Progress Report

Interplay between Sampling Design and Small Area Estimation to Improve Forestland Inventory

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Temesgen Hailemariam, Oregon State University
Aaron Weiskittel, University of Maine
Mike Premer, University of Maine
Rachel Cook, North Carolina State University
Phil Radtke, Virginia Tech
Corey Green, Virginia Tech

Temesgen Hailemariam, Presenter

Project Overview

1) Consider different stand characteristics and silviculture treatment and examine the performance of selected sampling designs and sample sizes for applying SAE models.

2) Examine the use of small-area estimators to either reduce sample size when precision is given or improve precision when the sample size is fixed; and

3) Explore methods to allocate sample size to subpopulation, including optimal allocation of samples in small domains

Current Progress

- Recruited a PhD student – Suchana Aryal.

- Data: We have assembled data collected in western Oregon. The data include:

1. Individual inventory plot summarizations, stand summarizations and polygons
2. Sentinel data, including mean reflectance values and additional variables derived from sentinel data sets

- Conduct a review of the literature and identify variable selection/reduction methods for estimating stand volume and site index from climate, terrain, and remotely sensed data.

- Examine different number and combinations of variables and reduce the number of variables before selecting a final set of variables.

Future Plans

- Complete literature review and data compilation for other key regions
- Develop sampling protocols to link remotely sensed data and ground data/attributes to reduce uncertainty and improve the quality of small-area estimates for timberland inventory
- Translate some of the theories in small-area estimation to practice.
- A PhD dissertation on the interplay
- Demonstrates ways for incorporating SAE models into operational forest inventory in plantations
- Publications in peer-reviewed literature
- Presentations at several regional professional meetings
- Summary report for member companies.