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Discussions

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Interactive comment on "CLARA-A2: The second edition of the CM SAF cloud and radiation data record from 34 years of global AVHRR data" *by* Karl-Göran Karlsson et al.

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General Comments

The article is generally well written and organized. The subject matter represents a great deal of work and a significant contribution to the cloud climate community. That said there are ways I think the article could be improved. There is little discussion and few figures comparing CLARA-A1 to CLARA-A2, which I think makes it more difficult to understand the location and magnitude of improvements. I also think some of the changes could be described in more detail. Specific comments are below.

Specific Comments

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Discussion paper

Section 4 There are lists of specific tasks performed for GAC data pre-processing, histogram, and albedo products. The cloud masking changes are less clear. A list of specific changes might help this. For example, P5 L22 states "Cloud detection during Polar day conditions over snow- and ice-covered surfaces has been optimized, and falsely-detected clouds during Polar night conditions have been largely removed." How was this done? It might also help to show specific examples – a comparison scene of cloud detection over semi-arid regions for CLARA-A1 and CLARA-A2 would be one possibility.

Similarly there is little description of the changes to CTO retrieval. Would it be possible to include a little more detail as to what modifications were made to allow successful retrievals to jump from 70% to 97%?

There is not a lot of discussion of how the changes compare to CLARA-A1 (other than Figure 2). I think it would be helpful to include CLARA-A1 data in a few of the comparison figures against PATMOS-x and MODIS (and maybe have a Hitrate panel for CLARA-A1 in Figure 3). Figures 7, 9 and 11 seem like good candidates for this.

Section 7 The comparison against Norris et al. 2016 seems superficial, even by the preliminary standard defined in the manuscript. It is difficult to come to any conclusions based on the single figure 16. A linear regression to remove the ENSO signal might shed some light on this.

Figures 3 and 4 – the red-blue colorbar is usually used for temperature or something with positive and negative values. Also it is a little difficult to differentiate the value of Hitrate for higher values.

P4 – Are observations under twilight conditions excluded for all products, or just for the monthly averages?

P6 L7 – I don't understand this explanation. Is there perhaps a citation showing that the dry sub-tropical regions with decreased Hitrate are areas where sub-pixel scale

clouds frequently occur?

Figure 12 – Hard to differentiate between blue and black dots

Technical Corrections

P2 L10 – 'lined out' should be 'outlined' P2 L18 – 'already' is unnecessary and can be removed P2 L37 – the grammar and use of semicolon in this sentence is odd – consider rewording P3 L1 – Sentence beginning with "Additionally, orbital drift..." is awkward. Consider rewording P3 L9 – incorrect usage of the word 'spurious' P5 L13 "is using" should be "uses" P5 L26 – Should be "spurious" or "false" cloud, not both.