

Interactive comment on “MICRU background map and effective cloud fraction algorithms designed for UV/vis satellite instruments with large viewing angles” by Holger Sihler et al.

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The authors need to clarify definitions of relative azimuth angle (RAA) and scattering angle (SA). It seems as though the authors performed their CF calculations using correct RAA and SA in the paper; however, I noticed the definitions of RAA in Figure 1 and SA in Equation (7) do not agree with each other.

Suppose SZA = 30, VZA = 60, and RAA = 180 in Figure 1. Then, we can estimate SA = 90 from Figure 1.

On the other hand, plugging the above SZA, VZA, and RAA into Equation (7) gives:

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$$\begin{aligned} SA &= \text{acos}\{-\cos(\text{VZA})\cos(\text{SZA}) + \sin(\text{SZA})\sin(\text{VZA})\cos(\text{RAA})\} \\ &= \text{acos}\{-\cos(60)\cos(30) + \sin(30)\sin(60)\cos(180)\} = 150. \end{aligned}$$

Therefore, RAA in Figure 1 should be $|\text{VAA} - (\text{SAA} - 180)|$ or $|\text{VAA} - (\text{SAA} + 180)|$ instead of $|\text{VAA} - \text{SAA}|$ where SAA is solar azimuth angle and VAA is viewing azimuth angle.

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