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Interactive comment on “A method to improve the determination of wave perturbations close to the tropopause by using a digital filter” by P. Alexander et al.

Anonymous Referee #2

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This paper is concerned with a data analysis technique to derive temperature perturbations due to atmospheric gravity waves in the height range near the tropopause. Thermal structure near the tropopause, especially at low latitudes, is often associated with sharp temperature gradient just below and above the tropopause. Therefore, a simple filtering of a temperature profile along height may not correctly extract fluctuating components.

The authors applied “the double filtering technique” in order to extract temperature fluctuations caused by gravity waves even near the tropopause. However, no theoretical reasoning is discussed, and therefore, conclusions of this study are only empirically de-

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lineated. Then, it is difficult for us to justify whether the analyzed results could project the real atmospheric behavior. I am afraid I do not recommend publication of this paper in AMT.

Specific comments Page 3, line 9-10: "According to the linear theory of waves in the atmosphere (see, e.g., Nappo, 2002)". This statement is useless, which should be removed. Page 3, line 7-10, Fig. 1: Results in Fig. 1 are not fully explained. Figure 2: The figure is redundant. Page 6, line 3-10: Characteristics of both band-pass and low-pass filters used here must be explained in full, otherwise, the nature of the problem is not understood. Provided the cut-off of the filters is sharp enough, the second processing with the low-pass filter does not change the results significantly. Page 6, line 14-15: I do not agree with this statement, because the problems are not apparently removed in Figs. 3 and 4.

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4, C232–C233, 2011

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