

Interactive comment on “Note on rotational-Raman scattering in the O₂ A- and B-bands: implications for retrieval of trace-gas concentrations and terrestrial chlorophyll fluorescence” by A. Vasilkov et al.

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Dear authors,

It is with interest that I have read your manuscript on rotational raman scattering in the O₂ A and O₂ B band.

I have the following comments:

p.8790, l.21-22: "To the best of our knowledge, RRS effects in the O₂ A- and B-bands
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have not been quantified in the literature."

But see Sioris and Evans (2000) in GRL.

p.8792, l.13-15: "The far-red fluorescence radiance feature at the surface is approximated by a Gaussian function, [...]. "

Could you please provide a reference for this parameterization?

p.8792, l.23-24: "Quasi-monochromatic computations are carried out at a spectral sampling of 0.01 nm, that of the solar irradiance reference spectrum from Chance and Kurucz (2010)."

I guess I would be interested to know the spectral resolution of the solar irradiance reference spectrum here. This seems a relevant quantity to compare with the minimum FWHM for the instrument response function of 0.03 nm.

p.8798, l.5-7: "Neglect of RRS filling in the O₂ A band may therefore lead to biases in satellite-retrieved CO₂ mixing ratios similar to effect of chlorophyll fluorescence shown in (Frankenberg et al., 2012)."

No support for this statement is provided. It would be very interesting to know, of course, whether this statement is indeed true, but I think that the manuscript does not address this question. I am afraid that I therefore find the title presumptuous.

p.8794, l.15-16: "A comparison the RRS filling-ins computed"

missing words, typo?

The work that you did on RRS in the O₂ A and O₂ B bands is timely and needed. The question remains how neglect of RRS (resulting in radiance errors that you quantify) affect retrieval. Thank you for this work.

Kind regards,

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