# PLANETARY VARIABLES
Forest Carbon

MAP OF ABOVEGROUND FOREST CARBON ALONG THE SOUTHERN MARGIN OF THE AMAZON RAINFOREST.

Forests play a critical role in absorbing vast quantities of carbon dioxide from our atmosphere, but the inability to accurately measure the carbon they store inhibits the full deployment of this tool for climate change mitigation.

Physical field measurements require time- and labor-intensive sampling often in remote locations, while airborne surveys need costly flights and data processing that are rarely repeated. Existing satellite datasets often lack the detail to visualize individual trees, underrepresent forest dynamics, and fail to identify crucial events like degradation.

GLOBAL

REGIONAL

LOCAL

TREE

Forest Carbon, one of our Planetary Variables, offers up-to-date, accurate, and finely resolved measurements of the aboveground carbon stored in forests.

Leveraging quarterly updates from high-resolution satellite imagery, our Forest Carbon product captures changes that other datasets might miss, enabling stakeholders to fully track forest changes from entire regions to countries to individual trees. This globally complete dataset removes the cost and burden associated with traditional field measurements and offers a cost-effective solution for carbon accounting worldwide.
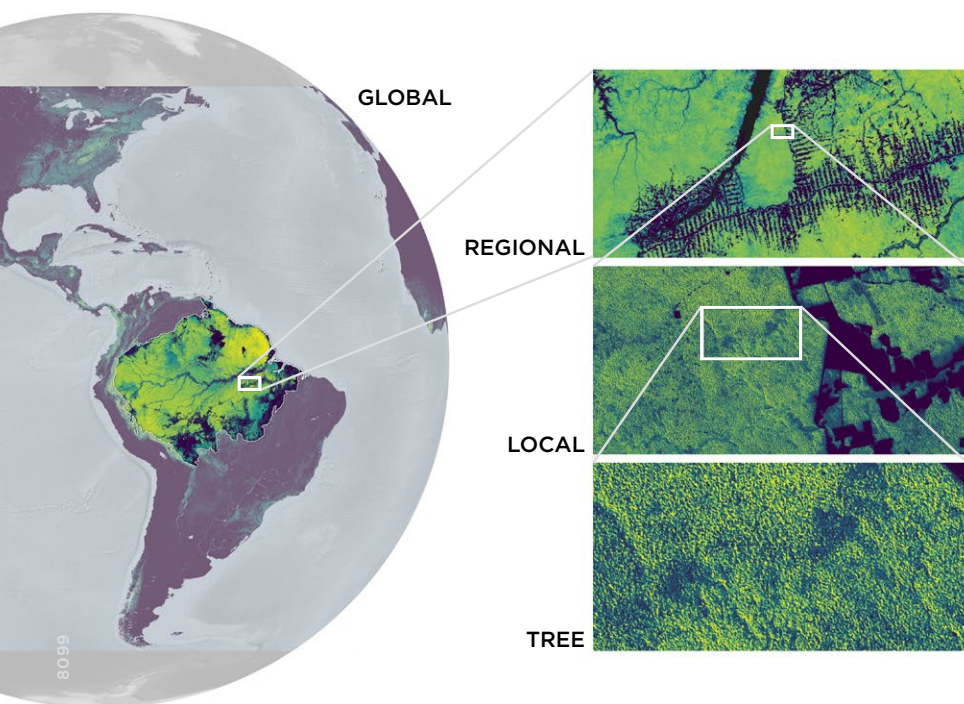
FREQUENCY
Dynamic systems need dynamic monitoring. Updated quarterly to capture sub-annual disturbances.

RESOLUTION
Unprecedented granularity at 3 meter per pixel resolution. We capture more complete patterns of forest change over time, giving stakeholders detail.

ACCURACY
Quality data in means quality data out. Scientifically validated methodologies establish at least 80% accuracy to ensure loss events are captured.

SCALABILITY
Near-LiDAR level accuracy at a fraction of the cost, everywhere on Earth. Our globally complete dataset removes the burden of needing to conduct field measurements or airborne surveys.

HOW IT WORKS

Planet makes use of an extensive global airborne and spaceborne LiDAR database of forests as the gold standard for ground truth data on canopy height and canopy cover. Using this LiDAR data for training and validation, we build deep learning models on PlanetScope Surface Reflectance imagery fused with multiple public satellite sources. These models are applied globally to calculate canopy height and canopy cover. Global predictions of basal area and wood density are built from process-based models drawing on a field inventory database of nearly half a million georeferenced plots. Regionally calibrated allometric equations using height, cover, basal area, and wood density are created from the field inventory database and used for predicting aboveground live carbon stocks. All predictions are validated using independent airborne, spaceborne, and field measurements of canopy structure and aboveground carbon.
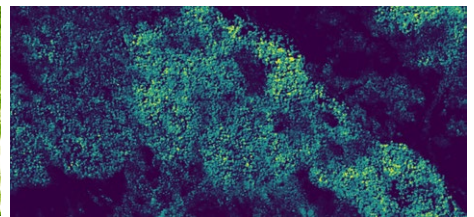
CANOPY COVER
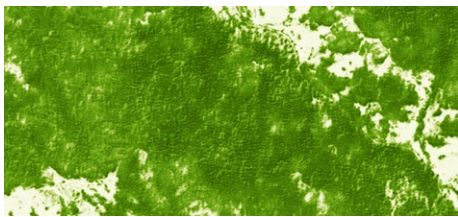
0 — 100
percent

CANOPY HEIGHT
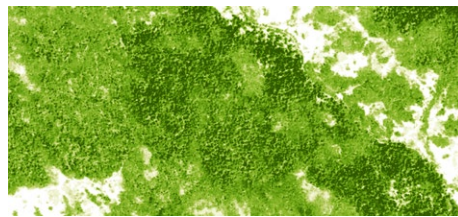
0 — 40
meters

ABOVEGROUND LIVE CARBON

0 — 300
Mg/ha

USE CASES ACROSS INDUSTRIES

Forest Carbon Projects

Our Forest Carbon Planetary Variable enables the quantification of carbon stocks and forest area over time to accurately quantify losses and gains. The accuracy is comparable to airborne approaches but the data is orders of magnitude less expensive while being globally available, providing a cost-effective solution for comprehensive monitoring. The high precision, accuracy, and granularity offered by the Forest Carbon variable provides an objective foundation for identifying and implementing improvements in carbon initiatives.

Deforestation Monitoring for Supply Chains

Forest Carbon data provides comprehensive monitoring by quantifying deforestation on a high-frequency cadence. Stakeholders can report on their supply chains to forests globally with unprecedented granularity and confidence. In the context of the EU Deforestation Regulation (EUDR), the Forest Carbon dataset offers more precise data, aligning with the regulation's focus on defining deforestation boundaries and providing crucial context regarding forest degradation and carbon loss.

SPECIFICATIONS

	MONITORING	DILIGENCE
Pixel Size	3 meters	30 meters
Temporal Resolution	Quarterly updates	Annual
Data Availability	Global	Global, archive from 2013
Data Layers Included	Canopy Cover Canopy Height Aboveground Live Carbon Streaming Visual Basemaps	Canopy Cover Canopy Height Aboveground Live Carbon
Data Product Inputs	LiDAR: Airborne LiDAR, GEDI Electro-optical: PlanetScope, Landsat8, Sentinel-2 SAR: Sentinel-1, ALOS-PALSAR Ground: Field inventory plots	
Units	Canopy Cover: Percent Canopy Height: Meters Aboveground Live Carbon: Megagrams per hectare	

PRICING

	MONITORING	DILIGENCE	ALL-ACCESS (INCLUDES BOTH DILIGENCE AND MONITORING DATA)
Price per hectare	$0.25	$0.10	Contact us for pricing

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