Copernicus comments – 26 May 2022

Comments to the author:
Dear Dr. Burt,

Following the positive reviewer comments, I have taken a pass through the parts of the manuscript that they have highlighted and have made a few additional notes myself. These comments are largely clarifications, requests for more information on your methods, and related to house style. The one request that departs from this "minor" approach is that regarding our data-availability policy, which also extends to model code.

I look forward to reviewing a revised draft with these additional data components.

Best wishes,

Andy Wickert

SPECIFIC COMMENTS:

Dr. Molyneux commented on Figure 8, and you left an extensive response to this, but without changing the manuscript text. If such a long response be warranted, then I would imagine that an update to the caption as Dr. Molyneux requested may also be appropriate.

A substantive comment/response on the point raised was included in my 24 February revision (tracked version, lines 307-318) and is retained in the latest version – section 4.3.4, paragraph commencing 'Events such as outlined above do occur occasionally in the real world …'

Regarding Dr. Bell's comments:

Line 58 (original submission): Could you amend the text to indicate the amount by which the anemometer might be off-center, as you have noted in the response?

This was already amended in the 24 February revision to read as ‘close to the centre’. The exact dimensions are not material to the argument, and were not recorded: the experimental setup was dismantled at the close of the field experiment. Figure 2 makes the position of the wind sensor sufficiently clear.

Line 64 (original submission) and lines 219-224 (your tracked changes version). This information seems misleading because the external sensor is out of spec at this point. So therefore, no reliable comparison could be made and concerns about the internal sensor's error don't seem so meaningful without considering the external wind sensor as well.

With respect, I believe I fully covered this point previously – 24 February tracked version, section 3.1.2, lines 219-224, where it is unambiguously stated that ‘While it is possible that more uncertainty attaches to the lowest speeds, this is largely irrelevant to the outcome, because the typical 0.4-0.5 m s-1 stopping speed of the external U2 and U10 Vector anemometers meant that reliable comparison ratios could not be accurately obtained below these levels.’ I believe it is preferable to include the lower wind speed values with a rider to the effect that the sensitivity of the external sensors was insufficient fully to detail the performance in this area, and leave it up to the reader to decide whether or not to put any faith in this part of the analysis, rather than simply omit it without further comment.

Line 381 (original submission): I think that the problem is that the table is not clear that the psychrometric coefficient here is multiplied by 1E-3. Adding a "x" symbol to the caption would help, and I think that something in the table itself would too.

Done. The factor for A, x 10^{-3} K^{-1}, has been added to the table caption and the table heading. For clarity in the heading this has necessitated a smaller font size in order that it be included in one line - personally I think the latter is unnecessary as the factor is explicitly stated in the caption. The factor is now explicitly stated everywhere the value of A is referenced within the accompanying text, eight times in all.

My comments:

General: Do you have a reference to demonstrate that most temperature measurements are taken within Stevenson-type thermometer screens?

Included as requested.

General: Please go through the style guide (https://www.geoscientific-

instrumentation-methods-and-data-systems.net/submission.html) and bring the manuscript into the house standards. Number equations and avoid footnotes if possible.

Done

General: Please include your data and code (per policy: https://www.geoscientific-instrumentation-methods-and-data-systems.net/policies/data_policy.html) in a linked repository. I typically use GitHub+Zenodo for my own work (with code or small data sets); you may have other preferences.

Uploaded to Figshare, https://doi.org/10.6084/m9.figshare.19889515.v1 , and included in text

Line 107, tracked-changes version: Both instruments do not agree, but rather are offset by a ratio, as you demonstrate.

I believe the wording used correctly and succinctly expresses the relationship.

Section 3.1. It would be good to have goodness-of-fit parameters here, alongside which subset of the data was fit based on the anemometers' performances.

Noted in 3.1 that all 2423 hourly values were used in the analysis, subsequently segmented into the two wind speed classes whose reasoning is explained in detail within the text. Summary statistics related to goodness-of-fit are now included in section 3.1 (for values of U2 or U10 > 1 m s-1) and in Table 1 (for the entire dataset).

OTHER POINTS

Submission notes refer to **Figure S1 to be included in the Supplement** – but there is no Figure S1 in my MS.