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Interactive comment on "Methodology for determining multilayered temperature inversions" *by* G. J. Fochesatto

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Interactive comment on Atmos. Meas. Tech. Discuss., 7, 10559, 2014.

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Interactive Discussion

Discussion Paper

1 **Methodology for Determining Multilayered Temperature**

2 **Inversions**

3

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11 **Abstract**

12 Temperature sounding of the atmospheric boundary layer (ABL) and lower troposphere
13 exhibits multilayered temperature inversions specially in high latitudes during extreme winters.
14 These temperature inversion layers are originated based on the combined forcing of local and
15 large scale synoptic meteorology. At the local scale the thermal inversion layer forms near the
16 surface and plays a central role in controlling the surface radiative cooling and air pollution
17 dispersion; however, depending upon the large scale synoptic meteorological forcing, an upper
18 level thermal inversion can also exist topping the local ABL.

19 In this article a numerical methodology is reported to determine thermal inversion layers present
20 in a given temperature profile and deduce some of their thermodynamic properties.

21 The algorithm extract from the temperature profile the most important temperature variations
22 defining thermal inversion layers. This is accomplished by a linear interpolation function of
23 variable length that minimizes an error function. The algorithm functionality is demonstrated
24 on actual radiosonde profiles to deduce the multilayered temperature inversion structure with
25 an error fraction set independently.

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Fig. 1. MS Revised