

Reply to the reviewer's comment on the manuscript "The subtleties of three-dimensional radiative effects in contrails and cirrus clouds" by Carles et al.

In black is the reviewer's comment, in blue the authors' response.

I admit the improvements on the revised manuscript. The manuscript is under the scope of the journal. I recommend to accept the paper after the following minor corrections:

1. Through the revised manuscript, independant should be independ'e'nt. Furthermore, the independent column approximation is already abbreviated as 'ICA' in the manuscript; I suggest to unify the word through the manuscript.

We thank the reviewer for the typos, we corrected them through all the manuscript and unified the "ICA" notation.

2. The previous studies (e.g., Stephens et al., 1991; Cahalan et al., 1994; Marshak et al., 1995; Varnai and Davies, 1999; Wissmeier et al., 2013; Okata et al., 2017) proposed several approximations based on the independent pixel/column approximation. The reviewer suggests for the authors to discuss among the methods in introduction.

We added a sentence and reformulated the paragraph in the introduction, l.29 to 34.

3. L.296: 'Under plane parallelthe independant column approximation' should be 'Under the independent column approximation'

We thank the reviewer for their attention and corrected the sentence.

4. L.446: It is not fully correct because Momoi et al. (2022) proposed the method to take forward-scattering into account correctly yet rapidly.

We thank the reviewer for the reference, we added it l.452.

Reference(s)

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Marshak, A., A. Davis, W. Wiscombe, and R. Cahalan (1995), Radiative smoothing in fractal clouds, J. Geophys. Res., 100(D12), 26247, doi:10.1029/95JD02895.

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Wissmeier, U., R. Buras, and B. Mayer (2013), paNTICA: A fast 3D radiative transfer scheme to calculate surface solar irradiance for NWP and LES models, *J. Appl. Meteorol. Climatol.*, 52(8), 1698.