Earlywood, Latewood, & The Summer Monsoon

THE UNIVERSITY OF ARIZONA

LTRR Laboratory of Tree-Ring Research University of Arizona

CLIMAS Climate Assessment for the Southwest

NSF

EPA

Earlywood & Latewood

Earlywood

- Lighter color
- Less Dense

  (Larger cells/thinner walls)

- Conducts water & nutrients

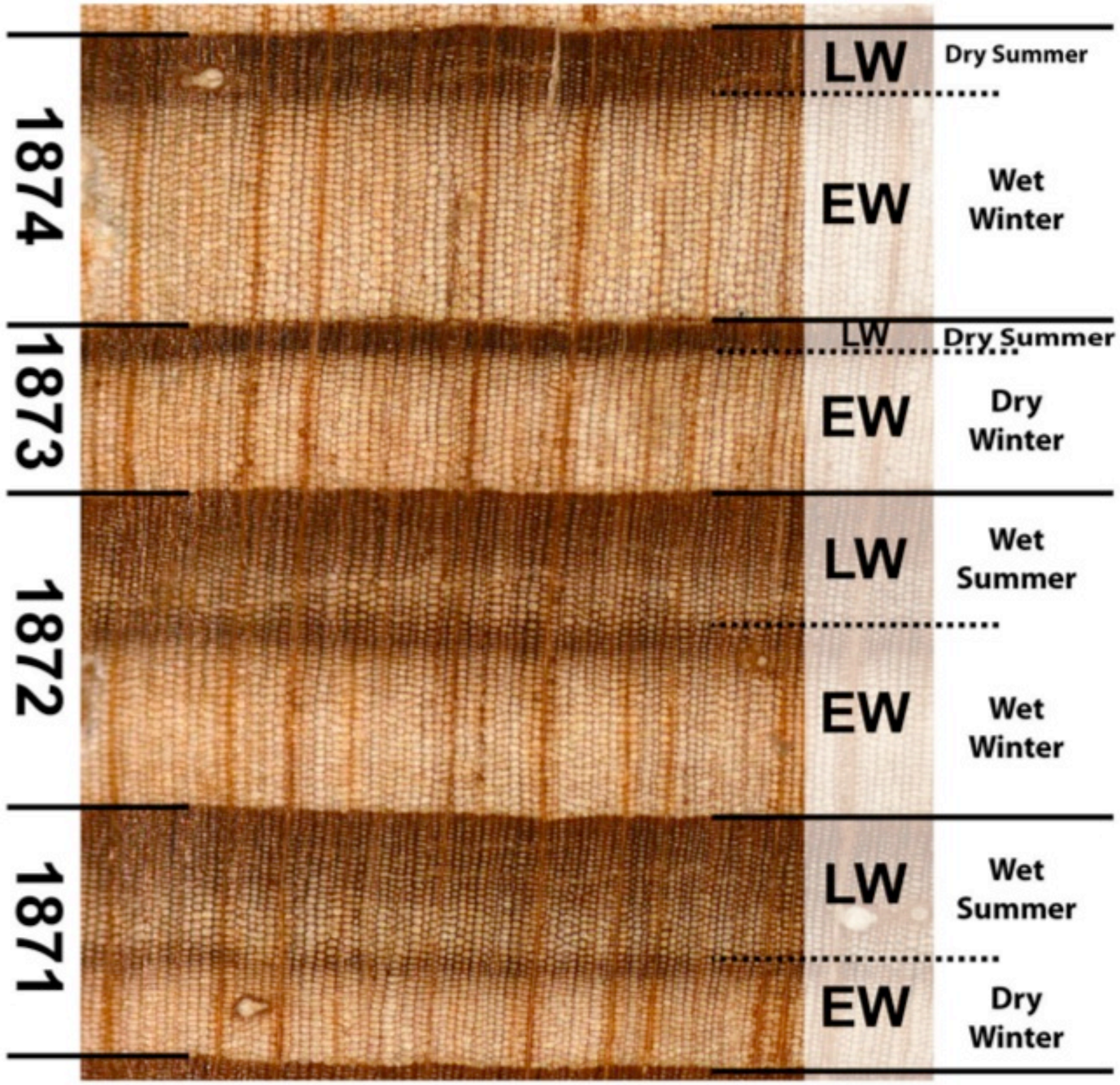
Latewood

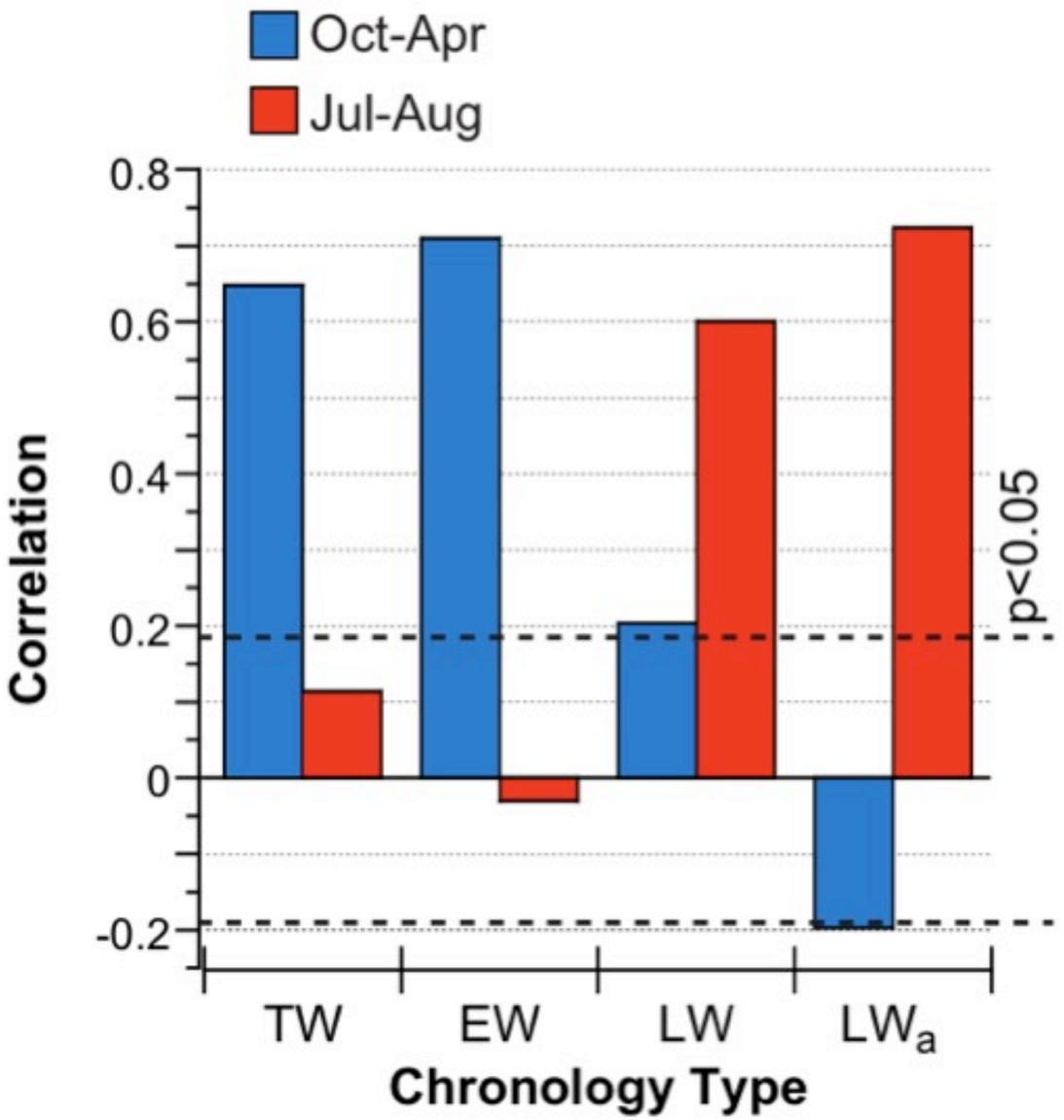
- Darker color
- More Dense

  (Smaller cells/thicker walls)

- Provides structural stability

Earlywood & Latewood





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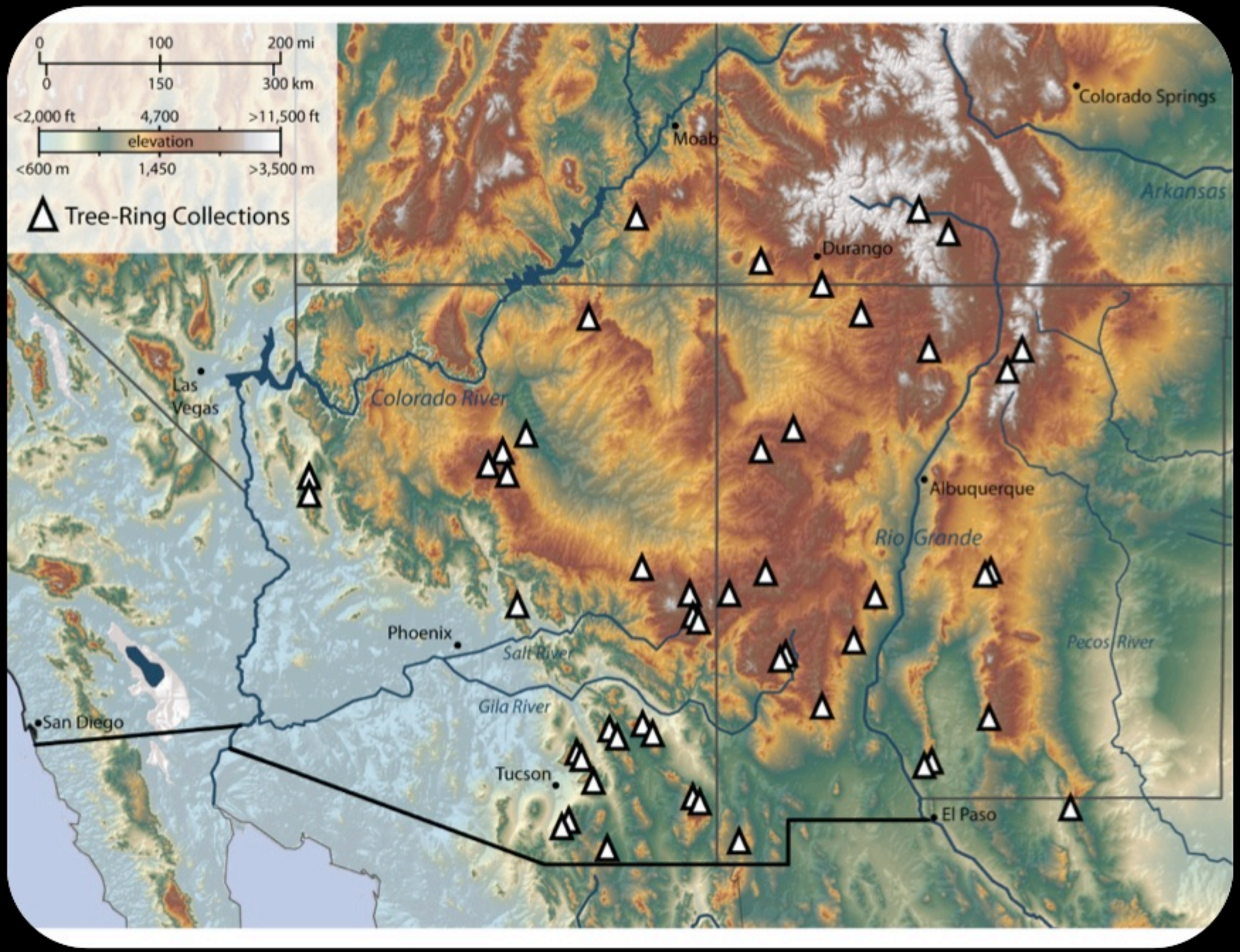
A New Tree-Ring Network of Earlywood and Latewood Chronologies



Field Work

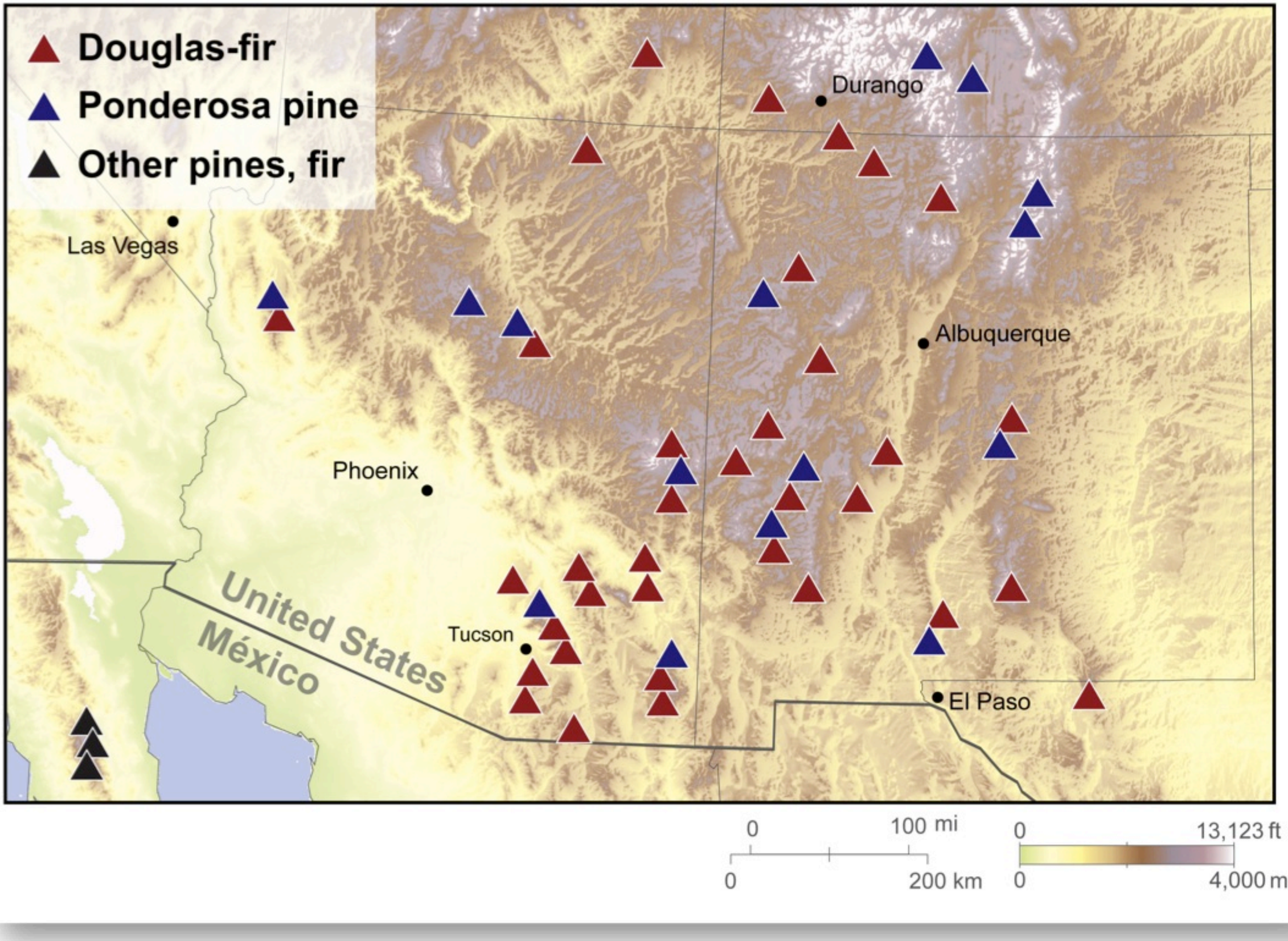
- 53 Sites
- 20 trees per site
- 2 cores per tree

Archive Work

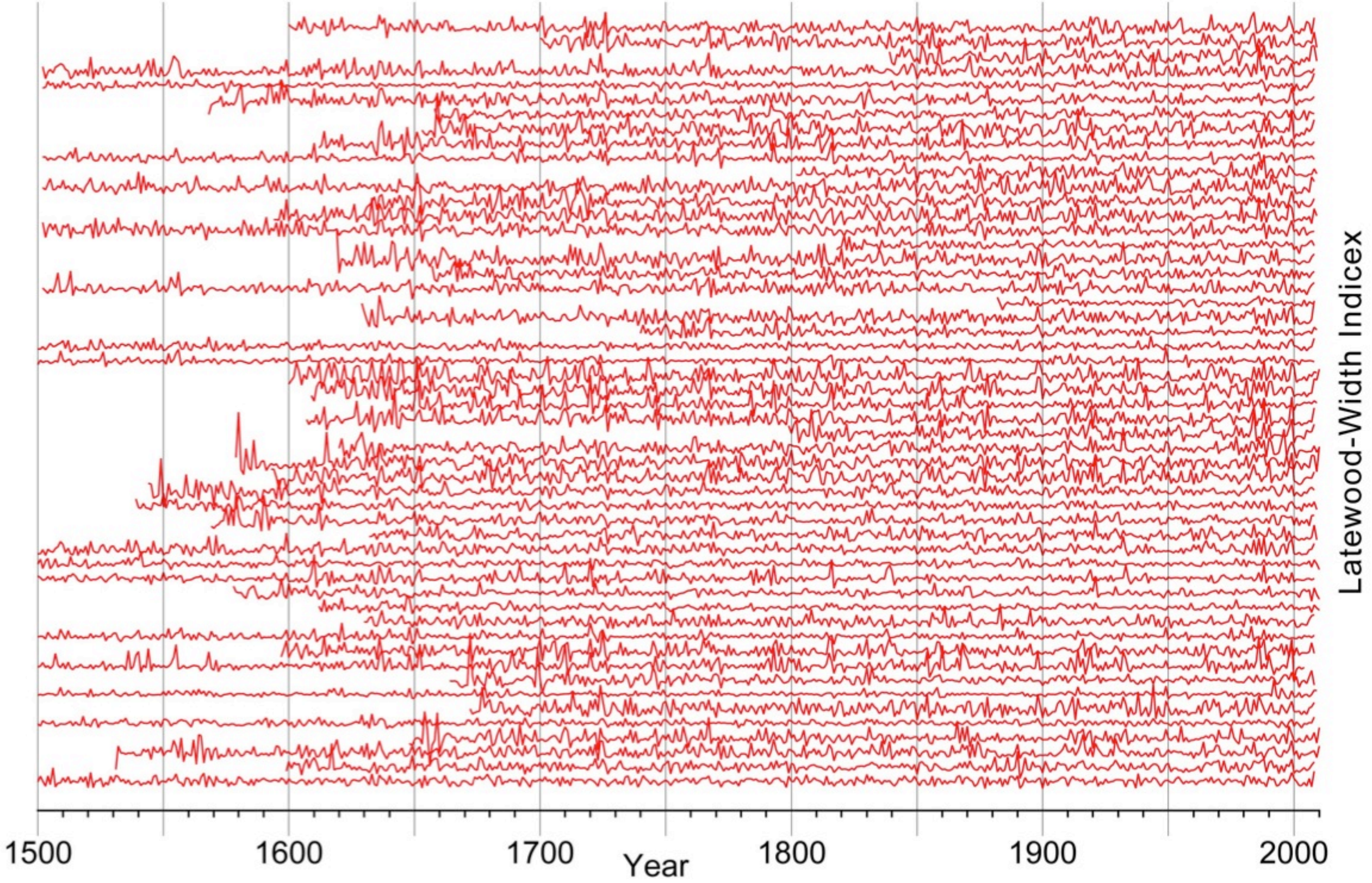
Lab Work

- Re-measure each sample for earlywood and latewood widths
- Prepare, date, measure new samples
- Compute chronologies

New Earlywood & Latewood Chronologies



Monsoon Project Latewood Chronologies



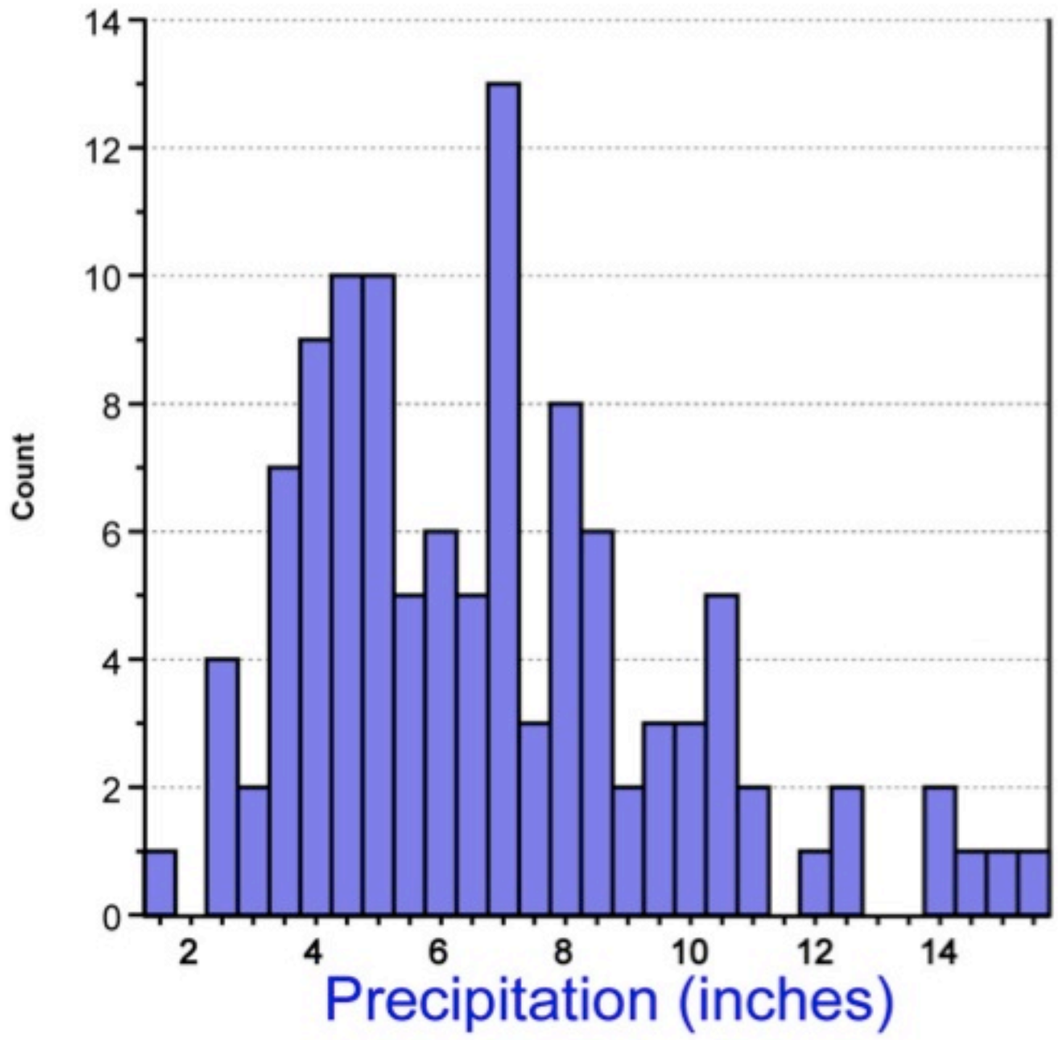
Tree Rings and the North American Monsoon

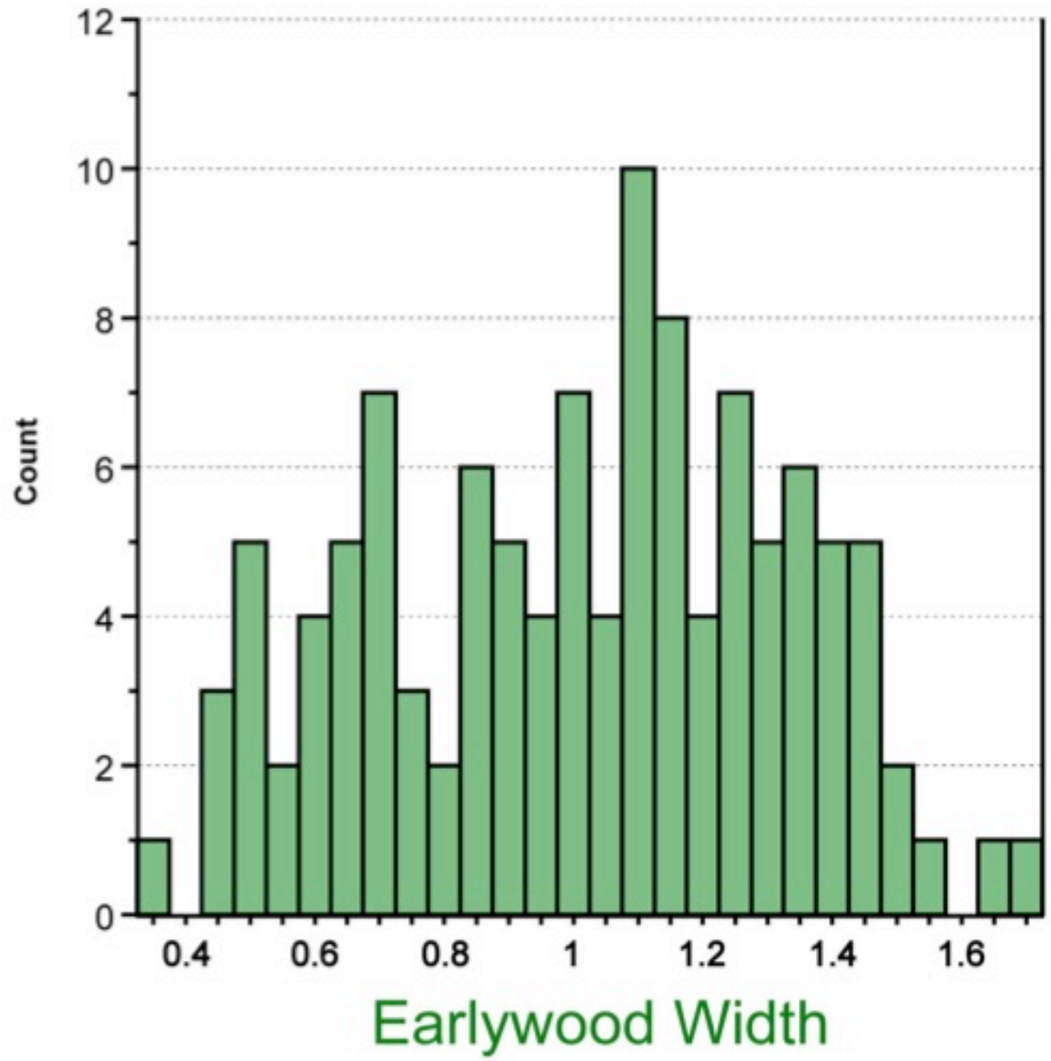
Project Goals

- Develop the first monsoon-sensitive chronology network in the SW U.S.
- Investigate long term monsoon season drought variability in SW U.S.
- Compare cool-season and monsoon-season precipitation in the paleo records
- Assess relationship between monsoon and large scale circulation (i.e., El Niño)
- Provide useful information to stakeholders

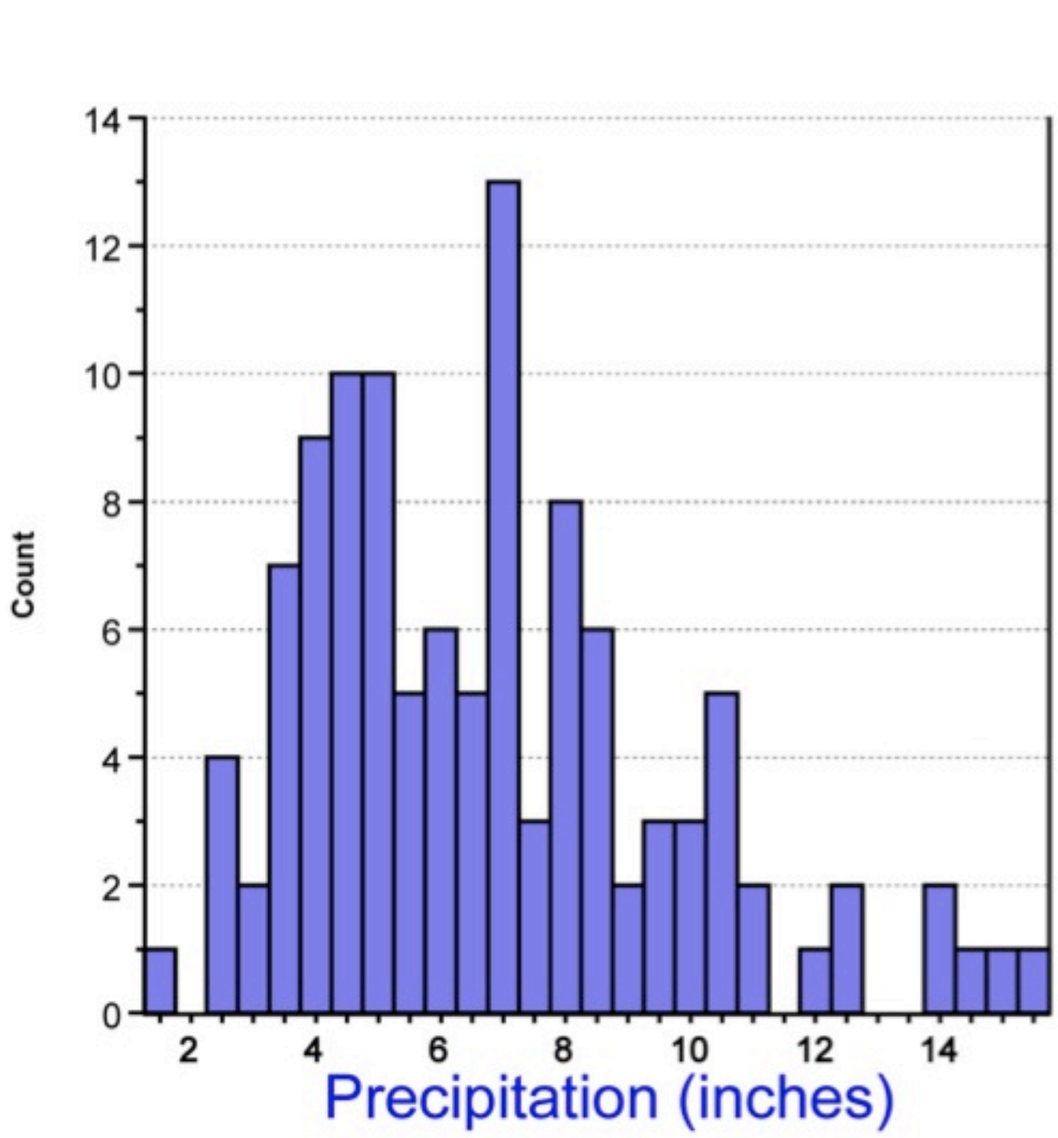
http://monsoon.ltrr.arizona.edu

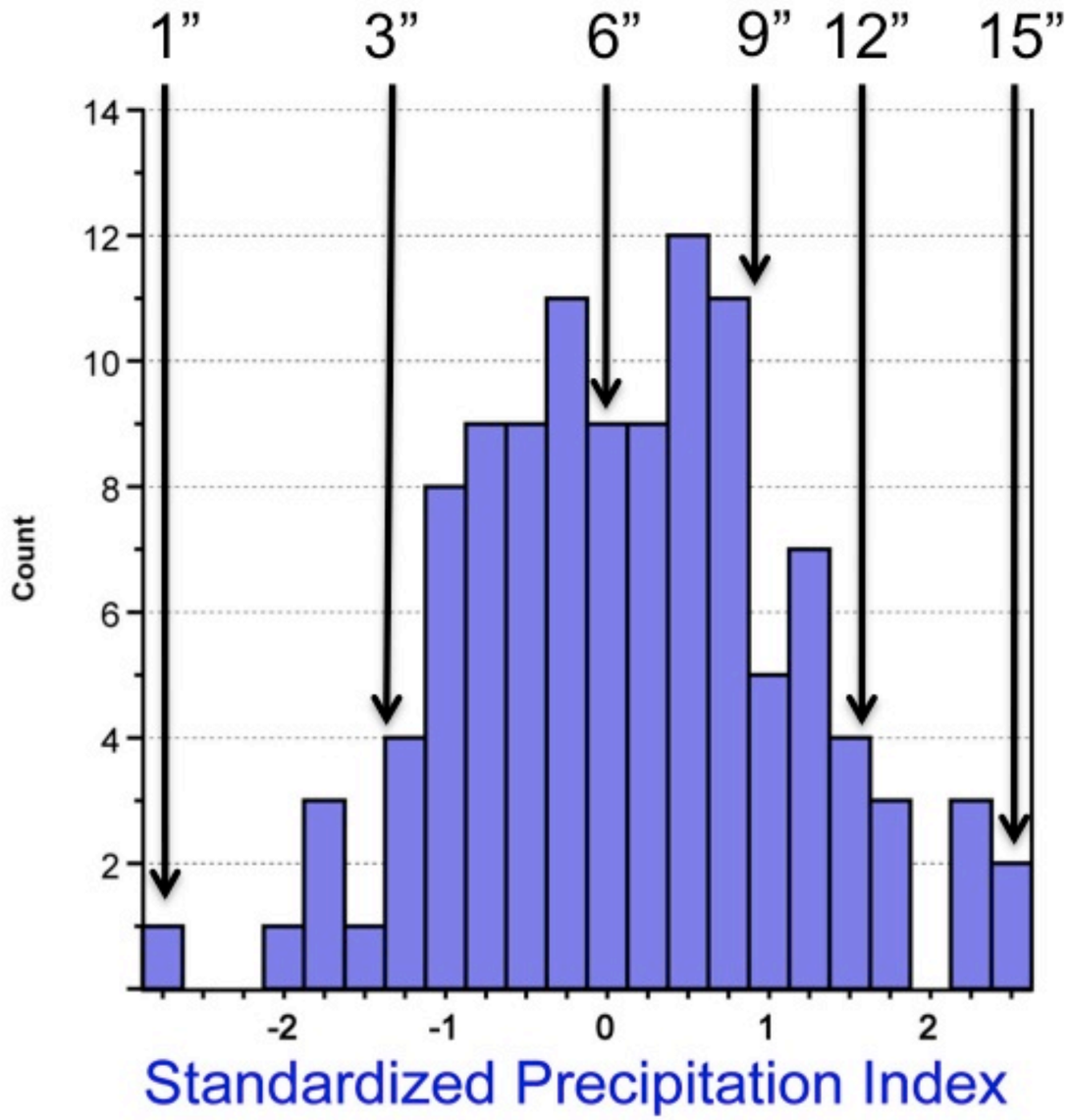
Precipitation, Tree Growth, Standardized Precipitation





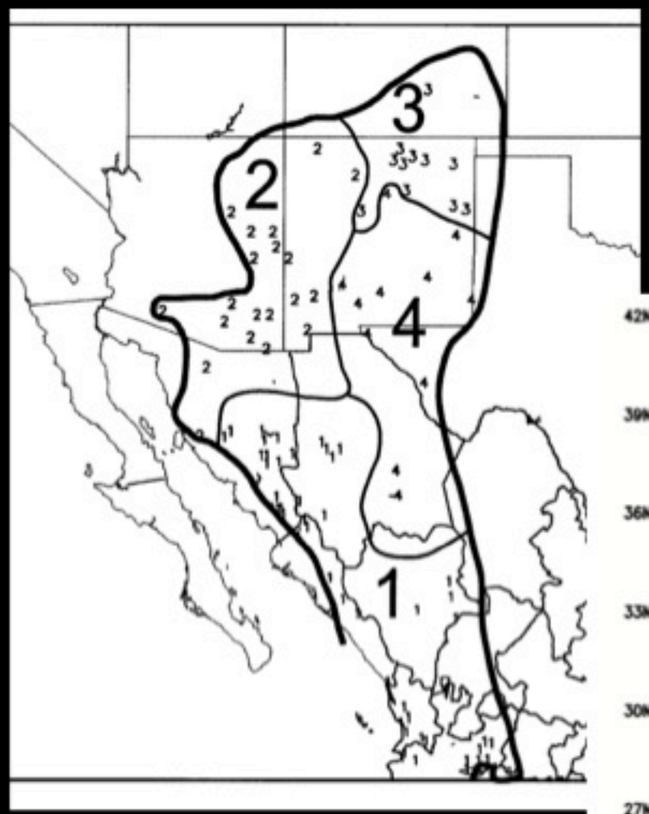
Precipitation, Tree Growth, Standardized Precipitation



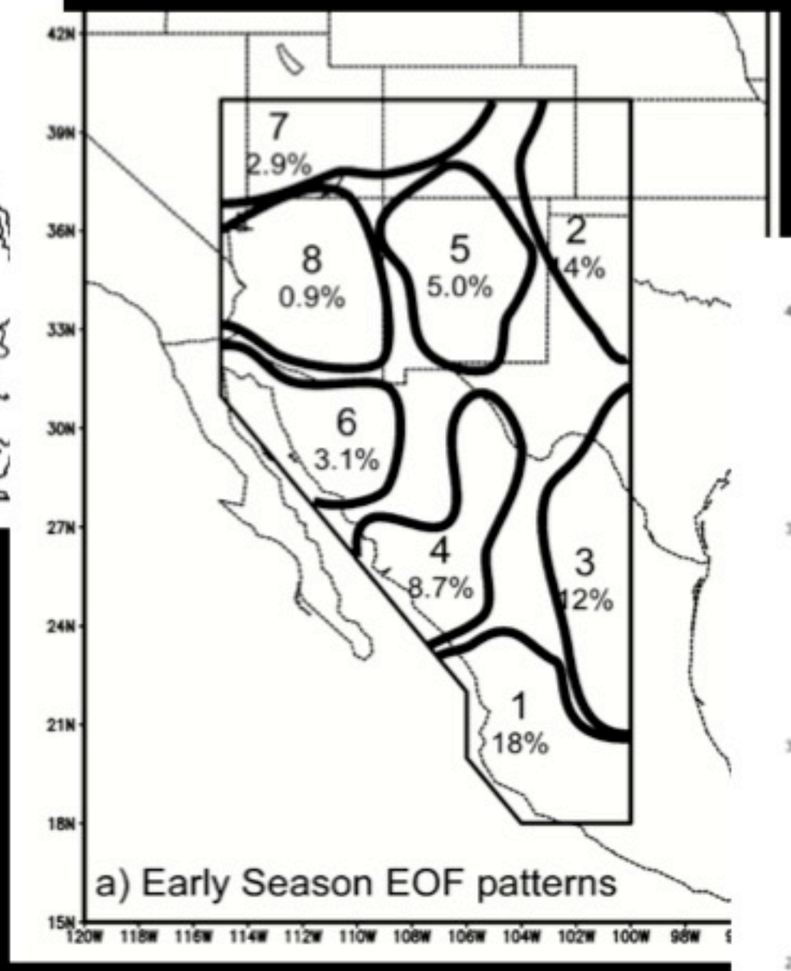


Monsoon Sub-Regions

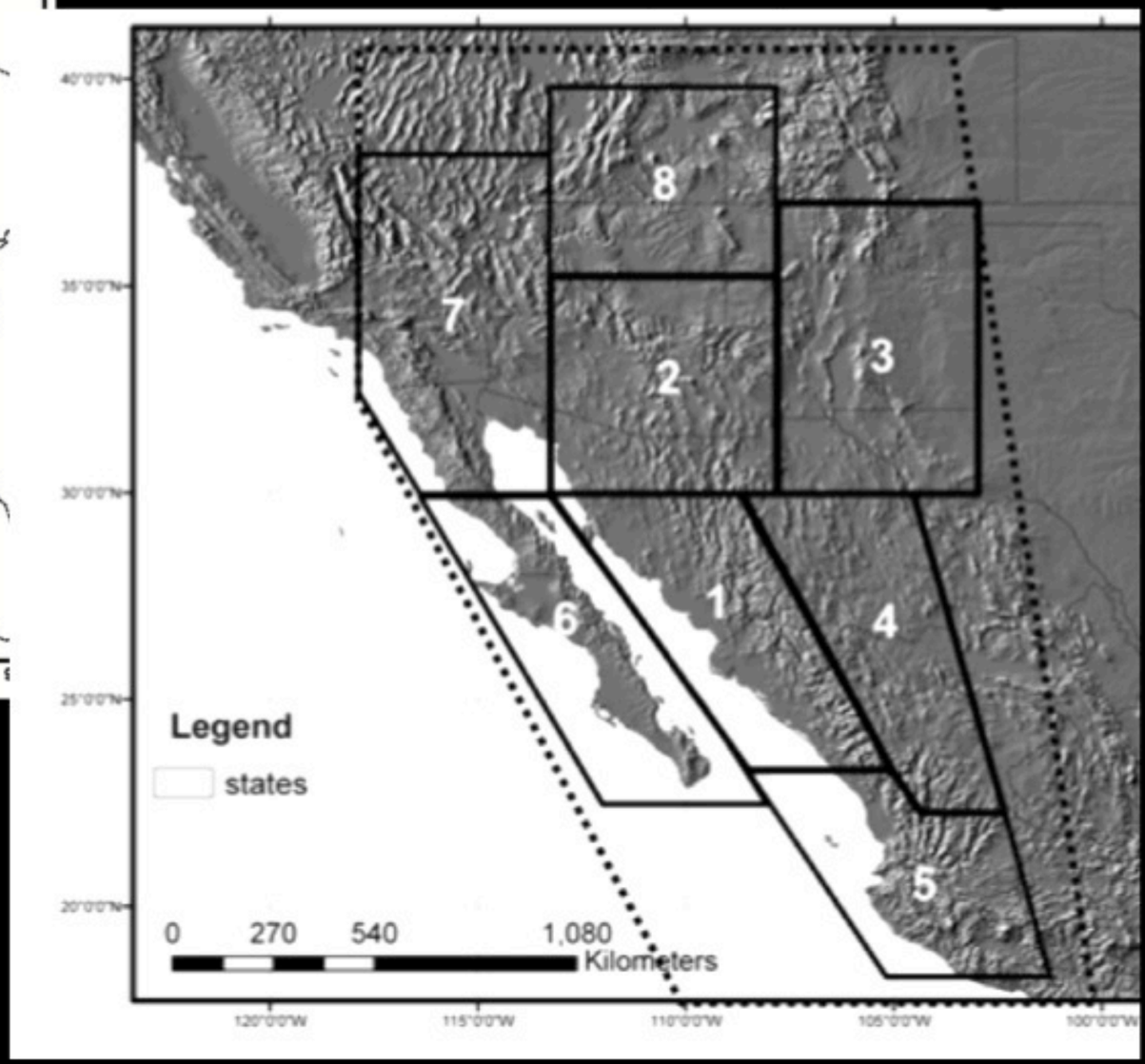
Comrie and Glenn (1998)



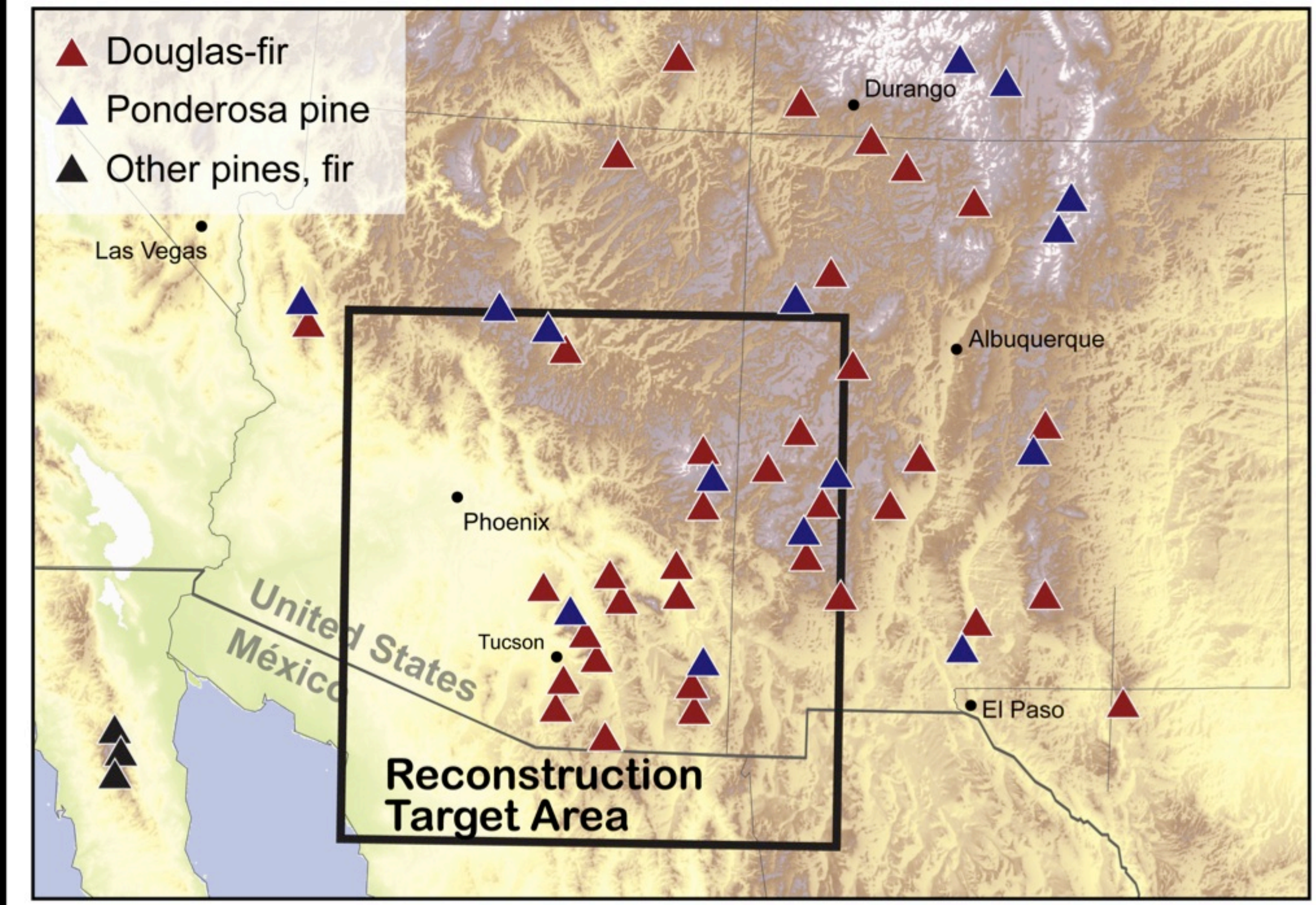
Gutzler (2004)



NAME Forecast Regions
Gochis (2008)

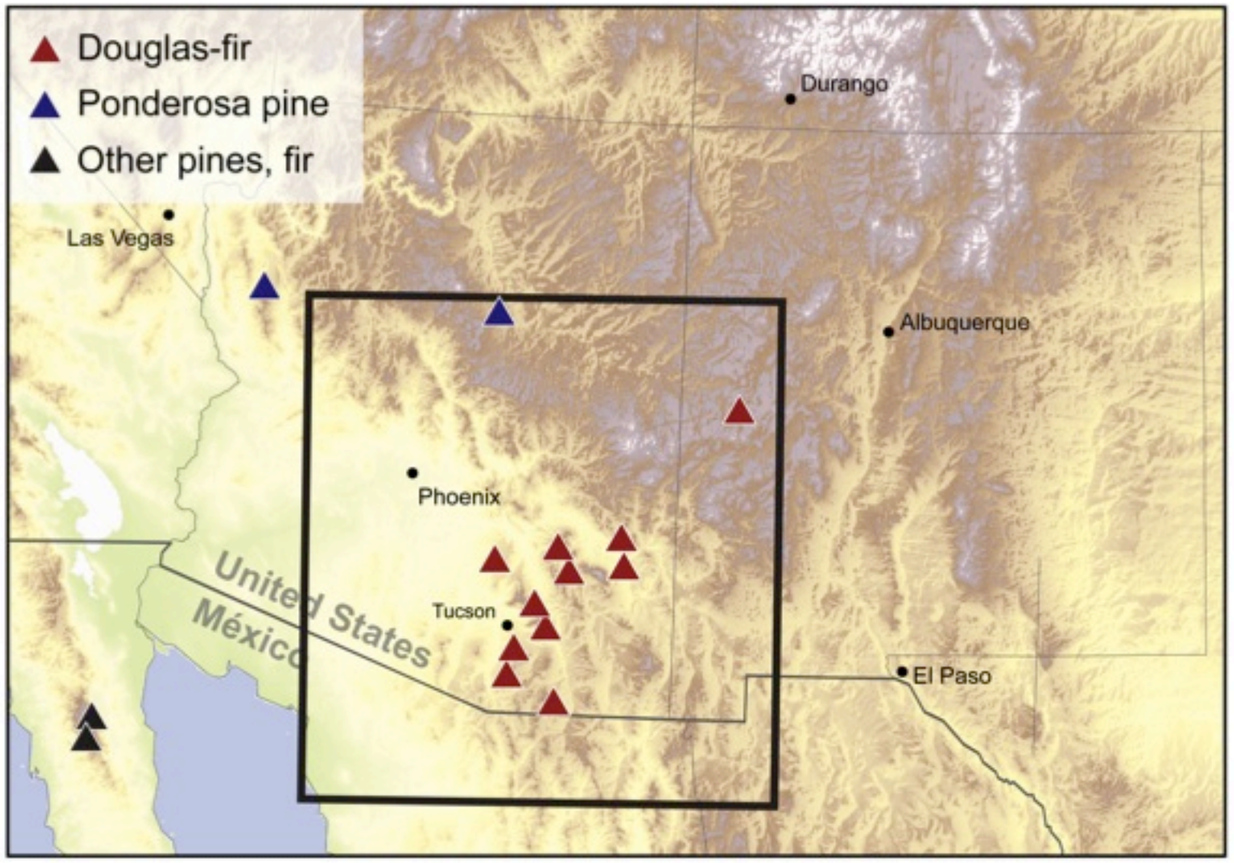


Summer and Winter Precipitation Reconstructions



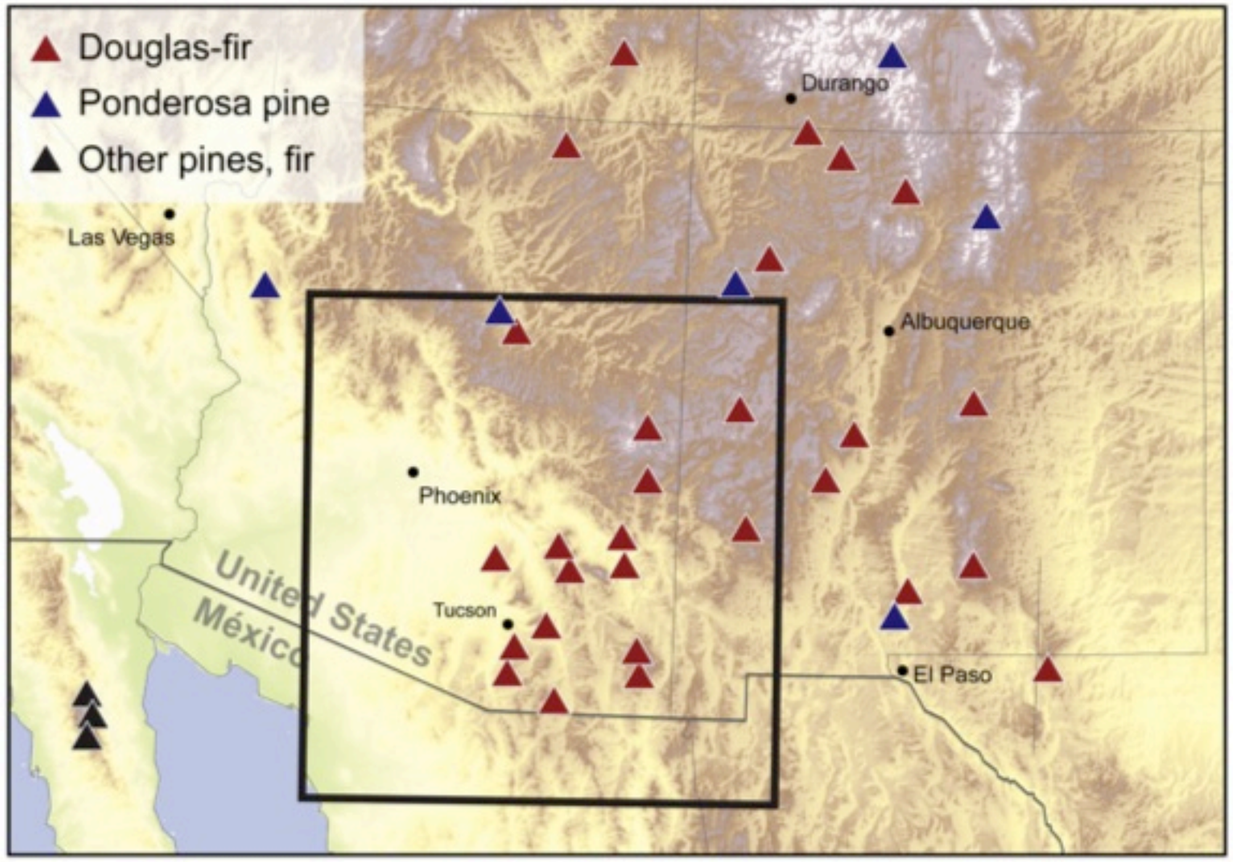
Reconstruction Predictors

June-August SPI



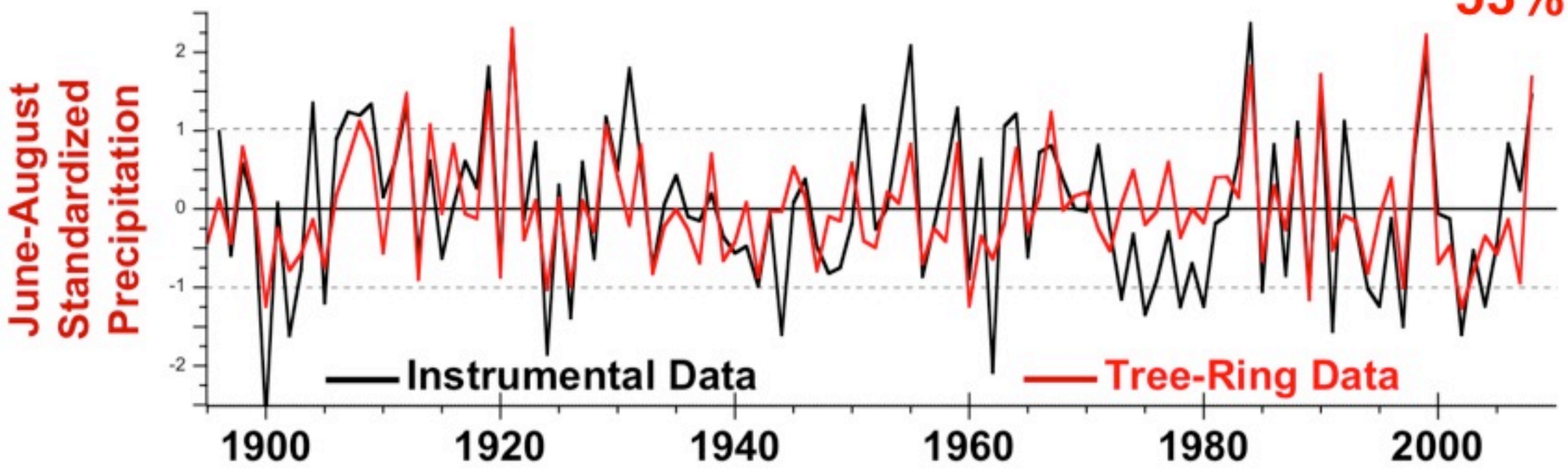
- 15 Chronologies
- 662 Trees

October-April SPI

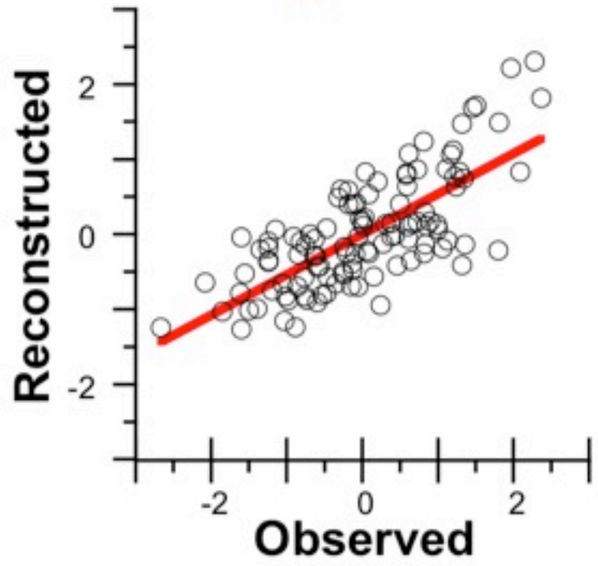


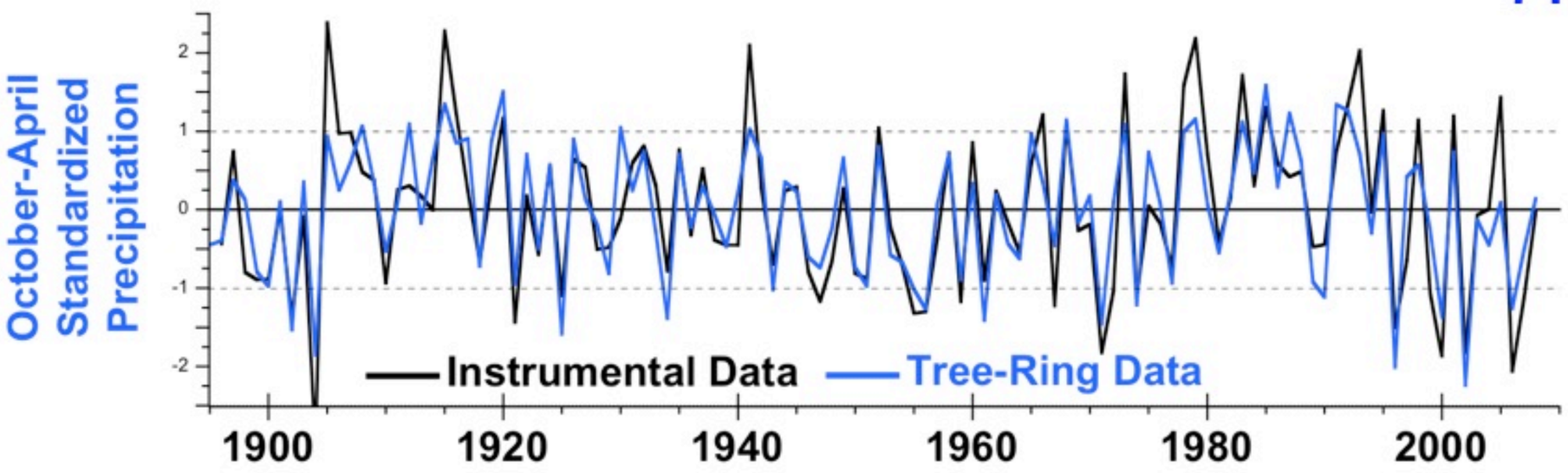
- 37 Chronologies
- 1,605 Trees

NAME Region 2 SPI Reconstructions

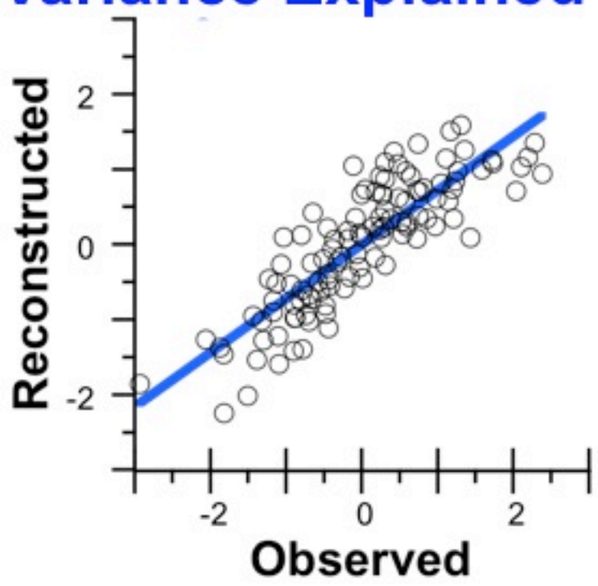


53% Variance Explained





71% Variance Explained



NAME Region 2 SPI Reconstructions: 1539-2008