

## ***Interactive comment on “Water vapour total columns from SCIAMACHY spectra in the 2.36 $\mu\text{m}$ window” by H. Schrijver et al.***

### **Anonymous Referee #1**

Received and published: 19 June 2009

This paper presents progress in the retrieval of water vapour columns from SCIAMACHY near-infrared measurements. The scientific value of the data is not exploited in this work. This is a first paper, describing an improved method and some global comparisons with ECMWF analyses. The paper presents a novel approach to account for the ice layer on the detector. Substantial conclusions are reached regarding agreement with ECMWF analyses, quality of spectroscopic data, and the correction method for the ice on the detector. The scientific methods and assumptions are valid and clearly outlined. The results are sufficient to support the interpretations and the conclusion. The method is described sufficiently. The authors give proper credit to related work and clearly indicate their own original contribution. The title is appropriate and the abstract is adequate. The overall presentation is well structured and the language used is fine. Abbreviations and units are correctly defined and used. No part of the paper should be

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clarified, reduced, combined or eliminated. The number of references is appropriate.

#### Specific comments

-p.1466, you could add "..., particularly a reduction in the bias" to the end of the sentence "...improved agreement between...".

- A sample spectral fit could be shown.

- a comparison with a completely independent measurement would have been preferable over a comparison with ECMWF, whose profile shape is used in the retrieval.

- Figure 1 shows that there is an over-response of >20% to the lowest layers. This is unusually large and may deserve a comment. There may be cancelling errors with the under-response above 800 mb, provided that water vapour amounts below and above 800 mb are strongly correlated.

#### Technical corrections

p.1457 "measured" ->"measured" p.1460 "...extinction in the ice"-> "...extinction by the ice" p.1483 It should be specified that mean is in black and the standard deviation is in blue.

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Interactive comment on Atmos. Meas. Tech. Discuss., 2, 1453, 2009.

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