

General Comments

In this comprehensive analysis, the authors develop empirical corrections for wind measurements on a specific mobile platform, and demonstrate significant improvements for headwinds, and slightly more trouble correcting for much less frequent tailwinds (relative to the vehicle motion). Particularly nice (and novel to my knowledge) is the analysis of the relative importance of vehicle attitude vs. flow distortion errors in Section 3.5. The well-developed material presented in this manuscript is more than sufficient for publication, but one wonders whether the developed CFD framework could now be used to optimize the anemometer position, to guide improvements for future studies!

Specific Comments

Line 47: I think “modified” is more comprehensive and accurate than “introduced”

L112: 0.001 m/s is the precision. The accuracy (and actual uncertainty) is much larger. Similarly for the direction in Line 114.

L160: in addition to the vehicle dimensions, it would be nice to see the specifics of how the CSAT is mounted, i.e. separation from the roof, distance from the front bumper and windshield, etc.

L184: for those readers not intimately familiar with CFD, please define the “growth rate”.

L239: Have you estimated what effect this simplification may have? In reality, the vehicle has a significant velocity relative to the ground, and if we assume non-slip at both surfaces (separated by perhaps 25cm), there will obviously be tremendous shear that may produce some interesting turbulence. Likely these disturbances will not have a significant effect on what happens above the roof, but it might be good to comment on this with a sentence or two here.

L270: Fig. 4 is superfluous

L288: any comments on how much things may change under overcast conditions? Clear skies will be associated with possibly significant convection, especially over a paved surface.

L366: repeated sentence

L462-471: repeated material... condense

L504-508: repetitive

L536: give $\omega \times r$ a name (e.g. $-\Delta V_A$)

L624-635: while I laud the authors for showing the naked truth in Fig. 9 (i.e. significant deviations & scatter) instead of a much cleaner secondary product such as a graph of the MBE percentage reductions, I think the language should be moderated a bit (e.g. remove the “significantly” in L625).

The trend mentioned in L629 is also not that obvious; instead of progressively getting larger, there is a decrease from 0-1 to 1-2, then followed by an increase.

L658: a couple of typos

L680: was the same filter for distance from the vehicle to the ground station applied as in L605?