

Atmos. Meas. Tech. Discuss., referee comment RC3
<https://doi.org/10.5194/amt-2020-461-RC3>, 2021
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Comment on amt-2020-461

Anna Karion (Referee)

Referee comment on "Testing the altitude attribution and vertical resolution of AirCore measurements with a new spiking method" by Thomas Wagenhäuser et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2020-461-RC3>, 2021

Review of "Testing the altitude attribution and vertical resolution of AirCore measurements with a new spiking method", by Wagenhauser et al.

The manuscript presents a well-written and clear description of a method that can be used to assess and correct the altitude assignments of AirCore measurements and also their vertical resolution. This relatively simple empirical method for correcting for a pressure drop inside the AirCore tubing during descent seems to work very well in the two flights shown. As the authors mention, the extent of applicability of a given linear fit might need to be investigated more in future work, especially around issues such as individual dryer packing. This data can also provide a check of any future more theoretically-based estimation of the pressure drop. It is a valuable study to be included in the literature on AirCore balloon deployments, as altitude assignment is one of the uncertainty components of these measurements.

I only have very minor grammatical comments or clarifications, below.

L188, perhaps I missed this earlier but what is ml_n ? (and again elsewhere including L326, after 1.4 liters (ln??))?

L197, rather than "bar" perhaps SI units would be used here (editors can comment on journal policy) (same comment, line 332 using "atm".)

L213, approximately should be spelled out here and elsewhere I believe (editors can comment on that)

L 229 Typo, June 18 is used twice, should be June 17

L243 should be the analyzer's (apostrophe added)

Fig 4 and Fig 5, one is labeled GPS Altitude and one geometric - are these the same thing? (i.e. both based on the GPS reading?). (and same question for other figures - perhaps they should all be made with consistent labeling).

L286: "between the both" should be "between the two"

L335 and on: It would help the reader if discussion of Figure 8 could mention the sharp changes in the modeled resolution occur at the junctions between different diameter parts of the Aircore.