

Atmos. Meas. Tech. Discuss., author comment AC2
<https://doi.org/10.5194/amt-2021-132-AC2>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Reply on RC1 (continuing)

Julien Totems et al.

Author comment on "Mitigation of bias sources for atmospheric temperature and humidity in the mobile Raman Weather and Aerosol Lidar (WALI)" by Julien Totems et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-132-AC2>, 2021

(This is the continuation of the first part of the reply, posted a bit too early by clicking submit at the wrong time)

In the table caption, we have added: "The grid points are located 8 km WNW of the lidar and 2 km S of the RS station respectively, 18.3 km apart, and almost all RS trajectories below 6 km altitude are contained within the same "pixel" of the ERA5 fields."

L667/668: It would be interesting to learn about potential reasons for these remaining differences, even if the authors cannot verify these in the context of this paper.

We propose the following text to complement the analysis, and better conclude our study:

"There is still a discrepancy with the mean difference of temperature however; it is not fully explained by the differences of temperature at the locations of the two profiles seen in ERA5. The model used to approximate the correction may be imperfect, and introduce small errors when the necessary correction is large and fast-varying. We aim to improve this in the future by a better estimation the overlap ratios horizontally, for instance using a large folding mirror instead of tilting the lidar, which induces varying mechanical constraints on the optics. This should greatly reduce the necessary correction function and the remaining error should be limited by the horizontal inhomogeneity of the atmospheric temperature over a few kilometers."

Technical comments / typos: **All these corrections have been made.**