Review: "A high-level cloud detection method utilizing the GOSAT TANSO–FTS water vapor saturated band"

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General vote

Acceptable after minor revision

Referees synopsis

This manuscript presents a method to retrieve high-level clouds from measurements of the TANSO-FTS instrument onboard GOSAT. The presented approach is able to detect optical thin clouds in high altitudes and shows good agreement with CALIOP cloud classification data.

The study describes the retrieval method in detail and despite some weaknesses in the English language and syntax, the reader is able to understand the approach. It might be useful to have a high-quality data record for high-level clouds, but I think the evaluation approach against CALIOP has some deficiencies, which should be improved before publication

Major review points

1. The criterion for co-locations of TANSO-FTS and CALIOP is a distance within 100 km. I understand that is difficult to get enough co-locations for just one year if you use a smaller distance, but for a distance of 100 km (or even 400 km as in Fig. 8) a match could be pure random. How do you explain a matching ration of nearly 70 % for a distance of 400 km (Fig. 8)? In my point of view a meaningful evaluation is done for co-locations within the distance of half a grid point and a time of five minutes. What is the reason to use this distance? The agreement with CALIOP looks quite good for distances of 25 km. Why don't you use just a longer period for comparison with a much smaller distance for co-locations?
2. The result from the case study comparison with CALIOP is that TANSO-FTS has a higher revisit time. Could you please quantify things like "was clearer" or "was larger" in more detail?
3. In parts of the manuscript it is mentioned that there is already a retrieval for high clouds from GOSAT. It would be nice to have a comparison against comparable products.
   At the moment it is hard for the reader to classify the quality of this data record compared to existing products, such as the MODIS cloud product, CLARA-A2 or HIRS cloud data from University Wisconsin.

Minor review points

4. The English has to be improved by a native speaker. Especially the usage of the plural.
5. Will the data be freely available? If yes, in which format, temporal and spatial resolution? What are the future plans for this data record?