

Geosci. Instrum. Method. Data Syst. Discuss., referee comment RC2
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Comment on gi-2021-31

Anonymous Referee #2

Referee comment on "Measurements of natural airflow within a Stevenson screen and its influence on air temperature and humidity records" by Stephen Burt, Geosci. Instrum. Method. Data Syst. Discuss., <https://doi.org/10.5194/gi-2021-31-RC2>, 2022

The manuscript was interesting and relevant to better understand the sampling characteristics as function of external wind flow in a Stevenson screen shelter. Many Met Services and other agencies still use the Stevenson Screen as their primary framework for taking measurements of temperature and humidity. Results from studies like this could help understand measurement uncertainties and also provide wind dependent correction factors for measurements using Stevenson screen.

Overall, I think the paper was well written and provided new results that will be interesting for readers. However, I feel the paper was limited in scope and could be expanded to better understand flow characteristics in the Stevenson screen at different locations within the screen. This could further be expanded to collect actual measurements of temperature and pressure to compare the variability of measurements with observed environmental wind speed and direction observations at the height of the Stevenson screen. I would like to see the author to expand on these ideas for future studies.

Below is some specific comments for consideration:

Lines 55-62: The wind sensor was mounted in the center of the screen. Was this representative of the location of where temperature and humidity measurements are typically made? If not, why not mount the wind sensor at that location(s)? Was there any thought of making flow measurements at other locations (higher/lower, closer to the screen walls, etc.) to see to characterize the variability in the screen. Significant variability could impact the observations of the temperature/humidity measurements. Did you explore any impacts of the measurements while using the laboratory stand to mount the sensor?

Lines 63-64: Were the wind measurements logged at 1 min, 5 min, and hourly or was the

observations logged at 1-min and averaged to 5 min and hourly or were subsampled at 5 min and hourly? This is a bit confusing.

In Fig. 1, it would be interesting to know what is the direction of North for reference. This could help understand if there were any impacts of flow if the environmental wind was directly along one of the corners for example.

Lines 128-130: The external wind speeds are measured at 2 m and 10 m. What is the height of the wind sensor above ground inside the screen? If the sensor in the wind screen is not at 2 m, what is the potential impact in the results of the study?

I found the results shown in the discussion sections 4.3.3-4.3.6 interesting and a nice exercise to explore the potential impacts. What would make this paper (or future paper) even more interesting if these results could be verified with actual observations from a Stevenson screen comparison study.