

Interactive comment on “Modified Ultrafast Thermometer UFT-M and temperature measurements during Physics of Stratocumulus Top (POST)” by W. Kumala et al.

J. Bange (Referee)

jens.bange@uni-tuebingen.de

Received and published: 29 March 2013

This manuscript describes the set-up, functionality and characteristics of the improved Ultrafast Thermometer UFT-M. First results from flights penetrating stratocumulus clouds from above demonstrate how well this instrument works. The description and discussion is well quantitative and fulfils all requirements of a journal on atmospheric measurement technology. This manuscript describes an excellent experimental work. It omits any new meteorological insights, but since it is submitted to a more technology-focused journal, this should not be a problem. With this new instrument, that provides an enormously high spatial resolution of air temperature measured during flight, mete-

C467

orological results will follow soon.

However some minor corrections and some additional information are suggested from my side:

- 1) In section 1 or in section 4, the flight path and the length of the analysed flight sections should be explained, preferably in a map. Also information on the weather and other experimental boundary conditions should be given.
- 2) The UFT-M is an open-wire thermometer. So the systematic measurement errors due to solar radiation, black-body radiation from the environment (the aircraft fuselage where the sensor was mounted on) and dynamic pressure increase should be analysed and discussed.
- 3) The slope of the measured temperature power spectra are compared to the Kolmogorov distribution in Fig. 10. Such comparison can better be done using structure functions (in addition to the power spectra that are more suited to identify e.g. sharp resonances)
- 4) Although the manuscript focusses on the technology, it would be interesting to know for what scientific tasks and questions the sensor is useful (i.e. what hypothesis can be checked with this sensor in future?)
- 5) Throughout the manuscript, but especially in line 4 to 24: please make correct use of parentheses around citations.
- 6) 2088, line 9: Do you really mean 'from'?
- 7) 2096, Line 23: Describe flight TO10 (also see remark 1)
- 8) 2095, line 5: What do you mean with 'stored by the authors'?
- 9) Fig. 4,5,6 and 9 are too small, especially the axis labels and numbers