

Progress Report

Assessing canopy and understory in Loblolly plantations with Google Earth Engine

CAFS 21.87

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Use satellite data to estimate stand conditions

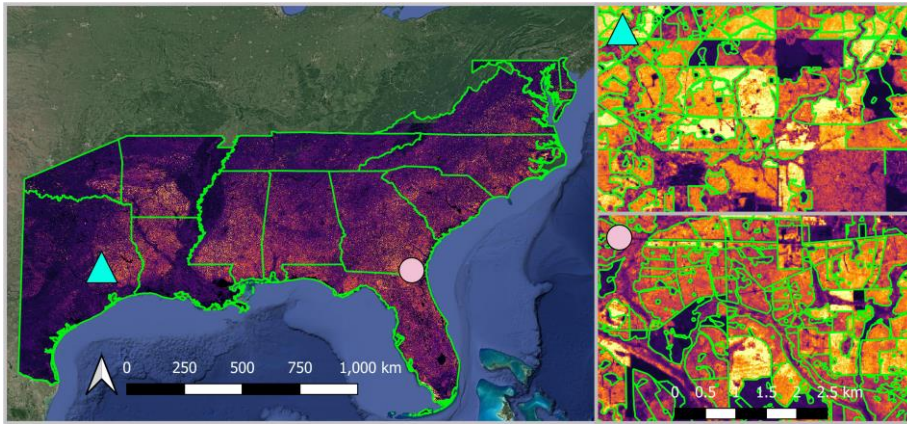


- Satellite imagery can provide key information for timber management
 - **Canopy LAI:** Future growth potential, fertilizer need
 - **Understory Density:** Competition control
- Use Google Earth Engine to access + process Sentinel-2 (10 m) and Landsat (30 m) archives

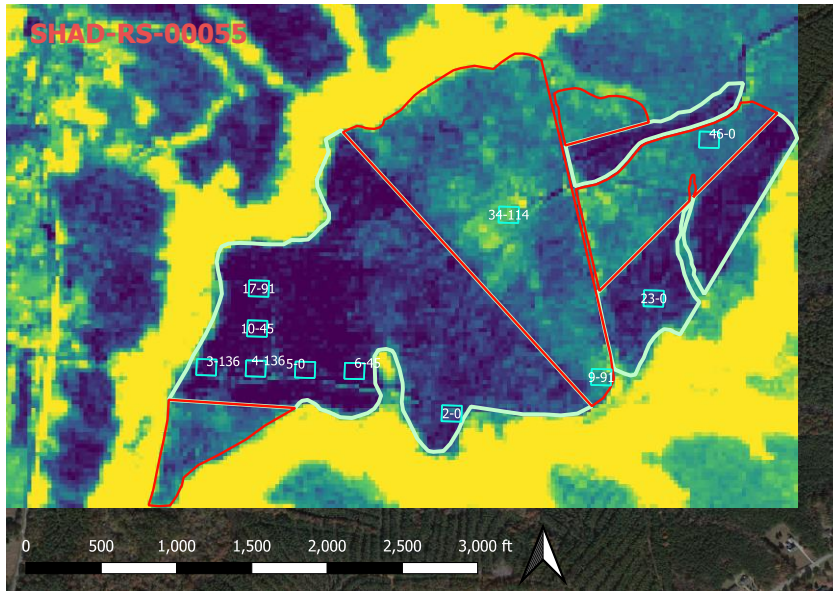
1. Leaf Area Index (LAI): Leaf area per ft²
2. Deciduous Understory Index



Current Progress



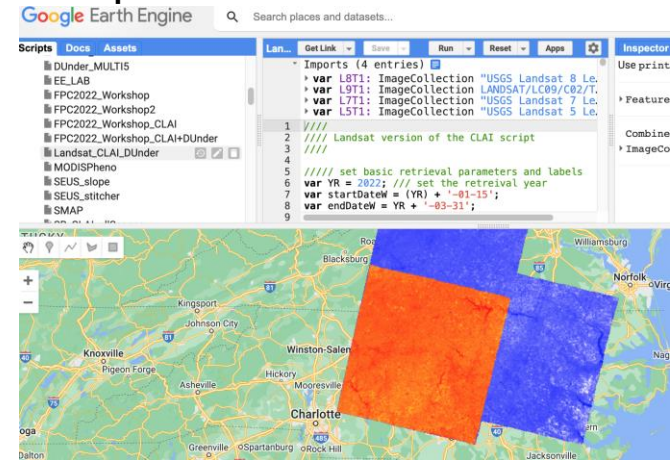
Southeast US Loblolly LAI, 2019-2022 (Sentinel-2)



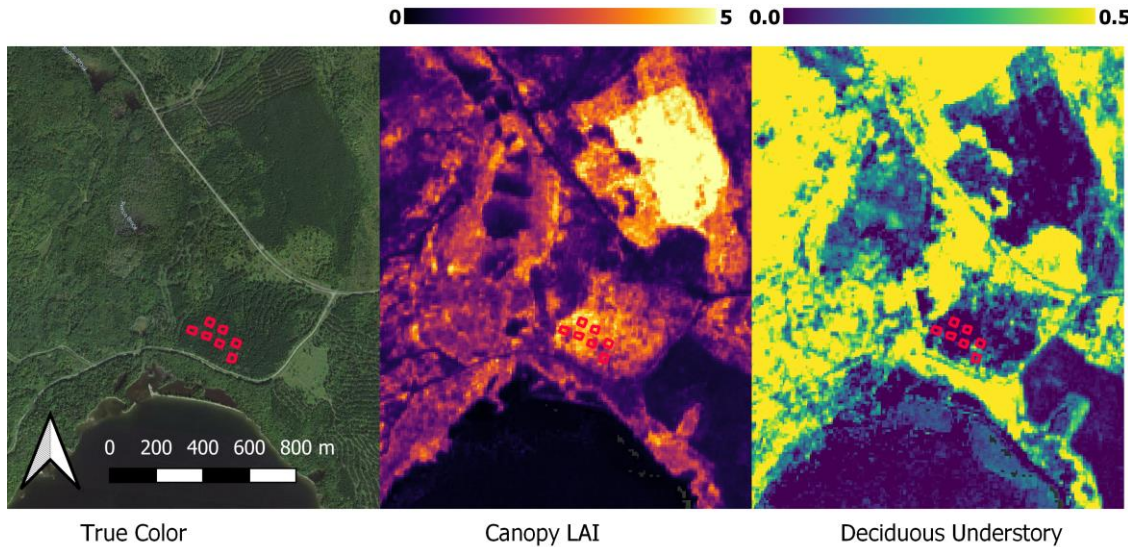
Stand Bounds
Green outline Herbicide
Red outline No Herb.
DUnder Index
0.5
0.0

Loblolly Understory tool (Sentinel-2)

Adaptation to Landsat 5/7/8/9



Future Plans



Adapt to other forest types

1. Maine Spruce+Fir
2. PNW Doug Fir

Maine Spruce + Fir:

- Adapt method using existing LAI history (Landsat)
 - Evaluate existing models
- Test Understory method on known Beech understory

PNW Douglas Fir

- Evaluate the current LAI record → Local Model

