Atmospheric
Measurement
Techniques
Discussions

Interactive comment on "Influence of changes in humidity on dry temperature in GPS RO climatologies" *by* J. Danzer et al.

Anonymous Referee #1

General comments

The authors investigate the influence of humidity changes on dry temperature climatologies from GPS radio occultation data. This is an important subject because humidity is expected to increase due to future climate change and water vapour changes could lead to misinterpretations of GPS radio occultation dry temperature trends.

For the calculation of differences between the dry and physical temperatures the authors use ECMWF and for trend analyses several CMIP5 models.

The paper is well structured and written with very clear results and conclusions. My recommendation is to publish the paper with minor revision.

Detailed comments and suggestions in the order of occurrence:

Page 5462, lines 12-13: How is the interpolation from ECMWF levels to a 200 m grid performed? Generally it is questionable to interpolate from coarse vertical resolution (ECMWF) to a much lower grid (200 m).

Page 5465, Eq. 6: How did the authors initialize the integral on the upper bound (infinity)?

Page 5471, lines 6ff: How did the authors calculate the trends and how is natural variability (QBO, ENSO, volcanic eruptions, solar cycle) considered? Please describe this point in more detail.

Page 5480, Fig. 1: Would be nice to see where the lines cross the surface? In contrast to most radio occultation measurements model data are available down to the surface.