

Interactive comment on “Methodology for determining multilayered temperature inversions” by G. J. Fochesatto

Anonymous Referee #2

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The study presents a simple algorithm to identify temperature inversions approximating the sounding with broken line. After having described the technique and associated errors, the author presents results on 15 Jan 2014 at 00 UTC at Fairbanks International station. Changes and deeper analysis are expected to improve the paper.

General comments

The paper is often unclear and sometimes incoherent in presenting the study. For example, the definition of error thresholds in temperature gradients is ambiguous: are these values referred to $\text{abs}(dT/dz)$? or only to dT/dz ? Moreover, it is not clear which type for radiosounding data have been used: in case

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of TEMP WMO messages, only relevant points are often included in the message, while raw radiosounding data typically contain five seconds measurements. How do the performances change with finer radiosounding?

In the introduction, the technique is described as relevant in arctic atmosphere, but in the following it is stated that it is important for several applications.

In the conclusions, it is stated that the "methodology has been applied to the study of 10 years", but no description is reported (period time?, where?) neither results are shown. Indeed, the paper presents only one real application of this methodology: the author should show results obtained from a larger dataset analyzing behaviors and errors under different atmospheric conditions. The classification of atmospheric layers (I, FT and so on) is not described and it is not clear how the column classification in Table 2 is obtained.

Specific comments

The statement on pag. 10571 "The retrieval of stratified layers may results perhaps of no practical importance for operational meteorological purposes" needs to be clarified.

Several mis-spells appear in the paper. For example:

- pag. 10563 please change Sect. in Section
- pag. 10568 please change Fig. in Figure - pag. 10596 line 13 "the study of 10 years. upper air data"
- pag. 10569 line 21 "The method does not introduce new temperature points it rather reduces the amount of them according to the preset convergence value. However some degree of expertise in meteorology is needed to read the output data-structure and clasify the detected thermal layers."
- Table 1 caption is unclear.
- Table 2 caption: "Results of application of the numerical routine to extract thermal

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layers from" has to be rephrased.

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