

# Multi-Tiered Remote Sensing Approach for Improved Forest Structure and Biomass Modeling in the Mayan Biosphere Reserve

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## Overview

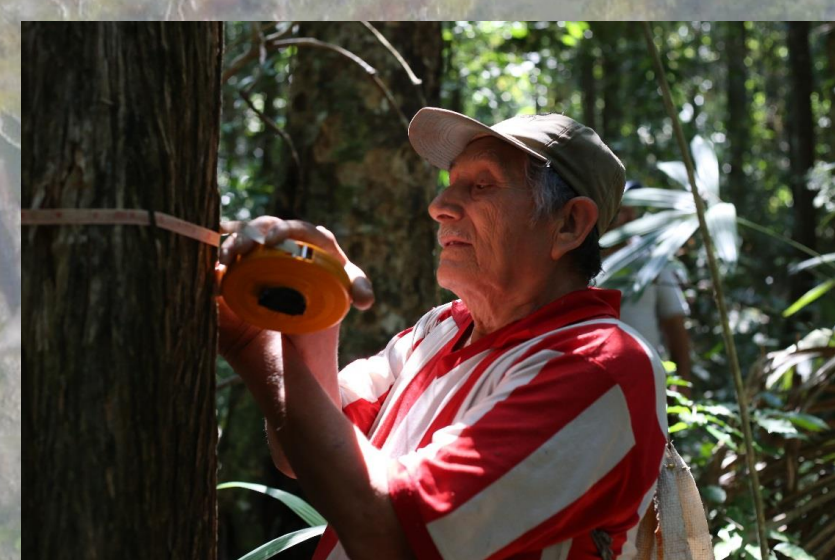
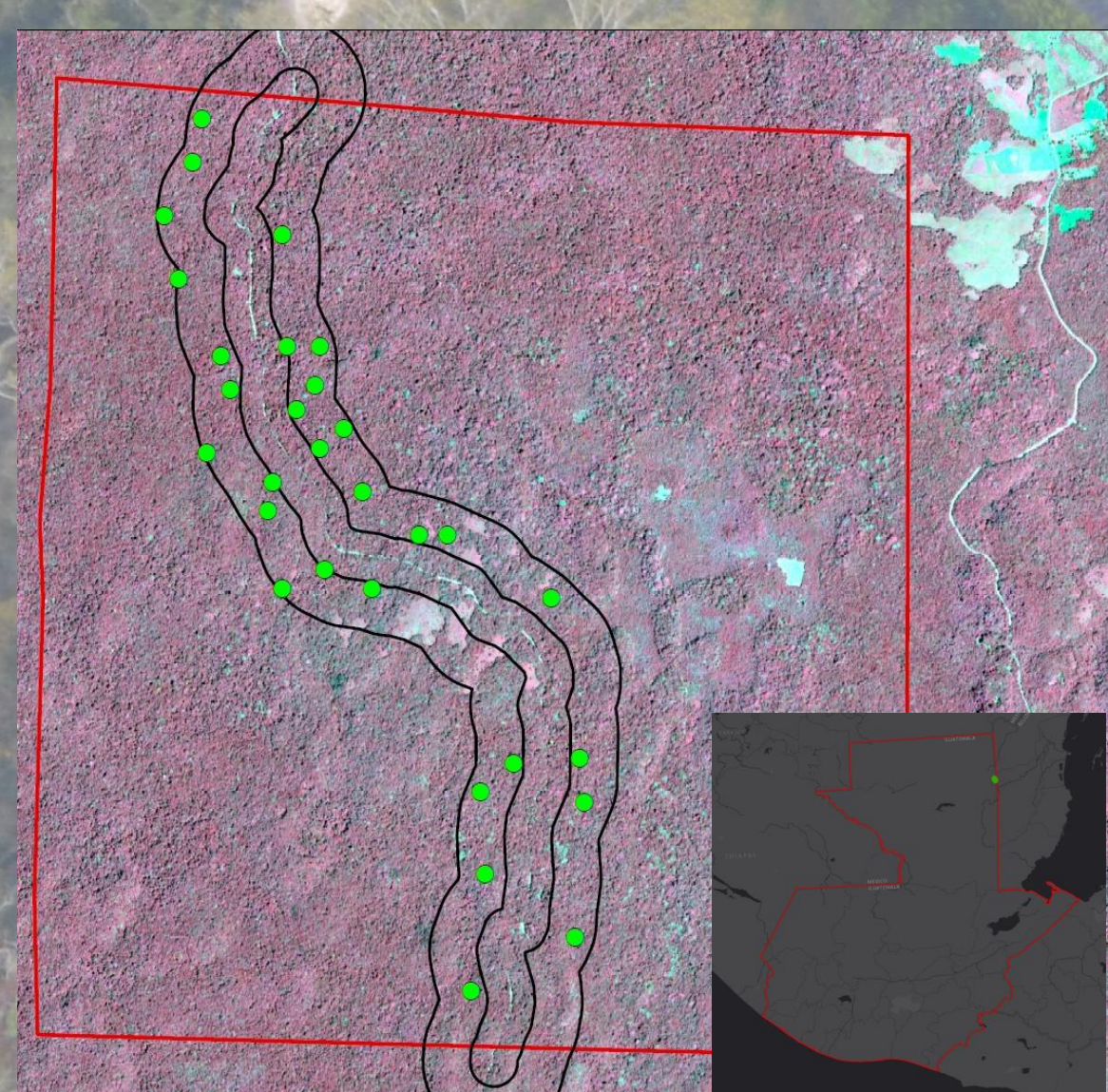
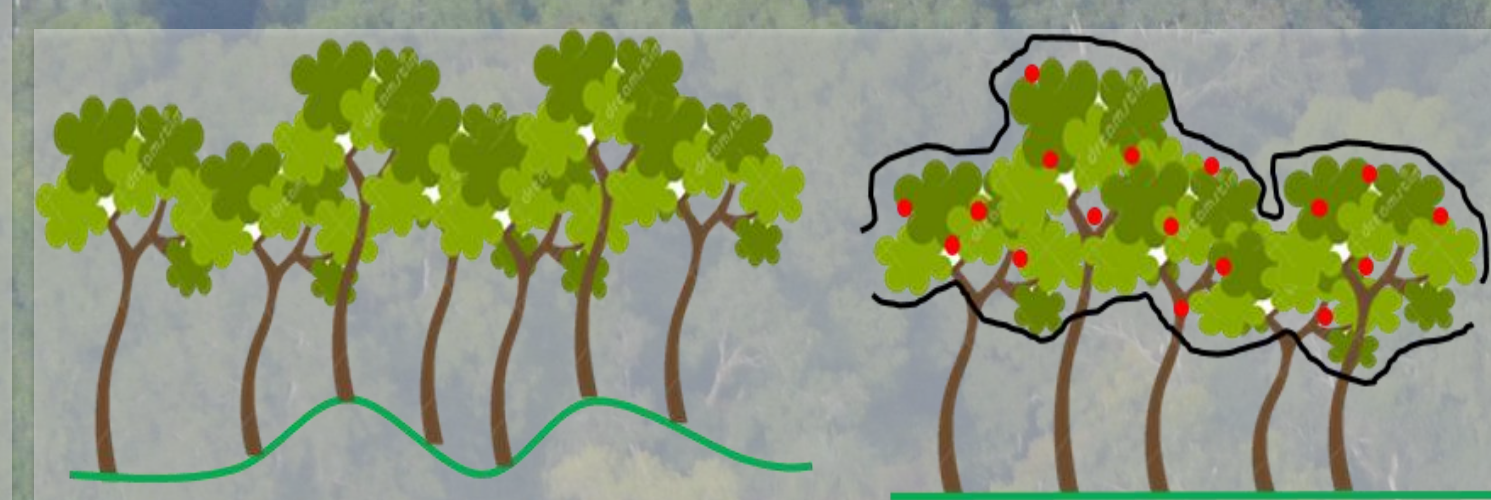
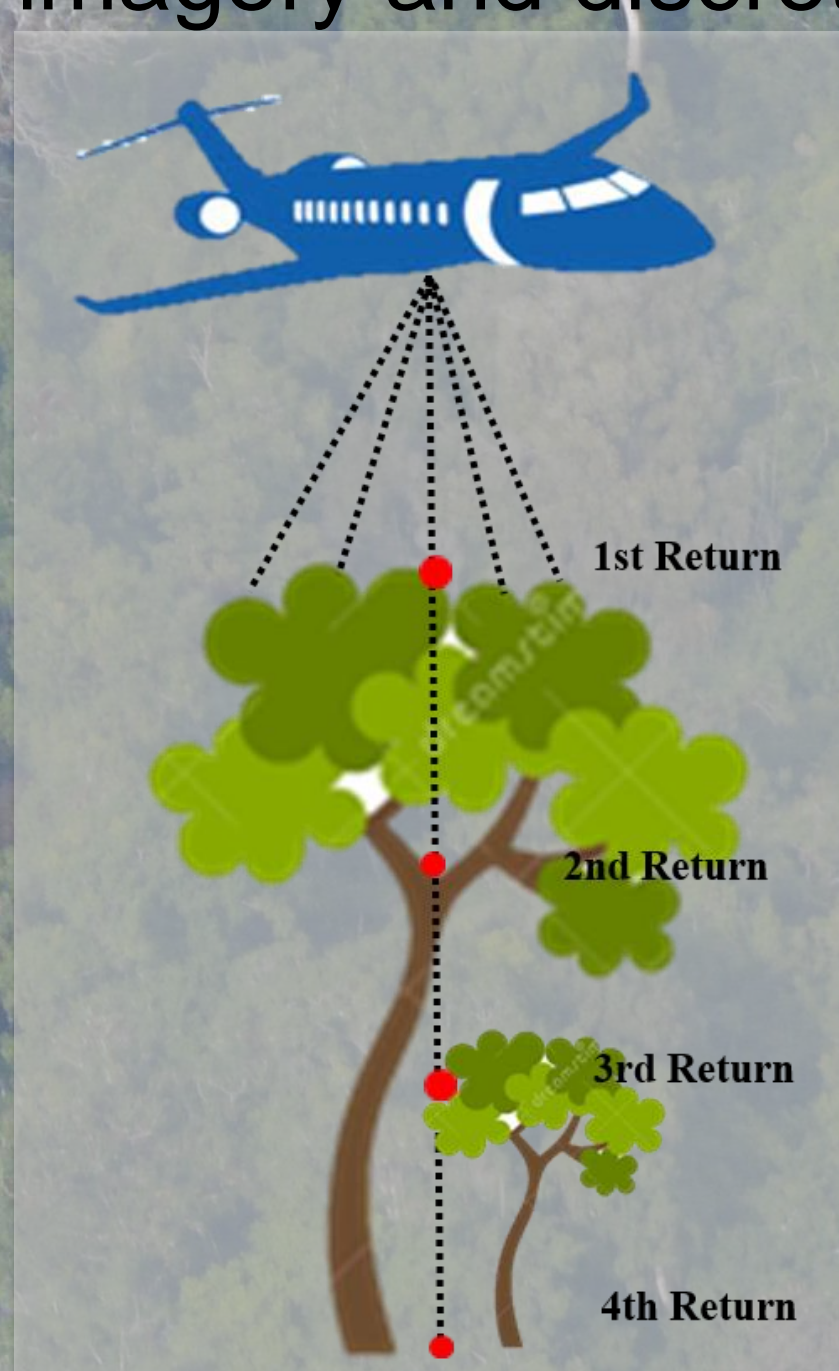
This research evaluates the statistical relationships between above-ground biomass estimates from field estimated biomass in the El Pilar Protected Forest in the Mayan Biosphere Reserve and the spectral properties of high resolution multispectral satellite imagery and discrete small footprint airborne Lidar.

## Key Findings

- ❑ Direct allometric measurement is not sustainable for large scale forest inventories
- ❑ Optical properties alone are inherently limited when estimating complex forest structure
- ❑ Fusion of point cloud data products and spectral information improve the mapping for forest structure using remote sensing

## Impact

- ❑ Large scale carbon inventories illustrate the impact the MBR has on the global carbon cycle
- ❑ Accurate biomass estimates enable forest communities, NGOs, and Guatemalan environmental institutes to apply for carbon-based economic incentive programs, like REDD+



## Explanation

Conventional biomass estimates acquired through direct measurement result in very accurate forest structure allometry but are not a sustainable solution for large scale carbon stock inventories. Remote sensing provides a solution to costs associated with field campaigns but statistical analysis and data fusion techniques need to be explored to minimize the limitations of individual datasets that cannot account for the complex forest structure typical in the world's tropical forests.

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