Dear Omar

We introduced the revisions to manuscript. Changes are marked with yellow.

Although the authors have addressed all questions and comments in their response to the referees, not all their responses to referee2 comments are reflected in the revised version of the manuscript.

1. The important issue of precluding the lidar+model retrieval results from being used to assess the accuracy of the model is not addressed in the revised manuscript.

Yes, lidar+model retrieval can not be used to asses the accuracy, so the model should assimilate the lidar measured (not retrieved) parameters only. Such assimilation is a subject of future efforts and is actually out of the scope of this paper.

In Conclusion we have added:

"The motivation for this work is to show that the aerosol transport model has sufficient skill to serve as an additional constraint in inversion of $3\beta+2\alpha$ lidar observations and development of such constrained inversion is in progress. Assimilation of lidar measured parameters in the model is the subject of our future efforts."

2. The abstract should mention the reported ranges of agreement for the reported episodes.

Added to the abstract:

"For the episode reported, the mean value of difference between the measured and modeled extinction coefficients at 355 nm is 0.01 km^{-1} with standard deviation of 0.042 km^{-1}."

3. It is not clear if responses to referee 2 comments 6 and 7 are reflected in the revised version of the manuscript.

Corresponding comments are added on p.5, ln.8-11 of revised manuscript.

4. Please indicate if referee2's points in comments 11, 14, 16, 17 and19 are addressed in the revised paper.

Comment 11 was added on p.5, ln.27-30

Comment 14. We mention in the manuscript that backscattering depends on the particle shape, size distribution and imaginary part of refractive index. We didn't discuss separately the effects of the particle shape (and hence the depolarization coefficient) in the model on backscattering coefficient. We are not ready for it yet, and it is out of the scope of this manuscript.

Comment 16. Added p.17, ln.1-4.

Comment 17. Uncertainties for retrievals with spheres are added to fig.18 in revised manuscript.

Comment 19. We have added several words on p.16 ln.26. Actually we don't choose between spheres and spheroids. We show both solutions and say that "true" is in between.