Interactive comment on "Cloud property datasets retrieved from AVHRR, MODIS, AATSR and MERIS in the framework of the Cloud_cci project" *by* Martin Stengel et al.

Anonymous Referee #2

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This manuscript reports new cloud property datasets Cloud_cci products based on measurements from the passive imaging satellite sensors AVHRR, MODIS, ATSR2, AATSR and MERIS. The authors developed two retrieval systems that include components for cloud detection and cloud typing followed by cloud property retrievals based on the optimal estimation (OE) technique, to simultaneously retrieve cloud-top pressure, cloud particle effective radius and cloud optical thickness using measurements at 5 visible, near-infrared and thermal infrared wavelengths, which ensures spectral consistency. The retrieved cloud properties are further processed to derive cloud-top height, cloud-top temperature, cloud liquid water path, cloud ice water path and spectral cloud albedo. These developments are useful for cloud and climate studies. The

spectral consistency of retrievals is especially important for deriving real physical properties of clouds from satellite data. These datasets can be useful for the research communities, so this reviewer recommends this manuscript be published. However, the presentation quality of this manuscript has not met the journal requirement and thus need significant improvement.

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?

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?

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

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

but not a scientific paper.

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