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Discussions

Interactive comment on "Screening for Snow/Snowmelt in SNPP VIIRS Aerosol Optical Depth Algorithm" by Jingfeng Huang et al.

Anonymous Referee #2

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This paper presents a modified NDSI-based snow detection scheme, which has been applied to the operational NOAA VIIRS IDPS and EPS aerosol algorithms. The proposed scheme effectively mitigated the snow contamination in AOD product by more accurately filter out pixels containing melting snow over high latitude regions. This is achieved by combining NDSI with various tests, such as brightness temperature, spatial variability, and spatial adjacency tests. Since snow contamination in the retrieval pixel even small amount could potentially lead to a significant high bias in AOD, it is important to implement more rigorous snow detection schemes in the aerosol algorithms and examine the impacts. The manuscript is well written and easy to follow. I believe that addressing the following comments would improve the quality of the paper further.

General comments 1. The proposed snow detection scheme consists of several steps.

I would recommend to extend Figure 2 and include AOD plots at every step, so that the readers can easily understand the impact of each step. The plot should probably be zoomed in more to better show the details. Plots of the test variables, i.e., NDSI, BT, and spatial variability, would help as well.

2. One can assume from Figure 4 that the proposed scheme results in some false alarm (snow detection in low latitudes, and low AOD in some snow-contaminated pixels). I would recommend to discuss this together with potential future work to further refine the scheme, as I think retaining good pixels is as important as removing bad pixels.

3. In Figure 6, I wonder if the three data points at AERONET AOD of ∼0.05 and VIIRS AOD of ∼0.2 are retrieval-related or snow-related.

Specific comments I don't find further specific comments other than the other reviewers'.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-137, 2018.