Multi-Scale Canopy Calibration & CFS Benchmarking Brief

Version 2026.11 · Optical Geometry & Seasonal Modeling · rootedcarbon.com/science

Overview of how Rooted Carbon reconciles smartphone elevation views and aerial consumer RGB drone frames into consistent tree-level biomass and CO_2e baselines.

Multi-Scale Optical Geometry

- Ground-level smartphone frames resolve bark texture, root collar framing, full vertical silhouette, and trunk diameter (DBH) cues using native 1× camera optics.
- Aerial consumer RGB drone frames map crown spread, species separation, and multi-tree stand density across woodlots and urban corridors without requiring rigid single-angle flight rigs.
- Center-frame optical normalization compensates for wide-angle lens distortion across everyday camera hardware.

Seasonal Canopy Behavior

- Spring bud-break and autumn peak color maximize deciduous-to-conifer species contrast across mixed Acadian stands.
- Summer full canopy closure activates explicit understory visibility flags and calibrated ±% uncertainty bounds.
- Late-autumn leaf-off passes expose basal trunks clearly prior to snowpack—the focus of ongoing Gen-5 calibration.

Ecological Modeling & Reporting Standard

- Aboveground dry biomass and stored atmospheric CO_2e are estimated through Rooted Carbon's proprietary ecological modeling pipeline benchmarked against Canadian Forest Service standards and multi-season caliper trials.
- Every output record clearly distinguishes stored carbon stock (t CO_2e) from estimated annual sequestration ranges (kg/yr) alongside explicit confidence bands.

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