

Interactive
Comment

Interactive comment on “Interpreting the variability of CO₂ columns over North America using a chemistry transport model: application to SCIAMACHY data” by P. I. Palmer et al.

P. I. Palmer et al.

Received and published: 6 June 2008

We thank the reviewer for a useful examination of our paper. Below are our responses to specific comments (shown in italics).

It is shown significant differences exist between the model and the satellite data and it is argued that this is likely due to shortcomings of the model simulations but also likely due to systematic biases of the satellite data, i.e., due to both data sets. A clear interpretation of the differences is not given.

Reviewer 1 and 3 share the same concerns regarding our interpretation of the SCIAMACHY data. Further model evaluation, which will be presented in the revised manuscript, shows that GEOS-Chem is more consistent with in situ data than SCIA-

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



MACHY and we will consequently strengthen our discussion of the model-data differences to reflect this result. See response to reviewer 3 for further details.)

Misuse of "model bias" term

Agreed. This will be corrected throughout the revised manuscript.

Modify the abstract to reflect no significant correlation between model and observed columns.

We will make the changes suggested by this reviewer.

Text related to Figure 7: Contribution of CO₂ CVMR from North American fossil fuel should be up to 2 ppm (not 0.5 ppm as stated).

Agreed. Typo corrected.

Caption of Figures 1 and 2: Are the numbers that are given valid for the black or the red data points? Please clarify.

Numbers are both black and red data. This will be clarified in the revised manuscript.

What is the reason for the somewhat lower sensitivity at 0km compared to 1km?

There is a very small decrease in sensitivity in the lowest kilometre. This is due to the averaging kernel being a mean value over different measurement scenarios (see Barkley et al, 6, ACP, 4483-4498, 2006), which include varying aerosol concentrations that at high levels decrease near-surface sensitivity due to scattering of the light path.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 7339, 2008.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

