

# GOMOS bright limb ozone data set

## by S. Tukiainen et al.

Answers to referee comments, Referee N. Rahpoe (RC C67)

The authors would like to thank Dr. Rahpoe for reviewing the manuscript.

### Response to comments

- **More text in the discussion.** We added the following paragraph of text to the discussion:

*In this work, we showed the accuracy of the GBL data as a function of latitude, altitude and solar zenith angle (Figs. 7–9)<sup>1</sup>. These are the most important variables affecting the overall quality of the profiles. Besides these variables, we have also studied the effect of season, scattering angle, albedo, and time, but they do not seem to correlate substantially with the bias. The quality of the GBL data could be summarized as follows. The accuracy of the GBL data is better than 10 % between 20 and 35 km. There is a negative bias at 35–45 km, that has a consistent shape with all studied observation conditions. Because of the regular shape, this bias is straightforward to correct if the data is used, for example, in time series studies. Above 45 km, the data is valid with the solar zenith angles less than 75 ° when the accuracy is approximately up to 15 %.*

- **133 - Omit the full link.** We now give the technical note (and link to it) as a reference.
- **151 - typo.** Corrected.
- **174 - why  $\chi^2 > 10$ ?** Large  $\chi^2$  values indicate some problem in the spectral fitting. Of course, the problem is that what actually is a “large” value. This is a reduced  $\chi^2$  so it should be ideally one. It is often larger (or smaller) in practice due to incorrect error covariance matrix or outliers in the data. The GBL  $\chi^2$  is distributed so that most of the values are between  $\sim 0.3$ – $1.2$  but the deviation below 24 km increases significantly towards larger values. The value of 10 is just an approximate value for screening the most corrupted values from the analysis. It removes around 1% of the all points and around 5% of the points below 24 km. We explain in the paper now how the error is calculated and show an example distribution of the relative error and  $\chi^2$  (Fig. 1).
- **221 - Login info as equation/table** We give the login info as a table.

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<sup>1</sup>Figs. 6–8 in the discussion paper. We will add one figure to the manuscript.

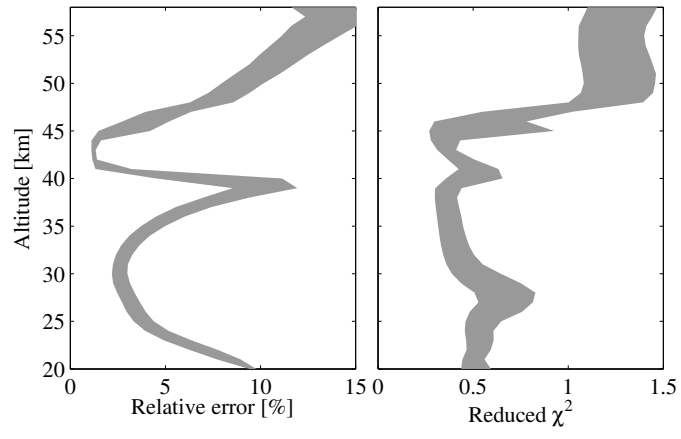


Figure 1: Interquartile range of the relative error (left) and reduced  $\chi^2$  (right). Data from the tropics, year 2004.