

Atmos. Meas. Tech. Discuss., referee comment RC2  
<https://doi.org/10.5194/amt-2022-163-RC2>, 2022  
© Author(s) 2022. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on amt-2022-163

Anonymous Referee #2

---

Referee comment on "The measurement of mean wind, variances, and covariances from an instrumented mobile car in a rural environment" by Stefan J. Miller and Mark Gordon, Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-163-RC2>, 2022

---

### General comments.

In this work the authors compare turbulence measurements made on a car instrumented with a sonic anemometer with the same measurements taken on a fixed tripod at the side of the road. The choice of the site, with lateral obstructions but with light traffic, is appropriate to the purposes of the comparison. The growing need of spatially extended data over inhomogeneous terrain makes mobile measurements an important topic in turbulence measurements. The most intriguing part is a wavelet based approach to reduce eddy-covariance measurements when they substantially differ from the ones from the fixed instruments and to remove the effect of intersecting vehicles on the measurements. The paper is clear and well written, sometimes a bit heavy to read for someone not familiar with all the correction methods described throughout. I recommend publication after the authors addressed my minor comments.

### Major comments.

- Section 2.5. As said above, this may be the most interesting part of the paper, since it offers a solid correction method for car measurements. However, while the wavelet analytical formulation is very clear, how the wavelet is applied is far less clear. I struggled a bit in understanding what is the averaging time scale on which the measurements are compared. At line 403 it seems that the maximum track length (in seconds) is around 40-60s while 5 to 8 minutes averaging was used before for wind directions and speeds. Was a different averaging time used for variances and covariances to compare with wavelet analysis or was only T set to 40-60 s as wavelet max-scale to reduce low-frequency contribution?

- The comparison between the turbulent heat flux is very interesting and well discussed. Would not be the case to compare the temperature variances seen by the tripod and the car?

**Minor comments.**

- The paper would benefit a table with the number of measurements records analyzed each day.
- In Section 2.4 what is the averaging time of the data presented?