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Atmospheric Chemistry and Physics Discussions

Interactive comment on "CLARA-A1: the CM SAF cloud, albedo and radiation dataset from 28 yr of global AVHRR data" *by* K.-G. Karlsson et al.

K.-G. Karlsson et al.

karl-goran.karlsson@smhi.se

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We will try here to respond to referee suggestions 1-5:

1. Use fewer acronyms.

Any discussion of topics related to the satellite-based scientific field is indeed full of acronyms and we often get comments about this. We are sorry that the reviewer thinks we use too many acronyms but in practice it is not easy to work in this field without using (or being forced to use) a lot of acronymns. A compromise in this particular case would be to remove the acronym CM SAF from the title. However, the name of the dataset (CLARA-A1) must be retained - otherwise the description would be unclear and not providing information on exactly what dataset we are talking about. For the

remainder of the manuscript, we will reconsider if there are cases when we can avoid using acronyms. If not, we think the reader should be able to follow the text by use of the Acronym list in Table 4.

2. Discussions are at times too qualitative for this manuscript.

We have to repeat that this manuscript is an overview description of a new dataset with quite a long list of components or parameters. It is impossible for us to dwell into a lot of details regarding individual components of the dataset. The manuscript is already very long. What we will do is to evaluate if some of the aspects that were specifically mentioned can be improved. In particular, we now consider to add some difference plots from the more extensive intercomparison with other cloud retrievals on the global scale (e.g., ISCCP, MODIS, PATMOS-X and CALIPSO-ST in Figure 3). However, to also provide e.g. spatial correlation plots will be to go too far if considering that there are so many different datasets involved (should we show spatial correlations for all of them? And what about all other products than cloud fraction?). Thus, apart from the mentioned extension, we are probably forced to refer to other complementary studies and papers on this dataset that are already published or in the pipeline to be published. There is already one such paper published in ACPD on the CLARA-A1 surface albedo component (Riihelä et al., 2013) and another one on the detailed examination of some of the cloud products (Karlsson and Johansson, 2013, AMTD).

3. When large differences are found, the authors do not provide helpful discussions/explanations. One example is on pages 946 and 947 when the LWP retrievals are discussed. LWP differs up to 20% between different products while the authors didn't provide good explanation this. Also, the numbers on line 4-5 of page 947 come out without any mentioning of how they are calculated.

We will consider if we can improve descriptions on those aspects. In general we can reply that we do not always have good explanations for observed differences, and we want to avoid wild speculations. Specifically, LWP from CLARA-A1 for the afternoon

satellites is found to be 20% higher than MODIS, and there is no obvious explanation for this. More detailed investigations are necessary to understand it. Nevertheless, we have noted that for the morning satellites (i.e. N17 with 1.6 micron channel) closer agreement is found. A more philosophical question is whether a 20% difference of LWP is exceptionally large or not. We do not think it is alarming in any sense when considering the different approaches (involving very different assumptions) and the true lack of very good validation references over such a long period. Regarding the numbers on line 4-5 of page 947, these are the current results from the performed validation studies made so far within the EUMETSAT climate monitoring satellite application facility project. These results are available in internal validation reports, publicly available from the CM SAF web user interface to the products. Normally we try to describe these validation studies also in peer-reviewed papers but the amount of details here is large and cannot always be transferred to the format suitable for scientific journals.

4. As a technical document for a data product, some of the descriptions on the methodology and assumptions could be better. In the a few pages that actually describe the product the authors go through a few products with relatively light reference to the actual algorithms used in this and other data products. The paper will be better if this aspect of presentation is improved.

We will go through product and algorithm descriptions again and consider possible improvements.

5. Less discussion and speculations please. The lengthy discussions after the actual presentation of the data are overblown in my opinion. Many of these should be either trimmed out or severely reduced in length.

We agree that the discussion part of the paper could be shorter and more concise. We will remove some parts and move other parts back to the individual product discussion sections(which is also to some extent in line with comment 2 asking for more elaborated discussion of the products).

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 935, 2013.