Reply to editor

Dear Prof. Schmidt,

We thank you for your comments. We have addressed your comments in the manuscript, and we believe the manuscript is clearer in terms of these two questions. Below is a response to each of your comments. Your original comments are in black, and our replies are in blue.

1) The explanation regarding the insensitivity to BRDF (reviewer 3) is somewhat short. Can you provide a little more information and preliminary explanation? It is understood that this will be studied in more detail later, of course.

We added some more information about the EPIC observation geometry to explain the insensitivity to BRDF. Note, EPIC is parked at L-1 point and its viewing geometry is nearly constant (close to the 180 degree backscattering). Hence, once the surface reflectance database is well defined at the backscattering direction for the aerosol retrieval at one time, they are suitable to be used for other times. Now the text in section 3.3 becomes:

"It should be noted that the effect of non-Lambertian surface reflection may bias the ALH retrieval, because uncertainty in surface reflectance can substantially affect the ALH retrieval accuracy (see Appendix A). Nevertheless, this type of impact could be limited as EPIC's earth observations are confined within an almost constant viewing geometry with scattering angles between 165° – 178°. Further studies are needed to examine the detailed impacts, which will be one of our future efforts."

2) It makes sense that the retrieval should be rather insensitive to SSA, but could you add a somewhat physical explanation, if possible?

We added more explanation for the sensitivity to SSA in the Appendix, which reads:

“DAOS ratios are sensitive to SSA to some degree, especially for large AOD values (Figure A1e). However, the sensitivity to SSA is much less overwhelmed than the sensitivity to AOD and surface reflectance because the reflectance at TOA depends more on surface reflectance and AOD (than SSA in relative sense). As a result, SSA only has marginal impact to the ALH retrieval error (green curves in Figure A2c-d), which is consistent with findings by Sanders et al. (2015).”