

## ***Interactive comment on “GOMOS data characterization and error estimation” by J. Tamminen et al.***

### **Anonymous Referee #2**

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GOMOS data characterization and error estimation J. Tamminen et al. ACP-2010-77

This paper does a thorough job of characterizing all possible sources of error associated with the atmospheric number density profiles retrieved using GOMOS dark limb stellar occultation measurements. It is a well written useful paper that should be published with minor revisions.

I have no suggestions for major revisions.

I have a handful of suggestions for minor revisions.

1) The manuscript needs a thorough proofread to clean up many grammatical errors and clumsy phrases. However, I do want to compliment the authors whose native language is not English for writing an easily understood document of higher quality than

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many that come from native English speakers. 2) Figure 3 illustrates SNR values for different stars at different wavelengths. In the text the authors use qualitative descriptors like "good". I think it would be useful to give a more quantitative description of what is bad, good and excellent. Is it possible to associated SNR numbers with these qualitative descriptors. 3) What does the "obs" and "ext" stand for in equation 1? 4) A little more explanation of the retrieval process described in the first paragraph of section 3.1 would be helpful. The notation and subscripts associated with the covariance matrix seem to change and although I think I understand what is going on a couple more sentences could save me the time of looking up the reference to check the notation. 5) In figure 7 the quantities  $a_1$ ,  $a_2$  and  $a_3$  are not explained until perhaps later. I assume they are the three fitting coefficients for the quadratic. 6) I believe the caption in Figure 8 should be changed to read 44 km instead of 34 . 7) Figure 11 and the text surrounding it are very confusing. Is the NO<sub>3</sub> plot missing from this figure.

In summary this paper should be published after minor revisions as it provides useful insight into the quality of the retrieved GOMOS data products.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 6755, 2010.

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