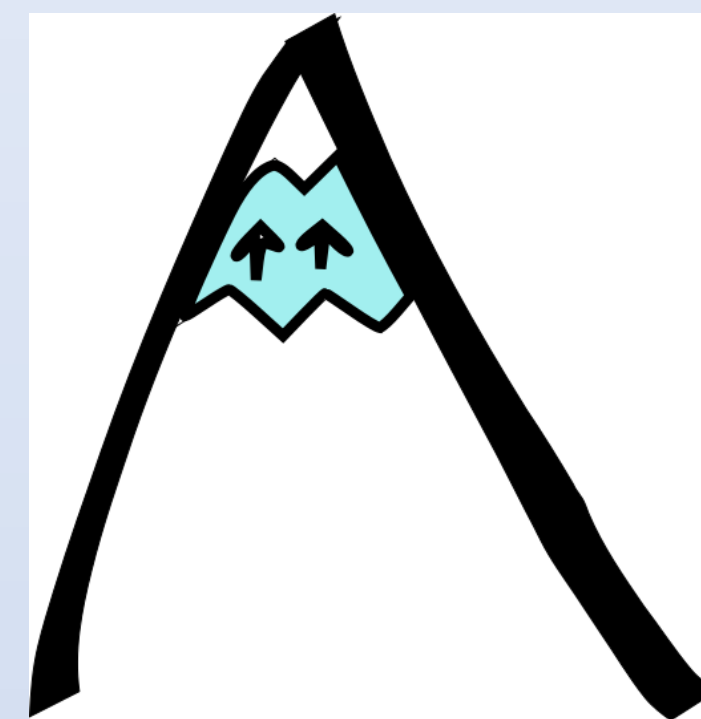




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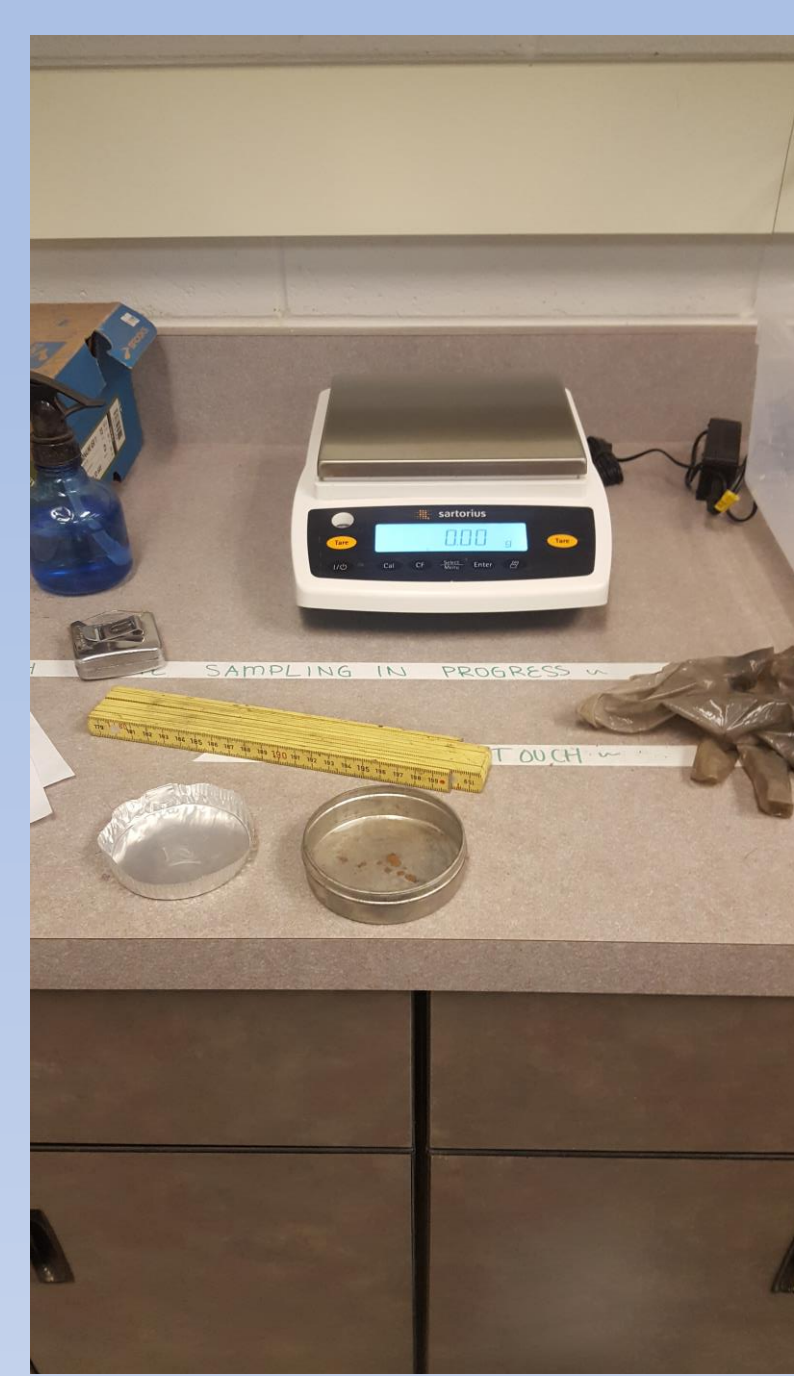
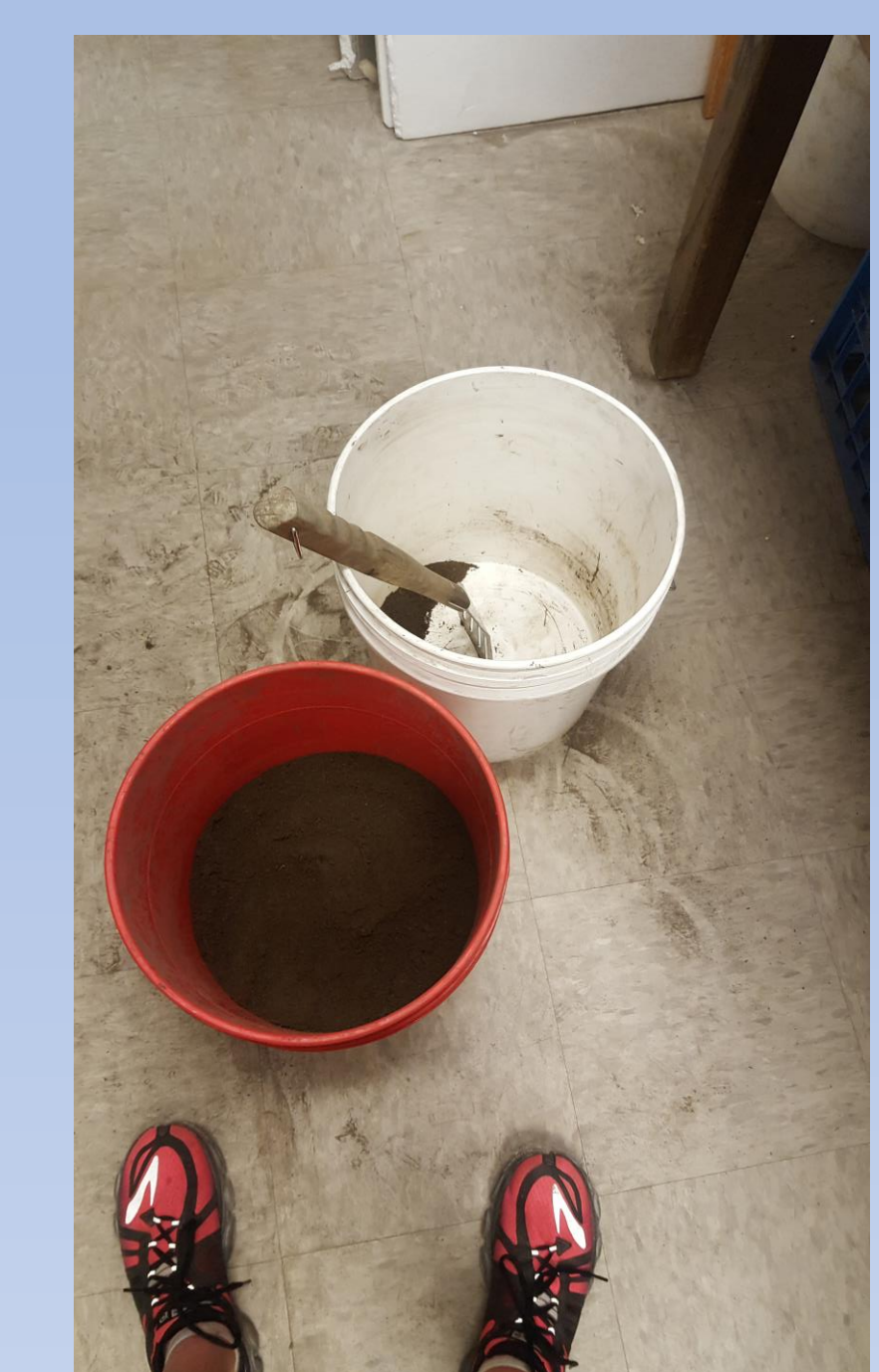
## Soil Water Availability May Change due to a Warming Climate

- Shifts in the elevation of the snow rain transition are likely with a warming climate.
- Soil water availability could be affected by this shift.
- Plant water use depends on soil water availability.
- Understanding current plant water use is key to predicting what may happen to plants as the snow-rain transition shifts.

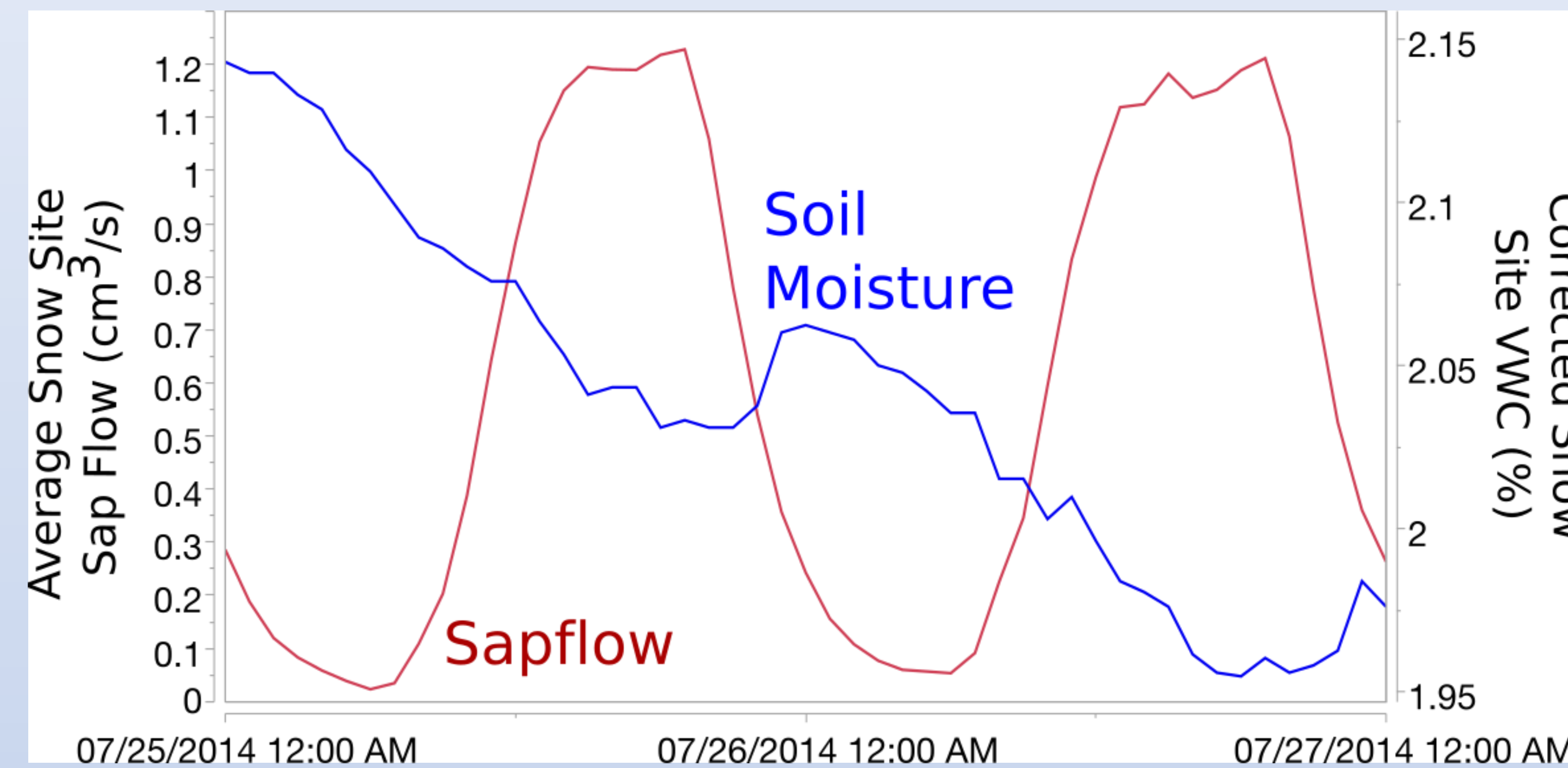


## Goal and Approach: Using Gravimetric Soil Moisture to Correct Previous in Site Data

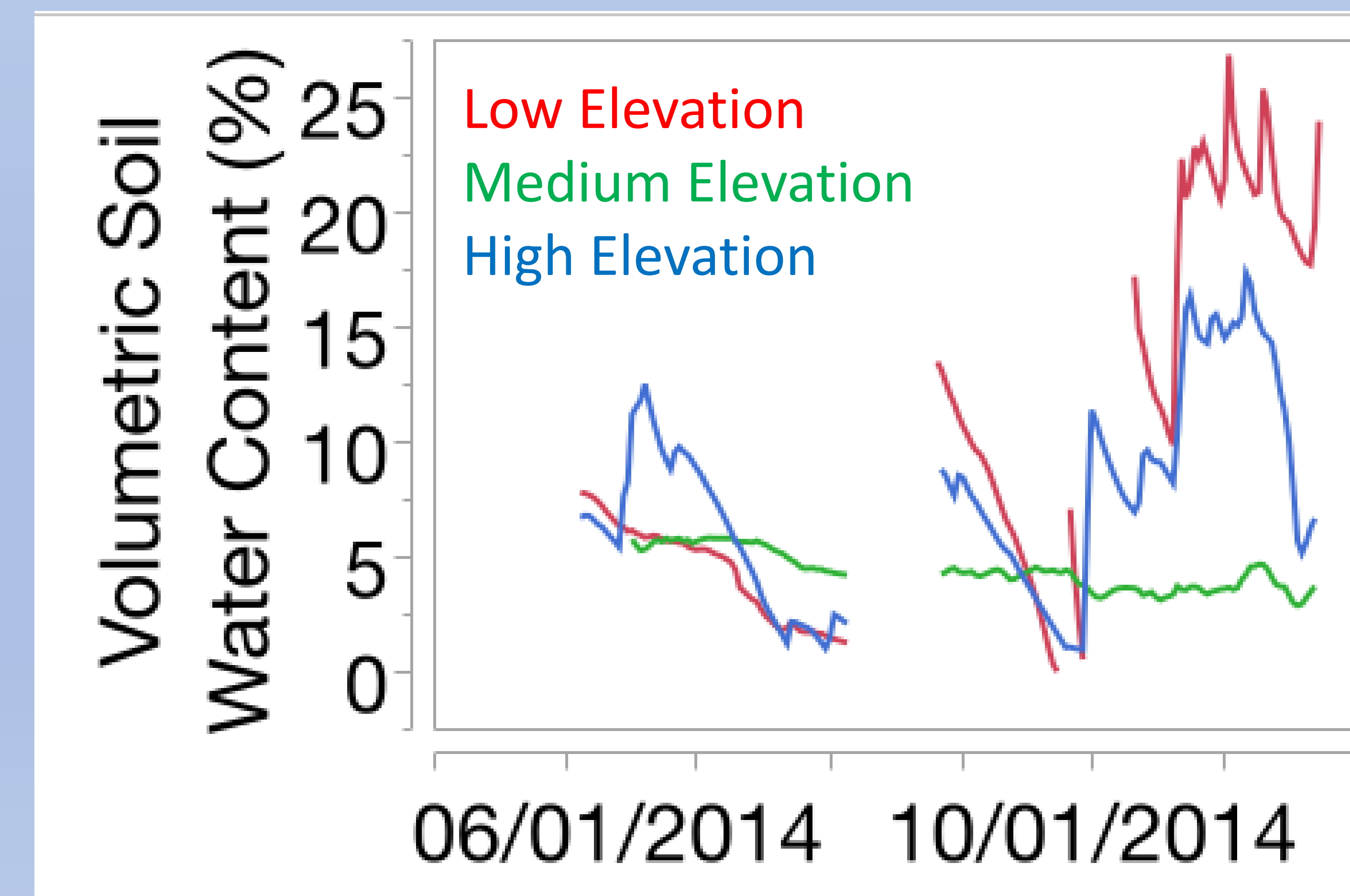
- Previous research across the snow-rain transition in the Pioneer Creek watershed in Central Idaho's Frank Church Wilderness focused on plant water use by Douglas Fir, but observed quantities of soil moisture were hard to interpret.
- The data needed to be corrected, by calibrating the 5TM Decagon Soil Moisture Probe.
  - This was done across a moisture gradient for each site.
  - Step 1: Pack down the dry soil to bulk densities.
  - Step 2: Take soil moisture measurements over a time period of 5 minutes.
  - Step 3: Dry soil for 24 hours (this was done with a drying oven at a temperature of 40 degrees C.)
  - Step 4: Compare gravimetric and probe measurements at five or more moisture levels.



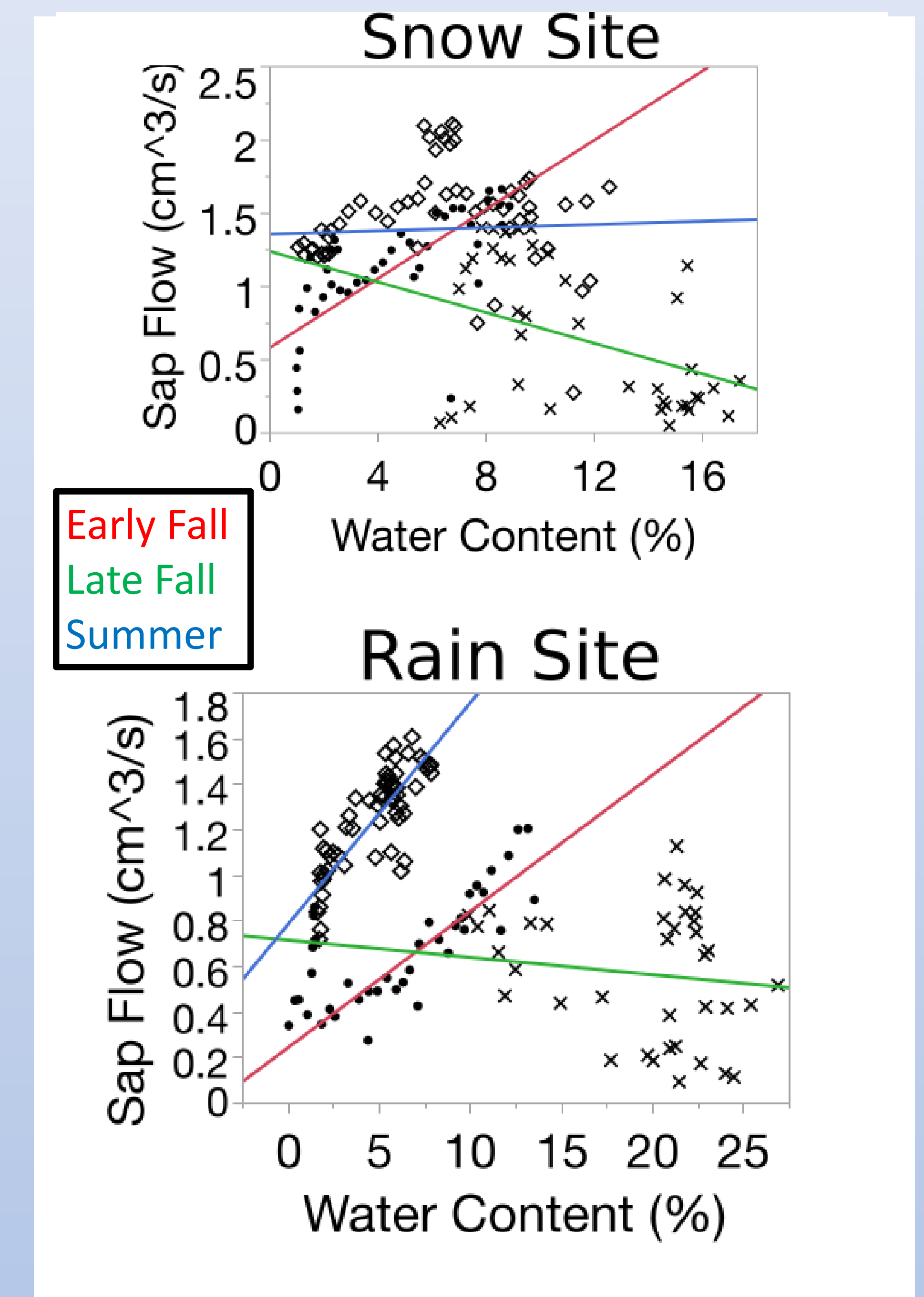
## Diel Cycles in Sap Flow are Bigger and Offset in Time from Soil Moisture Cycles



## Soil Water Content Varies More at Snow and Rain Sites than Mixed Precipitation and Increases in Late Fall with Variations throughout the Study Period



## Sap Flow is Most Sensitive to Soil Moisture in Summer at Rain Site, and in Early Fall at Snow Site



## Overall Implications of Corrected Data

- Increased soil moisture appears to minimize differences in snowmelt timing and plant water use across the elevation gradient.
- Timing of soil moisture- sap flow sensitivity is consistent with different energy and water limitations at the rain and snow-dominated elevations.

## Acknowledgments

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