

Climate & Health Workshop Series

What the experts predict the climate will be like in LA County in 2050 and 2100

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Environmental Health Division, Room 171

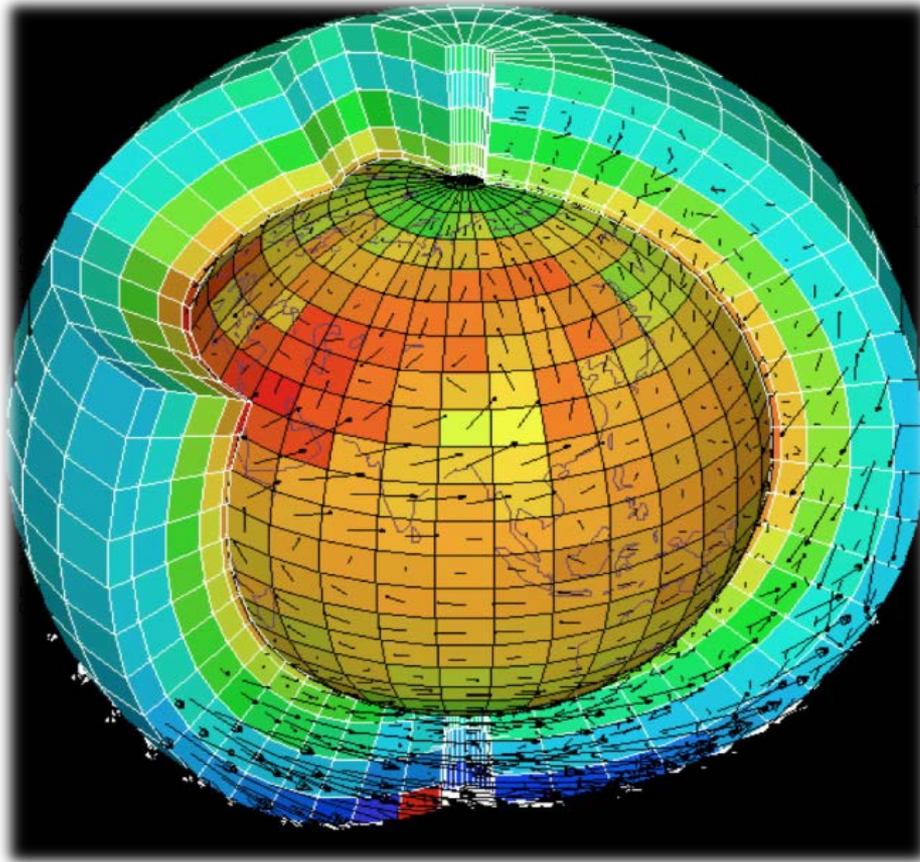
Los Angeles County – Department of Public Health

550 Commerce Drive; Baldwin Park, CA 91706

Learning Objectives

- Explain why downscaling/regional modeling is critical to climate action planning in LA county
- Provide two examples of neighborhoods or cities within LA county that are expected to experience a dramatic increase in the number of extreme heat events by midcentury
- Explain what trends are predicted for wildfires in the Los Angeles basin based on the regional climate modeling that has been conducted to date

Climate scientists use *global climate models* to project future climate



- GCMs are computer models that solve equations representing scientists' best understanding of how the climate system works
- There are more than 30 different GCMs developed at centers around the world
- GCMs can simulate past climate or project future climate
- Scientists can specify greenhouse gas concentrations in a GCM and see how climate responds

But global climate models have limitations when it comes to regional modeling



- The LA region has a complex topography that creates microclimates
- Global climate models are too low in resolution to capture these fine-scale differences



Ventura

**San Fernando
Valley**

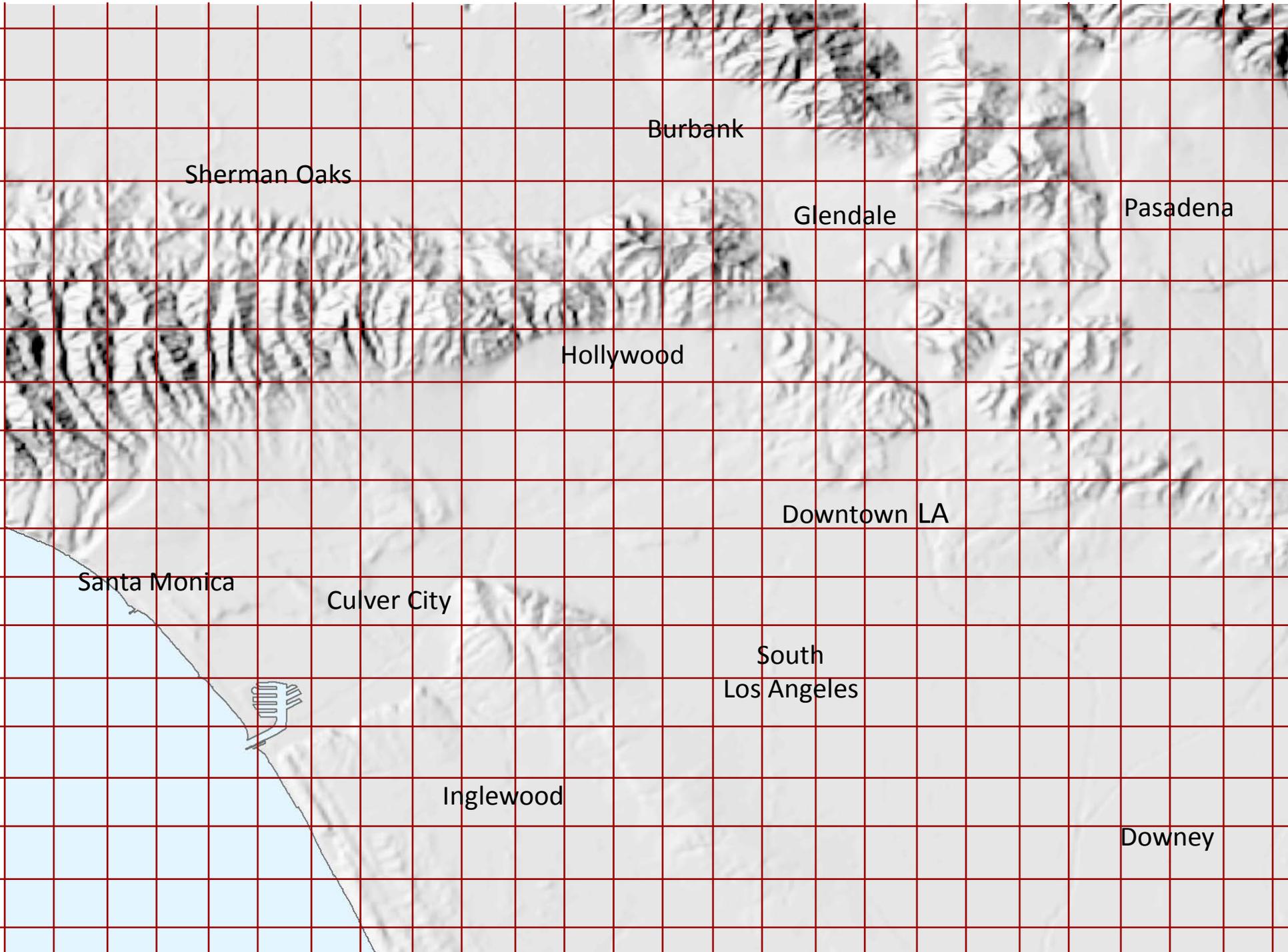
Palmdale

San Bernardino

Santa Monica

Downtown LA

Long Beach



Burbank

Sherman Oaks

Glendale

Pasadena

Hollywood

Downtown LA

Santa Monica

Culver City

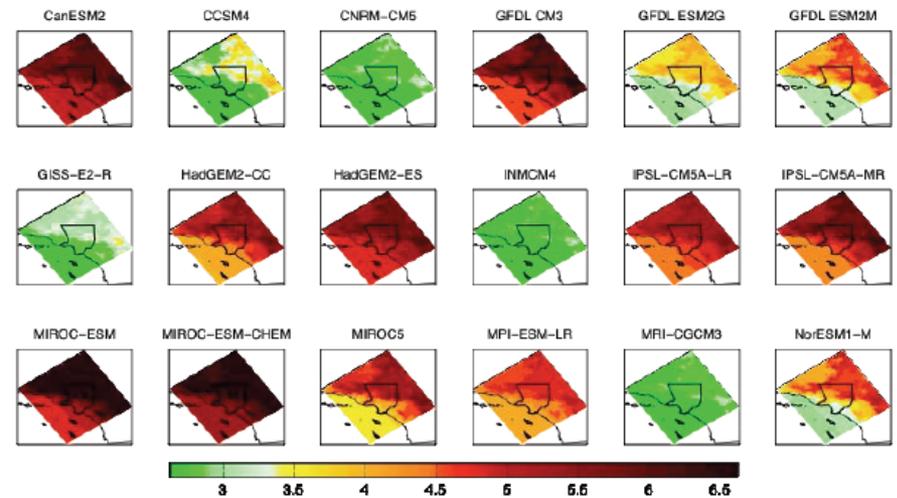
South
Los Angeles

Inglewood

Downey

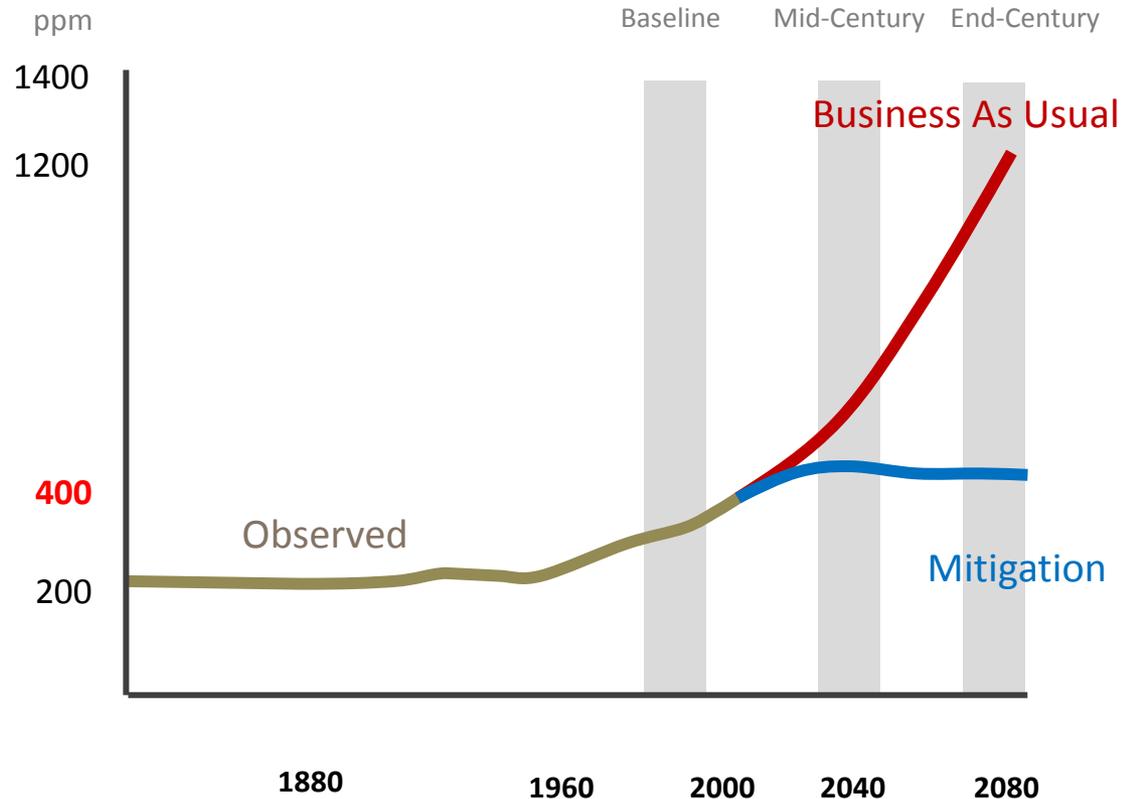
The Climate Change in the Los Angeles Region Project

- Conducted by Alex Hall, PhD, and his research group at UCLA
- Downscaled ~30 GCMs with dynamical and statistical techniques
- Looked at 2 GHG emissions scenarios: “business as usual” and “mitigation”



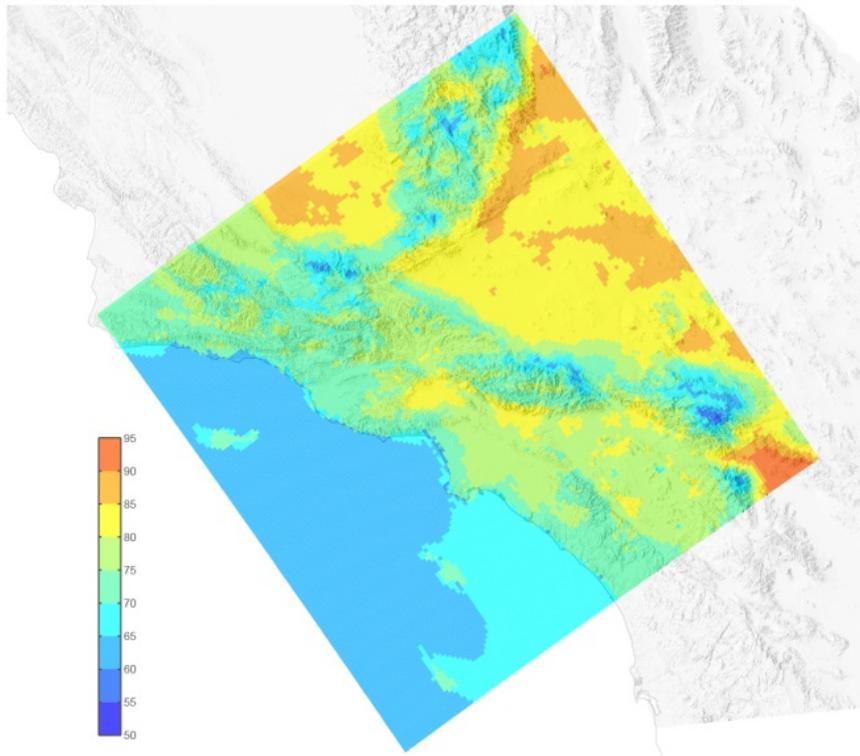
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- Looked at three time periods
 - 1981–2000 (baseline)
 - 2041–2060
 - 2081–2100

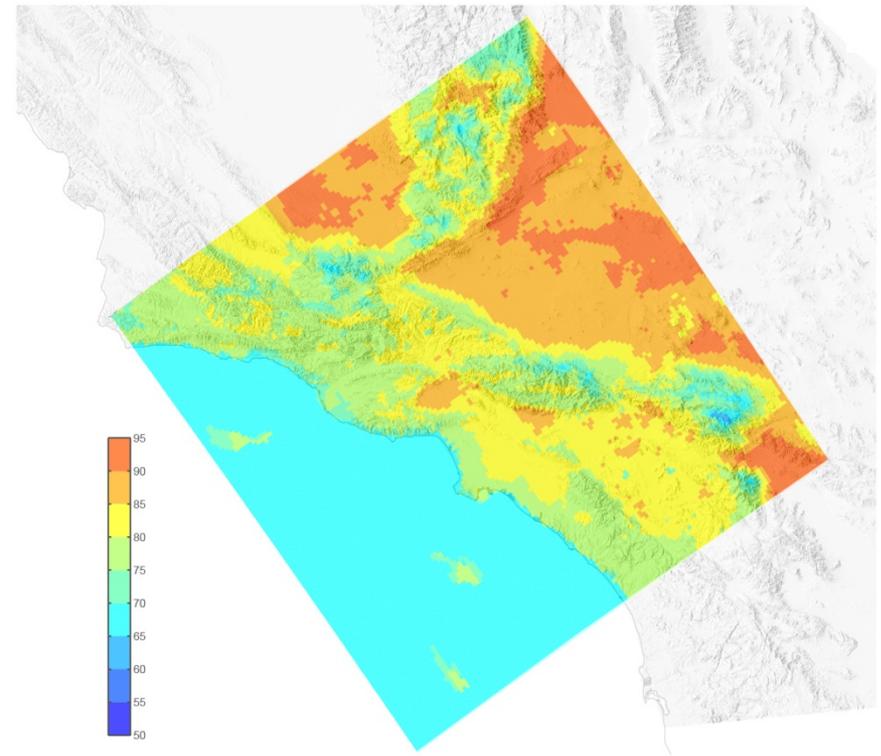


Temperatures will rise across the region, but some areas warm more than others

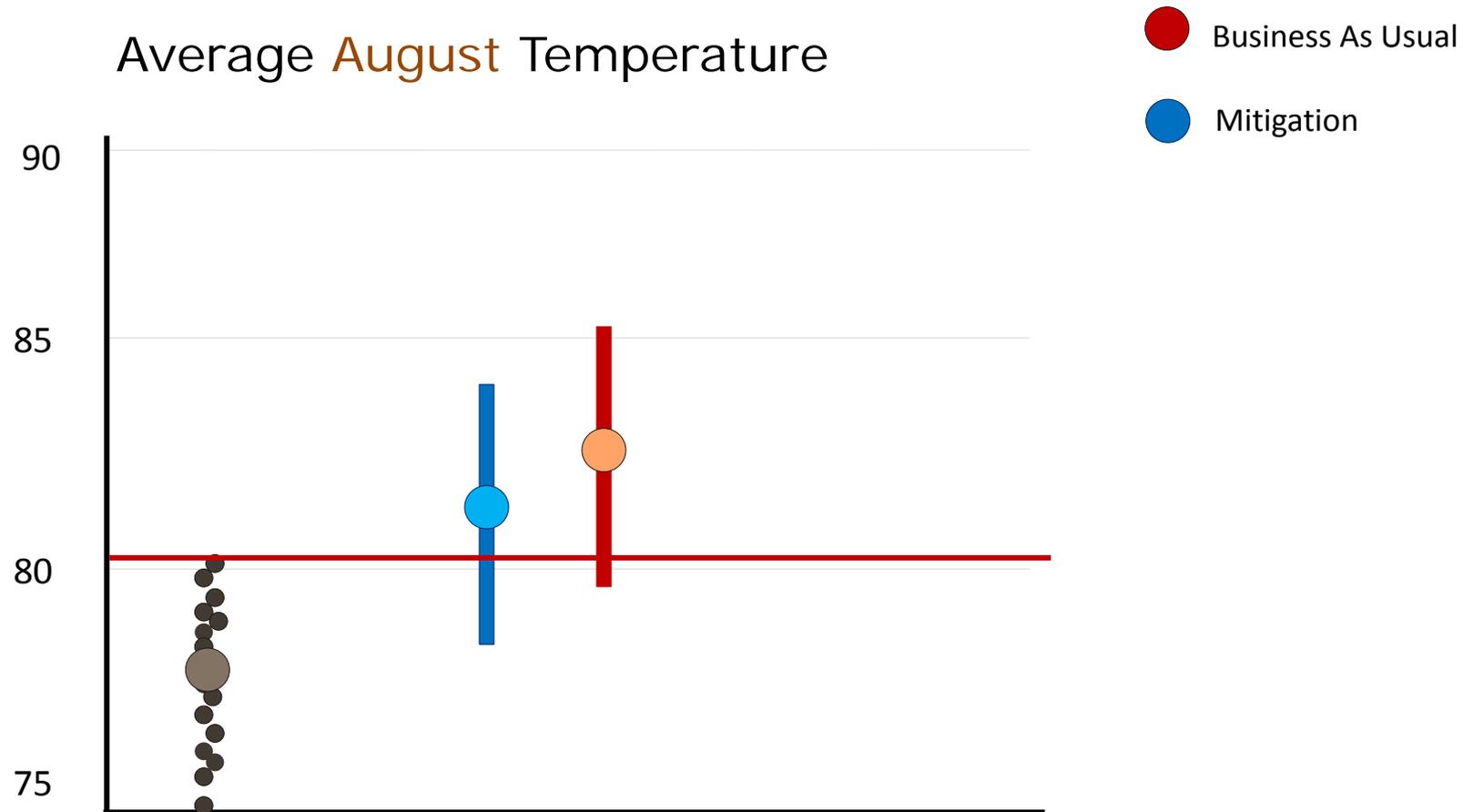
Average August Temperature
1981–2000



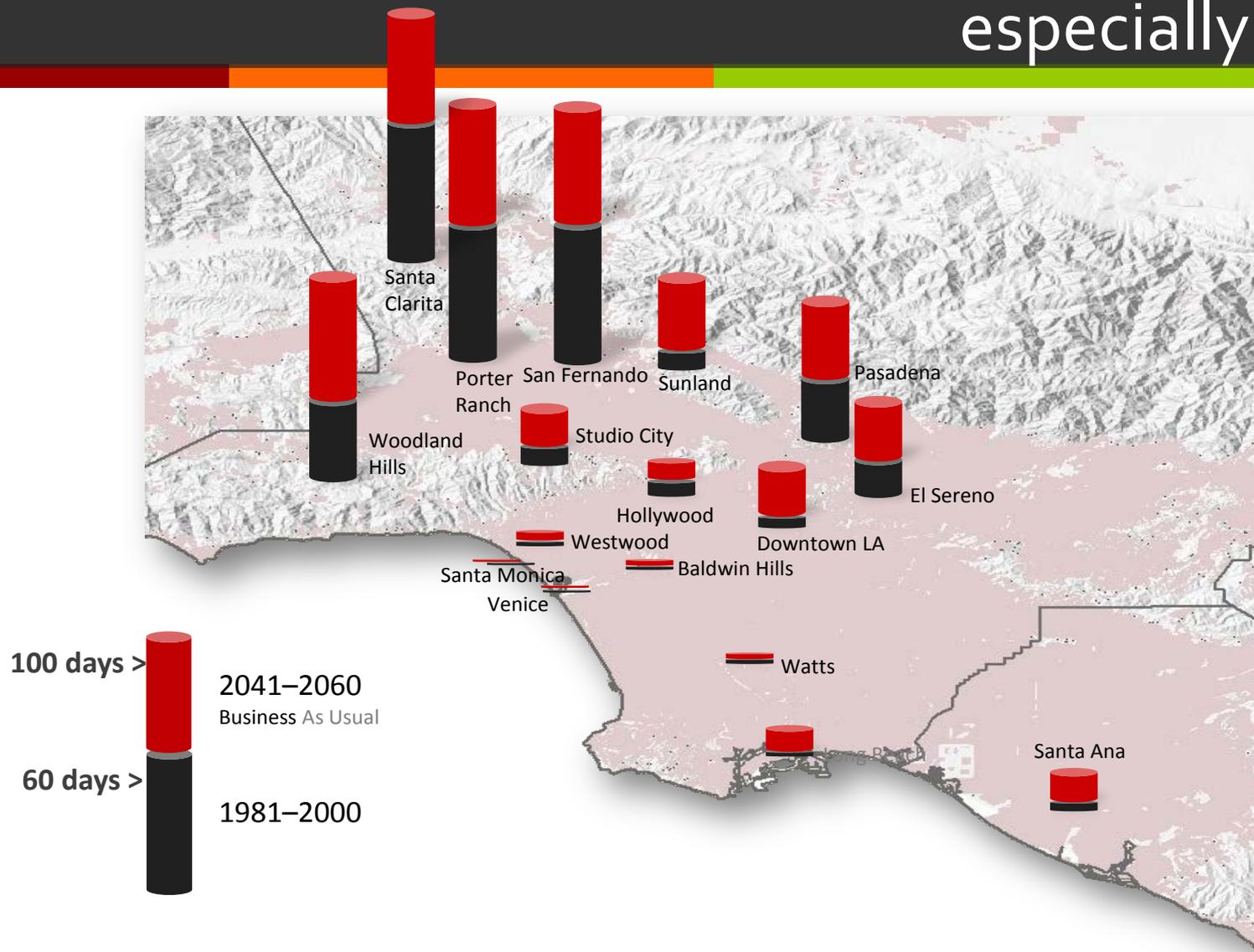
Average August Temperature
2041–2060: **Business As Usual**



At mid-century, significant warming will occur regardless of emissions scenario

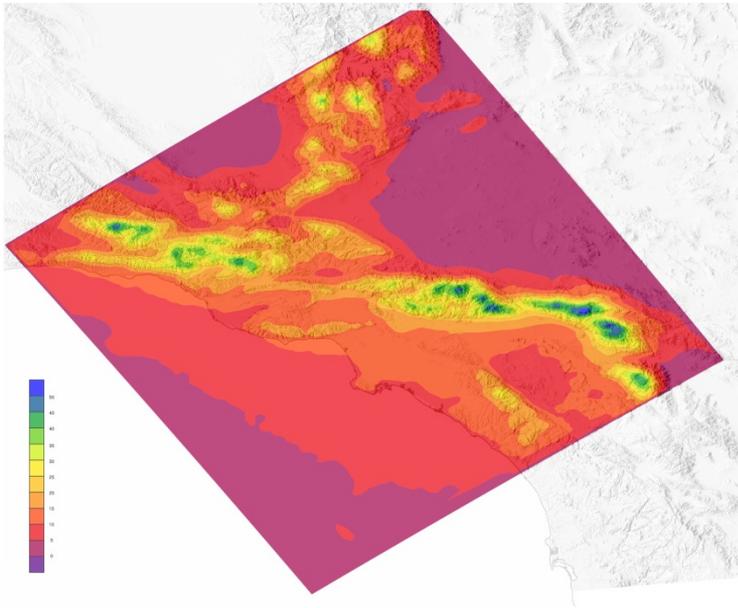


The number of very hot days will increase, especially inland

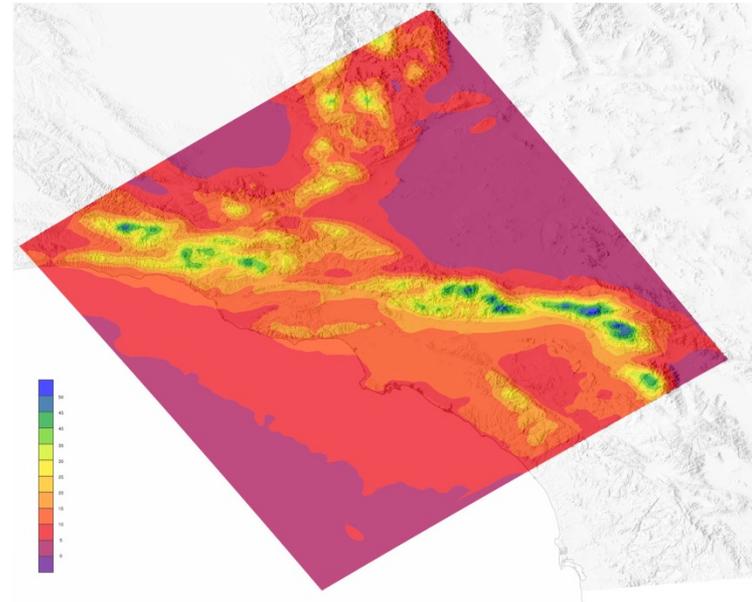


We don't expect precipitation to change much, compared with natural variability

Average Dec–Mar Precipitation
1981–2000



Average Dec–Mar Precipitation
2041–2060: **Business As Usual***



*Results are preliminary

But due to warmer temperatures, more precipitation will fall as rain instead of snow

Baseline Annual Snowfall



But due to warmer temperatures, more precipitation will fall as rain instead of snow

Mid-Century

Business As Usual



But due to warmer temperatures, more precipitation will fall as rain instead of snow

Mid-Century

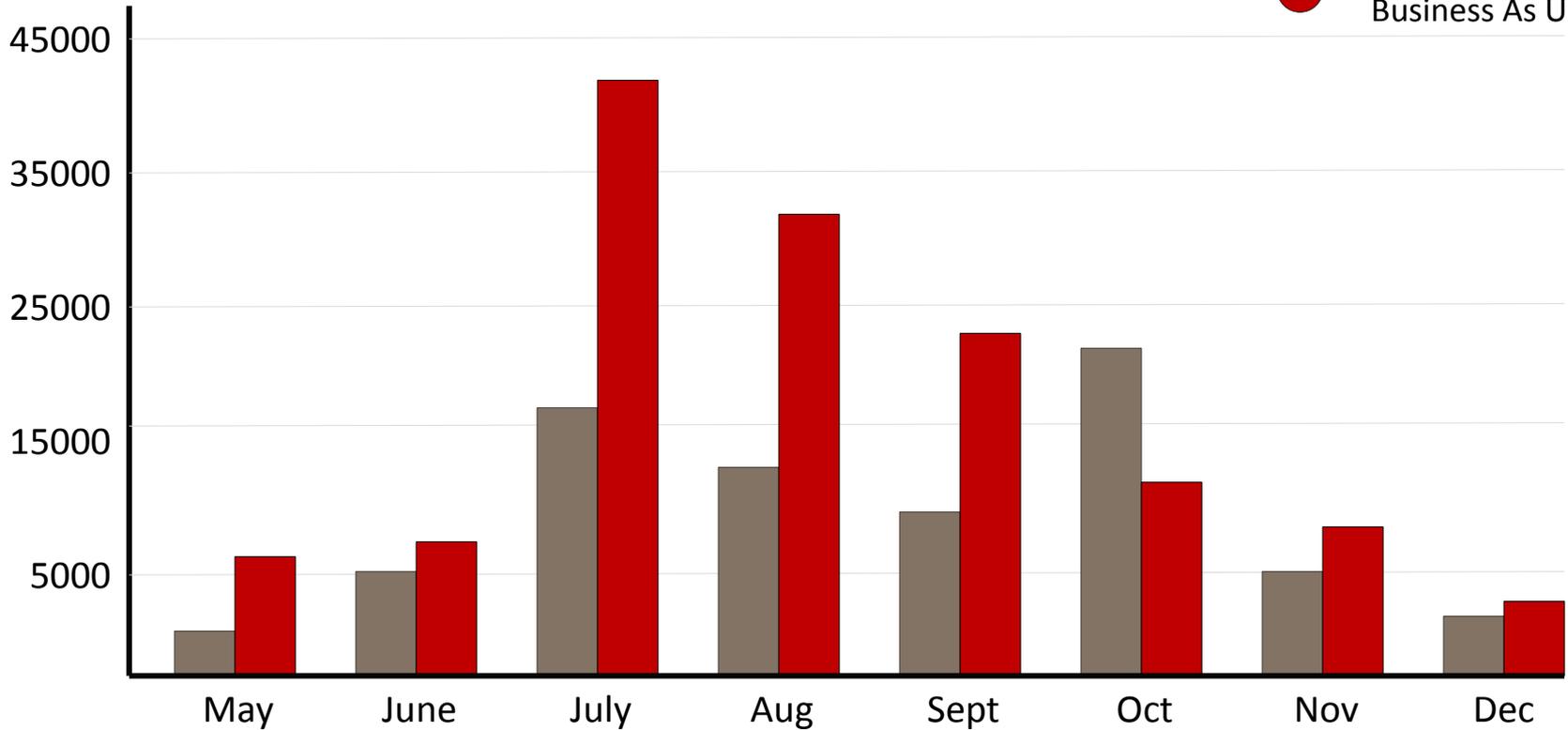
Mitigation



Hotter summer temperatures will mean more summer wildfires

Acres Burned by Wildfires*

- 1981–2000
- 2041–2060 Business As Usual

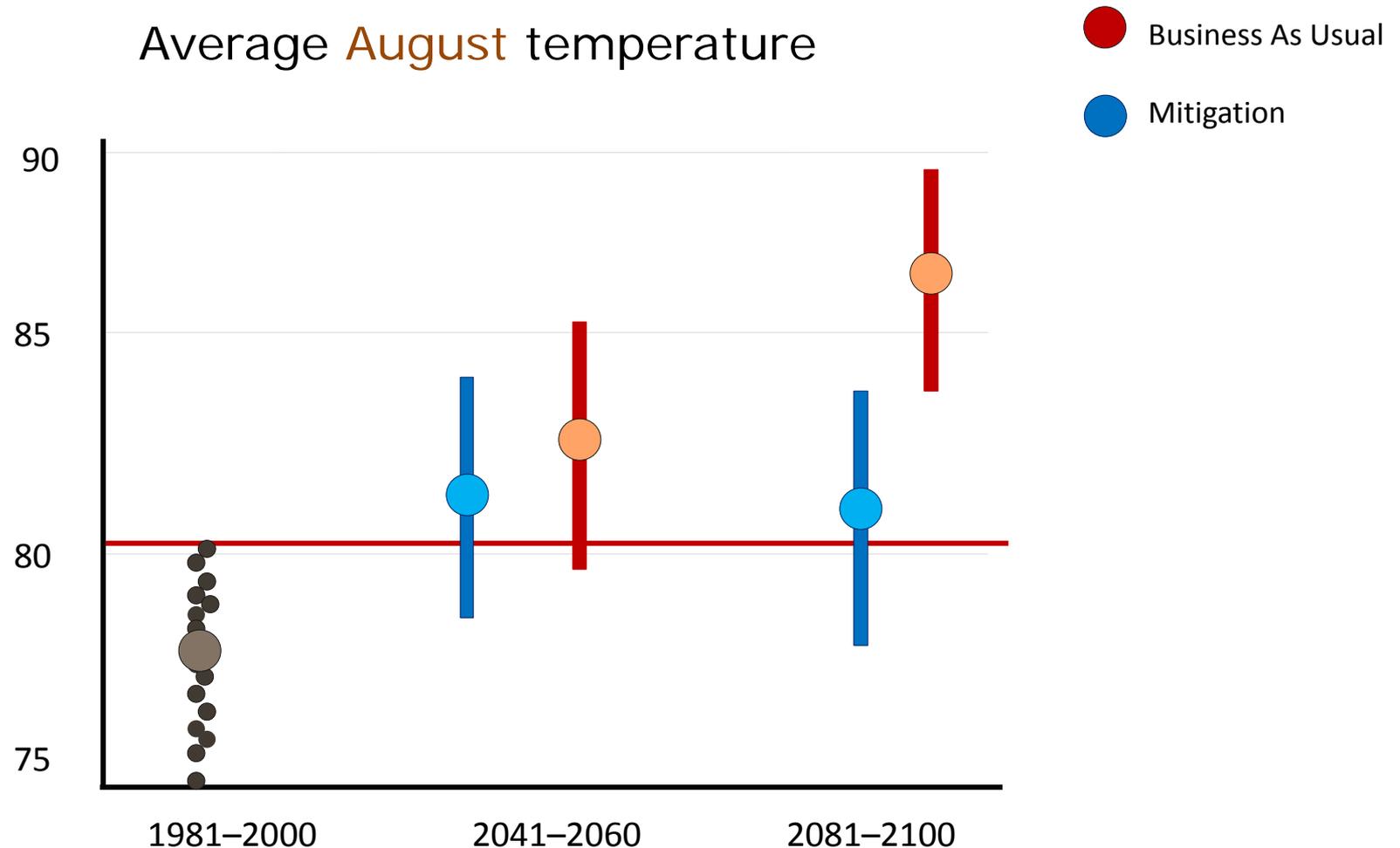


*Preliminary results from fire study conducted in collaboration with Yufang Jin and Jim Randerson at UC Irvine

What do the mid-century findings mean for LA?

- Average temperatures are likely to rise 4.6 degrees across the region by mid-century under business as usual.
- Hotter temps lead to more summertime fires and greater area burned overall.
- The number of extreme heat days will increase.
- About 70% of changes we see in business-as-usual also occur in mitigation scenario, meaning significant climate change is inevitable and we need to adapt to it.
- Inland areas see greater warming and more extreme heat days than areas in the basin or at the coast.
- More winter precip will fall as rain instead of snow. This could lead to greater runoff and increased flooding.
- But is adaptation enough?

End-century results show that mitigation can prevent further change



For more information



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SIERRA NEVADA SNOWPACK

GROUNDBREAKING SCIENCE

ABOUT THE AUTHORS

THE COMMUNITIES OF LA?



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DR. ALEX HALL, LEAD UCLA RESEARCHER:

When you tack on warming of 5 - 6°F, that's a noticeable difference. If humans are noticing it, so are plants, animals & ecosystems. Our home will be fundamentally different than they are now.

For many people, climate change still feels too abstract and faraway; This makes it more real. It's eye-opening to see how much it will warm where you live. Armed with this information I'm very optimistic that we can confront and adapt to a changing climate.