

Interactive comment on “Neural network cloud top pressure and height for MODIS” by Nina Håkansson et al.

Anonymous Referee #1

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Thanks for the explanation for not including the bias and SDD. This is precisely the kind of discussion that belongs in the paper. Without this explanation and discussion, it would appear to many readers that something is being hidden by the authors.

The obvious question to most interested parties, particularly those who are potential users of the data, is, "Is the cloud height retrieved with this method, on average, in the right location? If not, how far away from the right altitude is it?" That is essentially the question both reviewers have asked. If I am assimilating or verifying a model output, I will want to put the cloud in the correct layer. An MAE of 500 m can just as easily be produced by all positive or all negative differences and thus I might expect to be within 500 m of the correct height on average, but I will not know if it is plus or minus 500 or if I am always biased high or low. The distributions in the current figures help but are

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not quantitative. If I look at other cloud height data sources and see that they tell me whether I should expect to be too low or too high on average, I might be more inclined to use one of their datasets. For example, Hamann et al. (AMT, 2014) summarized their differences in bias, stdv and rmsd. Straightforward. It is not the whole story as argued in the response, but an important part. and one most people can relate to. The reader is not well served when obvious statistics are excluded. An explanation for why the bias and SDD are not included has been provided to the reviewers, but not to the readers. There is a lot of good discussion and information in your explanation about the retrievals that are important to understand. For example, the breakdown of biases according to cloud height is very helpful. The differences in bias between CPR and CALIPSO follows from some of my other comments. I find the paper unacceptable without such basic statistics. I think that the paper should include all of it: bias, SDD, Skew, Median, and MAE. The discussion then should be directed at explaining what the best measure should be and why one is better than the other. Part of that is already done in the supplement.

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