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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Error analysis for CO and CH_4 total column retrievals fromSCIAMACHY 2.3 μm spectra" *by* A. M. S. Gloudemans et al.

Anonymous Referee #2

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General Comments:

The paper presents a detailed examination of the errors associated with the retrieval of CO and CH4 total columns from SCIAMACHY channel 8 spectra. The main difficulty in retrieving trace gas columns from this wavelength interval is the essentially the quality of the SCIAMACHY spectra. Whilst the effects of instrument calibration on the CO and CH4 retrievals have been addressed in Gloudemans et al. (2005), readers not familiar with this work may not be aware of ongoing instrument/calibration issues. It would therefore be better to discuss the more important instrumental issues first and then examine the other effects later (although I can understand why the authors have presented the paper in its current format). The content of the paper is good but I would advise the authors to restructure the paper.

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I therefore recommend publication after the authors have considered these suggestions.

Minor comments:

Page 5168, Line 20: Where are the accuracy figures for the CO and CH4 columns taken from? It would be sensible to insert a reference.

P5188, L23: Add (in brackets) the spectral resolution of the synthetic and SCIAMACHY spectra.

P5194, L4: Does the application of the averaging kernel actually 'eliminates errors' or simply minimizes them?

P5195, L16: What is the uncertainty in the ECMWF pressure fields? Are errors in the total columns created by highly variable surface pressure over mountain regions really negligible?

P5206, L9: Correct spelling of 'noise errros'

P5206, L10-14: What percentage of SCIAMACHY measurements have instrument noise errors greater than 1.5E18 molce/cm2? Adding a map of the noise distribution would be useful.

P5211, L20: The authors write 'sufficient precision for application to satellite data' what do they mean by this statement?

Figure 2: The x-axis in the top panel, which shows the CO averaging kernel, could be expanded (e.g. from 0.6 to 1.4).

Figure 9: How much of the difference between July and November could be due to seasonal variations in albedo?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 5183, 2008.

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Interactive Comment