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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A cloud filtering method for microwave upper tropospherichumidity measurements" *by* S. A. Buehler et al.

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We would like to thank both reviewers for their constructive comments and suggestions. Reviewer comments are repeated here, our reply is typeset in bold font.

Anonymous Referee #1

The Review of the manuscript 'A cloud filtering method for microwave upper tropospheric humidity measurements' by S. A. Buehler et al.

MS-NR: acpd-2007-0092

The manuscript presents a cloud filter for upper tropospheric humidity (UTH) measure-

ments from the high frequencies of AMSU-B on the basis of the two earlier studies. Model simulations on the basis of ECMWF data set and radiative transfer models have been performed to investigate the influence of viewing angle on AMSU-B channel 18 threshold and to derive the different thresholds for Tb18. Also, the impact of ice clouds on UTH area mean values was estimated by case studies. This manuscript is a well-written paper. Its structure and exhibitions are easy to follow. I highly recommend it for publication in ACP after some minor revisions listed in the following.

1. Page 7510, lines 12-14. This sentence is confused.

The sentence was cleaned up and broken up in two.

2. Page 7514, lines 3-5 and lines 18-20. Why are different radiative transfer models (RTTOV and ARTS) and different ECWMF model data used for the simulations? Why not use consistent data and model?

The use of different RT models had purely practical reasons. It is uncritical, since both models have been shown to be in good agreement (Buehler, S. A., N. Courcoux and V. O. John (2006), Radiative transfer calculations for a passive microwave satellite sensor: Comparing a fast model and a line-by-line model, J. Geophys. Res., 111, D20304, doi:10.1029/2005JD006552.)

The Chevallier data set was used for the quantitative derivation of thresholds, since it emphasizes atmospheric diversity and should cover the widest range of atmospheric conditions. On the other hand, direct ECMWF data were used for Fig. 1, because we wanted to use data from the same time period as the AMSU data shown.

3. Page 7515, line 14, change 'to simulated' to 'to simulate'?

Simulated was correct, but the sentence was confusing. It now reads '...we applied the method first on simulated clear-sky brightness temperatures...'.

4. Page 7512, line 9; Page 7515, line 14, What is the physical means for UTH_JAC? It

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is better to add more information on it for easily understanding.

The paragraph where UTH is first mentioned was extended to better explain the concept. The paragraph that discusses Fig. 2 was extended to better explain UTH_JAC and UTH_Tb

5. Page 7515, line 18, 'here and everywhere' is not necessary.

We agree that it is redundant, but we would like to keep it, since it may help some readers.

6. Page 7522, line 10. When the authors mention that 'The method combines two existing methods. One isEand the other one is E'. It is better to cite the corresponding two references again here.

Done.

7. Figures. When the subplots are described the authors prefer to use locations, such as, top plot, rightmost column, etc. I suggest the authors to use labels to mark the subplots, such as Fig. 3a, 3b, and etc.

This is an editorial issue. Since we are not clear about the policy of ACP in this respect we propose to leave it to the copy-editor for the final version to decide how we should label and refer to the sub-plots.

8. Page 7534, Fig. 6. Change '?UTH' to '?UTH'.

This comment is unclear. It seems that some characters were not translated to pdf correctly by the ACPD website.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 7509, 2007.