

Interactive comment on “Three years of global carbon monoxide from SCIAMACHY: comparison with MOPITT and first results related to the detection of enhanced CO over cities” by M. Buchwitz et al.

Anonymous Referee #1

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General Comments:

This is a well-written paper and would be of interest to the ACP readership. It should be published after attention to the issues below.

Specific Comments

Page 409 line 23. In the discussion of the pixel mask it would be useful to have a diagram of the pixel mask used and how it compares to the spectral region used for the retrieval and the CO lines in that region. The web-site indicated for the time-dependent

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pixel-masks refers only to a large “table of tables” in ASCII and so needs considerable work to interpret for this study. It is unclear from the discussion how much of the spectrum is included/excluded from the retrieval.

The comment on page 410 line 6 that the retrieval depends significantly (presumably this means a bias in the results) upon the mask is also of some concern because it would be expected that increasing the number of excluded pixels would increase the noise level, but not produce a significant bias. Are the reasons for this problem understood?

Figure 8 Right-hand panel. The averaging kernels (AK) of SCIAMACHY and MOPITT are considerably different, and in particular the AKs of MOPITT are non-uniform with height, being very small near the surface. Therefore a comparison of the “column” products from both instruments is liable to be somewhat mis-leading as the pseudo-column derived from MOPITT will depend upon the a-priori profile used for the lowest levels. It is this reviewer’s understanding that MOPITT uses a single a priori measurement for all retrievals so this might help with the interpretation, but the simple subtraction of the two columns needs some significant interpretation.

Technical Comments

Page 407, line 14 - “..we present a detailed comparison with CO from MOPITT..” It depends upon the interpretation of “detailed”, but this paper does not provide a high degree of detail in the comparison

Page 411 line 21 “pattern” not “patter”

Page 413 line 8 “..that many more..”

Page 413 line 16-17 “Especially for air quality measurements..”

Page 414 line 10 “What are the typical source strengths of polluted regions..”

Page 416 line 10 “..located in an adjacent..”

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Figure 1 “..the gaps before and after..” assumes that the reader knows which way the satellite is going (bottom left to top right or the reverse and not bottom right to top left or the reverse.) It can be worked out from the next sentence, but it would be better adjusted here.

Figure 4 “..AATSR fire counts (..) are displayed..” and this sentence does not need bracketing.

Figure 5 It might be the review copy, but the symbols on this figure were hard to locate and the dots and lines run into one another.

“..using a 30 day running mean.” (also in Figure 6)

Figure 6: Again may be a presentation issue, but the data on this diagram were too small to read - under enlargement the text and data were clear, but not at normal viewing enlargement.

Figure 9 A bit of confusion. If the pixel of SCIAMACHY is rectangular, why are the “pixels” in the upper left square?

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 405, 2007.

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