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Atmospheric Measurement Techniques Discussions

Interactive comment on "Remote sensing of cloud top pressure/height from SEVIRI: analysis of ten current retrieval algorithms" *by* U. Hamann et al.

Anonymous Referee #2

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General comments

The paper presents the analysis of ten algorithms operating on small set of TOA radiances measured by SEVIRI. The paper represents the first assessment of its own, within the CREW activity. I read it with pleasure and I found the exposition quite clear, even for a not native english speaker as I am. The paper hasn't great pitfalls and is clearly worth publication. There are however some minor issues, which have to be clarified/addressed, that will improve readability and scientific information content.

Specific comments

Sect.2 "Datasets and methods". Here the instrumentation and the cloud retrieval methods are introduced. Since we are discussing a quite fine-grained instrument, whose

imagery is mainly centered on the african continent, where dust and biomass particles are present, I think that a couple of paragraphs must be added about discrimination of aerosols from clouds. It's clear that for the validation exercise the cloud/aerosol mask of CALIOP can be used (is it really used for discrimination?) but this problematic is only hastily mentioned twice in the paper (p.416 l.17 and p.436 l.1) without any further consideration.

p.412, l.18: Is it still true that the emissivity among the SEVIRI channels (10.8 micron throughout 13.4 micron) is constant/similar? And if not, could you provide quantification?

p.417 l.22: in Fig.3a it is difficult to distinguish which line belongs to the respective algorithm. This is a common problem for all ensuing Figures. I coudn't come up myself with a smarter visualization, so perhaps it's better not to redo any Figure at all but to insert here a new plot instead. This plot shall cluster the algorithms after the approach for the solution of the forward problem (radiance fitting, optimal estimation and radiance ratioing). This is informative, because the authors state that "It is also written that differences among the algorithms can be traced back to different algorithm characteristics."

p.425 l.6 and 7: "The high occurrence of optically thin clouds in the boundary layers detected by SEVIRI can partly be caused by interpretation of broken clouds as thin clouds." Is this true for all algorithms?

p.430 l.10: As stated by the authors, "many algorithms" are affected by little sensitivity to thin clouds. This means that some (but not all) algorithms may perform differently than others. Could you please be more specific on this issue and expand the discussion, with a similar fashion and depth you devote to the misfits arising from assumed temperature inversions of Sect.4.2.4?

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 401, 2014.