

Dear Dr. Yuyu Zhou and reviewers,

We are extremely grateful for your feedback, expertise, and the time you have spent helping us refine our data description. Below are our revisions and responses in blue to a couple of comments that arose after we submitted our major revision.

On behalf of all coauthors, thank you so very much,

Russell Doughty

Report #2 from Anonymous referee #1:

Page 5:

Line 106: The authors stated that SIF retrievals with a mean single measurement precision around $\sim 0.5 \text{ W/m}^2/\text{sr}/\text{um}$. I want to know what is the basis for precision of $0.5 \text{ W/m}^2/\text{sr}/\text{um}$. Up to now, there is no validation results that could demonstrate the spaceborne SIF retrieval precision.

We fully describe SIF retrieval errors in Section 4.2, which is titled *SIF retrieval uncertainty*. The equations and methods are fully documented and described in this section.

We have edited the statement at line 106 to read:

“...enabling SIF retrievals with single measurement precision around $\sim 0.5 \text{ W/m}^2/\text{s}/\mu\text{m}$ (as fully described in Section 4.2).”

Line 114: Please verify the spectral resolution of GOSAT. 0.012 is different with that introduced by previous works.

We appreciate the attention to detail, but we reported the resolution as being, “... a spectral resolution of 0.2 cm^{-1} .” Perhaps the reviewer was looking at a previous version of the manuscript, as a reviewer asked us to report the spectral resolutions in cm^{-1} .

This number comes from the Kuze et al. (2009) paper that we cited. Here is an excerpt from the abstract of that paper:

“TANSO-FTS is capable of detecting three narrow bands (0.76, 1.6, and $2.0 \mu\text{m}$) and a wide band ($5.5\text{--}14.3 \mu\text{m}$) with 0.2 cm^{-1} spectral resolution (interval).”