

Thank you for your comments. Please find below a point-by-point reply to the raised questions.

1. **Thank you for the clarification. The point about sparse ground coverage is well taken for the general CTH retrieval evaluation, where CloudSat-CALIPSO already serves as the primary reference. However, the parallax correction assessment is validated only against CLAAS-based corrections, which are themselves a retrieval product rather than an observed displacement. Since the abstract frames "physically consistent parallax correction" as the main objective, this distinction could be significant: agreement with CLAAS-3 shows consistency between two retrieval methods, not necessarily a correction that matches the true cloud location. Even a small number of collocated surface sites — checked before and after correction — could offer independent evidence that the correction is moving pixels toward, not merely alongside, a plausible ground truth..**

We agree that agreement with CLAAS-3 demonstrates consistency between two retrievals rather than agreement with an observed displacement, and we have adjusted the manuscript accordingly.

We would like to stress, however, that parallax correction is a deterministic geometric transformation: given the satellite viewing geometry (known from orbital data) and CTH, the displacement follows analytically. There is no free parameter and no algorithmic choice to be validated. The only uncertain input is CTH, and this quantity is validated here against CloudSat/CALIPSO — the most reliable CTH reference available. The CLAAS comparison therefore serves a different, complementary purpose: to demonstrate operational equivalence, i.e. that a single-IR-channel retrieval reproduces the geolocation obtained with a state-of-the-art multispectral product.

Regarding ground-based cross-checks, we see a physical rather than practical obstacle. Lightning, precipitation and irradiance signatures mark the convective core at the surface, whereas parallax correction relocates the cloud top. With tilted updrafts and anvil advection, a genuine horizontal offset of several kilometres between cloud top and surface signature is expected. A mismatch after correction could therefore not be attributed unambiguously to the correction itself, and such an evaluation would require a dedicated study of cloud-top/surface-signature geometry

Following the reviewer's remark, we have

- rephrased the abstract to state that the method yields parallax correction consistent with operational geostationary products, rather than 'physically consistent'
- added a paragraph to the discussion acknowledging that the evaluation is retrieval-versus-retrieval, and identifying independent validation against surface-based observations as a valuable direction for future work.