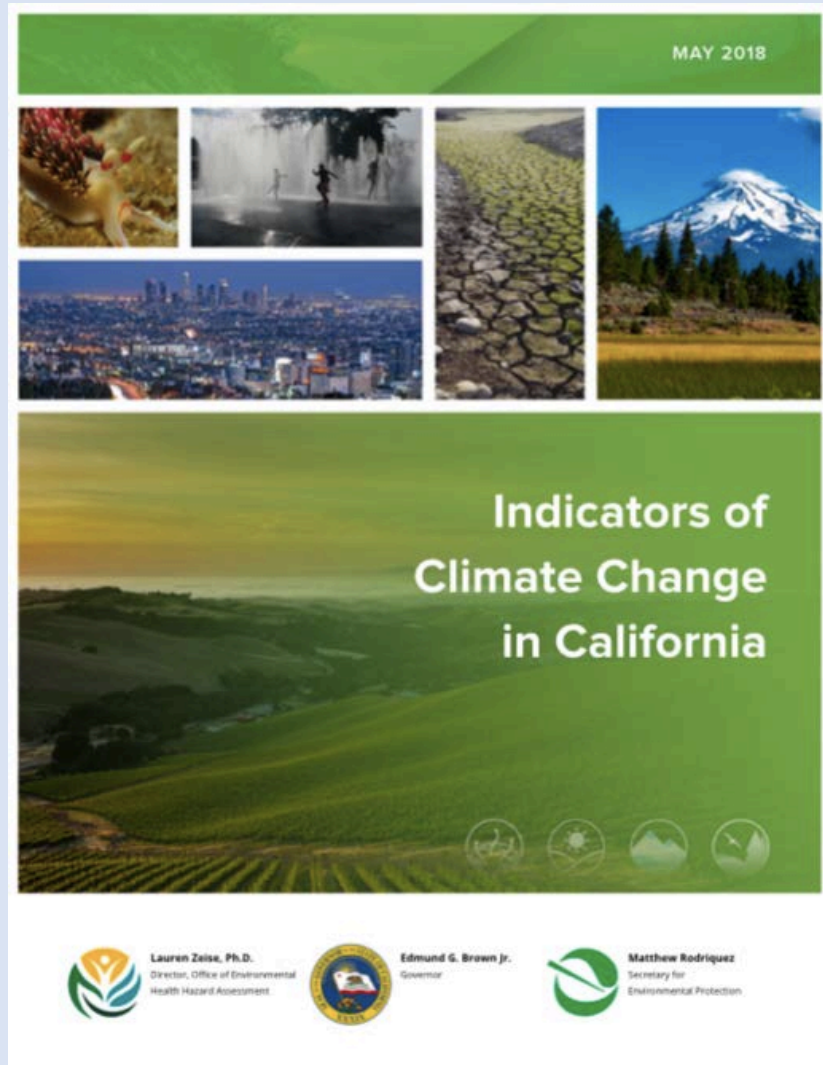


California is already experiencing climate change



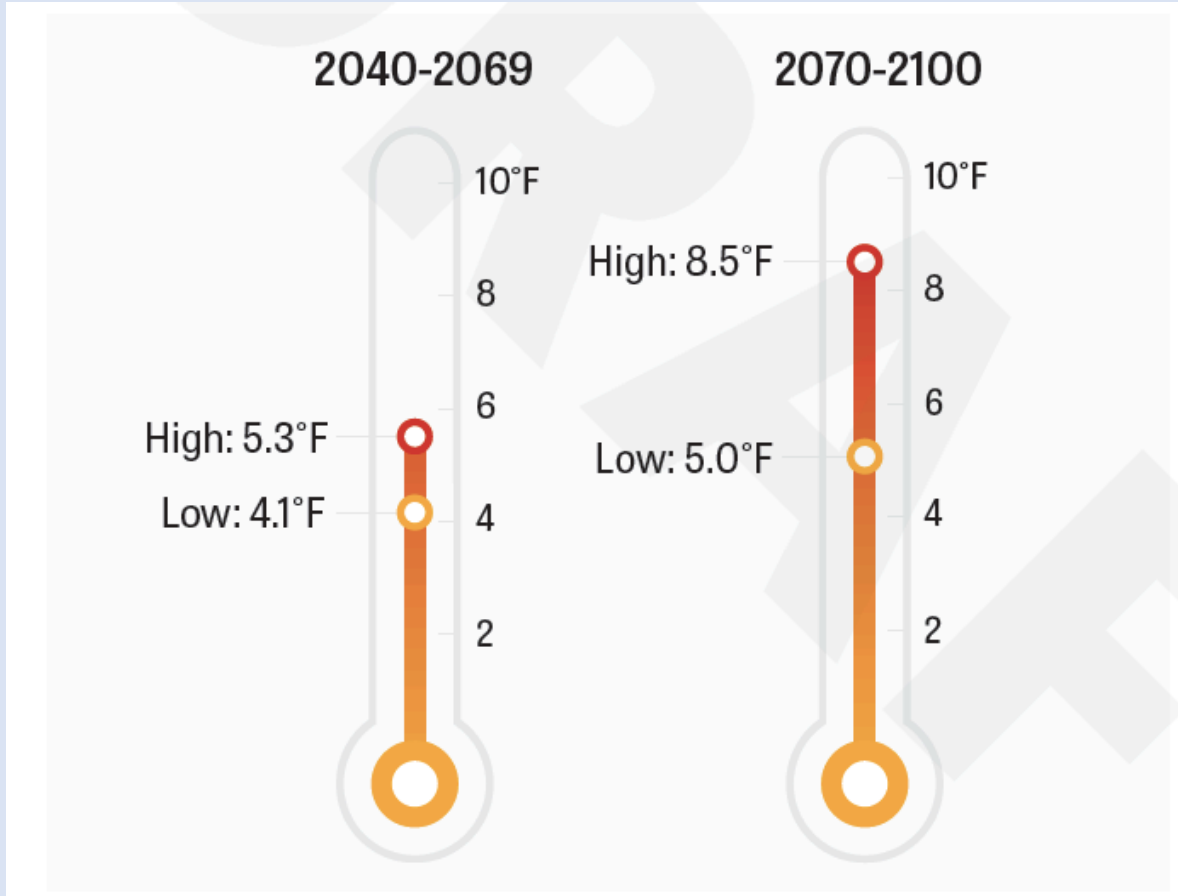
- Glaciers have lost 70% area since the beginning of the century
- Ocean temperatures are warming
- Areas burned by wildfire has increased since 1950
- Species' range shifts
- Changes in timing of species' natural patterns

Understanding future climate impacts

- Required by [Executive Order #S-03-05](#)
- Periodic scientific assessments to understand the potential impacts of climate change in California
- Inform state, local, and regional decision makers
- Technical reports and statewide summary

	Year	Focus
1 st Assessment	2006	Impacts by sector
2 nd Assessment	2009	Provided initial estimates of economic impacts
3 rd Assessment	2012	Improved understanding of vulnerability and adaptation options
4th Assessment	2018	Inform adaptation planning and implementation

Temperatures are increasing



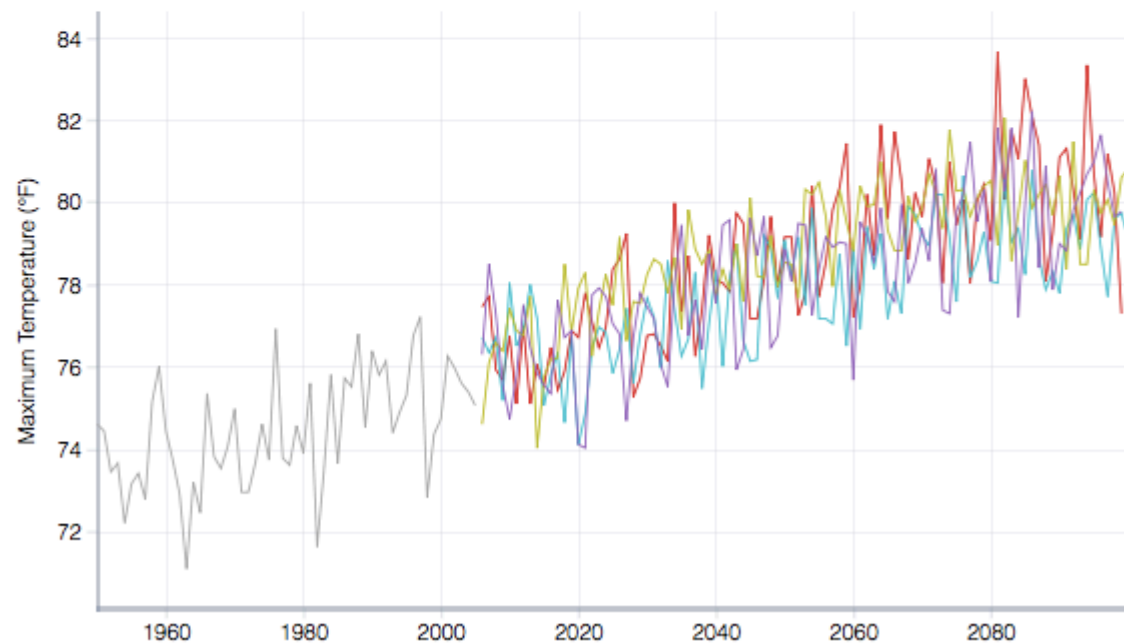
- Small difference until the middle of the century
- Early emission reductions are important
- Additional temperature increase is certain, regardless of emission reductions

Maximum Temperature

GRID CELL (38.59375, -121.46875)

Emissions peak around 2040, then decline (RCP 4.5)

Range of annual average values from all 32 LOCA downscaled climate models
Modeled Variability Envelope
Observed Data (1950–2005)
Modeled Data (2006–2099)
HadGEM2-ES
CNRM-CM5
CanESM2
MIROC5



SCENARIOS

RCP 4.5

Emissions peak around 2040, then decline

RCP 8.5

Emissions continue to rise strongly through 2050 and plateau around 2100

QUICK STATS

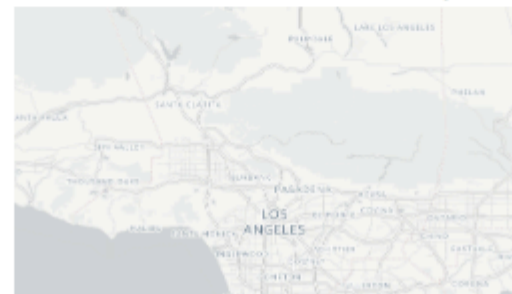
Historical Annual Mean for 1961–1990

74.2°F Observed

Modeled Projected Annual Mean for 2070–2099

79.8°F

Change Location



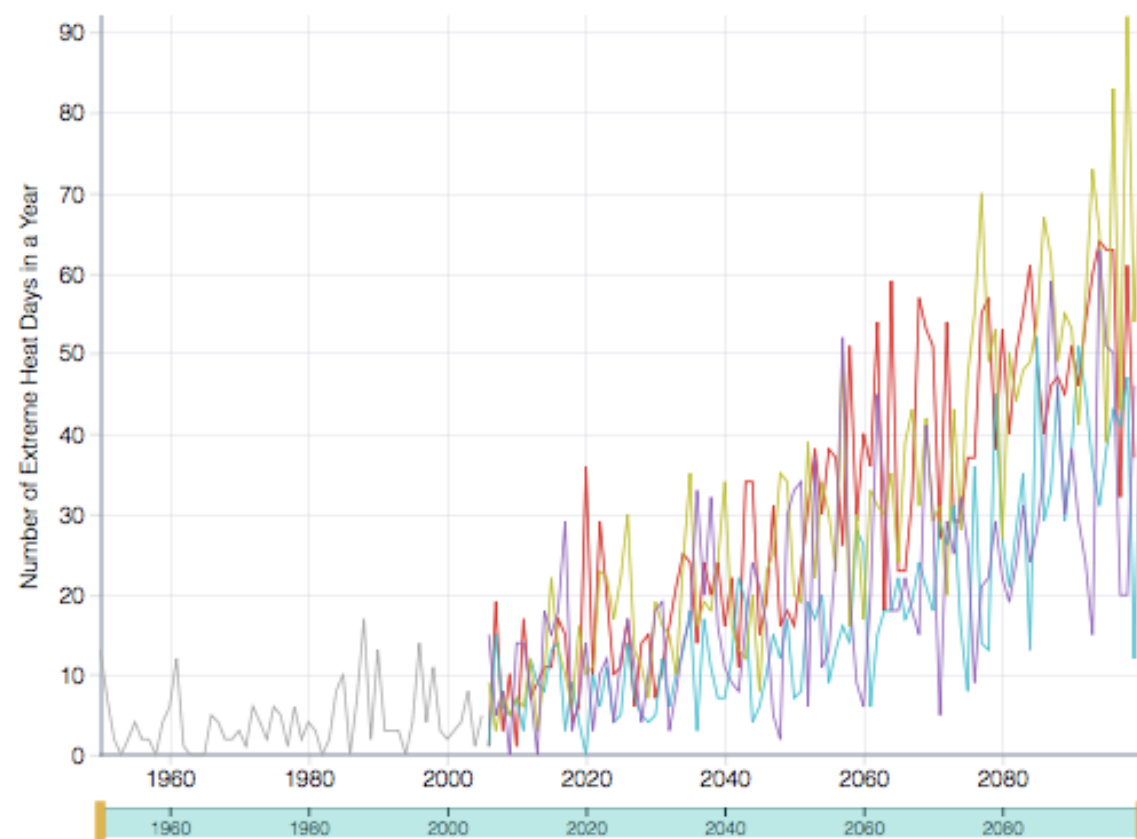
Number of Extreme Heat Days

GRID CELL (38.59375, -121.46875)

Emissions continue to rise strongly through 2050 and plateau around 2100 (RCP 8.5)

— Observed Data (1950–2005) Modeled Data (2006–2099)

- HadGEM2-ES
- CNRM-CM5
- CanESM2
- MIROC5



SCENARIOS

RCP 4.5

Emissions peak around 2040, then decline

RCP 8.5

Emissions continue to rise strongly through 2050 and plateau around 2100

QUICK STATS

Extreme Heat Threshold

103.9°F

Average number of days with high above 103.9°F in 1961–1990

4.3

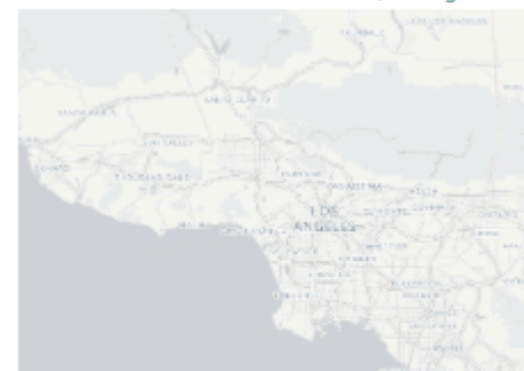


Average number of days with high above 103.9°F in 2070–2099

40



Change Location



Sea Level Rise – New Probabilistic Projections

		<i>Probabilistic Projections (in feet) (based on Kopp et al. 2014)</i>				<i>H++ scenario (Sweet et al. 2017) *Single scenario</i>
		MEDIAN	LIKELY RANGE	1-IN-20 CHANCE	1-IN-200 CHANCE	
		<i>50% probability sea-level rise meets or exceeds...</i>	<i>66% probability sea-level rise is between...</i>	<i>5% probability sea-level rise meets or exceeds...</i>	<i>0.5% probability sea-level rise meets or exceeds...</i>	
		Low Risk Aversion			Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.4	0.3 - 0.5	0.6	0.8	1.0
	2040	0.6	0.5 - 0.8	1.0	1.3	1.8
	2050	0.9	0.6 - 1.1	1.4	1.9	2.7
Low emissions	2060	1.0	0.6 - 1.3	1.6	2.4	
High emissions	2060	1.1	0.8 - 1.5	1.8	2.6	3.9
Low emissions	2070	1.1	0.8 - 1.5	1.9	3.1	
High emissions	2070	1.4	1.0 - 1.9	2.4	3.5	5.2
Low emissions	2080	1.3	0.9 - 1.8	2.3	3.9	
High emissions	2080	1.7	1.2 - 2.4	3.0	4.5	6.6
Low emissions	2090	1.4	1.0 - 2.1	2.8	4.7	
High emissions	2090	2.1	1.4 - 2.9	3.6	5.6	8.3
Low emissions	2100	1.6	1.0 - 2.4	3.2	5.7	
High emissions	2100	2.5	1.6 - 3.4	4.4	6.9	10.2

Wildfire Threat

- Frequency, severity, and extent of wildfire is projected to increase
- Numerous factors:
 - Development patterns
 - Shifting extreme winds
 - Precipitation and soil dryness
 - Forest health

