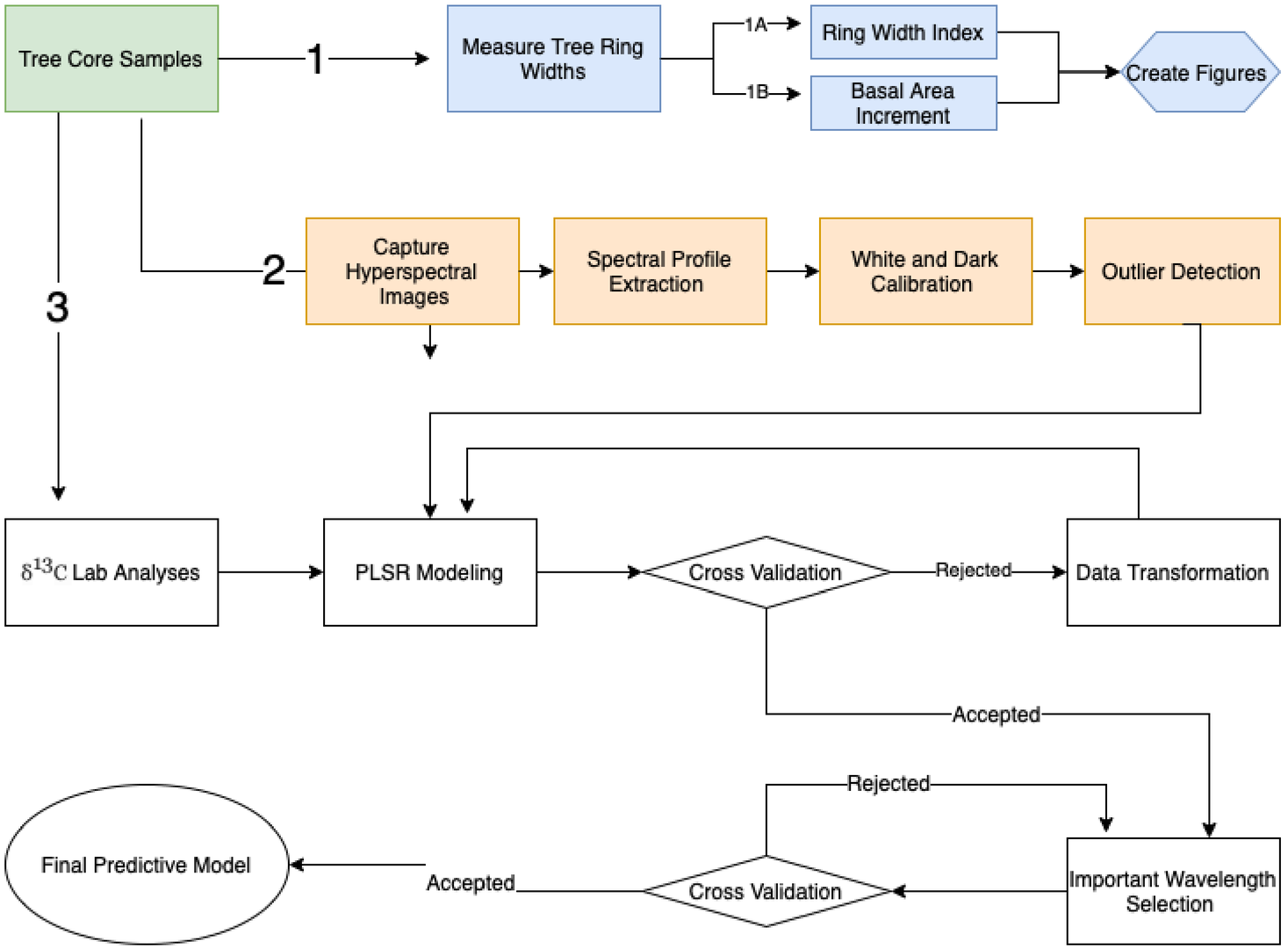
Scientific Issue:

To provide a more effective method to assess tree reponse to global-change-type drought, I propose to uniquely pair stable carbon isotope composition (an important proxy for plant function) with hyperspectral imaging of tree rings.

Project Workflow



Project Goals for Fall 2021

GROWTH VARIATION ANALYSES

Writing reproducible code to successfully calculate Ring Width Index and Basal Area Increment from tree ring width measurements.

Creating good figures for annual growth ring parameters comparing dead and live trees and by site.

Benchmark: complete by early November

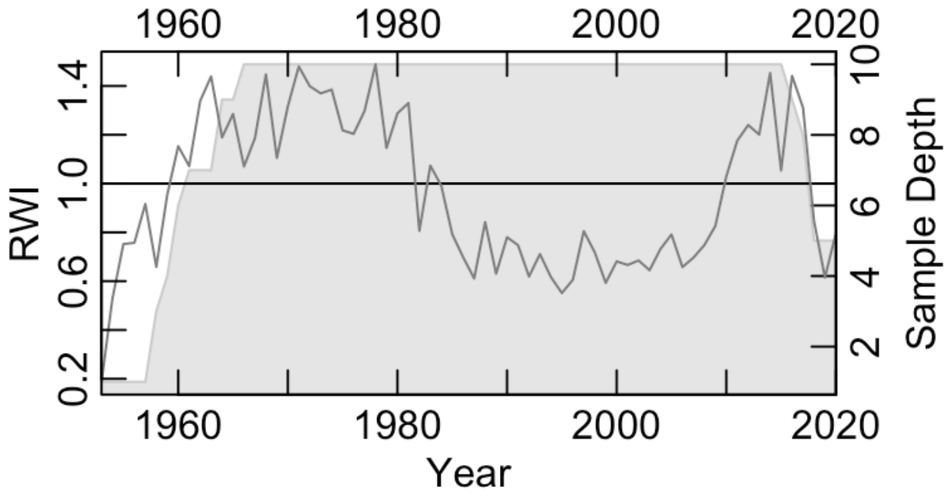
HYPERSPECTRAL RELFECTANCE ANALYSES

Writing reproducible code to successfully complete spectral data transformation, Partial Least Squares Regression modeling, and relevent wavelength selection.

Benchmark: complete by end of term

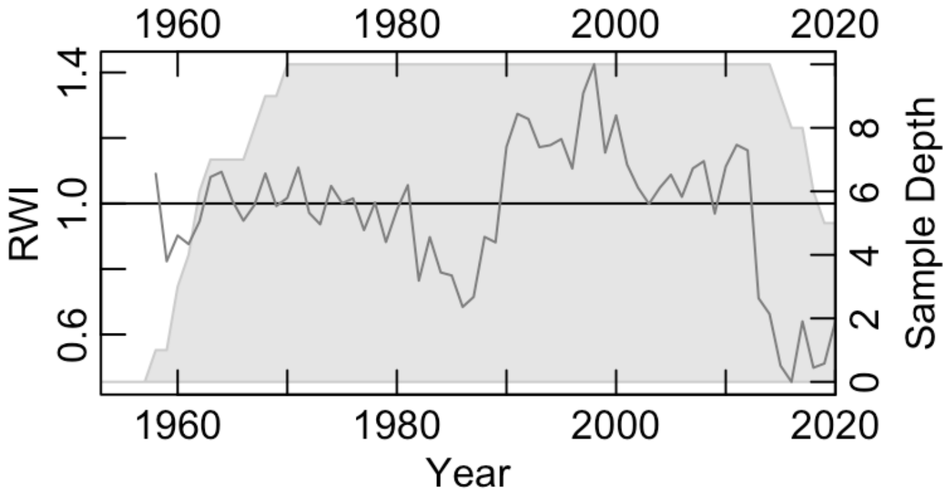
Achieved Successes

Site 1 Mean Value Chronology



RING WIDTH INDEX SITE 1

Site 2 Mean Value Chronology



RING WIDTH INDEX SITE 2

Challenges

DATE PARSING SET BACK

I spent much more time parsing dates to pair climate variables with tree ring growth variations than planned for.

MENTOR DISAGREEMENT IN ANALYSIS

There is an ongoing discussion between myself, my advisor and a tree ring specialist about further analysis of growth variations which has halted analysis.

WAITING EPA LAB APPROVAL

Currently the isotopic portion of my project has been put on pause until I recieve approval to use EPA laboratory facilities.