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Interactive comment on “Two fast temperature sensors for probing of the Atmospheric Boundary Layer using small Remotely Piloted Aircraft (RPA)” by N. Wildmann et al.

Anonymous Referee #2

Received and published: 23 May 2013

The manuscript describes the design, building and test of two different types of miniaturized fast temperature sensors for the use on small RPA systems, an important step towards reliable heat flux measurements with those small unmanned platforms. The two sensors are based on well established measurement principles, namely fine wire resistance thermometers and thermocouples. The manuscript is in general well structured and describes the design and realization of the sensors appropriately. Laboratory and field tests, including parallel airborne measurements against well established atmospheric temperature measurements, as radiosondes and a meteorological mast, have been performed and are used to estimate the measurement accuracy. I suggest

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to accept the manuscript for publication after minor revisions described below and after a language check by a native speaker.

Specific comments:

line 35: inconsistent use of upper and lower case for radar, lidar, sodar RASS

caption of table 1: add "for the determination of turbulent heat fluxes" at the end of the line

line 149: I suggest to use consistently RPA/RPAS instead of UAV

figure 3: hard to read, in particular the very small letter size, I suggest to increase the figure or at least the fonts

line 216: wrong hyphenation: "Messe-lectronic"

line 377: the statement of 10 m uncertainty/variation does not match the 2m altitude stability stated before in line 349

figs 10/11: The measurements of the Sodar show a distinct deviation in lapse rate compared to the other systems. If these data (that are basically not really used in the following) remain in the figures, the behavior has to be shortly discussed.

figs 10/11: symbols and/or color for "Tower" or "Profiler" should be changed to enable a better distinction between the corresponding data points

lines 449-454: here is one example of a sentence that is rather long and complicated to read and needs to be rephrased: "The fact that FWPRT measurements and also the pure thermocouple signal do not show this significant radiation errors shows that with fine wires of the diameter used in this system, at an airspeed of 20 m s⁻¹, hardly any radiation error is to be expected."

line 474: remove blank after "temperature"

line 685: "statistical measure" or "statistical parameter" instead of "statistics"

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line 687: insert "," after "flow"

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 3089, 2013.

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6, C1060–C1062, 2013

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