



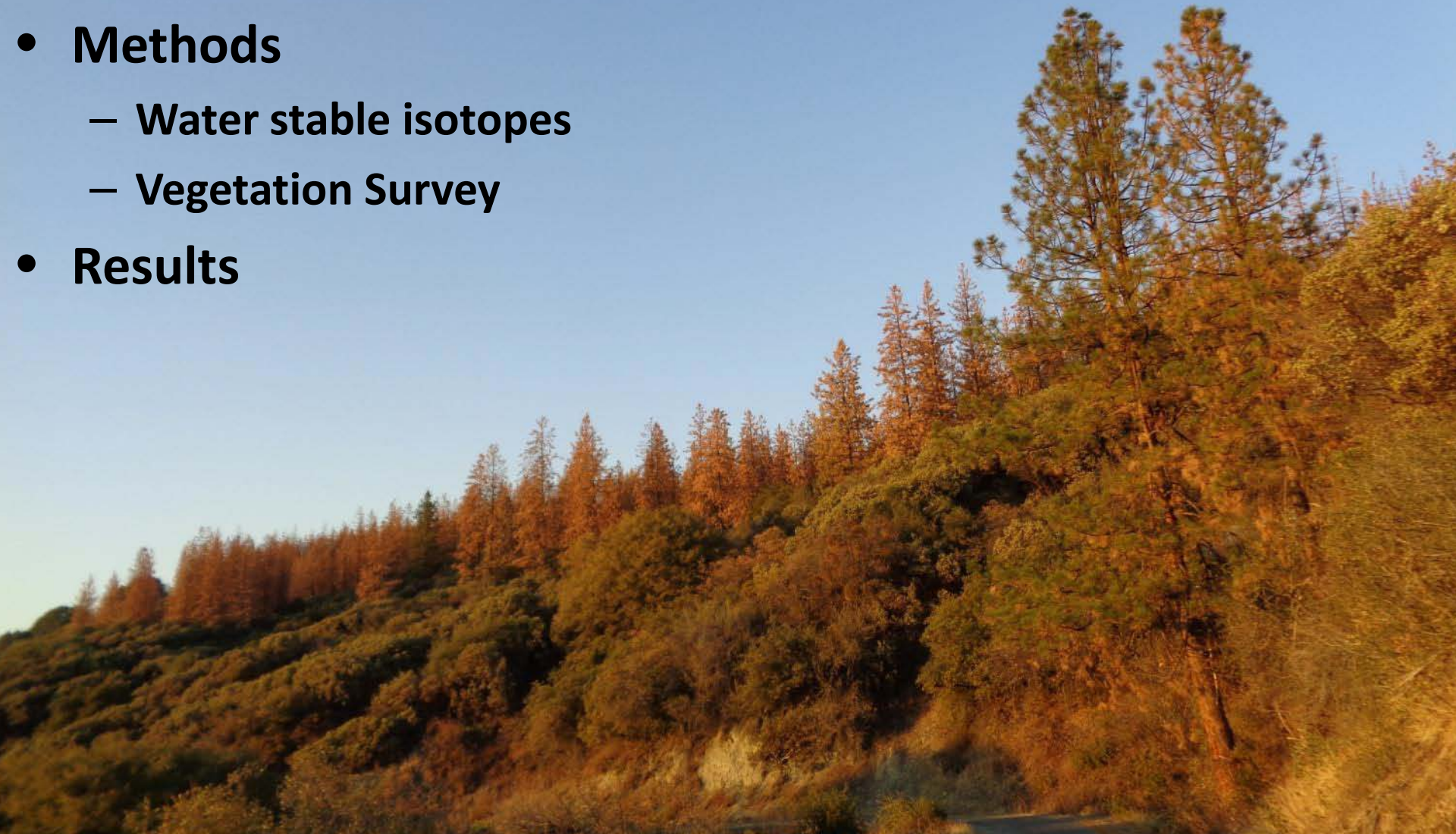
# Variability in Sierra Nevada forest water sources during a severe drought

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# Outline

- **Questions**
- **Field Site**
- **Methods**
  - **Water stable isotopes**
  - **Vegetation Survey**
- **Results**



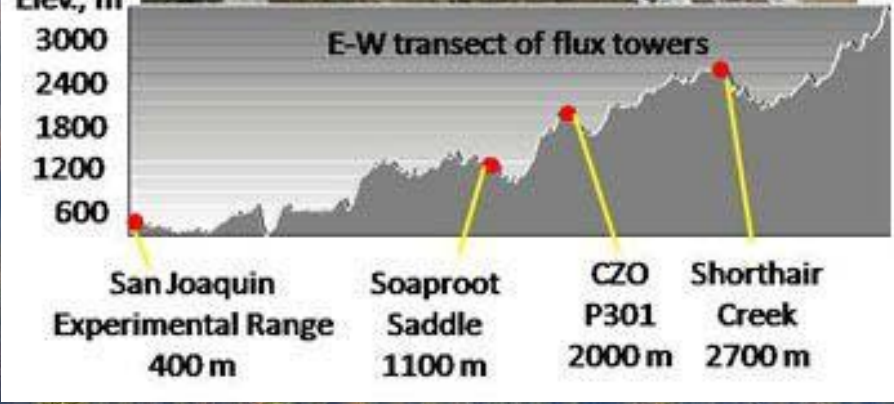


**Question:**

**Where does forest  
vegetation get its  
water?**





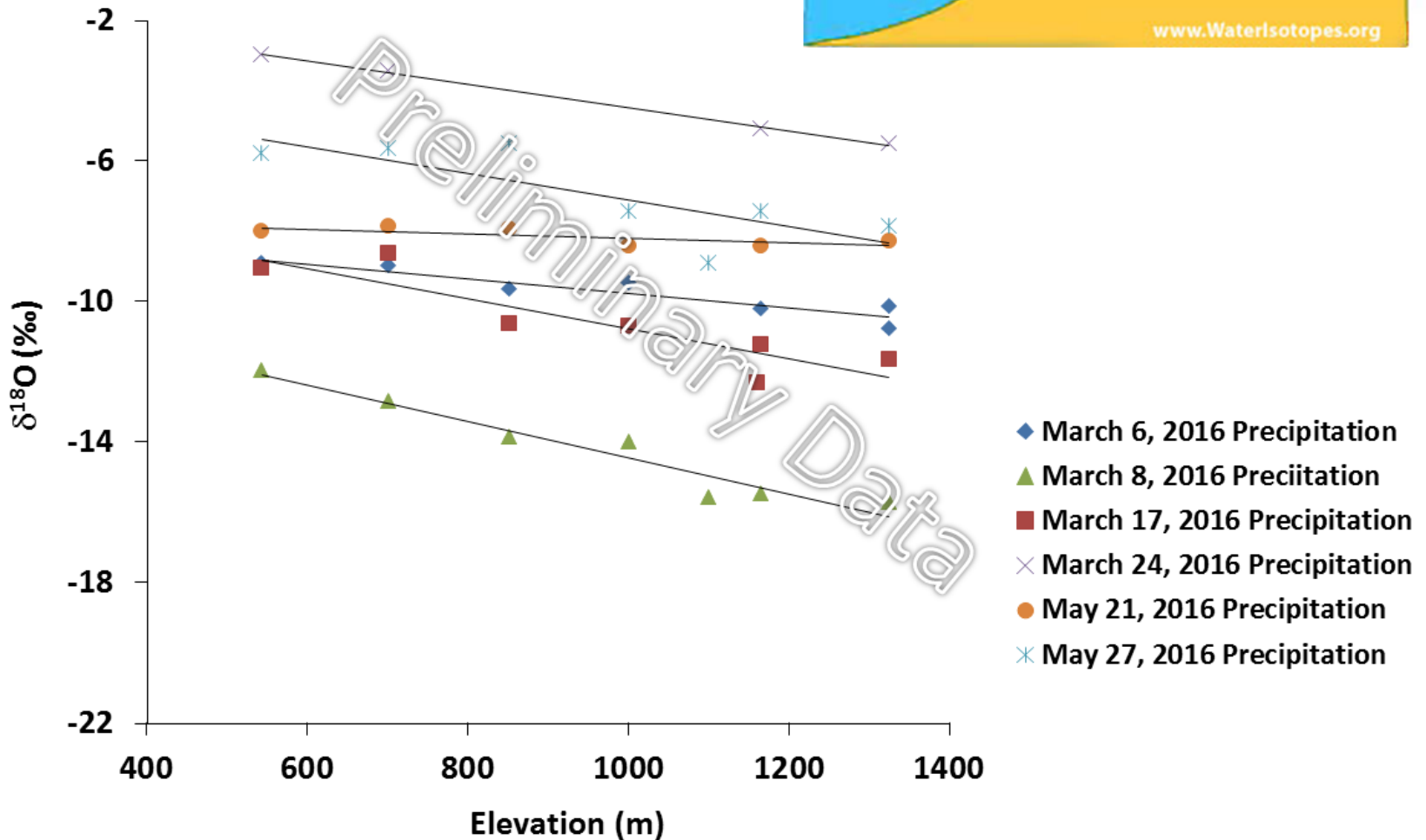
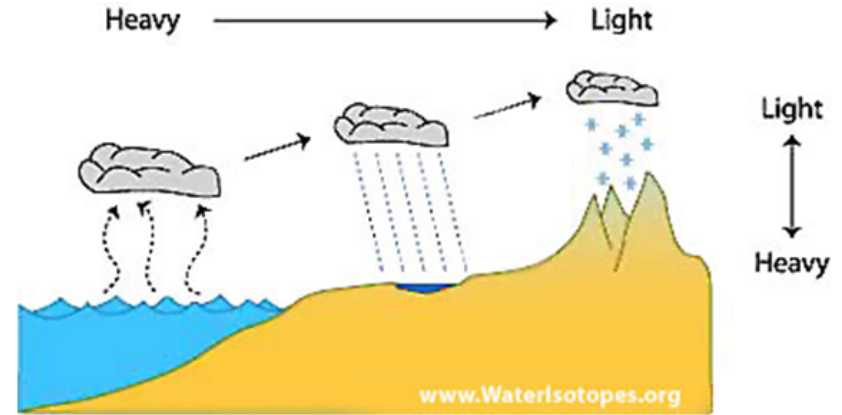


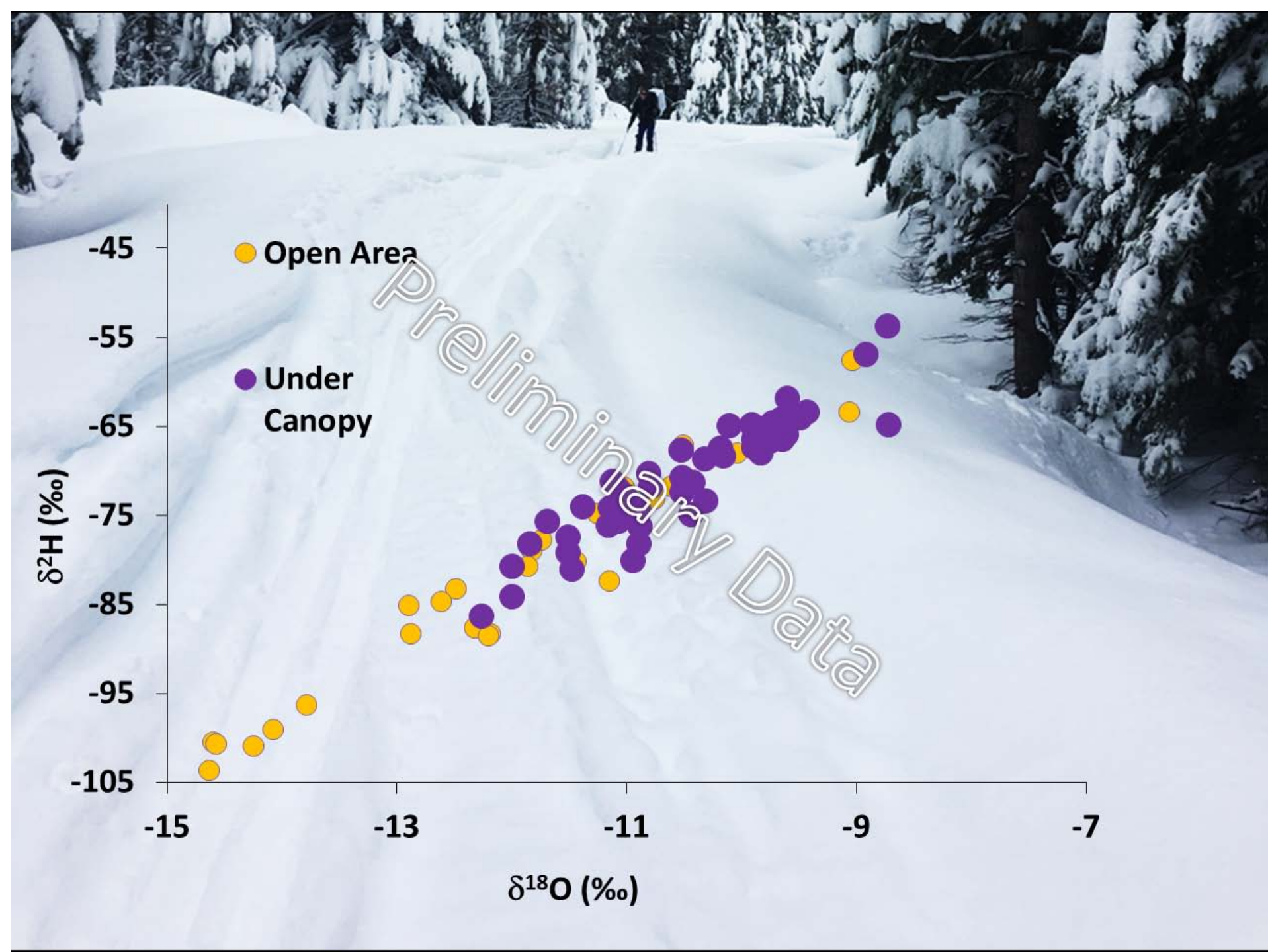






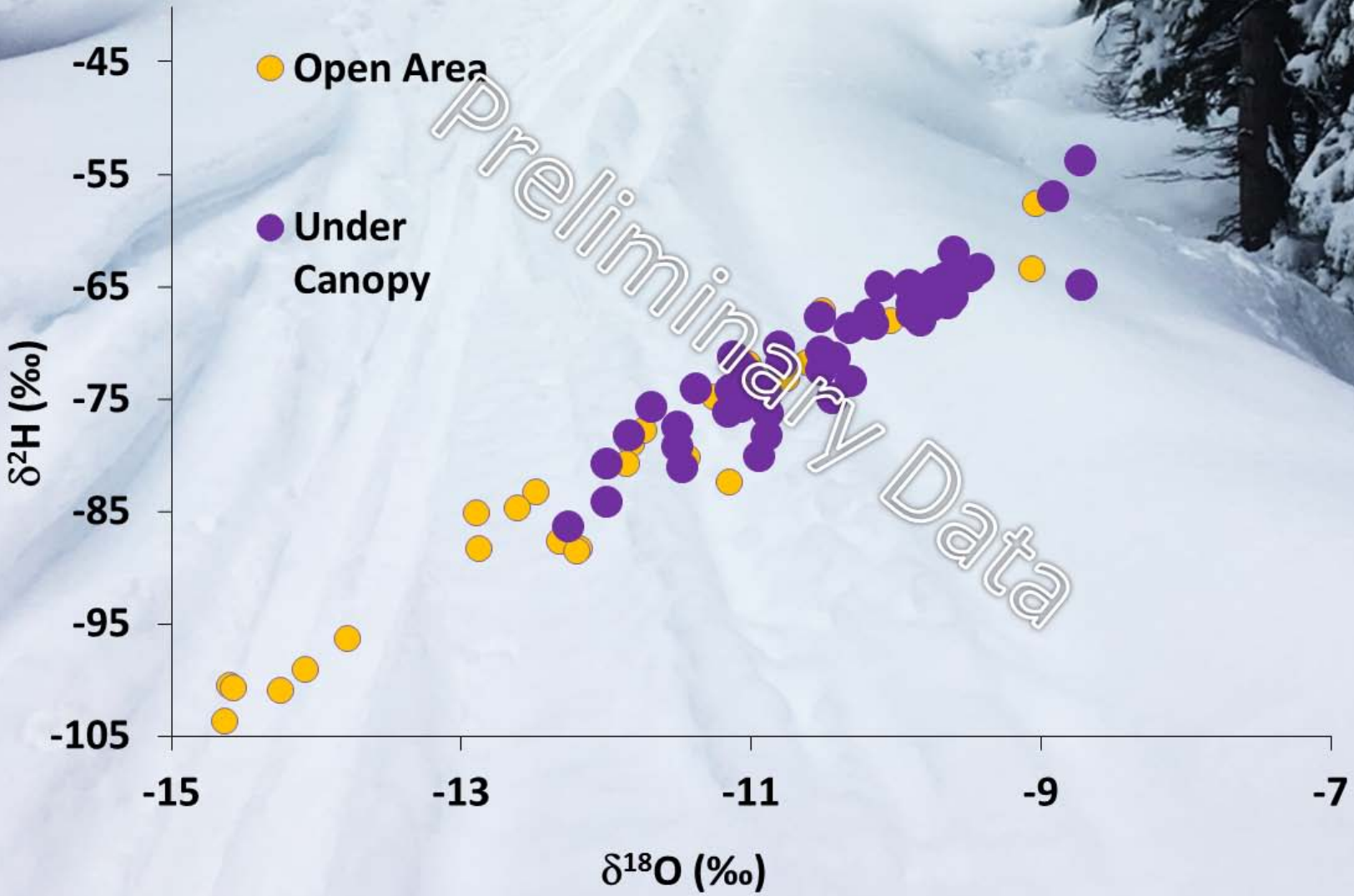
# Storm & elevation variation:





Preliminary Data

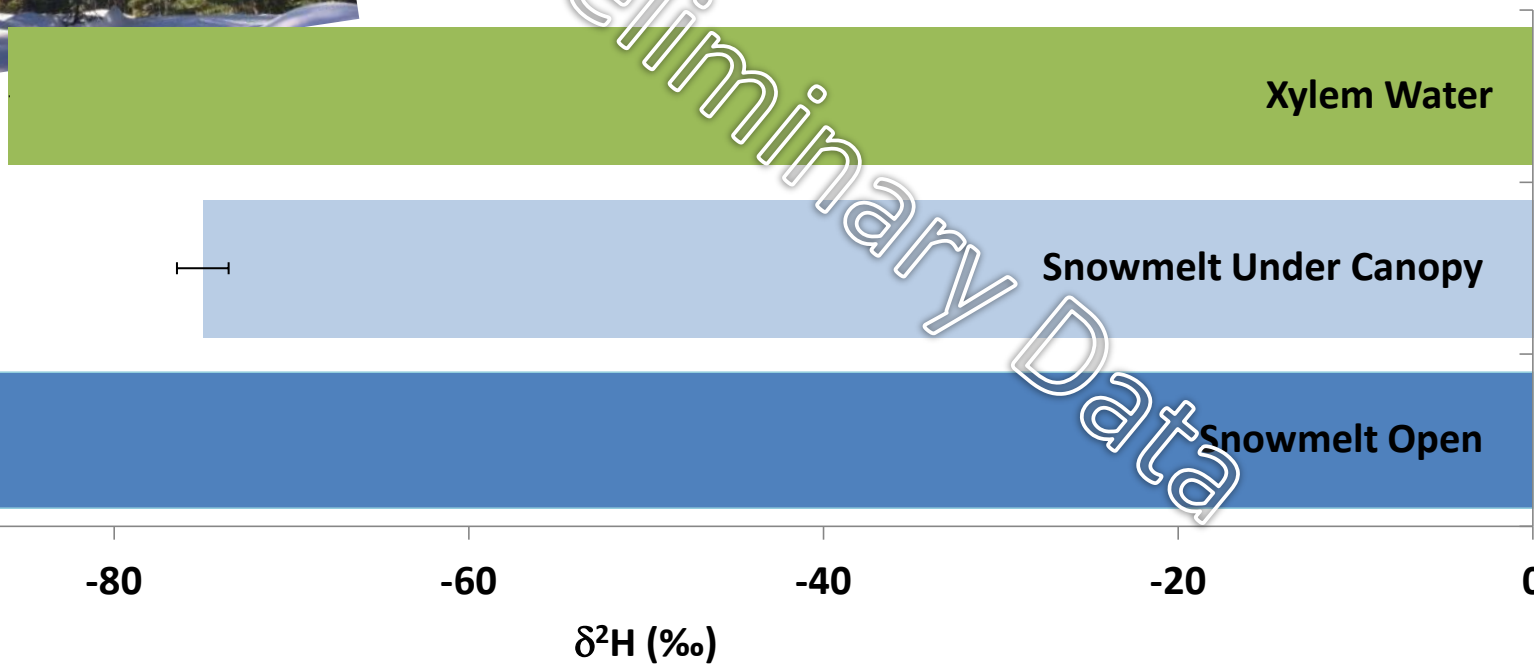
- Open Area
- Under Canopy



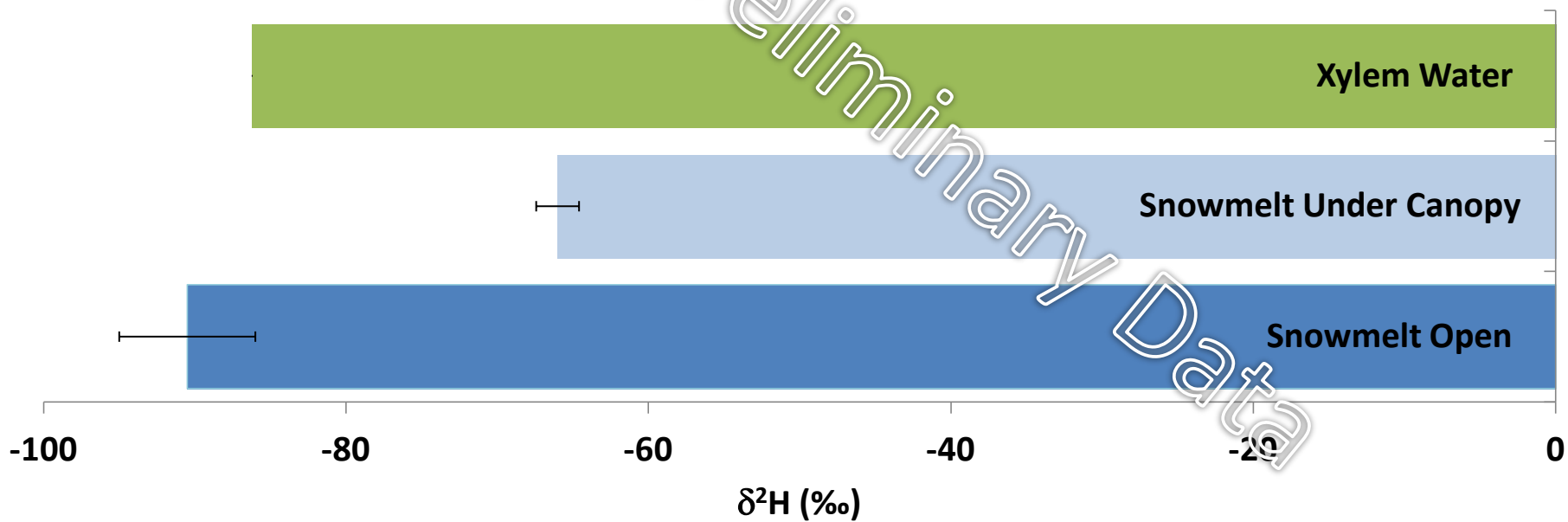




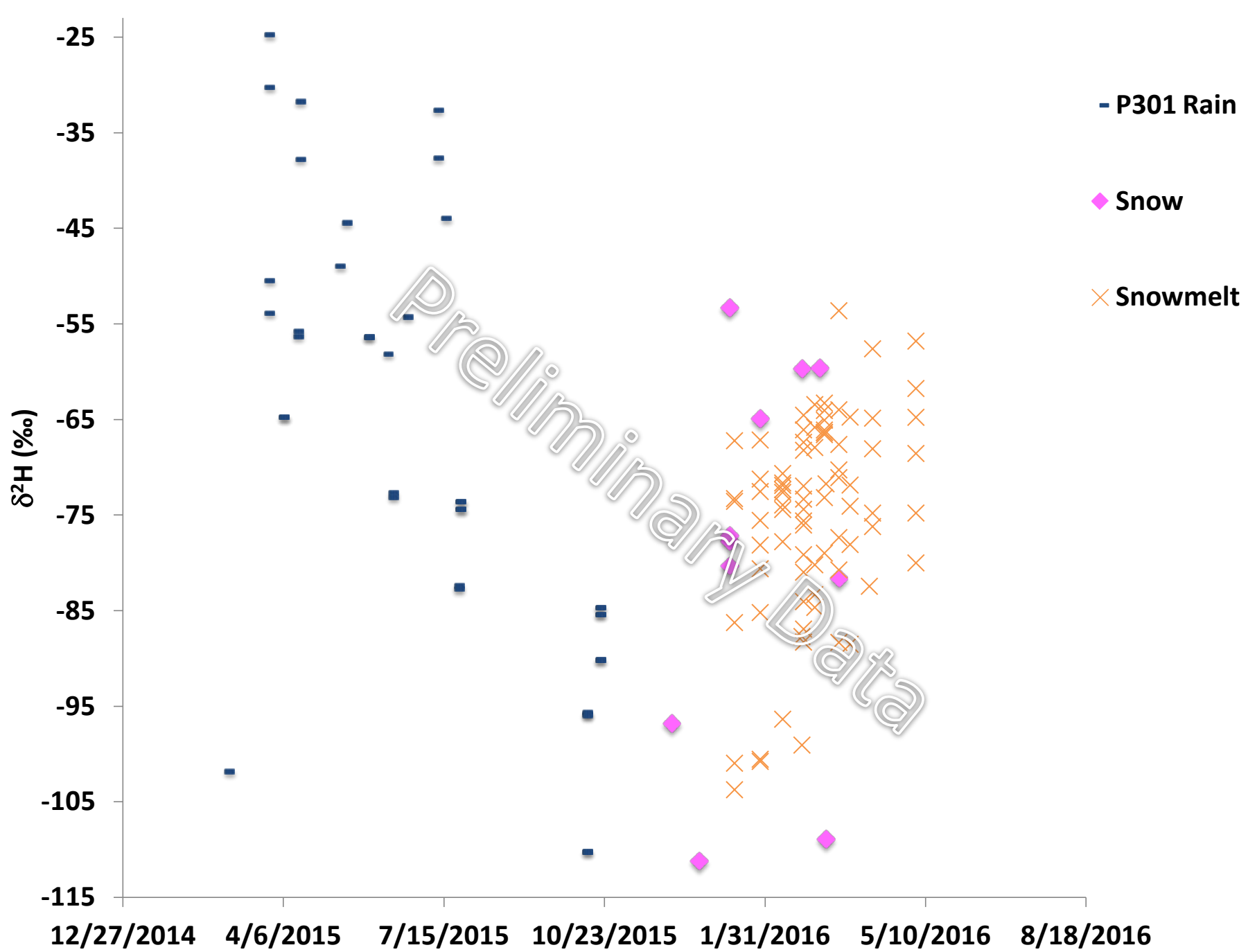




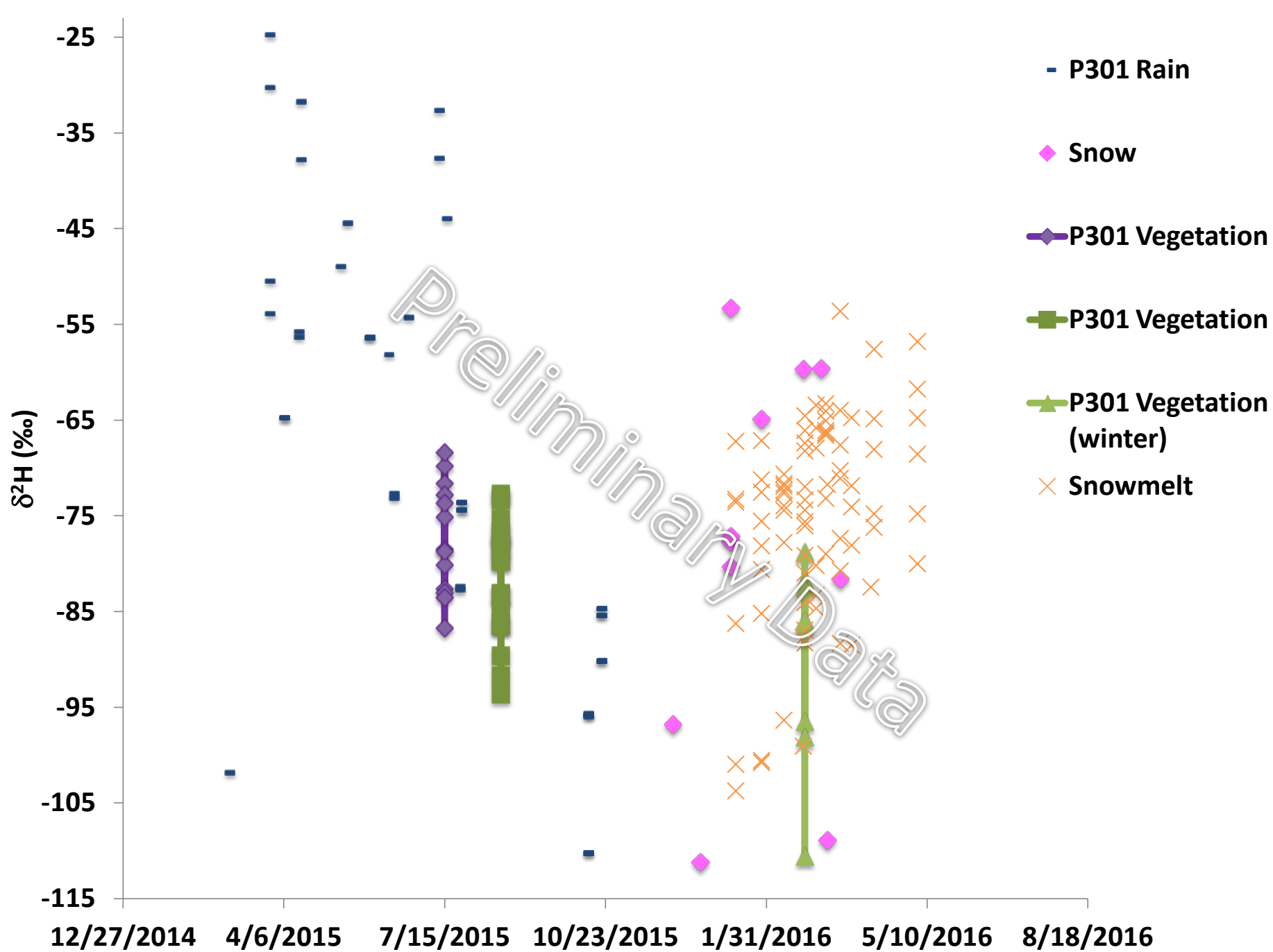




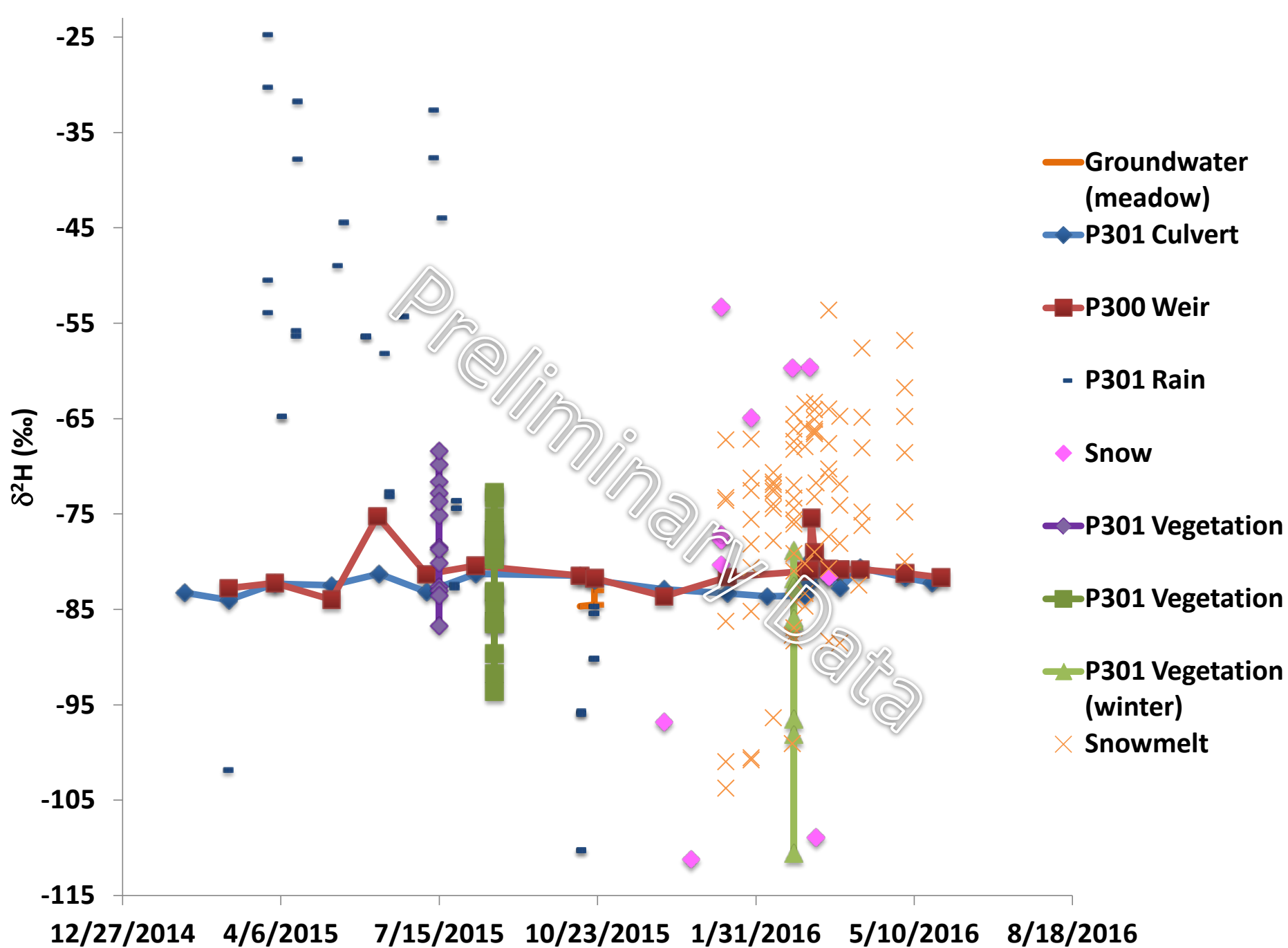




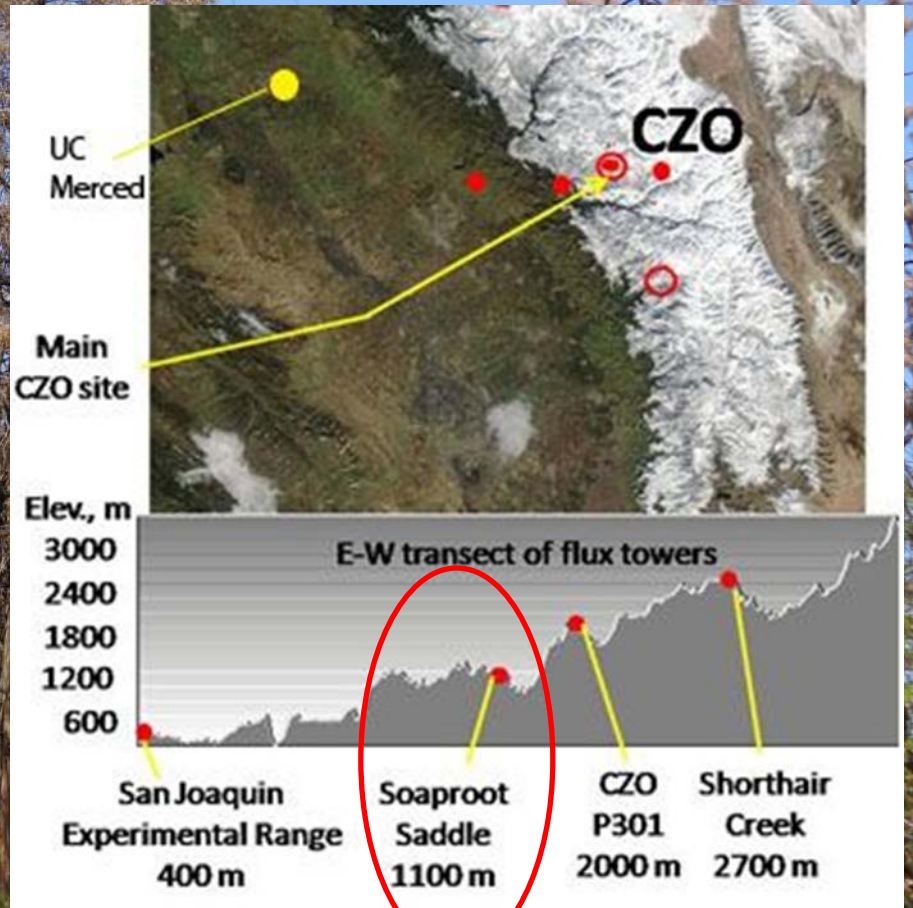
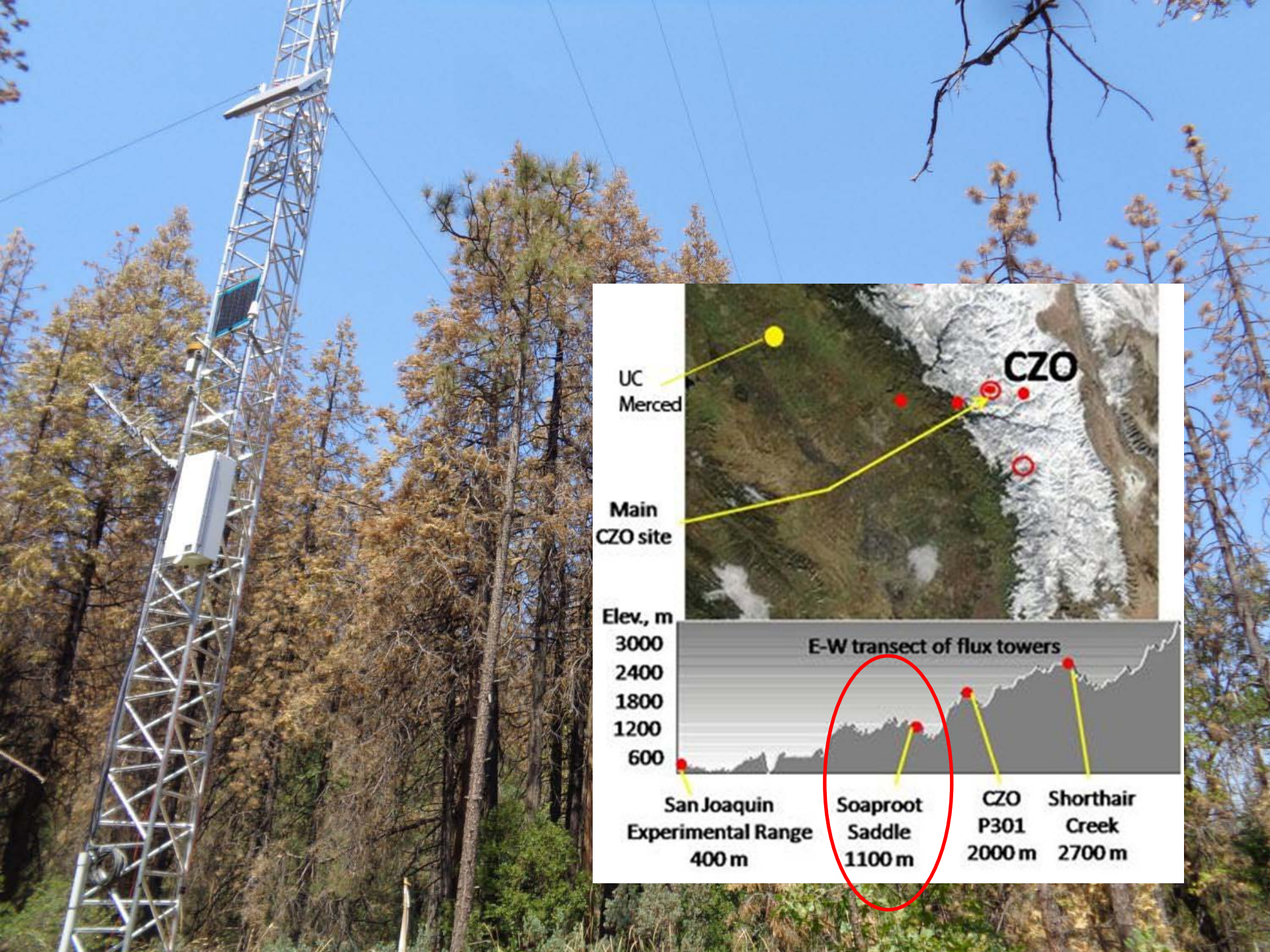






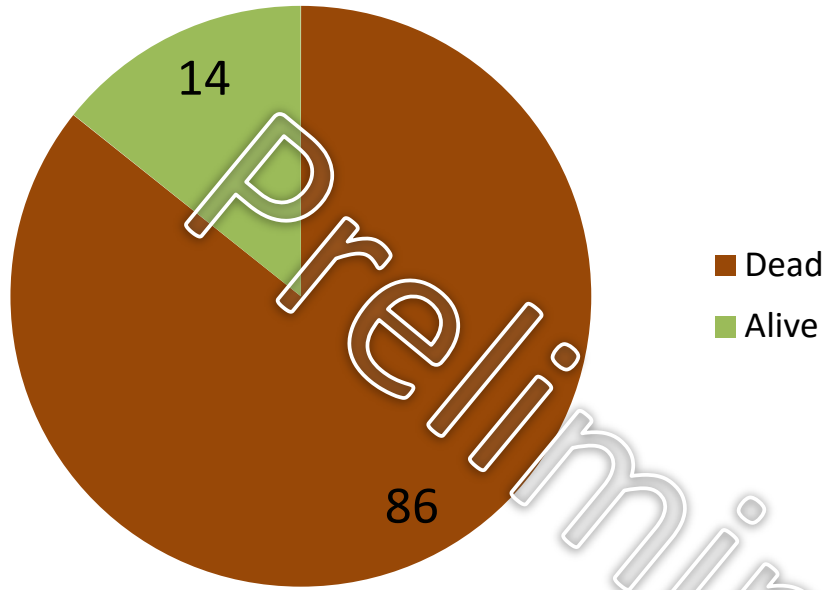




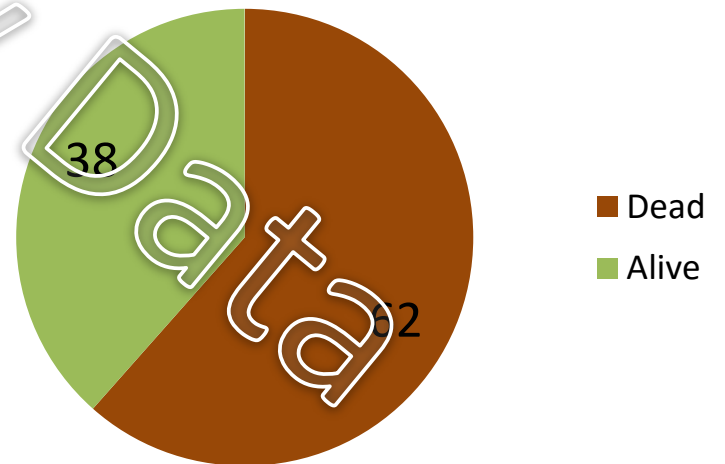




### Tall Incense Cedar



### Short Incense Cedar

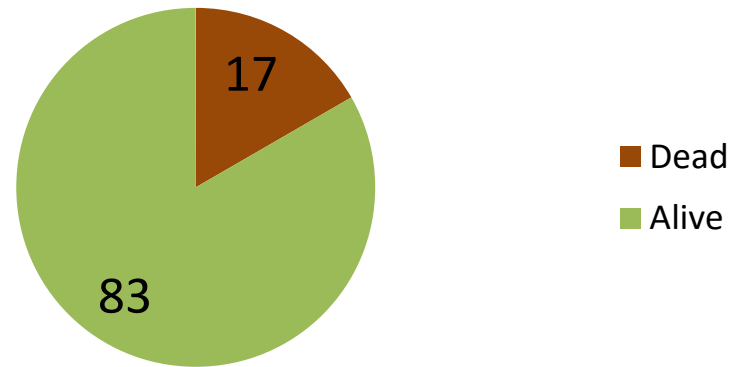




### Tall Ponderosa Pine



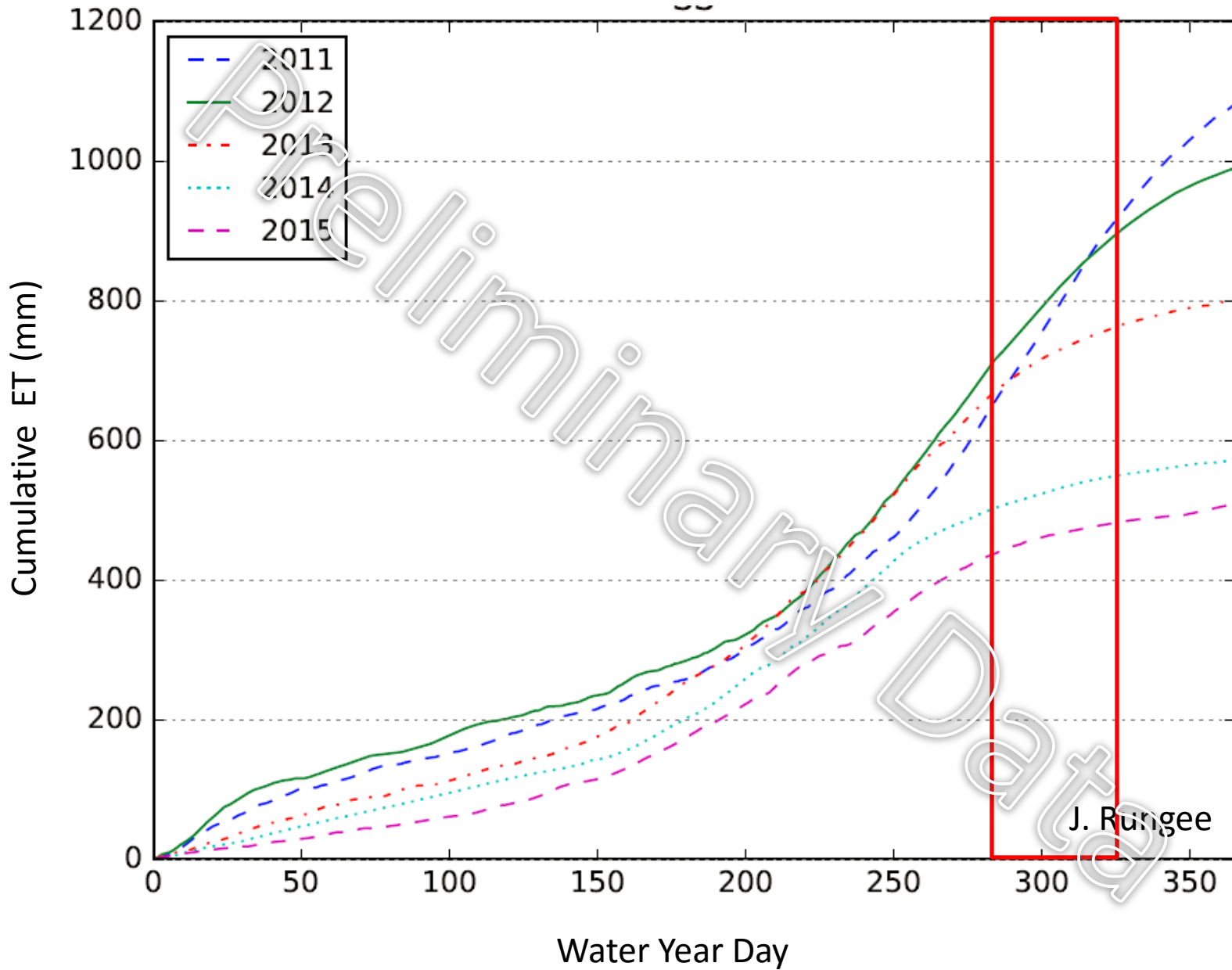
### Short Ponderosa Pine



### Ponderosa Pine (% of tree dead & height)



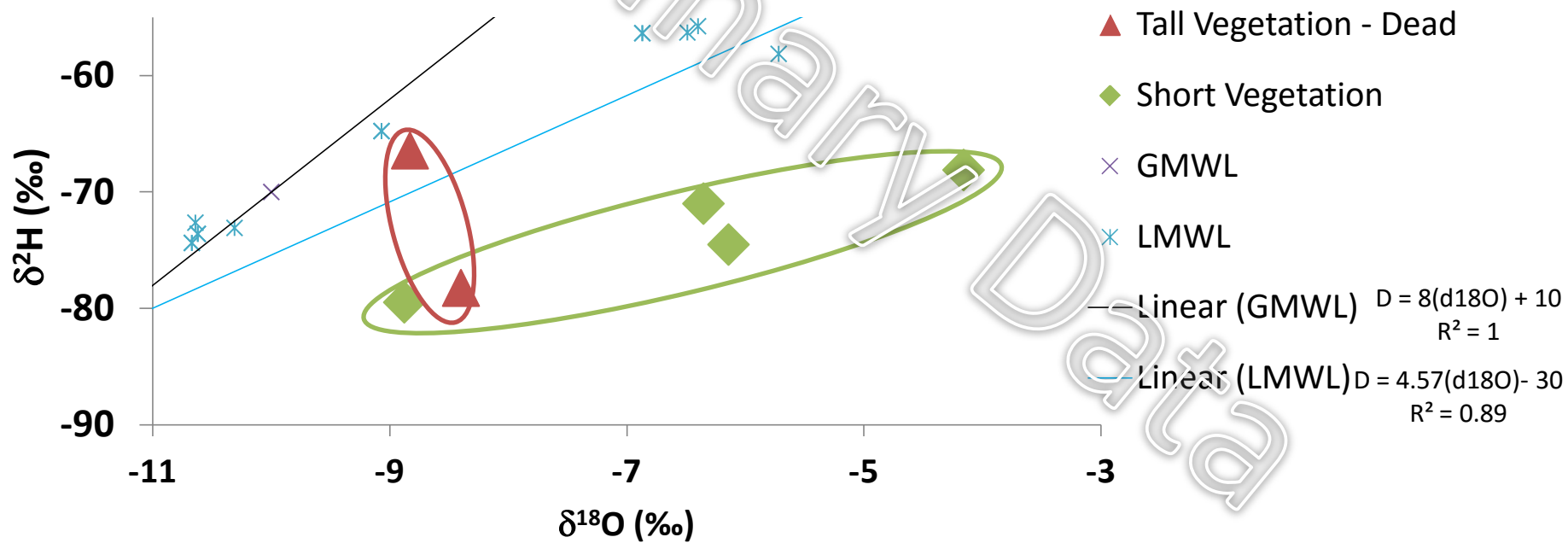
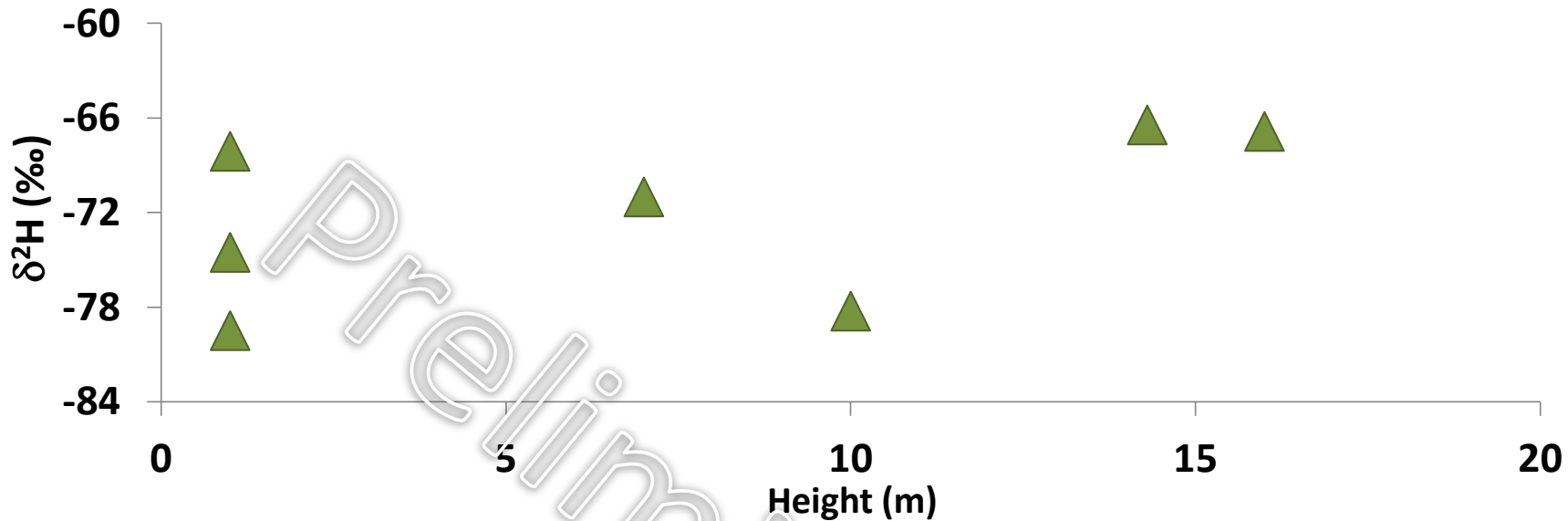




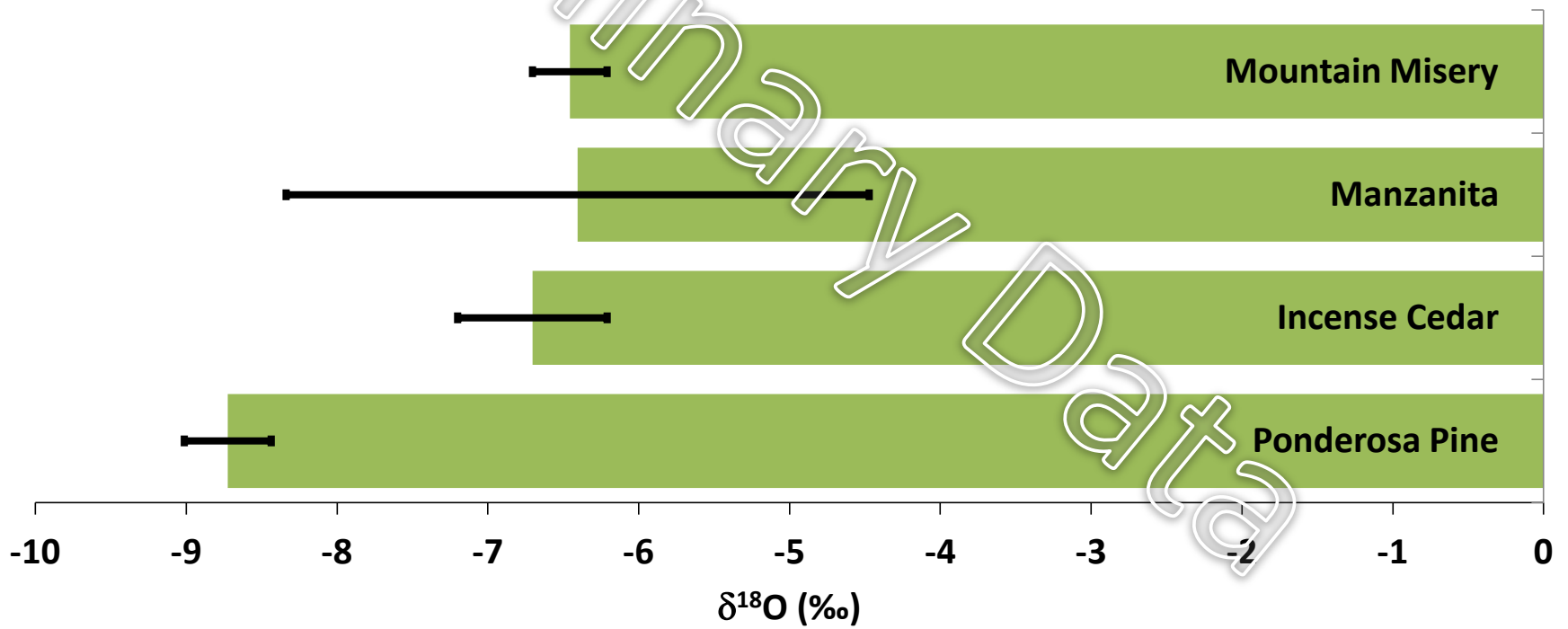


**Were tall trees tapping into different water sources than short trees?**





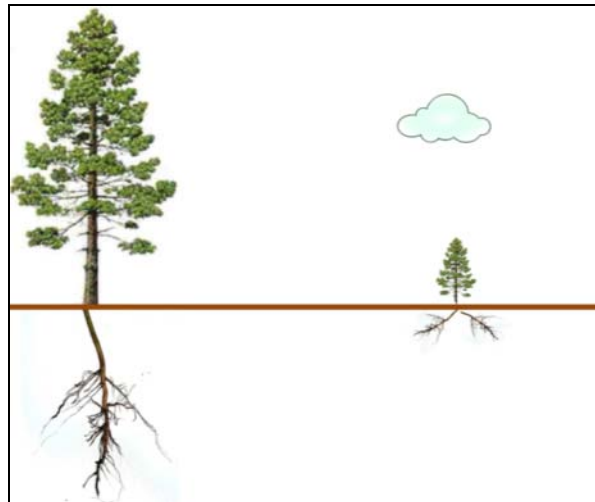
# August Soaproot Vegetation Variation





# Results Summary

- Canopy structure may influence water uptake
- Water sources can change seasonally
- During severe drought, accessing a variety of sources  $\uparrow$  drought tolerance
- Tree height likely hydraulic disadvantage



# Acknowledgments

- **Southern Sierra Critical Zone Observatory**
- **Southern California Edison**
- **Lawrence Livermore National Laboratory**
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A photograph of a forest landscape. In the foreground, there is a dense field of green, low-lying vegetation, possibly a meadow or a clearing. In the background, several tall, thin, coniferous trees stand against a clear blue sky. The trees have a mix of green and brown needles, suggesting a transition or a specific species. The overall scene is bright and clear.

# Questions