

Interactive comment on “Validation of brightness and physical temperature from two scanning microwave radiometers in the 60 GHz O₂-band using radiosonde measurements” by Francisco Navas-Guzmán et al.

Anonymous Referee #2

Received and published: 16 May 2016

Dear Editor and Authors

The paper presents an inter-comparison campaign of tropospheric temperature profiles measured by three different instruments at the same site. The instruments are:

The new temperature radiometer TEMPERA, operating at the low frequency flank of the oxygen band between 50 and 70 GHz developed at IAP.

The commercial available Humidity And Temperature PROfilers radiometer (HATPRO), RPG

C1

Radiosondes with in situ instruments

The paper is very interesting, well written and describe the potential of the new TEMPERA radiometer.

When the comments below are considered my opinion is that the paper fulfil the requirements for publication in “Atmospheric Measurement Techniques”

Except from the remarks from Anonymous Referee #1, that I agree with, I add the following comments.

In equation 1 (page 3/ line 24) the zenith angle is used but in the rest of the paper elevation angles are used to describe the vertical pointing. I suggest that equation 1 is reformulated to use elevation angle as well.

Glancing through the technical description of HATPRO at http://www.radiometer-physics.de/download/PDF/Radiometers/General_documents/Manuals/2015/RPG_MWR_ST It looks like some information about the HATPRO beam can be found on page 11

I think the “than” shall be excluded in the sentence “The temperature comparison between HATPRO and RS under clear conditions shows almost identical values in the lowest part (from ground to 3 km) than for all weather conditions” at page 14/ line 8-9.

I believe that the same line types are used in figure 8 as in figure 7 (dash-dotted for mean and solid for std) but this has to be clarified in figure 8 either in the caption or in the legend.

It is an interesting approach to simulate the brightness temperatures from the radiosonde data to be able to compare them with the measured brightness temperatures from the two radiometer systems. A comparison of the different temperature profiles from the three instruments is also presented. I would like the authors to expand upon the two different comparisons. Can for example the observed differences in the direct temperature comparison explain the differences in the comparison of the brightness temperatures?

C2

