

Progress Report

Tree Dominance from Remotely Sensed Data

Project Code (CAFS.22.97)

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Project Overview

The objectives of this intern project are as follows:

- 1) Obtain multiple, high point-density datasets from photogrammetric and LiDAR remote sensing acquisitions across a variety of site and stand conditions, all paired with GPS stem-mapped forest plots, relative to three different US regions:
 - a) Pacific Northwest
 - b) Northern Rocky Mountains
 - c) Southeast;
- 2) Conduct accuracy assessments of remote sensing platforms to correctly identify dominant and co-dominant (crop trees) across varying stand development stages, stand densities, and species compositions
- 3) Evaluate differences in remote sensing platforms to detect and accurately measure tree crown metrics and their relationship to tree dominance
- 4) Evaluate the accuracy of remote sensing platforms to detect change in tree and stand growth over short temporal periods and varying site productivity types.



Current Progress

- ✓ *Tree Dominance as defined by Tree Height*
- ✓ *LiDAR data provided by Northwest Management*
- ✓ *Equipment Obtained*



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1. Use Individual tree processes available in lidR
 2. Create a remotely sensed dominant tree list as defined in step 1.
 3. Cruise stands to obtain a georeferenced dominant tree list using traditional methods. (In process)
 4. Obtain additional high pulse density LiDAR
 5. Create the additional LiDAR derived dominant tree list (similar to step 2)
 6. Compare traditional and remotely sensed tree lists from step 2, 3 and 5.
 7. Draft Results



Future Plans

Traditional field collection is currently in progress May 2023 – July 2023.

High density LiDAR collection is tentatively scheduled in July 2023.

Data processing, analysis and reporting will begin in August 2023.

Once the topic of tree dominance from remotely sensed data is completed, these additional topics will be addressed.

1. Assess implementation of growth and yield models with multitemporal remotely sensed data.

2. Democratization of Forest Inventory Data

- Assess the accessibility and ease-of-use of remotely sensed forest areas and the programs used to derive forest inventory metrics

