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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The T1-T2 study: evolution of aerosol properties downwind of Mexico City" *by* J. C. Doran et al.

Anonymous Referee #2

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General Comments:

This is a well written paper. Authors do a good job of summarizing the the previous literature and provide considerable detail of the T1-T2 experiment and aerosol instrumentation. Interestingly, results from T1-T2 experiment show higher values of specific absorption of EC compared to other studies. In my opinion, paper is "acceptable with a few minor revisions". Listed below are specific comments and technical corrections that authors should consider.

Specific Comments:

SC1) I realize that you are planning a more sophisticated analysis of transport from T1-T2, however, I was curious what would happen if you calculated back trajectories

from T2. In other words, would you identify the same days with T2 back trajectories (i.e., 69, 77, 78, 79, 83) as you found from the T1 forward trajectories?

SC2) I am not convinced that Day 79 should be included as a T1-T2 transport day based on trajectories shown in Figure 4.

SC3) What day/time were soundings shown in Figure 5 collected? Please add this to figure caption.

SC4) May want to change title of paper to: "The T1-T2 study: evolution of aerosol optical properties downwind of Mexico City"

SC5) Day 83 had transport from T1 to T2. Day 83 was also the day of lowest values of EC and OC aerosol concentrations. From Figure 1 it appears that 83 was one of the coldest days with very high RH and reduced solar radiation (i.e., it was probably raining). This should be discussed some in the text. Are specific absorption values significantly different on this rainy day compared to the sunny days? What would you expect?

SC6) Figure 8 is not appropriately discussed in the text. This figure shows an apparently robust relationship between Abs and EC conc. What is the significance/importance of this relationship and of the different slopes observed at T1 vs T2. What is the Rˆ2 of these correlations? Does this plot include all the data points or only points during transport from T1 to T2?

Technical Corrections:

TC1) How many days had simultaneous radiosondes at both T1 and T2? It looks like 5 pts at 0900, 6 pts at 1300, and only 2 pts at 1500. Are all the simultaneous 1500 soundings included in this figure? Also interesting to note the wide range in 1300 boundary layer heights.

TC2) In Figure 6 it is misleading to connect the dots between T2 EC data on day 72 with data on day 73. Same for the T2 OC data.

ACPD

6, S6688–S6690, 2007

Interactive Comment

TC3) Table 1 needs better delineation (perhaps more white space) between T1 and T2 groupings of data columns.

TC4) How many samples or hours are included in Figure 9 histogram? Please include this in the figure caption.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 12967, 2006.