 h between the simulations with and without fire. I think slow development of convective storms in the runs with fires has to be explained.

A:There is usually no time lag, only a difference in magnitude. Storms tended to de-

velop in approximately the same locations and time in the NE part of the domain (pg 30626, line 15). There are other parts in the domain that still inhibit more stable precipitation with shallow clouds. We addd a sentence to make this clearer.

Q:Fig. 15: This figure is not appropriate to compare the fields with and without fire in Fig. 14 because of different location of simulated cloud system.

A:We agree that cloud systems are in slightly different locations. We tried to accommodate this by taking a running average into and out of the cross section. In the text, we now state that care has to be taken when interpreting this figure, since the location of the cloud system is slightly different. Alternatively we could take this figure out completely.

Q:Fig. 9 & 10: Please show the time evolution of both values from 1600 UTC to 2000 UTC.

A:The reason we have the figures completely separate is the difference in magnitudes (light morning precipitation versus much heavier convective precipitation), and the difference in type of precipitation. 1700UTC to 1900 UTC the magnitudes shift drastically, since we are starting to see a different precipitation regime. We would prefer to keep these regimes as separate as possible. For domain D1 we put everything in one figure, since the resolution is coarse and the aerosol indirect effect does not show up much.

Q: Fig. 12: Information for contour interval and color bar are omitted.

A: We changed the contouring as well as put on a label bar. Additionally we originally had intended to not display the same as in Fig.11. However, Fig. 11 also shows the tendency differences, instead of the temperature differences. As a result we changed both figures and captions.

Q: Fig. 13: Time in the figure (0200 UTC) is different from that indicated in the text (0000 UTC)

A: The wording was changed in the text.

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Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/10/C14972/2011/acpd-10-C14972-2011-supplement.pdf

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 30613, 2010.

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Interactive Comment

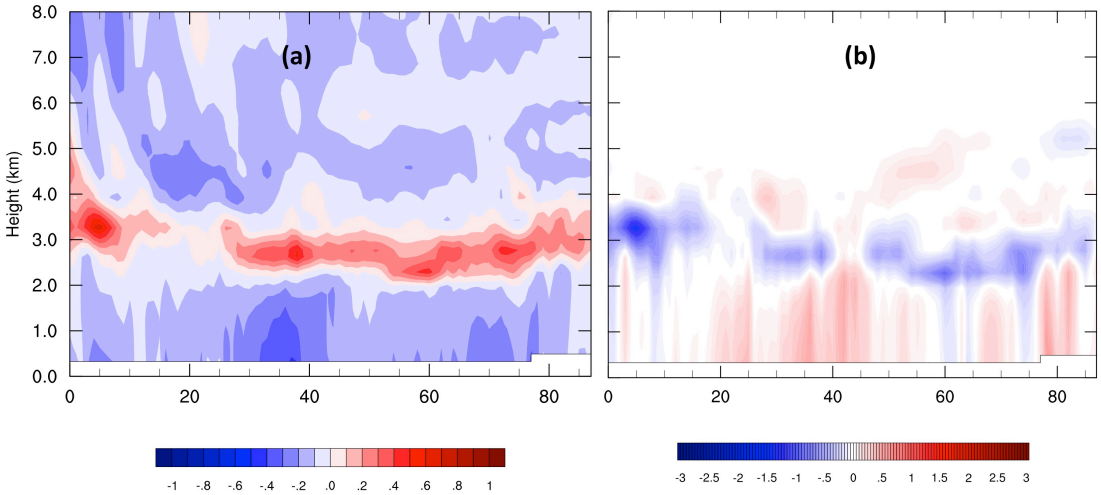

Figure 11: Temperature (a) differences in ^{0}C and water vapor mixing ratio (b) differences (g/kg) from the runs with fires minus the run without fires for cross section A at 2200 UTC, July 3, 2004. Fields are averaged along a line that extends 5 grid points into and out of the cross section.

Fig. 1.

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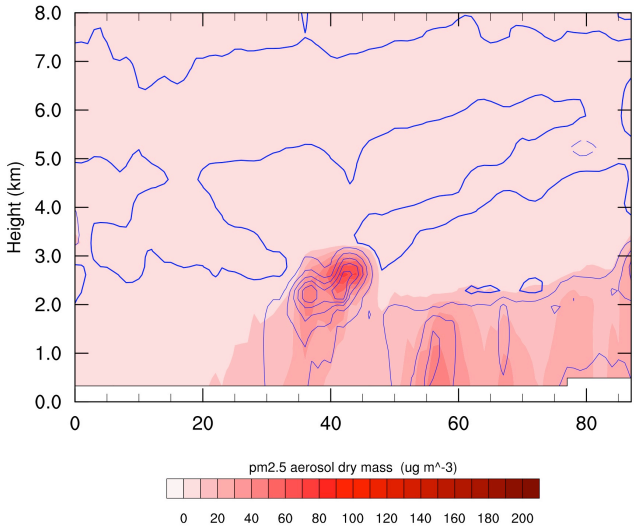

Figure 12: Radiative temperature tendency differences in ^{0}C (blue contours from -.5^{0}C (dashed) to +3^{0}C in half degree intervals) overlayed with PM2.5 concentrations (in red) for cross section A at 2200 UTC, July 3, 2004. Fields are averaged along a line that extends 5 grid points into and out of the cross section.

Fig. 2.

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