

Interactive comment on “The influence of dust optical properties on the colour of simulated MSG-SEVIRI Desert Dust imagery” by Jamie R. Banks et al.

Anonymous Referee #1

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General comments:

Overall this is a comprehensive well written examination of how various dust aerosol properties affect long-wavelength IR (LWIR) bands that SEVIRI can measure.

When reading the title I had the impression the paper was going to discuss visible light imagery since these wavelengths actually produce a perception of color. Perhaps using the term "infrared color" or other wording to indicate infrared wavelengths are the main focus, given that "false" color is being used.

Other specific items:

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Page 4 line 2: to clarify, the B beam is just a scaled tb10.8 value while the R and G beams use actual differences between channels.

Page 4 line 11: were only cases chosen where the blue beam equals 1, or were the values normalized somehow?

Page 4 lines 20-30: Would it be possible to label locations of various dust types within figure 8 or another figure?

Page 10 line 27: Does the particle aspect ratio also affect the backscatter fraction, by enhancing the phase function as we approach 180 degrees scattering angle? This does happen at visible wavelengths so I wonder if this also applies with the IR?

Page 11 line 27: Wording could be "It is also important"

Page 18 line 27: With the mention of needed 3-4 more orders of magnitude of coarse dust, is this mainly due to the smaller mass concentration, smaller area to volume ratio or some other factors? It seems the scattering efficient Q should be high enough for coarse particles.

Conclusions:

A good summary and I'm happy to see a mention of cooler elevated dust, and the moisture hiding of dust. Is it possible that consideration of other channels in the shorter IR and visible wavelengths would further help to constrain aerosol properties with satellite imagery? There are papers that talk about both visible and IR that might be considered as references such as this one: Correlated IR spectroscopy and visible light scattering measurements of mineral dust aerosol. Perhaps this can also be highlighted as future work?

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2010JD014389>

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-48>, 2018.

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