

What Climate Change Means for LA

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Global to Local

- Global climate models (GCMs) are the best tools we have to project future climate.
- The Intergovernmental Panel on Climate Change Assessment (IPCC) reports are based on GCM projections of climate change on a global scale. For example, they tell us about:
 - Change in global mean surface air temperature
 - Change in global snow cover and sea ice extent
 - Changes in the global water cycle
- Projections of change for the globe or for large regions are useful for understanding the overall scale of human influence on the climate system.
- But they don't tell us much about how people and ecosystems in particular places will experience climate change.
- For that, we need more detailed projections that “zoom in” on specific regions.



Ventura

**San Fernando
Valley**

Palmdale

Santa Monica

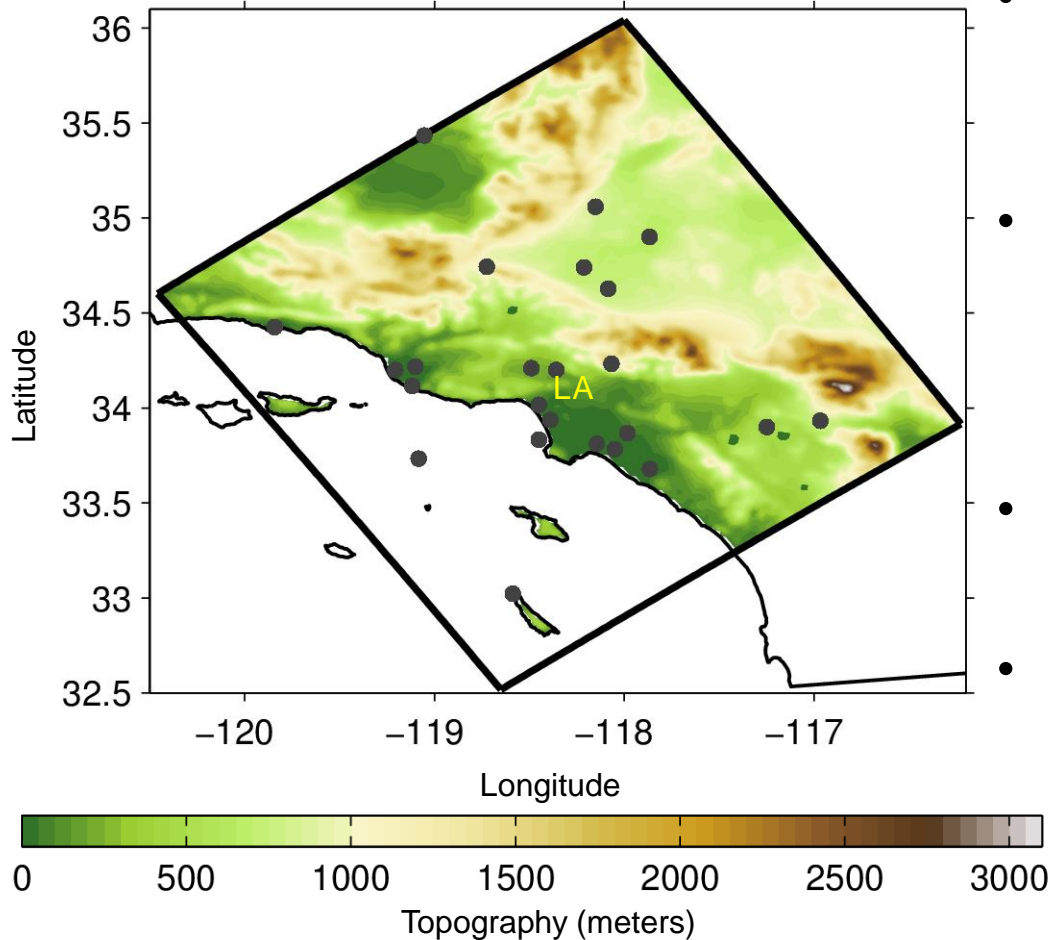
Downtown LA

Long Beach

San Bernardino



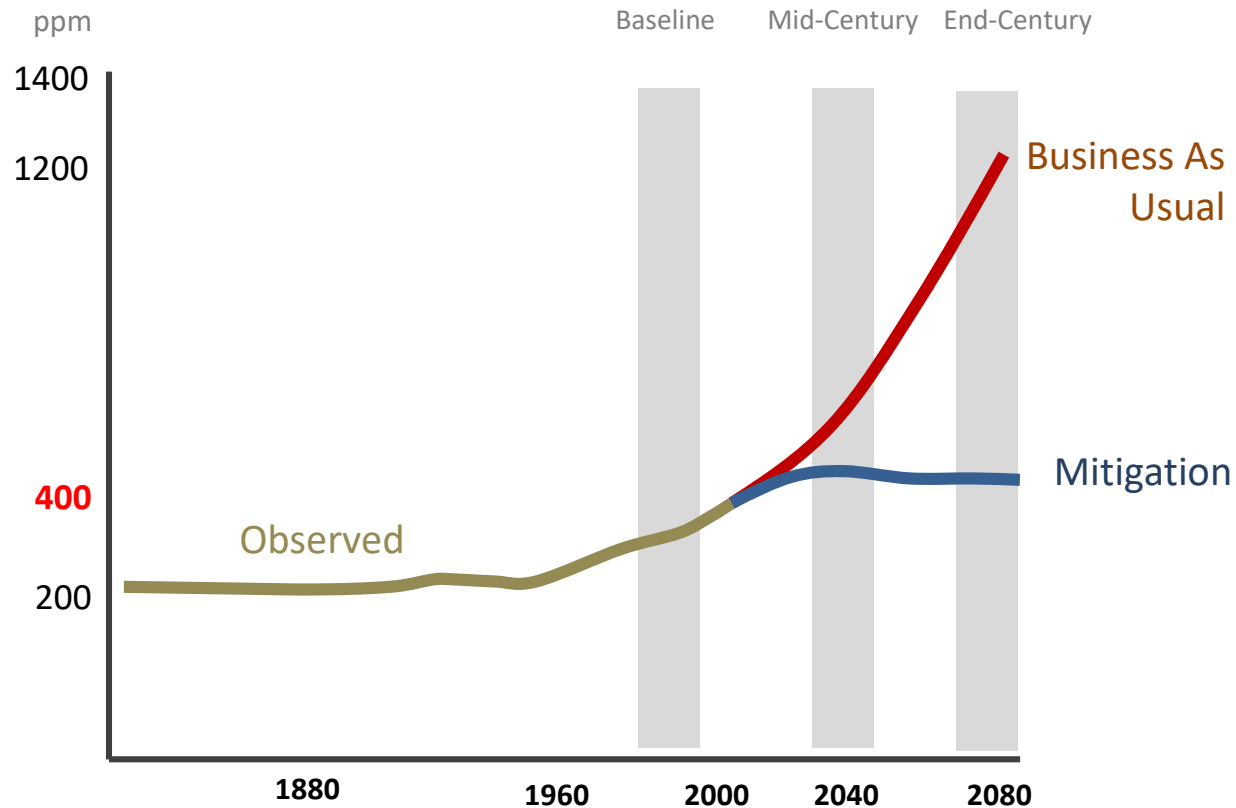
The “Climate Change in the Los Angeles Region” project



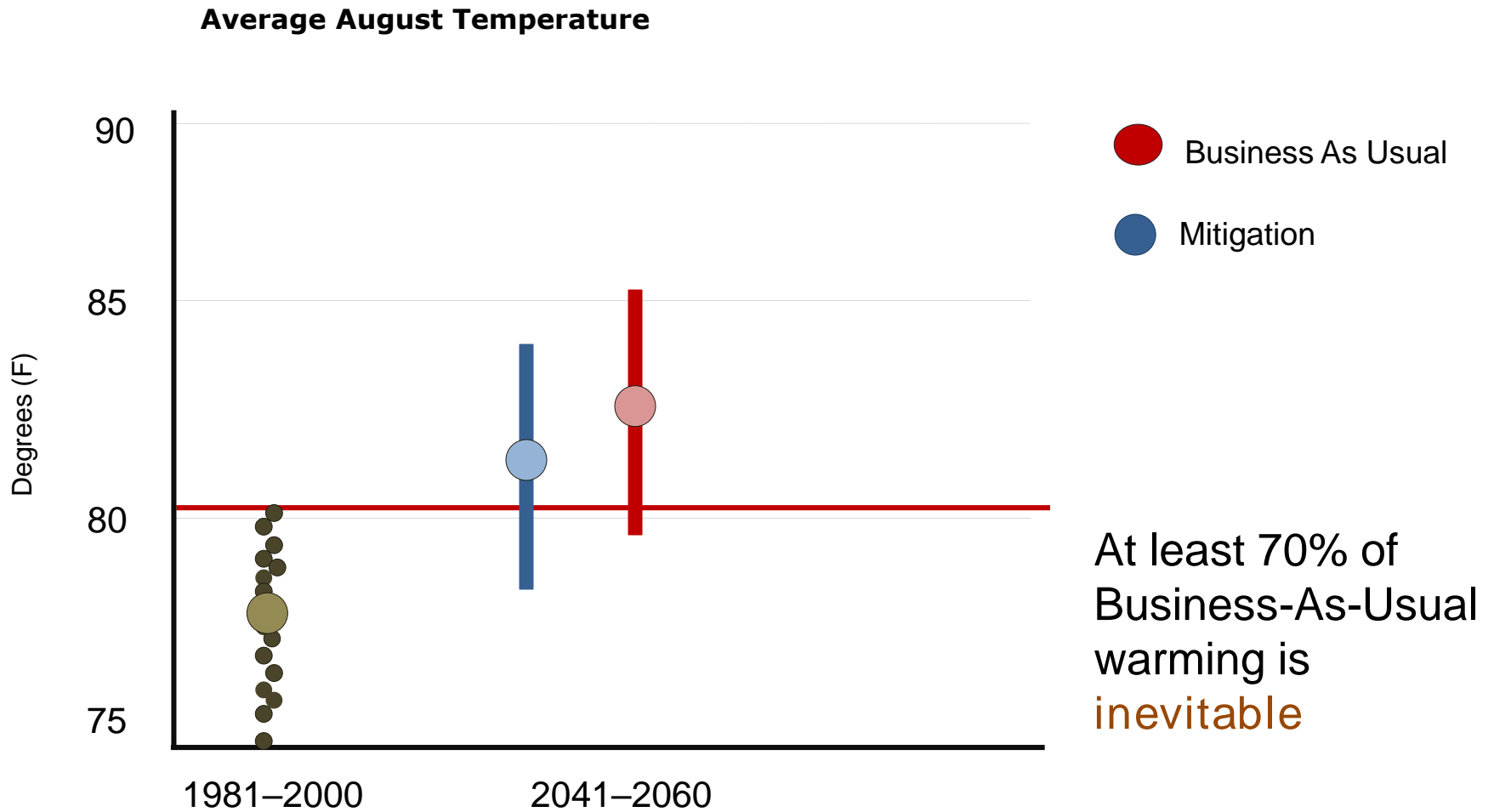
- At UCLA, we recently completed a high-resolution regional climate modeling project over LA.
- We developed methods to **downscale** GCM information to a 2-km, or “neighborhood” resolution.
- We downscaled 30+ GCMs over the greater Los Angeles region.
- We looked at several aspects of climate, including temperature, precipitation, snowfall, and wildfire.

The “Climate Change in the Los Angeles Region” project

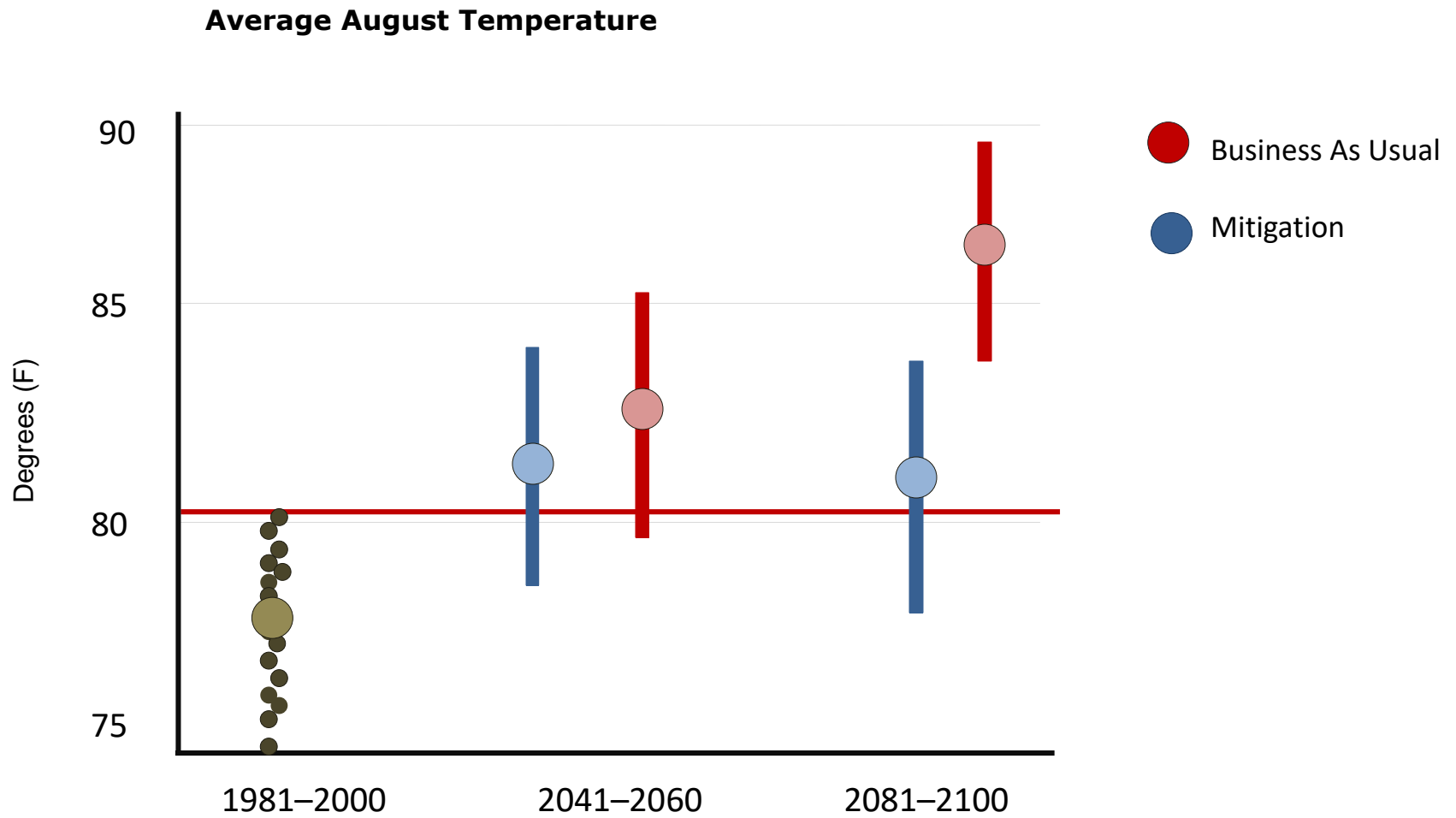
- We looked at two scenarios of greenhouse gas concentrations...
- ...and three time periods.
- The next slides show what we found.



Higher average temperatures

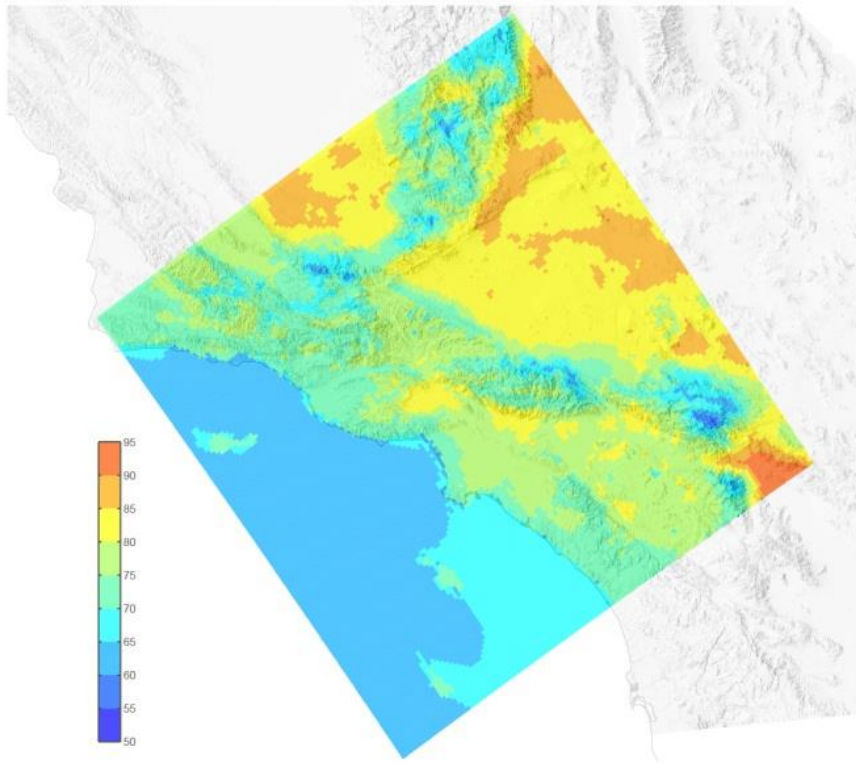


Large difference in outcomes at end-of-century

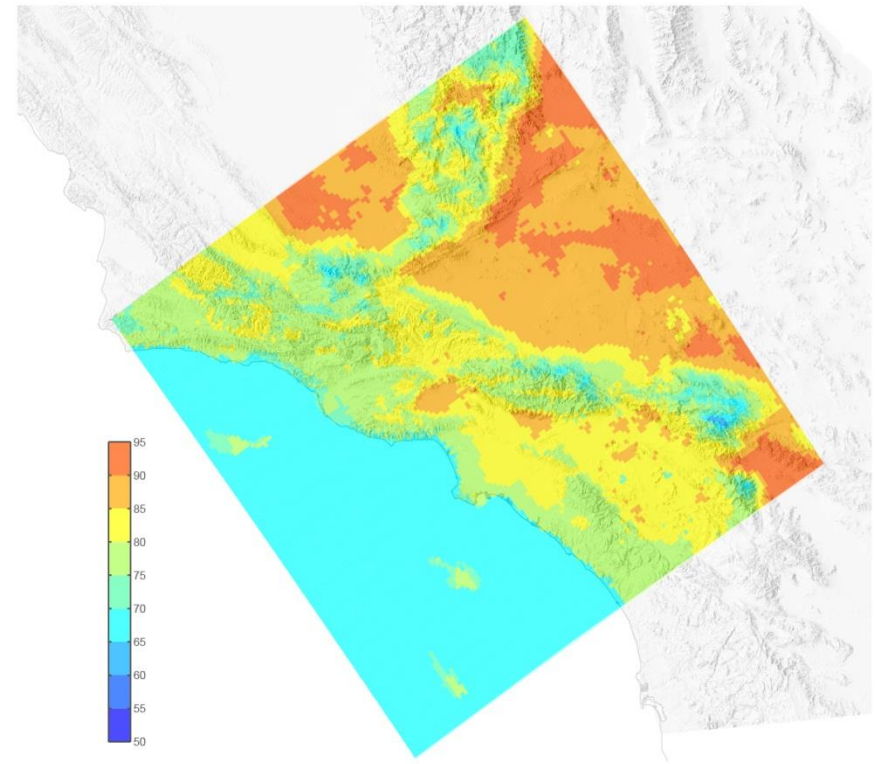


Differences in temperature across the region

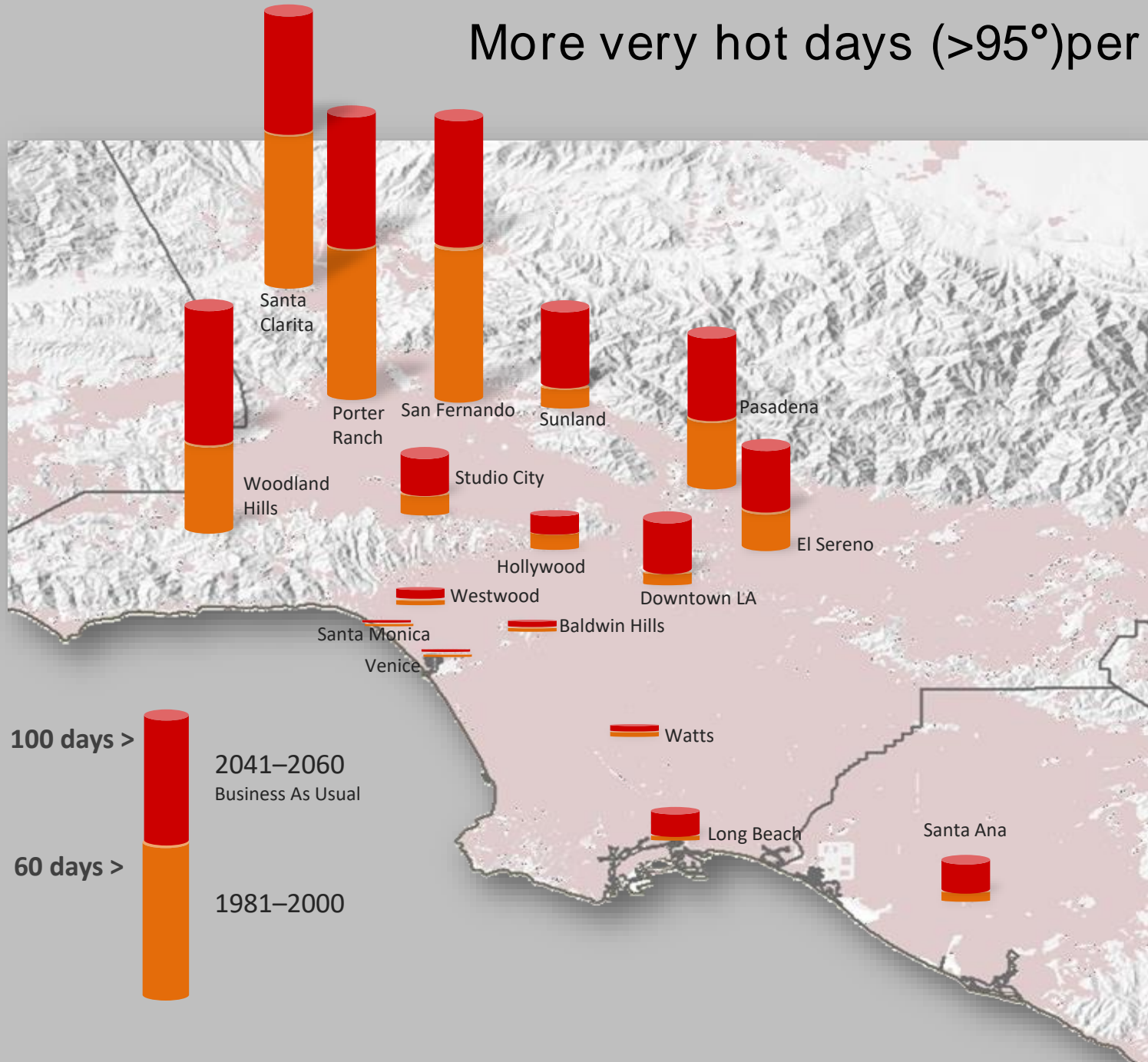
**Average August Temperature
1981–2000**



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



More very hot days (>95°) per year



Two types of fire in LA region



December 2017 Skirball Fire

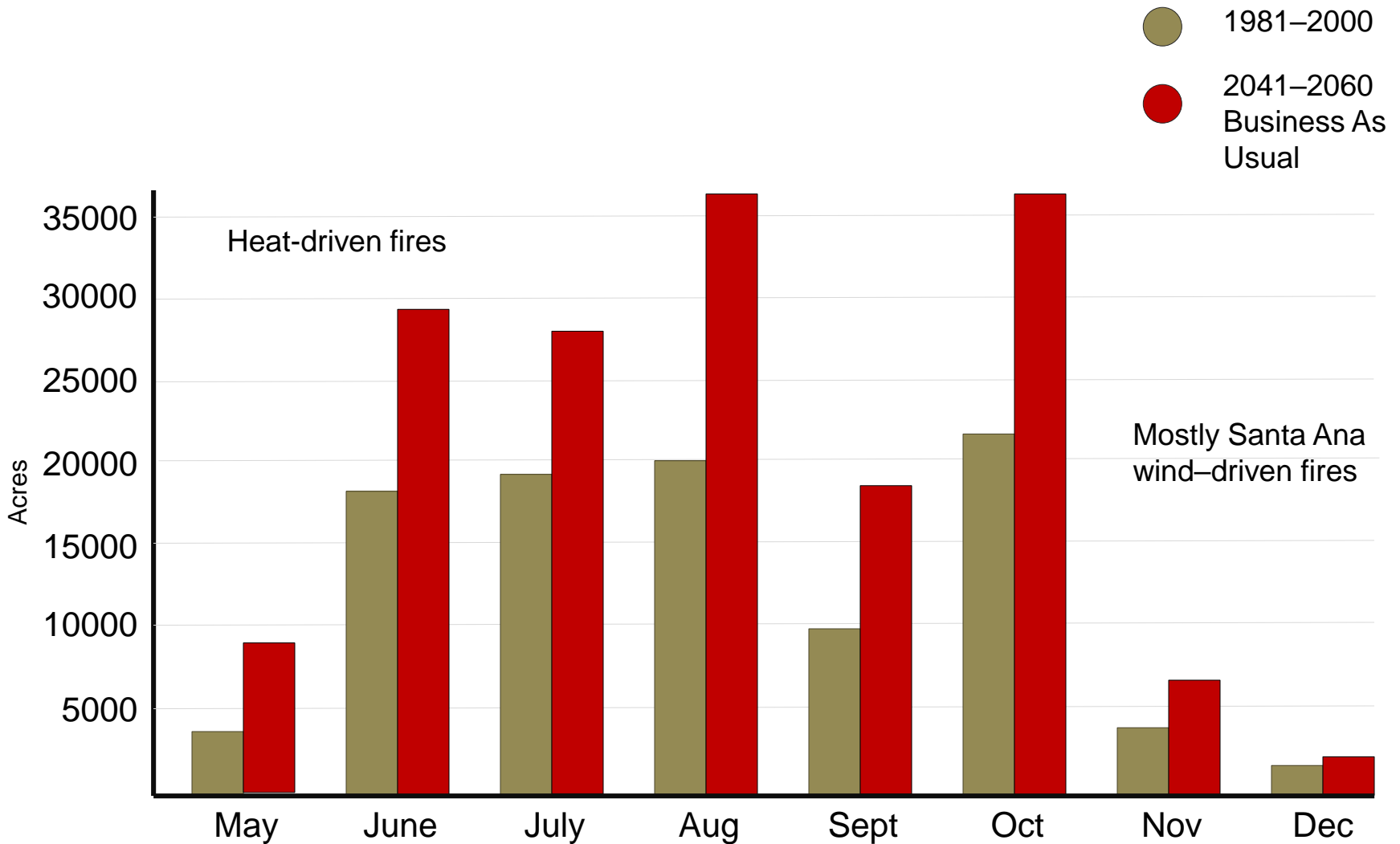
Summer fires: high temperatures, low humidity

Fall fires: Santa Ana winds



2009 Station Fire

Area burned by wildfires increases



LA's water resources also depend on the Sierra Nevada climate

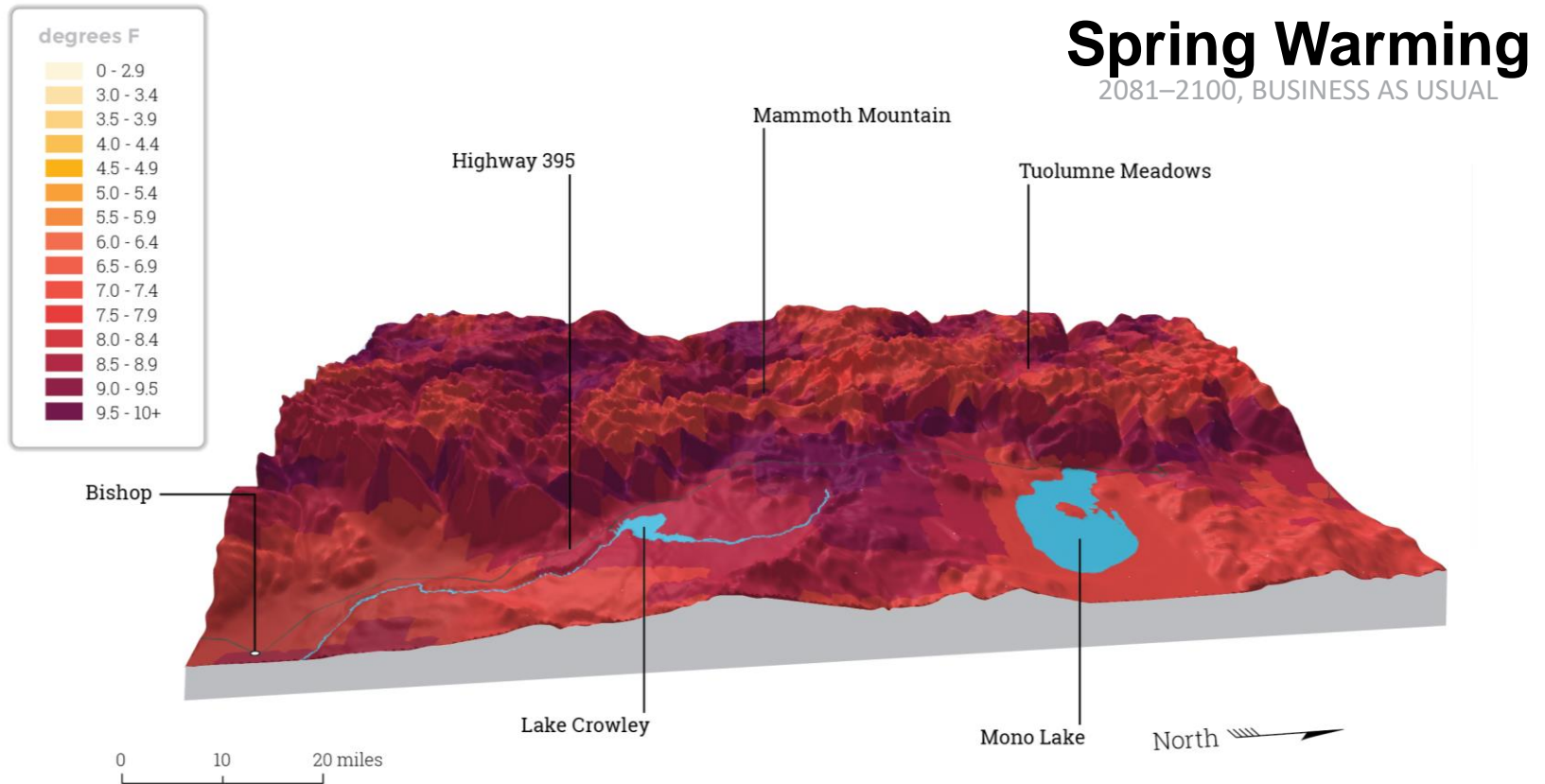


The “Climate Change in the Sierra Nevada” project

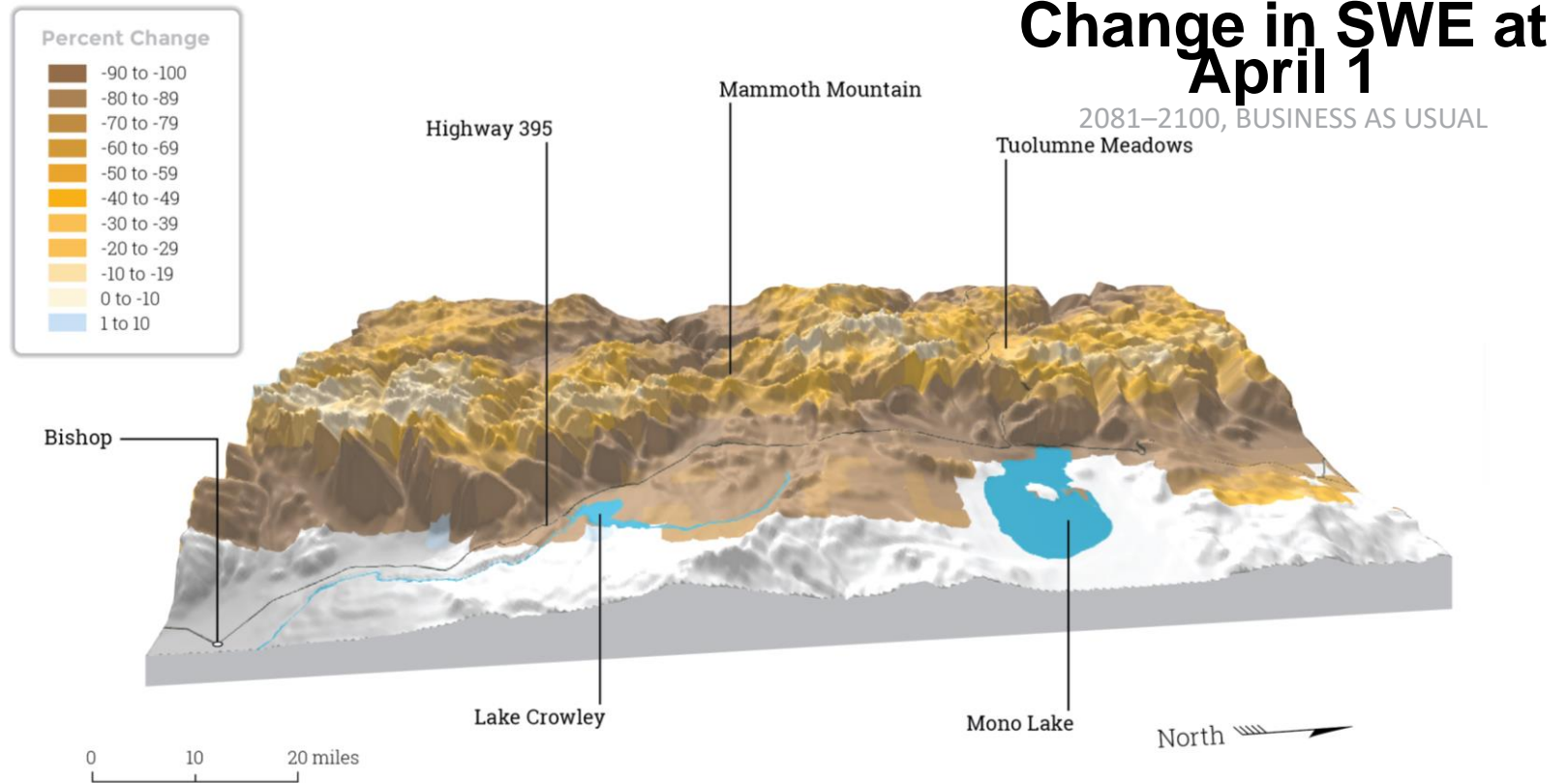
- At UCLA, we recently completed a high-resolution regional climate modeling project over the Sierras.
- The next slides show you what we found.



Future Warming: Eastern Sierra

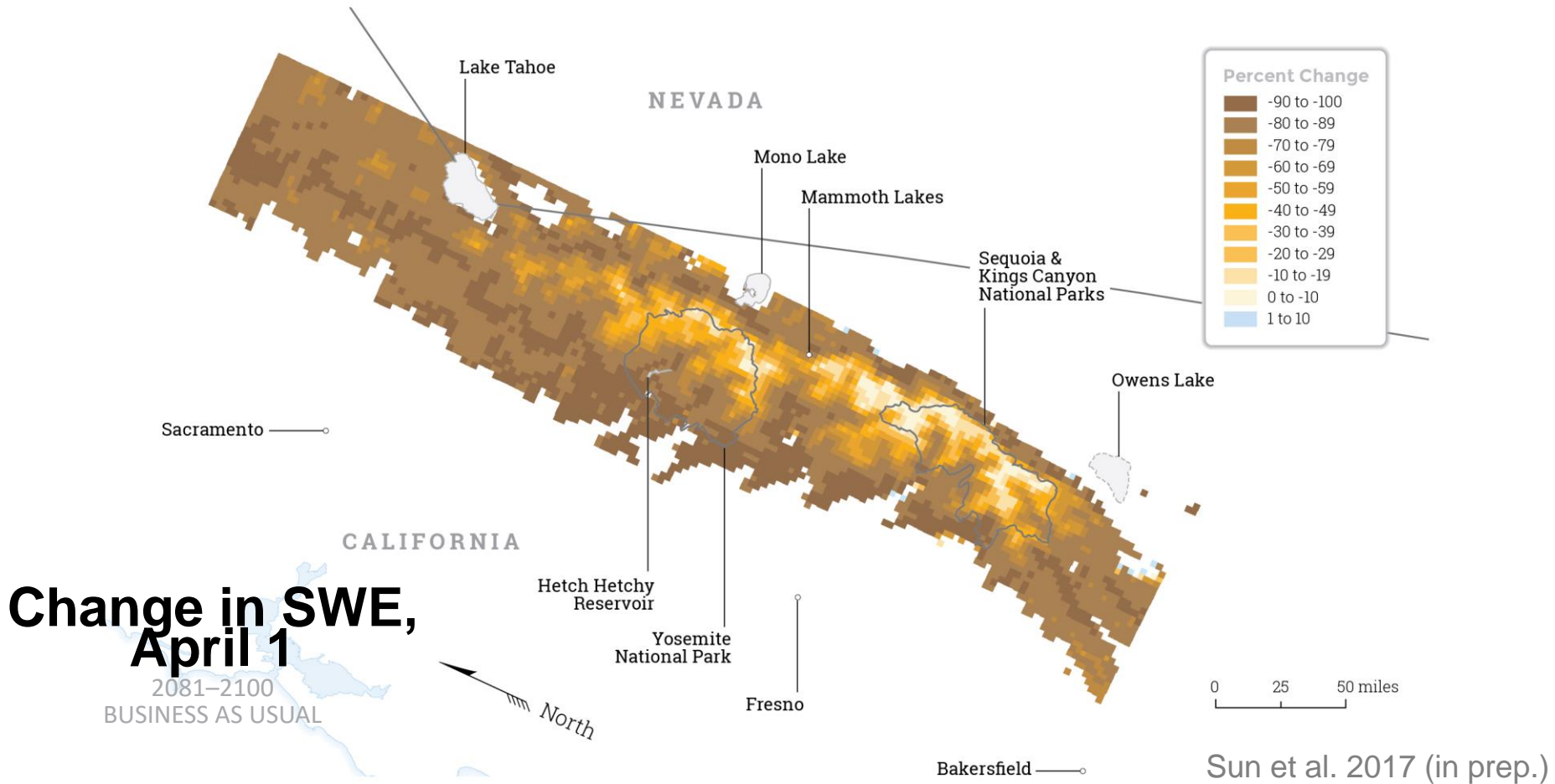


Loss of Snow: Eastern Sierra



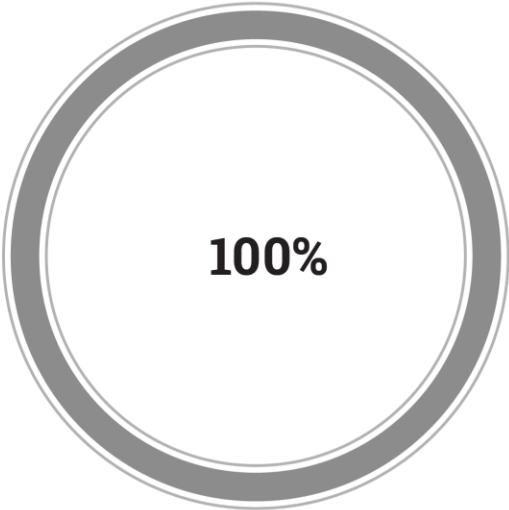
Sun et al. 2017 (in prep.)

Loss of Snow

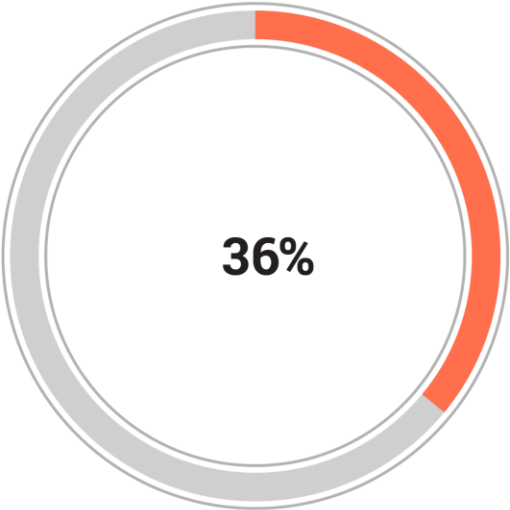


More Manageable Changes Under Mitigation Snow at April 1

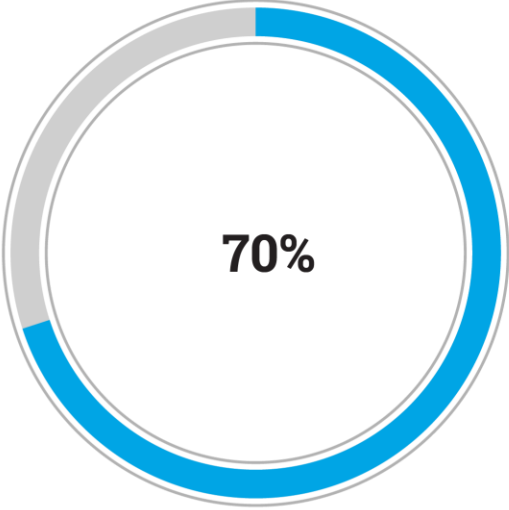
● Historical Data ● Business as Usual ● Mitigation



Baseline
1981-2000



End of Century
2081-2100



Sun et al. 2017 (in prep.)

Summary and implications

- Average temperatures and extreme heat days will increase across the region, but the valleys and mountains are affected to a greater extent than coastal areas.
- Less of precipitation falls as snow due to warming in the mountains, and snow melts faster.
- Due to warming, we can expect more wildfires, with larger area burned.
- Although we are already committed to significant climatic change by mid-century, further change can be averted by following a mitigation path.

“What Can I Do?”

- Our results show that Angelenos need to:
 - 1) Adapt to inevitable changes in climate
 - 2) Help to prevent further changes
- More than half of residential water use goes toward outdoor landscaping, and the water needs of lawns and plants not adapted to LA’s climate will increase.
- Therefore, a key adaptation measure is to conserve water by replacing climate-inappropriate lawns with **native plants**.
- More than half LA’s greenhouse gas emissions come from transportation—namely, gas-guzzling cars.
- A meaningful way to prevent further change is to use low-emissions **transportation alternatives**: bikes, public transit, electric vehicles, etc.
- California and Los Angeles are leaders in emissions reductions and sustainability. We need to support these efforts with our **votes**.

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