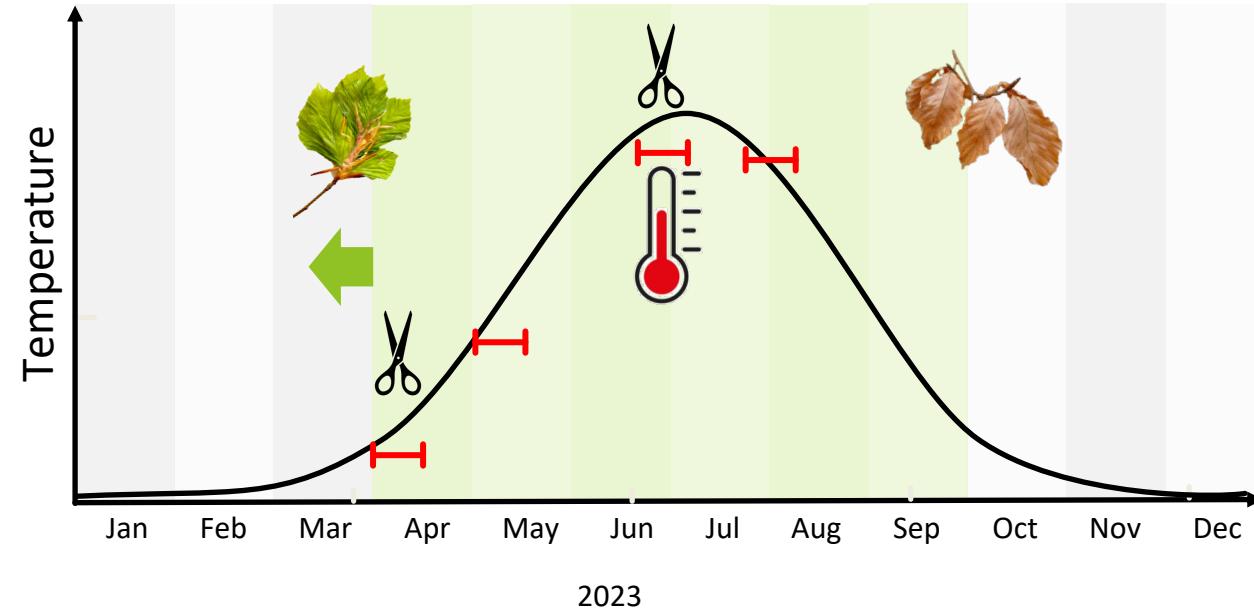


Ambient conditions at Totem Fields



(Some) research questions:

- How flexible are species in shifting their phenological sequence and growth within the growing season when interrupted by drought?
- When is growth affected most by drought?
- How much does an extended growing season translate into increased biomass production and when does this growth happen?

8 species (4 congeneric pairs that differ in drought tolerance):

- *Pinus contorta* vs. *strobos*
- *Quercus macrocarpa* vs. *rubra*
- *Acer macrophyllum* vs. *negundo*
- *Sequoia sempervirens* vs. *Sequoiadendron giganteum*

-> Total of 1200 saplings (2 years old). 15 Reps in each treatment

Treatments

- Drought** (2 weeks, 30/20°C day/night, ambient photoperiod, climate chamber)
- Defoliation** (partly/full clipping, burning with a heat gun to simulate spring frosts, insect outbreak or heat waves)
- Growing season extension** (induced by c. 2 weeks of warming, Greenhouse)
- Heat wave** (induced by c. 2 weeks of 35°C, climate chamber)

Measurements/Observations

- **Phenology:**
 - Leaf-out
 - bud set
 - senescence
- **Growth:**
 - radial (magnetic stem dendrometers)
 - apical shoot elongation
 - Total biomass increment
- **Wood anatomy:**
 - number of cells produced after/during treatment
 - Cell wall characteristics