Tree Growth in the Rocky Mountains

EBIO 5420 – Computational Biology

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Central Research Questions

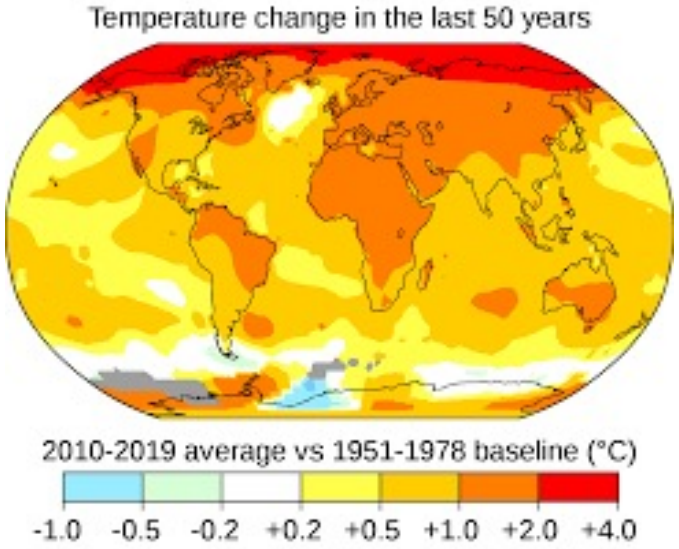
Comparing the annual growth rate in relation to

1. Elevation
2. Location (*latitude*)

of the individuals among five different tree species over 20 years

Motivation and Background

- Human influence on climate results in dangers for life on our planet
- Tree growth records effects of climate change over many years
- Allows quantification of climate change's effects



Approach

- Analysis based on dataset "*Climate and competition effects on tree growth in Rocky Mountain forests*" from DRYAD

- The original study looked at effects of precipitation, temperature, and biotic interactions on the growth rate using nonlinear regression models

About the Data

- Collected in 2012/2013
- Annual radial increment over the last 20 years
- Stem diameter at breast height (1.3 *m)*
- Average of 2.4 cores per tree at 30 *cm*

Dendochronology

Anticipated Details

- Work revolves around R packages **tidyverse** and **ggplot2**
- Calculating average growth rate per year over 20 years
- Related growth rate to elevation/location of individuals
- Compare results for five tree species
- Visualize the average growth rate in dependence of elevation and location

Anticipated Results

Expectation:

1. Average growth rate increase in high elevation

2. average growth rate to increase in former colder climates (Northern National Parks)