

Atmos. Meas. Tech. Discuss., referee comment RC1
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Comment on amt-2020-502

Anonymous Referee #3

Referee comment on "Directionally dependent Lambertian-equivalent reflectivity (DLER) of the Earth's surface measured by the GOME-2 satellite instruments" by Lieuwe G. Tilstra et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2020-502-RC1>, 2021

This paper presents a new method to extend the typically used surface LER with a direction dependency. The DLER concept is applied to GOME-2 measurements, and the relation with the surface BRDF is analyzed both theoretically and practically. This paper is well-organized and well-written, and the content is of interest to the community involved in satellite retrieval of atmospheric properties. I recommend publication in AMT after the authors address minor comments below.

P1 L21 Please give the full names of the different species.

P2 Could you also comment on the pros and cons of the Loyola et al., 2020 method with respect to DLER?

P9 L11 The spatial resolution has changed to 40 km *40 km for GOME-2A. How large is the influence of combining measurements from two instruments with different spatial resolution? Is the instrumental degradation an issue in the DLER retrieval?

P12 L31 What is the reason of applying Eq 9 at 758 nm? P12 L29 concludes that 758 nm can be treated monochromatically.

P14 L26 Maybe it is good to show surface albedo maps here?