

***Interactive comment on “Vertical profile of tropospheric ozone derived from synergetic retrieval using three different wavelength ranges, UV, IR, and Microwave: sensitivity study for satellite observation” by Yasuko Kasai et al.***

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Dear Kasai et al.,

I have found your manuscript of a huge interest, as it further extends the path towards multi-spectral integration in retrieval algorithms and it enables significantly improved vertical information extraction on tropospheric ozone.

Nevertheless, in your introduction I have found that you have missed what has been the first experimental step (i.e. using real satellite data) of all this spectral integration. Consequently, I suggest adding the following references of our past work:

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Sellitto, P., Del Frate, F., Solimini, D., and Casadio, S.: Tropospheric ozone column retrieval from ESA-Envisat SCIAMACHY nadir UV/VIS radiance measurements by means of a neural network algorithm, *IEEE T. Geosci. Remote*, 50, 998–1011, doi:10.1109/TGRS.2011.2163198, 2012

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Sellitto, P., Di Noia, A., Del Frate, F., Burini, A., Casadio, S., and Solimini, D.: On the role of visible radiation in ozone profile retrieval from nadir UV/VIS satellite measurements: An experiment with neural network algorithms inverting SCIAMACHY data, *J. Quant. Spectrosc. Ra.*, 113, 1429–1436, doi:10.1016/j.jqsrt.2012.04.007, 2012

that first introduced the combined use of UV plus visible (i.e. the ozone Chappuis absorption bands) spectral information and demonstrated that it improves vertical sensitivity of these retrievals. This was the first use of different bands, even if in a single satellite instrument, and is of a historical importance in this path that you are spectacularly extending using MW information, after the works of Cuesta et al and Fu et al that introduced the use of TIR spectral information.

Thank you for your very interesting work. Pasquale Sellitto

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