

Earth Syst. Sci. Data Discuss., referee comment RC3
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Comment on essd-2021-237

Anonymous Referee #3

Referee comment on "Global GOSAT, OCO-2, and OCO-3 solar-induced chlorophyll fluorescence datasets" by Russell Doughty et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-237-RC3>, 2021

The authors provided a detailed descriptions on three global SIF data products (GOSAT, OCO-2, OCO-3) in terms of SIF retrieval, quality flag, sun-sensor geometry and so on. Although the information was necessary for the correct use and interpretation of SIF data, many aspects have been presented or discussed in previous works and user guide. Moreover, it seems like that these three SIF products were independent besides they were retrieved in similar retrieval windows or similar spectral resolutions. Overall, the novelty of this manuscript is not clear, so I recommended a major revision before publication. The authors should provide some new findings rather than the simple summary of previous works.

Other comments:

The structure of this manuscript was not well organized and was a bit imbalanced. For example, Sections 2.1 (GOSAT) and 2.2 (OCO-2/3) belong to the satellite platform, but the Section 2.3 (observation modes) could be better presented in Section 3 (data description). In addition, Section 4.1 (SIF retrieval) and 4.3 (SIF retrieval uncertainty) could be combined one section to reduce the number of subsections. Discussion is confusing and it seems like suggestions on use of SIF. I was also confused why putting so many efforts on the comparison of OCO-2 and GOSAT SIF (four figures in this subsection and only eight figures in the whole manuscript).

Line 43. PAM was mainly used in leaf level. It could be better to write "in vivo at the subcellular and using PAM at the leaf level"

Line 51-51. It is not clear to compare SIF and photosynthetic yields. Compare SIF with GPP?

Section 2.3. I found the observations of target mod was reduced in OCO-2 v10 compared to v8. Could you address this here?

Line 366. Although it could mitigate the effects of sun-sensor geometry averaging sounding for a point of interest over the entire repeat cycle (16-days for TROPOMI), the seasonal variation of vegetation cannot be ignored in this long temporal period, which should be pointed out.

Line 373-376. More relevant background information should be added in this short paragraph. Why the gridding is unnecessary? How to directly use L2 data? What information would be lost? It will confuse me and other readers.

Line 378. at 757 nm?

Line 379. Stronger at this wavelength than that at 771nm?