

Interactive comment on “On the accuracy of analysed low temperatures in the stratosphere” by B. M. Knudsen

B. M. Knudsen

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The response to the referees is given under the same headings as they used (even though the page and line numbers have changed in the final version).

Referee #1:

General comments:

I prefer not to put ECMWF in the title, since it would have to be written out, which would make the title quite long. Also, some of the findings are general and apply to any analysis.

Specific comments:

page 4412: it is now pointed out in the second to last sentence in the abstract that there was a general cold bias in 2002/2003.

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page 4413, lines 17-21: this a because the cold winter 1995/1996 gives a much better statistic close to the frost point. This is stated now.

page 4413/4414: The Russian sondes have been used in Figure 2. In Table 2 the number of radiosondes is now available for all winters.

page 4414, line 2: $MPV > 35PVU$, as it is now stated.

page 4414/445: The wave activity is calculated for each radiosonde. The word 'measured' in line 16 on page 4414 is changed to 'radiosonde' to clarify this.

page 4416, line 3: the description of the first guess field is now brought forward

page 4417, line 15-: Fig. 2 is not very readable due to ACPD policy of having only half page Figures. The Russian sondes give an independent check on the ECMWF analyses as it is now stated.

page 4418, line 20-: see above

page 4419: The Dörnbrack and Leutbecher paper is now been described better. Scandinavia might be the land masses over which PSC most frequently occur, but if you look at the Figures in Pawson et al. (1995) the Arctic Sea is where they occur most frequently. The coldness of the winter does have an influence, because in a warm winter synoptic temperatures may not reach the frostpoint. This is now stated.

page 4421, Appendix: OK, the letter V is used now.

Typos/Technical corrections: the first 4 have been implemented. Figure 2 has not been changed cause the sizes of the plusses do correspond to the legend.

Referee #2:

General comments:

The temporal evolution of the biases depend on the level used. One should be careful when mixing ERA40 and operational analyses.

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Specific comments:

1. this is now done (cf. new Table 1) 2. OK 3. This statement is now elaborated on and referenced. 'long' is used instead of 'strong' 4. a chi-square test reveals that the two distributions are different with high significance, and this is written. 5. OK 6. OK 7. no number is given 8. I agree and this is stated in the paper 9. see general comment 10. OK 11. OK 12. An error in the filled symbols for the winter 2002/2003 has been corrected. The description of the temperature correction has been changed to: 'Other symbols in Fig. 5 show the temperature correction needed to be added to ECMWF temperatures to obtain the radiosonde PSC extent (without vertical averaging).' I hope the Figure is clearer now.

The technical corrections are all implemented.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 4411, 2003.

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