

## ***Interactive comment on “A meteorological overview of the MILAGRO field campaigns” by J. D. Fast et al.***

**J. D. Fast et al.**

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Response to Reviewer 2:

Specific Comments:

1. We were trying to contrast Bossert’s early study with those with more extensive data that followed. The reviewer is correct to point out there were some measurements and our sentence implied that there were none. The sentence has been changed to indicate there were some measurements available.
2. We have changed “for the remaining time periods” to “for the remaining time during March” to avoid confusion. The analysis in this paragraph was only for March, and did not consider other months.
3. We agree that it would be useful to understand the reason for the discrepancies

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between the rawinsondes and GFS analyses. To fully explain the discrepancies would require an in-depth study collaboratively with NCEP that is beyond the scope of this study, and we have provided the most plausible explanations for their occurrence. The information needed from NCEP regarding which rawinsondes are used in the GFS analyses are not readily available. For those rawinsondes that are used, one would need to test the assimilation algorithms to determine the reason for large departures between measurements and analyzed values.

5. The reviewer is correct to point out that probabilities associated with the K index are somewhat nebulous; therefore, the text has been altered to address the reviewer's concern about specific values. The second sentence on the probability using the K index has been deleted as well. We have left the 50% probability in Figure 11a to highlight for the reader the periods with higher probabilities of thunderstorm development.

6. The sentence has been changed to indicate the large change in potential temperature and humidity was largely the result of Norte 3.

7. Our explanation in the text was meant to suggest that radar wind profiler data set is better than the rawinsonde dataset in indicating general wind directions in the vicinity of Mexico City (6-h versus 30-min intervals, vertical resolution, etc.). We wish to leave both gray shadings in Figure 3 and 16 for the reader to compare and contrast. The periods of "southwesterly" wind directions in Figure 3 are qualitatively similar to those in Figure 16, except that the 6-h balloon sounding intervals cannot provide much temporal information since the wind directions in the valley can change rapidly.

8. Changed "six simulations" to "five of the six simulations" so that the sentence does not contradict the information later in the paragraph.

9. The reviewer is correct to point out that the results in Figure 18f confirms what has already been described in the text. However, the results here are a model prediction which can account for 3-D advection and vertical mixing in a more realistic way than just simply examining wind direction measurements as was done previously. The

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results suggest that model predictions, that will be the subject of several upcoming publications, will have some skill in predicting pollutant transport in the region. The other panels in Figure 18 give the reader some idea in how frequent the T1 and T2 sites would be impacted by Mexico City pollutants during meteorological conditions other than those for 2006. For these reasons, we have chosen to keep Figure 18 in the paper.

10. The blue flight track was usually flown earlier in the day than the red flight track. The figure caption has been changed to explain this.

11. As suggested, a label for Mexico City has been added to Figures 12 and 13 and the color text in Figure 12 has a gray background to show the yellow.

Technical Comments: 1. The sentence has now been divided into two sentences to avoid confusion associated with the original description of the synoptic-scale prediction models.

2. We agree that the figures on the ACPD web site paper are small. We expect that the figures will appear larger in the ACP version of the paper.

3. Yes, 2004 should have been 2005 in two places. The corrections have been made.

4. The reference to Fig. 1a has been changed to Fig. 1b, as suggested.

5. The figures that appeared on-line were much smaller than intended. The editorial staff informed me that the figures can be enlarged for the revised paper submitted to ACP. Then the labels should be easier to read.

6. The figure caption has been corrected to indicated that the 500 hPa plots are at the top.

7. The lines in the figure are now in color as suggested.

8. As indicated in the figure caption, only the 00 and 18 UTC values were denoted by dots in (a) and (b) to highlight the afternoon periods. On days with convection, the

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K index usually increased between the 18 (local noon) and 00 (late afternoon) UTC periods.

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 2037, 2007.

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