

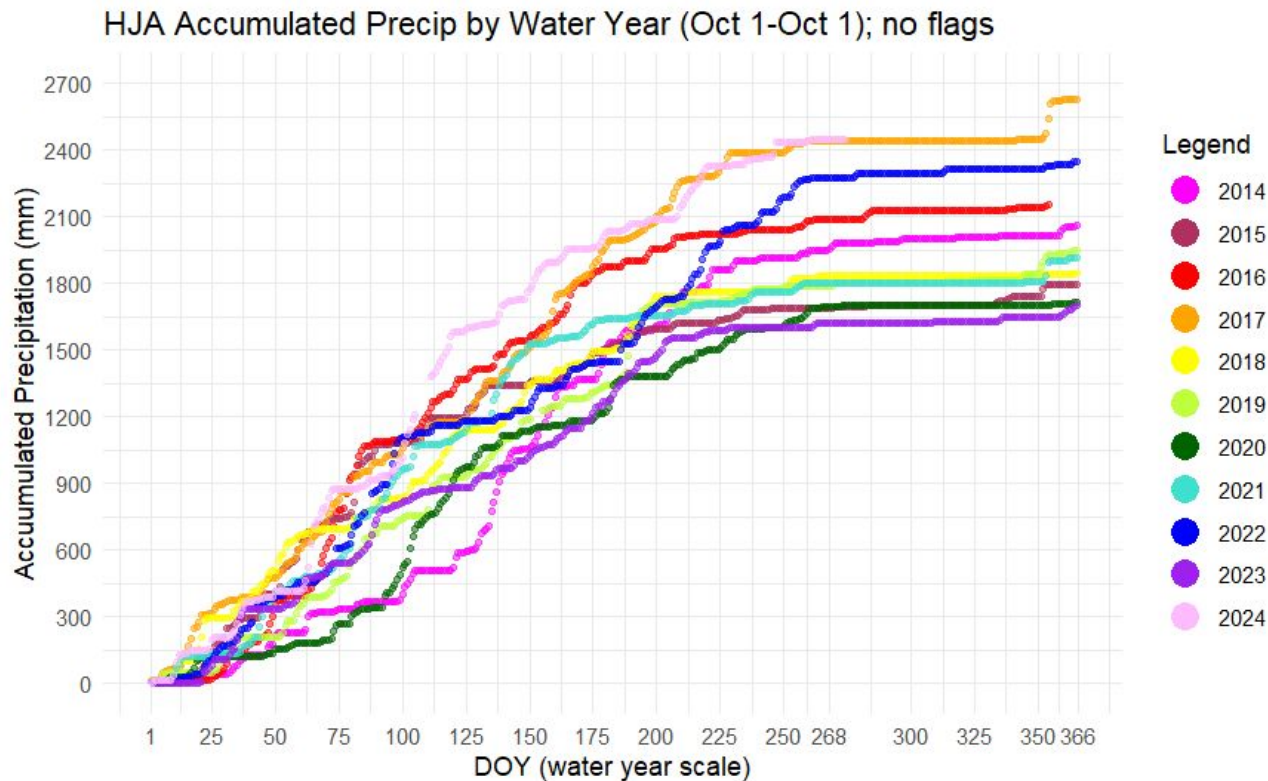
Contextualizing the 2021 Heat Dome Via Climatic Relationships, Dendrometry, and Dendrochronology

Flash Talk by Gabby John for the December 2024 HJ Andrews Monthly Meeting



- Patterns of tree growth
 - Challenging to categorize, especially when older
- 2021 Heat Dome
 - unprecedented & significant
- Heat waves & drought
 - complex & challenging to disentangle
 - Stress Hours help?

Problems? Solutions?



How do we achieve this?

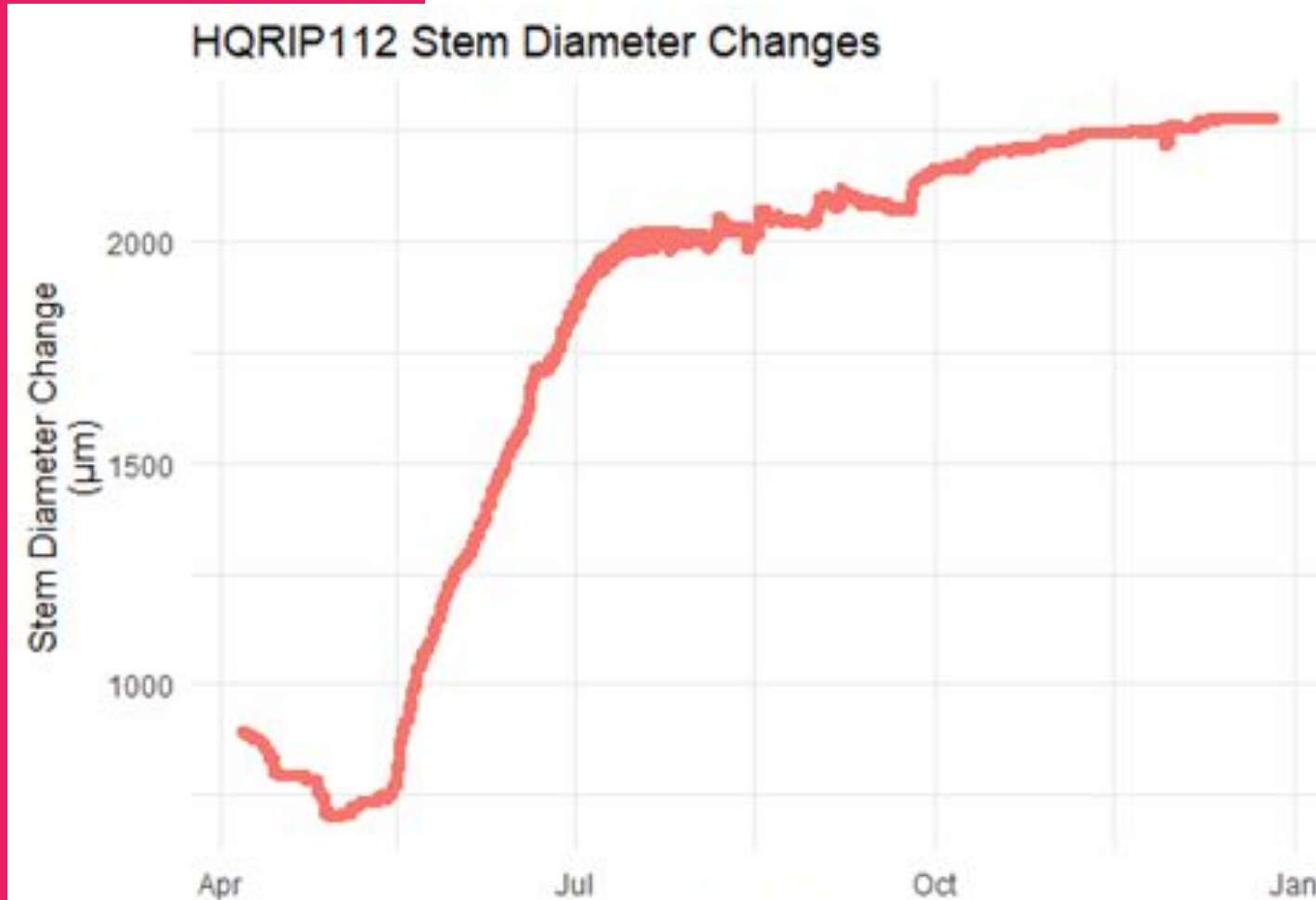
- Multi-faceted analysis of...
 - Met Station microclimate data (VPD, air temp, precip, etc.)
 - High-resolution dendrometers
 - Tree cores

- Dendrometry: specific changes
- Microclimate data: expansive, prevalent, ready to be analyzed
- Tree cores: long-term patterns
- ALL VIA HJA!



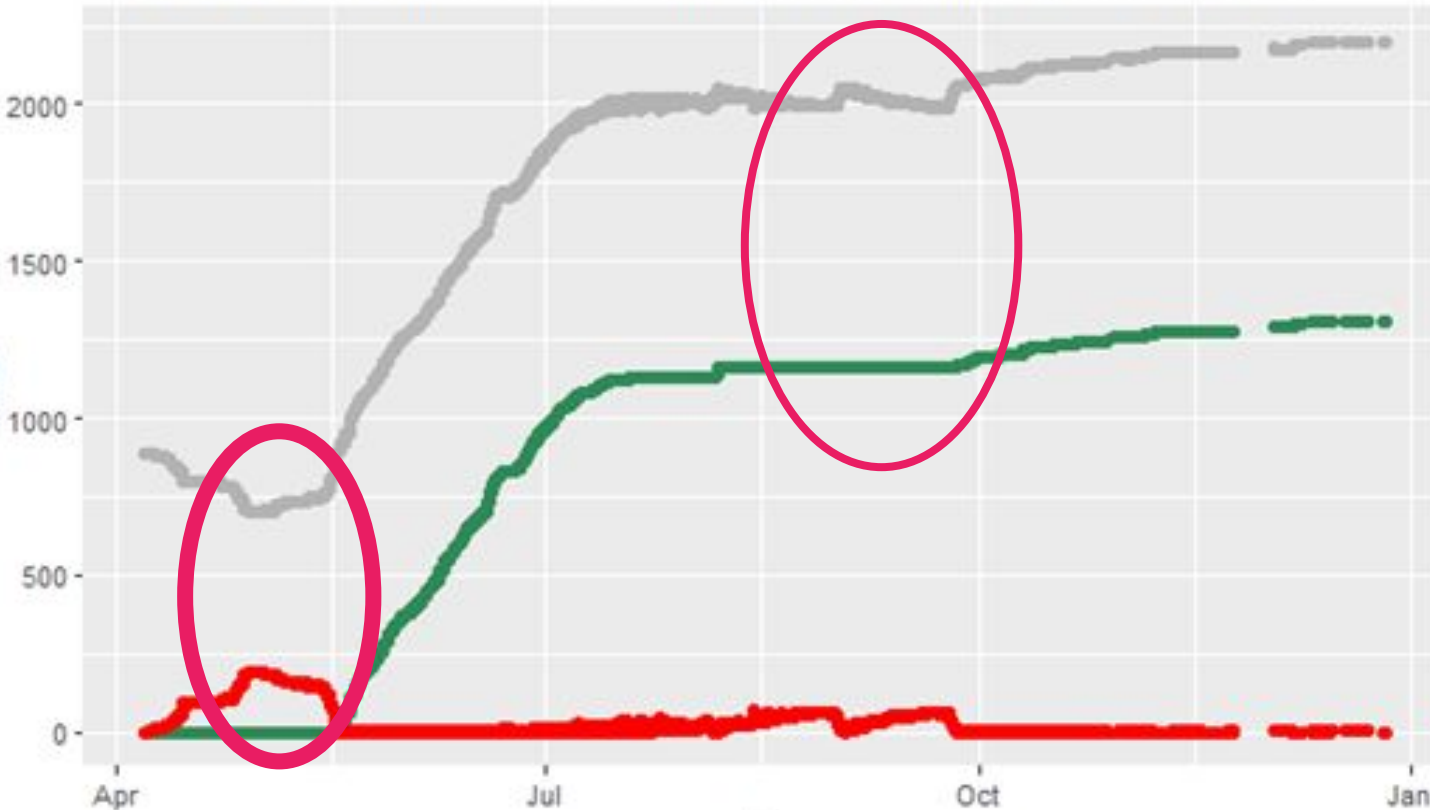
- Raw dendrometer output
- Incremental changes in diameter
- Riparian area by HJA headquarters
- Relatively as expected
- Some bumps / shrinkage

Unprocessed Data



TreeNetProc Processed Data

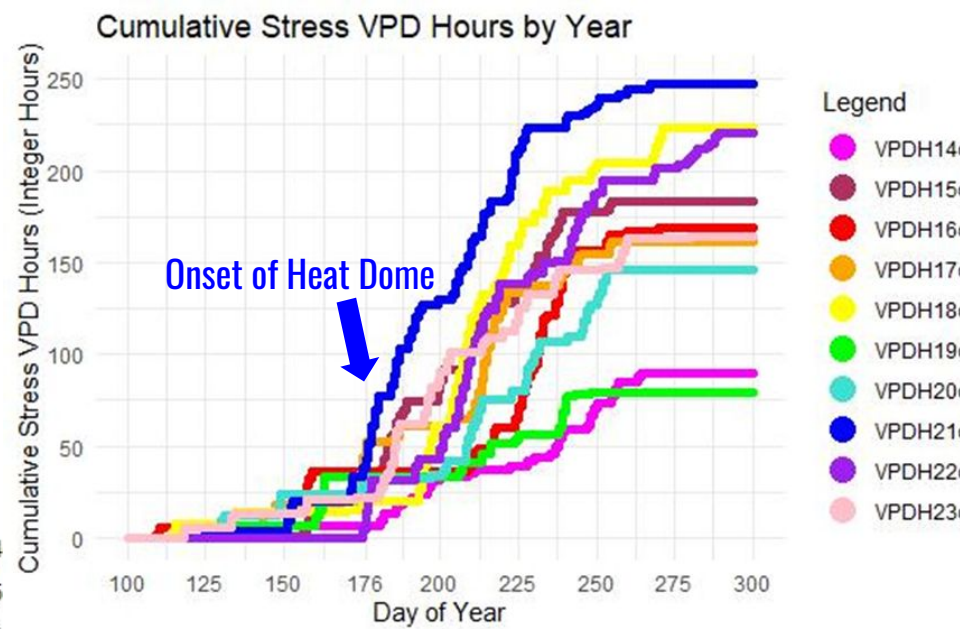
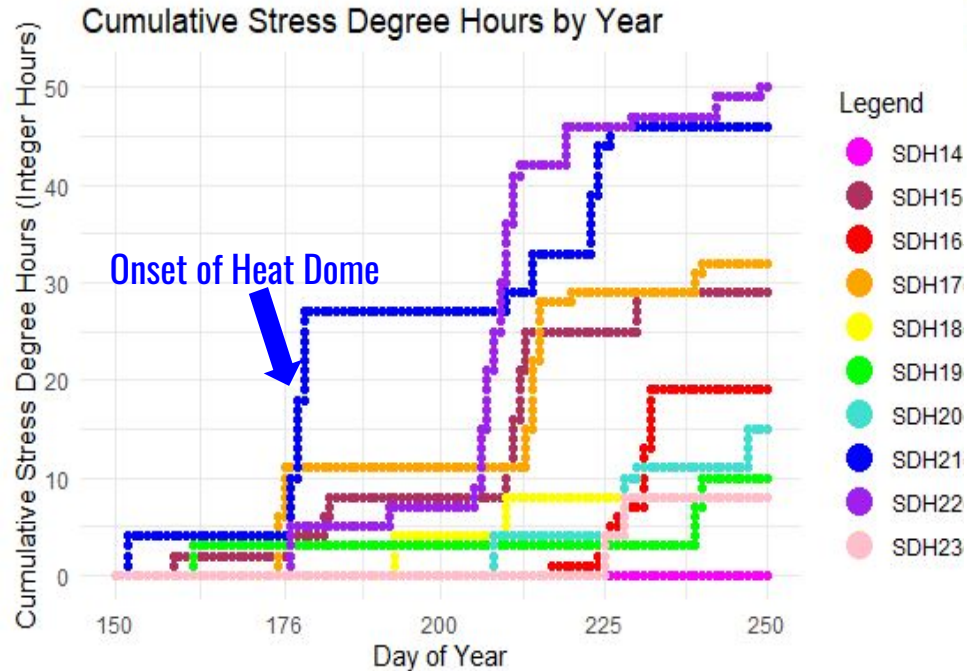
HQRIP112 dendrometer values (gray), annual growth (green), twd (red)



- Gray line: raw dendro output
- Green line: processed output—ideally more accurate
- Red line: estimate of tree water deficit (TWD)
- Thick circle: estimate of TWD due to shrinkage
- Thin circle: “smoothed” growth reducing “bumps” in output

Microclimate

- Tentative thresholds
 - $\geq 35^{\circ}\text{C}$; $\geq 3\text{ kPa}$



- Data from HJA Provisional Data Portal
- Significant indicators of disproportionate stress for 2021
- Ready to compare with dendrometer & tree core data

THANK YOU!
:-)

