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Comment

Interactive comment on “Technical Note: A novel parameterization of the transmissivity due to ozone absorption in the k -distribution method and correlated- k approximation of Kato et al. (1999) over the UV band” by W. Wandji Nyamsi et al.

Anonymous Referee #3

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The manuscript proposes a new parametrization scheme of the UV radiation transmission as calculated from the k -distribution method and the correlated- k approximation. Overall, the manuscript is clearly written, the importance of a new parametrization scheme is highlighted and the use of the subintervals is reasonable and well-presented. My main concern is if the manuscript is so convincing that the proposed parametrization will be used in practice instead of analytical radiative transfer calculations. From my point of view, I would be reluctant to use it. And if the authors are able to respond positively to the following comments, then, probably the proposed method will be ex-

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tensively acknowledged and used. First, I think that the analytical runs in the UV region are not so computationally expensive and, in the relevant literature, the use of the Kato approximation is limited when compared with number of studies based analytical runs. Of course, this is mainly due to the limitations of that approximation scheme, as presented in this manuscript. However, the UV spectral range is quite short ($\sim 100\text{nm}$) and the importance of accurate calculations at specific wavelengths is high due to the great variety of UV dose rates. The authors should highlight the fact that the proposed approximation provides very close results with the analytical runs and successively takes into account: 1. The variety of ozone and temperature vertical profiles 2. The disproportionate role of ozone in UVB radiation for high solar zenith angles (please also explain why the solar zenith angles are limited to 80 deg.). It is also recommended to explain/present: 1. The performance of the proposed method in calculating the UVB irradiance components (direct, downward, upward) at specific wavelengths and different altitudes 2. The use of only 4 sub-intervals (what would be the difference in computation time/accuracy of calculations when using more/less intervals?) 3. The use of the specific wavelength intervals (table 1, 2nd column).

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 1027, 2015.

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