

Response to Editor's comment

The manuscript has improved substantially in terms of form and clarity. I consider it ready for publication after addressign the issue below.

The authors report that "During the revision of this manuscript, the operational algorithm was changed to the surface reflectance estimation method. The GEMS AEH algorithm is now used to the same surface reflectance data as L2AERAOD. Therefore, the revised manuscript does not mention the effect of discrepancy of surface reflectance." Please clarify whether the data presented have been generated with the updated algorithm (I would not expect so since the Figures 7-12 have not been updated with the latest revision). If the algorithm used for producing the data shown features this discrepancy in input surface reflectance, the discussion of its impact needs to be re-introduced int he manuscript.

Ans) Thank you for the comment about the result change issue due to version change of GEMS AEH algorithm. We agreed with the editor's concern. As mentioned in the previous version of manuscript, our validation results were used the AEH based on the minimum Lambertian surface reflectance data from the L2AERAOD because of the limitation of using the GEMS L2SFC (operational surface reflectance product). For this reason, previous versions of manuscript wrote the detailed explanation of discrepancy of surface reflectance data between operational result and paper version result.

During the revision process, the GEMS AEH algorithm changed from L2SFC to the minimum Lambertian surface reflectance from the L2AERAOD for surface reflectance identification. Therefore, the surface reflectance for the present version of operational AEH algorithm is coincident with those of the paper version. For this reason, our validation results (from Figure 7 to Figure 17) do not need to change. During the revision process, we also double-checked this issue, and the updated operational algorithm is the same as the paper version algorithm.

In addition, we also revised some typo-errors in the revised manuscript.