

Interactive comment on “Global carbon monoxide as retrieved from SCIAMACHY by WFM-DOAS” by M. Buchwitz et al.

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Response to author's reply on Comment on "Global carbon monoxide as retrieved from SCIAMACHY by WFM-DOAS", Buchwitz *et al.*, *ACPD*, 4, 2805, 2004

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We believe the authors have not responded adequately to some of our main concerns. Therefore we would like to take the opportunity to stress once again what we believe are the main points in our earlier commentary.

1. Specifics revisited

In what follows we use the same numbering as our original comments paper for ease of reference.

1. Section 5: Sensitivity to boundary layer CO. We have no problem with the authors' approach to calculating averaging kernels for a column product. However the

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only way an averaging kernel can exceed unity in practice is if the retrieved column is higher than the true column. In other words **this indicates an intrinsic overestimation in the retrieval** on the order of 10% (reading directly from figure 1) which is not addressed by the authors.

3. The MOPITT data has had clouded pixels removed but *this is not mentioned in the caption to figure 14 nor is it mentioned anywhere else in the paper* to the best of our knowledge.
4. The choice of the *ad hoc* scaling factor 0.5 is not adequately addressed either in the paper or in the authors' response. We agree with the authors that they do address why they use such a scaling factor, but it is not clear what data they used for determining this factor (e.g., 1 day, 1 month, 1 year of data; a particular region, e.g. Sahara only, or global investigation) nor why it is justified to use a *constant* scaling factor. One of the last sentences in Section 2 states that the throughput in channel 8 is time-dependent due to ice build-up. In Section 6 they state that the residuals "might result from spectrometer slit function uncertainties." Since the slit function in channel 8 varies in time due to the ice build-up, it does not seem justified to us to use a constant scaling factor. In addition, they mention that the scaling factor is determined from MOPITT measurements in the abstract only, and not in Section 6, which is confusing.
5. Are retrievals of CO above clouds in fact lower "on average" (quotes from authors' response)? A comparison of figures 7 and 8 does not lead one immediately to this conclusion. Perhaps the authors should make this statement more quantitative or drop it from the discussion altogether.
6. & 7. Once again, our main point here is not that more figures are necessary, but that a lot more description is required. In particular the discussion is almost non-existent as section 6.3 is only six sentences long and mentions 14 figures.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 2805, 2004.

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