

Reply to Reviewers

Dear Editor and Reviewers,

Here below (in yellow) a one-to-one reply to all the suggestions and comments provided by the Reviewers. Again, we warmly would like to thank all of you for the detailed work provided which greatly helped improving the quality of our research. Best regards, Tiziano Maestri and co-Authors.

Reviewer #1 (B. Baum)

Here are some minor grammatical suggestions for the authors to consider:

We noticed that the Reviewer referred to line numbering in the latex-diff document. All suggestions are accepted.

Line 165: Suggest rewording the sentence beginning with “It is not infrequent the occurrence of...” to something like this: The occurrence of precipitating ice crystals from mixed-phase cloud layers is not infrequent.

Lines 332-333: as it will be shown —> as will be shown

Line 473: scarceness —> scarcity

Line 496: from MODIS sensor is showed Figure 10 —> from the MODIS sensors are shown in

Line 503: in right panel —> in the right panel

Lines 524-525: products provides —> products provide

Line 528: higher percentage —> a higher percentage

Line 532: which comprises —> that encompasses

Line 564: averagely larger — relatively larger

Line 565: dumping —> dampening

Line 637: benefits of the shortwave —> benefits from the shortwave

All suggestions are accepted and modifications applied.

Reviewer 2 (Xianglei Huang)

Suggestions for revision or reasons for rejection (will be published if the paper is accepted for final publication)

The authors have done a good job addressing my comments. The revised manuscript is much improved in terms of presentation. I commend the authors for the time and effort invested in making this manuscript more comprehensive and thorough. I only have two technical comments, and once they are addressed, I recommend acceptance of the manuscript.

1. If I have counted the number of spectra in Table 2 correctly, it ends up with 202. Section 4.1 says, "From this set, only 202 spectra are used for training the CIC algorithm" I assume this means that Section 3.1 (which is related to Table 2) uses the same 202 spectra for training. If so, I would like to suggest mentioning this in 3.1 such that readers will be aware that the same set of training spectra were used in both Sections 3.1 and 4.1.

Some text is added to better clarify this. The total number of TS spectra is reported in the table 2 caption note. In Section 4.1 a reference to Table 2 is added which should make clear that the spectra used in the TS are those reported in the Table. Another similar specification is provided at line 238 in Section 3.1.

2. Figure 10 in reply to my previous comments (acp-2021-97-AC1-supplement.pdf) is different from Figure 10 in the revised manuscript. The author should make sure to use the correct one in the final manuscript.

True. The final version of the figure is the one reported in the revised manuscript. The plot does not include the comparison with the MODIS MCD06COSP products since it is based on the combined used of visible and infrared channels. Our choice is also supported by the request of Reviewer #1 who suggested to avoid the usage of that specific MODIS product.