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Atmospheric Chemistry and Physics Discussions

Interactive comment on "An evaluation of the SAGE III Version 4 aerosol extinction coefficient and water vapor data products" *by* L. W. Thomason et al.

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This paper as the title says an assessment of the Version 4 SAGE III Aerosol and H2O products. It falls short of a full validation in the sense that a final assessment on the actual accuracy, precision, and vertical resolution are not presented but presents reasonable evidence that the intended instrument design goals are being met. Personally I am not overly fussed over the fact that a lot of details (like detailed error analyses and spatial dependencies of comparisons) that typically appear in validation papers is not present here. If this is important to the editor/Journal then this paper would need to undergo major revisions. I personally do not feel this is really necessary.

Some minor points.

Page 22178 line 11 why is 15–25 km considered the "primary" aerosol range. Don't aerosols exist all the way to the surface?

Page 22178 last sentence. I would rephrase saying that the SAGE III H2O measurement is not affected by aerosol loading.

Page 22179 line 6 instrument –> instruments

Page 22179 line 11 I would call the sun a radiant source rather than target.

Page 22179 line 22 I would say moon as the radiant source.

Page 22186 line 3&4 When discussing ratios you are really doing the comparisons in percentage term and I would just say that. IE ratios tend to compare small measured extinctions with equal weight to large extinctions.

Page 22193 line 11 change on to one

Page 22197 line 16 I think you mean 1 / sqrt(2)

Page 22198 line 16 Does northern hemisphere mean 0–90 N? It might be useful early on in this manuscript to show a time series of latitude coverage for SAGE III

Page 22198 line 19&20 I don't understand why water should be dryer when PSCs are absent. I would have thought it would be opposite since this is a temperature controlled issue.

Page 22200 line 4 I think you should say noise is substatially damped for altitudes > 15 KM

Page 22200 line 25-29 I would try to do this comparison without any correction the the MLS data.

Page 22201 line 1-7 I would say that MLS represents the hygropause differently than SAGE III because of their different vertical resolutions rather than to say MLS doesn't

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resolve the hygropause. In fact the MLS vertical resolution gets better in the troposphere (about 2 km). See the Read et al. MLS UTLS H2O validation paper (2007).

Figure 5. I could not see any red and blue lines here.

Figure 14 I would say weekly bins rather than 0.02 years

Figure 15 Give the ratio sense ie X/SAGE III except for MLS where it seems like its SAGE III / MLS.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 22177, 2009.