

Interactive comment on “Basin-scale wind transport during the MILAGRO field campaign and comparison to climatology using cluster analysis” by B. de Foy et al.

B. de Foy et al.

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The authors would like to thank the referees for their careful reviews which have been used to improve the quality of the paper.

Referee #1:

General Comments Thank you for the suggestions for the figures, they have been adopted in the revised version.

Specific Comments

1. Figure 1 with a basin map has been added.
2. The information is calculated from the hourly RAMA data, explanations added to the text. The time zone is Central Standard Time (UTC-6 hours).

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3. -
4. -
5. Figure 5 changed to bar chart (per Ref 2 suggestions too).
6. This is from results not shown, as clarified in the text.
7. The extra 3 stations do not change the results but do take a lot more room.
8. Agreed, “three-dimensional wind patterns” was removed (part of changes to section 6).
9. Data from T2 is only used in the display, not the clustering. Text modified to be clearer.
10. -
11. Agreed, Sec. 6 underwent substantial revision.
12. Yes, “episodes” replaced with “episode types”.
13. Thank you for your suggestions. New Figs. 11, 13, 14 are, I hope, much clearer.
14. Other 2 episodes added, will ask for Fig. 12 (was 14) to be full width in the print version.
15. This section has been rewritten. The original intent was to discuss momentum downmixing as developed by Banta et al. 1981 (see de Foy et al., 2006a for discussion).
16. The diurnal distribution of the Nsfc-Sw cluster. This has been rewritten.
17. -
18. Agreed. Table 1 has bold values for row maxima. In addition, the column maximum is in italic.
19. Thanks for the suggestions, Fig. 6 merges Figs. 5, 6, 7. Terrain contours were added, site locations were clarified, the colorbar is larger. Correct, the

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color bar is not evenly divided. This is to give greater resolution during the day time hours.

20. A full width display of Fig. 7 (was 8) should help.

Technical Comments Thank you for the suggestions which have been addressed in the final version. We have made all the changes suggested by the reviewer to eliminate typographical and grammatical errors in the original text and have sought to eliminate additional errors.

Referee #2:

General Comments Thank you for the general and specific comments. Showing that MCMA basin meteorology during MILAGRO was similar to past studies is in fact a worthwhile exercise because the interpretation of campaign data and the use of the results for policy analysis depends on knowing how climatologically representative the campaign was. Doing this with existing clustering algorithms hopefully contributes to the promotion of more analysis of this type for both climatological studies and radar wind profiler data interpretation.

Specific Comments

1. Extra figure added of basin geography (Fig. 1), lengthy descriptions (mainly Sec. 6) cut down.
2. Section 7.2 (Comparison with MCMA-2003) was upgraded to a Discussion section with comparisons to other basin flow studies.
3. This was added to the Discussion section, thanks for the suggestion.
4. Reference to Fig. 1 with station location was added.
5. Both T0 and T1 wind profiler data were used in the cluster analysis. This is made clearer in the revised version, see Sec. 6.
6. Yes, this is mentioned in the text, see Sec. 6.

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7. Thank you for the suggestions. A new, improved, figure has been made. Maximum Ozone levels for each data have been added. Adding time series to an already crowded graph would have been excessive however (see changes above, in Figs. 11, 13, 14).
8. This paper is concerned with meteorological rather than photochemical episodes. Due to variations in sunlight and emissions, there is a large variation in ozone levels within the meteorological episode types.
9. Text modified accordingly in the Summary.
10. Terrain countour labels added to figure, see Fig. 2 (was 1).
11. Changed to Potential T., see Fig. 4 (was 3).
12. New bar chart made without data overlay, see Fig. 5 (was 4).
13. Fig. 8 is in fact a histogram. In this case, it makes sense to connect the dots as it shows the diurnal evolution of each cluster type. It also makes sense to overlay the lines as it shows the transition between cluster types as a function of the time of day. The alternative would be to display each line as a separate bar chart. This would make the results even harder to see despite requiring much more room.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 13035, 2007.

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