Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC3
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Comment on amt-2022-205

Anonymous Referee #3

Referee comment on "First assessment of Aeolus Standard Correct Algorithm particle backscatter coefficient retrievals in the eastern Mediterranean" by Antonis Gkikas et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-205-RC3, 2022

Gkikas et al. compared the Aeolus L2A particle backscatter coefficient retrievals with ground-based lidar measurement in Greece. The authors showed Aeolus SCA and GRD backscatter profiles for 4 cases and statistic assessments for 46 collocated cases. It is not clear if the 4 cases are representative for the SCA backscatter coefficient product. For the statistic assessment, the authors showed that the SCA (SCA mid bin) cloud filtered backscatter profiles have better agreement with the GRD backscatter profile than the unfiltered profiles. The authors used AERONET, CAMS, MERRA-2 aerosol data to describe the aerosol situations for the 4 cases but not compared AOT from the auxiliary data with L2A. It may give readers a feeling that more auxiliary information than the Aeolus L2A data is used in the paper. The paper is well-written, good structure and lots of references. Some long sentences can be rewritten to make the paper easy to read.

Specific comments

Abstract

Line 27 Change ‘hydrometeors’ to clouds. I think hydrometeor is too broad here.

Please provide the L2A data version (Baseline) in the abstract, because there are different L2A versions available.

It would be nice to provide some numbers in the abstract.

Introduction

It is impressive that the authors have cited so many papers throughout the manuscript.

Line 285 ‘lat = 35.86 N, lon-23.31 E’.

The degree symbol is missing. Please check the texts with ‘lat=, lon = ‘ throughout the manuscript.

Line 307 ‘...at 354 and 532 nm…’

Is it 354 or 355 nm?

Sect. 5 collocation between Aeolus and ground-based lidars.

It is not clear how the Aeolus and ground-based lidar are matched in altitude bins. Could you explain it in the texts?

Sect. 6.1 results

Please explain why these 4 cases are selected. Are they the best cases?

Sect. 6.2

Lines 554 – 555. Please move this sentence to the earlier section. It is important to know the L2A data version.

Lines 576-577 '… the GRD profiles have been rescaled to match Aeolus vertical product resolution'

How is the rescaling performed?

How many Aeolus profiles are used in the statistic assessment? Later I saw it is in the figures.

Lines 672 -673.

Units are missing after the values.

Line 796

‘… and the EarthCARE derived AEOL-FF and …’

Change AEOL-FF to AEL-FM.