

Spatio-temporal variability of *Pinus rigida* in a coastal pine barren

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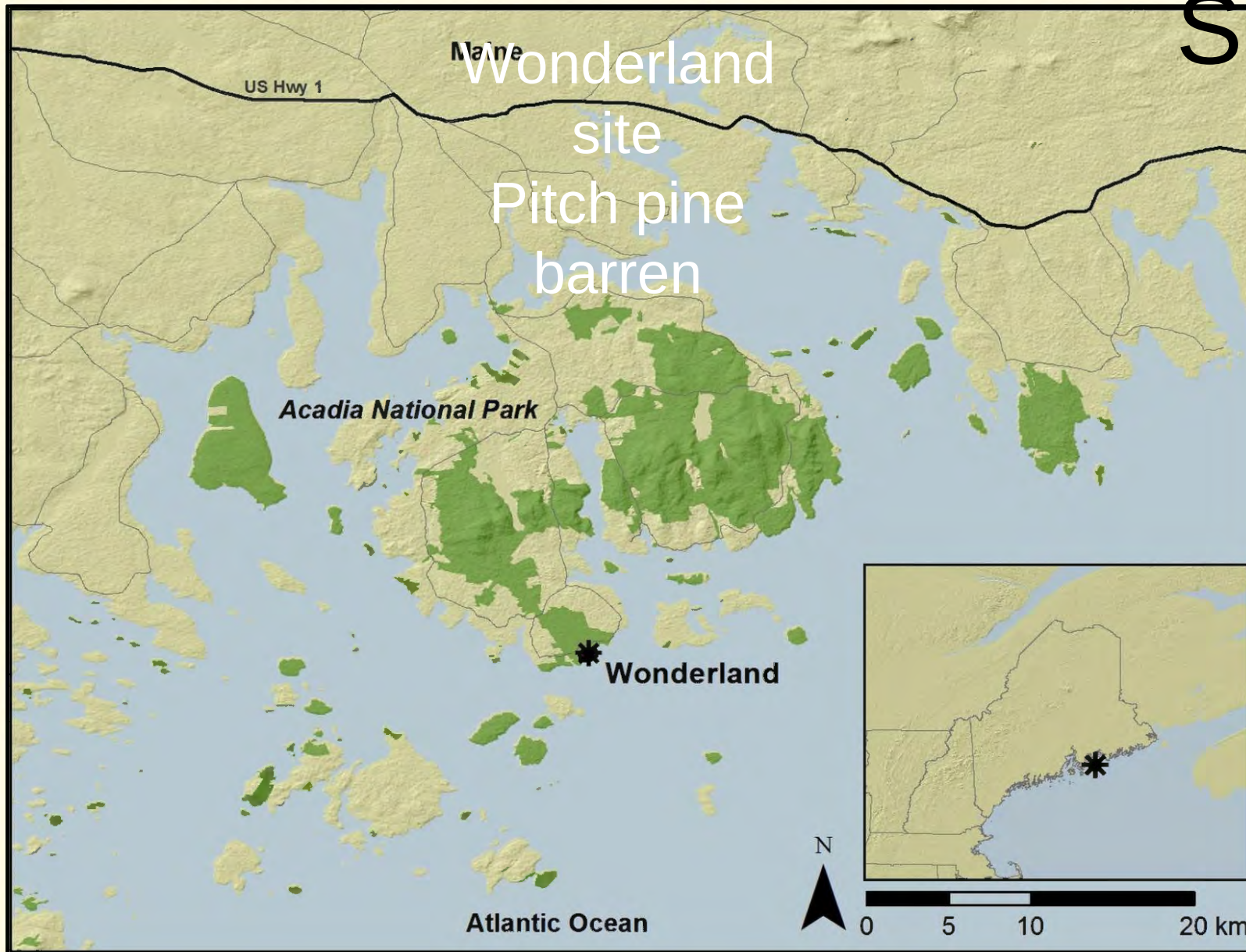
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Aaron Teets - University of Maine
Savannah Collins - University of Tennessee,
Knoxville
Cody Russell - California State University,
Northridge
Dr. Grant Harley - University of Southern
Mississippi



Objectives

1. Develop a rock barren pitch pine chronology
1. Examine spatial and temporal climate-growth relationships
1. Explore climate reconstruction



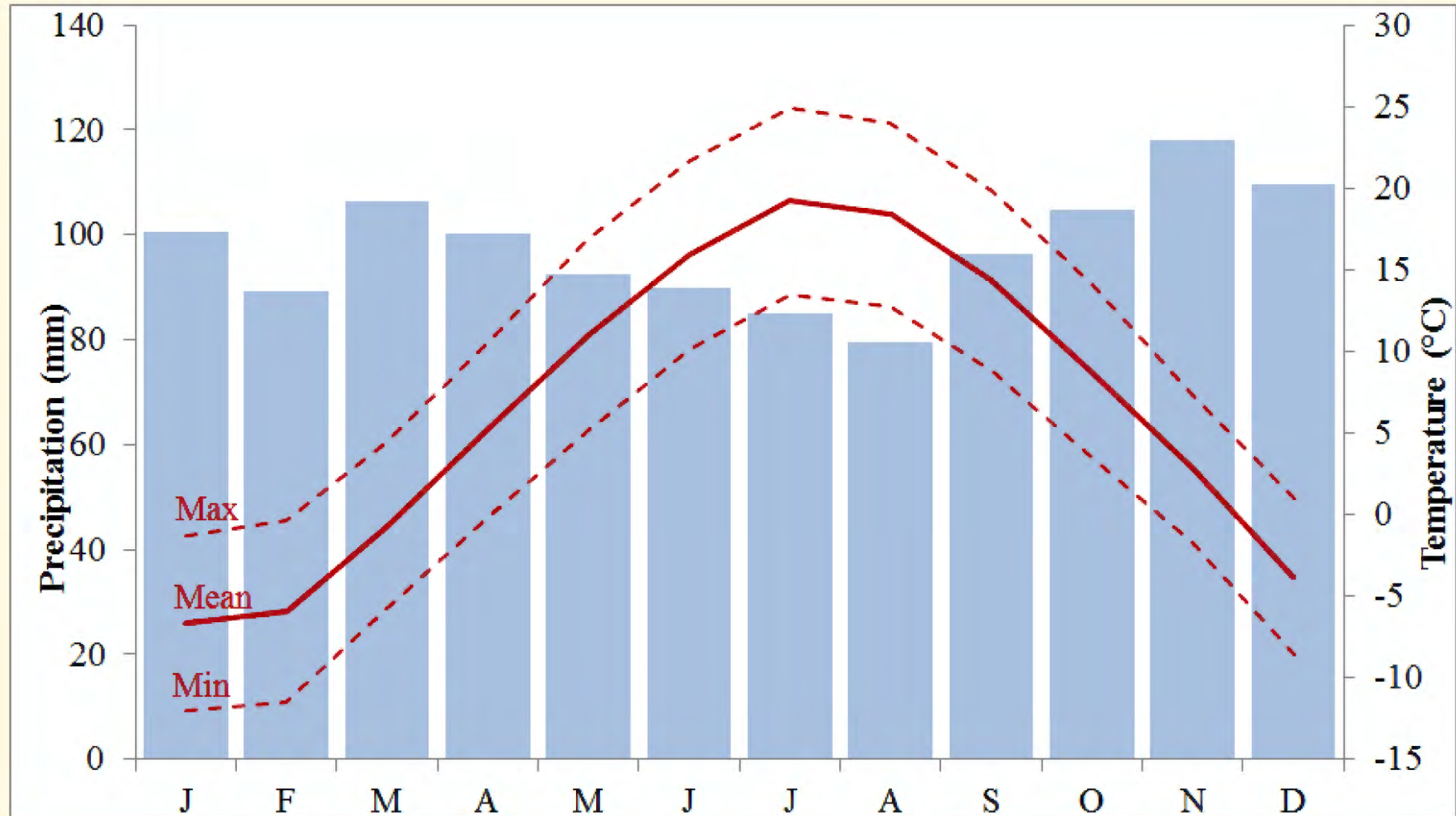






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Climate



Methods: Site

Survey

Sampled, measured, and geo-located



55 individual trees, 2 cores per tree

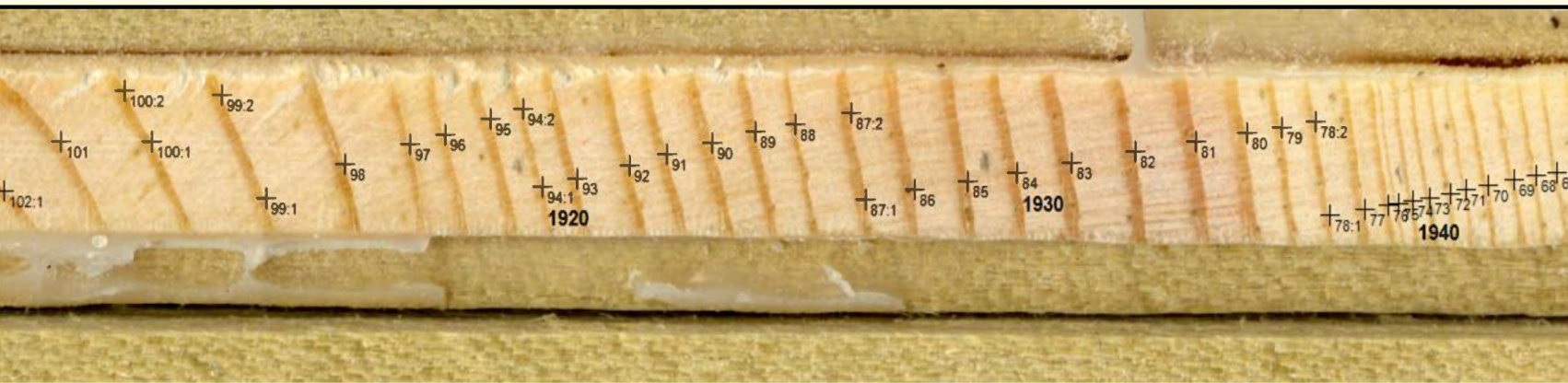


Methods: Laboratory

All cores dried, mounted, and sanded with progressively finer sandpaper (120, 220, 320, 400, 600 grit)

Cores crossdated using skeleton plot

Ring widths measured with CooRecorder, Velmex, & WinDendro





Result

S

Yo those rings are tight!

290 years with 15.7cm DCH

15 mm = 50 years

Sample # WL38B

Number of samples : 64

Mean length of series : 108 yrs

Length : 1711-2014 = 303 yrs!

Series Intercorrelation : 0.553

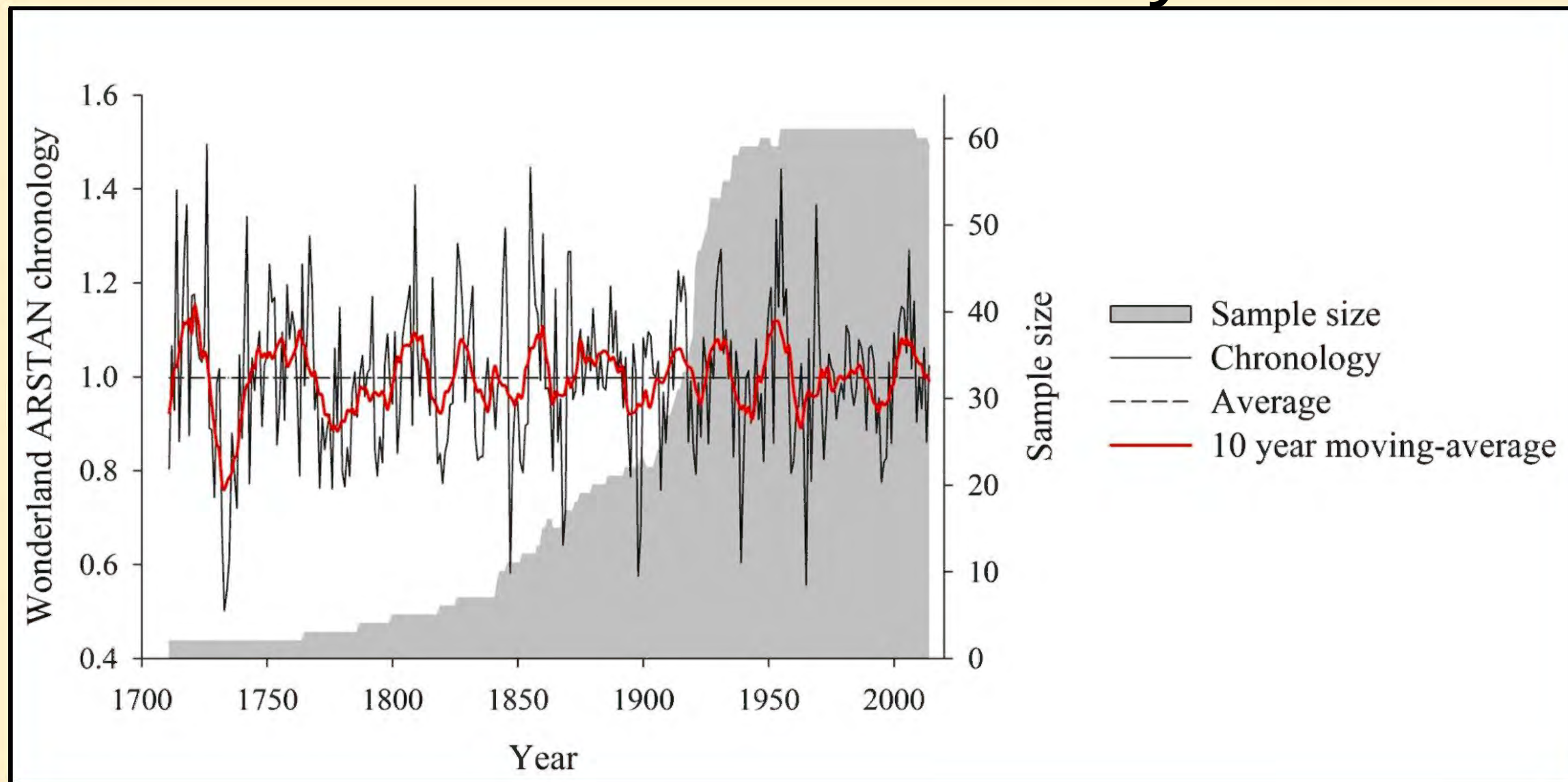
Mean Sensitivity : 0.255

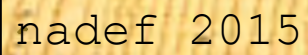




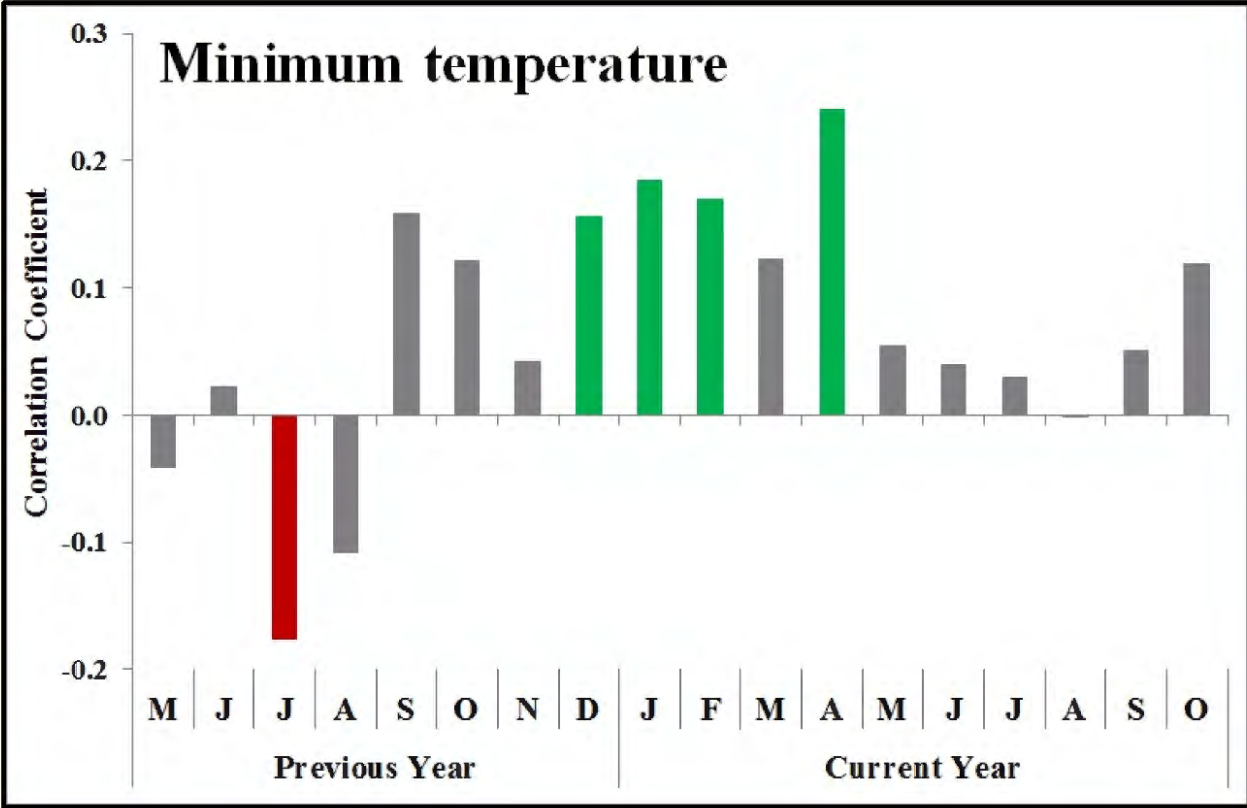
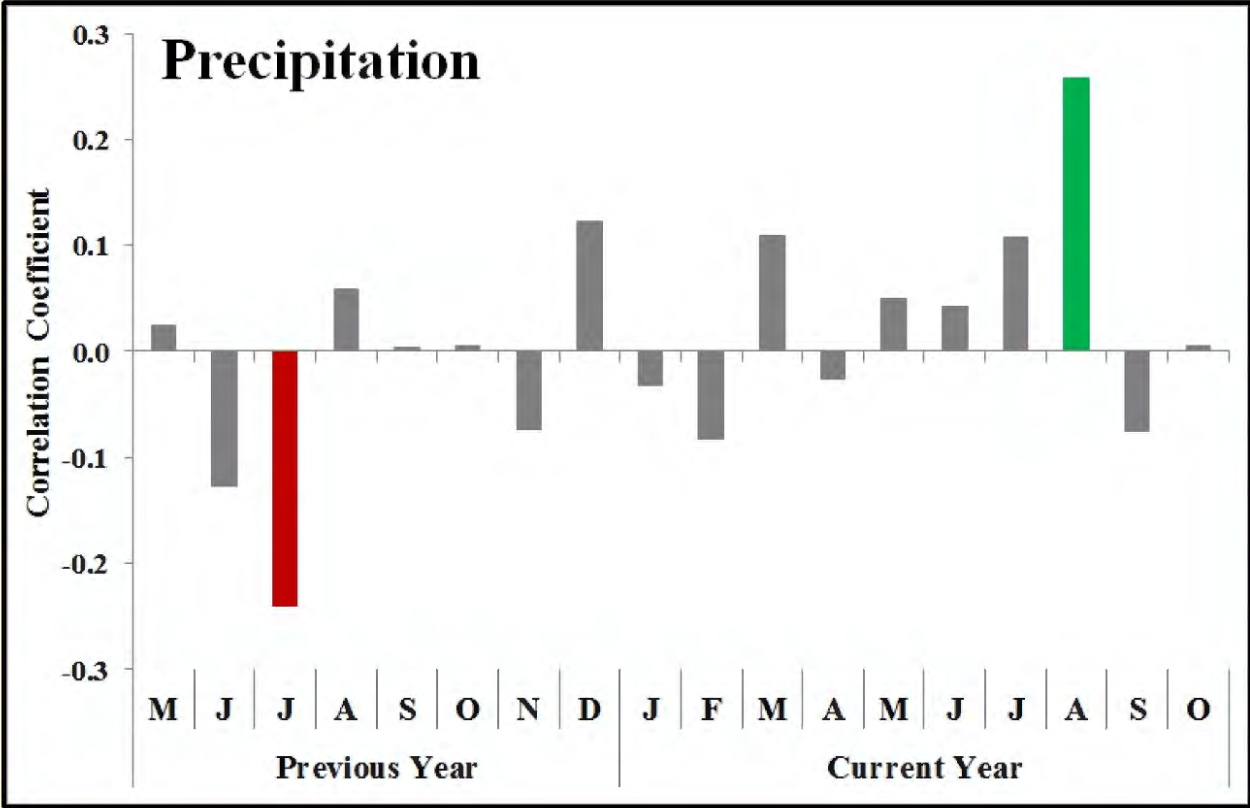
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Chronology





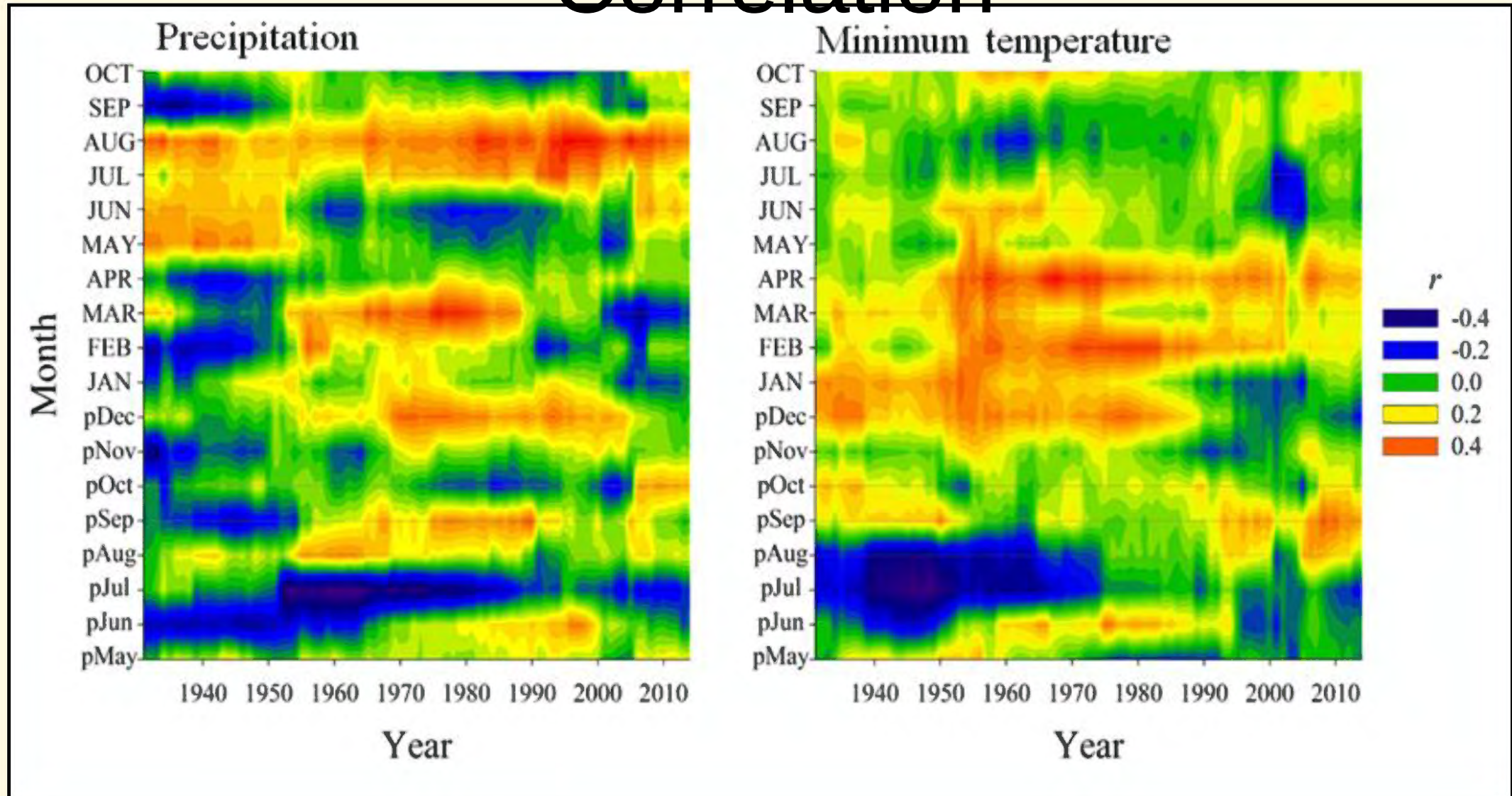
Results: Climate Response





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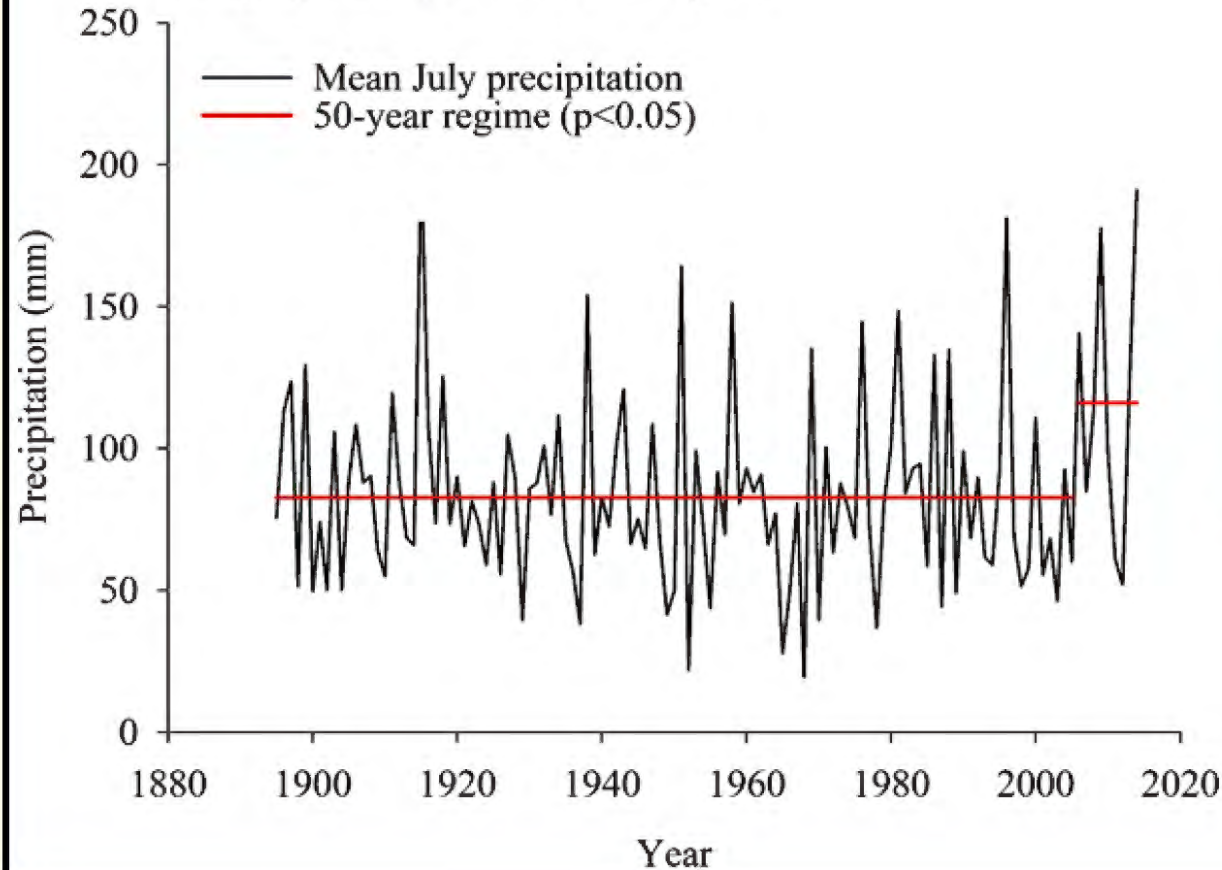
Results: Moving Correlation



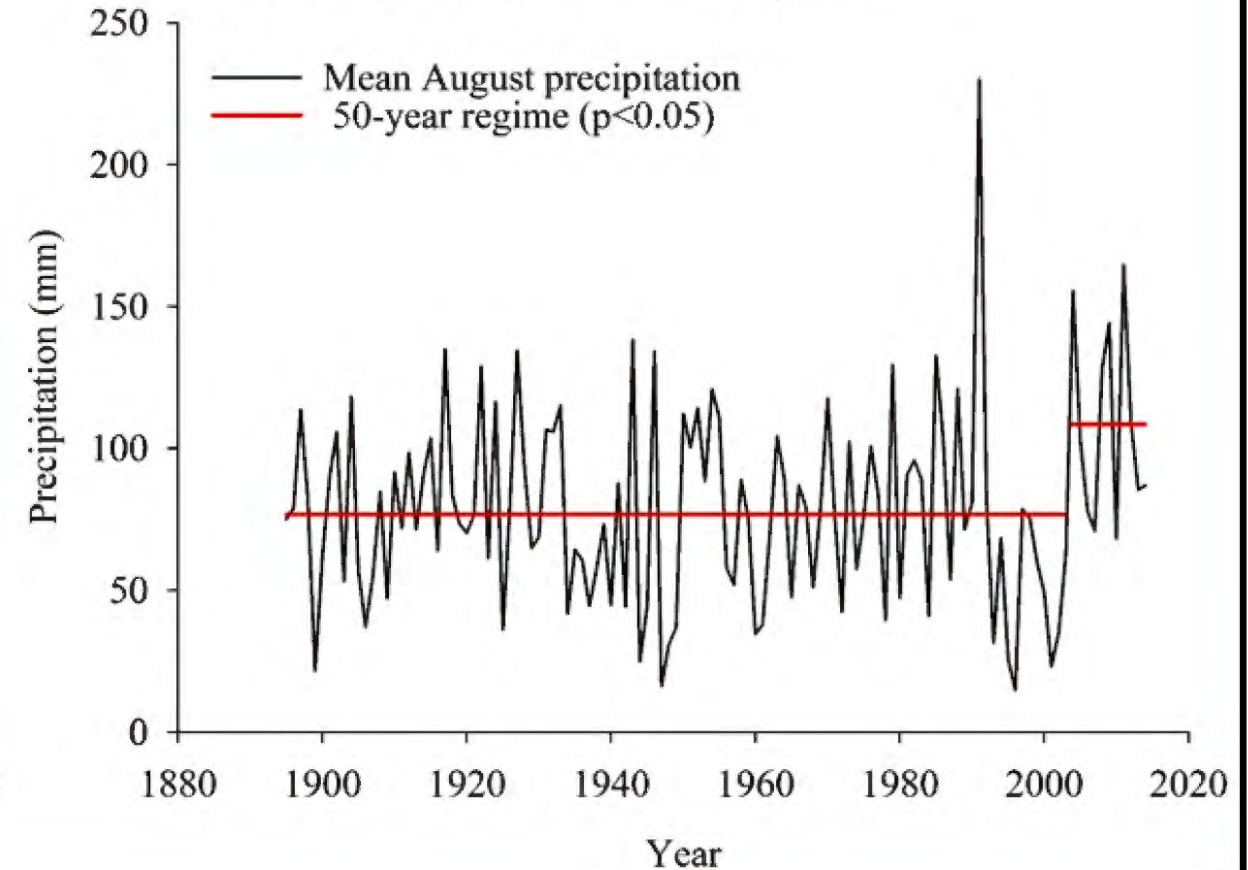


Results: Regime Shift

July precipitation regime

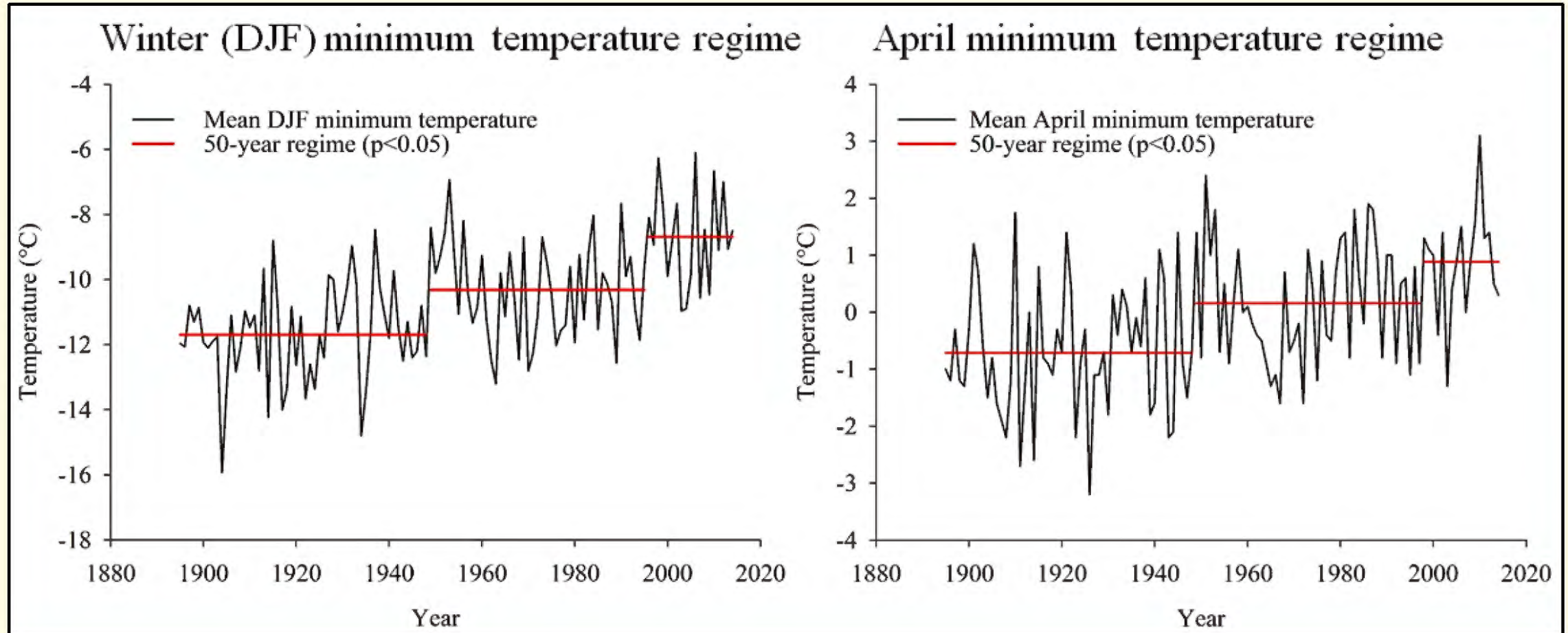


August precipitation regime





Results: Regime Shift



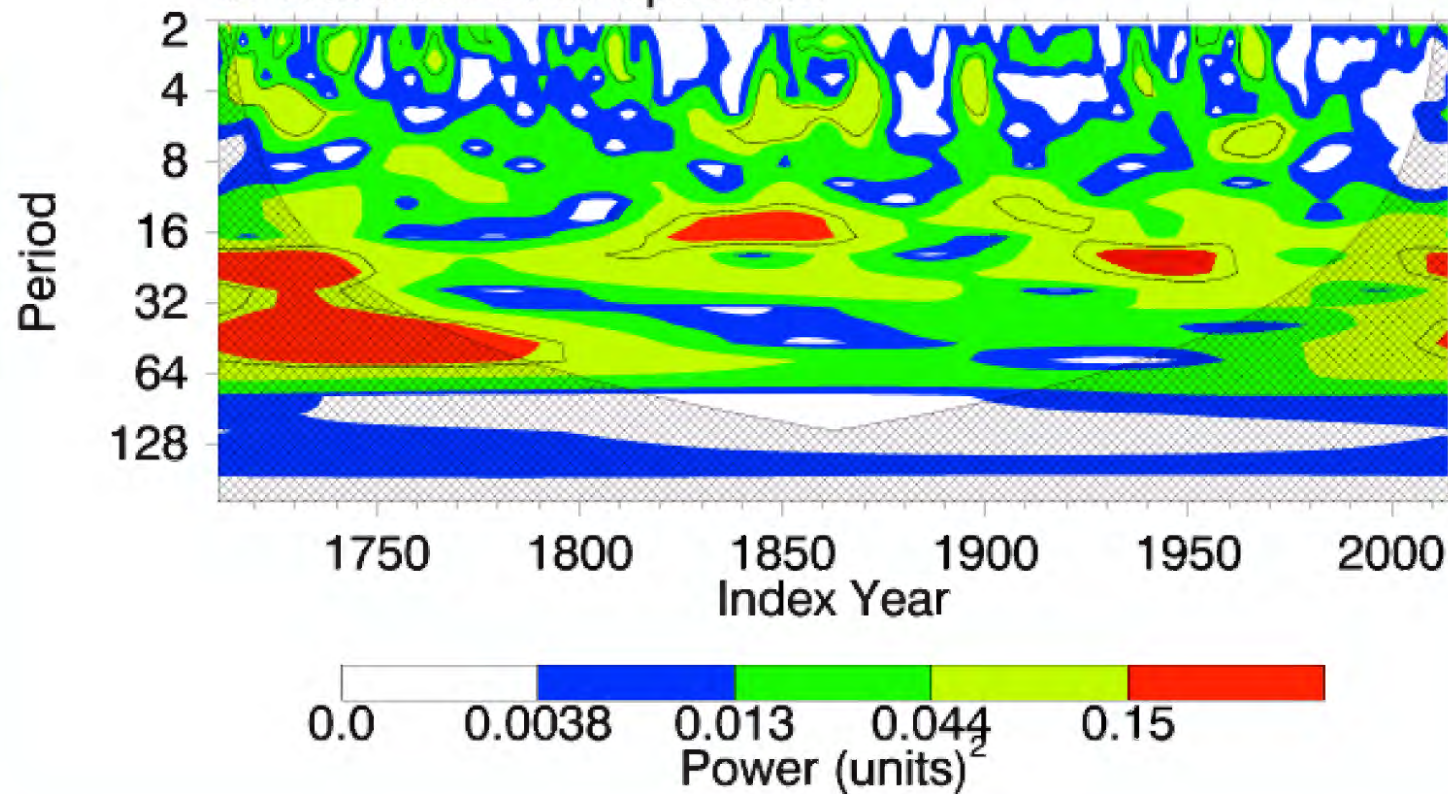


Wavelet Spectra

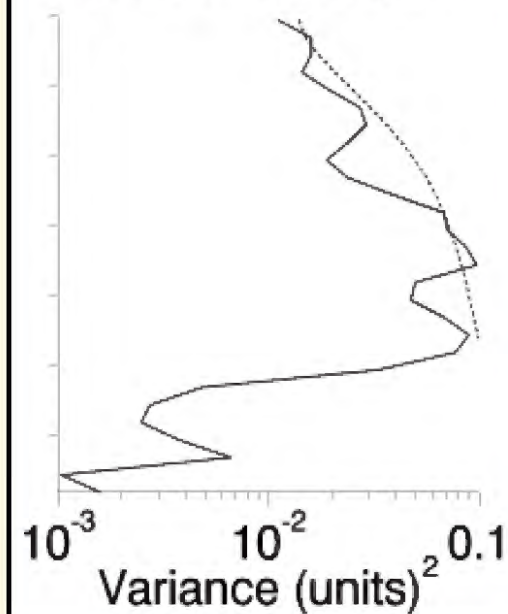
a. Wonderland Chronology



b. Wavelet Power Spectrum



c. Global Wavelet

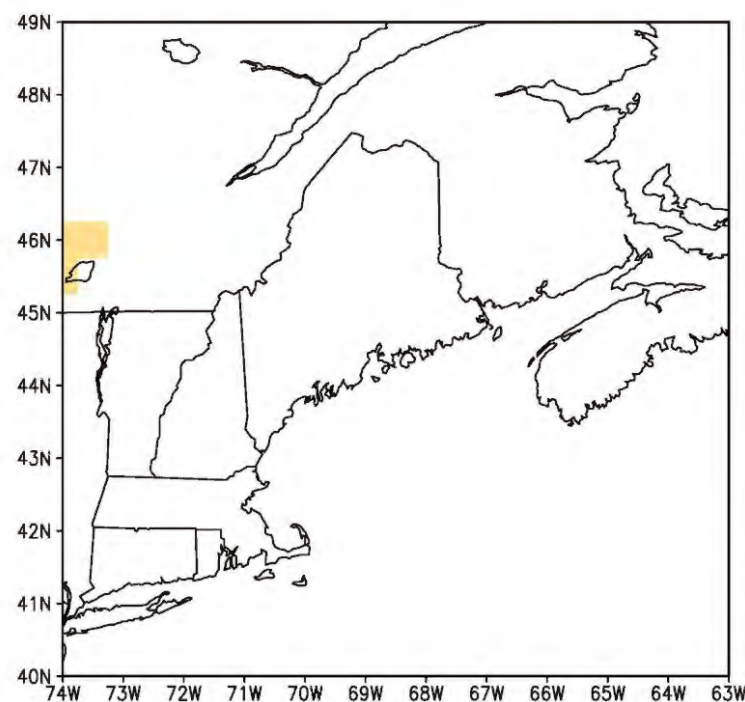




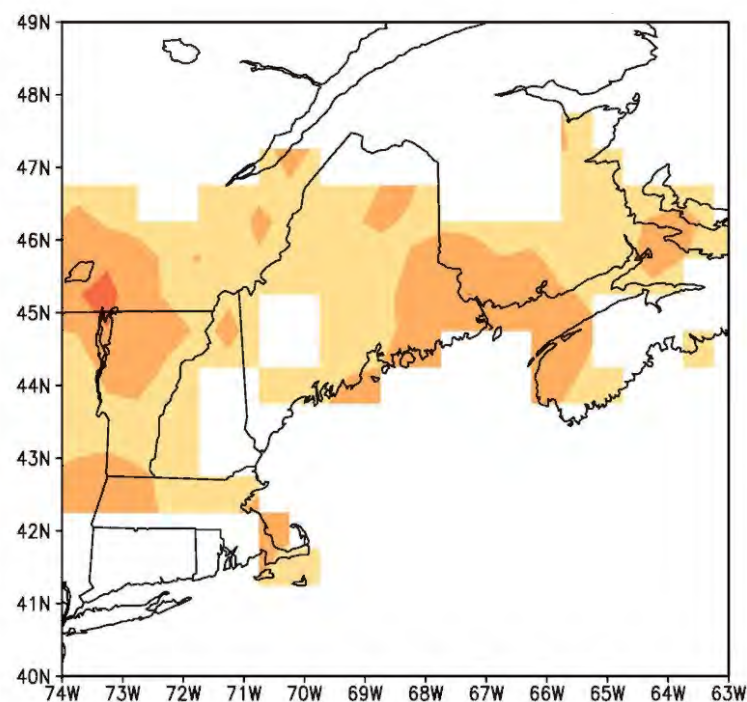
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Results: Spatial Shift

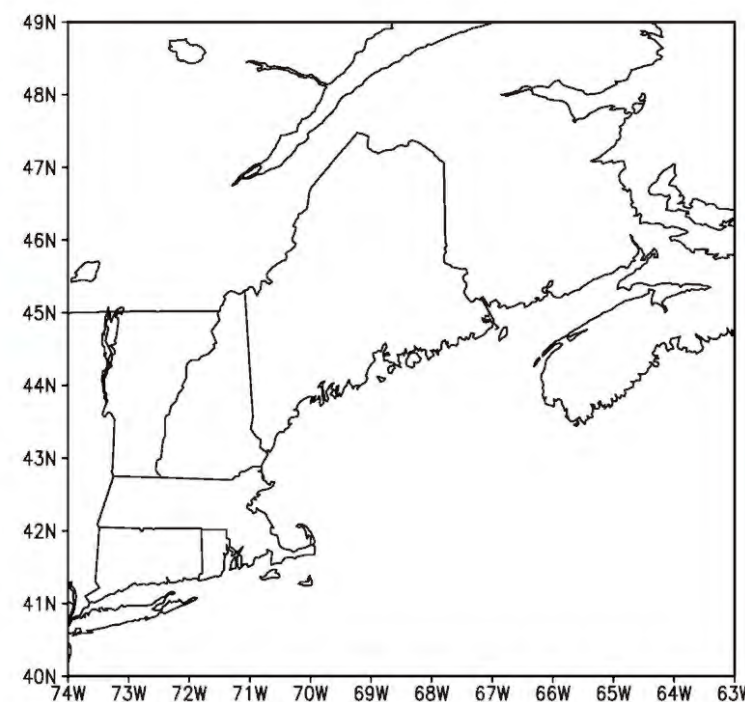
April - Minimum Temperature



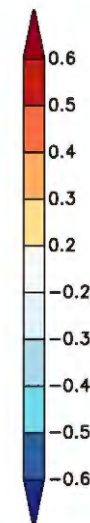
1901-
1948



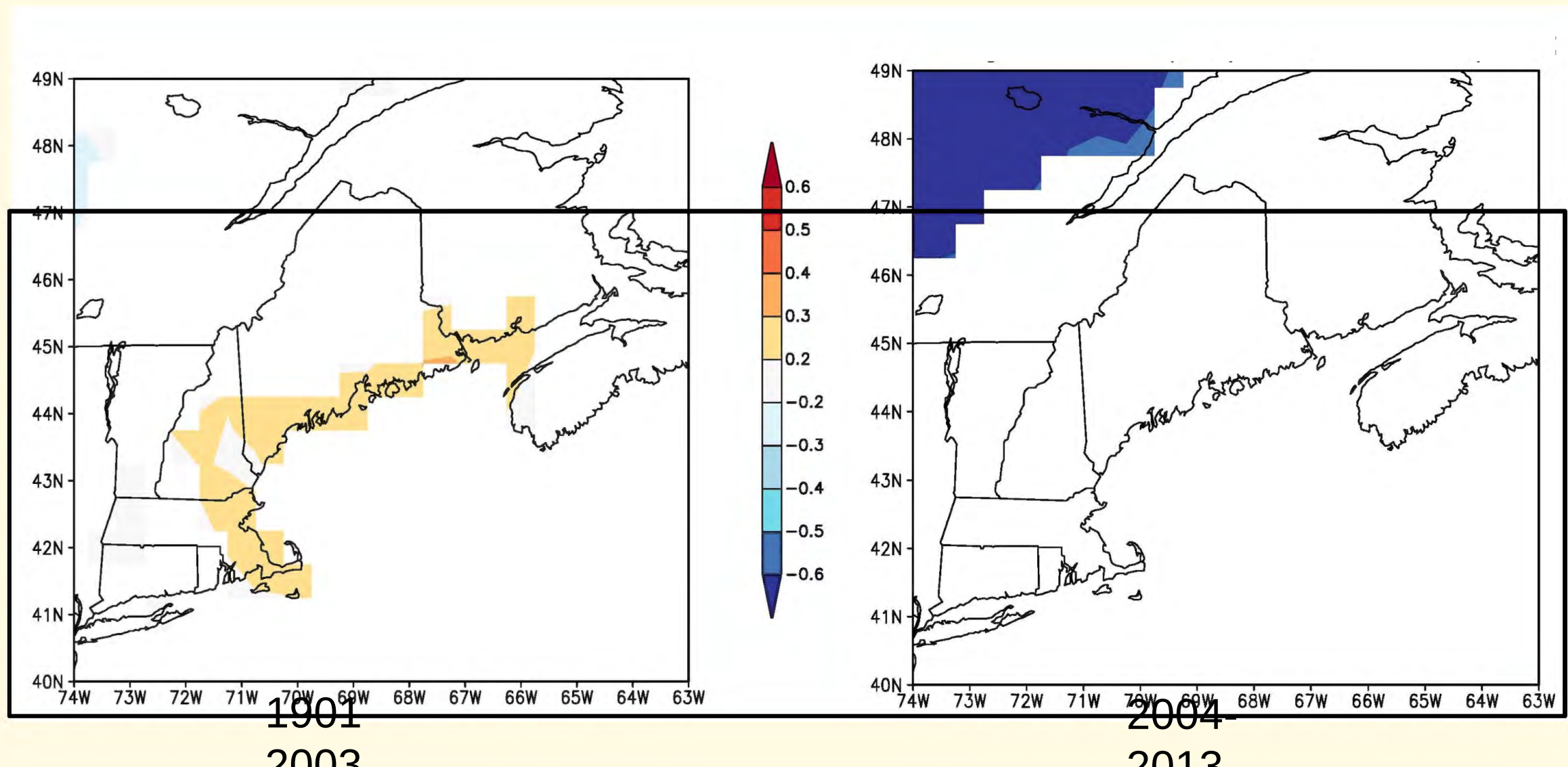
1949-
1997



1998-
2013



August- Mean Precipitation

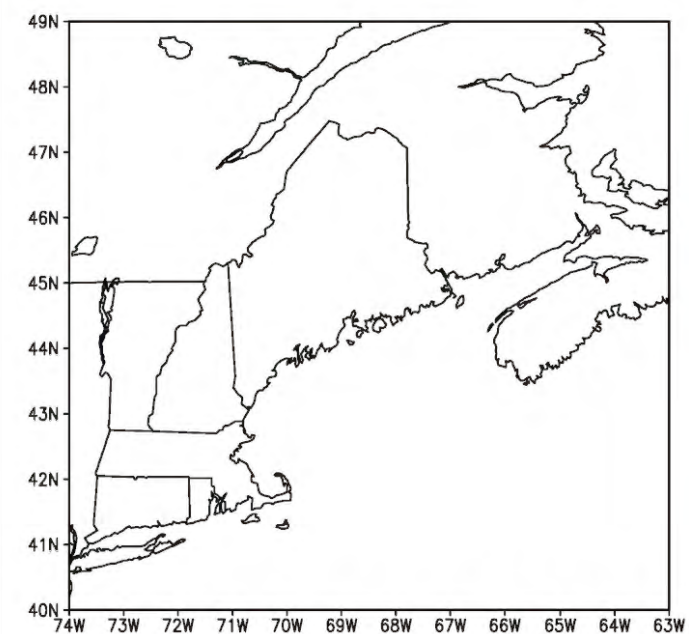




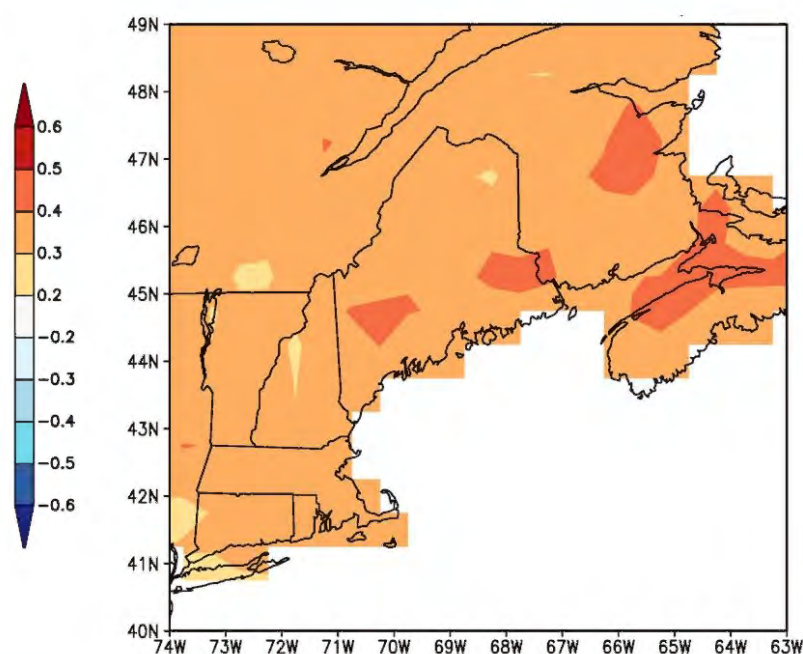
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Results: Spatial Shift

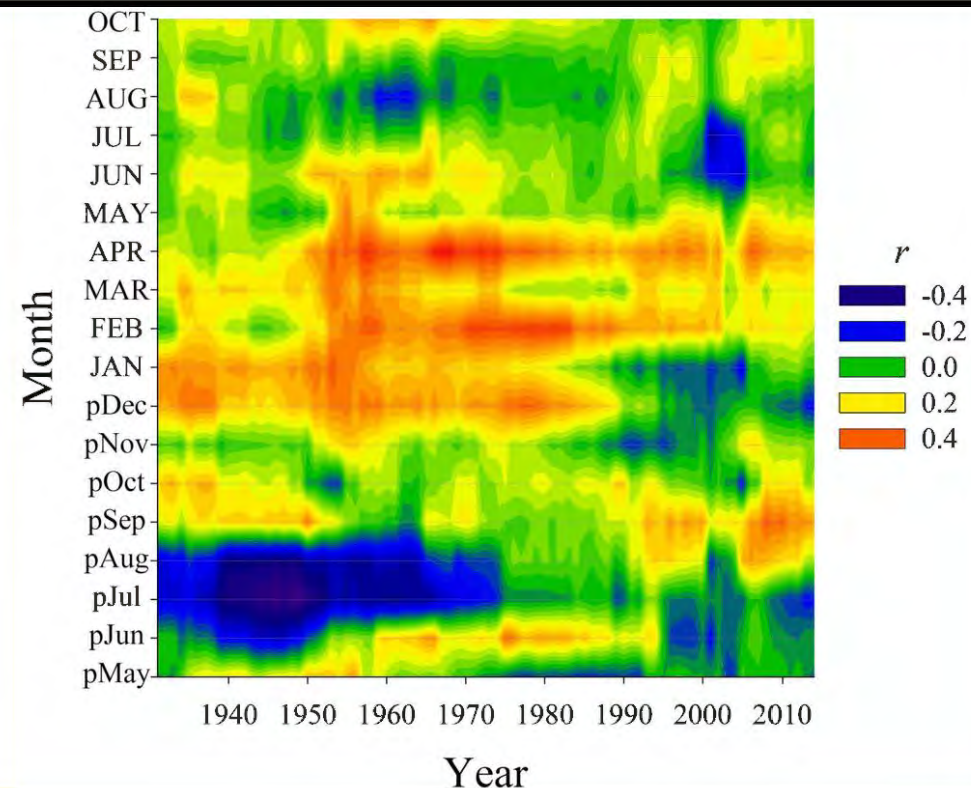
February- Minimum Temperature



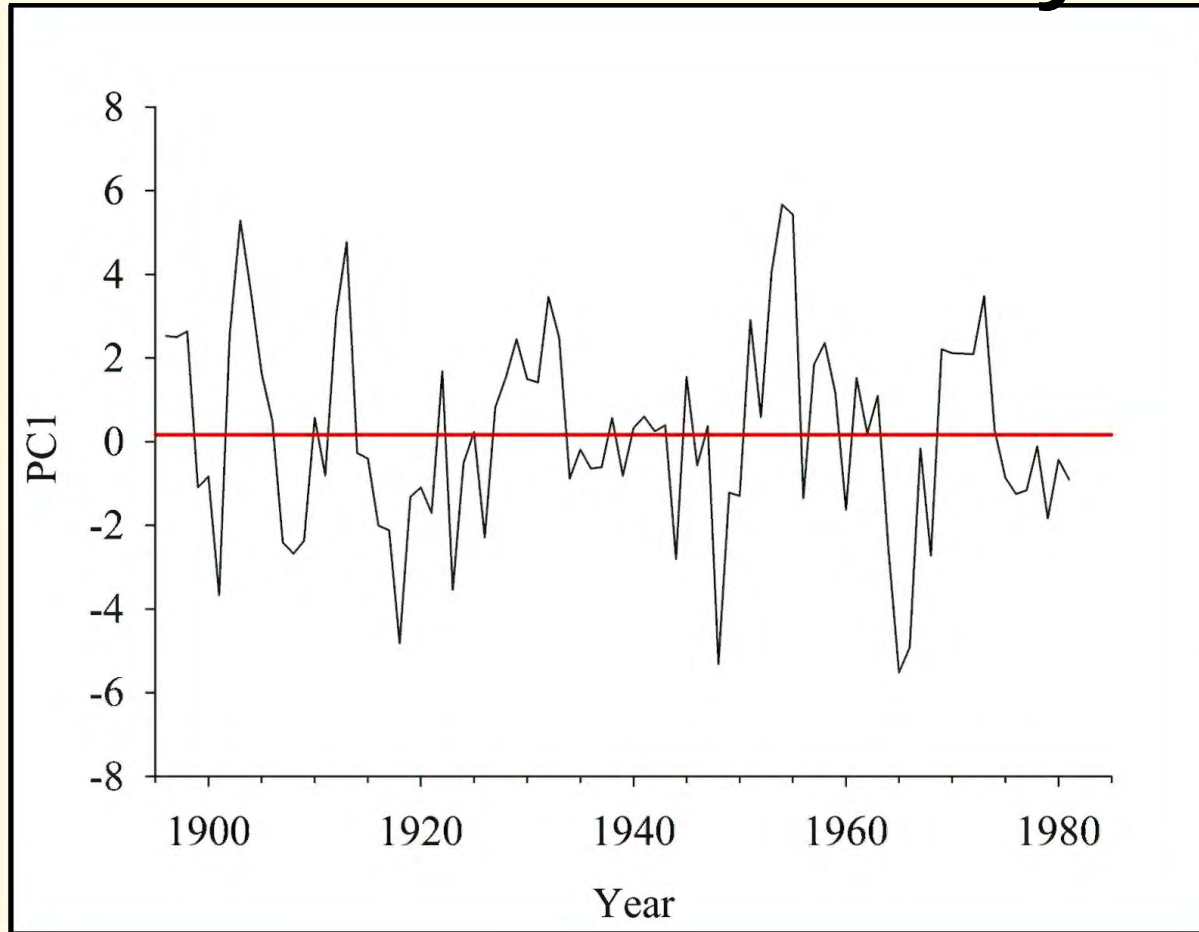
1901-
1937



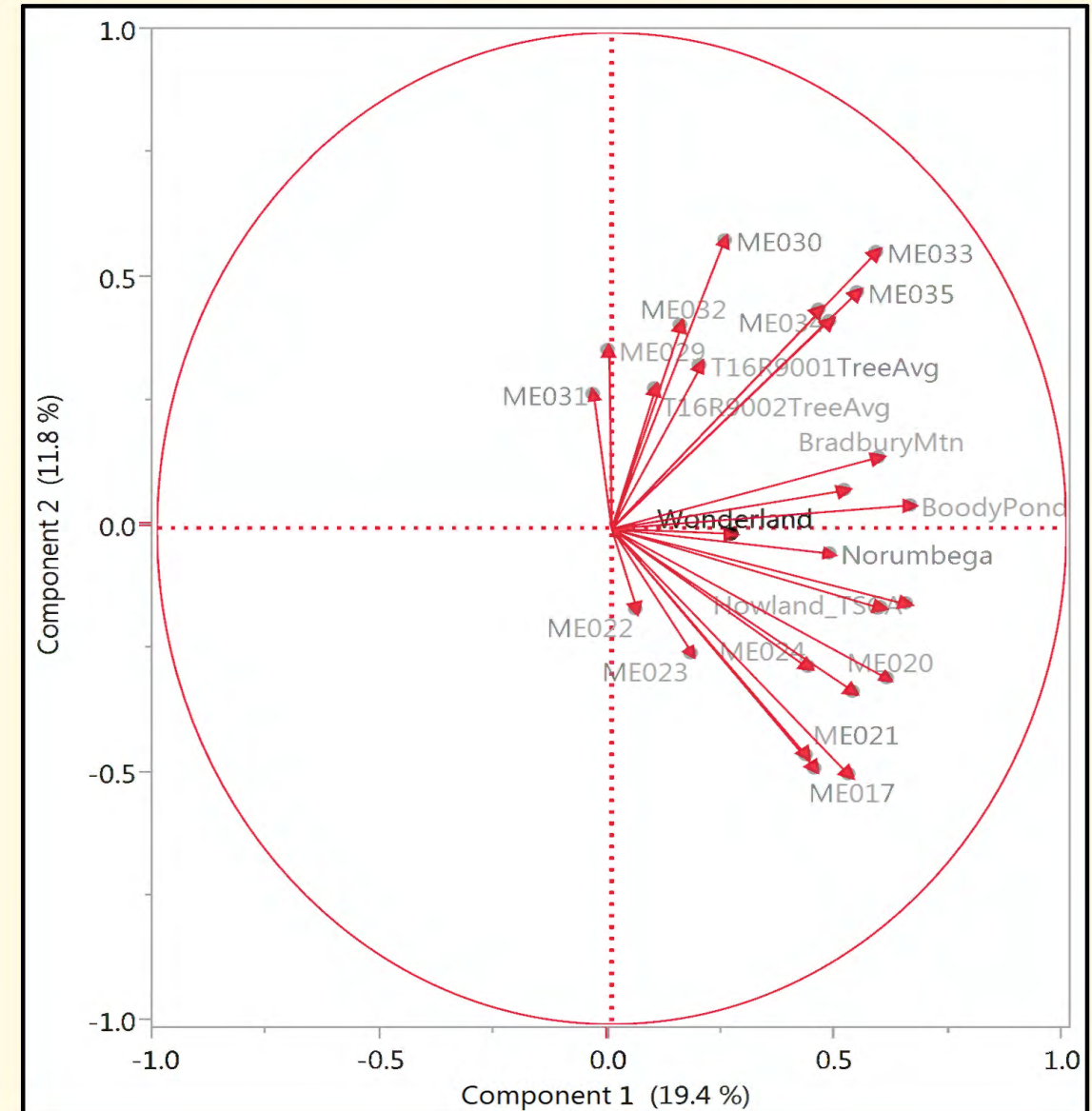
1938-
1995



Principle Component Analysis



Common Variance in All Maine Chronologies
1896 - 1981



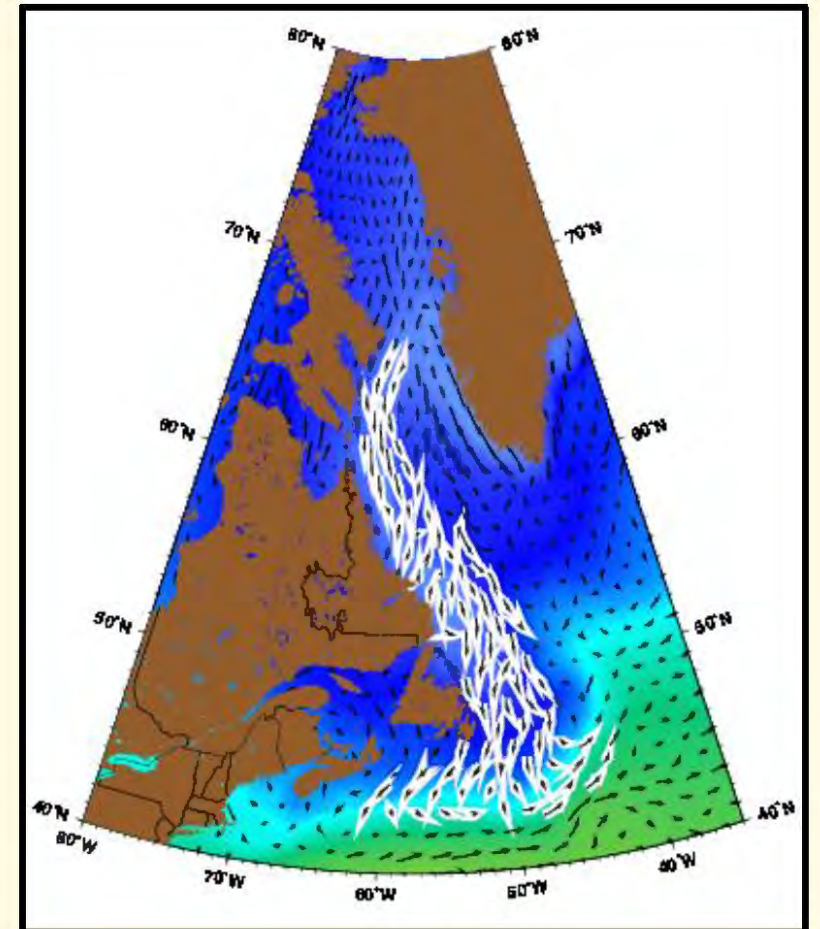
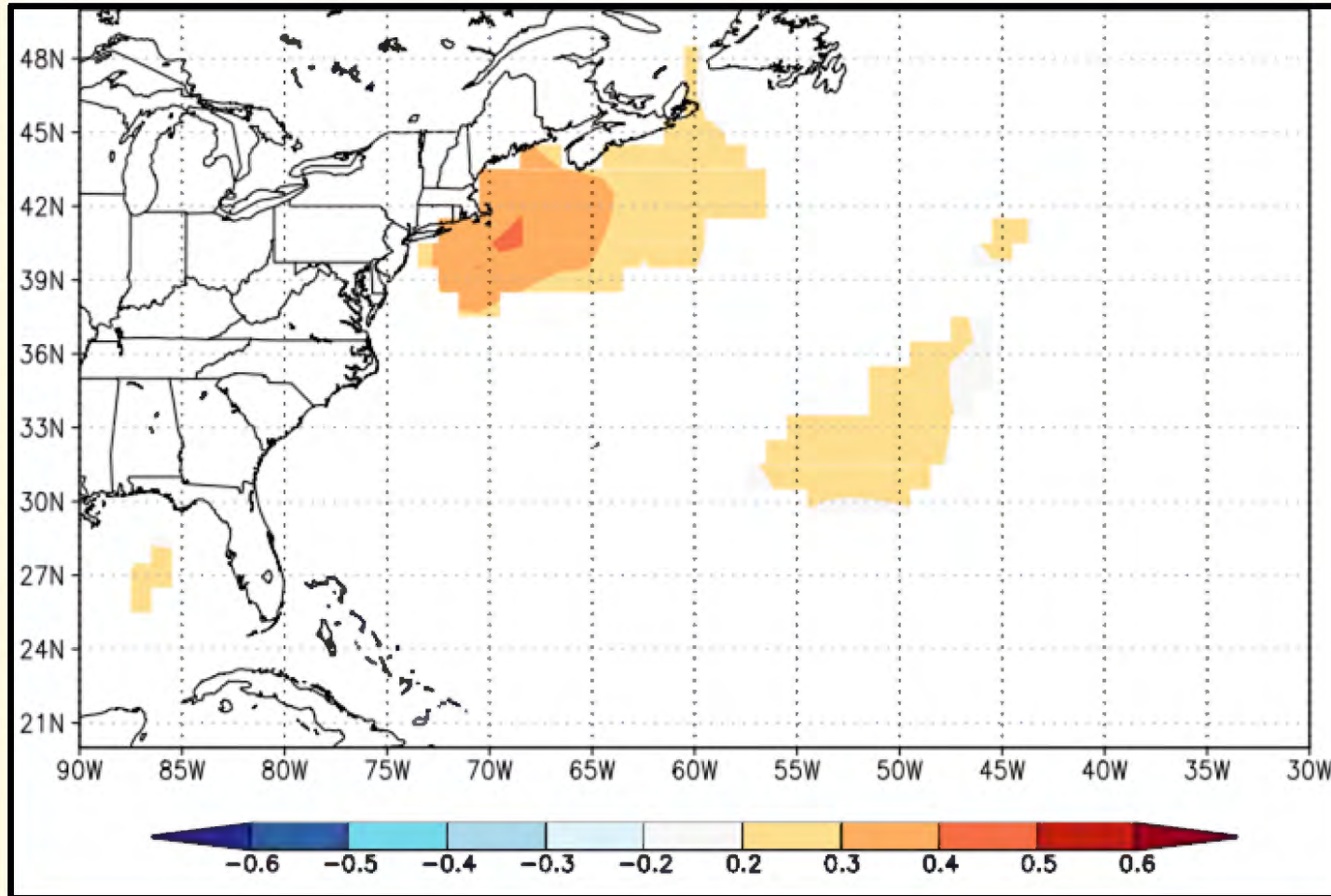


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Sea Surface Temp

January-June Sea Surface Temperature 1896-1981

Labrador Current



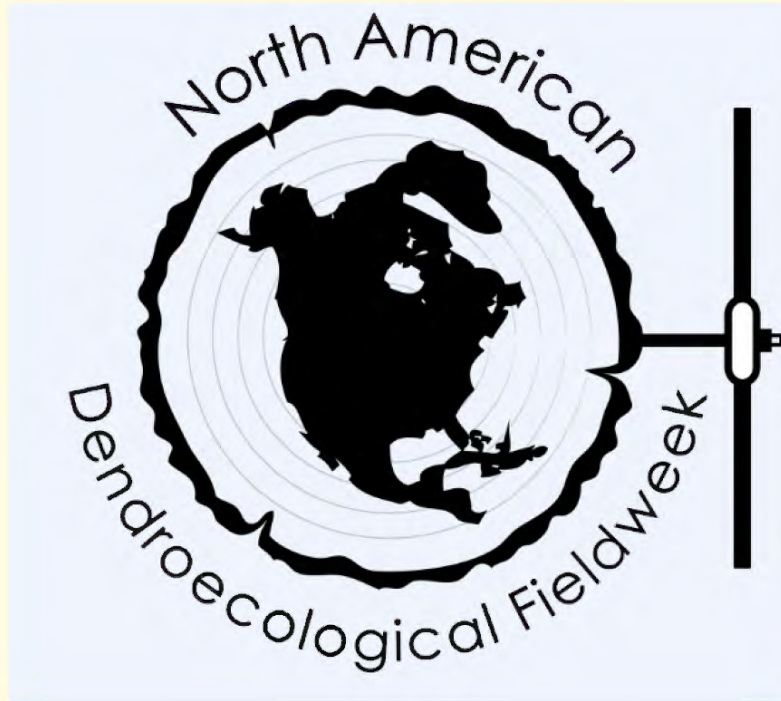
1. Developed a rock barren pitch pine barren chronology

1. Explored spatiotemporal climate-growth relationships

1. Reconstructed climate...



Thank you!



BCS # 1061808

QUESTIONS?

Your body is
a wonderland!



QUESTIONS?

