

# Cal-Adapt

California's Climate Data Resource and Interactive Toolkit



**GEOSPATIAL  
INNOVATION  
FACILITY**

Cutting-Edge Mapping Technology at UC Berkeley

Developed by University of California's  
Geospatial Innovation Facility

- Nancy Thomas (Executive Director)
- Shruti Mukhtyar (Lead Developer)
- Maggi Kelly (Faculty Advisor)
- Brian Galey (Senior Developer)
- Eric Lehmer (Developer)



Funding and oversight by  
California Energy Commission

- Susan Wilhelm
- Guido Franco
- Advisory Committee



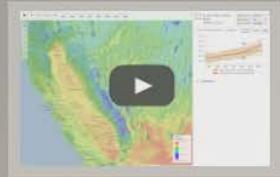
[google.org](#)





## Video Tour

VIEW THE DIFFERENT TOOLS AND  
DATA AVAILABLE IN CAL-ADAPT



## Explore Climate Tools

INTERACTIVE MAPS & CHARTS



## About Cal-Adapt

SUBSCRIBE TO THE CAL-ADAPT  
NEWSLETTER

- NEW WHAT'S NEW?
- WHAT'S TO COME?
- FAQS

## Access Data

ACCESS THE RAW DATA USED IN CAL-ADAPT



Select and download data in a variety of  
tabular and GIS formats

## Resources

RESEARCH, PUBLICATIONS & LINKS



Find out more about climate change  
research in California, explore peer  
reviewed publications and learn more  
about how to use climate projections.

## Community

CAL-ADAPT BLOG, CLIMATE CHANGE  
NEWS & EVENTS



Find out more about how climate change  
in California is relevant to your community  
and share your thoughts and findings

[Tweet](#)

[Like 580](#)

Site developed by:  
Geospatial Innovation Facility



Cal-Adapt is a product of the Public  
Interest Energy Research (PIER) program

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State of California, Edmund G. Brown Jr., Governor

Cal-Adapt



# What is Cal-Adapt?

- Resource created by State of California under contract with UC Berkeley's Geospatial Innovation Facility to convey local climate risks based on peer-reviewed science
- Launched June 2011
- Users
  - General public
    - learn about climate change data relevant to their area
  - Local planners and technicians
    - obtain meaningful information and data to help guide locally relevant climate action plans and adaptation strategies
  - Scientific community
    - access primary data relevant to an area of interest

# Guiding Principles



Locally relevant  
climate information presented  
in easy to understand themes  
and topics



Interactive  
maps and charts allow users to  
explore different aspects of  
climate change



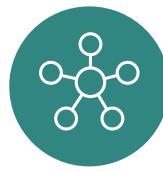
Easy access  
to primary climate change data  
in GIS and tabular formats



Peer-reviewed  
and publicly available data  
with full attribution of  
researchers



Engage  
foster translation of science  
to usable tools



Connect  
users with other resources,  
tools, publications, case  
studies

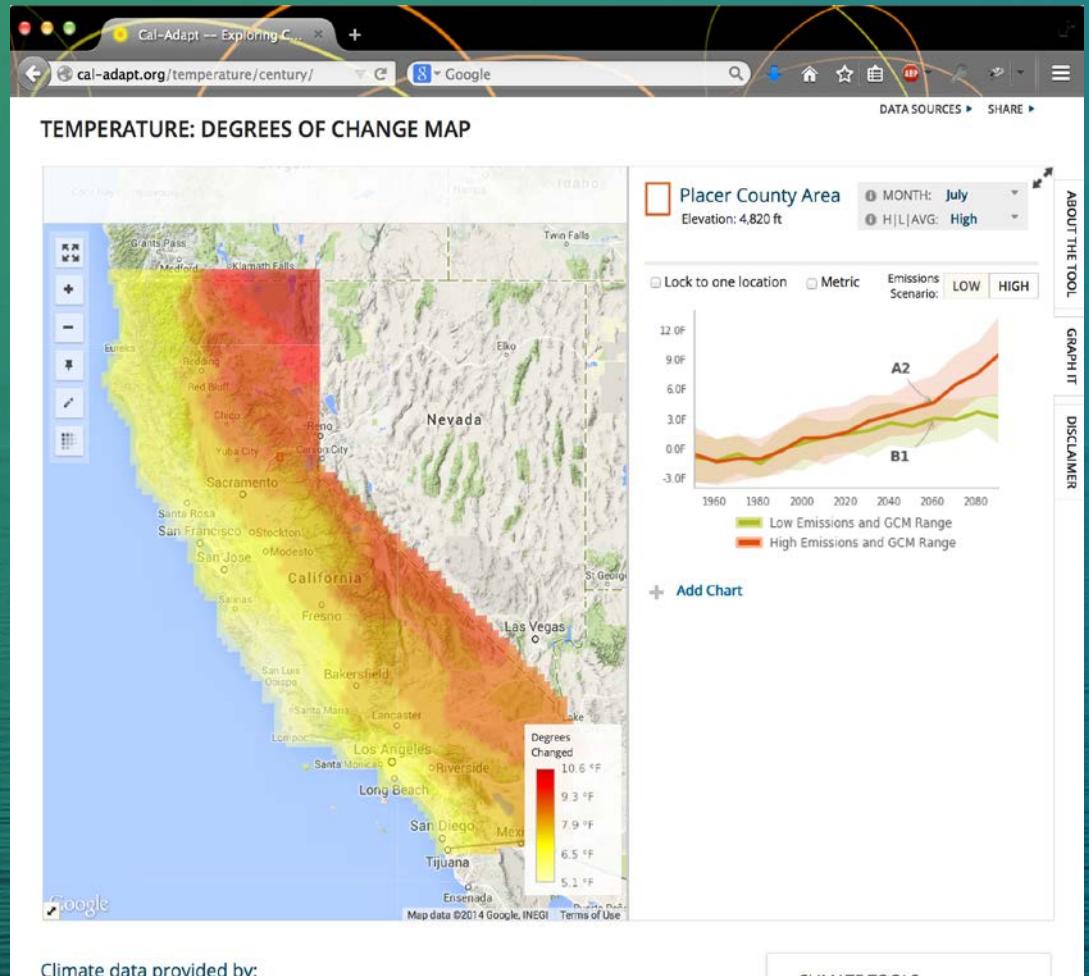
# Visualizing Climate Data

Temperature: Degrees of Change

July

Climate change is expected to affect different areas of the world disproportionately. This is also true within the state of California.

Data: Projected differences in temperature between historical (1961-1990) and end of century (2070-2099) periods



Climate data provided by:

CLIMATE TOOLS

Cal-Adapt



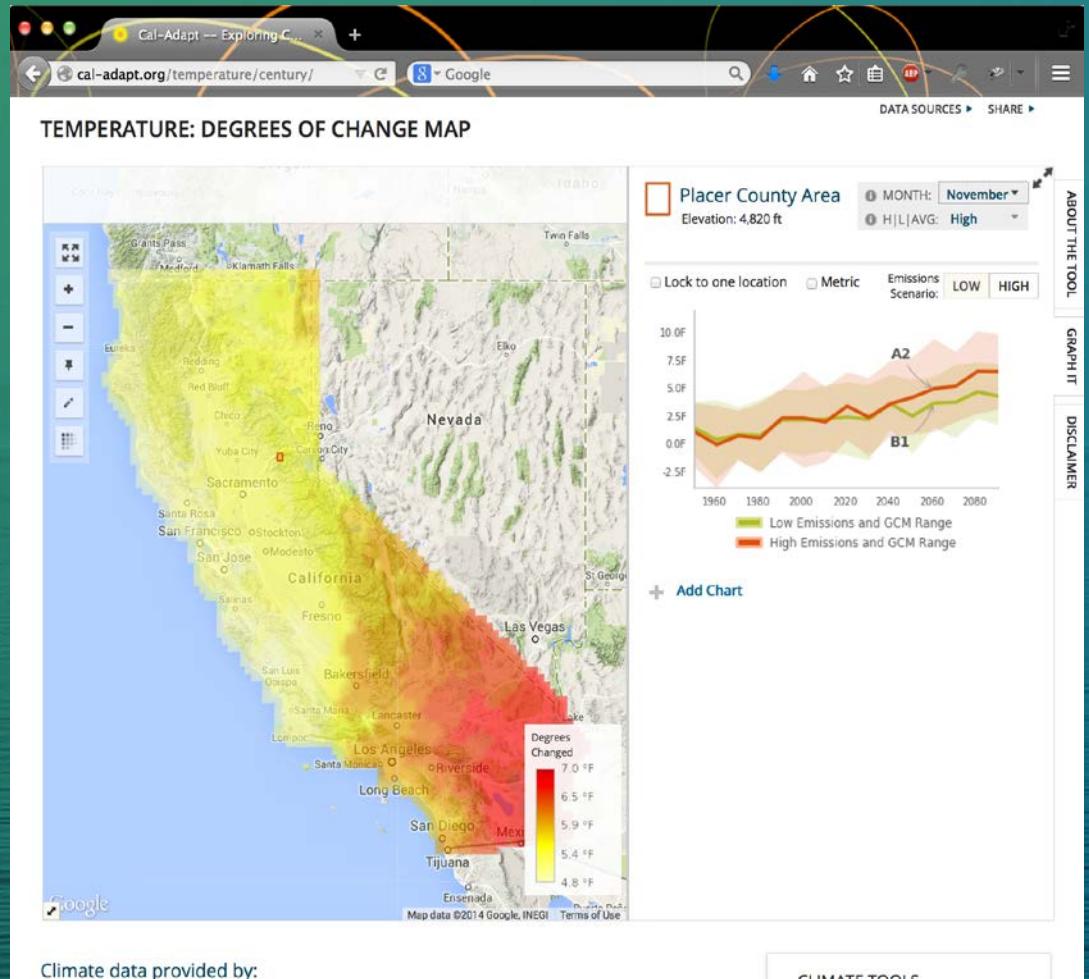
# Visualizing Climate Data

Temperature: Degrees of Change

November

Climate change is expected to affect different areas of the world disproportionately. This is also true within the state of California.

Data: Projected differences in temperature between historical (1961-1990) and end of century (2070-2099) periods



Climate data provided by:

Cal-Adapt



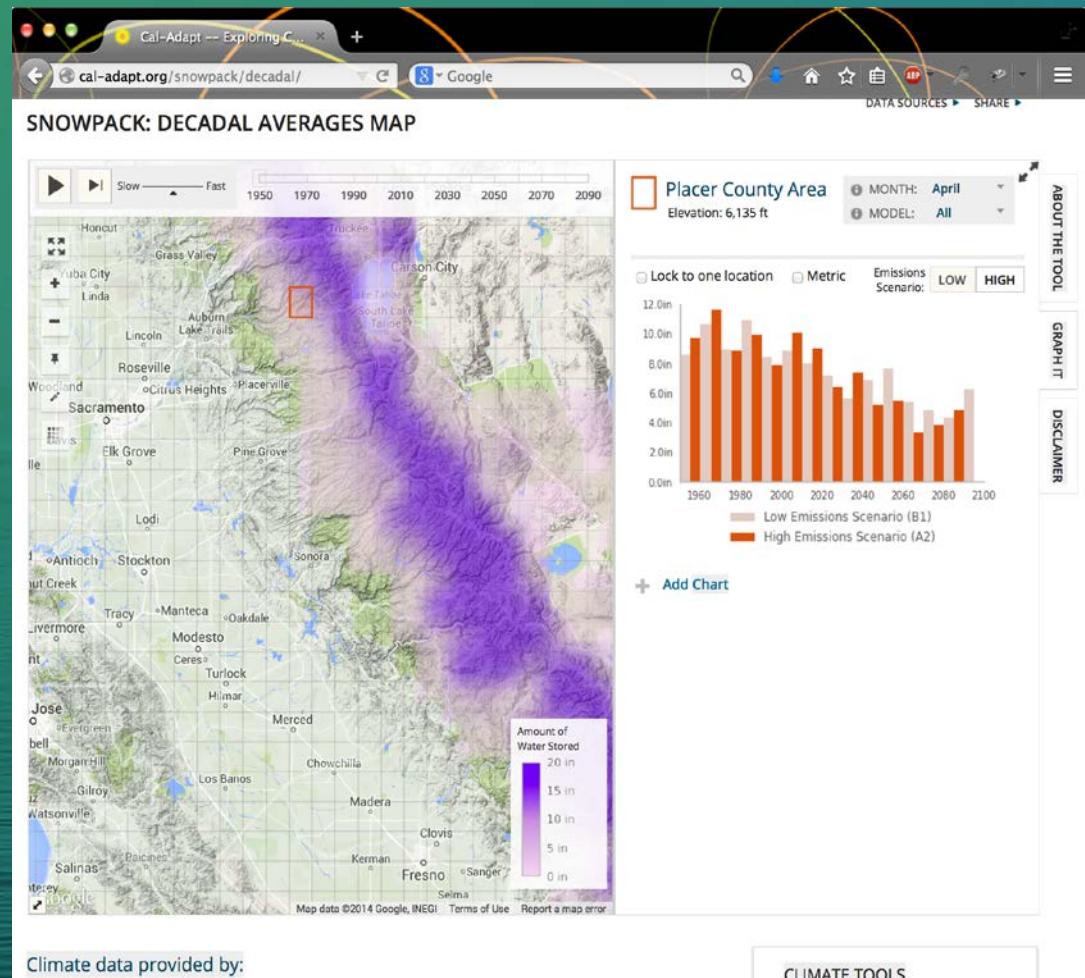
# Visualizing Climate Data

## Snowpack

April 1950

Projections suggest more precipitation will fall as rain instead of snow, and the snow will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent.

Data: Projected Snow Water Equivalent from Scripps Institution of Oceanography



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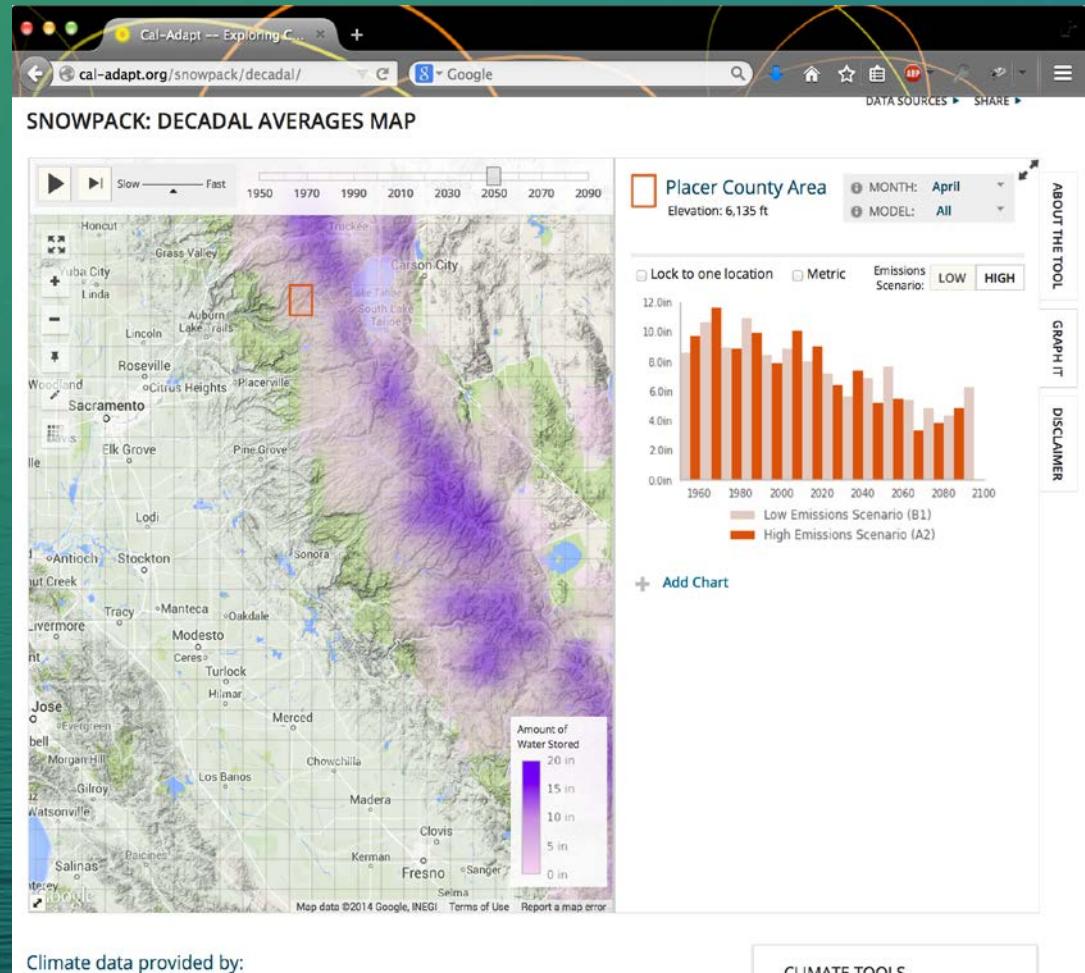
# Visualizing Climate Data

## Snowpack

April 2050

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CLIMATE TOOLS

Cal-Adapt



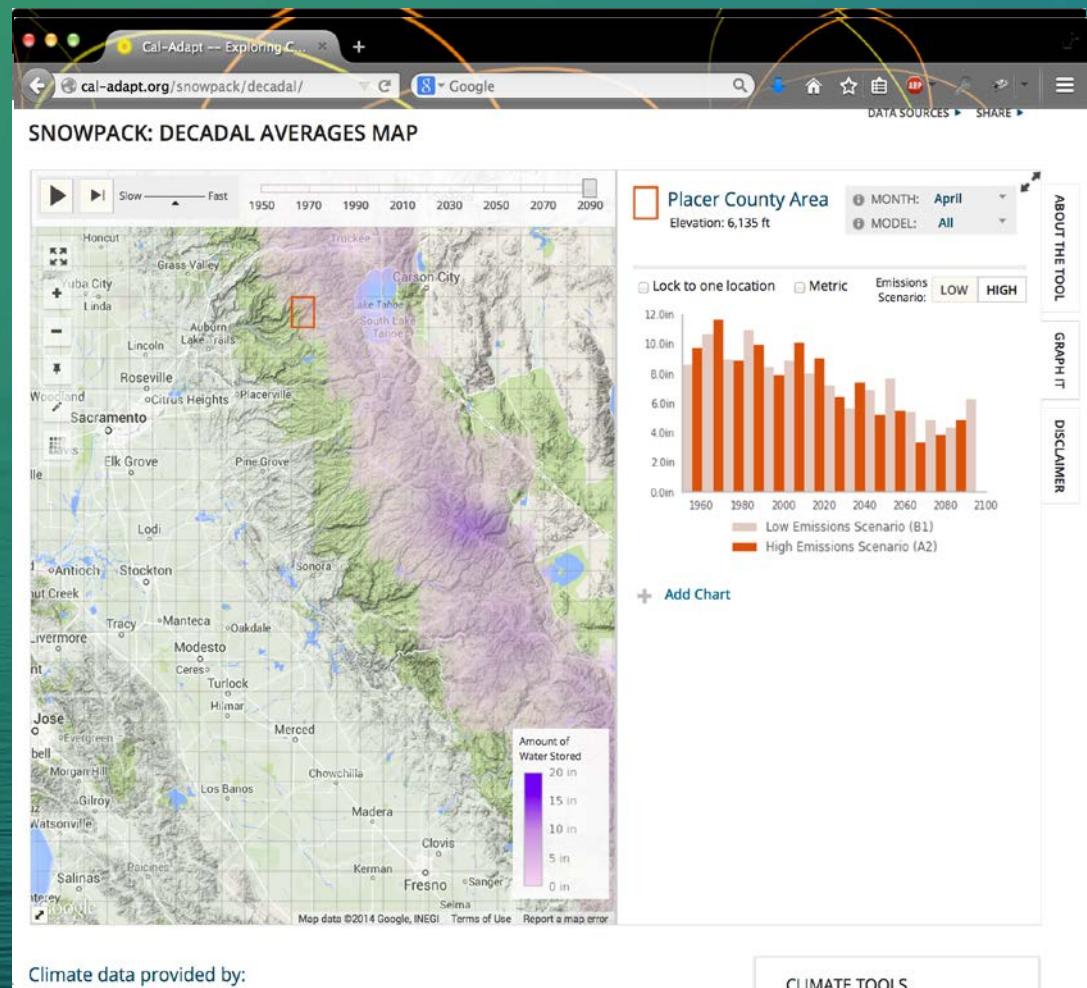
# Visualizing Climate Data

## Snowpack

April 2090

Projections suggest more precipitation will fall as rain instead of snow, and the snow will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent.

Data: Projected Snow Water Equivalent from Scripps Institution of Oceanography



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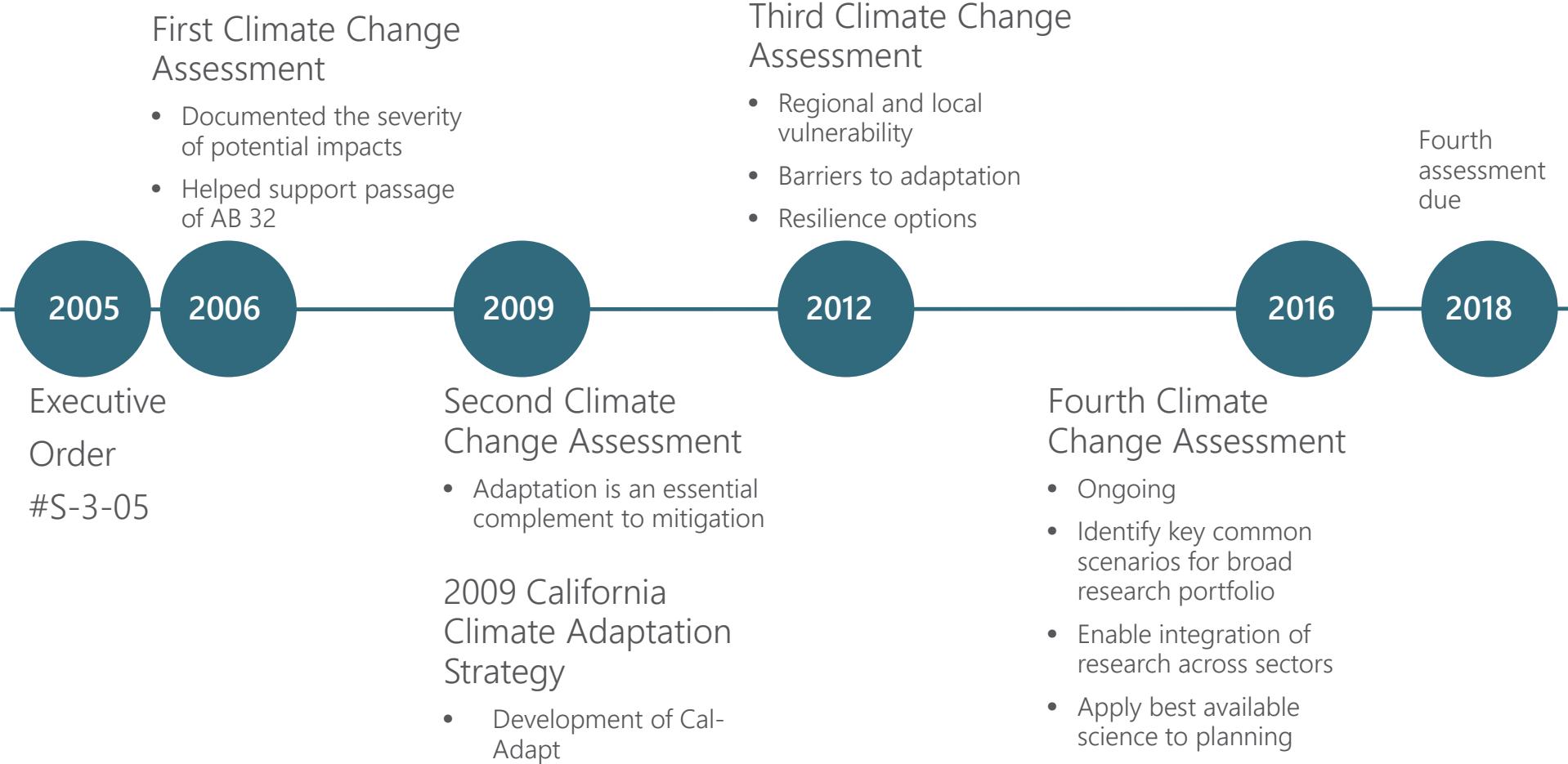


# California Climate Change Assessments

California produces periodic scientific assessments on the potential impacts of climate change in California and reports potential adaptation responses.

Required by Executive Order #S-03-05, these assessments influence legislation and inform policy makers.

# California Climate Change Assessments



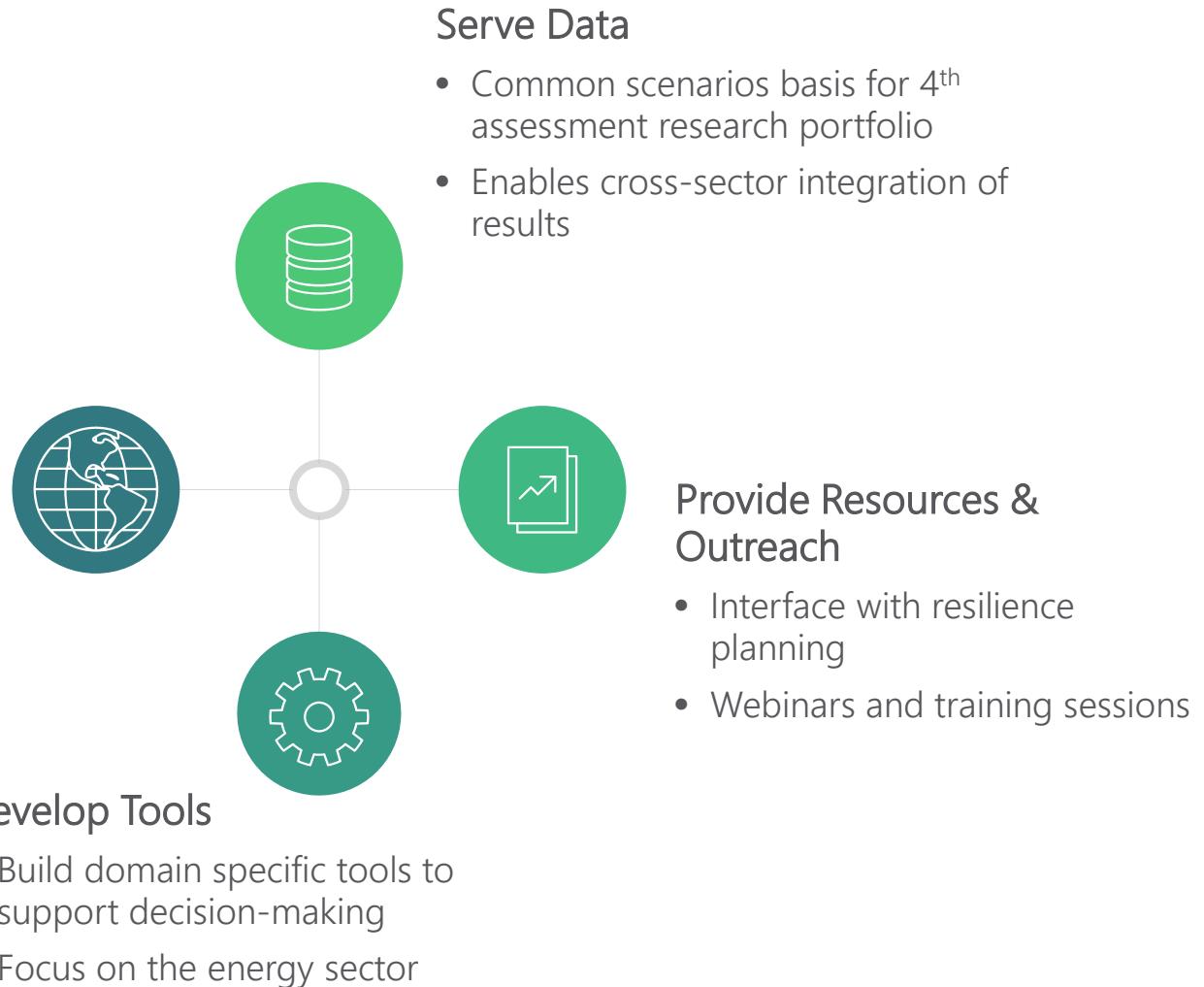
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# How Does Cal-Adapt Support the 4<sup>th</sup> Assessment?

## Data Visualizations

- Support decision-making
- Communicate results of 4<sup>th</sup> assessment research
- Climate, hydrological, sea-level rise, snowpack, wildfire risk



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# Cal-Adapt 2.0

[beta.cal-adapt.org](http://beta.cal-adapt.org)

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Climate Tools Data Resources Blog About Help

caladapt

Exploring California's Climate Change Research

Cal-Adapt provides a view of how climate change might affect California.  
Here you will find tools, climate data, and resources to conduct research, develop adaptation plans and build applications.

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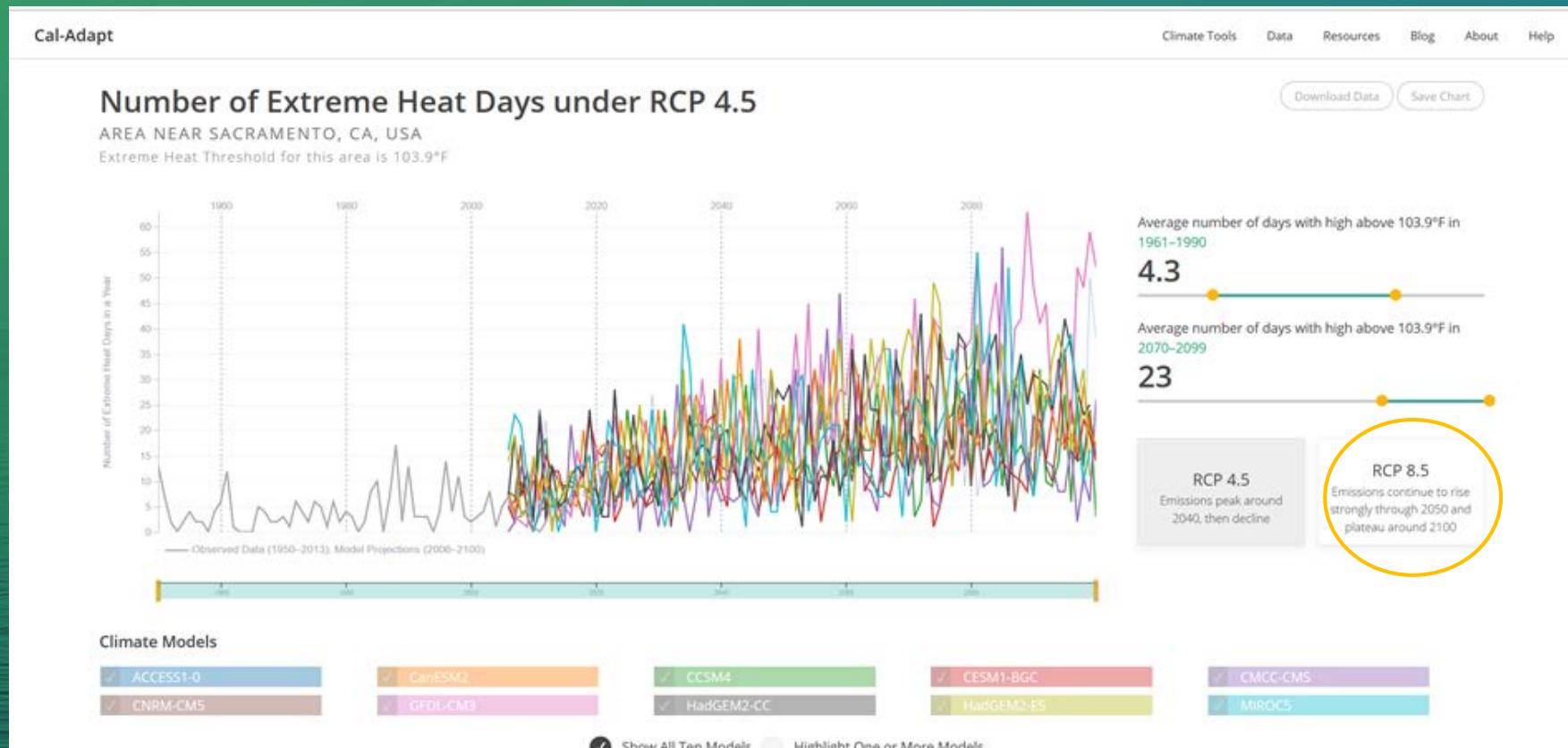


# Goal of Cal-Adapt Enhancements

- Higher resolution, higher fidelity data
    - Temperature and precipitation at daily time steps from LOCA downscaled CMIP5 data, Scripps Institution of Oceanography (Pierce et al. 2014)
    - inundation (Delta as well as open coast and bay)
    - observed historical data (daily temperature, precipitation)
    - wildfires (forthcoming fall 2016)
  - Enhanced usability, including support for interpreting data and visualizations
  - Built with modern and powerful data visualization libraries (e.g. D3, Leaflet)
  - Public API\* supports third-party tool development
- \* Applications Programming Interface

# New Tools & Visualizations

## Extreme Heat Days

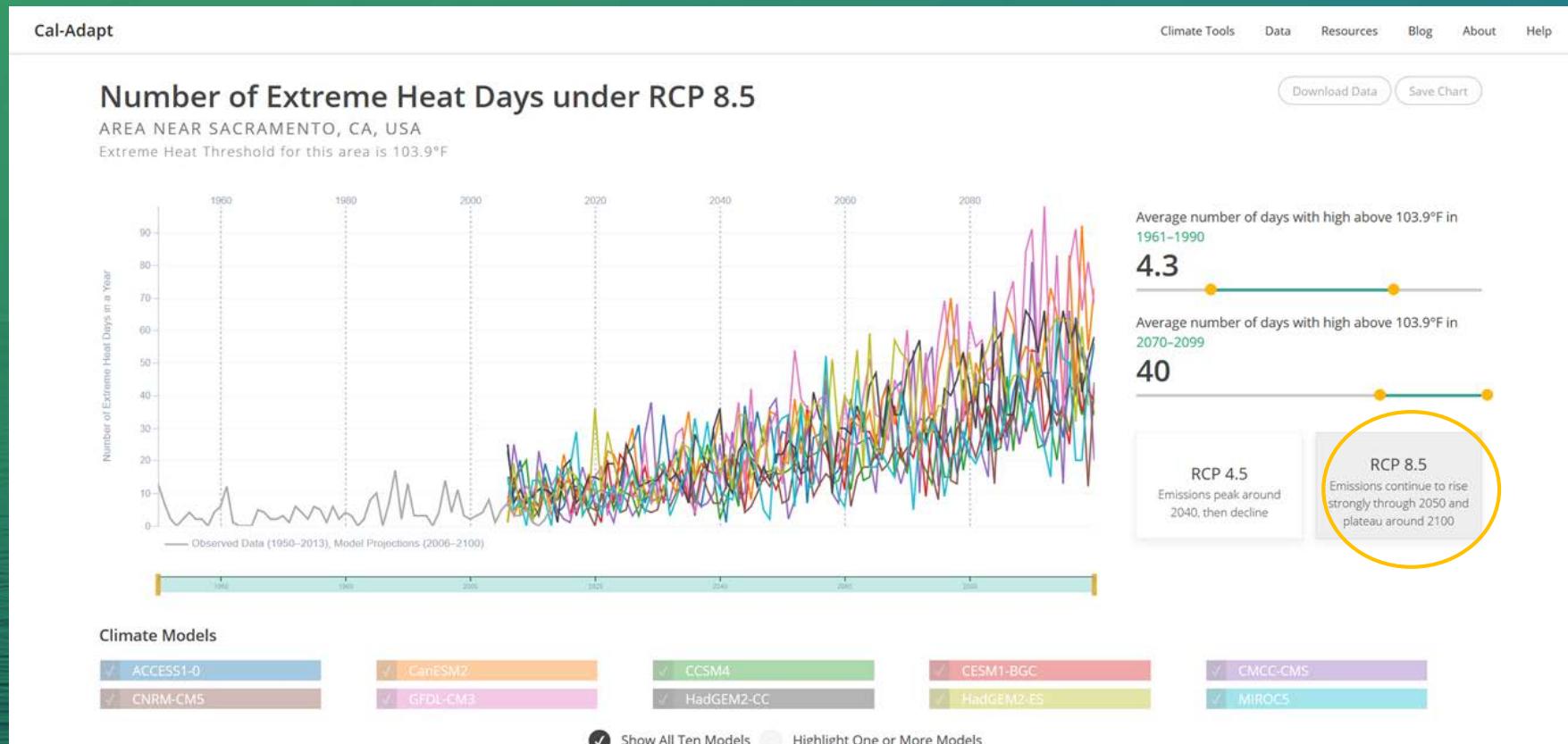


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# New Tools & Visualizations

## Extreme Heat Days



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# New Tools & Visualizations

Extreme Heat Days

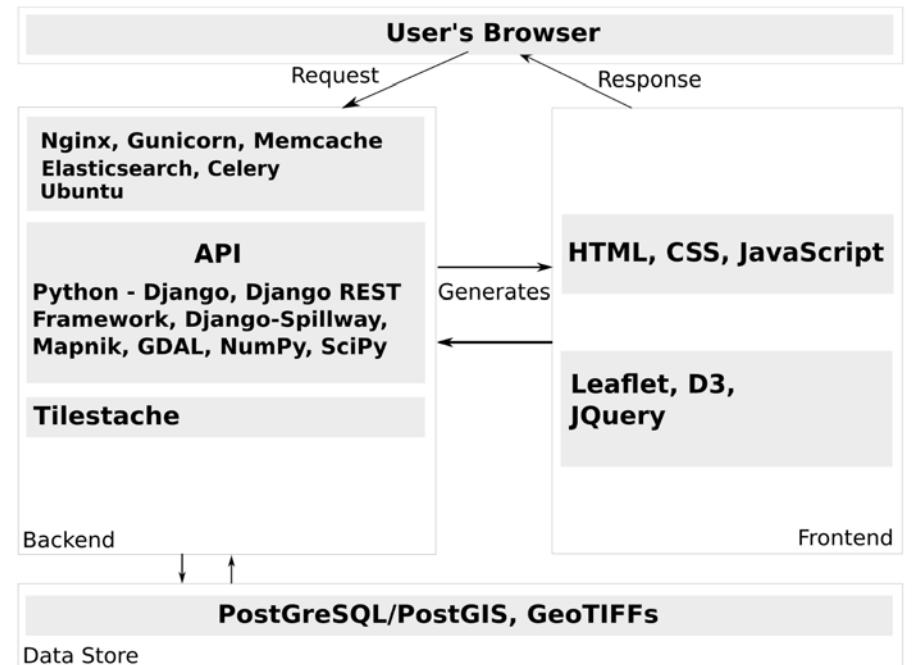


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# Cal-Adapt API

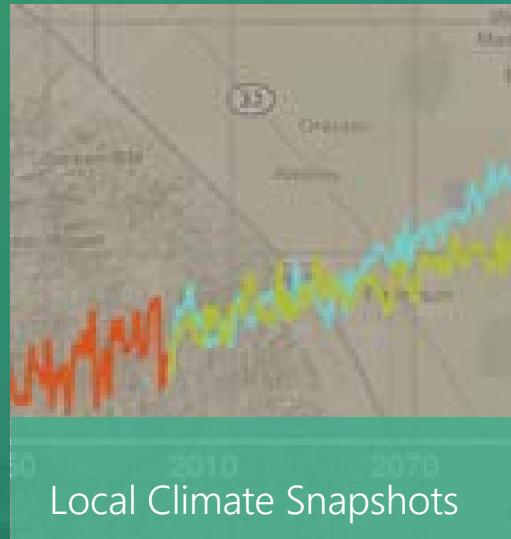
- Open source architecture powered by Django, Django REST framework and Django-Spillway, an open source library developed at the GIF
- Dynamic temporal aggregation of time series data
- Spatial aggregation by counties, climate regions, watersheds, census tracts, legislative districts
- Allows other organizations to access climate data and build domain specific visualization and planning tools



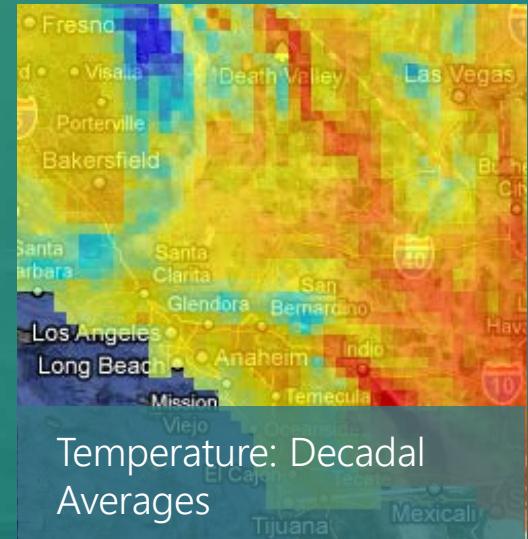
# Update Existing Tools & Visualizations



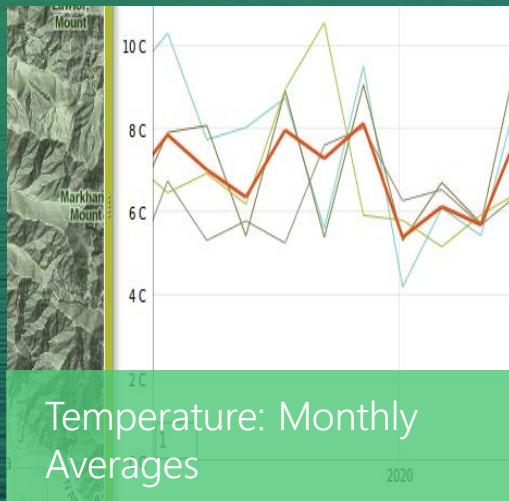
Wildfire Risk



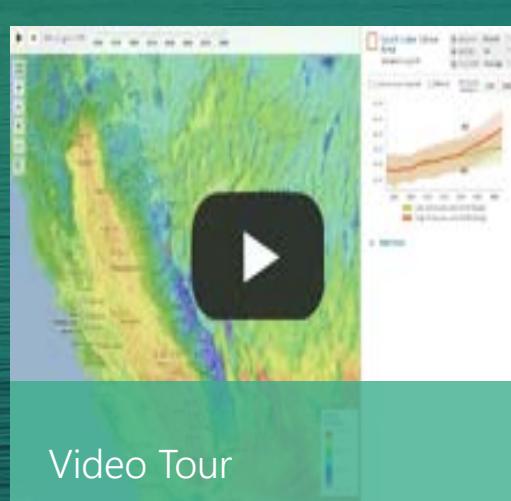
Local Climate Snapshots



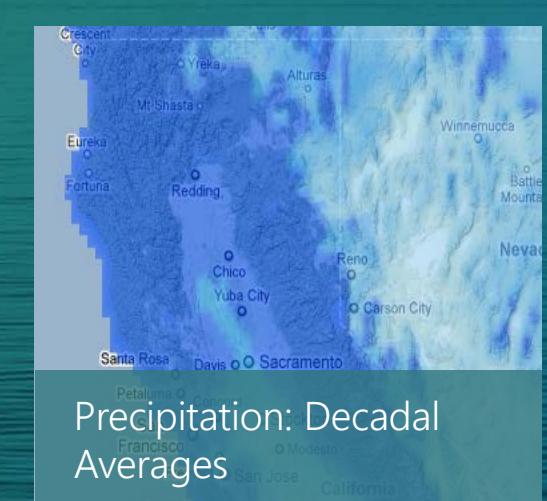
Temperature: Decadal Averages



Temperature: Monthly Averages



Video Tour



Precipitation: Decadal Averages

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# Thank you

Questions? We welcome your feedback.

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[support@cal-adapt.org](mailto:support@cal-adapt.org)

Twitter: @cal\_adapt

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Cutting-Edge Mapping Technology at UC Berkeley

