

Atmos. Meas. Tech. Discuss., referee comment RC1
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Comment on amt-2021-341

Anonymous Referee #1

Referee comment on "VELOX – a new thermal infrared imager for airborne remote sensing of cloud and surface properties" by Michael Schäfer et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-341-RC1>, 2021

This manuscript describes the new thermal infrared imager VELOX, the corrections and calibrations that are applied, the cloud detection algorithm and their use for the EUREC4A field campaign. This manuscript will therefore be useful for the proper use of observations made during the EUREC4A campaign and possible future campaigns. It is well written, well organized, and deserves to be published in AMT. I have only a few minor comments detailed below.

Minor comments:

- l. 114: "The non-imaging infrared thermometer has a larger and more sensitive detector..." this is not obvious as Table 1 show a larger NETD value

- l. 243, Eq. (1): What does the "imager optics" mean? The external lens of the optic is certainly transparent enough in the infrared to have a low emissivity and to let pass an important fraction of the radiation emitted by "the bottom" of the optic (the detector?). Are the imager and its optics (lens, detector, etc.) assumed to be isothermal? How are the temperature T_{opt} and the emissivity ϵ_{opt} determined?

- l. 297: how is the "no cloud-free" condition determined?

- l. 357: which of the two cloud fraction, "most likely cloudy" or "probably cloudy" is used for this comparison?

- I. 376: I understand that the distance to the nearest dropsonde introduces errors, but why would these errors be systematic enough to generate a bias? I would rather expect a random error.

-I.404: the bias in the retrieved altitude should be mentioned here