

## ***Interactive comment on “Retrieval of desert dust aerosol vertical profiles from IASI measurements in the TIR atmospheric window” by S. Vandenbussche et al.***

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This paper provides an interesting look at a method for the retrieval of dust aerosol from thermal infrared spectra. Although the algorithm depends on a large number of assumptions and auxiliary datasets, the resulting dust optical depth and height information agrees reasonably well with other observations.

Some indication of the expected uncertainties or contribution functions would be useful to evaluate the information content in these results.

The paper often talks about vertical profiles of dust being retrieved, but with only 1.5

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pieces of independent information it is more of an effective height than a true "profile".

Given all the necessary assumptions, the retrieval appears far more reliable over ocean than over land. This is to be expected, perhaps. Is all the "white space" in Figure 6 and 7 inside the two circles failed retrievals or spectra where no retrieval was attempted? Perhaps some indication could be given for where retrievals were not attempted because of the data filtering process.

In Figure 6, while the mean altitude of dust over the ocean shows a well-defined systematic trend and seems quite believable, over the land there are pixels with altitude greater than 4 km and less than 1 km juxtaposed next to each other. This looks like noise or poorly-converged retrievals. Do the authors believe these small-scale variations in dust aerosol height?

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