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Atmospheric Chemistry and Physics Discussions

Interactive comment on "CLAAS: the CM SAF cloud property dataset using SEVIRI" *by* M. Stengel et al.

C. Carbajal Henken (Referee)

cintia.carbajal@wew.fu-berlin.de

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General
The paper presents a new dataset derived from long-term satellite measurements that can be used for analysis of spatial and temporal variability of cloud properties. Overall, it is well structured and includes references where necessary. The instrument is introduced, as well as the algorithms used to derive the cloud properties. The figures demonstrate the products available in the dataset and also serve to demonstrate possible applications. Furthermore, efforts have been taken to highlight the main advantage of the instrument compared to other satellite passive imagers, namely the high temporal resolution. Therefore, it serves well as a reference paper for the new dataset and is

within the scope of the journal.

Questions/Suggestions
Several issues need some more clarification before final publishing.

Section 3.1 MSGv2010
Fractional clouds means in this case the cloud contaminated pixels? (p26459 l18)

In 16x16 SEVIRI pixels region different types of clouds likely exist. How is this translated to RTTOV input where one has to use choose a cloud type and cloud water content per atmospheric layer for an overcast simulation? (p26459 l19)

Section 3.2 CPP
As a user I would be interested in how much percent of the pixels actually get a climatological value for REFF (and therefore also included in LWP/IWP). Since REFF is not one of the cloud products provided, is there a way to see whether a climatological value has been used or REFF has been retrieved using the LUTs? (p26460 l16)

How is the 3% uncertainty in the VIS/NIR reflectances justified? Are forward model errors quantified and propagated? (p26460 l25)

Section 3
Could mention the ranges within that the cloud properties are retrieved, for example put them in a table. The choice of allowed ranges can have an impact on computed means etc.

Section 4.1 Pixel-based products
From figure 2 it looks as if CTP is also derived for cloud-contaminated pixels (P11L24), although in the text it says that the CTP is derived for pixels characterized as cloudy. In Section 3 (p26458 l11) it said that COT is derived for pixels assigned as cloud filled. Does this include cloud-contaminated or not? Please clarify.

Section 4.2 Daily and monthly means
For CTP an alternative averaging in log-space is done. Can also be considered for

COT, why was this not done? (p26462 l2)

4.3 Monthly mean diurnal cycle
What kind of retrieval artefacts? Is this reflected in uncertainty estimates of L2 products? (p26464 l10)

Section 4
Only one time there is mention of uncertainty estimates, namely for the CPP products. Are they also provided next to the pixel-based products? Is the uncertainty taken into account when making the higher level products? If so, how is this done?

Technical corrections
an → a (p26454 l19)
vertical → vertically (p26458 l11)
additional → additionally (p26464 l19)
clouds → cloud (p26465 l12)
sun → solar (p26466 l24)

warmer CTP does not make sense (p26459 l13)

Rephrase "This investigation indicates that the first two moments are often not enough to sufficiently characterize the cloud variability similarly good for all applications "→ " E.g. "This investigation indicates that the first two moments are often not sufficient for all applications to characterize the cloud variability." (p26468 l18)

Fig 6, panel c is named b. It says absolute number of occurrence and in the text it says relative number of occurrence.

Indicate in Figure 8 that for CFC and CTP also the +12 hour values where included as it says in the text (p26469 l16)

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