

## Comment on amt-2022-163

Anonymous Referee #1

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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-RC1>, 2022

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The paper presents a thorough evaluation of mobile car-mounted turbulence measurements near the surface. The mobile measurements are compared with corresponding stationary tower data, which shows that the mobile system can provide satisfactory mean and turbulence data following a proper procedure for flow distortion correction. Furthermore, it is shown that using wavelet analysis for calculating higher order statistics of the mobile measurements can be more appropriate than the traditional eddy-covariance technique. The paper is well written and I recommend publication after minor review.

### Specific comments:

1. It is not clear how many measurement passes are made for each track.
2. In 243: The authors should clarify how exactly the mobile data can have "a time series with a temporal length 11 times that of" the 1-km variance. Since the track length is 1 km, where does the additional data (the temporal equivalent of 10 km) come from?
3. In 605-607 and 617: The interpretation of the confidence interval should be clarified. Why is one standard deviation related to the 95% confidence interval? Why is the confidence related to "not significantly different than 0" at In 607 and "consistent with the tripod" at In 617?

### Technical comments:

- In 365: the sentence looks unfinished?
- In 394: "Figure 6(a), (b) and (c) show..." - Such statements should be clear from figure captions and are not needed in the main text. Similar holds for other figures (e.g. Fig. 8).
- In 478: delete one occurrence of "of the".
- Fig. 12b: x-axis should say "... sonic...".