

## ***Interactive comment on “Retrieval of aerosol single scattering albedo at ultraviolet wavelengths at the T1 site during MILAGRO” by C. A. Corr et al.***

### **Anonymous Referee #2**

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The manuscript outlines the calculation of total column averaged aerosol single scattering albedo in the UV spectral region from direct and diffuse measurements made with a UV-MFRSR at sit T1 during the MILAGRO campaign in Mexico City in March 2006. A simple method is described that uses AERONET aerosol optical depths in the retrieval. These results are used to estimate the photolysis rates of NO<sub>2</sub> at the site.

In general, the manuscript is well written and presents an in depth analysis of the problems involved in the retrieval of aerosol optical properties in the UV. There are no major omissions in the manuscript. However, some minor modifications may make the presentation easier for the reader to follow.

Table 1 should be simplified with necessary explanations moved to footnotes. Columns

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6 and 7 should be modified to make the results easy to find. Perhaps extra columns could be added to separate the results from the method explanations. Remove wavelength designations from column 8 and give only results that correspond to wavelengths listed in column 4.

The color blue used in the Figures did not reproduce well and is difficult to distinguish from black. The use of a brighter color would better define the Figures. Also the symbols used to label the plot axes should be larger and more descriptive [e.g. "Single Scattering Albedo ( $\omega$ )" instead of just " $\omega$ "] with full descriptions in the Figure captions.

Figure 1: The title on the plot is unnecessary and should be covered in the Figure caption. Better define the numbers scattered throughout the Figure in the Figure caption. i.e. Lin-Quad=-0.002; Air mass = 3.778;  $\sigma\tau = 0.01$ ; etc. Can some of these be omitted from the plot and explained in the caption only?

Figure 2: Explain the graph inset (ln Vo,  $\sigma$ , and last number column) in Figure caption and also in text. What is meant by the statement in the caption "The RMS difference between AERONET and UV-MFRSR  $\tau$  (0.004) is shown to the right"? Explain this relationship in the text.

Figure 3: It appears that the x axis is miss-labeled since the Figure caption says that it is for a fixed value of g. Omit the plot title as it is explained in the caption.

Figure 4 is very difficult to read. Hopefully this will improve when the Figure becomes larger. Use a brighter color than blue to distinguish Level 1 from Level 2.

Page 4984, ln 5: It is assumed that the reference here to Fig 7 is for Fast et al. Fig 7 and not the Fig in the current manuscript. It may be less confusing to omit all Figure numbers except for those in the current manuscript and explain the results reported by Fast et al. in less specific terms.

Figure 6: Omit plot titles (0319). It is difficult to tell which of the 3 plots the caption is referring to. Better discriminate between top left and top right plots in the Figure

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caption. What is meant by “middle” in the Figure caption? Does this refer to the lower plot? This could also be further explained in the text. Perhaps this Figure could be better presented if the first plot (AERONET  $\tau$ ) were omitted since it is not covered in the text. If the authors feel that this information is necessary to fully understand the manuscript then maybe it should be presented as a separate Figure and explained fully in the text.

Figure 10: Omit the insets in the Figure ( $\tau=$  ;  $\omega=$  ;) as they are explained in the caption, and correct these values in the Figure caption as they appear to be reversed from those in the Figure. Omit Figure inset “SAFS” and explain the acronym in the Figure caption.

Page 4989, In 18: The sentence beginning “In contrast...” is very difficult to follow. Please clarify.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 4971, 2009.

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