**Atmospheric
Measurement
Techniques
Discussions**

Interactive comment on "On the optimal method for evaluating cloud products from passive satellite imagery using CALIPSO-CALIOP data: example investigating the CM SAF CLARA-A1 dataset" *by* K.-G. Karlsson and E. Johansson

Anonymous Referee #1

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I thank K.-G. Karlsson and E. Johansson for the clarification of my issues.

1. As there is not sufficient guidance in the literature, the discussion of the validation methods like hit rate and Kuipers score is probably useful and I agree to keep the discussion of the different quality measurements.

2. I think, I suggested to test the sensitivity of the results for the thresholds 0.5% and 2% (not 0.2%) meaning double and half of your suggested threshold. It would be great, if you can write a comment in the article that explains in a scientific way, what

"too far away from where the real action" means. Another possibility is to check, that the results are qualitativly the same, as another threshold close to the chosen is used. I understand that this is your own definition, but results should not depend on small changes of this threshold (see also point 6).

3. I think it adds information to the article to report this additional results.

4. Your answer make it more clear to me, that you also remove clouds from the 5km product. Looking at your description of your post-processing steps (page 1103 line 9ff) it was not clear to me, that you also remove clouds from the 5km product. Should it be included in this description like step 2a) set 5km to cloudy, if CFC'>50% and 2b) set 5km to clear, if CFC'<50%?

5. I am OK, if the authors want to stay with their definition of FAR_cloudy/clear. It would be great, if you can check, if the formulation of the FAR are well understandable for everyone. E.g. maybe it is more clear to write "FAR quantity for clear AVHRR condition" instead of "FAR quantity for clear condition" .

I am sorry, maybe my comment not accurate enough formulated. I do not question, that FAR_cloudy decrease with decreasing optical depth. The point I wanted to make here is, that in the text (Page 1112, line 10ff) you write: "the corresponding decrease of the FAR quantity for clear conditions in Fig. 8 shows...". To me it was not clear if you mean the decrease of FAR_cloudy with decreasing optical depth or the decrease of FAR_clear with increasing optical depth.

6. This was only a small point. And I agree that it would be to much work to change all the plots. My point here was, that the derivation of FAR and POD with respect to optical depth in closer to your final defintion of your quality criteria (d POD_cloud/d optical depth + d FAR_clear / d optical depth) < 1%. In a plot of (d POD_cloud/d optical depth + d FAR_clear / d optical depth) as function of optical depth it would be possible to mark your 1% limit and it should also become obvious, if your results are robust against small changes of the 1% threshold.

7. Your response (the usage of the 3.7mue channel) completely answers my question. Thanks. That was more a personal question, no changes in the article are needed here.

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