



Buyer's guide to remote sensing data

Plots vs pixels: comparing data providers with your field data

Incentivizing investment in real climate action.

You need remote sensing data for your project

But no benchmark exists to tell you which provider is best

Your starting point

You're sourcing remote sensing data – to build a baseline or give offtakers monitoring insights. You need to pick a provider whose data best represents your project & the area around it.

The challenge: There's no clean way to tell whose data is best:

- No direct measurement of biomass anywhere across your project → no ground truth to rank providers against.
- Field plots are the natural reference, but they cover a small fraction of the area and carry real uncertainty of their own → comparison against them can't settle the question outright.

This guide covers how to make the most of your field plots, and what else can inform the choice when they are thin.

What goes into the choice?

Requirements

Does it give you what you need?

- Data and layers – biomass, canopy structure, indices
- Resolution, coverage and update frequency
- How it's delivered – rasters, zonal statistics

Trust

Are the data credible?

- Inputs – what is the model trained on
 - Independent validation – against a reference
 - Local validation: does it hold up in my area of interest?
- The purpose of this guide

The first thing you might do is compare plots to pixels

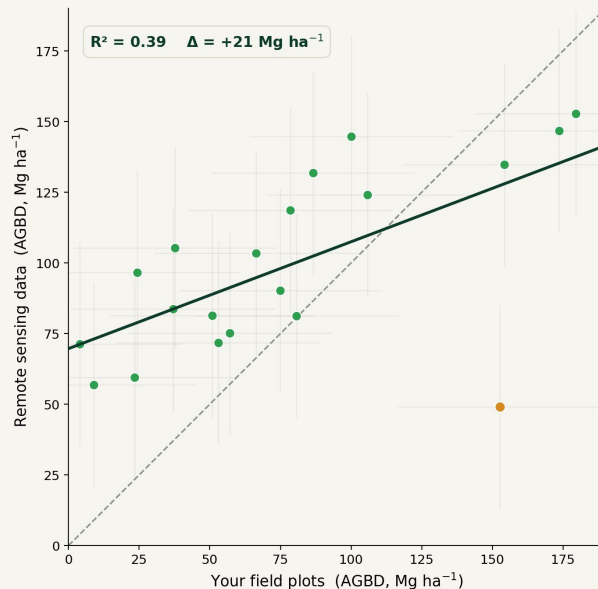
But beware of the pitfalls with simple comparisons

1. The gap isn't "who's wrong"

The two may sit at different average stocks – but **neither is ground truth**. One runs tape measurements through an allometric equation, the other is a satellite model. The gap doesn't tell you which is closer to the truth.

3. Small samples are a coin toss

With a small sample – say 20 plots or fewer – and both sides uncertain by roughly half, you're at the mercy of randomness. Measure a different 20 and the picture moves. You could rank a weaker provider above a stronger one and never know.



2. Weak correlation isn't weak data

The best-fit line is flatter than the 1:1 line – but that's noise in both plots and pixels (often over 50% each) pushing R^2 down, not bad data. The term for this is regression dilution.

4. A plot can land in the wrong pixel

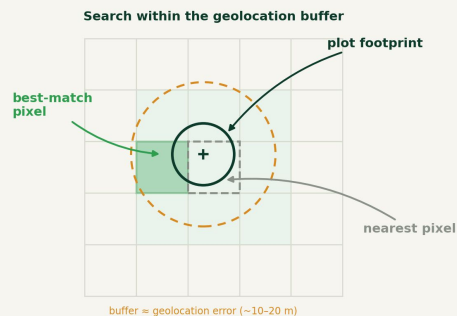
A plot is located by GPS to about 5–15 m, and pixels are only 10–30 m across. So it can fall in the neighbouring pixel or partially cover multiple pixels. Either way the values won't match: a scale-and-location issue, not a flaw in the data.

Compared this way, the winner comes down to randomness – not merit.

How to make the most of the field data you have

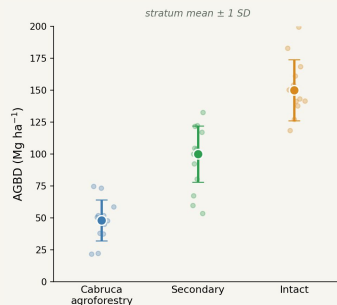
From point-matching, to distributions

1. Match plots to pixels well



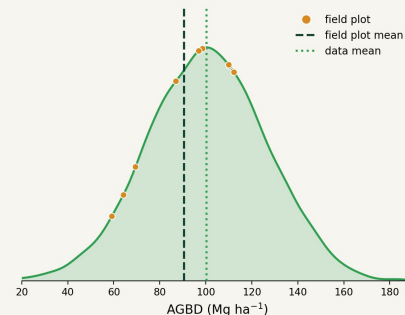
Use as many plots as you have, and larger ones where you can. CEOS good practice¹ points to at least ~0.25 ha, cutting noise and scale mismatch. Buffer each plot by a conservative geolocation error (~10-20 m), then match it to the best-fitting pixel in that buffer, not just the nearest.

2. Compare stratum means



Group plots and pixels into strata (e.g. forest type) and compare the mean of each stratum, not point-by-point – random noise averages out, so a real difference between providers shows through where single points can't. This assumes your plots sample each stratum representatively, not opportunistically.

3. Compare distributions



Visualise the remote sensing data's distribution across the wider stratum and overlay your plots. Ask whether they fall within that range – not whether each point matches its pixel – using the whole map. Again, your plots should span the area's strata and biomass range.

Done this way, the real differences between remote sensing providers begin to show through – you're choosing based on signal, not luck.

Going above and beyond traditional field data

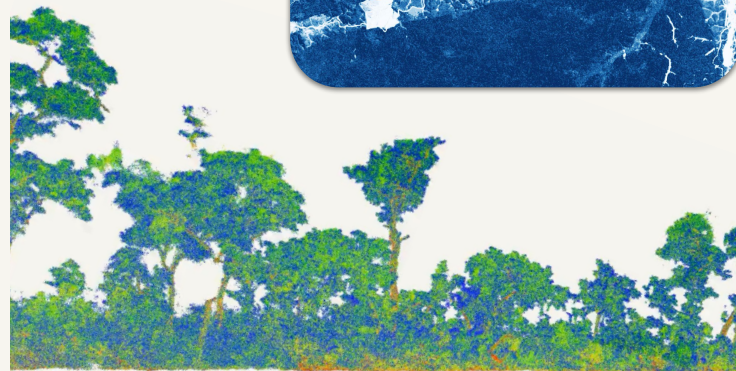
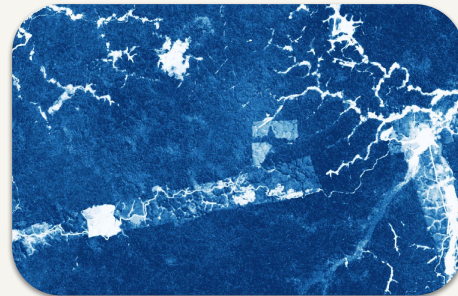
Airborne lidar provides wall-to-wall reference at pixel scale

Thousands of validation pixels, not a handful of plots

Validate against a well-calibrated lidar reference over tens or hundreds of hectares – so the randomness that plagues small samples largely disappears.

Check the layers directly, not just aboveground biomass

Canopy height and cover come almost directly from lidar data, so you can validate them cleanly. Biomass still needs a structure-to-biomass model, so it's one step less direct.



Pixel-scale, like-for-like

Lidar gives a value for every pixel, so you compare like with like at matching scale – the scale and location mismatch goes away.

Low-cost drone lidar puts this within reach

A strong reference no longer needs a big budget – drone lidar makes it genuinely tractable.

Done this way, you get the clearest signal yet of whether remote sensing data represent your area of interest.

Choosing well – with or without field data

The bottom line

If you have field data, compare them properly:

1. Best-match pixel

2. Stratum means

3. Distributions

✗ Raw point-to-pixel

Invest where you can – even a low-cost drone lidar goes a long way

As well as field data, judge the provider:

Requirements

Does it fit? Resolution, cadence, and the layers you need.

Trust

Independent validation, honest per-pixel and zonal uncertainty, transparent inputs.

Choose on merit – does it fit, can you trust it, is it representative of your area of interest?

Not on a comparison too noisy to settle it. That's how you avoid rejecting good data, or buying worse, by chance.

Biomass Atlas

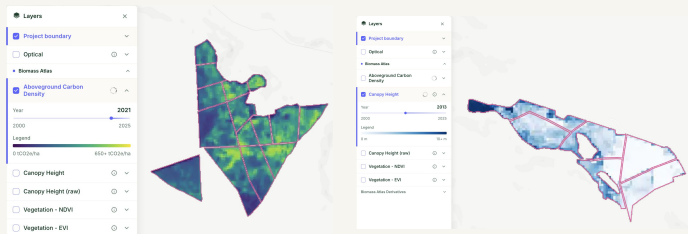
Choose and execute your project opportunities

-  **De-risk site selection before feasibility spend**
Screen candidate boundaries based on biomass stock and its evolution over time – both inside and outside a potential project's area.

-  **Optimise within the selected sites**
Use remote sensing data to pick the best sites for pilots and initial, high-stakes cohorts.

-  **Build trust with your stakeholders**
Independent estimates mean your project claims are verifiable and backed by a trusted third party.

-  **Evidence project's progress every year**
Biomass Atlas data is refreshed more frequently than project's monitoring cycle so you can increase the quality & cadence of investor, offtaker & buyer engagement.



Methodology Toolkit

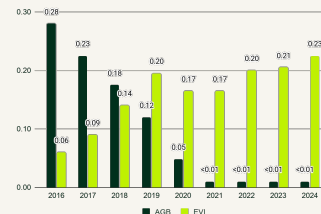
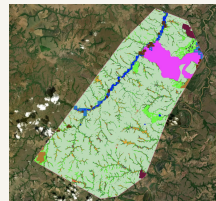
Accelerate project registration & issuance

-  **Focus your limited resources**
Rack up dMRV-enabled methodology experience by working with the experts rather than having to navigate every novel challenge yourself.

-  **Pick & choose**
Understand implications of the different options available to you, e.g. the choice of Stocking Index. Select the modules you require vs. what you have already or can DIY.

-  **Cut down on time spent in the back & forths**
Availability of the underlying data (Biomass Atlas) and extensive documentation means your counterparties can self-serve rather than drowning you in meetings.

-  **Controls costs**
Transparent and predictable costs even when there are ongoing unknowns, e.g. the total area of the donor pool you'd otherwise have to buy the data for.



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