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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Retrieval of atmospheric parameters from GOMOS data" *by* E. Kyrölä et al.

Anonymous Referee #2

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This is essentially a concise version of an ATBD for GOMOS, and, as such, very useful for anyone interested in where the GOMOS retrievals come from. It is also particularly useful to anyone interested in the stellar occultation technique. It should certainly be published. I do have a list of questions/corrections which I hope the authors will consider.

"Especially important this is for ..." Should be "This is especially important for . . ."

"Figure 6 shows the tangent altitude change in a short occultations" – no "s" on occultations

"The following table provides" – Do you mean Table 1?

"Almost all scientific work are using only dark limb measurements and the dark limb is often defined by requiring the solar zenith angle to be larger than 107o (or 108o)." -

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Why does this value vary?

“New values in ADU (Analog to Digital Unit) are interpolated from neighbouring pixels by a median filter but they are not used in the further processing.” Why bother to interpolate if you don’t use the data?

Figure 11 – Is it reasonable to conclude from this figure that all of the CCD pixels are now “hot”, and so that there is no reason to expect any further increase in Dark charge? How does this CCD compare with other CCD columns?

Figure 12 – Why does this figure only go through 2006, while Figure 11 goes through 2008? Does this curve level off after 2006 as does Figure 11?

“There are an O2 emission around 760 nm and OH emissions near 940 nm.” Grammar

“overflow is assumed to be only punctual.” I’m not quite sure what this means, but punctual is certainly not the right word here.

Figure 16 - “The figure shows the time delay effect explained in Fig. 3.” I can’t really figure out which curves are following which. What magnitude of time delay is expected here?

Equation 13 - “At present, delta-SL is set to zero because the stray light correction is not activated.” – This does not seem like a good idea. If there is no correction for stray light, there would seem to be all the more reason to include an error estimate for it.

“This means that we cannot simply use the cross sections as such in the inversion but we must take the instrumental resolution into account.” – Is this a confusing way of stating that the forward model must be solved for at several frequencies and then averaged to match the spectrometer? If not, please explain further.

“Once the density profile is obtained the temperature profile is computed using the hydrostatic equation.” – But this is not the temperature used in the standard retrievals? Or is it? Please be explicit here.

ACPD

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"After the first vertical inversion the effective cross section becomes along the LOS averaged cross section with the local constituent densities as weights." The grammar here needs some work.

Equation 41 – So, how many coefficients are actually used in the current retrievals?

Why does the scintillation only affect the 30 km data in Figure 20?

Equation 44 – Isn't there already a 1/lambda term from the aerosols? Why is there another one here?

Equation 46 – It seems very odd not to use a logarithmic interpolation in density here.

"The ECMWF neutral density has been eliminated from data as an 100% known contributor." –What does this sentence mean?

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 10145, 2010.