

Continuing Project

Quantifying carbon sequestration as a function of silvicultural treatment in loblolly pine CAFS 21.89

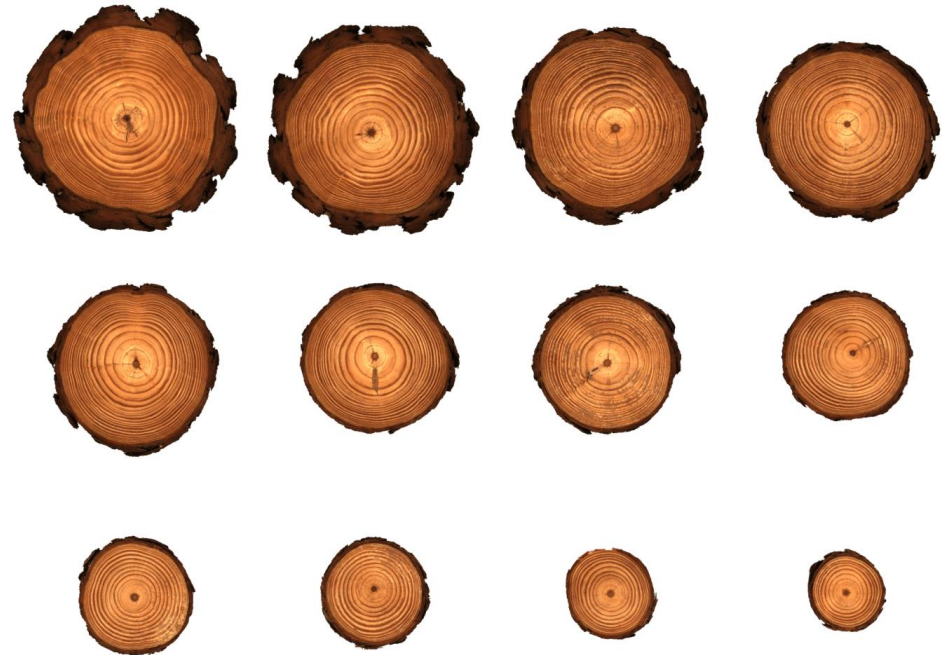
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Bullock (UGA), Dan Markewitz (UGA), Tom
Eberhardt (USFS)

Presenter: Joe Dahlen - UGA



Project Overview

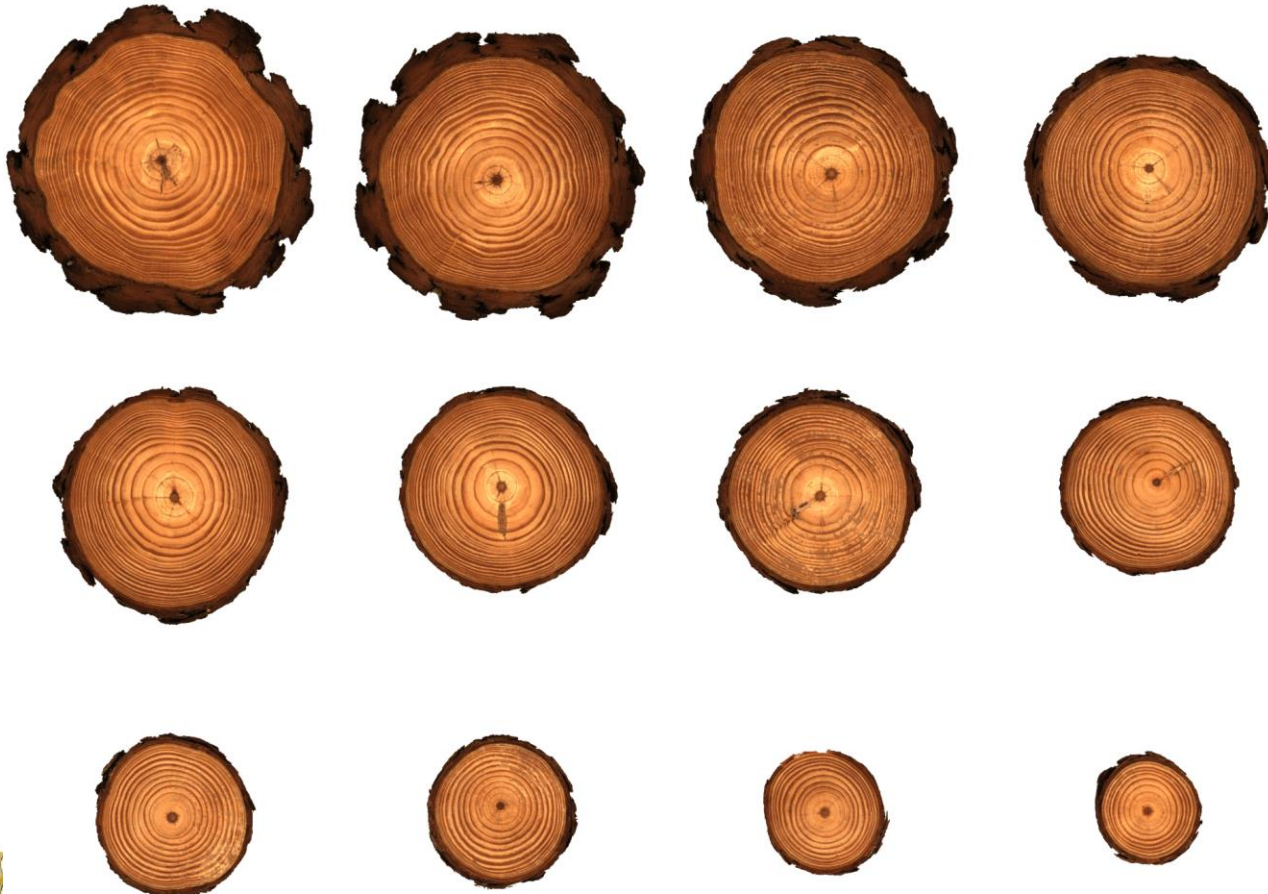
- Growing interest in quantifying carbon in managed forests
- How does silvicultural treatment influence carbon sequestration in stems?



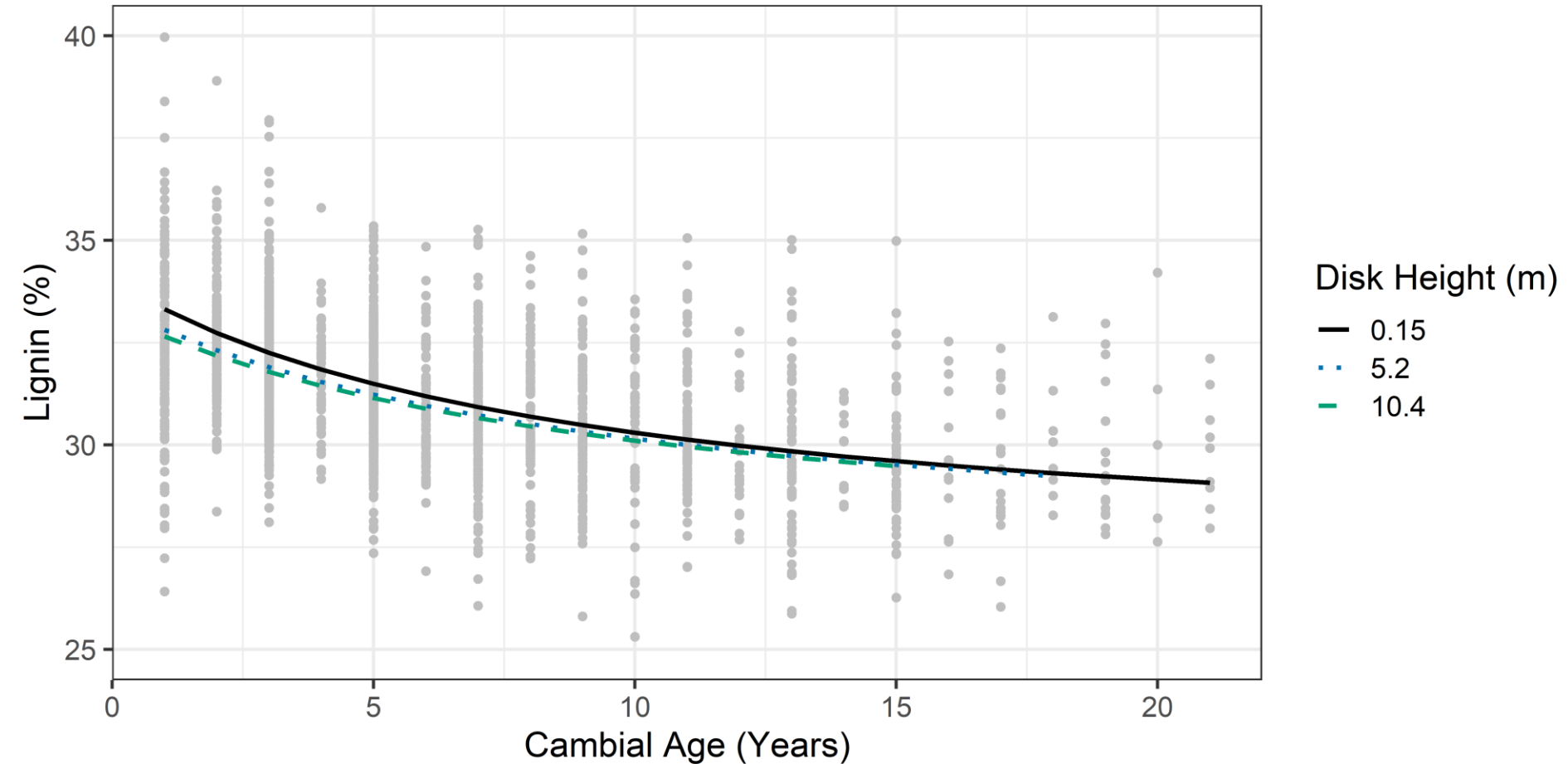
Volume * Specific Gravity = Dry Weight

Dry Weight & Carbon % = Carbon

Long term carbon vs short term carbon



Carbon % largely a function of lignin:cellulose content and extractives



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Resistance drilling can be used to nondestructively estimate wood specific gravity (bark SG?)

- Instrument specific calibration
- Australia: Radiata Pine and Eucalyptus require different calibrations



3 mm needle with resistance recorded from bark to bark



Resistance drill example trace

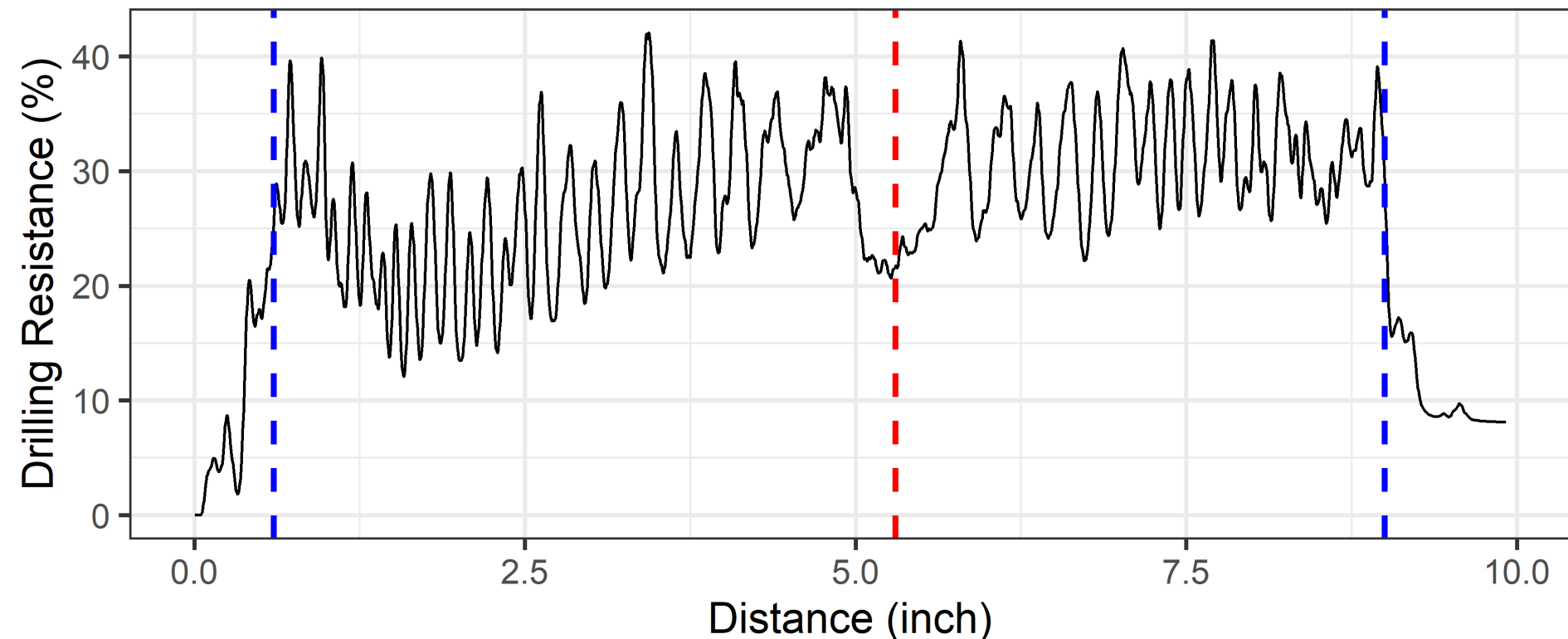
Signal processing important

Diameter At Breast Height = 9.7 in

Wood Located Inside Blue Vertical Lines (8.6 in)

Bark Located Outside Blue Vertical Lines (1.1 in)

Pith Approximately Located At Red Vertical Line



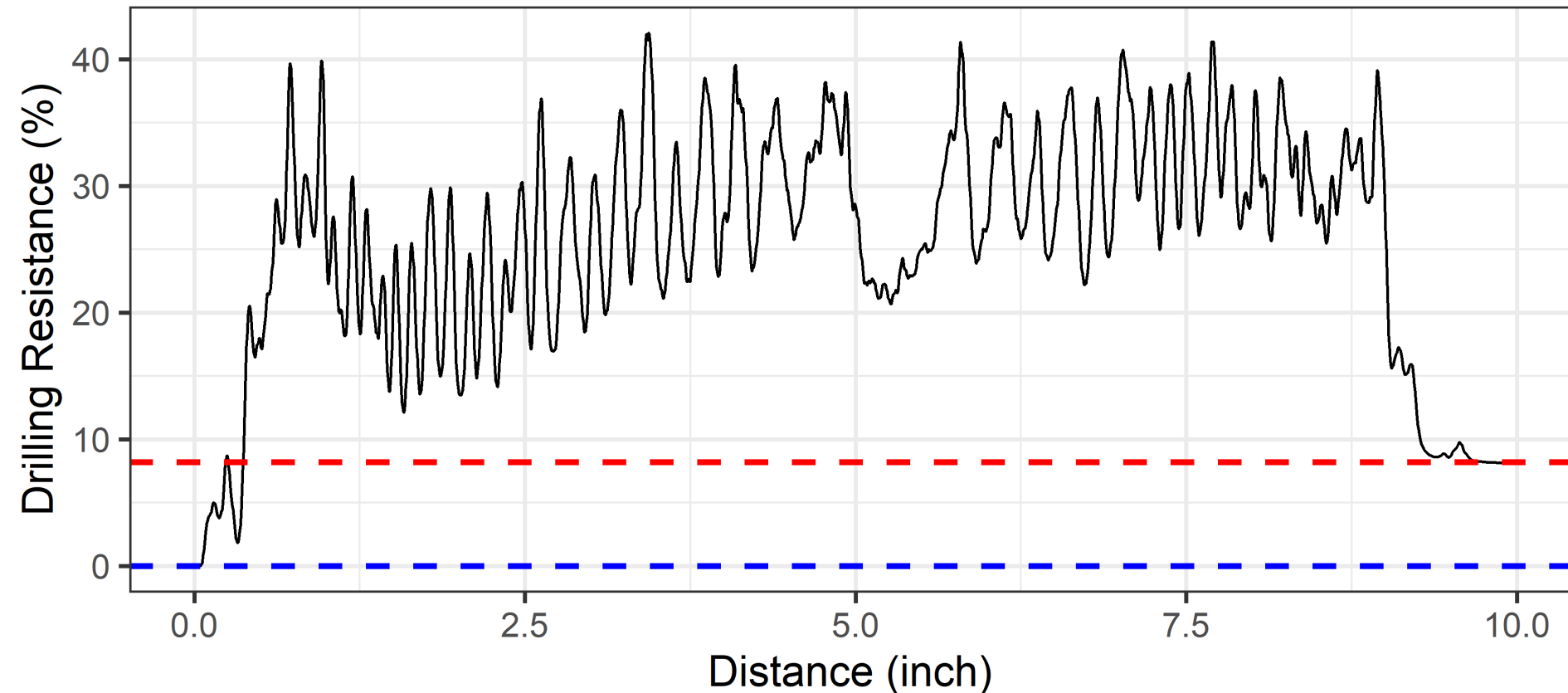
Resistance drill example trace

Signal processing important

Needle Enters Tree at 0.0 inch

Needle Exits Tree at 9.7 inch

Drilling Resistance Increases With Distance Due to Friction



Future plans

- M.S. student started in Fall
- Getting familiar with resistance drilling
- Field protocols
- Signal processing
- Calibration to wood SG
- Calibration to bark SG?



Thank You and Questions?

- NSF CAFS
- Members of the Wood Quality Consortium and Plantation Management Research Cooperative

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