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Atmospheric Measurement Techniques Discussions

Interactive comment on "Operational surface UV radiation product from GOME-2 and AVHRR/3 data" *by* J. Kujanpää and N. Kalakoski

Anonymous Referee #1

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Review on Operational surface UV radiation product from GOME-2 and AVHRR/3 data J. Kujanpää and N. Kalakoski Finnish Meteorological Institute, Helsinki, Finland

The paper deals with the description of the operational UV product of GOME-2. Although the reviewer thinks this paper should be published it must be improved on several items, mostly textual. Generally, the paper is a bit too long. This holds especially for: Abstract and introduction Paragraph 2.4. This paragraph can either be omitted or summarized to a few lines. Figure 3 in this paragraph is not used to discuss matters, it just present old results that are well known.

On the other hand, the authors could explain more precisely - what the UV radiation product is. Since a comparison is made with UV-index measurements, it is likely that

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the product involves irradiance and not an actinic flux or something else. Please clarify - what is meant with cloud optical depth? It is most likely the optical depth that describes the attenuation of unscattered radiation following Lambert Beer law. However, the cloud optical depth and UV irradiance at the ground or TOA are not trivially linked. (Paragraph 3.2 3.3). Some extra discussion on this could be helpful.

Figure 4. Plotting derivatives, and in the same figure, is not helpful. The curvature of the reflectance is not that complicated. What is rather puzzling is the large influence of the surface albedo on the reflectance for large cloud optical depth. At an optical depth of 100, the difference between a ground albedo of 0 and 0.6 is not noticeable, but going to a=1 the reflectance jumps to approximately 0.95. This could be due only to the rather coarse grid used to create this plot (both in steps albedo and cloud optical thickness). A better plot on a higher resolution grid (additional steps between a=0.6 and a =1) should clarify this.

Figure 5 Same applies

The title above figure 4 is a bit obscure "Metop-A ch.1: θ0=40, θ=40, ïĄĎïĄł=120, ps =1.0, ïĄťa =0.0, M325", same applies to figure 5. The authors should better explain the used parameters for their calculation. ïĄťa =0.0 implies not absorption. That rather contradicts Fig. 2 where absorption in the Chappuis band is explicitly mentioned. Do the authors suddenly neglect absorption, or does " ïĄťa =0.0" refer to something else?

Table 2 Aerosol optical depth: an indication of the wavelength at which the used numbers apply is lacking

Figure 7 How can there be zero overpasses per day in (local) winter for a polar orbiting satellite? The authors probably mean something else like useful readings per day to obtain a cloud optical depth or something the like. In addition, the authors should comment on the asymmetry of this figure, i.e. the difference in shape of the red+ orange coloured area for the North and South hemisphere.

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8, C1242–C1244, 2015

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8, C1242–C1244, 2015