

## DAY 2

## DATA

**A window into a tree's world**

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Research Background:

According to National Aeronautics and Space Administration (NASA) and the National Oceanic Atmospheric Administration (NOAA), the years 2015-2018 were the warmest recorded on Earth in modern times! And it is only expected to get warmer.

Temperatures in the Northeastern U.S. are projected to increase 3.6°F by 2035. Every year the weather is a bit different, and some years there are more extremes with very hot or cold temperatures. **Climate** gives us a long-term perspective and is the average weather, including temperature and precipitation, over at least 30 years.

Over thousands of years, tree species living in each part of the world have adapted to their local climate. Trees play an important role in climate change by helping cool the planet - through photosynthesis, they absorb carbon dioxide from the atmosphere and evaporate water into the air.

Scientists are very interested in learning how trees respond to rapidly warming temperatures. Luckily, trees offer us a window into their lives through their growth rings. Growth rings are found within the trunk, beneath the bark. Each year of growth has two parts that can be seen: a light ring of large cells with thin walls, which grows in the spring; and a dark layer of smaller cells with thick walls that forms later in the summer and fall. Ring thickness is used to study how much the tree has grown over

the years. **Dendrochronology** is the use of these rings to study trees and their environments.



Jessie taking a tree core in the winter.

Different tree species have different ranges of temperatures and rainfall in which they grow best. When there are big changes in the environment, tree growth slows down or speeds up in response. Scientists can use these clues in tree's rings to decipher what climate was like in the past. There is slight variation in how each individual tree responds to temperature and rainfall. Because