Georgia's Climate

What do we expect in the future?

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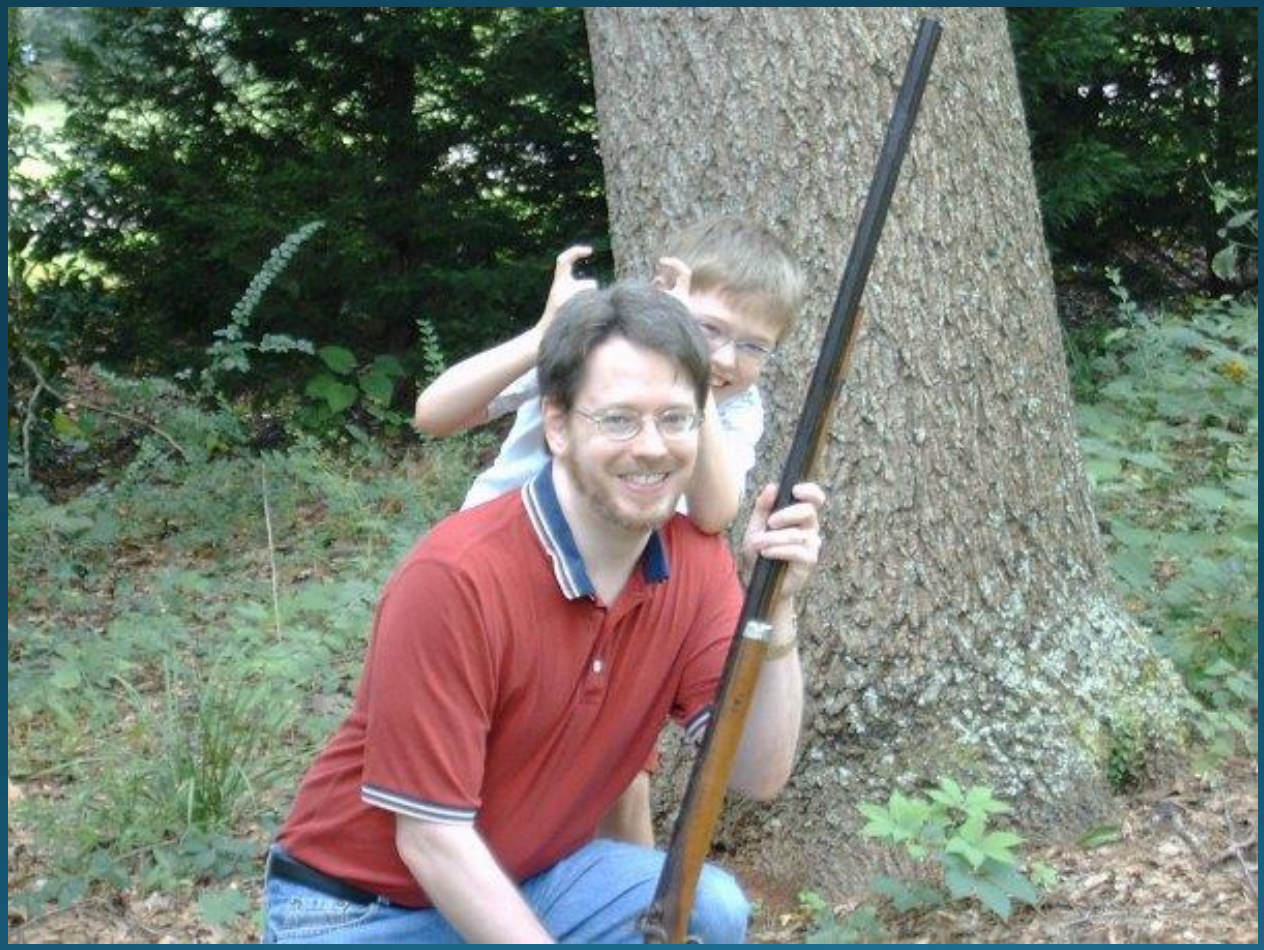
Main points of this talk

- Temperatures are rising, and nighttime temperatures faster than daytime
- Average rainfall is not changing but extreme rainfall is increasing
- Drought is becoming more frequent
- In the future, temperatures will increase even more
- Total rainfall may increase or decrease but it will be harder with more dry spells in between
- Extreme weather will become more frequent except for winter weather

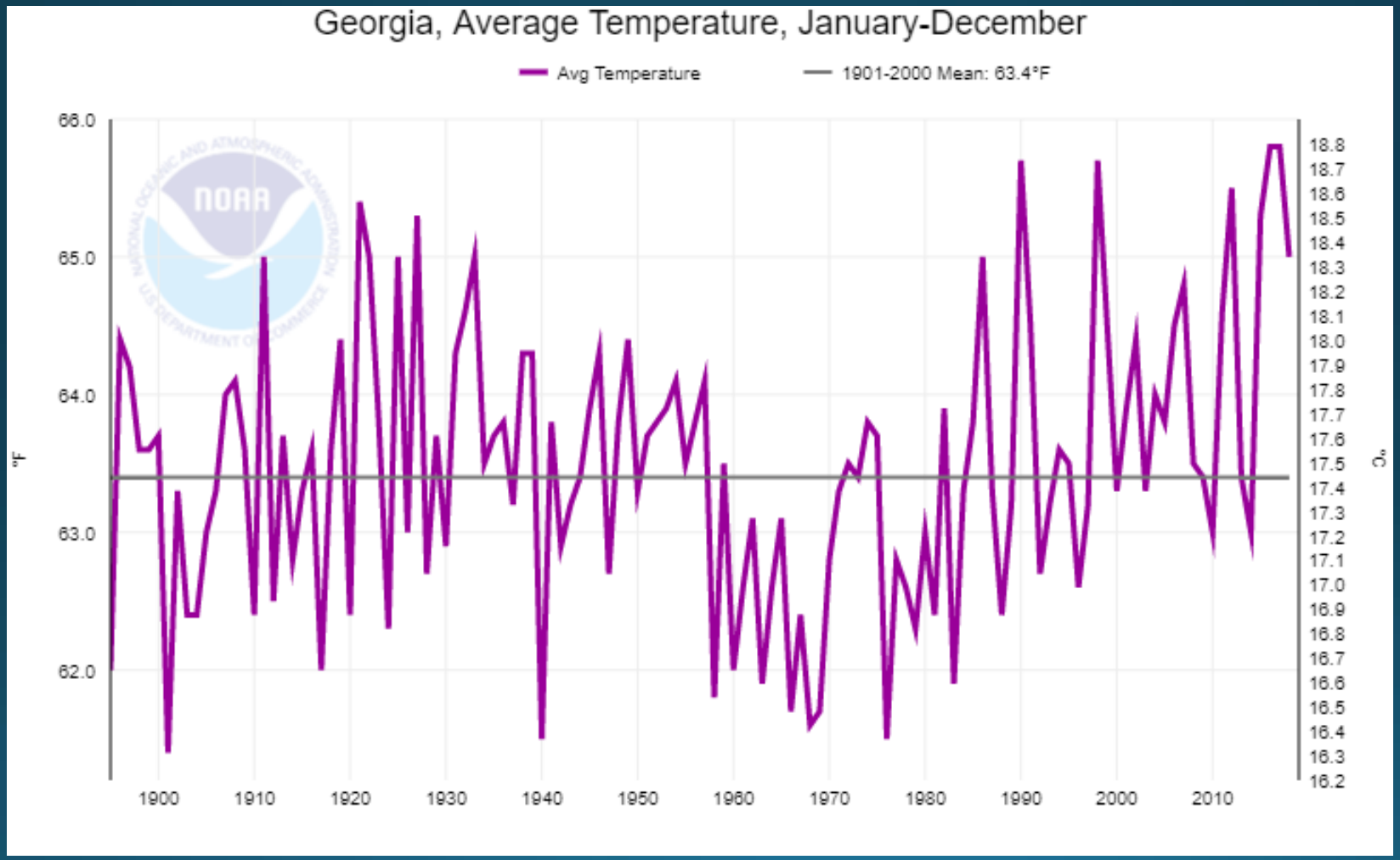
How trees will be impacted by climate

- Trees will experience more stress due to changing climate
- The types of trees that do the best in the Southeast will change
- Foresters will experience stress from hotter working conditions
- There will be more competition for land between forests, urban areas and crops

What trend you see depends on your age



Temperature trend over time



https://www.ncdc.noaa.gov/cag/statewide/time-series/

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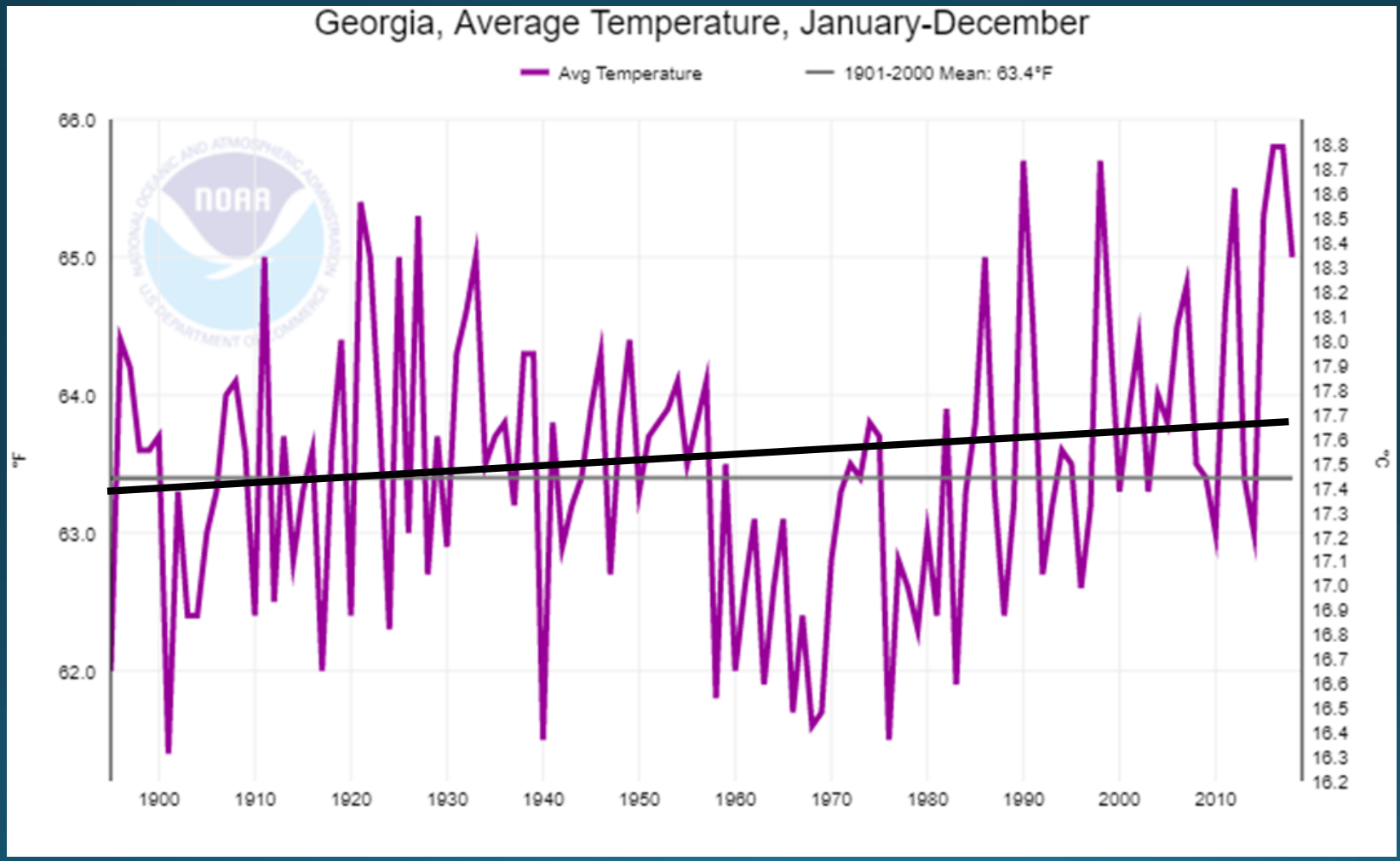

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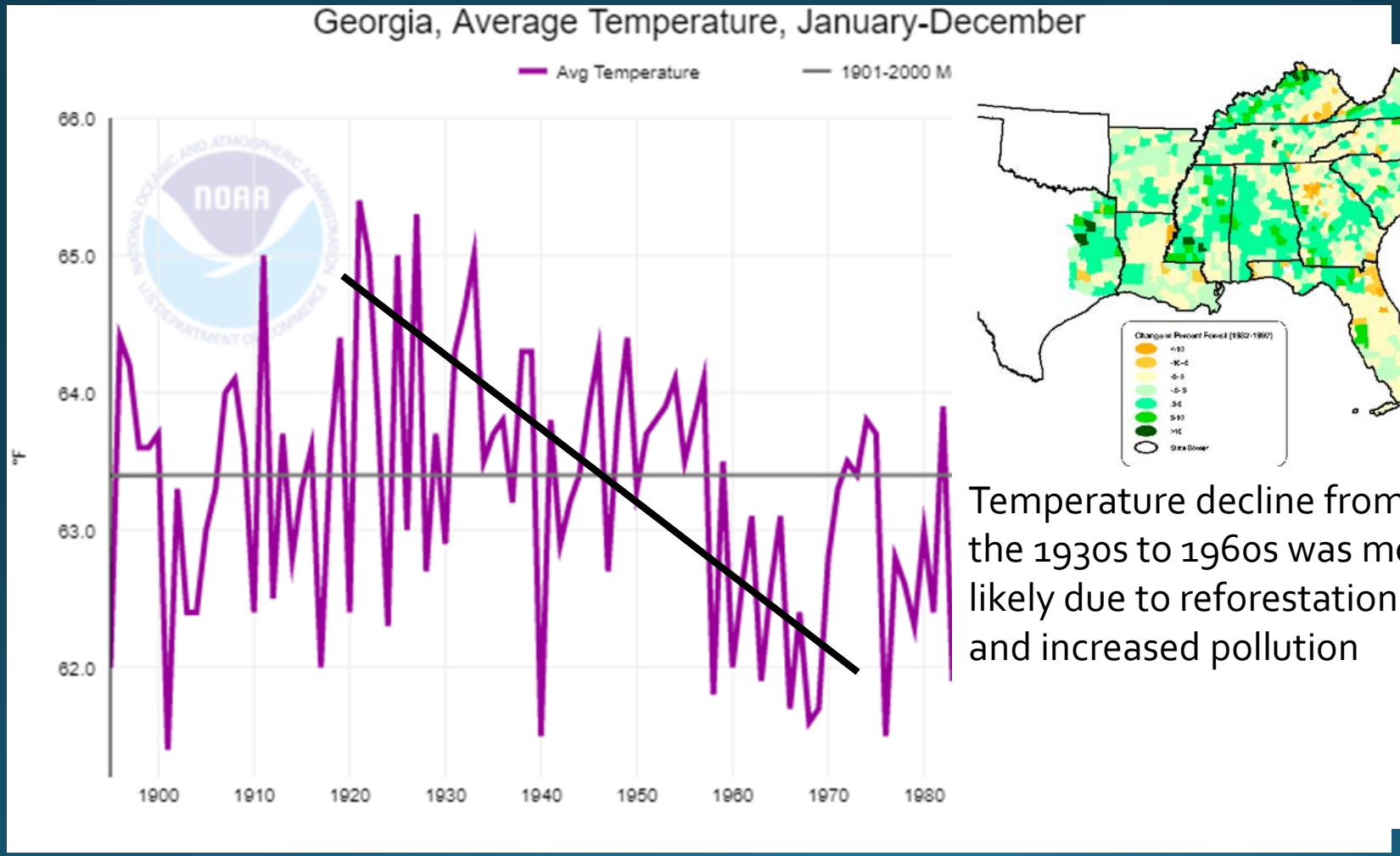

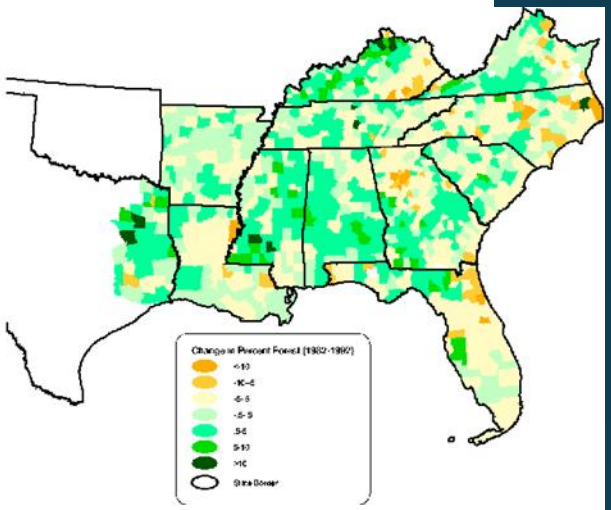

Temperature decline from the 1930s to 1960s was most likely due to reforestation and increased pollution

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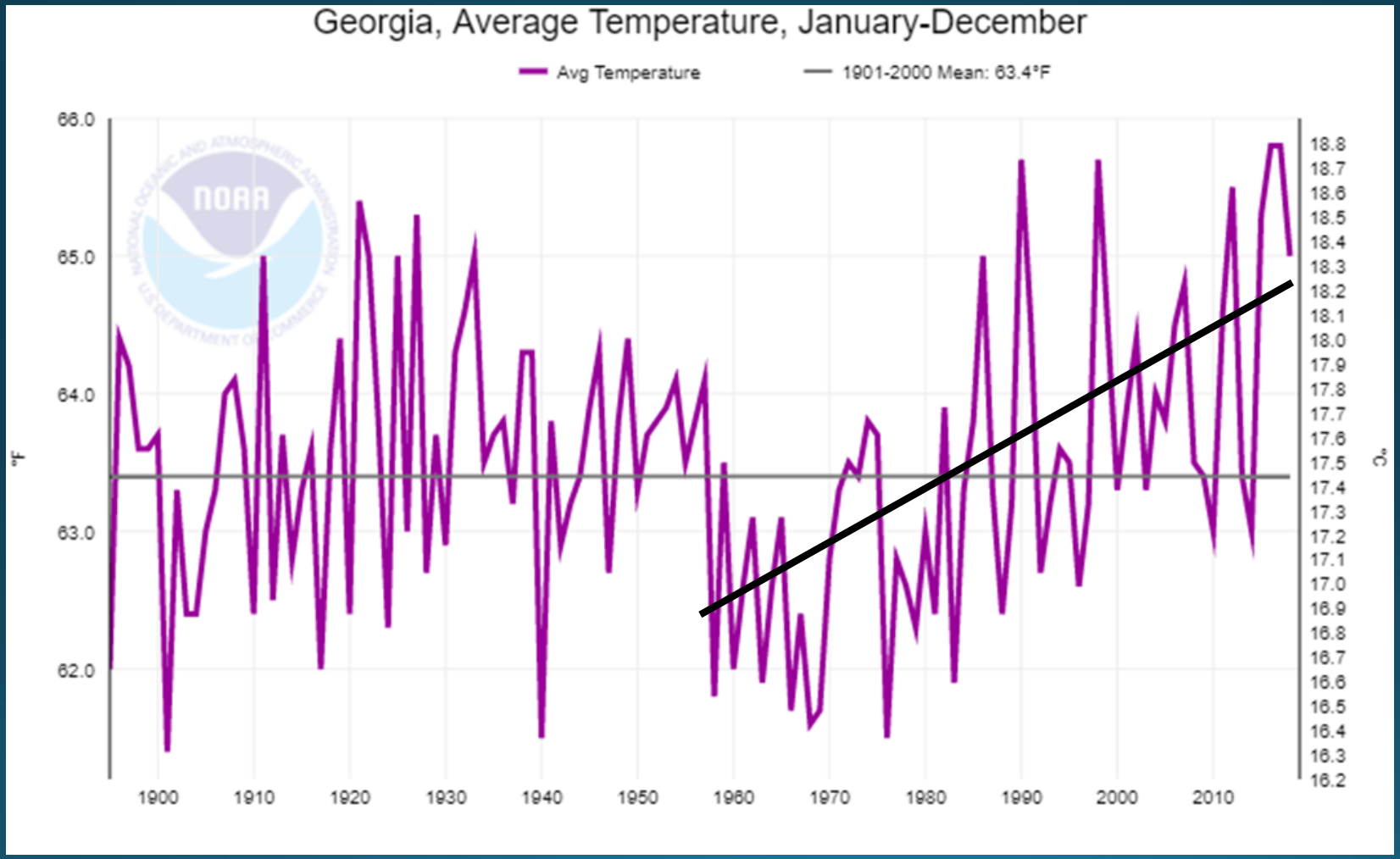
Temperature trend over time



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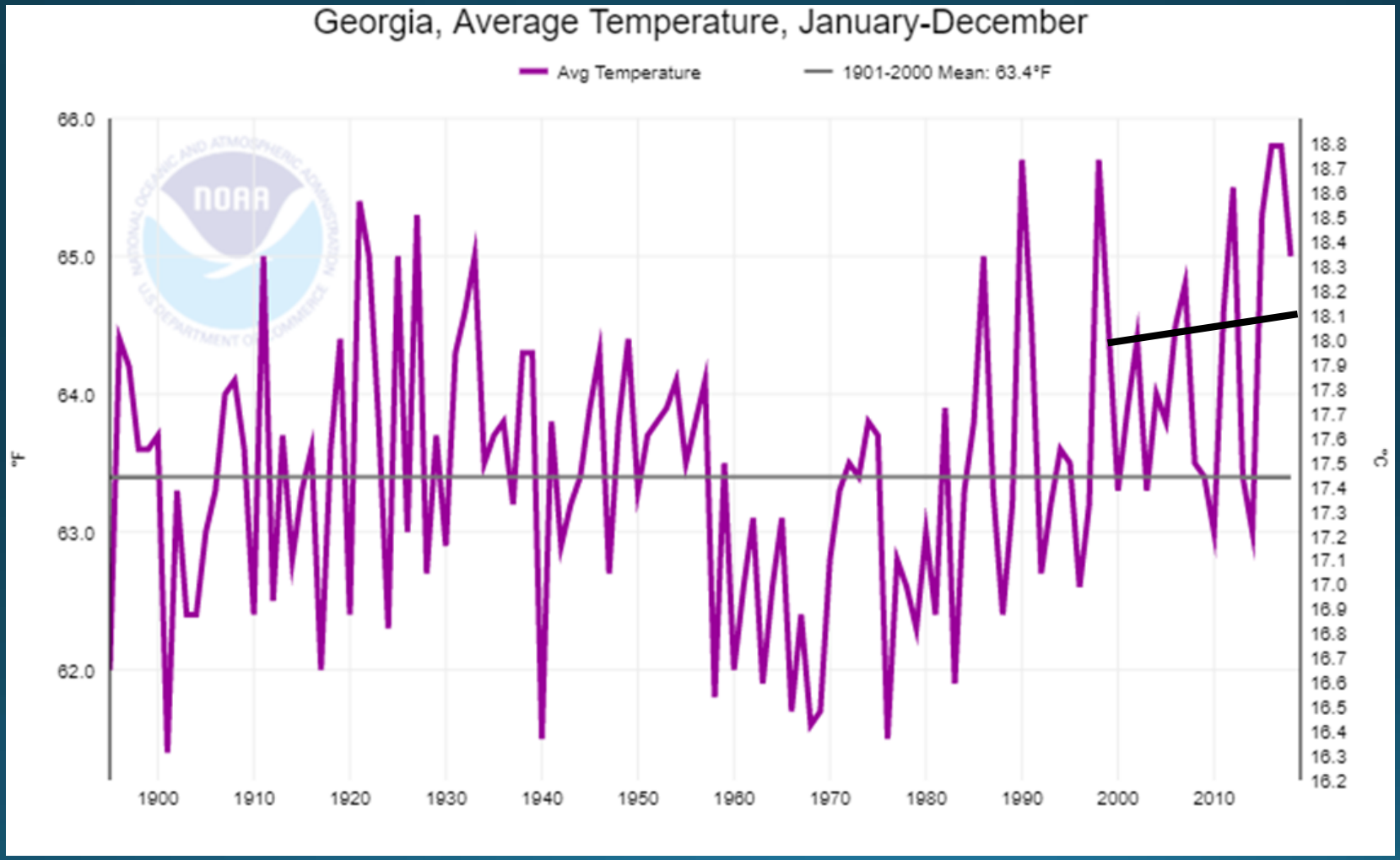

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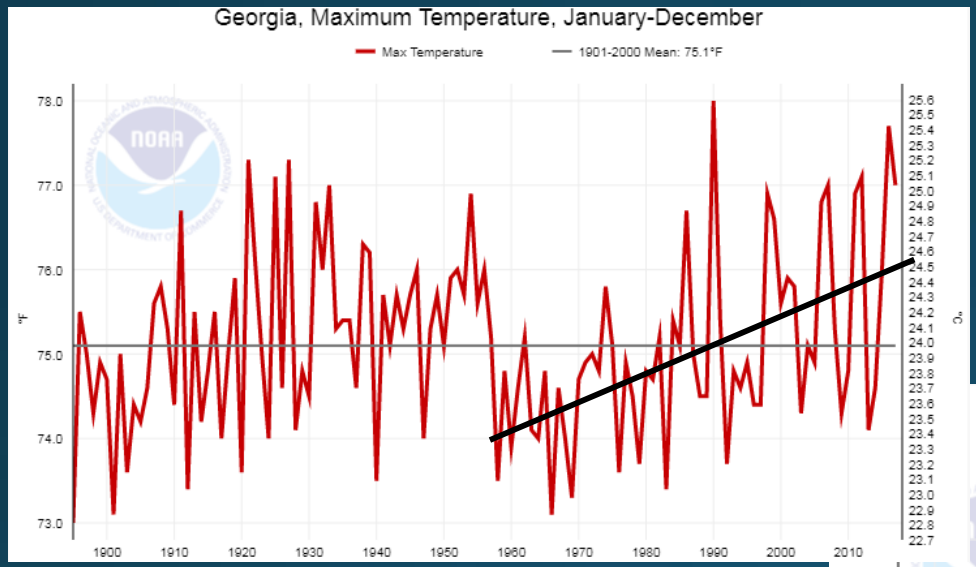
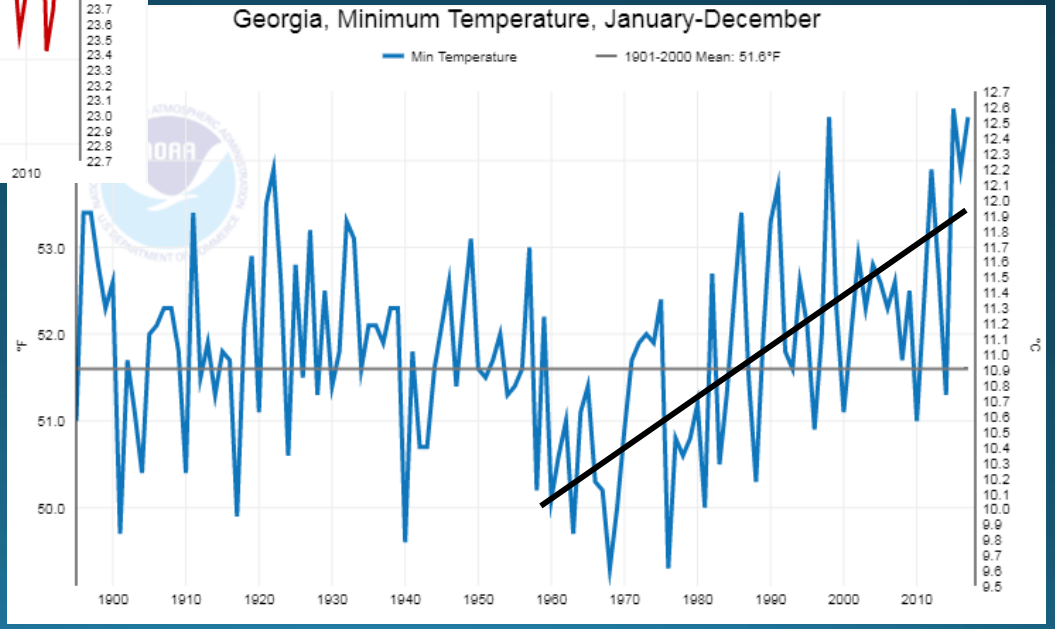
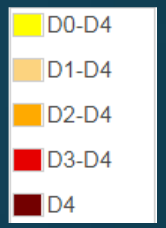


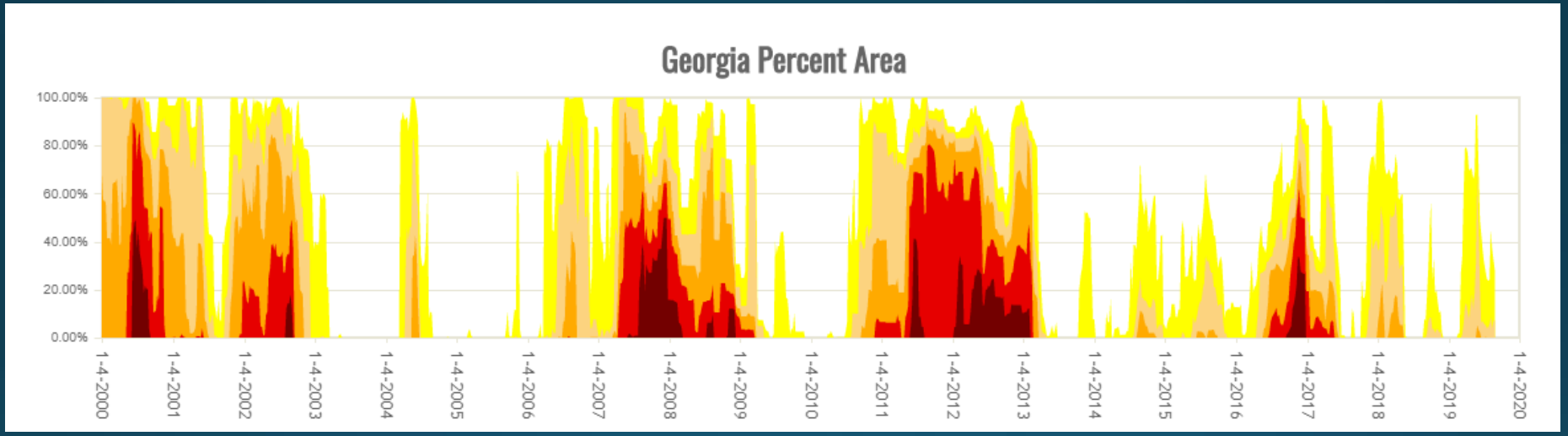
Both daytime and nighttime temperatures have increased since the 1960s, but nighttime temps have increased faster



Minimum temperatures occur near sunrise and are tied to urbanization and to humidity

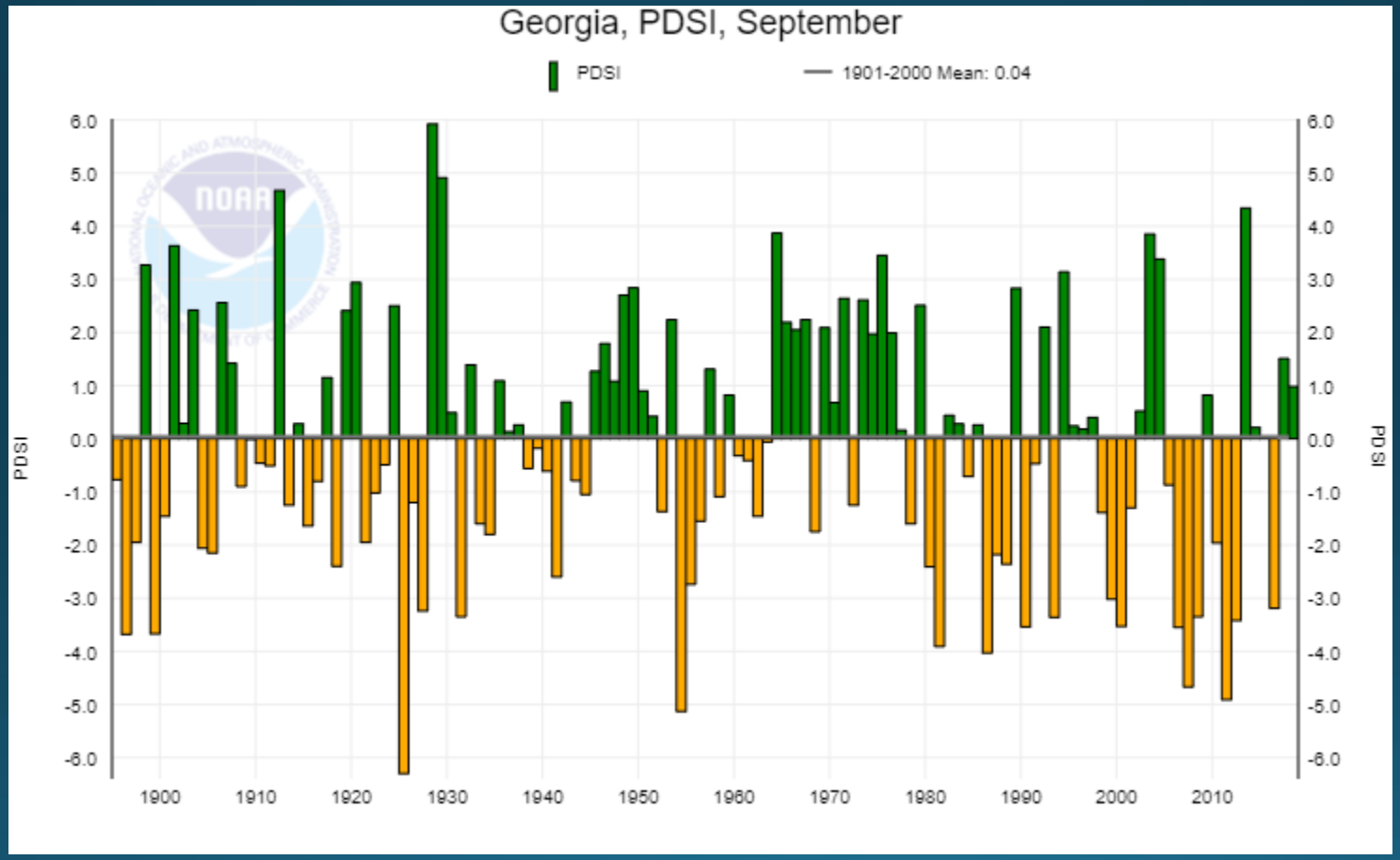
Drought since 2000



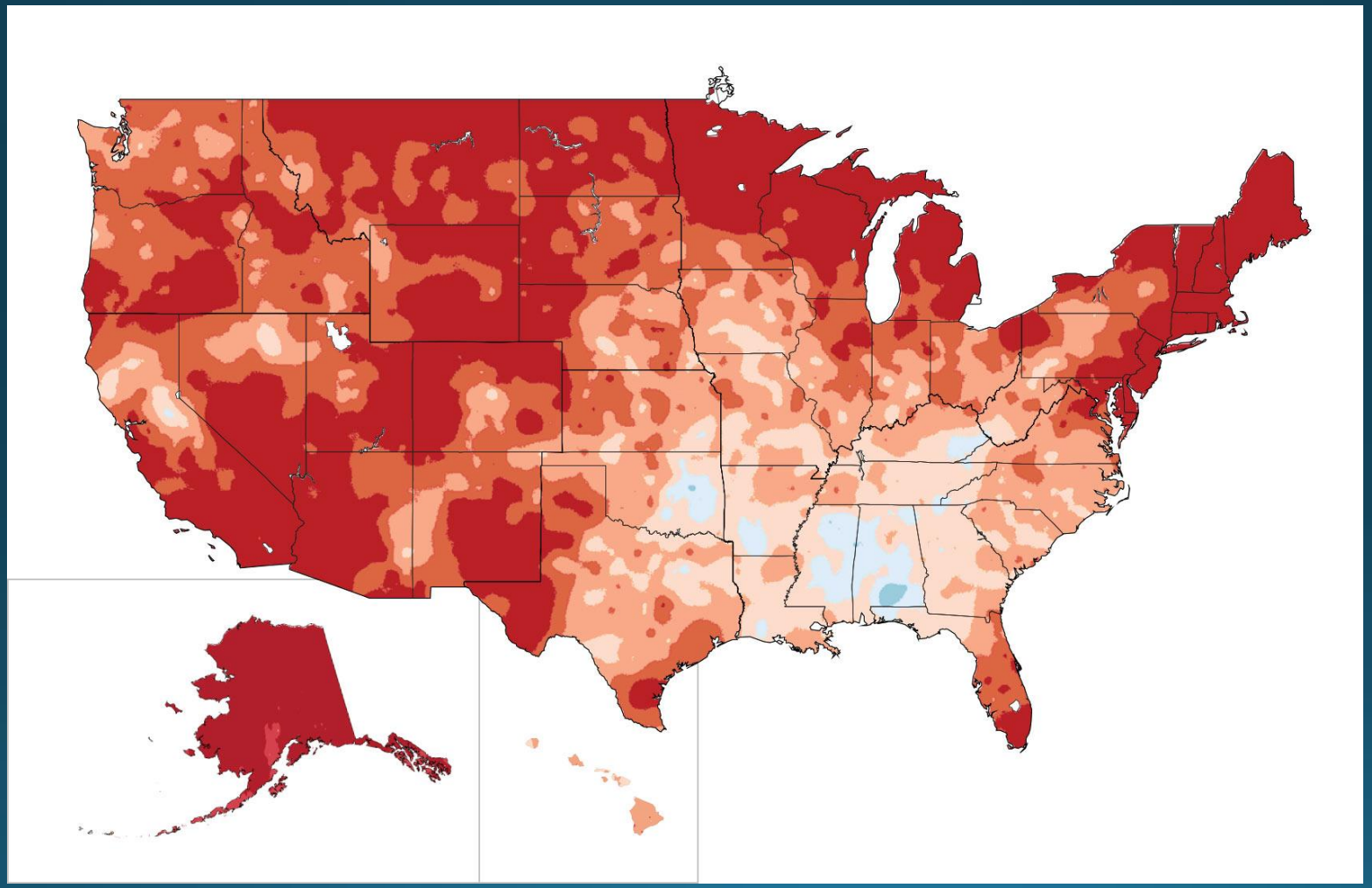


Percent of Georgia in drought from 2000 to present

Drought since 1895

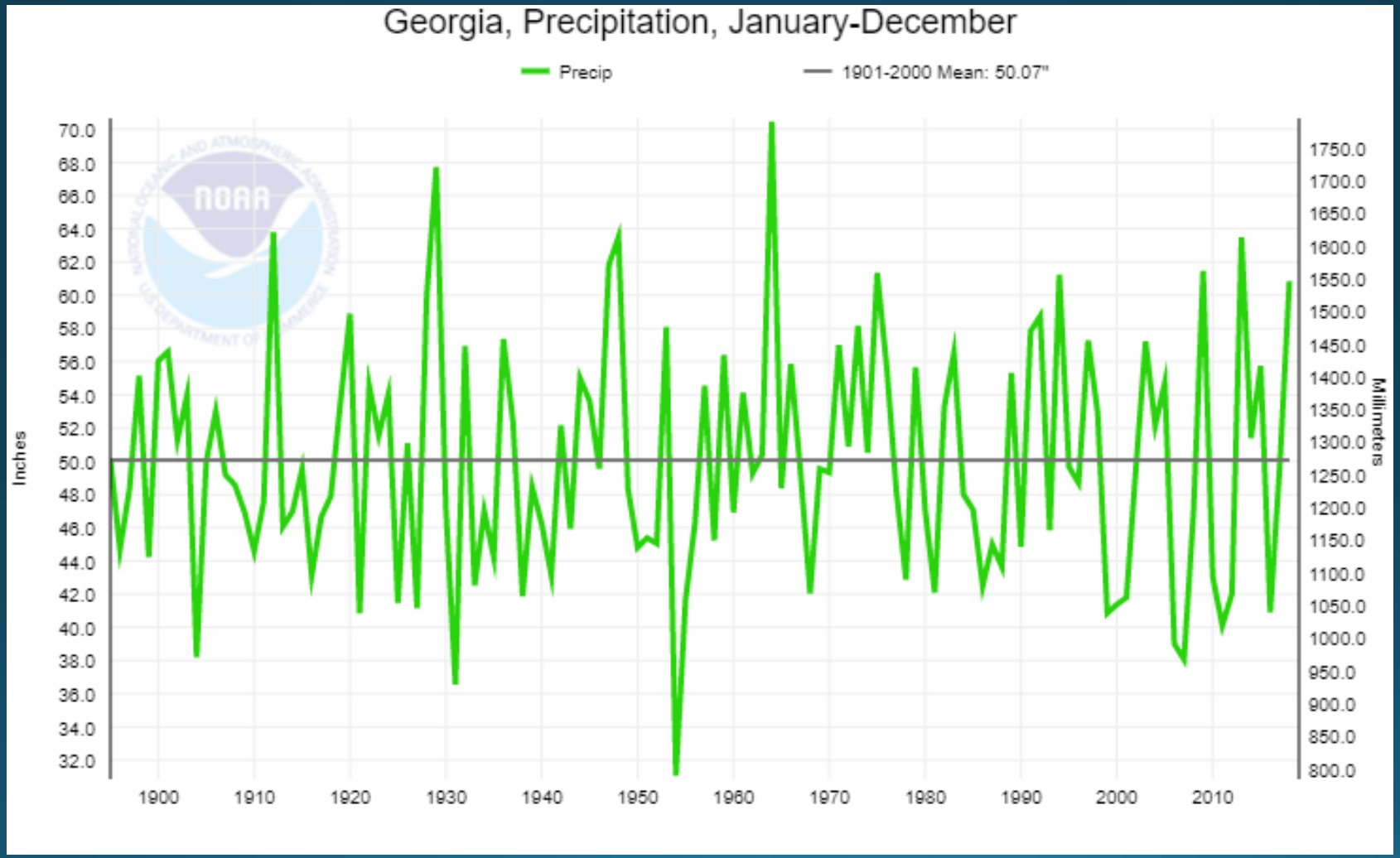


Temperature trends over 100 years



Red=increase over last 100 years, blue=decrease

Precipitation trends over time



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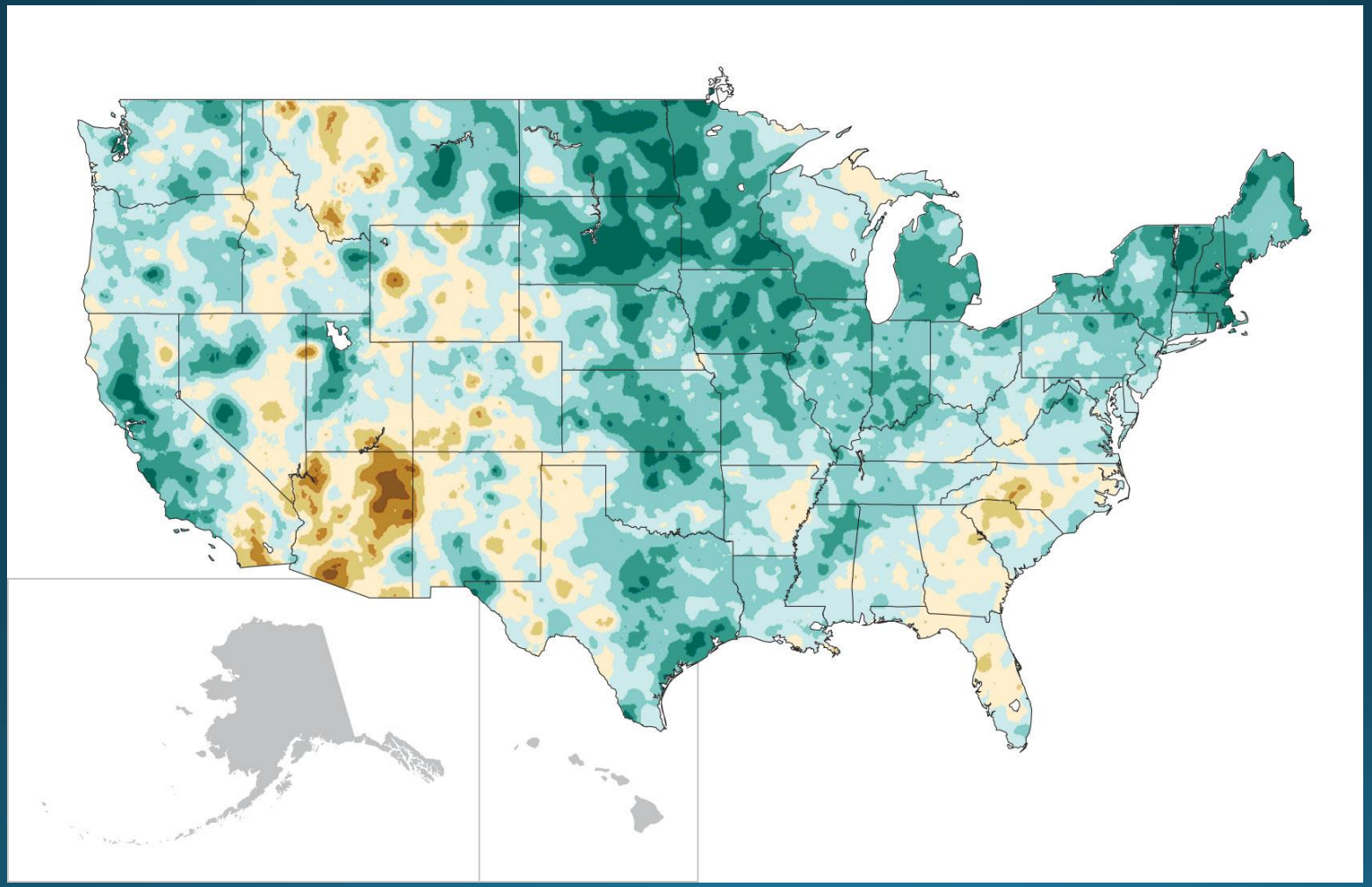
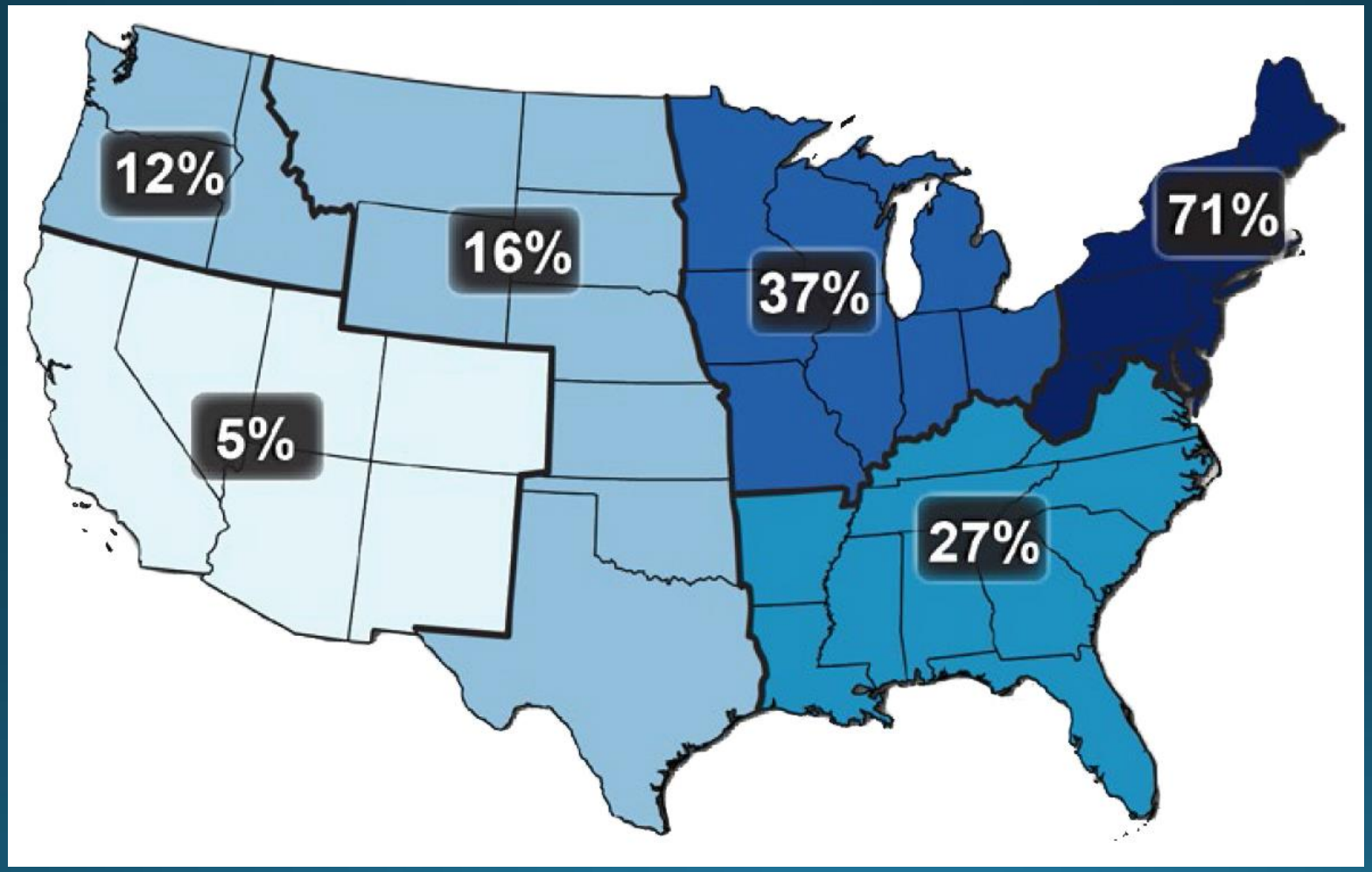
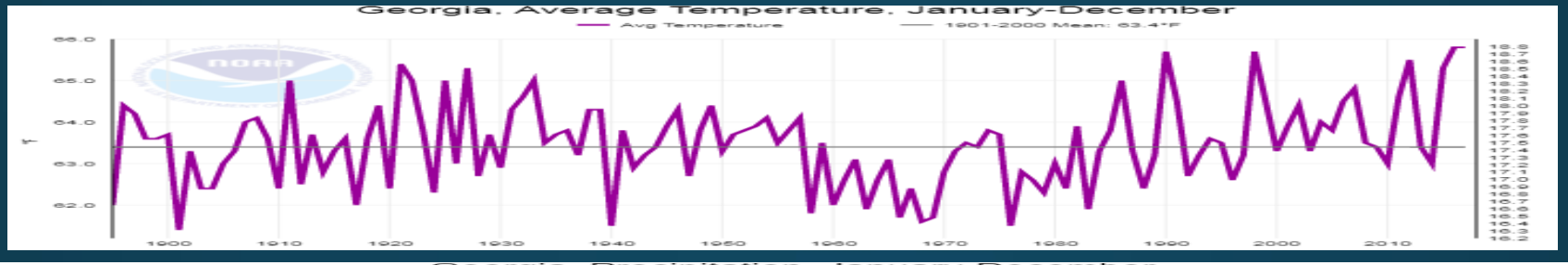


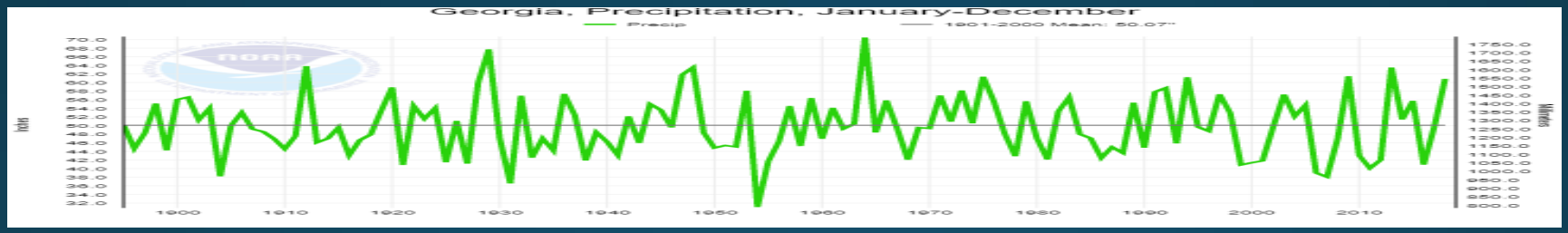
Green=increase in annual rainfall, brown=decrease

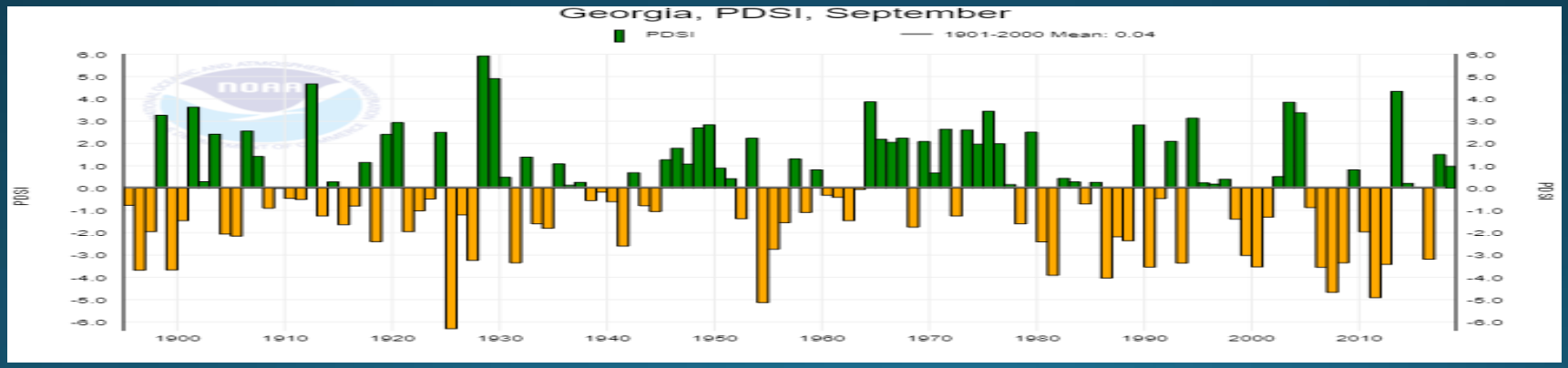
Increase of days with 2" or more



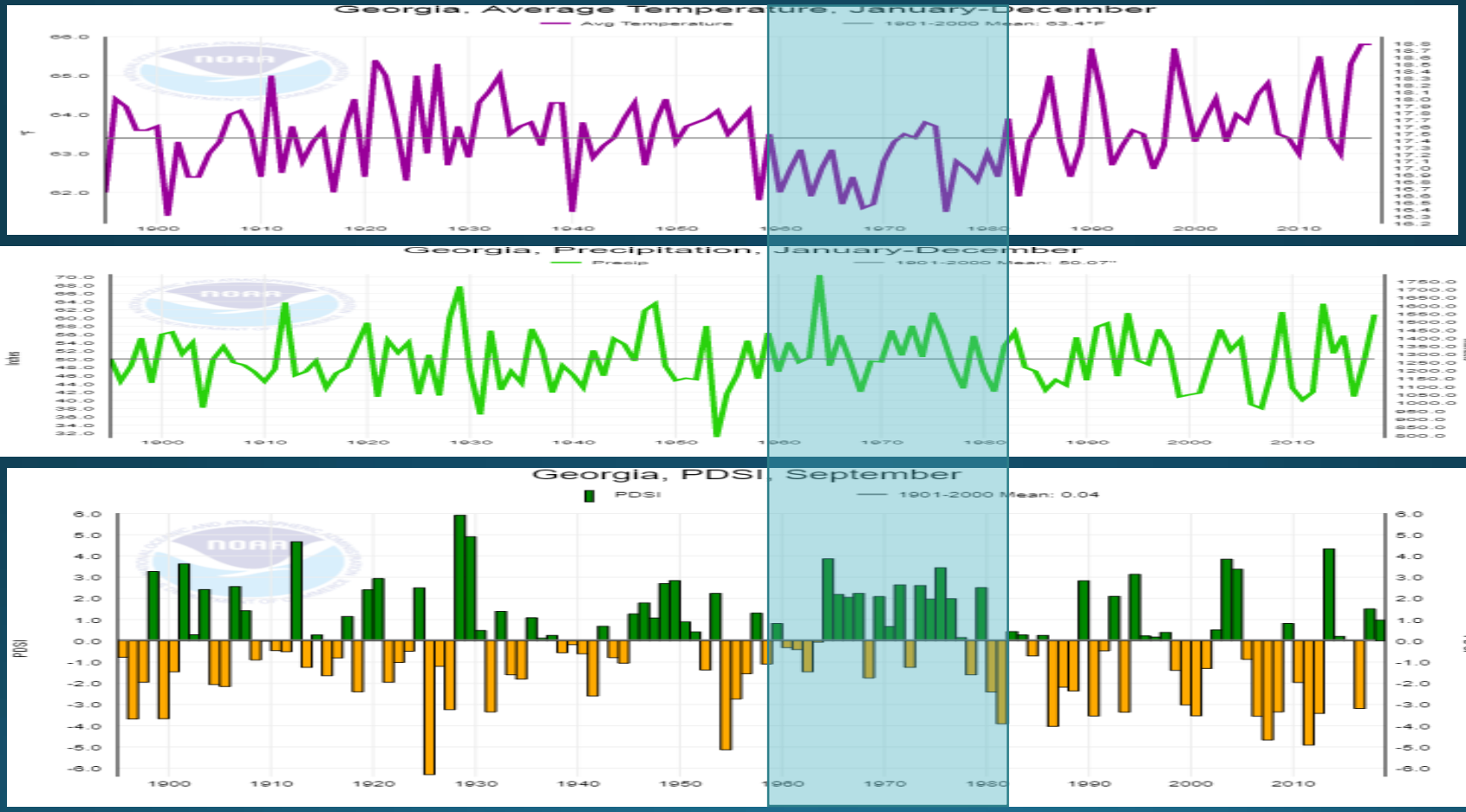
Drought trends over time



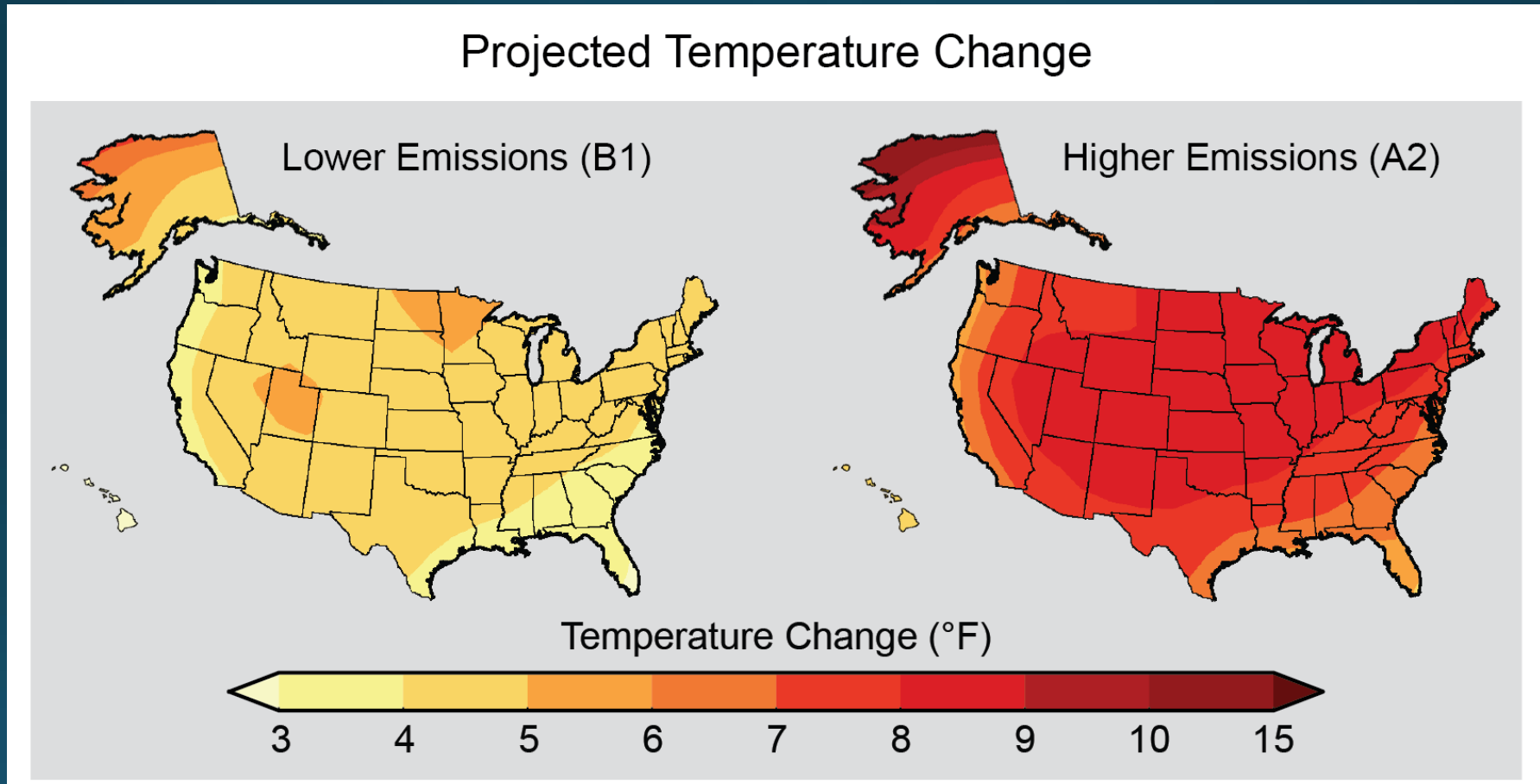




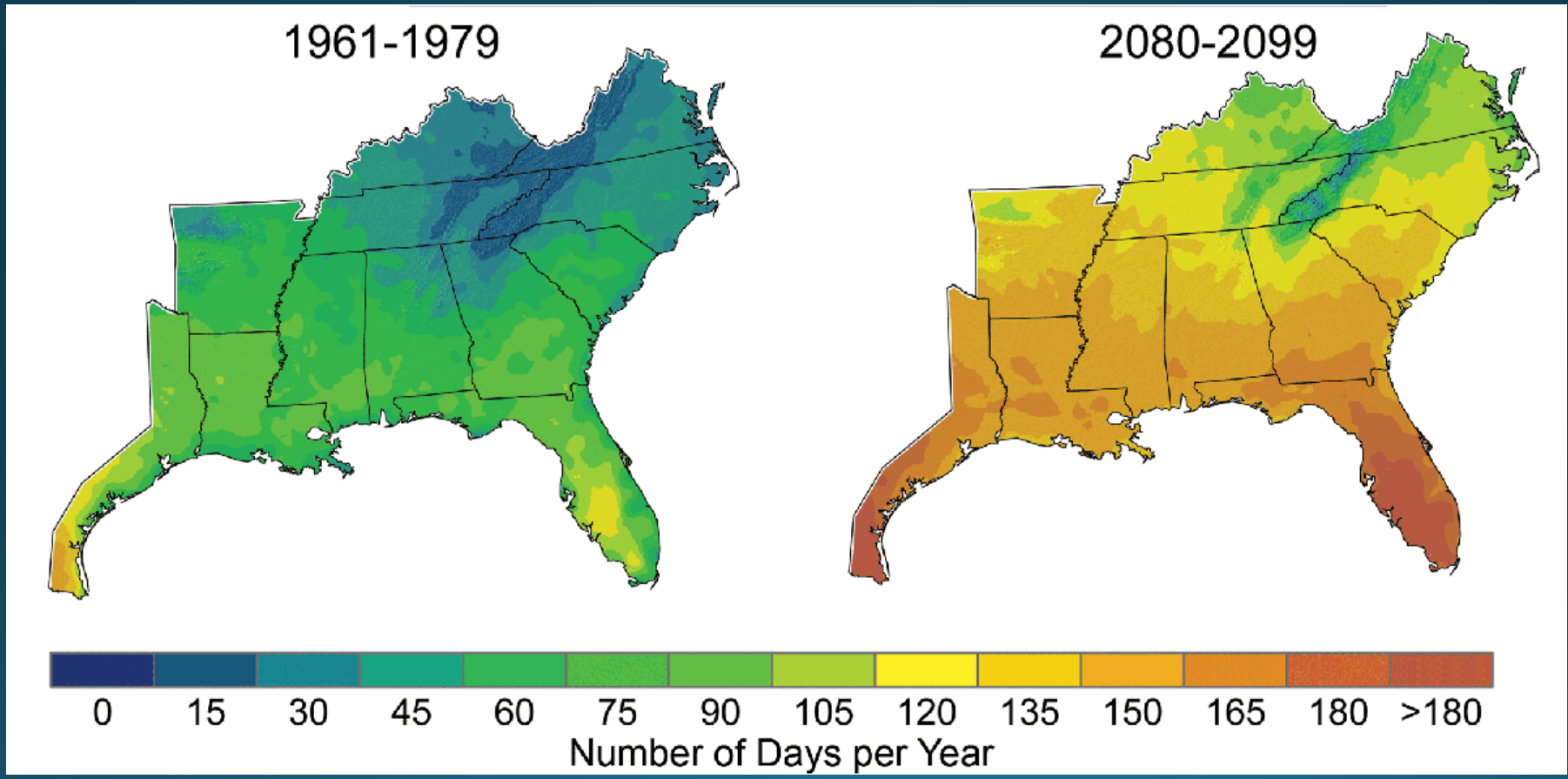
Drought trends over time



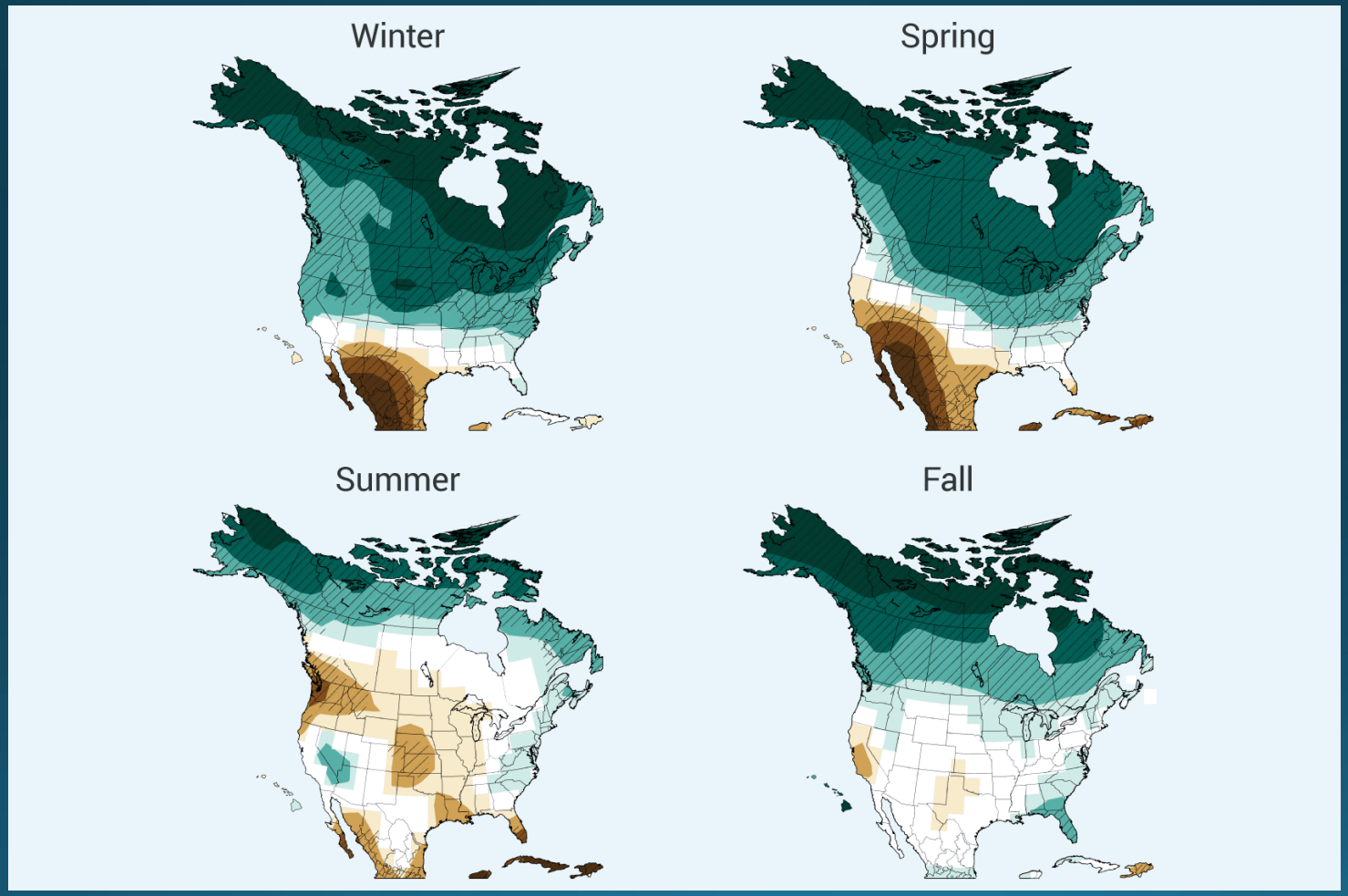
Projected changes in temperature by 2100



Number of days above 90 F by 2100



Seasonal projections of precip by 2100



Hurricanes and extreme weather

- No apparent increase in number of tornadoes so far but season could expand
- Less ice storms and winter weather in Georgia
- Research is not clear on whether there will be more or less hurricanes but the ones that occur are likely to be more extreme due to warm water as fuel—higher winds, slower so more rain

What does this mean for trees and forestry?

- Hotter temperatures could cause more problems for outdoor workers
- More frequent heavy rains may cause problems with erosion, debris flows
- More extreme weather like hurricanes could cause increases in tree damage

The bottom line

- In the next century temperatures will rise 5-10˚F
- Growing season will increase by about 1 week per 1˚F
- Precipitation may increase or decrease but evaporation will rise and more rain will run off, decreasing soil moisture
- Winter storms should decrease but high winds may increase
- Tree species will migrate north over time and we may be able to grow more tropical species in the Southeast
- More competition for forest land from both agriculture and cities

- Climate naturally changes
- Humans are making changes to the land and air that affect our climate too
- Changes in climate will challenge us but can also provide new opportunities

Thank you!

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