

The authors have addressed nearly all of my major concerns. However, several minor issues remain, which I suggest the authors revise. While the use of pseudo-invariant calibration sites (e.g., deserts) is valuable for evaluating sensor radiometric stability, these regions contain little to no vegetation do not emit meaningful SIF signals. As such, analysis may not convincingly validate the reliability of interannual SIF trends. The dataset has clear value and the revision has improved the manuscript. However, I recommend a minor revision to address the following issue before acceptance.

Minor :

1) The authors only provide pseudo-invariant calibration site analyses to argue against sensor degradation. Yet, no independent validation is offered to demonstrate whether the strong decline during 1995-2000 reflects real ecosystem dynamics or methodological artifacts. Cross-validation with independent datasets (e.g., tree-ring records, AVHRR NDVI, FAPAR, or process-based model simulations) would be necessary to convince readers that these early trends are credible.

2) Some terms are over-stated (such as robust, significant (without P value), and substantial) without sufficient quantitative evidence. More cautious and objective wording is recommended. Here are some examples: Line 274: "Our dataset provides a robust estimate..."; Line 512: "...show a significant improvement compared with..."; Line 742: "...a substantial amount of carbon flux variability remains unexplained."

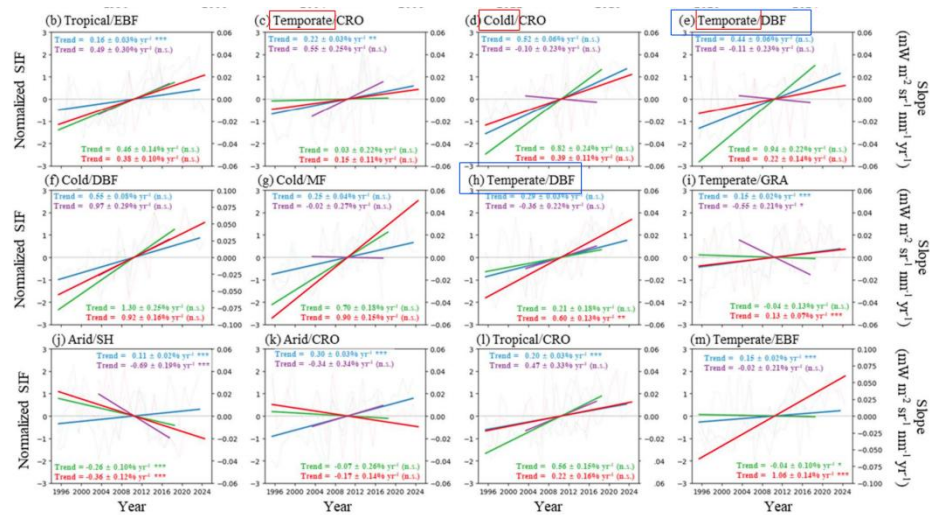
3) I recommend you to add all abbreviations for each figure. For example, in Fig. 10, please add the definitions or full names for the following abbreviations (including LHSIF (red), LT\_SIFc\* (green), SIF\_005 (purple), and LCSIF (blue)) at the end of the figure caption. In addition, using two stars for significance level is more common (i.e., \* for  $P < 0.05$  and \*\* for  $P < 0.01$ ).

4) Please double check all figures to avoid typo errors.

Fig. 10(d): typo error: 'Coldl'——>"Cold";

Fig. 10(c), (e): typo error: "Temporate"——>"Temperate"

Fug. 10(e), (h): why they are the same name? Maybe the layout could be improved by putting of vegetations in different climate regions in the same row or line.



- 5) Line 22: "...has garnered significant attentions..." (change 'attentions' to 'attention').
- 6) Line 46-47: "...The Orbiting Carbon Observatory(OCO)-2 satellite..." (Missing space before parentheses).
- 7) Line 181-185: "...Eq. (1) can be broken down into three terms (Bacour et al., 2019): " (Replace the full-width colon with a standard English colon).
- 8) Line 309: Please ensure that the first word in x- and y-axis titles starts with a capital letter for consistency (e.g., Fig. 7a: "Yearly max SIF" instead of "yearly max SIF"). Same as in Fig. 8b.