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Atmospheric Measurement Techniques Discussions

Interactive comment on "Characterization of the OCO-2 instrument line shape functions using on-orbit solar measurements" *by* Kang Sun et al.

Anonymous Referee #2

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The paper analyses the OCO-2 ILS and compares different analytical and empirical parameterizations. The paper is well written, and the findings are of great interest for the retrieval of trace gases from satellite spectra. In particular the dependency of analytical parameterizations on sampling position, as consequence of undersampling of OCO-2, is carved out well. I recommend publication after dealing with the following comments:

1. The introduction is quite vague with respect to previous satellite missions. For instance, to what "existing satellite instruments" (page 1, line 17) do you refer? TOMS? GOME? OMI? GOSAT? Please extend the description of existing instruments relevant for this study, and show the improvement of OCO-2 design in direct comparison to e.g. GOSAT. Also the "species measured by existing satellite instruments" (page 2, line 21) are quite general; please specify, and note that OCO-2 is not the first instrument

measuring CO2.

2. In section 3, various ILS parameterizations are listed which are applied in the following analysis. Later in section 5, the Super Gaussian is introduced and applied as well. Please introduce the Super Gaussian earlier and add it to the list of parameterizations from section 3 on.

3. Page 1, line 12: "induced"

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