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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Aerosol airmass type mapping over the urban Mexico City region from space-based multi-angle imaging" *by* F. Patadia et al.

Anonymous Referee #3

Received and published: 16 May 2013

The paper presents detailed analysis of MISR aerosol retrievals on 2 episodes over Mexico City during the MILAGRO field campaign, and compares the results with AERONET measurements, supplementary sun photometers and airborne AATS-14 and HSRL.

Both strengths and weaknesses of the MISR aerosol retrievals are described with a focus on urban regions. This is valuable for future analysis of the MISR data.

General Comments:

It seems that one of the key aspects of the paper is the data in Table 4. I would find it

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valuable to have an additional figure showing the comparisons graphically.

There seems to be some overlap of sections 4.3, 5 and 6. I wonder if these could be rationalized / shortened, for example into “Specific Findings” and “General Findings”

Specific Comments:

Pg 7932-20, 7945-11: For the non-specialist, could you clarify the regular mode and high resolution mode of MISR on pg 7932?

Pg 7934-24: You mention that Redemann et al., 2008 and Livingston et al., 2008 analyze MODIS and OMI results respectively. It would be good to discuss how these findings compare with the MISR results. Maybe this section of the introduction can be shortened and/or replaced with an item in the discussion & conclusion section discussing the relevance of the papers.

Pg 7936-21: This section could be reduced to describe only the data used in this study (2 aircrafts?).

Pg 7938-22: Please define the “Golden Days”

Pg 7939-22, 7942-10: There is also a smaller scale meteorological analysis in: “Basin-scale wind transport during the MILAGRO field campaign and comparison to climatology using cluster analysis,” de Foy et al., ACP 2008. The discussion of the results could include the finer transport categories presented there (South Venting, O3-South), and also mention the climatological representativeness of these cases.

Pg 7942-21: Could the first part of this section on MISR retrievals be shorter? Also, could tables 2 and 3 be moved to supplementary material?

Pg 7941-3: What are the results from these other publications that are relevant to the current study? Is MISR in agreement with all of them? Does the extra spatial coverage add some insight to the understanding of regional pollution? Eg. Both Crounse et al., 2009 and Querol et al., 2008 discuss the omnipresence of dust and the implications

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for studying aerosols in and around the MCMA. de Foy et al., 2011 has detailed HSRL transects for both March 6 and 15.

Pg 7946-23 + Fig. 5: How were regions I and II defined? How large are air masses A1-A4? (are they multiple MISR pixels?)

pg 7946-28 The spherical smoke particles you present suggest the presence of atmospheric tar balls in the fresh biomass plumes. The discussion should be linked to Yokelson et al., 2009 and de Foy et al., 2011.

Pg 7952-5: MCMA and surroundings has a lot of dust and very bright surfaces. Does this mean that the results of the paper are limited to this type of city? What can still be said about other types of urban regions?

A map of the MCMA with station locations would be helpful.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 7931, 2013.