

Interactive
Comment

Interactive comment on “Estimating cloud optical thickness and associated surface UV irradiance from SEVIRI by implementing a semi-analytical cloud retrieval algorithm” by P. Pandey et al.

P. Pandey et al.

praveen.pandey@vito.be

Received and published: 15 June 2012

Authors are thankful to Dr. A. Kokhanovsky for his interest in this manuscript.

Figure 2 of the discussion paper corresponds to the transmittance in the ultraviolet (UV) range of the solar spectrum produced using Tropospheric Ultraviolet and Visible radiation model (TUV, Madronich, 1987). Similar results were obtained by earlier studies (Nichol et al., 2003; Harman et al., 1999) in the UV range. The difference in the ratio of the diffused light transmitted through a cloud at the nadir illumination to that at the solar zenith angle 60° could pertain to the difference in the wavelengths, i.e., visible and UV. The influence of solar zenith angle on the cloud transmittance in the

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Interactive
Comment

UV range is found to be rather small. The coefficients used in our studies are tuned to reach an agreement with the TUV model. Similar functional form in the UV range can be obtained following van Weele and Duynkerke (1993). Despite of the above reasons, we rechecked our calculations and re-simulated the cloud transmittance with different coefficients as suggested by Dr. Kokhanovsky. Yet, the TUV model results remain the same. Hence, we retain the functional form proposed in the discussion paper.

We are again thankful to Dr. Kokhanovsky for his comment about the use of IR channel to retrieve the effective radius. Authors are aware of this fact and approximations related to asymmetry parameter. But study in this direction is out of the scope of our final goal, i.e., in context of air quality based on meteorological and regional air quality models.

References:

Herman, J.R., Krotkov, N., Celarier, E., Larko, D., and Labow, G.: Distribution of UV radiation at the Earth's surface from TOMS-measured UV-backscattered radiances, *J. Geophys. Res.*, 104, 1999.

Nichol, S.E., Pfister, G., Bodeker, G.E., McKenzie, R.L., Wood, S.W., and Bernhard, G.: Moderation of cloud reduction of UV in the Antarctic due to high surface albedo, *J. App. Meteo.*, 42, 2003.

Van Weele, M., and Duynkerek, P.G.: Effect of clouds on the photodissociation of NO₂: observations and modelling, *J. Atmos. Chem.*, 16, 1993.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 12, 691, 2012.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)