

Interactive comment on “University of Kentucky measurements of wind, temperature, pressure and humidity in support of LAPSE-RATE using multi-site fixed-wing and rotorcraft UAS” by Sean C. C. Bailey et al.

Anonymous Referee #2

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The manuscript provides an overview of data collected by the University of Kentucky during the LAPSE RATE campaign. Data were collected by several types of UAS including one type of fixed-wing vehicle and three types of multi-rotor vehicles. In addition, data were collected on a small meteorological tower at the surface.

The manuscript is short and well-written and the description of the various platform and instruments is quite detailed. I consider this manuscript a data report. This is the intention of Earth System Science Data papers if I understand correctly from the description of the scope of the journal. There is no significant scientific content in this

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paper. I have some specific comments listed below.

- 1) Providing pictures of the various UAS used with details of the location of the various sensors would be very useful for the data users
- 2) I liked Figure 3b and these figures should also be included for the other flight days. In addition, tables with timing of each flight should be provided in my opinion for a data report.
- 3) Figure 3a is not very clear. I think that zooming in the area of the flight operations would make the flightpaths much clearer. Perhaps a 2D, rather than 3D map would also make things clearer.
- 4) Ascent and descent rates of the UAS (in particular the multi-rotor UAS) AND their justification should be provided. Also, were these rates kept constant every time for the multi-rotor UAS?
- 5) Line 96: how was the optimal mast height determined? Perhaps it was not so 'optimal' given the bias that was found (in section 4, see also later comment)
- 6) Line 227-230: This needs some clarification: a. Expand on 'acceptance range violations' b. What 'intermittency' of occurrences? I thought that the multirotor UAS ascended and descended in a continuous fashion? c. If data were not removed were they at least flagged in the data files?
- 7) Can the temperature and humidity data collected during a descent be used without any correction (due to e.g. slow time response of sensors)? Please provide an example figure in which temperature and humidity are plotted for ascent and descent during one flight
- 8) Line 240-244: These biases represent a major weakness in this data set. As a scientist potentially interested in using these data, I am not satisfied by the action taken by the authors that "These biases have been removed in the data files made openly available". Much more detailed information need to be provided about possible

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causes. Was there no dependency of the bias on the wind speed? Was the same bias present during hovering and ascending flights? How about wind direction? Was the bias equal in u and v component of the wind? Anyhow, at this point, without any additional information, I would be very skeptical about using the data.

9) line 245: Mention somewhere what time sunrise was on July 18.

10) Minor typo: remove duplicate 'of' in line 25.

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