



# Geographical Patterns of 11-Year Climate Variability in the U.S.

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Last-minute talk at SVECSE  
Bozeman June 4, 2008

# Disclaimer

- I'm a solar theorist, not a climatologist
- For science I'm more confident of, see left-hand side of my poster

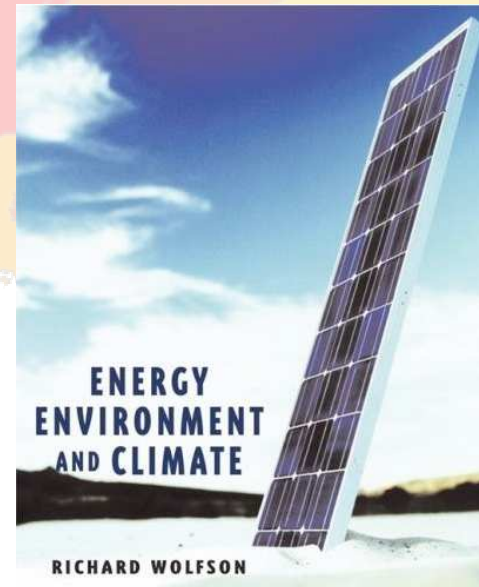
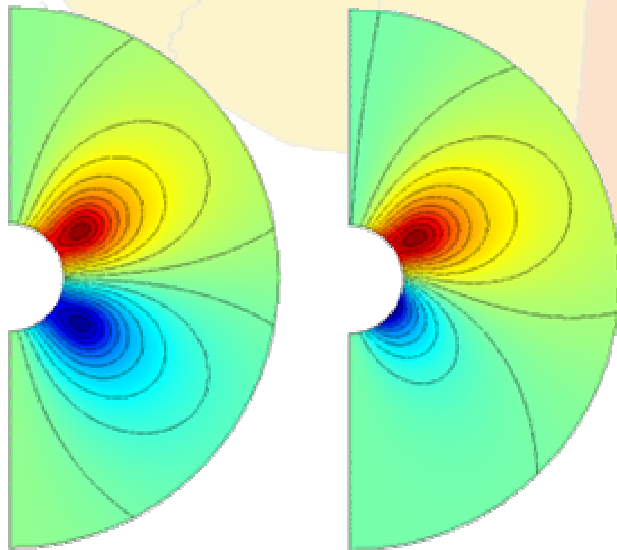
- Brief forays into climate:

GEOPHYSICAL RESEARCH LETTERS, VOL. 31, L19202, doi:10.1029/2004GL020574, 2004

## Twentieth-century climate change in New England and New York, USA

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# Motivation

- Difficult to detect SC signal in global temperature (North et al. 2004 in *AGU Solar Variability and its Effects on Climate*)
- Global average response tempered by phase variations
- So look for regional effects
- USHCN provides high-quality long-term climate data for U.S.

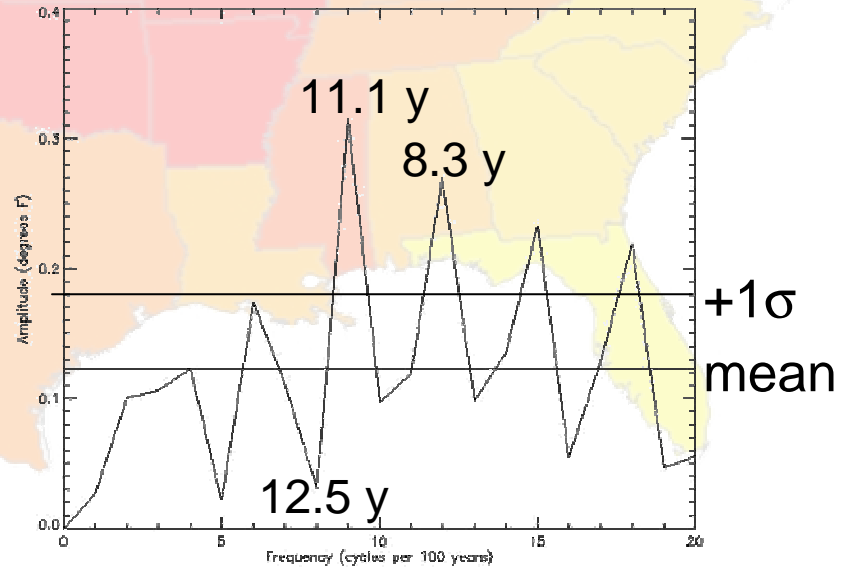
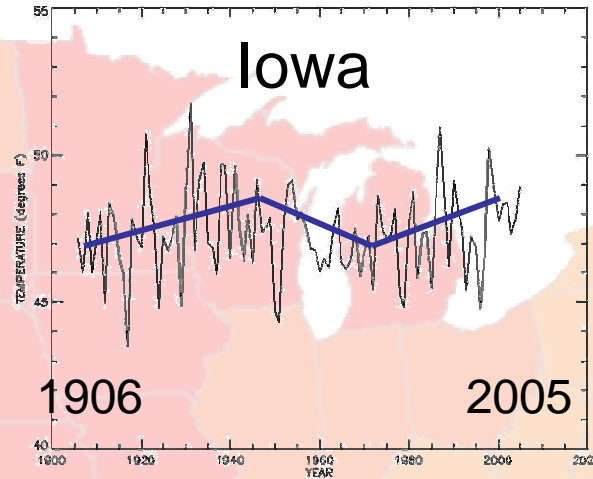
# Methodology

(1) Average USHCN annual temperature data by state

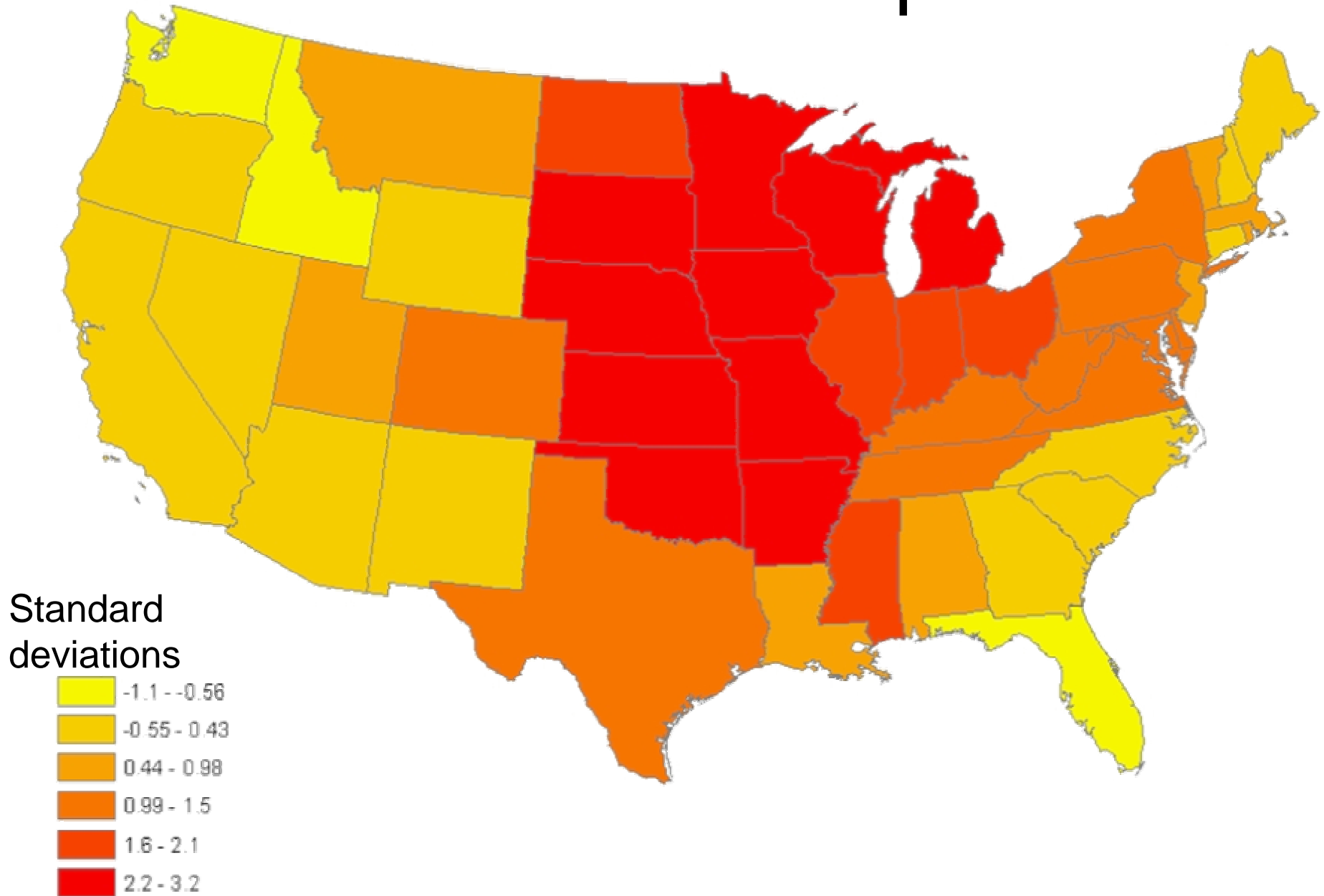
(2) Subtract 3-segment linear fit

(3) FFT

(4) Express 11-year amplitude in standard deviations



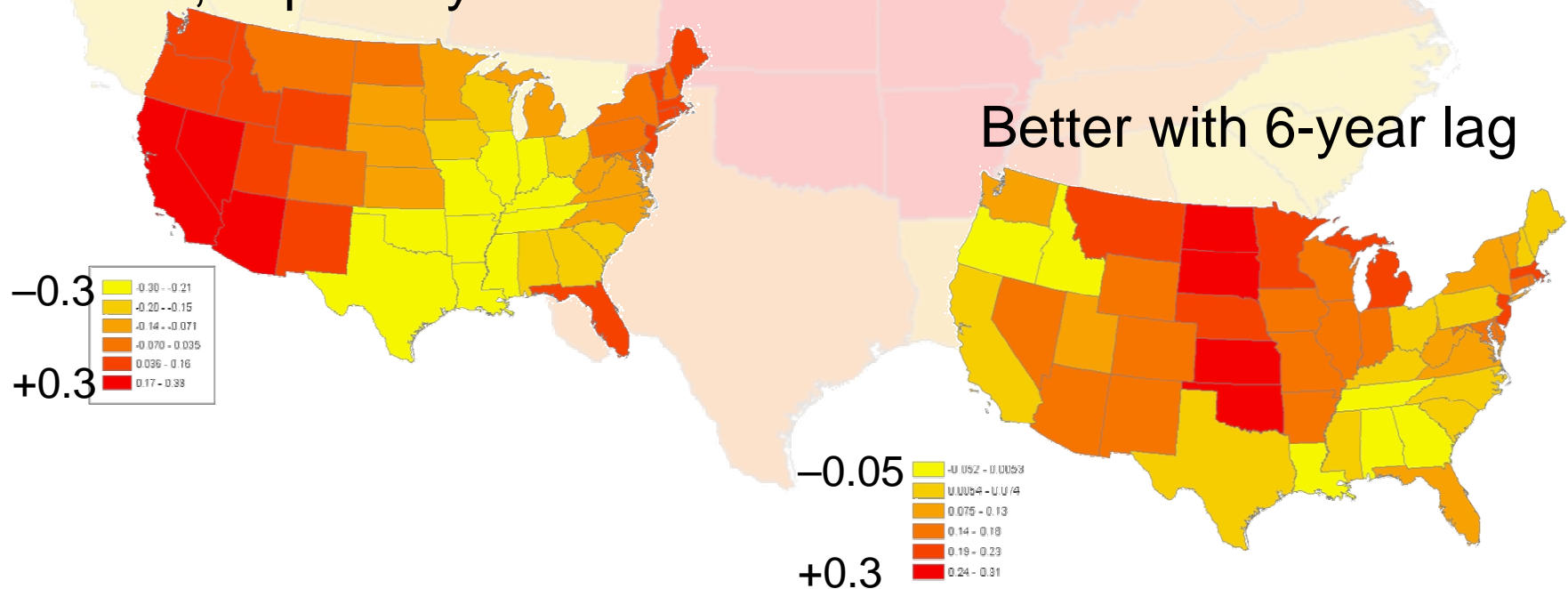
# Result: 11-Year Amplitudes



# Is This a Solar-Cycle Response?

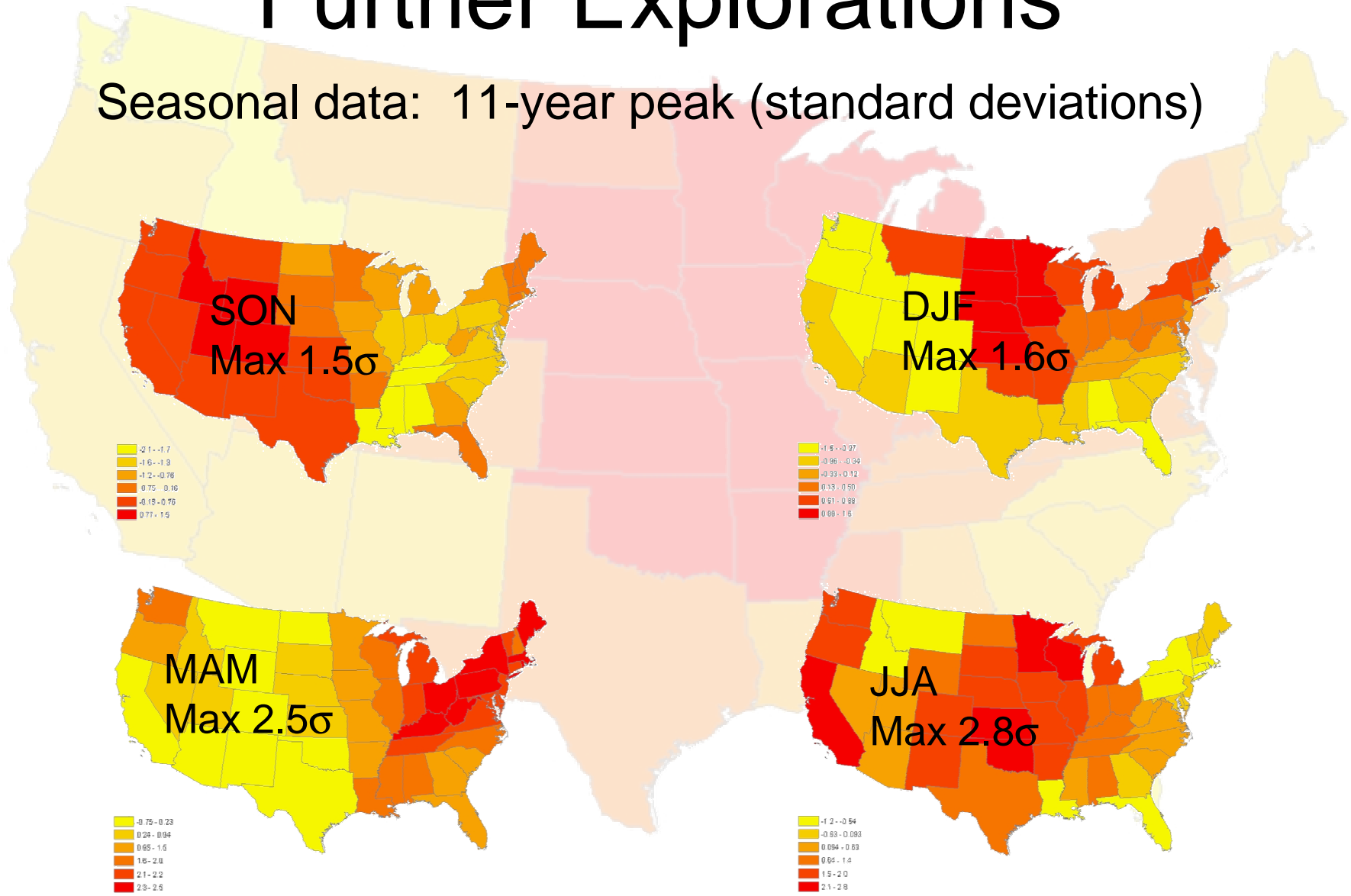
- Maximum 11-year amplitude:  $\sim 0.18^{\circ}\text{C}$
- Correlation with SIDC sunspot number?
  - Correlation coefficients, SN vs temperature

Poor, especially in Midwest



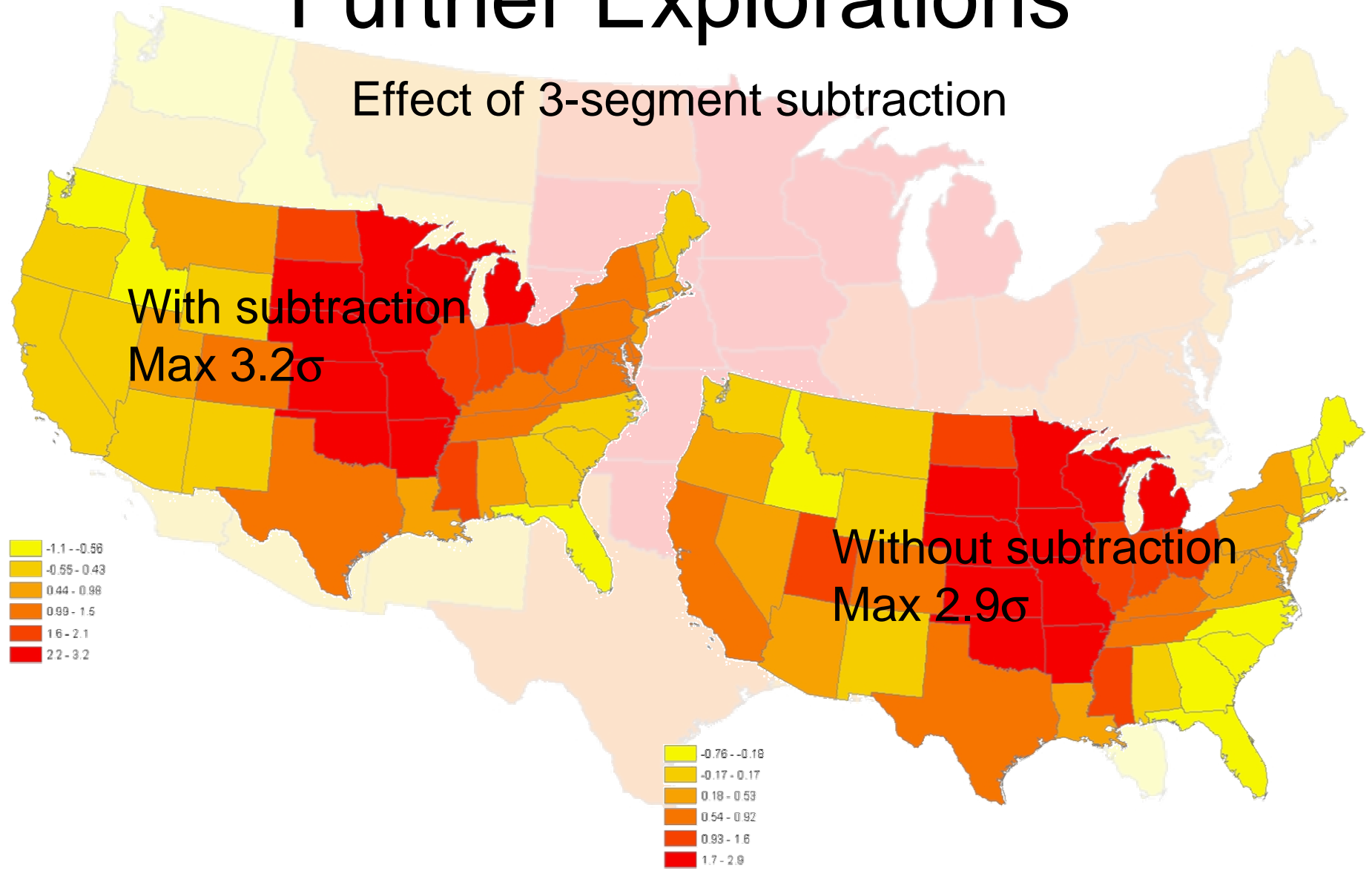
# Further Explorations

Seasonal data: 11-year peak (standard deviations)



# Further Explorations

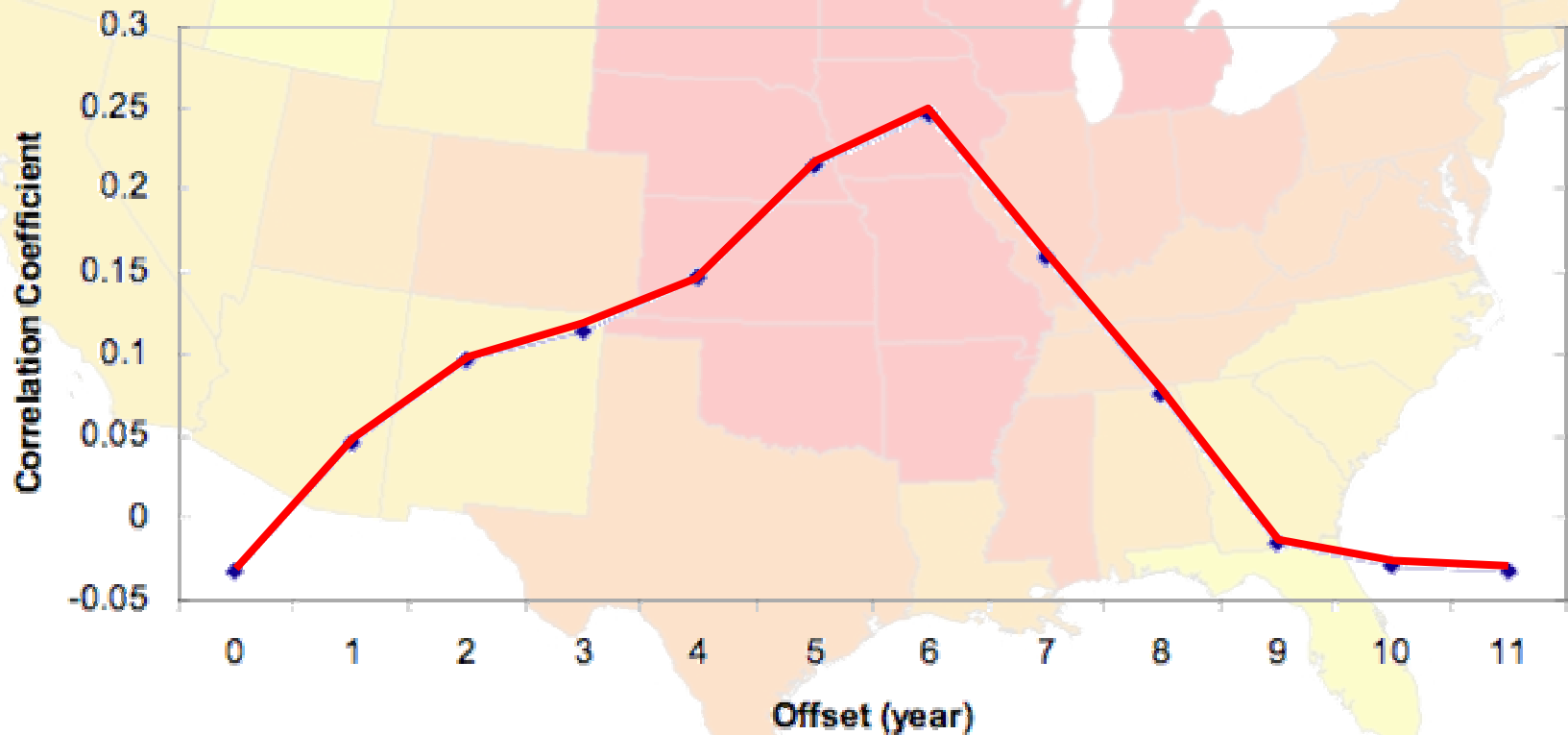
Effect of 3-segment subtraction

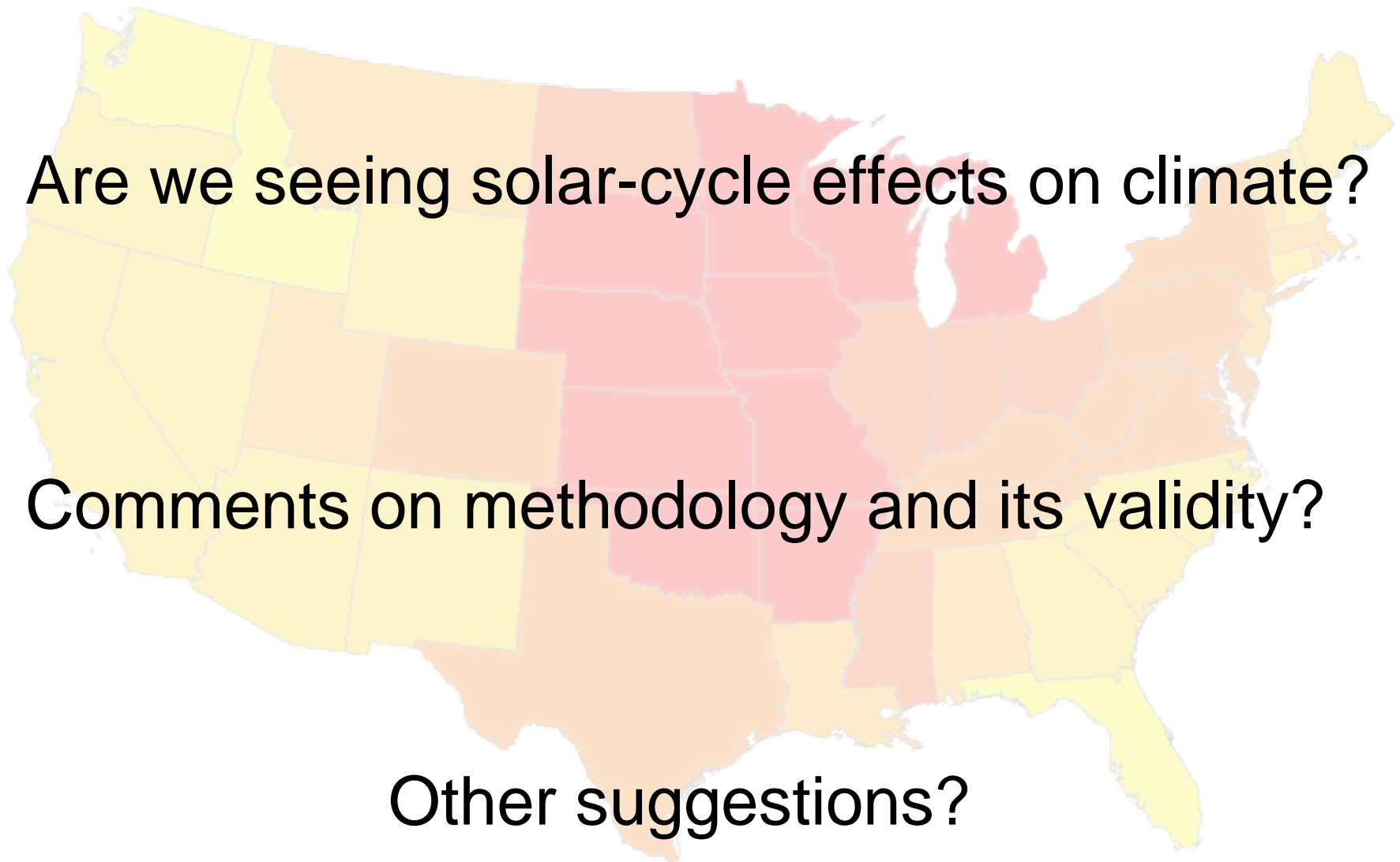




# Further Explorations

Phasing of SN versus temperature, 48-state average





Are we seeing solar-cycle effects on climate?

Comments on methodology and its validity?

Other suggestions?