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Atmospheric Measurement Techniques Discussions

Interactive comment on "Global and long-term comparison of SCIAMACHY limb ozone profiles with correlative satellite data (2002–2008)" *by* S. Mieruch et al.

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Vertical resolution matching. The vertical resolutions between instruments vary between 2 and 4 km and do not differ significantly enough to warrant resolution matching. The use of averaging kernels to match vertical resolution is mostly appropriate when comparing data with markedly different vertical resolutions, e.g. ozone sondes and satellite data. Therefore, no resolution matching was applied here.

Temperature data for vmr conversion (HALOE SABER). Temperature profiles are retrieved from SABER data (Remsberg et al. 2008). HALOE derrived temperatures from

the CO_2 retrieval, below 35 km, NCEP reanalysis temperatures are used. This is now explained in the text.

SCIAMACHY bias in the lowermost tropical stratosphere. The largest bias is clearly seen in the tropical region and extends somewhat to lower middle latitudes. It is clearly confined to below 30° in the comparison of collocated profiles (see Fig. 5).

Comparisons of zonal means and collocated profiles. We agree with the reviewer that computing time is not really a critical issue, however, direct comparisons of zonal means is much simpler and easier to do.

Concerning the trend analysis. The reason, why the difference time series show no significant trends is because the trends in pairs of time series are quite similar and nearly cancel out in the difference time series. We checked the difference time series which were conforming our results by showing similar trends but the variability of the residuals is too high (compared to the trends) and not statistically significant compared to the absolute trends.

Sampling issues for solar occultation instruments. On page 4888, line 22, we state already "This is consistent with the notion by Terao and Logan (2007) that the sampling of the solar occultation data is sufficiently representative for calculating monthly mean zonal means." We believe no further comments are needed in the paper.

Data quality of SAGE II V6.2 ozone. The change from V6.1 to V6.2 mainly affected the H_2O retrieval (see Thomason et al., 2004). This is now mentioned in the text.

Other minor comments. Changes following the reviewer's comments are made except for p. 4880, line 4 and 4889, line 22, where we left the text as is.

References

Remsberg, E. E., et al. (2008), Assessment of the quality of the Version 1.07 temperature-versus-pressure profiles of the middle atmosphere from TIMED/SABER, J. Geophys. Res., 113, D17101, doi:10.1029/2008JD010013

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 4867, 2011.