

# Red Cones of the John Muir Trail

## An Ideal Field Site For Dendro Reconstruction of Sierra Snowpack?

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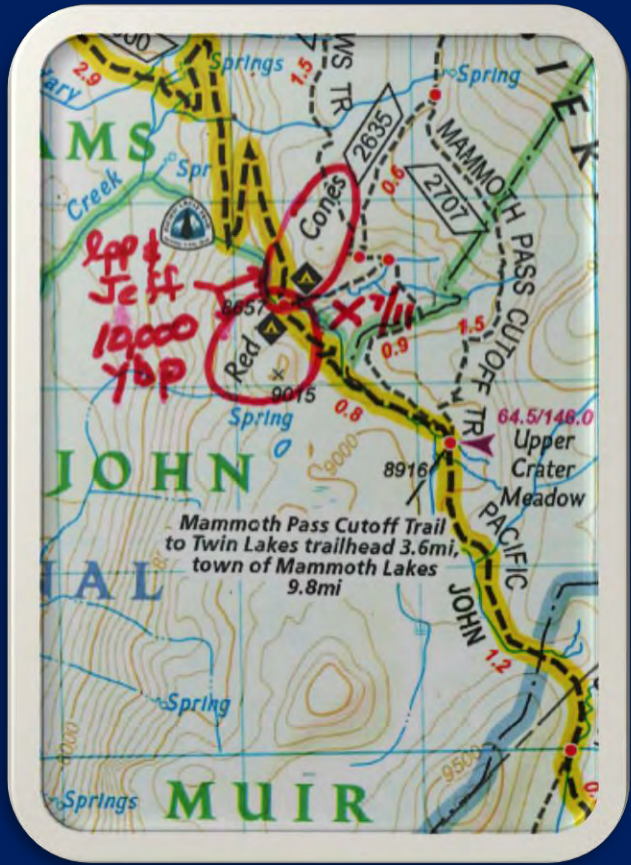


*The Laboratory of  
Tree-Ring Research*

# Outline

- Why the Red Cones for dendro
- Recent fieldwork there
- Preliminary descriptive dendro stats
- Future plans





Peak elevation: ~9000 ft

age: ~8500 years

Schulman, E. 1937. Selection of trees for climatic study. Tree-Ring Bulletin 3(3):22-23.

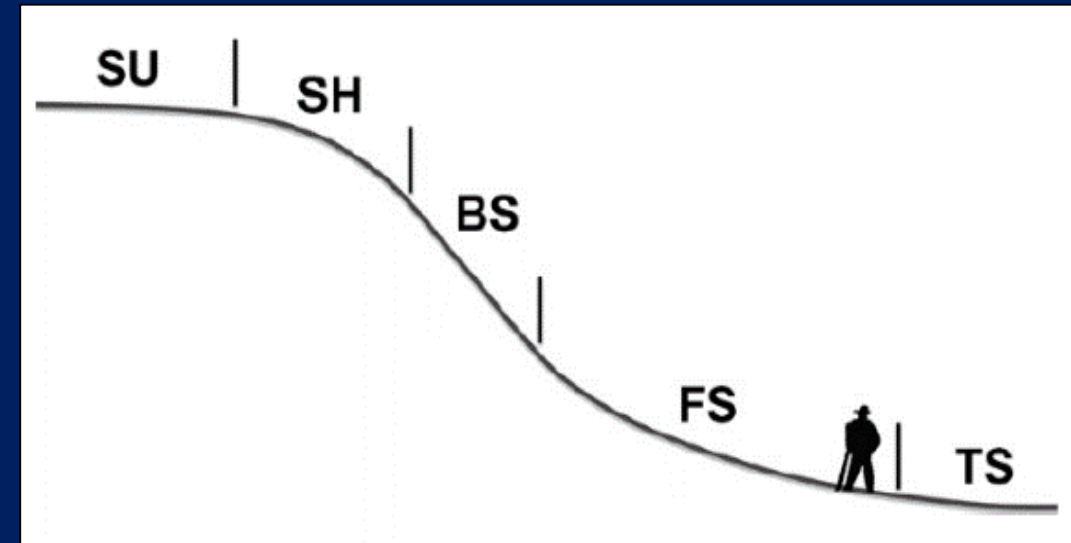
- Steep slopes (angle of repose,  $\sim 24^\circ$ )
- Thin soils (cinders, young, little organic material)
- Immediate rainfall must be depended upon
  - Little to no watershed above ( $\sim 125$  m tall)
- Trees of Red Cones might be good rainfall recorders
  - Snowpack





# Hillslope Position

- Summit
  - Flat, but exposed
- Midslope
  - Maximum steepness
- Toeslope
  - Flat, zone of accumulation







1600

Jeffrey pine



Sierra red fir



Western white pine



## Basic Dendro Stats (since 1900)

- Mean (median) ring width
- Interannual variability
  - “Mean sensitivity”
  - Difference divided by the average, consecutive rings
  - 0.10 is low (violins)
  - 0.40 is high (ponderosa pine, American Southwest)



## South Cone

### Summit

Med: 0.38 mm

MS: 0.19



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### Mid Slope

Med: 0.87 mm

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### Summit

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MS: 0.19

### Mid Slope

Med: 0.87 mm

MS: 0.16

### Foot Slope

Med: 1.73 mm

MS: 0.22



North Cone

Summit

Med: 0.74 mm

MS: 0.20



## North Cone

### Summit

Med: 0.74 mm

MS: 0.20

### Mid Slope

Med: 1.02 mm

MS: 0.13





North Cone

Summit

Med: 0.74 mm

MS: 0.20

Mid Slope

Med: 1.02 mm

MS: 0.13

Foot Slope

Med: 2.40 mm

MS: 0.17

## Preliminary Conclusions at Red Cones

- Hillslope position affects growth rates
- Interannual variability is low generally
- 2015 is a narrow ring in most trees
  
- If trees of Red Cones reflect snowpack, it might be limited to showing extreme low years
  - Frequency, consecutive years
  - 400 years of record possible