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Interactive comment on "Application of SCIAMACHY and MOPITT CO total column measurements to evaluate model results over biomass burning regions and Eastern China" *by* C. Liu et al.

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Comment to "Application of SCIAMACHY and MOPITT CO total column measurements . . .." by Liu et al.

In section 2.3 the authors mention the instrumental issues that affect the SCIAMACHY CO measurements, as they have also been reported in literature before. They also mention that sophisticated solutions have been developed but that these corrections

are not perfect. The authors then tried different methods to correct for these problems following a.o. Gloudemans et al. 2005 and Buchwitz et al. 2007. The results are described in Liu et al. 2010 (PhD-thesis) and not shown in the ACPD manuscript here, but they conclude "that part of the problems of the SCIAMACHY CO data could be improved, at least for limited periods of time, but systematic biases still remained". Having looked at Liu et al. 2010 and the results they obtain by applying the variable offset correction as introduced by Gloudemans et al., 2005, I am surprised that this correction has little or no effect on the time-series over the Sahara. Effectively the resulting 'corrected' time series is very similar to the uncorrected time-series as shown in Fig. 1 in this ACPD-manuscript. For comparison I include the figure below showing the resulting time-series for our SCIAMACHY CO dataset (IMLM) applying our variable offset correction over the same area and time-period as is used by Liu et al. As you can see there is no obvious drop in CO values correlated to the changing ice-layer. This is why we think the correction is quite adequate -although not perfect- to deal with the ice-layer on the SCIAMACHY detector. Basically I am surprised about the somewhat disappointing results that the authors obtain - as described in Liu et al. 2010- when applying this correction approach to their IMAP CO retrieval. The authors also write in Liu et al., 2010 "Here it is interesting to note that the improvement reported by other studies (e.g. Gloudemans et al., 2005) is better than found in our study. The reason for these differences are not clear, but might be caused by the use of different retrieval settings". I think it is important to make such a statement in the current manuscript to make clear that apparently different results are obtained with different SCIAMACHY retrievals applying a similar correction approach.

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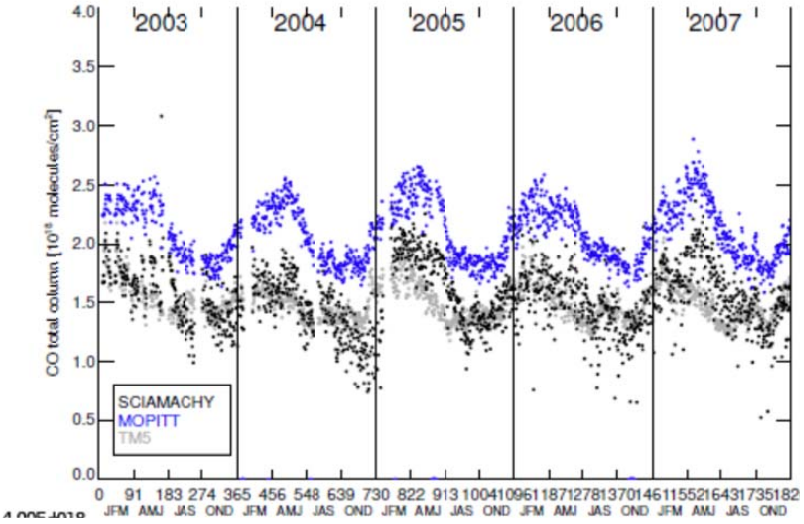
2003
2004
2005
2006
2007
CO total column [10^18 molecules/cm^2]
SCIAMACHY
MOPITT
TM5
0 91 183 274 365 456 548 639 730 822 913 1004 1096 1187 1278 1370 1461 1552 1643 1735 1826
JFM AMJ JAS OND JFM AMJ JAS OND JFM AMJ JAS OND JFM AMJ JAS OND JFM AMJ JAS OND