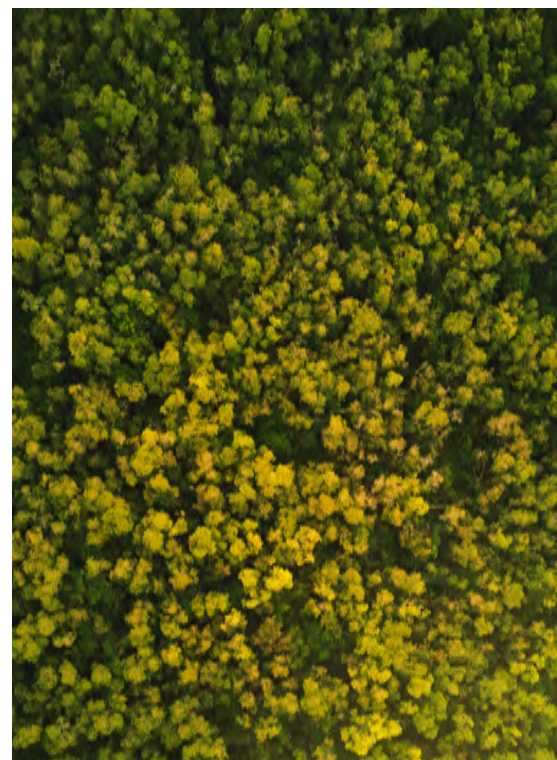


High-resolution forest structure data.

We use deep learning to monitor annual changes in forest structure globally.

Lobelia's forest structure is a satellite-based product providing high accuracy annual measurements of aboveground biomass, canopy height, and canopy cover at 10 m resolution from 2016 to the present.

The product has been validated globally with in-situ data across four highly distinct biomes: the Mediterranean, the boreal forest, the tropical rainforest, and the semi-arid savannah.



USED FOR:

- Carbon stock estimation and emissions.
- Forest inventories: degradation, deforestation, and recovery.
- Biodiversity and habitat suitability modeling.
- Nature based climate adaptation monitoring.

FEATURES:

-  10 m resolution coverage - Global
-  Weather, light and RFI independent
-  Annual updates since 2016
-  Immediate data retrieval without the need of local calibration
-  Based on a peer-reviewed methodology
-  Accessible via API



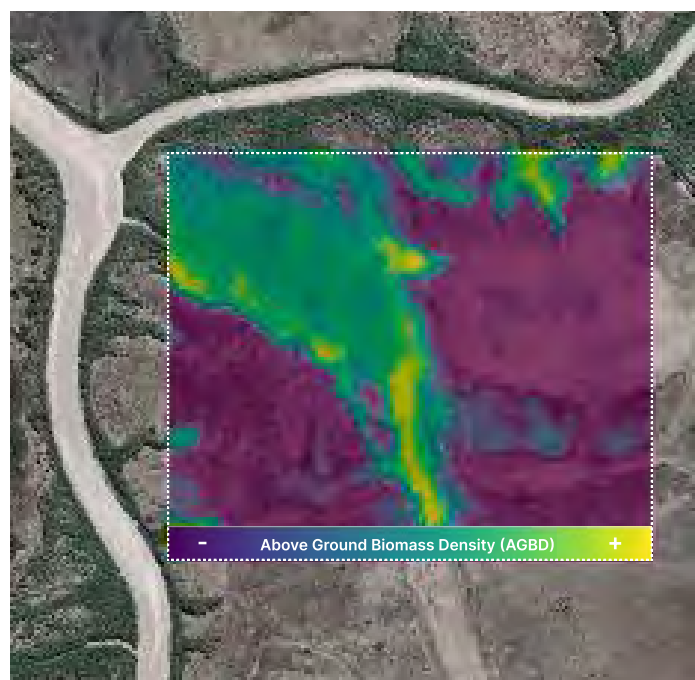
How does it work?

1. The dataset integrates LiDAR, multispectral, SAR, land cover and elevation data into a single deep learning framework.
2. The multi-output model is trained on GEDI-derived forest metrics to simultaneously predict multiple variables, leveraging shared patterns for improved accuracy.
3. Key variables describe the essential components of forest structure for precise, high-resolution, yearly monitoring.
 - Aboveground biomass density and annual change are used to calculate carbon stocks, and to estimate belowground biomass.
 - Canopy height measurements and annual change are used for monitoring restoration and mapping habitat suitability
 - Canopy cover and annual change indicate forest density, habitat extent, and deforestation.
4. Provides uncertainties via 5% and 95% confidence intervals.

Deep Learning Synergy for Advanced Forest Structure Mapping.

Intended for large scale applications, Lobelia's product offers non-invasive, high value forest analytics without the costs and emissions associated with in-situ inspections. This reliable and precise method for monitoring forestation projects is more advanced than comparable commercial solutions, and provides greater adaptability across diverse landscapes worldwide.

The product is continuously updated with state-of-the-art forest structure modeling.



USED BY:



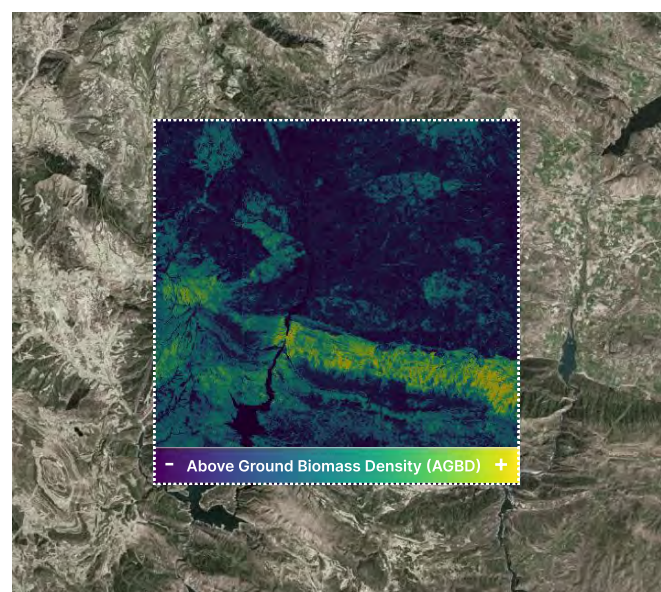
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SACYR



TECHNICAL SPECIFICATIONS

Time coverage	2016 to present
Spatial coverage	Global
Temporal resolution	Annual
Spatial resolution	10m
Satellites used	GEDl, Sentinel-1, Sentinel-2

RELEVANT PEER-REVIEWED PUBLICATIONS:

Perpinyà-Vallès et al. (2025) DOI: [10.3390/rs17071268](https://doi.org/10.3390/rs17071268)
 Perpinyà-Vallès (2025) [Doctoral Thesis](#)

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