

Interactive comment on “Retrieval of the total precipitable water vapor and cloud liquid water path over ocean from the Feng-Yun 3D microwave temperature and humidity sounders” by Jun Yang et al.

Anonymous Referee #1

Received and published: 19 December 2019

The work presented in this article is interesting and the authors invested a lot of work to enable a retrieval of cloud liquid water path (CLW) and total precipitable water (TPW) from measurements of MWTS and MWHS aboard FY-3D.

However, although the title of the paper suggested a focus on the retrieval scheme and a thorough analysis and validation of the results, this has been just briefly touched in section 4. The authors are aiming to use existing algorithms to retrieve CLW and TPW, which have been originally developed for another instrument. It is not clear whether the algorithm coefficients have been adapted or newly trained. I have to assume that this is

C1

not the case because it is not presented in the paper and that the original algorithm has been used unchanged. I therefore do not see a substantial new concept or approach to derive CLW and TPW from sounder data.

The verification of the results is very limited. Basically, just two days of retrieved data from two different instruments are compared visually. Unfortunately, a thorough statistical analysis and validation of the results over a sufficient period of time is missing.

The authors concentrate on the simulation of two channels, which are not available on the two instruments but essentially needed to apply the selected algorithms. As these two channels are window channels, I do not expect that the surface emissivity characteristics of these window channels can be recovered from the sounding channels, as these do not see the surface. It is certainly possible to estimate parts of the atmospheric emission of the signal, because it is due to liquid water and water vapour. However, it would then be more appropriate to develop a new retrieval to directly derive CLW and TPW from the existing physical information in the given channel set. The additional step of estimating the surface channels is adding large uncertainties. This could be avoided by a direct retrieval.

Given these major general issues, I do not recommend to accept this paper for publication.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-447, 2019.

C2