

Interactive comment on “Cloud sensitivity studies for stratospheric and lower mesospheric ozone profile retrievals from measurements of limb scattered solar radiation” by T. Sonkaew et al.

Anonymous Referee #3

Received and published: 7 May 2009

The topic of this paper is very interesting to all scientists making limb measurements in the UV-visible spectral range. It is carefully written and content corresponds to the title. I can recommend it for publication in AMT. Some comments follow.

Comments:

1. It would be interesting to know what are the errors in the cloud free case when realistic instrumental errors are included in the simulation. This would give the scale for errors from clouds. You mention synthetic data: is noise included in data?
2. Sec. 3 p.385 line 3: The method in Tukiainen et al. uses simultaneously wavelengths from UV-Visible.

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3. Authors put a lot of effort to derive Eq. (21). This equation is an approximation and in some cases leads to completely wrong results as the authors admit. In my mind this derivation is a sidestep from the main idea of the paper i.e. to estimate errors from clouds. Could this part be shortened?
4. In Sec. 5 p. 390 line 1: .."absolute limb radiances"... Do you mean original radiances or normalised radiances Eq. 1? This question applies to all subsequent use of "absolute radiance". Probably it would be more meaningful to consider normalised radiances because they are the starting point for retrievals?
5. It would be useful to show a plot of the measurement considered. Instrument, sun, clouds, albedo and few possible paths for solar light.
6. I am missing a discussion about the spatial extent of the clouds and albedo (see for example Oikarinen, JGR, 107, 4404, 2002). The paper assumes uniform cloud and albedo. Have you considered any more complicated cases?
7. Appendix is awfully long. Do you see any possibility to shorten it?

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 379, 2009.

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