

I appreciate the substantial work the authors have done in response to the comments. The manuscript is much improved. I still have a couple of technical comments. I recommend a minor revision.

1. The claim of inter-CERES agreement to 0.03% (line 557) needs to be objectively stated. The three satellite means agree to 0.03%, but each mean has a bootstrapped 95% CI of $\pm 0.45\%$ (Terra), $\pm 1.08\%$ (Aqua), $\pm 0.53\%$ (NOAA-20), and each satellite samples different scenes and local times. In my view, the three are statistically indistinguishable at the $\sim 0.5\text{--}1\%$ level. The numbers in the manuscript cannot substantiate a claim of 0.03% agreement.
 - a. *Authors' response:* We thank the reviewer for this important comment. The reviewer is correct that reporting the raw difference between the mean values of the three CERES instruments (0.03%) without accounting for the uncertainty on each individual mean overstates the precision of the inter-CERES agreement. As the reviewer notes, the 95% confidence intervals for the individual CERES instruments (Terra $\pm 0.45\%$; Aqua $\pm 1.08\%$; NOAA-20 $\pm 0.53\%$) overlap, meaning the three means are statistically indistinguishable from one another rather than distinguishably “agreeing to 0.03%.” We have revised the manuscript to state this more objectively.
 - b. *Proposed changes to the manuscript:* The sentence in line 565 has been revised from:
“The comparisons in Fig. 14 and Table 3 show that CTIM and CERES agree to well within their respective uncertainties and that the CERES instruments used in this study agree with one another (within less than 0.03% based on this comparison).”
to:
“The comparisons in Fig. 14 and Table 3 show that CTIM and CERES agree to well within their respective uncertainties and that the Terra, Aqua, and NOAA-20 CERES instruments used in this study agree are statistically indistinguishable from one another.”
2. About footprint geometry: The 242 km radius is derived from $h = 453$ km, while Sect. 2.2 says ~ 500 km. CTIM re-entered in December 2023, so its altitude must have decayed substantially over the 15-month observing period; with $d = h \cdot \tan(23^\circ)$, a 400 km altitude gives 170 km cross-track rather than 192 km. Please state the altitude range over the analysis period and either (a) compute the footprint per observation from the actual altitude, or (b) show that using a fixed 453 km changes nothing. My hunch is (b) would be true, as the spatial response is near zero beyond ~ 165 km anyway.
 - a. *Authors' response:* We thank the reviewer for bringing up this important point. CTIM was launched into an approximately 500 km altitude, correctly stated in Sect. 2.2. The 453 km altitude used in Sect. 3.1 for the footprint-geometry calculation represents the median CTIM altitude across the analysis period; the CTIM altitude ranged from 503.9 km to 299.4 km over this period (26 August 2022–30 November 2023) as its orbit decayed ahead of re-entry in December

2023. A rigorous per-observation altitude and radius correction (Reviewer's option a) would require the minimum CERES footprint threshold to change for each CTIM footprint; thus, each CTIM footprint would require extensive sensitivity analysis for determining the statistically significant number of CERES footprints for Step 1 of the matching algorithm. (The process is demonstrated in our response to Reviewer 1). We instead evaluated option (b): whether the fixed 453 km altitude meaningfully affects our results.

For each of the 541 CTIM–CERES matches, we recomputed each CTIM footprint radius using that observation's altitude using the equation:

$$d = h \tan(23^\circ)$$

This provided a conservative approximation, as it excluded along-track motion blurring, which increases the true footprint size relative to this calculation. Thus, this conservative approximation should provide a larger difference between the fixed-altitude and altitude-varying approaches than a motion-blur-inclusive correction would, since it produces smaller footprints overall.

With each new altitude-specific CTIM radius smaller than 242 km, we used a “cookie cutter” approach: any CERES footprint farther from the CTIM centroid than that observation's radius was excluded entirely. The remaining CERES footprints were weighted using the same CTIM spatial response function, footprint area ratio, and clear-sky limb-darkening adjustments as in the original analysis. The weighting itself was unchanged; only the set of CERES footprints included in the weighted mean for each CTIM–CERES match differed. Excluding the far-field footprints increased the relative contribution of the remaining, near-edge footprints to the weighted mean, compared to the original fixed 242 km radius.

The altitude-varying analysis yielded a combined mean relative difference of -1.203% ($\sigma = 4.169\%$) across all 541 matches, compared to -1.186% ($\sigma = 4.159\%$) using the fixed 453 km altitude (a difference of 0.017 percentage points in the mean and 0.010 percentage points in the standard deviation). At the level of individual CTIM–CERES matches, the altitude-varying analysis produced a mean per-match shift of -0.018% ($\sigma = 0.194\%$), with a maximum absolute shift of 2.959% occurring at 299.5 km (near the minimum altitude observed over the analysis period). The per-match relative differences between the two methods were highly correlated overall ($R^2 = 0.998$; $\text{RMSE} = 0.194\%$), which further confirmed that the altitude correction does not substantially alter individual CTIM–CERES match-level results.

We therefore concluded that the fixed 453 km altitude used for the footprint-geometry calculation did not meaningfully affect the results reported in this study, consistent with option (b) suggested by the reviewer.

- b. *Proposed changes to the manuscript:* We have added the altitude range explicitly to the manuscript (Lines 190-191):

“Where $h = 453$ km was the median CTIM orbital altitude across the analysis period (see Sect. 6 for a sensitivity analysis of the fixed-altitude assumption).”

As indicated by our changes to the sentence in Lines 190-191, we added a note following the first paragraph in the results section (Lines 537-544):

“Notes on the fixed-altitude footprint geometry assumption:

To evaluate the sensitivity of our results to the fixed 453 km altitude used in Sect 3.1, each CTIM footprint radius was recomputed using that observation’s altitude in Eq. (5), excluding along-track motion blurring (a conservative approximation that yielded smaller footprints and therefore an upper bound on the expected sensitivity). Using the same 541 CTIM–CERES matches, the CERES footprints falling outside of the altitude-specific CTIM radius were excluded in the CERES mean radiance calculation. The resulting altitude-varying analysis yielded an overall mean relative difference of -1.20% ($\sigma = 4.17\%$), with per-match relative differences highly correlated between the two approaches ($R^2 = 0.998$). These results indicated that the fixed 453 km altitude did not introduce a meaningful bias in the reported CTIM–CERES comparisons.”

In addition, a few typos and inconsistencies.

- 3. NOAA-20 σ : text (line 524) and response say 3.83%; Table 3 says 3.89%. Please check and reconcile.
 - a. *Authors’ response:* We thank the reviewer for finding this typo. The value in Table 3 should have been reported as 3.829%, which is where the rounded value of 3.83% comes from in (now) line 525.
 - b. *Proposed changes to the manuscript:* The value in Table 3 has been corrected.
- 4. Line 78: "National Academies of Science (2016)" vs. "National Academies of Sciences (2018)" elsewhere
 - a. *Authors’ response:* We thank the reviewer for finding this typo.
 - b. *Proposed changes to the manuscript:* This has been corrected to “National Academies of Sciences (2016)”.