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Interactive comment on "SCIAMACHY validation by aircraft remote measurements: design, execution, and first results of the SCIA-VALUE mission" *by* A. Fix et al.

A. Fix et al.

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We would like to thank Referee #2 for very concise and well meaning comments and suggestions.

1. General comments:

We are grateful that the referee supports the opinion that an aircraft equipped with remote sensing instruments is an excellent platform for the validation of satellite instruments. We will be glad to pick this up again in the conclusions.

We fully agree with both, referee #2 and #1, that the title is misleading in the sense that

we do not present validation results but only measurement result. We will change the title to reflect this fact accordingly. Nevertheless, we would like to state that the mission was conducted for validation purposes.

Concerning the issues the referee addresses namely the agreement of the instruments this will be topic of a follow-up paper, indeed. This will also include a statistical analysis of the differences between ASUR and OLEX profiles. We are well aware that a comparison of the microwave instrument and lidar will then require the use of the respective averaging kernels because of their different vertical resolution (see specific comment no. 4)

2. Specific comments:

2.1. We will gladly add the source by (Feist et al., 2000) the referee mentions.

2.2. For ASUR, we currently have a quasi operational retrieval for O3, HCl, ClO, N2O and HNO3 only. For the other molecules for which spectra have been recorded, especially H2O and BrO it takes much more effort to produce reliable results. The retrieval of these species hasn't been done so far. Since ASUR's contribution to the SCIAMACHY validation is ozone and N2O, only these two molecules have been included within table 2. This is also the reason why no HNO3 profiles have been shown.

2.3. Thank you for pointing it out. This is wrong and should be 20 - 60 km. The values given correspond to HNO3.

2.4. Here, we also fully agree with the referee. However, as mentioned above, the detailed comparison between OLEX and ASUR profiles will be topic of a separate paper. As the reference for comparison of microwave profiles to higher resolved ones we will cite the paper by Tsou et al. as well as the paper by Rodgers, C. D. and B. Connor: Intercomparison of remote sounding instruments. J. Geophys. Res., 108, (D3), 4116, doi: 10.1029/2002JD002299, 2003.

3. Technical corrections

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3.1. The novelty of the instrumentation (p8384) concerns the combination of the three remote sensing instruments. It is true that both, OLEX and ASUR are well established instruments (which is by the way a prerequisite for satellite validation). While some modifications were applied on these instruments to cope with the requirements set by the specific campaign. AMAXDOAS was designed to fit into the remaining space of the Falcon.

3.2. Internally, the team spoke from the “main” validation campaign in order to distinguish these from a technical test campaign. As this leads to confusion, indeed, we will readily skip this expression.

All other technical corrections suggested will be incorporated.

Concerning the use of English language we appreciate the corrections very much and will adopt them.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 8381, 2004.