

Reactions to the comments of referee 3 (referee comments italicized and bold, our reaction comments are neither italicized nor bold).

The paper present a study on the applicability of a cloud screening method to nocturnal star photometry AOD data. Even if of great importance in the analysis of these kind of data, it is not clear to me if this method can be easily applied to climatological time series.

Not sure what to do about this comment in terms of changes to the text. In all phases of the revisions of the manuscript we tried to play down the "climatological" aspect, recognizing that what we were providing was a "preliminary (testbed) AOD climatology" and to underscore that the main contribution to the paper is to point out the real problem of unfiltered homogeneous clouds.

Another concern is that the language is too unformal at some points (e.g. at line 195 "Spatial comparisons between CALIOP and GC AODs were spotty at best" or at line 238 "A notable Ny-Ålesund star photometry feature was..").

We'll live with the "spotty" (it is in Merriam-Webster) and we don't really see what is wrong with the line 238 (line 239).

Comments

Line 295: the difference you cite is not generally positive in my opinion (2 are positive and 2 negative for Eurika and generally negative for Ny-Alesund).

There was a mistake in the selection of the data for the graph ($\langle \tau_{a, hom} \rangle$ was inadvertently plotted when it should have been $\langle \tau_a \rangle$ that was plotted). The graph was corrected and now the statement we made is coherent with the graph.

Appendix A: is not clear to me which is the need for this mathematical demonstration. Which is the physical sense?

While equations (A1) and (A2) of Appendix A are analogous to equation (1), the rest of the derivation is necessary to formally show how the homogeneous and inhomogeneous lidar (coarse mode) optical depths are partitioned above and below h_{LIC} . The idea of partitioning above and below h_{LIC} is critical to our argument about the importance of low altitude ice clouds and the derivation is needed to mathematically support that argument.

Minor comments

Line 187: check "starhotometry"

Fixed

Line 266: there is one "(" not necessary.

We could not find any unnecessary parenthesis

Line 278: should not be 'Appendix A'?

Yes : "Appendix B" replaced by "Appendix A" (line 279)