

# Climate Trends in Georgia:

What they mean  
for towns and cities

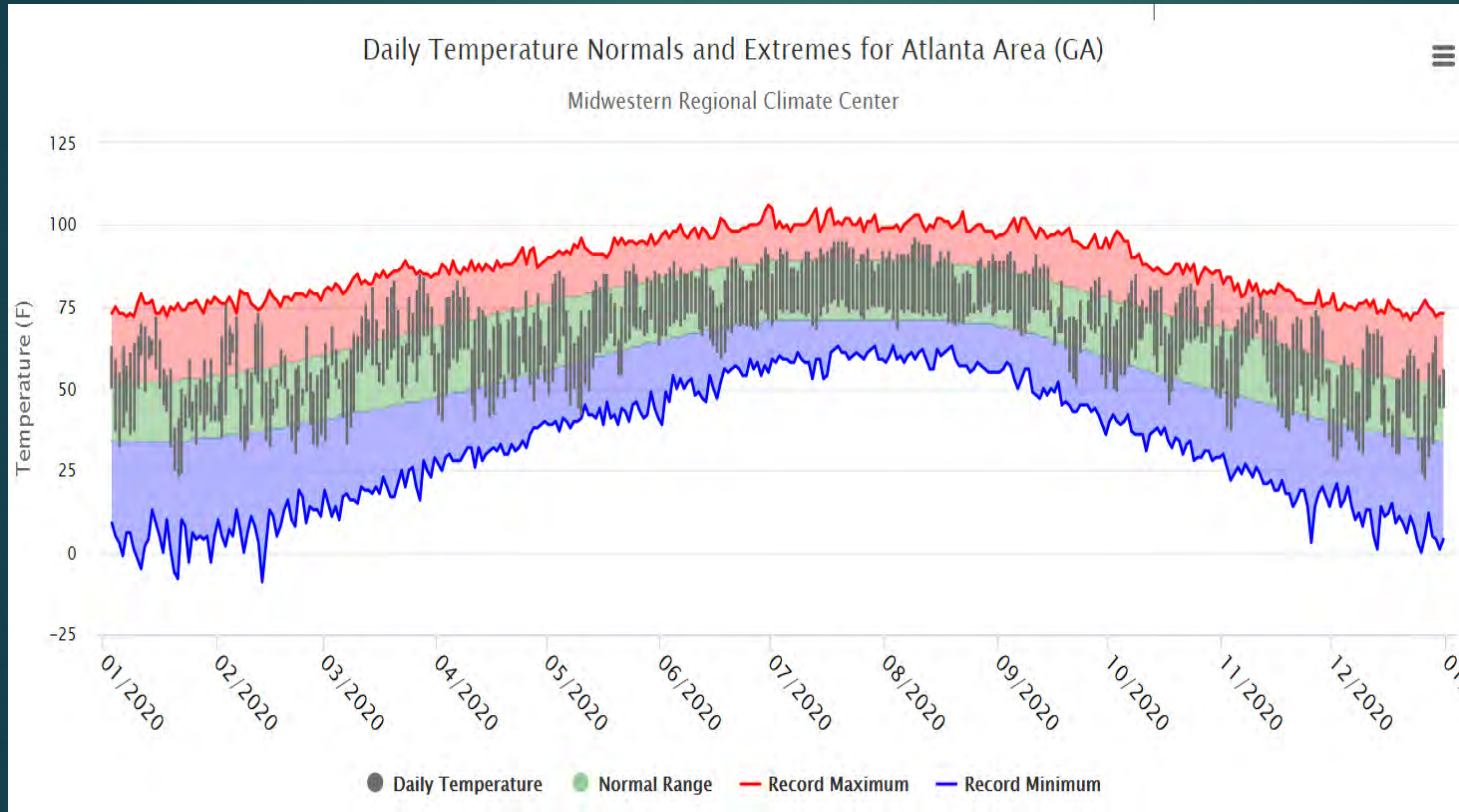
**Pam Knox, University of Georgia**

Agricultural Climatologist

Director, UGA Weather Network

[pknox@uga.edu](mailto:pknox@uga.edu)

# What is Climate?



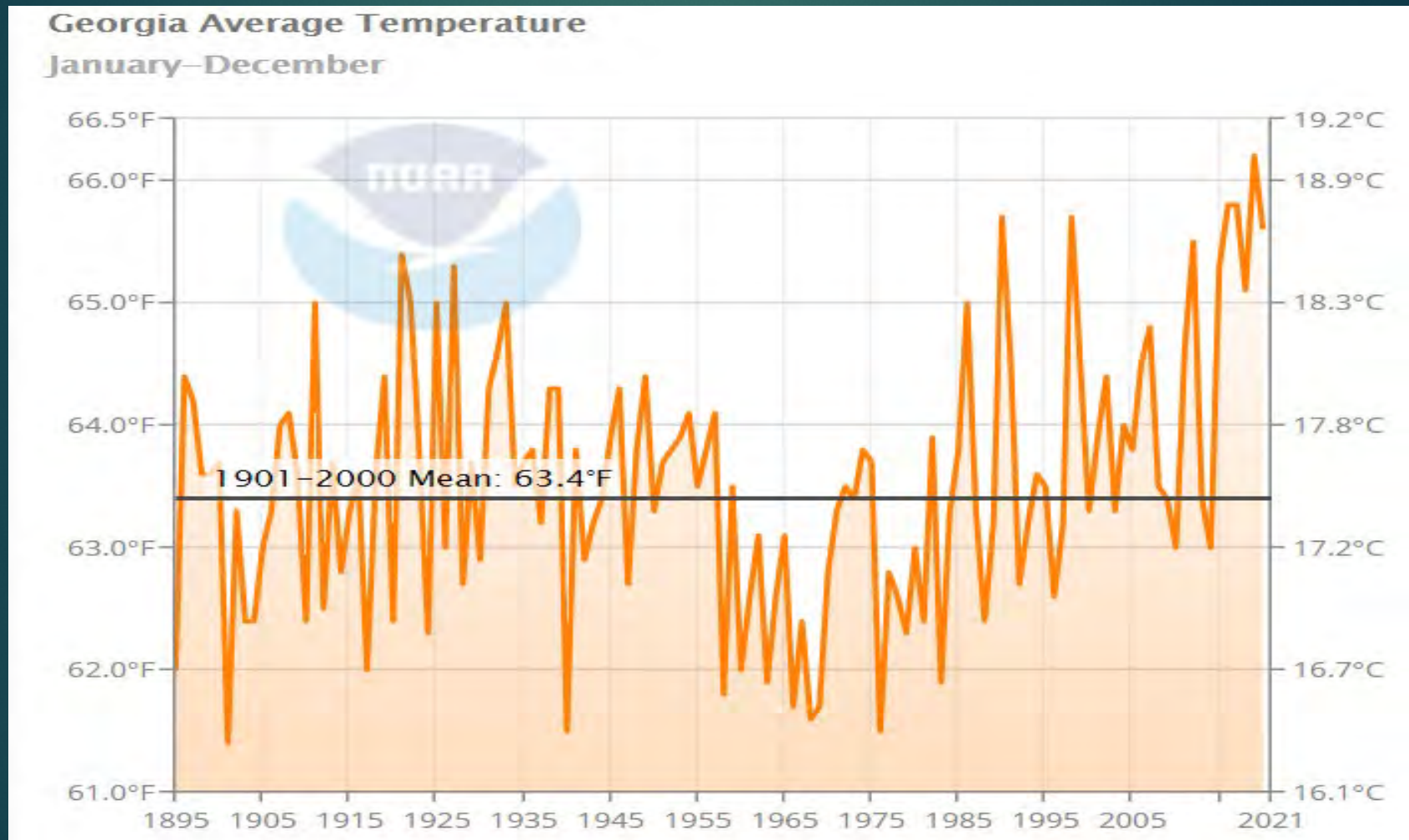
- Averages
- Ranges
- Extremes
- Cycles

<https://mrcc.illinois.edu/CLIMATE/>

What you think happened to the climate depends on what time period you are looking at

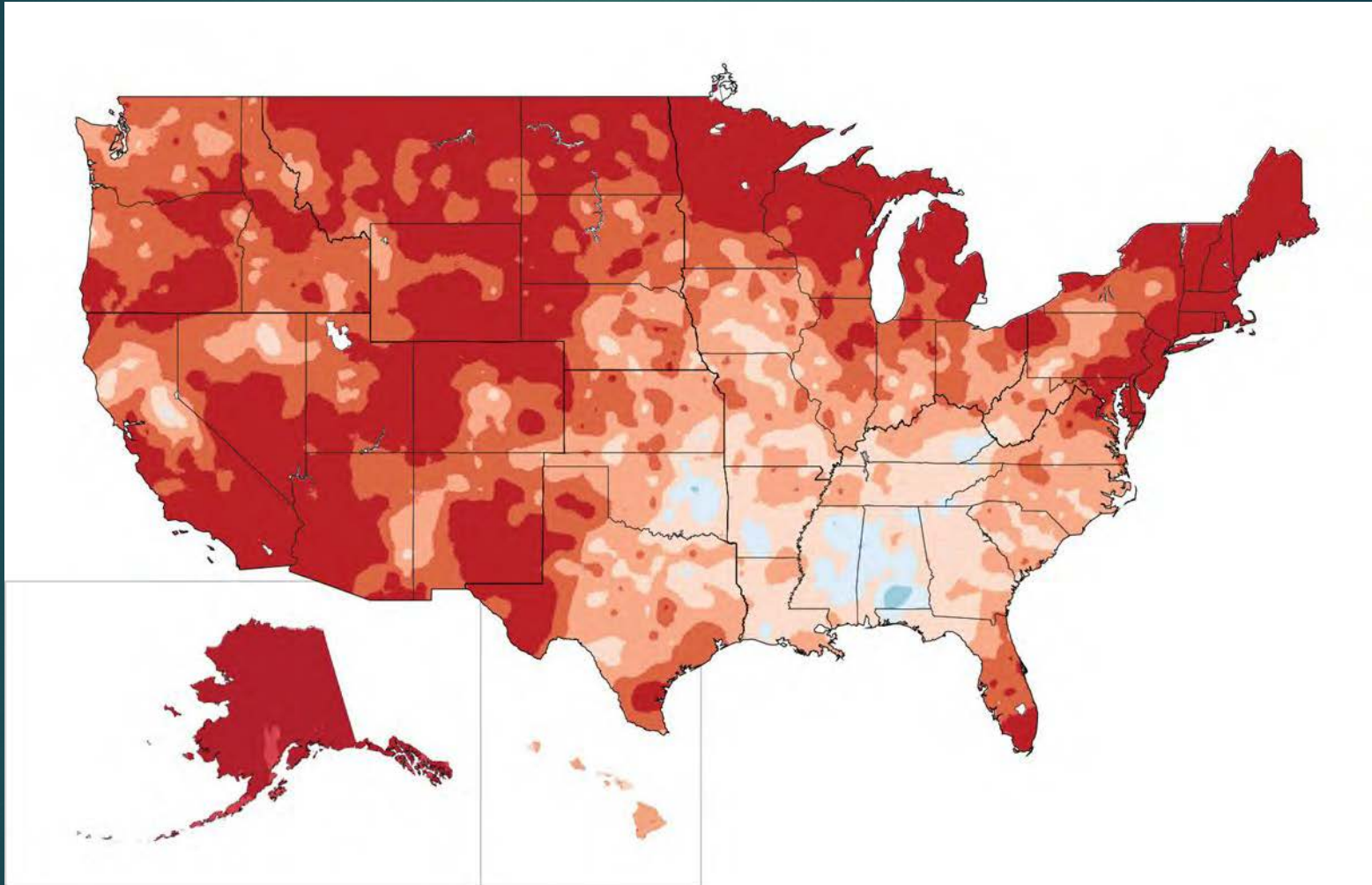


# Georgia Temperature Trend



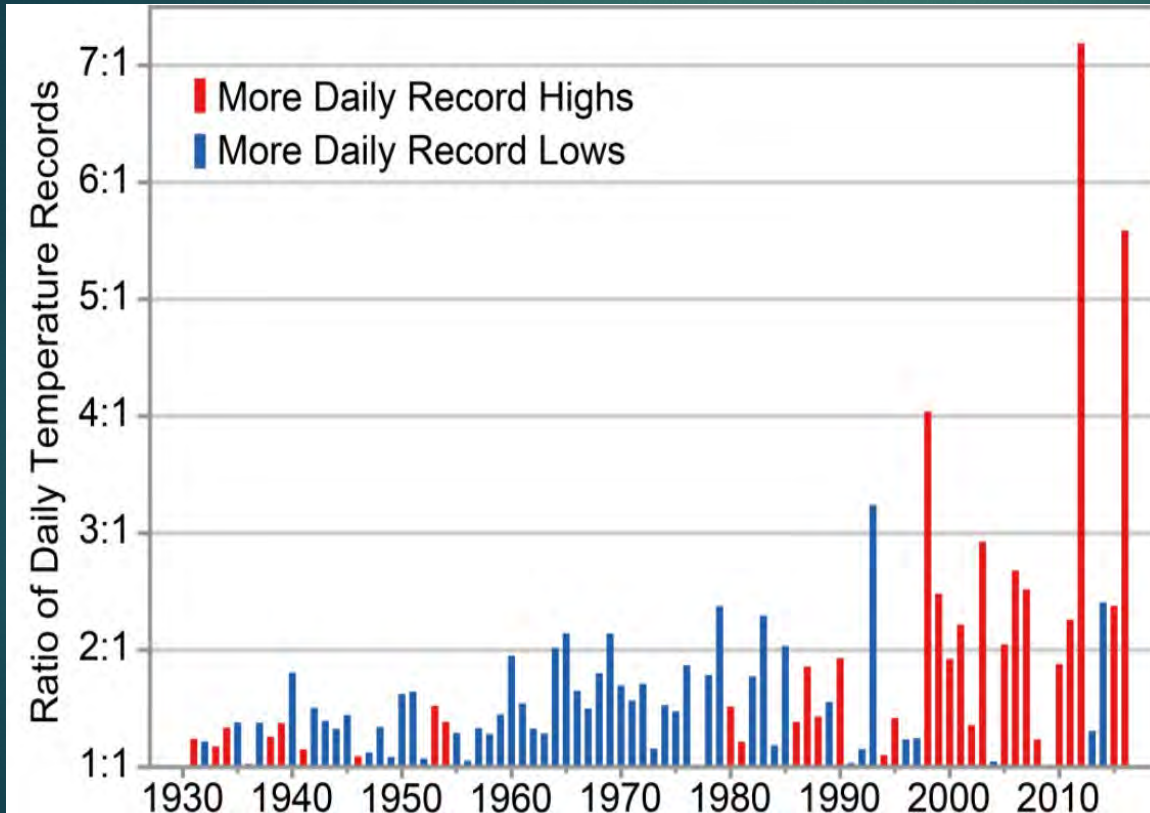
<http://www.ncdc.noaa.gov/cag/>

# US Temperature Trend by Region



Source: EPA

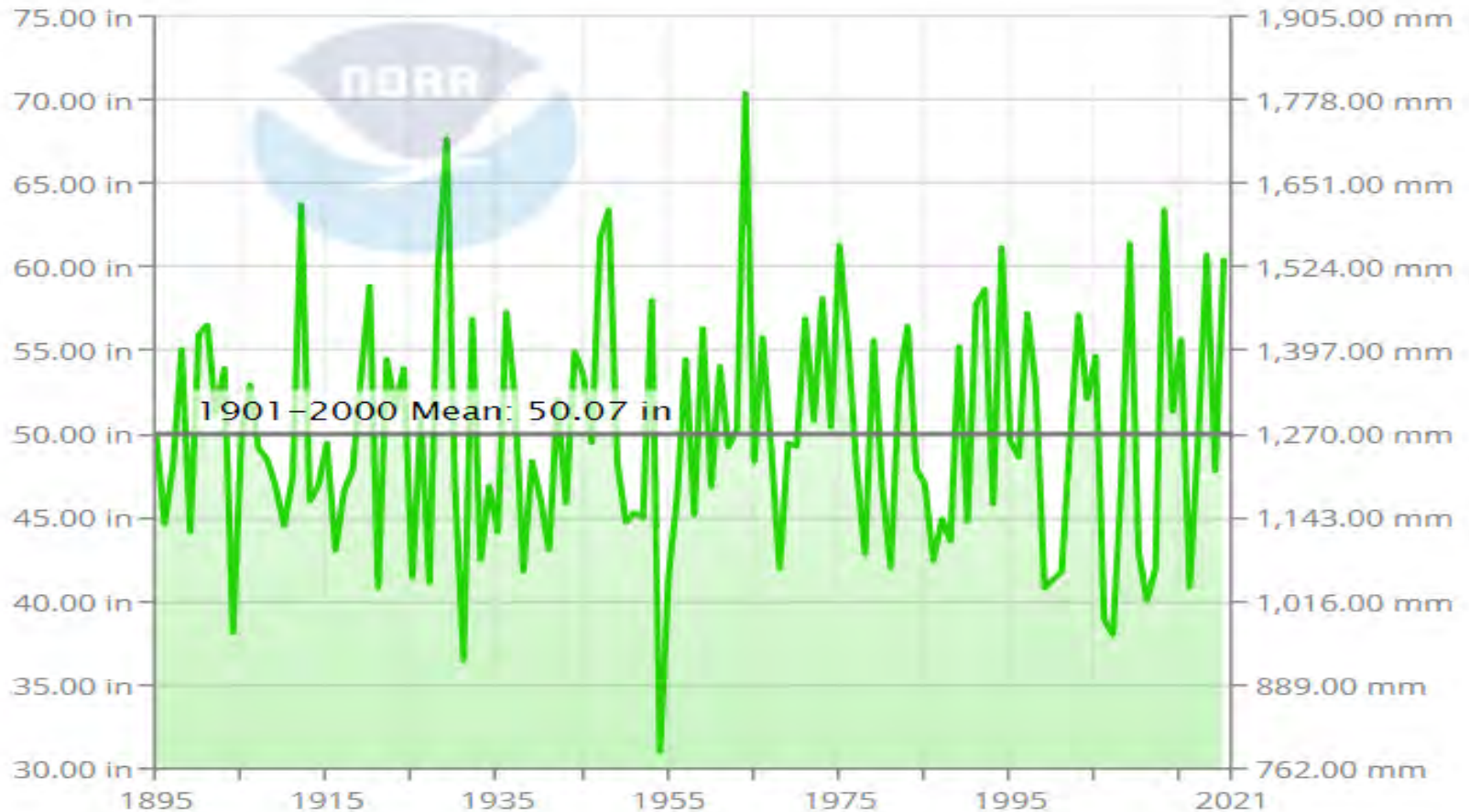
# Extremes in Temperature



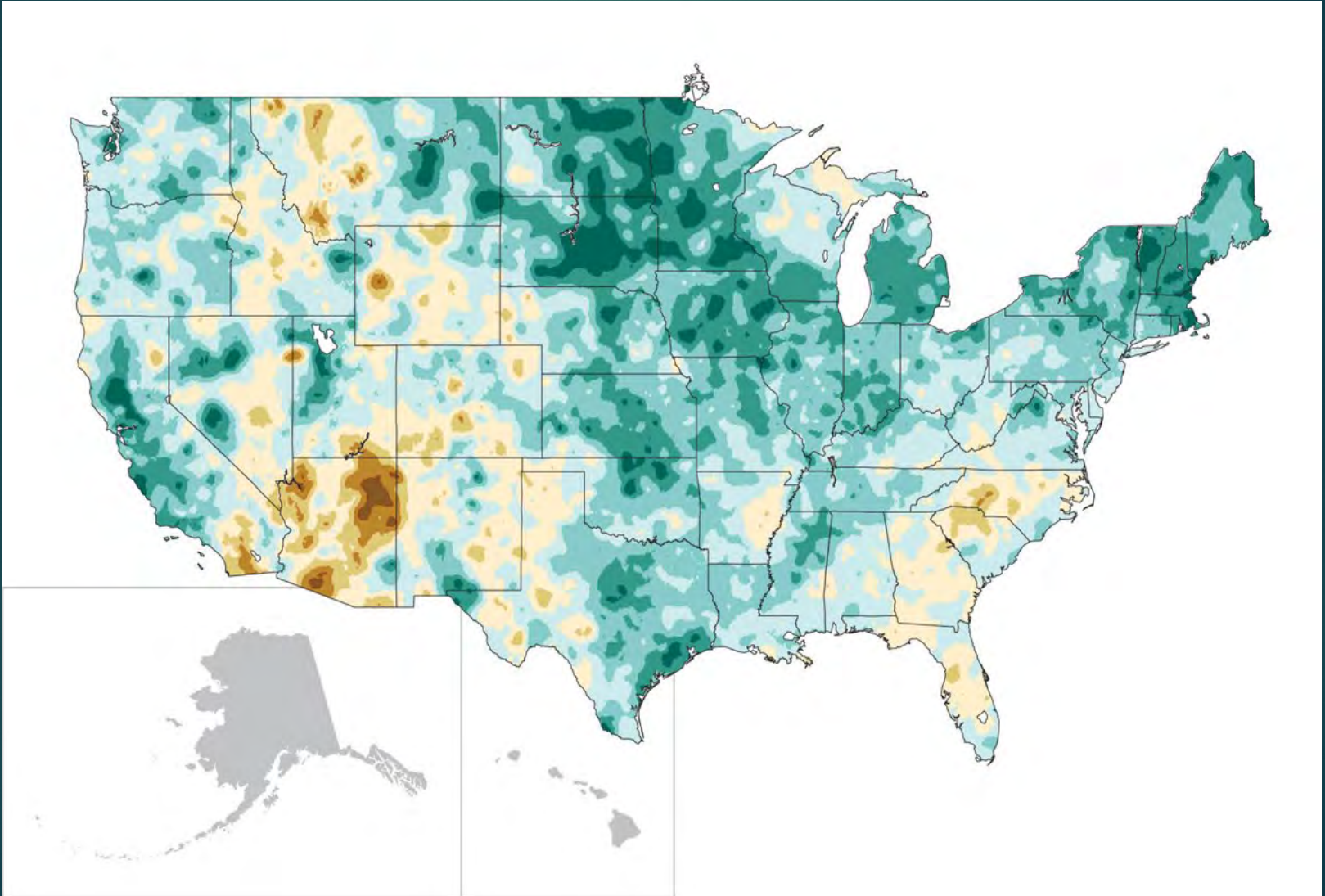
- Many more high temperature records set than lows
- Overnight temperatures and humidity are increasing more than daytime temperatures

# Georgia Precipitation Trend

**Georgia Precipitation**  
**January–December**

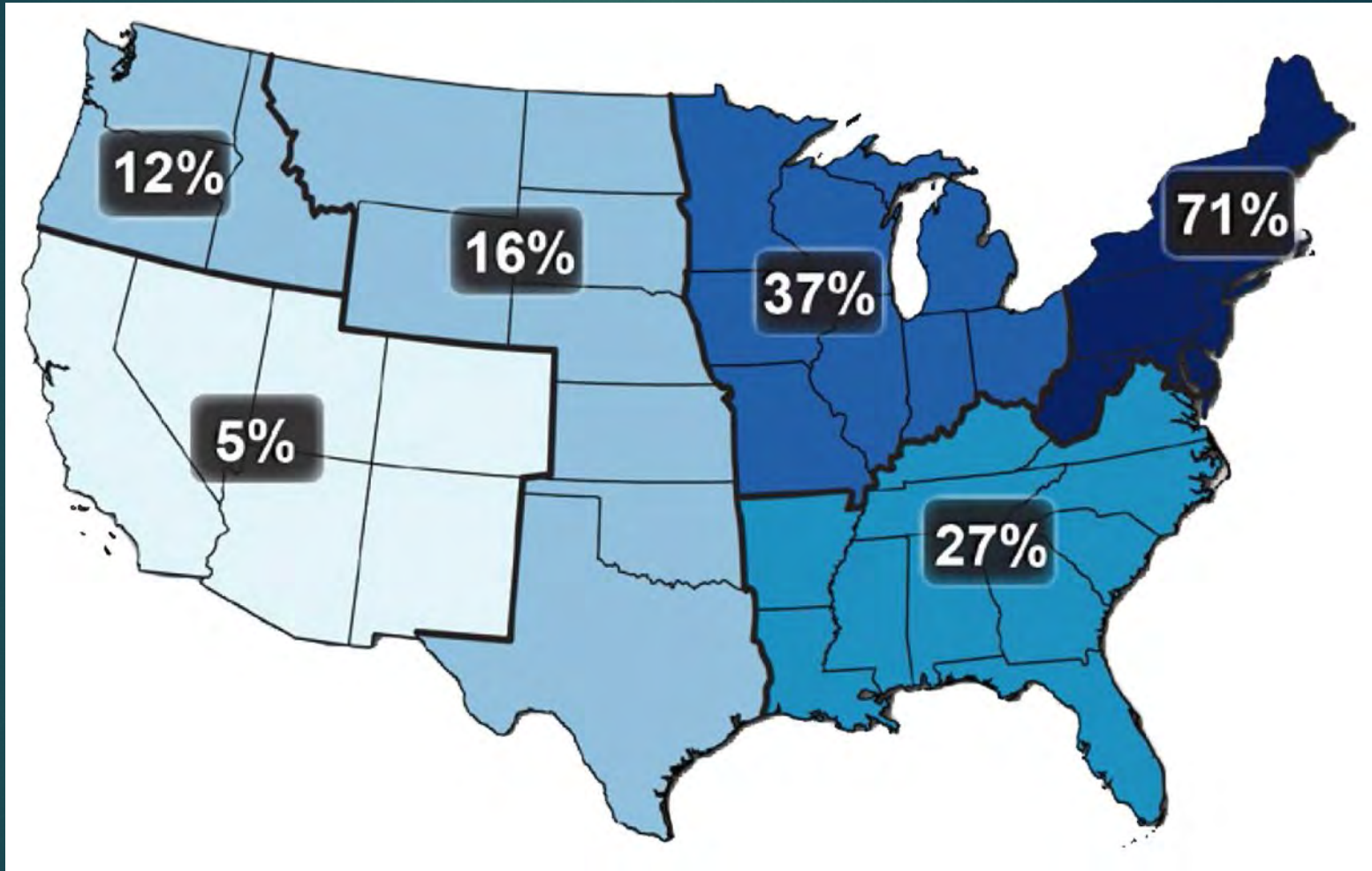


# US Precipitation Trend by Region





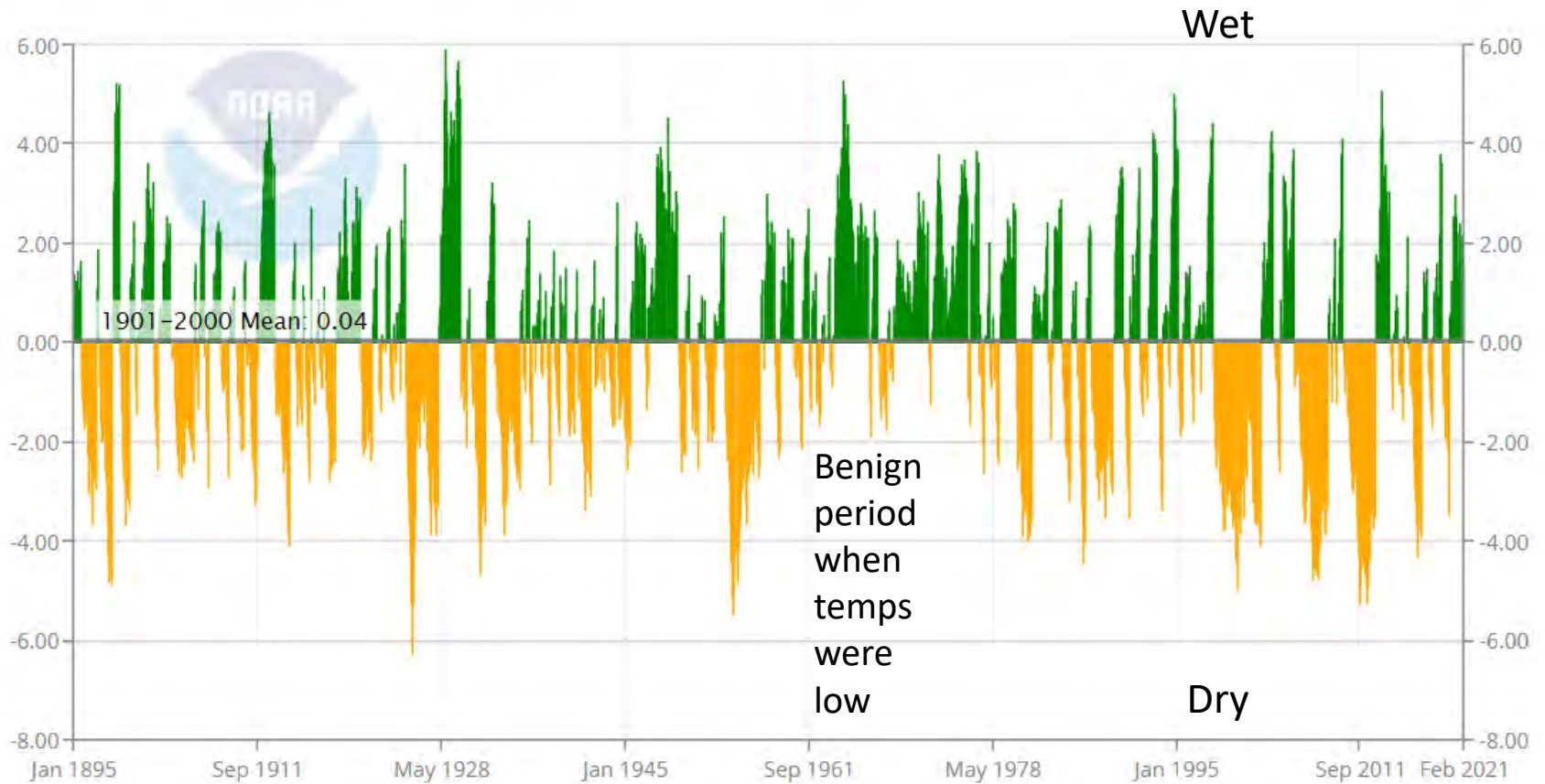
# Trends in Extreme Precipitation



Increase in the number of 2" rainfalls per year from 1958 to 2011

# Drought

Georgia Palmer Drought Severity Index (PDSI)



PDSI=Palmer Drought Severity Index

# How does the changing climate affect cities?

- More energy demand for air conditioning (less for winter heat)
- More heat stress on outdoor workers and underserved populations
- Health concerns for more heat-related illnesses, more mosquitoes and other pests, stresses on health providers to have access to enough water
- Heavier rain will lead to increased erosion and infrastructure challenges—drainage not designed for the heaviest rains
- More drought will lead to water supply issues and potential for water conservation issues

# How do cities affect climate?

- Urban areas heat up more during the day and stay warm at night (urban heat islands)—even in small cities
- City emissions increase pollution and can cause more rain downwind—health issues for folks with asthma, etc.
- Old and poorly designed infrastructure leads to more flooding of roads and housing in vulnerable areas
- Growing populations use more energy, water, food—all of which contribute to greenhouse gas emissions

# What does the Future Hold?

## Challenges

- ▶ Warmer temperatures increase diseases and pests
- ▶ More heat stress
- ▶ More potential for drought
- ▶ More extremes
- ▶ Economic costs of becoming resilient (for example, water supplies or power sources)
- ▶ Changing tastes and demographics in housing

## Opportunities

- ▶ More aware populace may be willing to improve food, energy, and water use
- ▶ Many solutions also save cities money or raise new revenues
- ▶ Other parts of the world will also undergo climate change, leading to potential for sharing knowledge and providing safe havens