

## ***Interactive comment on “FRESCO+: an improved O<sub>2</sub> A-band cloud retrieval algorithm for tropospheric trace gas retrievals” by P. Wang et al.***

**P. Wang et al.**

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The authors would like to thank referee 1 for the comments and suggestions. We have included the comparison of FRESCO and ARM cloud height in the revised paper. Comparing FRESCO+, FRESCO and ARM data, FRESCO+ cloud heights are lower than FRESCO, which is as expected. The FRESCO+ cloud heights have significant improvement for single layer low clouds. FRESCO cloud height are often higher than the cloud top heights for single layer low clouds, which is due to lack of scattering in the FRESCO algorithm. The comparison of FRESCO and ARM cloud height is shown in Fig. 7(c and d). We have also changed Fig. 7(a) to effective cloud fraction ( $c_{\text{eff}}$ ) greater than 0.2. The original Fig. 7(a) was for  $c_{\text{eff}} > 0.1$  and Fig. 7(b) was for  $c_{\text{eff}} > 0.2$ , which was not consistent. We used  $c_{\text{eff}} > 0.1$  because of more data points, unfortunately we forgot to point it out in the caption.

We agree with the referee that the similar inter-comparison could apply to other algorithm and instruments. As the referee said, this is beyond the scope of this paper. We think this is a very interesting topic for the future work.

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