Progress Report

Use of tree ring C and O isotopes for assessing site-specific response to thinning

Mike Premer (UM), Eric Turnblom (UW), Kim Littke (UW),
Rachel Cook (NCSU), Mark Kimsey (UI), Bronson Bullock (UGA), Lila Beck (UM)

M.I. Premer – University of Maine
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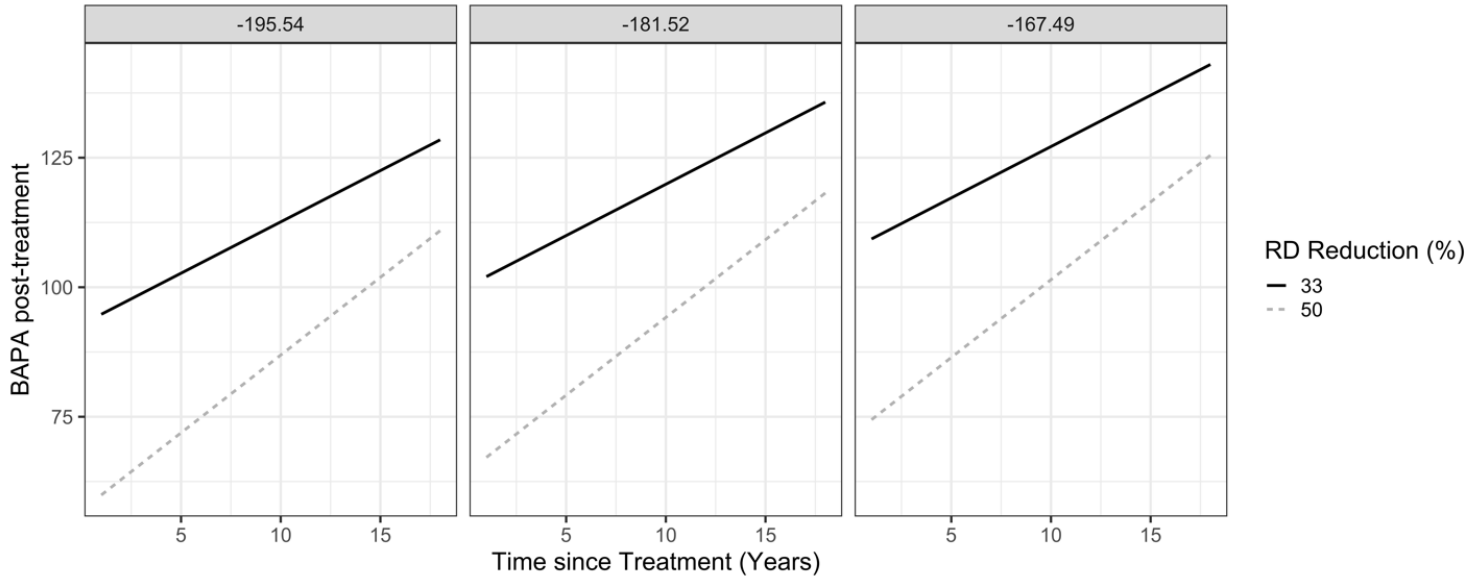
Project Overview

1. Quantify the causal mechanisms of stem growth response (or lack of) to variations in thinning intensity, timing, and site variables through sampling and analysis of tree ring stable isotopes (δ^{13}C and δ^{18}O) with regional long-term datasets

2. Link remote sensing composite estimates of productivity, (e.g., cumulative monthly timesteps of water availability) with thresholds of thinning response across the hydrologic gradient of sites and patterns in stable isotopes

3. Develop cross-regional silvicultural thinning guidelines and geospatial tools of estimated treatment priority and response to aid decision support in commercial forest operations.

- **Grad student recruited and active**
- **Initial round of sampling in Maine complete – 0.5” borer**
  2/6 Maine sites sampled
- **Water deficit products generated for the region at 20 m resolution**
  Explored as a predictor variable for thinning response



Future Plans

Tree rings will be processed at Forest Ecology Lab at UMaine

Winter – Summer 2024

Completion of field sampling of remaining sites

Spring – Summer 2024

Ring isotope processing will be conducted at Columbia University

Summer – Fall 2024

Extend to the PNW and SE in 2024

6 SMC Installations

6 RW-19 Installations

(Control, Heaviest thinning)

Measure and Core 10 trees per plot

**UMaine will supply increment corer*