

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2022-204

Anonymous Referee #2

Referee comment on "Assessing the consistency of satellite-derived upper tropospheric humidity measurements" by Lei Shi et al., Atmos. Meas. Tech. Discuss.,
<https://doi.org/10.5194/amt-2022-204-RC2>, 2022

Assessing the consistency of satellite-derived upper tropospheric humidity measurements
by Shi et al.

This study inter-compared the polar-orbiting satellite UTH datasets by including four participating datasets, two of which are new datasets and two of which have updated versions. Further authors have presented case studies for the El Niño period in terms of time series and spatial anomalies analysis, and the authors also try to conclude that during both El Niño and La Niña events, the values of the spatial anomalies in the infrared dataset appear smaller than those in microwave datasets and the spatial patterns of the four datasets are generally consistent over the deep tropics. This information is very informative but readers of the remote sensing community or users of these datasets might be interested to know about the quality of these datasets for their further utilization. It is suggested that include the quality of the datasets as per your results and also mention the finding of any systematic biases over different geographical regions in the manuscript. In that respect the present study has potential for publication after incorporation of the comments/suggestions as given below:

Comments:

The abstract is not informative enough.

The conclusion is not informative enough.

No discussion about insitu measurements as well as reanalysis data that provides UTH in the introduction section (e.g. Radiosonde, etc.).

The four datasets appear to be separated with two groups of similar UTH values. The values of CMSAF and FIDUCEO UTH are larger than the values of NCEI and UMIAMI UTH.

Why have authors taken the UMIAMI dataset as a reference for intercomparison? kindly add a magnitude of bias and also add some earlier analysis or findings with references.

Why did CMSAF show a negative anomaly during the year 2000 as compared to the other three datasets? Kindly explain.

Line160: adds some suitable references.

Why does the NCEI UTH trend underestimate higher magnitude over the Tibetan Plateau as compared to the other three datasets?

Line304 Over the Indian Ocean, decreased UTH centered over the equatorial central Indian Ocean is surrounded with increased UTH in all datasets.

Such types of features are not seen in the CMSAF data plot and inconsistent trends are seen in the CMSAF data plot (Fig8). kindly explain.