**Research Notes**

**Tasks**

* Fit linear regression to this with dendro to see start of szn and end and total expansion during szn
* Go through rest of TOMST in TNP high elevation in the tree where leaf temp is higher than air temp
* Instead of putting stress treshhold at 3 VPD / 35 C try finding the 90th percentile
* Email TNP about issues with some of the graphs being weird and also advice for ecomatik since TNP made for point dendros and also unsure of unit
* Email customer support for ecomatik conversions – goisser sales maanger appls scientist goisser@ecomatik.de cc chris
* When do slopes change start szn 🡪 end szn
* Histogram of sd/v
* Connie Harrington – phenology of cambial growth -> read her paper on determinants of start/stop stratify by site/sprage
* "We defined a heatwave periods where *daily maximum air temperature* was greater than 1.5 standard deviations above the long-term mean for a period of 3 or more consecutive days. We used xxx as the long-term mean."
  + But long-term mean is usually 1-2 decades of data
  + take mean of tmax and then calc std from that
* Pay attention to which dendros come from which site – van = vanmet cen = cenmet look at where these are on a map
* Check chris’s papers in g drive
* Institute for applied ecology
* David smith post doc
* Insightmaker concept map
  + Good for something eg things that affect stem growth like C allocatiom, PAR, temp, precip, TWD

**Dendro Notes**

* F

**Climate notes**

* Vwc is usually bt 0-0.4; normalize water content
* Instead of putting th

**HJA and Misc Notes**

* My work matters to inform adaptive management as I try to understand and weigh different drivers of tree growth
* Slope analyses in r (rate of change)
* Start of season vs end phenology analyses

Functions to model growth based on TNP output we could then model growth and feed vars we think control it at what points

On avg or location or date whatever what is the avg start day of growth vs end day -> table

Root weighted profile avg for soil moisture

Normalization is to have a relative 0-1 scale based on highest value being the 1

Temp v phase plot (not important) look at canopy v Tair 2022 PNAS paper from chris ,

Historesis pck shows how in phase/lag elliptical things are (not important)

How far back in the chronology do we want to go for tree cores

Blue light reflectance can give procy for density and may be corrected – there’s a paper on blue light reflectancefor a heat wave study

Ask mark about existing core data/cores

2 cores per tree – pith isn’t necessary

20 trees should be good per side

Earlywood/latewood differences can give more info about ratio climate surrogates

We expect for 2021 to see a thin/faint latewood band and a shorter overall band

Peter bedlos coast to crest dendros

After mounting 1 dot = 1 decade

Mounting then sanding can happen in an afternoon and computer stuff can be done in a weekend or so

After collection on site put in straws then mount

Be cazreful to core across slope to be mindful of tension and compression wood

Fab aspiurated is good to takew bias away from heating

Not all primet and dscmet columns in metadata are in the actual files – see INCOMPLETE examples in paper notes

11 sited with dendoes but only ecomatic at 5 sites captured heat waves thru July 2023 fire. Across the elevation gradient the lowest elevation ot the worst wrom fire so this may be interesting to see through a larger sample of cores.

Connect with cole Doolittle who is also doing dendro work

Scorch varies but is worse with vpd and canopy temp is high

Most dendros are df and wh but some wrc

Epa has some papers comparies manual dendros and cores

2015 was a hot and dry yeae and 17 was wet but hot so these would be good to compare

2021 was the worst

Manual dendros re usua;;y ,easired weekly

Sometimes a first rain can cause a spike in swelling and this is partially why spring fluctuations can be hard to assess real growth and dendrows can over exaggerate rain bumps and you should be careful having tnp smooth these bumps. Also be careful to discount data on the day of the installations.

“waring rule 3pg 5 deg c”

Dendros are mostly n facing and or shaded to reduce sunlight exposure that can affect data related to importance of fan aspirated data in low wind environments

 heat waves are 1.5 standard devs away from mean for three days in a row eg

so i could look at primemet data and see how that goes

long term mean is typically 1-2 decades of data

i ideally need daily tmax

reach out to julia and ask for long term air temp records the unadjusted Tair dataset from PRIMET

take mean of tmax and then calc std from that

r package to calculate heat waves i can install and itll do the 3 days  check tho if this is what i want bc it is marine heat waves

then i can say my calcs show that there were heat waves during X periods of time

<https://cran.r-project.org/web/packages/heatwaveR/readme/README.html#:~:text=The%20heatwaveR%20R%20package%20contains,introduced%20in%20Schlegel%20et%20al>

latewood vs earlywood

if theres time i can do XY

**From:** Still, Christopher <Chris.Still@oregonstate.edu>  
**Sent:** Friday, March 29, 2024 3:47 PM  
**To:** John, Gabhriel <gabhriel.john@oregonstate.edu>  
**Cc:** Schulze, Mark <Mark.Schulze@oregonstate.edu>  
**Subject:** useful review paper on plant growth

attached

Andrews and the epa

google earth as a skill

email with r and arc gis   
bill Hammond looking at temps and vapor pressure

Heat down response

Dendrometer data can be fed into r and can calculate tree water deficit and growth

Have chaney show me tree package

Western hemlock and doug fir there are. These atwo are great to look at because they are the two dominant species to look at despite being ecologically different. Hemlock is shade tolerant and understory. Hemlock may be less heat tolerant.

Get data from Andrews. Tree water deficit and growth.

Mark Schultz data did this and chris near metolias with ponderosa pine

Heat waves are coming more frequently and are more intense and might even be lasting longer. It is important to understand the degree to which . lots of info on drought responses but can be different.

Tree phys commentary from chris paper critiqueing heat vs drought

Heat dome =

Hemlock might be more affected because smaller generally speaking and not used to sun and wind and drought

Having some preliminaray data to share at the research proposal meeting would make me look so GOOD mark should be on my committee! Introduce myself and get there earlyu Friday

Talk to chaney mark’s Data will be circumference data which is different from point dendrometers

Adam Sisley

Andrews is paying form e

**Gabby John**

gabhriel.john@oregonstate.edu

Oregon State University

Master’s student in Forest Ecosystems & Society

B.S. in Plant Biology, Ecology, & Evolutionary Biology

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***You matter.***

Hja is mediterrannean climate

One goal of work is to predict tree growth patterns and TWD

Some HJA trees are irrigated

Vpd can be separated into temp v humidity. When used in conjunction w dendro, this can give insight on heat waves and their effects governmed by air h20 and can show how much h2o plant loses(from physfest Sean)

20-30 trees per site 2 cores per tree

See blue notebook for notes from committee meeting etc