

Interactive comment on “Comparison and synergy of stratospheric ozone measurements by satellite limb sounders and the ground-based microwave radiometer SOMORA” by K. Hocke et al.

K. Hocke et al.

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Dear Referee 2,

Thank you for your detailed review and your helpful suggestions for optimization of the article.

2. Response to your major comments:

We generally agree with your arguments. According to your major comment, we will limit the comparison between the satellites and the SOMORA radiometer to the time before June 2005. The impact on the article will be not so great, but it is good to remove this ambiguity and the bias will be a bit smaller.

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At the moment we cannot estimate if we find a plausible explanation for the stripes in the maps of the ozone differences. We will try some other time intervals for averaging. Thank you for your interest which is motivating for us.

We will have a more concise, logical and short article by means of your detailed comments. We reduce the number of figures from 19 to 16. We reduce the subsections of dependences on tropospheric attenuation and ozone.

3. Response to your detailed comments:

- It is a good idea to move the time series plots (10 and 11) to the begin.
- Gaussian distribution: it is not trivial that a Gaussian distribution is obtained for the ozone differences of two different instruments at different places. Many authors are uncertain too and provide both, 'median' and 'arithmetic averages'. However we will think about a shortening of the figures.
- Yes, we forgot the R values for the regression lines of Figure 3
- we will check σ/\sqrt{n} . It is a good idea.
- okay, some subsections (e.g., 4.6 and 4.7) should be shortened and some Figures are not essential. We did many things for the purpose of documentation. This purpose has been fulfilled (ACPD article), and the final ACP article should be more concentrated.
- double differencing: thank you for the information about Wild et al. (1995). We were not aware of this nice work which is in a close connection to our attempts of cross-validation. Since validation of ground networks and satellite missions is a very important (and expensive) theme, we think that the section on double-differencing is not overloaded. There are several aspects which have to be considered, e.g., what happens if the relative error is constant or if the absolute error is constant? Depending on this, one should calculate relative or absolute difference profiles for the cross-validation. Referee 2 seems to be very experienced with data validation and may find the correct analysis method by intuition. However for newcomers it might be straightforward if they

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have a theoretical framework. Of course we do not think that we provided this but our section on double-differencing may give some impulse to think further on a 'practical theory of cross-validation'.

- thank you for the other detailed comments which we will consider!

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 5053, 2007.

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