

# RUTGERS

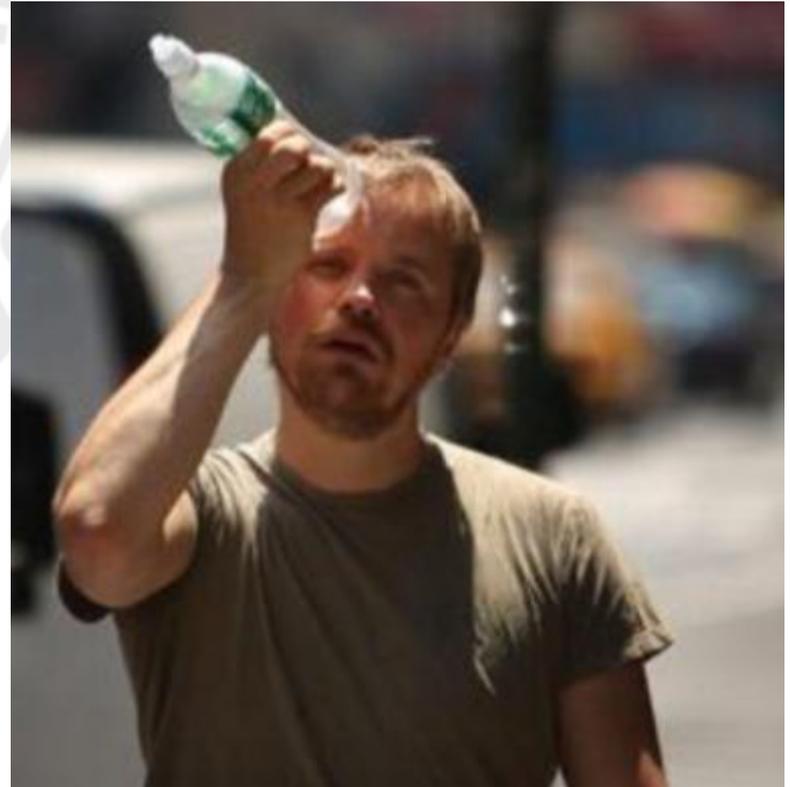
THE STATE UNIVERSITY  
OF NEW JERSEY

## Weather Trends and Hot Summer Days

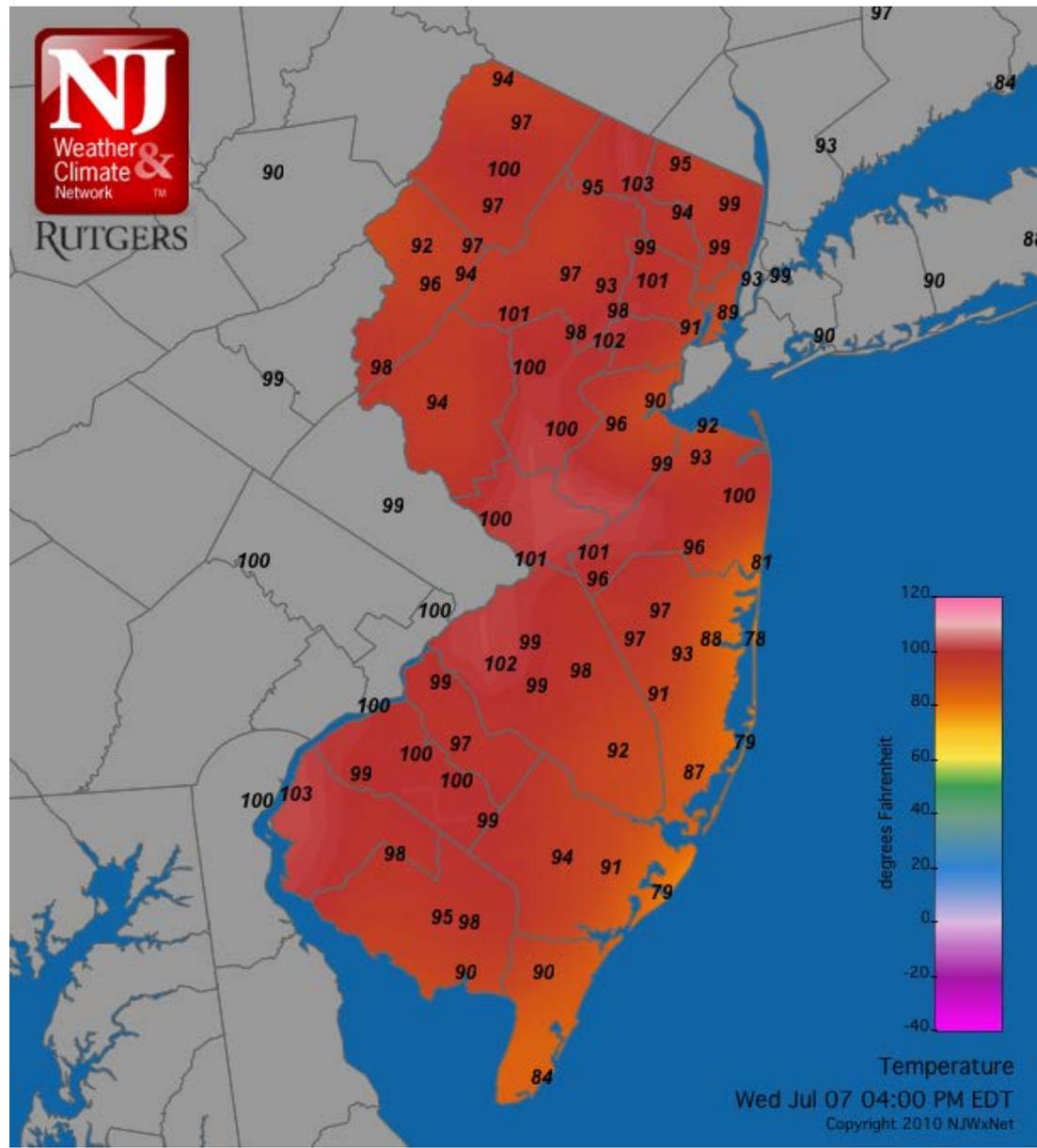
Why Smog Matters Symposium

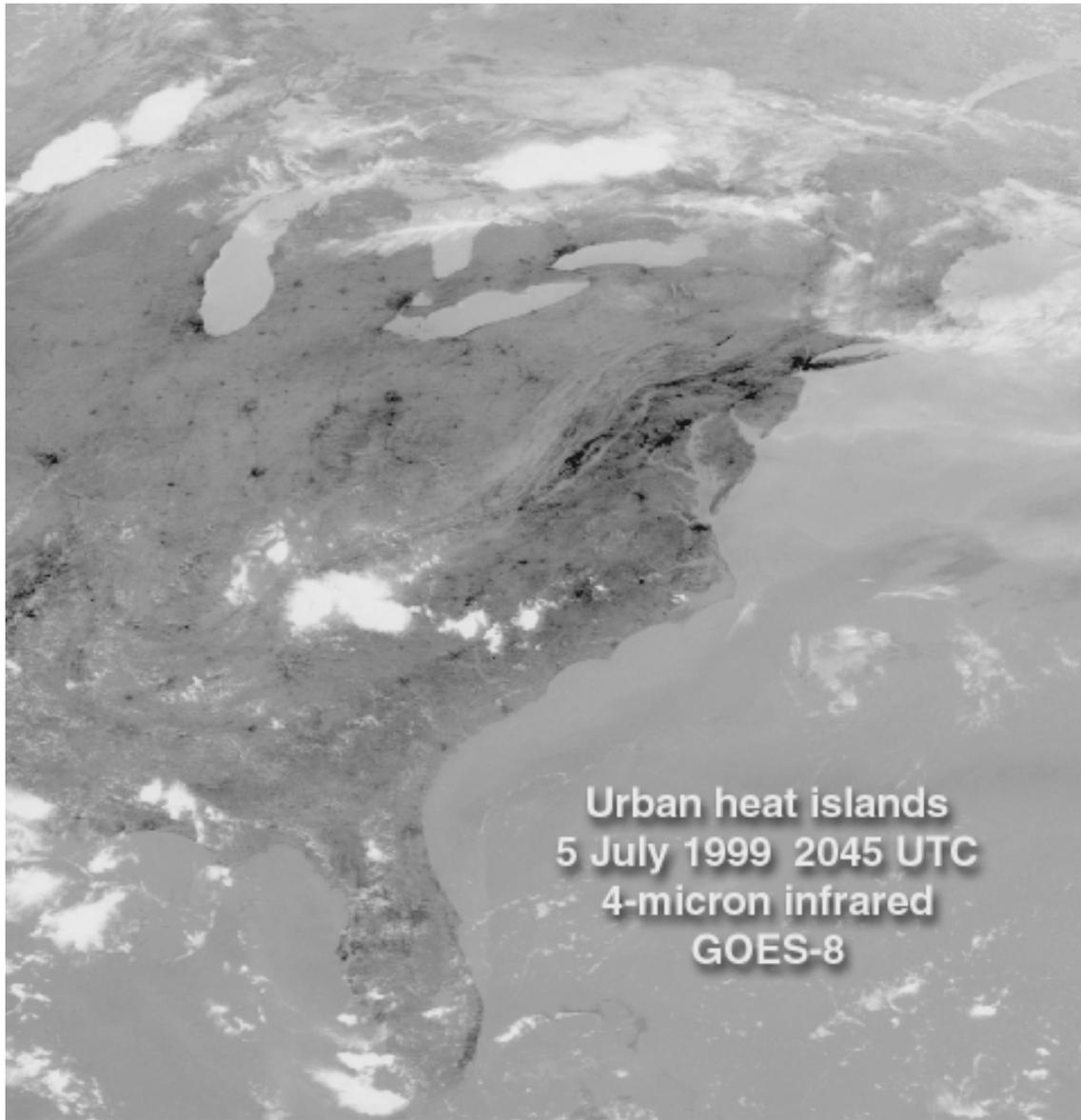
Dr. David A. Robinson  
Professor, Department of Geography  
& New Jersey State Climatologist  
Rutgers University

April 6, 2015

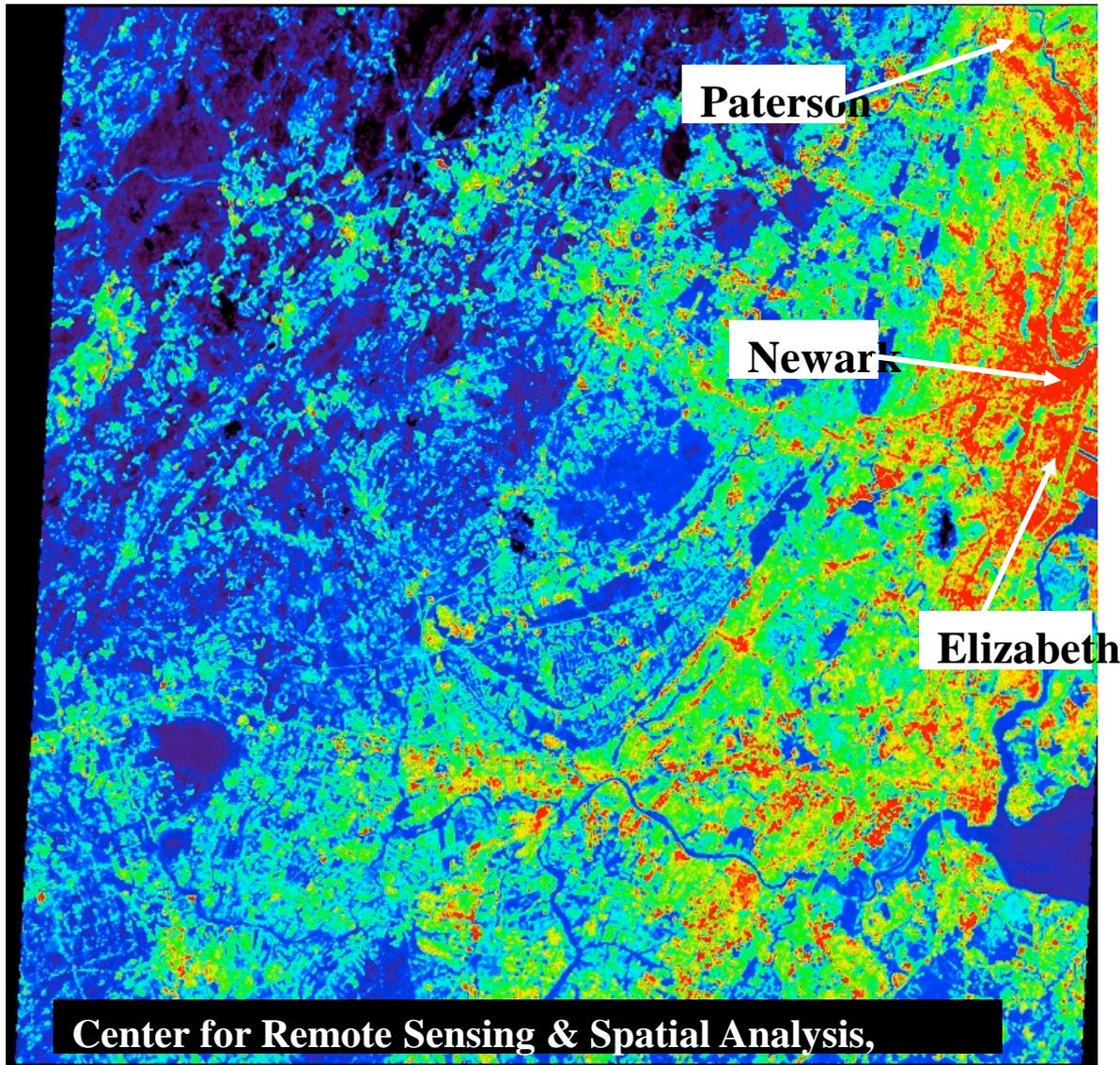


7 July 2010  
4:00 PM

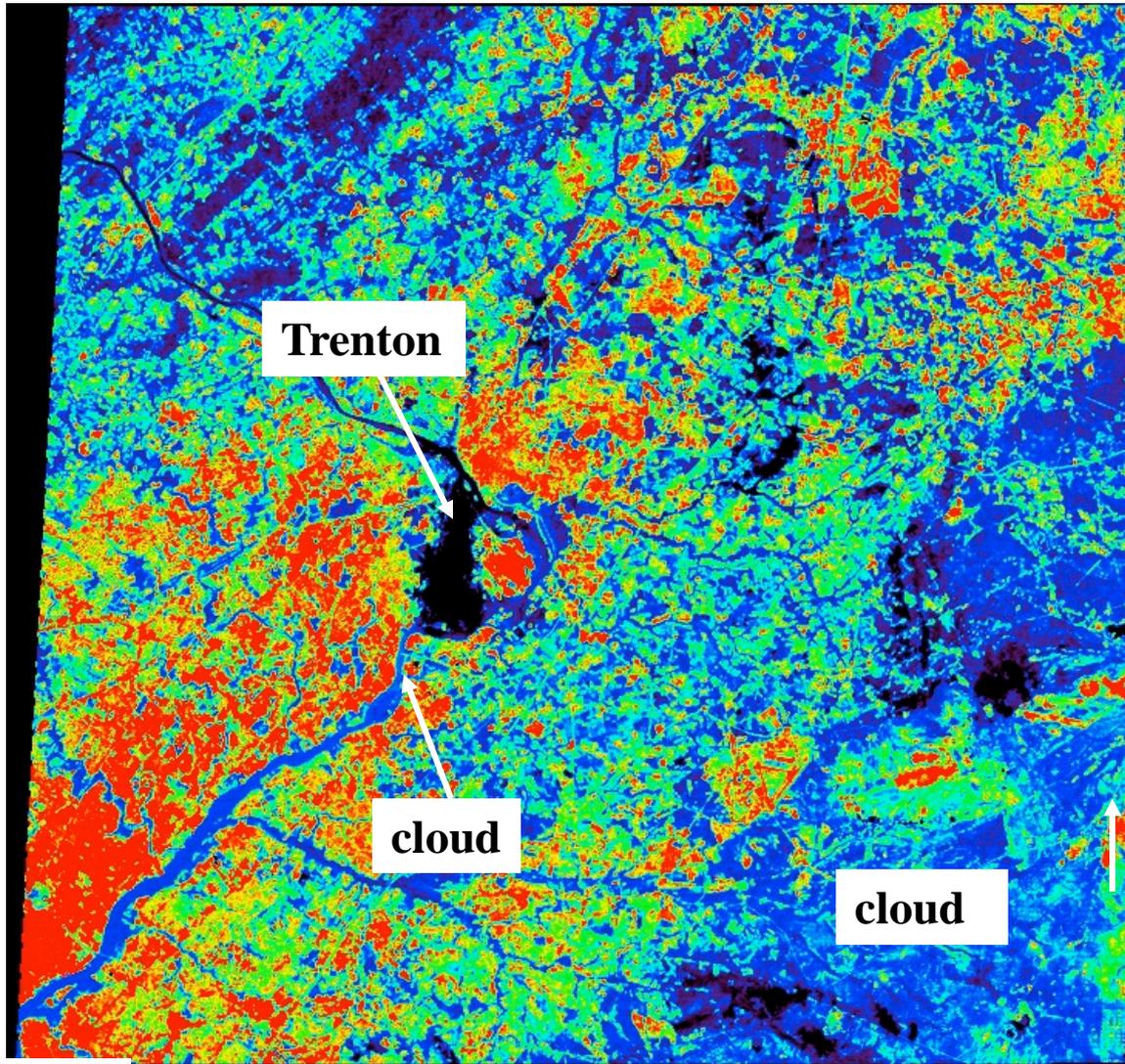




Urban heat islands  
5 July 1999 2045 UTC  
4-micron infrared  
GOES-8



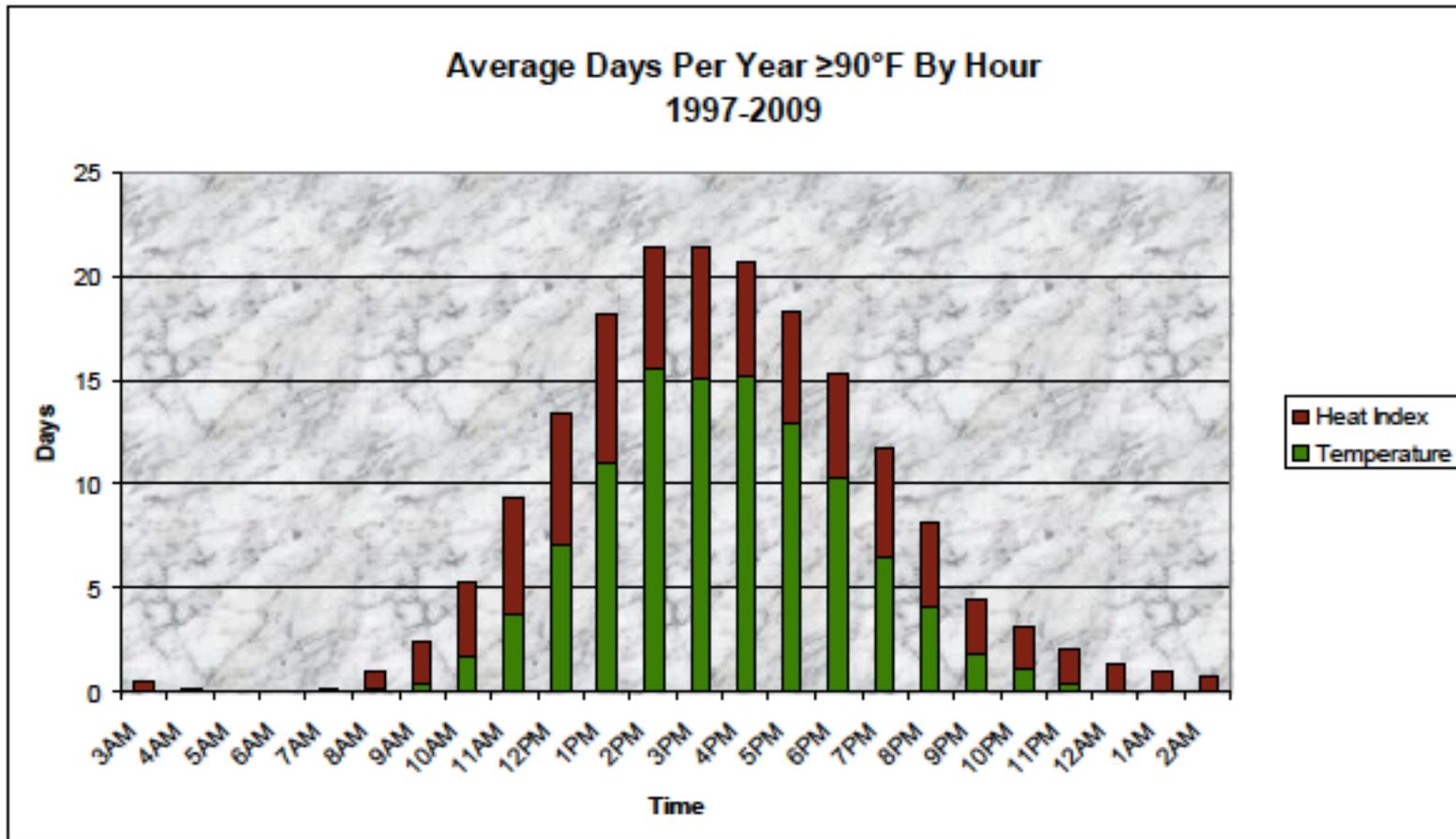
ASTER TIR image of NJ centered on the Watchung Mountains, ASTER Band 12 (9.075  $\mu\text{m}$ ) was acquired July 3, 2001. Daytime image. Colors: Cold to warm to hot (blue to green to red).



ASTER TIR image of NJ centered on Trenton, ASTER Band 12 (9.075  $\mu\text{m}$ ) was acquired July 3, 2001. Daytime image. Colors: Cold to warm to hot (blue to green to red).

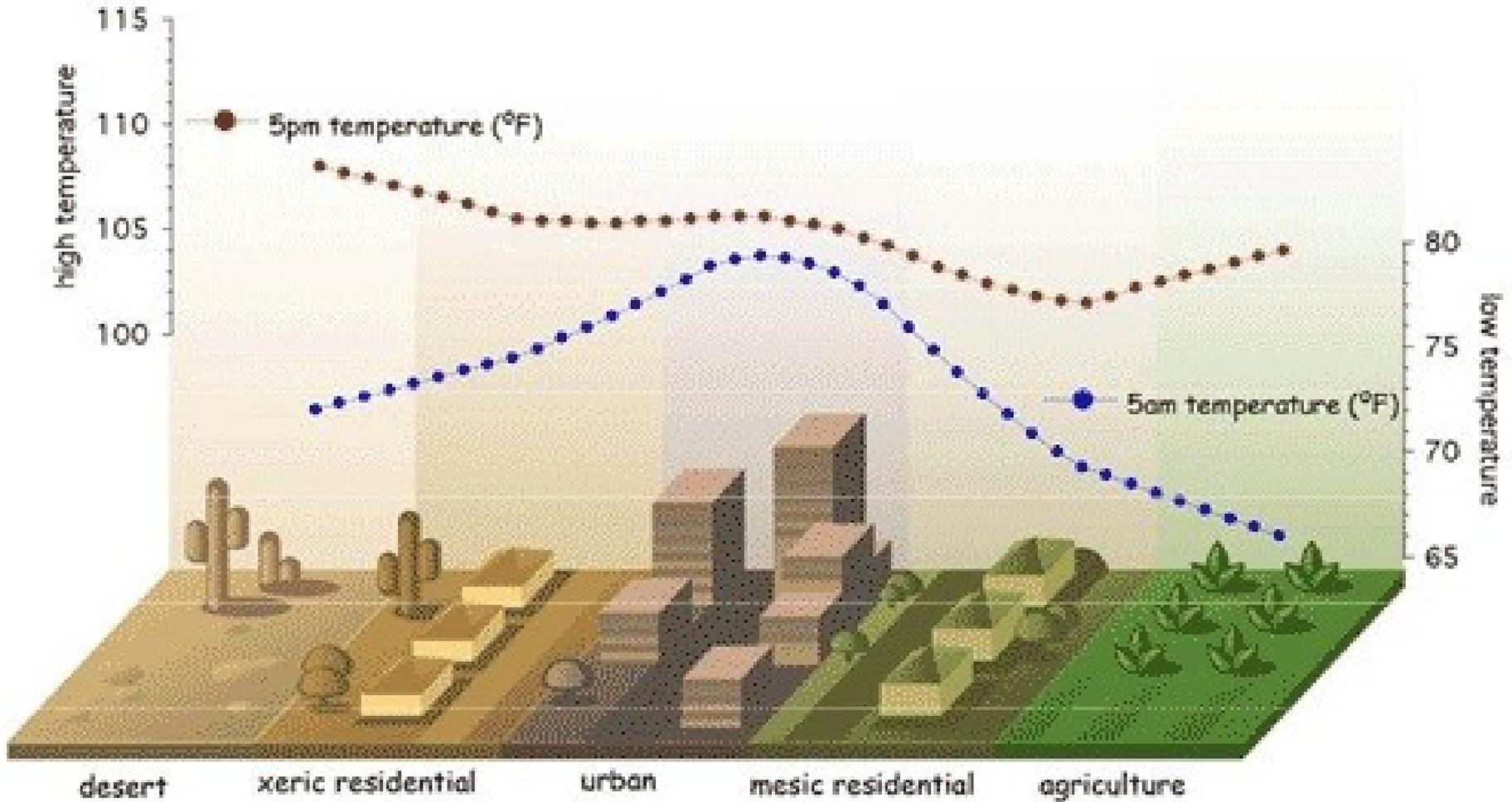
Camden

Center for Remote Sensing & Spatial Analysis,  
Rutgers University

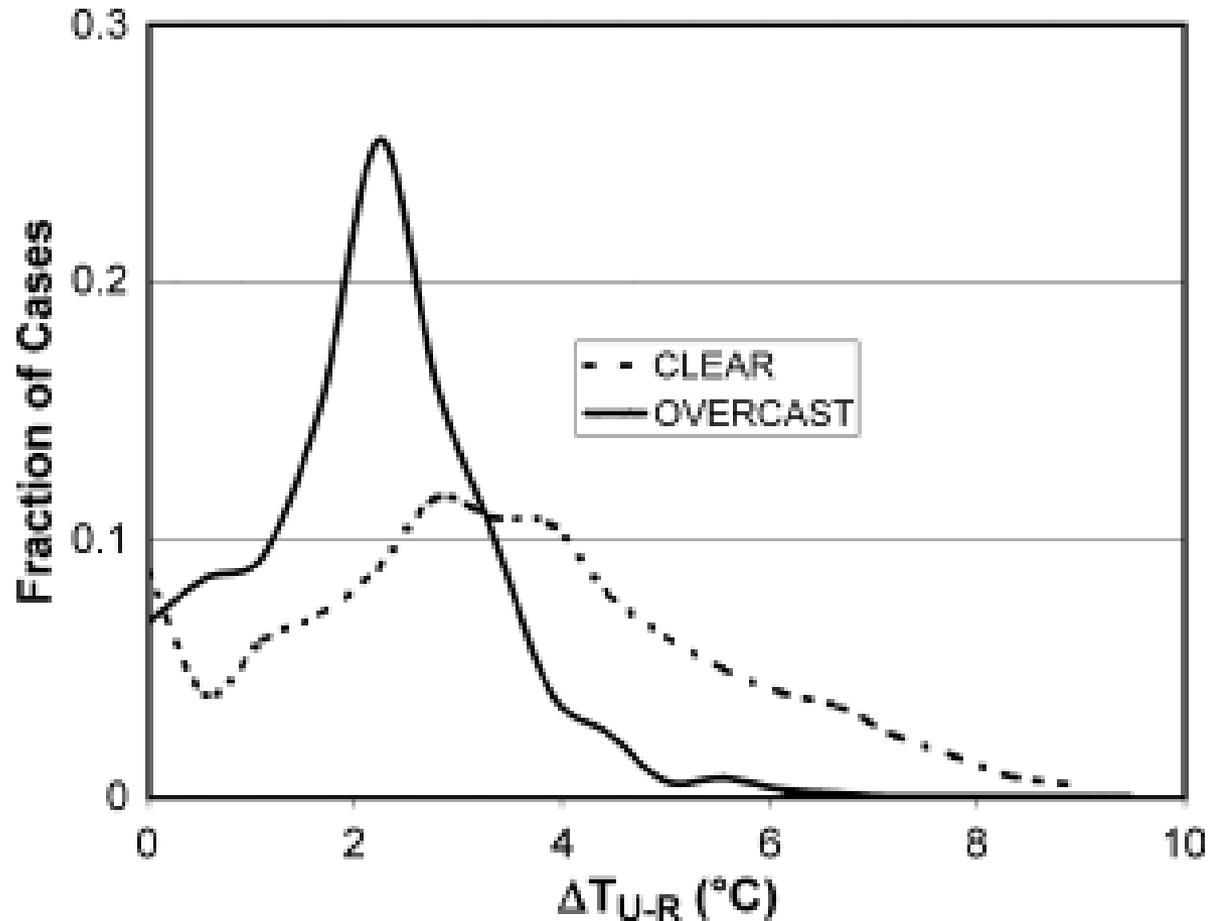


**Figure 5: Average days per year spent at or above 90° per year by hour, from 1997 to 2009. Note 2010 measurements are not included in this figure. Figure includes both absolute measured temperatures as reported by the Newark Airport ASOS, as well as calculated heat index.**

# Dawn and Late Afternoon Temperature Profiles

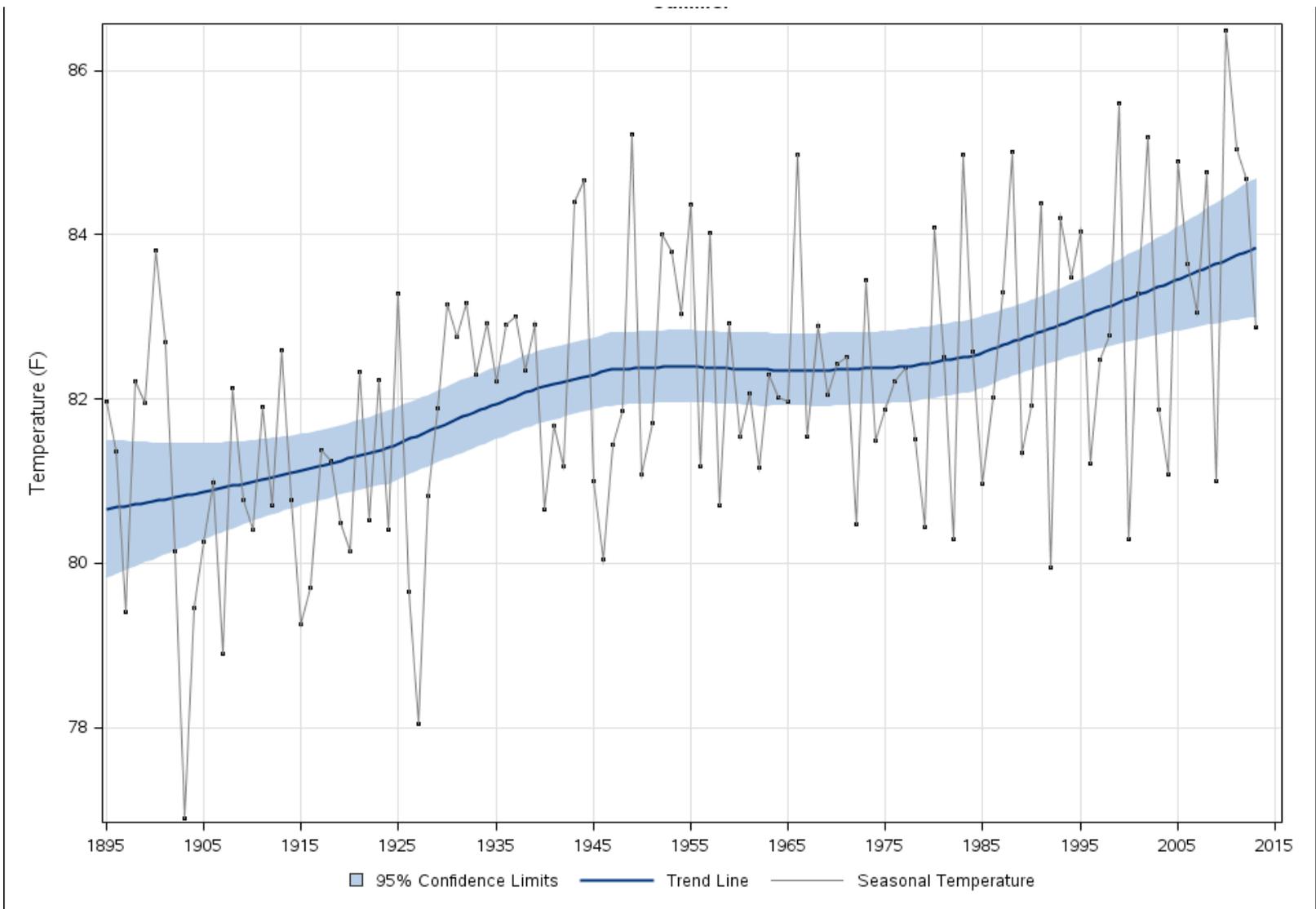


# Fraction of cases with urban – rural temperature differences at given values for clear & overcast conditions

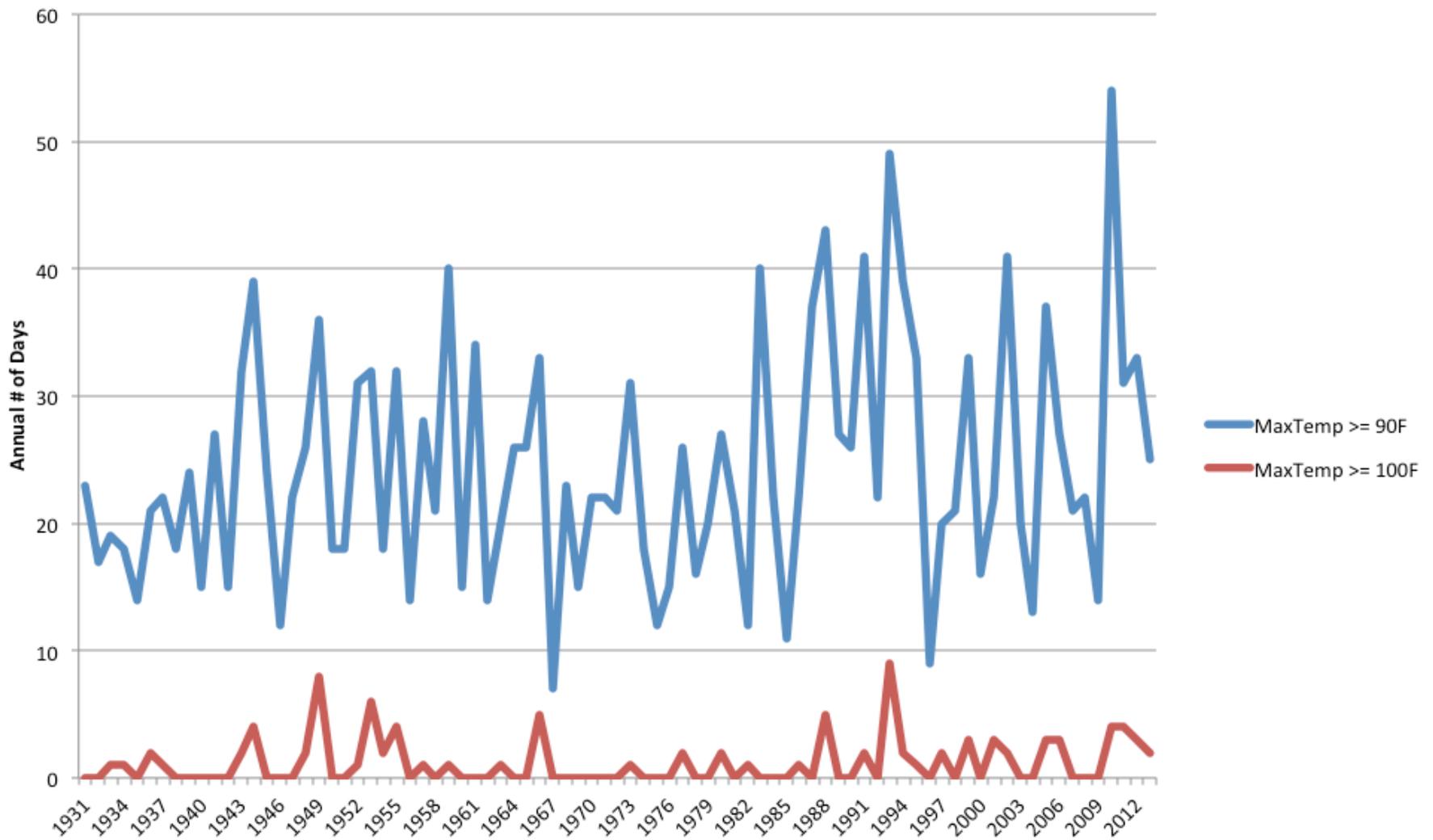


Gedzelman et al., 2003. Mesoscale aspects of the urban heat island around New York City. Theoretical and Applied Climatology

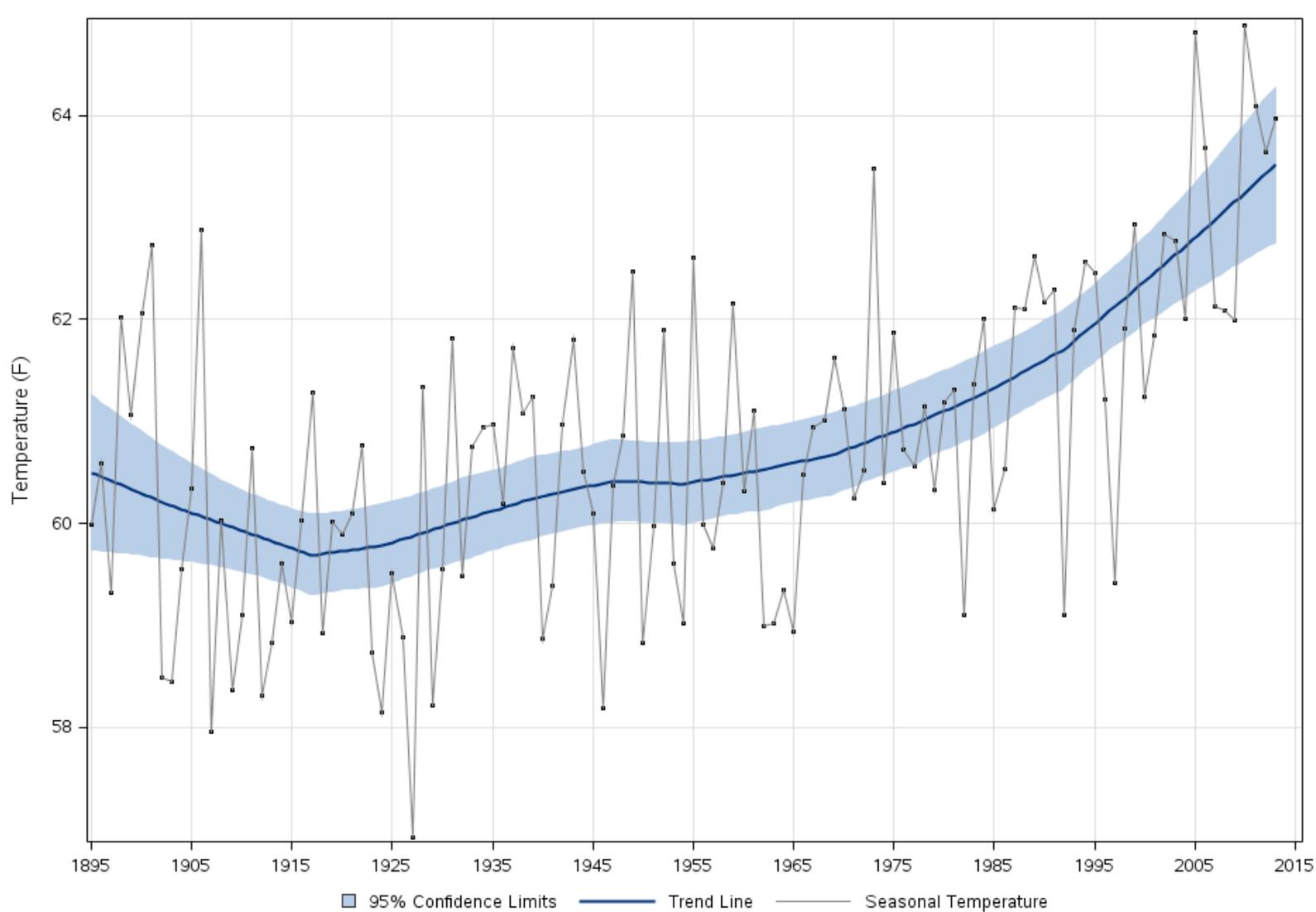
# NJ summer maximum temperatures: 1895-2014



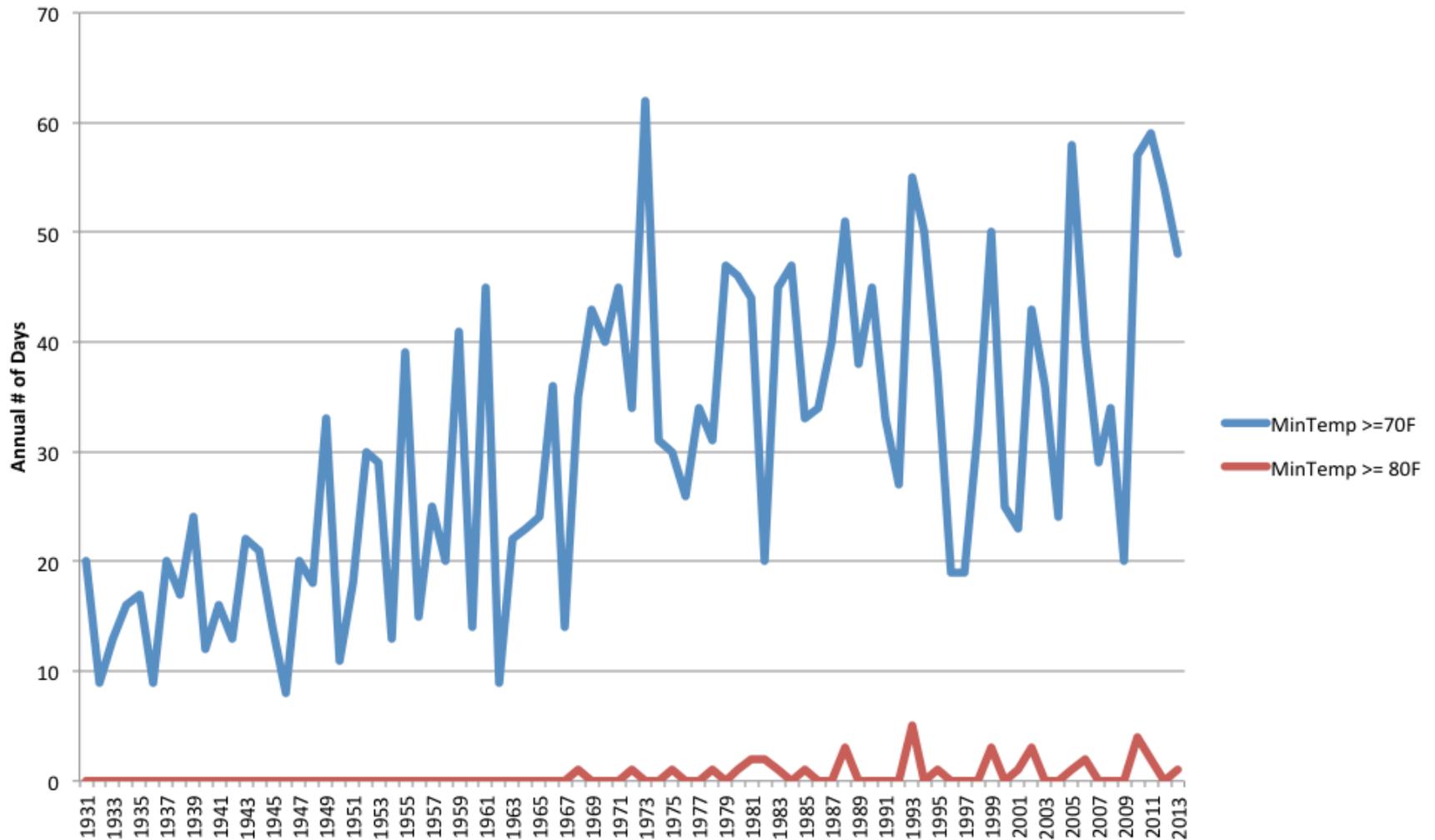
# Annual # of Days - Maximum Temperature Exceedance - Newark, NJ



# NJ summer minimum temperatures: 1895-2014



# Annual # of Days - Minimum Temperature Exceedance - Newark, NJ

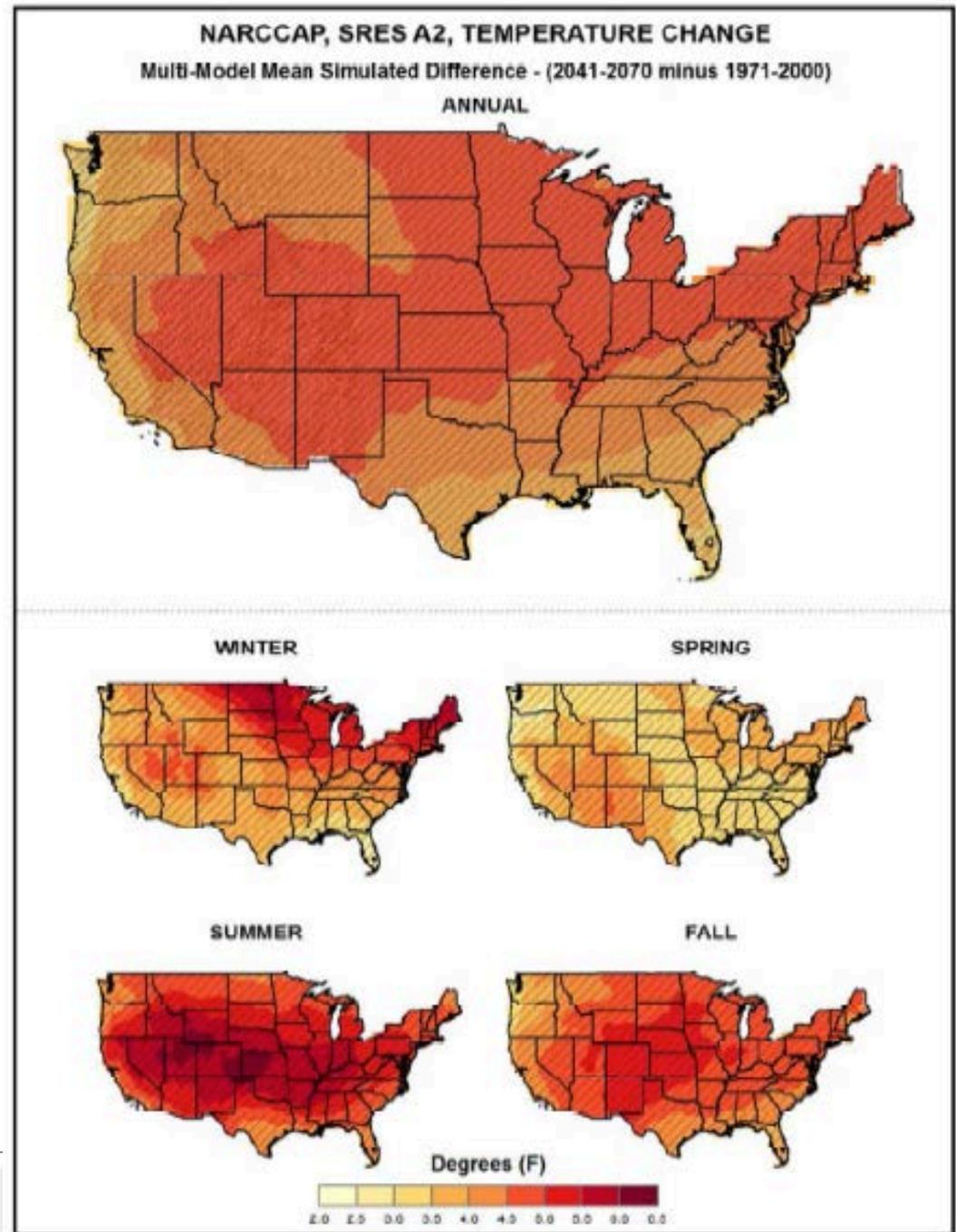


# Changing Annual and Seasonal Temperatures

2041-2070  
minus  
1971-2000

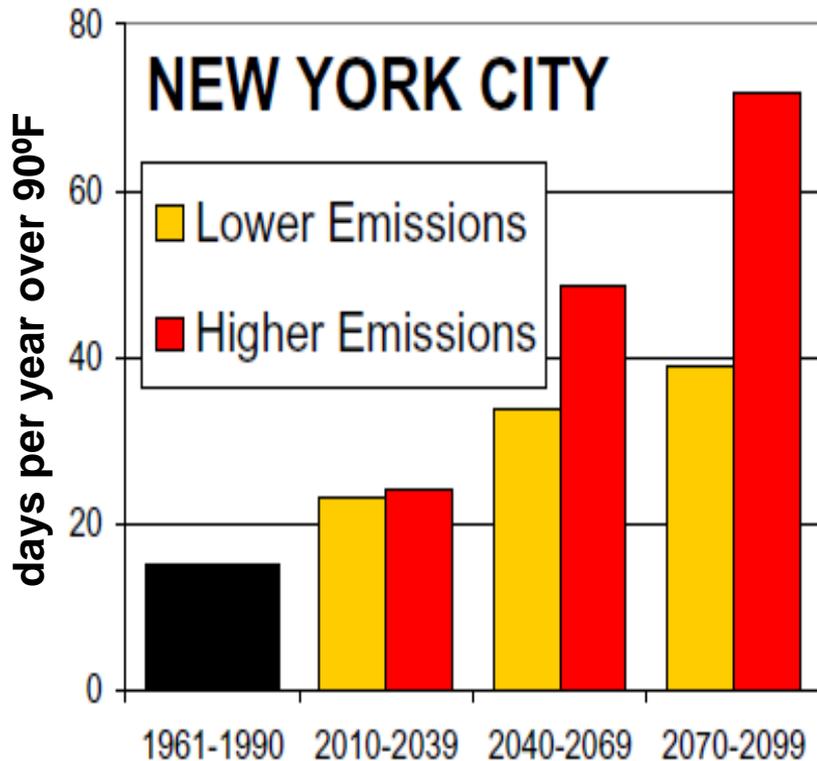
North American Regional  
Climate Change Assessment  
Program

Kunkel et al. NOAA Tech.  
Report NESDIS 142-9, 2013

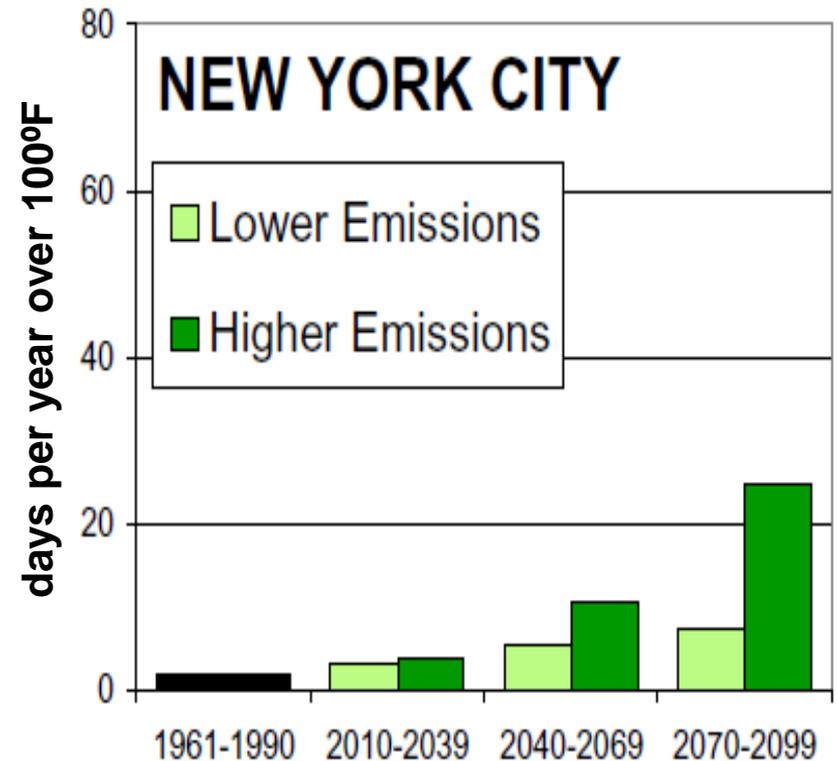


# Projected warming

## Days over 90F



## Days over 100F



Union of Concerned Scientists, NE Climate Impacts Report, 2006

## Summing up:

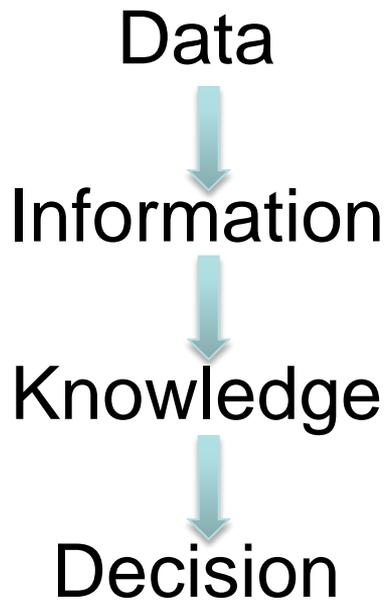
NJ summers have gotten warmer in recent decades; especially daily minimum temperatures

While all portions of NJ are warming, the urban areas often feel the largest impacts of increased heating.

Climate models suggest that the frequency of hot days will increase in the decades ahead in NJ and elsewhere.

Continued vigilance is required to monitor, understand and predict the future behavior of extreme summer temperatures.

# Office of the NJ State Climatologist



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at Rutgers University

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[www.njweather.org](http://www.njweather.org)

**Latest from the NJWxNet**

Latest temperatures across NJ appear in the above map. Click on the [Climate Network](#).

**Frequently Updated Climate Data**

- [Winter 2014-2015 Snow Event Totals](#)
- [Monthly and Annual Statewide \(1895-Present\)](#)
- [Monthly Station](#)
- [Monthly Maps](#)

**Latest News**

**Bitter Cold: February 2015 Recap and Winter 2014-2015 Review**

[NJclimate.org](http://NJclimate.org)