

General comment

The paper “CALIOP near-real-time backscatter products compared to EARLINET data”, by T.Grigas, M.Hervo, G.Gimmestad, H.Forrister, P.Schneider, J.Preißler, L.Tarrason, C.O'Dowd has been thoroughly revised based on the comments of two reviewers and two scientists expert in the domain. Although most of the comments have been properly addressed, the most crucial ones, the one raising doubts about the scientific relevance have not been entirely addressed. In my opinion there are mainly three points that have been only superficially answered:

1. The assimilation of CALIOP profiles in NWP
2. Error/uncertainty of Level 1.5 products
3. Is the improvement of 5% in R significant?

The authors responses to these three questions is elusive and does not address the above points.

Before getting into detail of the above points I'd like to comment the authors answer to questions 35 and 75. The authors have explained that the lidar ratios come from the climatological values of level 1.5 CALIOP data. Then the revised text is, in my opinion, even more confusing than before. I suggest to:

Pg 7 In 26-29, pg 28 In 1-6: replace the text with: “where β_{par} is the EARLINET particle backscatter coefficient and S_a is the particulate extinction-to-backscatter ratio, (commonly known as the LIDAR ratio). The LIDAR ratios have been extracted from the dataset of the aerosol types identified in the CALIOP Level 1.5. The reason why these values have not been taken directly from the EARLINET dataset is that only a limited number of LIDAR ratios were available for the coincident measurements. In fact, this number is significantly reduced by the fact that a LIDAR needs to be equipped with a Raman channel for the independent extinction profile measurements, and these measurements are normally available only during night-time because of low signal-to-noise ratio during daytime.”

Comment on point 1:

The authors have added a sentence in the abstract to justify the fact that the NWP assimilation objective is somehow missing in the study. But the way the abstract has been revised is not appropriate. It sounds like the authors were saying that they were motivated to provide the tools and recommendations how to assimilate CALIOP profiles into NWP, but then they just stopped and did something less challenging. Shall this manuscript be published it cannot be delivered with such a message in the abstract. I suggest that the authors provide a more detailed explanation in the introduction instead of the abstract if they feel like the information is really needed, otherwise that they simply describe what they have done and not what they would have liked to do but that they could not do.

Besides, the abstract remains poorly “attractive”. As highlighted in my first review I wonder whether a 5% improvement in the PBL correlation coefficient is the best achievement of this study.

Comment on point 2:

Regarding the uncertainty and the error evaluation of Level 1.5, as raised by Lucia Mona, nothing or very little has been done. Apart from equation 1 the error and the uncertainty of the Level 1.5 product has not been properly discussed in the manuscript.

Comments 37 and 79 were also aimed at a better definition of the error and possibly of a use of RMSE on top of the FoE.

Comment on point 3:

Unfortunately the authors have not directly answered to this point.

In conclusions:

I am still convinced that the manuscript should be improved especially trying and highlighting the recommendations that the authors can draw at the end of their analysis. This study about the evaluation of the CALIPSO Level 1.5 products is not groundbreaking, but it brings valuable information about the need to interpret the backscatter and extinction of tropospheric aerosol layers carefully especially when the atmosphere is stratified. My recommendations to the authors can be summarized as following:

- The abstract and the conclusions should still be improved, listing out all correlation coefficients in the abstract is not that interesting.
- Additional quantitative information about the Level 1.5 error and uncertainties should be added to the text.

Once these points will be addressed the manuscript could be of actual interest to the ground based and satellite LIDAR community, and somehow also to the NWP community.