

Interactive comment on “Retrieval of aerosols over Asia from the Advanced Himawari Imager: Expansion of temporal coverage of the global Dark Target aerosol product” by Pawan Gupta et al.

Anonymous Referee #1

Received and published: 9 April 2019

This paper presents the application of the existing DT algorithm for aerosol retrieval to the Advanced Himawari Imager. The main advantage to retrieve aerosol from such an instrument is the possibility to observe the daily cycle of the aerosol load. The results presented in the paper are promising, although more effort should be spent to overcome the issues discussed in the manuscript about the missing bands and a larger data sample should be included in the validation. The paper is clear and well presented.

Here are some general comments:

L271 You often mention cloud contamination issues, saying that they are expected

C1

in the results, but never show an example of it. It might be worth it to discuss this a bit more in depth, to quantify the impact of cloud contamination. Maybe a simple timeseries showing both your retrieval and AERONET (without any correlation) could do the job.

L283 Please specify what kind of statistical filtering is performed on the data.

L291 Please explain how the AOD at 0.55 μ m is derived.

Figure 2: You show here 3 different situations: DT biased high, biased low and unbiased against AERONET. Could you give an interpretation of these results? What can cause this different behavior? Also, a general overestimation for low AOT is visible in Panel A of Figure 2. You should discuss where this overestimation comes from. One explanation could be the different spatial scale and the impact of residual cloud contamination at the different scale (Henderson and Chylek, 2005, Chand et al., 2012). More technical details about Figure 2 (and 4): why not to use the percentage of points satisfying the GCOS requirements instead of the EE%? The readers should be more familiar with the GCOS requirement and this will also allow an easier comparison of your performance with the ones of similar algorithms. Finally, for consistency, could you please show the regression line in Panel A of both Figure 2 and 4?

Figure 3: The figure shows that the distribution of validation statistics varies from station to station. Could you please discuss possible reasons why it happens? Do you think it is due to the land cover type and the surface reflectance parametrization? Or the aerosol type?

Some minor corrections:

L168 In this study use the full disk data is used

L271 Because alternative methods have not been developed for masking clouds, and the alternative method for identifying sediments has not been vetted to the same extent as the original MODIS DT masking techniques. Therefore, the possibility of contami-

C2

nation from these features affecting the aerosol retrievals is higher than expectations based on the MODIS heritage.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-65, 2019.