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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Carbon monoxide, methane and carbon dioxide columns retrieved from SCIAMACHY by WFM-DOAS: year 2003 initial data set" *by* M. Buchwitz et al.

M. Buchwitz et al.

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Authors answer to the interactive comment of anonymous referee number 2 on paper Buchwitz et al., Carbon monoxide, methane, and carbon dioxide columns retrieved from SCIAMACHY by WFM-DOAS: Year 2003 initial data set,
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Answers to "General comments":

First of all we would like to thank the referee for the constructive comments on our

paper. Each comment will be carefully considered for the revised version of the paper. Below we give answers to each of the comments made by the referee.

Answers to "Specific comments":

Concerning the "lack of validation": The referee is right that a rigorous validation of the data is not provided by the paper. It was, however, not the intention to provide a validation paper, although the paper has been submitted to the ACP special issue on SCIAMACHY validation. This sounds strange but we have a clear explanation for this: The special issue will contain two papers where our year 2003 data set is compared with independent ground based FTS measurements (Dils et al., Sussmann et al.). Several details of how our data set is produced have however not yet been described elsewhere (this is especially true for the v0.41 methane product). Therefore, we considered it mandatory to submit for this special issue a paper where all this is described. We also had a second strong motivation for this paper, namely to present a discussion of the entire global data set. The ground based comparison focuses only on the measurements close to a limited number of ground stations and cannot give the full picture. In addition, the comparison with the ground based FTS is not unproblematic because of the limited amount of the SCIAMACHY data for cloud free station overpasses and because most of the stations are not located at ideal position. Many stations are on mountains, on island, or near the coast. Furthermore, there are a number of other limitations, e.g., that so far mainly the CH_4 and CO_2 columns have been compared (Dils et al.) but not our main products, XCH_4 and XCO_2. For all these reasons we were strongly motivated to provide at least a good "verification" of our main data products using global reference data.

Concerning the "large multipliers": We will add additional information for the revised version of the paper. We will also give a short summary of our latest improvements (in

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a new outlook section) to point out that for our new CO product (v0.5) a scaling factor is not needed any more.

Concerning CH_4 and CO_2: We will provide more details concerning these gases. We will also discuss the normalization by O_2 in more detail, especially in the context of the XCO_2 retrieval. Concerning the XCO_2 we will provide much more details concerning the comparison with TM3 to provide more confidence in our conclusions.

The comment concerning more cautious conclusions will be taking into account for the revised version of the paper (see also the remark related to CO_2 given above).

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 1943, 2005.