

Authors' response to Anonymous Referee #2

Referee comment:

1. The presentation language is not clear and simple as required commonly by scientific papers, such as "Satellite-based datasets of geophysical variables evolve periodically by revisiting and maturing two essential aspects: the underlying radiance records and the retrieval systems applied. The first aspect is usually addressed by tracking down and collecting historic and new satellite recordings, by characterizing the accuracy and stability of the full measurement record, and by applying new inter-calibration backwards through the entire record whenever new satellite missions provide better references. The second aspect is facilitated by: (1) continuously growing computer capabilities enabling the application of more advanced (and more computationally expensive) retrieval systems and the utilization of additional or more frequent auxiliary data which often undergo regular updates themselves, and (2) retrieval improvements which are often triggered when new satellite missions offer more accurate reference observations against which the retrieval systems can be validated." Is this the straightforward style of scientific presentation?

Author's response:

Thank you for pointing this out. We have shortened and simplified this paragraph.

Author's changes to the manuscript:

The paragraph now reads: "Satellite-based datasets of geophysical variables are crucial for climate research as they represent observations of the Earth's climate system, which can be used for both the analysis of the climate and its variability as well as guidance for atmospheric model developments. These datasets evolve periodically by mainly two activities: (1) Extending and improving the underlying radiance record by adding new satellite recordings and applying new inter-calibration to the entire record. (2) The development and application of more advanced retrieval systems and the utilization of additional or more frequent auxiliary data which often undergo regular updates themselves."

Referee comment:

2. Unnecessary statements exist across the text, such as "AVHRR is a passive imaging sensor, where the source of measured radiation is not emitted by the instrument. Instead, the upwards reflected solar and emitted thermal radiation is measured at the top of the atmosphere (TOA). This is done in abutting pixels that assemble a seamless image." Are these not known by every scientist in this research field?

Author's response:

We agree, these statements are known to most experts in the remote sensing field. However, this paper presents the datasets that will also be used by users from other research fields and we find it meaningful to provide some basic information about the sensors that have been used to generate the datasets presented as this information is crucial for understanding all strengths and weaknesses.

Author's changes to the manuscript:

No changes.

Referee comment:

3. Abstract is not well written, must be seriously revised to make "what's new" very outstanding.

Author's response:

Most important aspects were already covered in the last sentence of the abstract. However, we revised this to make the new things clearer.

Author's changes to the manuscript:

Last sentence of the abstract was modified to: "In particular the ensured spectral consistency and the rigorous uncertainty propagation through all processing levels can be considered as new features of the Cloud_cci datasets compared to existing datasets. In addition, the consistency among the individual datasets allows for a potential combination of them as well as facilitates studies on the impact of temporal sampling and spatial resolution on cloud climatologies."

Referee comment:

4. The whole manuscript is not well organized. It looks like a loose technical report, but not a scientific paper.

Author's response:

We agree that our manuscript contains many scientific and technical details. In particular by including the latter we cannot entirely avoid similarities to a technical report. However, we believe that the content of our manuscript, and the way it is presented is in line with ESSD policy and typical ESSD papers.

Author's changes to the manuscript:

No changes.