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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A practical demonstration on AMSU retrieval precision for upper tropospheric humidity by a non-linear multi-channel regression method" *by* C. Jiménez et al.

Anonymous Referee #2

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Comments on "A practical demonstration on AMSU retrieval precision for upper tropospheric humidity by a non-linear multi-channel regression method" by Jimenez et al

GENERAL COMMENTS

This paper describes the retrieval of upper tropospheric humidity from AMSU data using a neural network technique. The technique appears superior to a linear regression

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technique. The paper is quite well written and the scientific methods and assumptions generally appear valid. I recommend acceptance, subject to the specific comments and technical corrections detailed below being appropriately addressed.

SPECIFIC COMMENTS

Sections 4.1 to 4.3: From what it says in Section 4.1 it appears that 10 independent trainings were taken for each case and the results reported in Table 1 are the mean of the results for the independent trainings. How large was the variation in the results from each individual training? Can error bars be put on the results in Table 1? Also, when comparing the linear regression (Section 4.2) and Lindenberg (Section 4.3) results with corresponding results from the ECMWF dataset it should be possible to state if the differences were statistically significant.

Section 4.3: The discussion focuses on biases in the radiosonde data, but I find it a little surprising that more mention is not made of possible AMSU biases. This would be important since such biases are not included in the synthetic radiances generated from the ECMWF dataset. NWP centres regularly monitor AMSU data for biases (with respect to their forecast model), which are often related to instrument drifts, and bias corrected as a result. I assume therefore that biases in the AMSU data do exist, and thus these should be discussed (with reference to appropriate papers) in the text.

p7500 l17: A 0.8% degradation in precision is reported, but this is only the case when the Lindenberg retrieval is compared with the ECMWF retrieval for channels 6-7-8-18-19-20. Surely the comparison should be with the ECMWF retrieval for 6-7-8-18-19, which is a like-for-like comparison. Thus the degradation in precision should be 0.6%.

TECHNICAL CORRECTIONS

p7489 l12: 'on MetOp' not 'in'

p7491 l4: Spelling and grammatical errors. Change to '..atmosphere the lower..'

p7491 l5: remove 'this'.

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p7491 l11: spelling error: ’humidity’ not ’humidty’

p7491 l19: change ’is’ to ’are’.

p7493 l18: Should be ’As can be..’.

p7499 l4: Should be ’..especially at tropical latitudes, where..’

p7500 l10: Should be ’..a humidity parameter that is easier...’.

p7501 l7: ’see Fig 5’. Shouldn’t this be Fig 3?

p7501 l26: ’AMSU’ not ’ASMU’.

p7502 l4: Replace ’which’ with ’whose’.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 7487, 2004.