

Interactive comment on “Influence of line mixing on the retrievals of atmospheric CO₂ from spectra in the 1.6 and 2.1 μm regions” by J.-M. Hartmann et al.

Anonymous Referee #1

Received and published: 19 April 2009

Traditionally atmospheric retrievals use the Voigt lineshape function. The high quality of data from modern instruments and increasingly demanding geophysical requirements mean that non-Voigt lineshape functions need to be used. This paper nicely illustrates these points by demonstrating the need to include line mixing in order to obtain satisfactory precision in retrievals of carbon dioxide in the near infrared. I have only a few fairly minor points to make:

1. pg. 4874, l. 4, replace “have been retained” by “will be used”.
2. pg. 4875, l. 5, the status of GOSAT (nice spectra!) and (unfortunately) of OCO need to be updated; l. 11, “achieve the desired accuracy for retrievals”; l. 17-18 and

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throughout the text and figures, the notation given for the CO₂ bands is not correct. I suggest that G. Toon consult the CO₂ experts at JPL for the correct $v_1v_2^{\ell}v_3$ notation.

3. pg. 4876, l. 5, xCO₂ needs to be defined more carefully as it is not a simple vmr.

4. pg. 4879, l. 13, “error in”.

5. pg. 4880, l. 5, “retrieved in Band#1 from”.

6. pg. 4880, l. 24, “for each spectrum”.

7. pg. 4883, l. 28, “The good agreement obtained”.

8. pg. 4883, l.4 and pg. 4893, first line, “errors in”.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 4873, 2009.

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