

Interactive comment on “3D Wind Vector Measurements using a 5-hole Probe with Remotely Piloted Aircraft” by Radiance Calmer et al.

Anonymous Referee #2

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The authors present an attempt to conduct atmospheric 3D wind measurements from a light remotely piloted aircraft (<2.5kg) using a combined gps/imu and a 5-hole turbulence probe mounted on the nose of the aircraft. Though this is of significant relevance for the field of atmospheric sciences, e.g. by providing a way to characterize vertical velocities at cloud base level from relatively cheap, almost disposable platforms, I am unfortunately not convinced by the validation of the technique presented here. The manuscript is confusing at times, and will require a careful rewrite to be suitable for publication. I am especially concerned about the interpretation of the results presented in section 4, a critical aspect of this work as it is used as the validation of the RPAS sensor package. The spectral levels, “spikes” and slopes found in the frequency spectra off the three components of the motion compensated winds computed from the

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RPAS (and compared against the anemometer ground truth) shown in figure 7 are very concerning and not discussed in depth in the text (I went back to Reineman et al. 2013, there found slight spectral level differences for the lowest wavenumbers, but nothing as significant as what is presented here). I would encourage the authors to go back to the data processing and ensure the algorithm is motion compensating the relative winds computed from the 5-hole probe correctly. Figure 8 further demonstrates the disagreement between the sonic and RPAS wind measurements. I can't really say much about the rest of the manuscript without having resolved the basic measurement concern explained above.

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