Megafires:
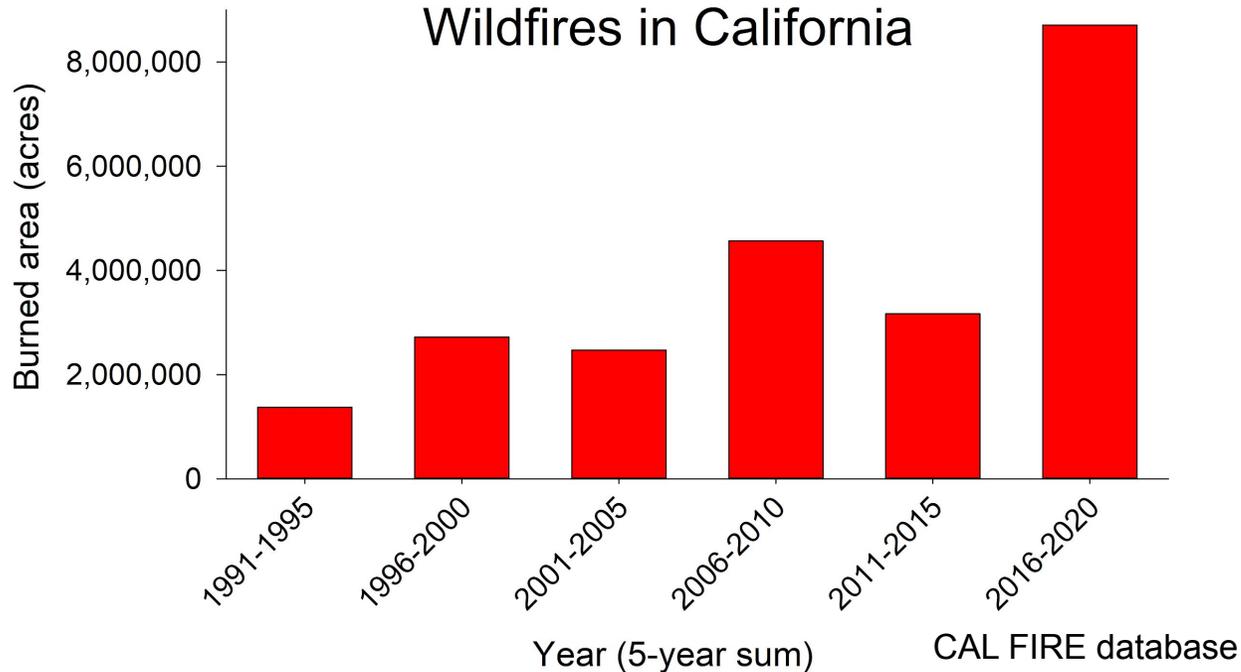# A huge climate change adaptation challenge in California

California 4th Climate Assessment

Prof. Alex Hall
Director, UCLA Center for Climate Science
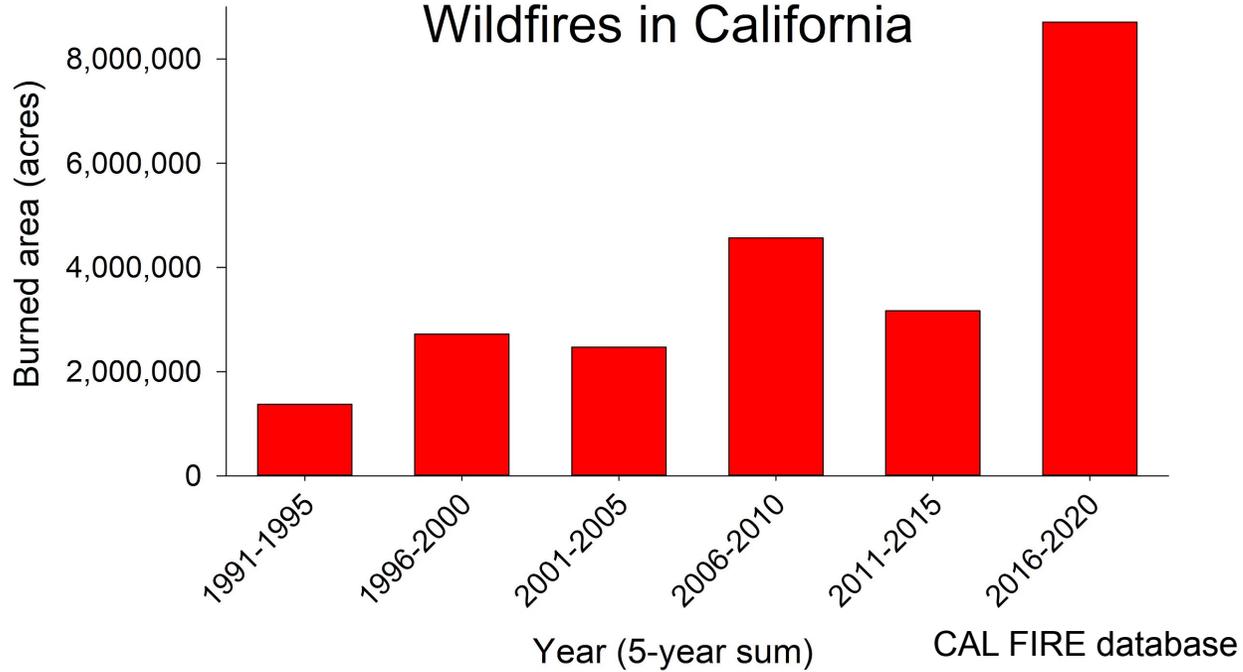
Climate Risk Disaster & Inequity hearing
July 21, 2021
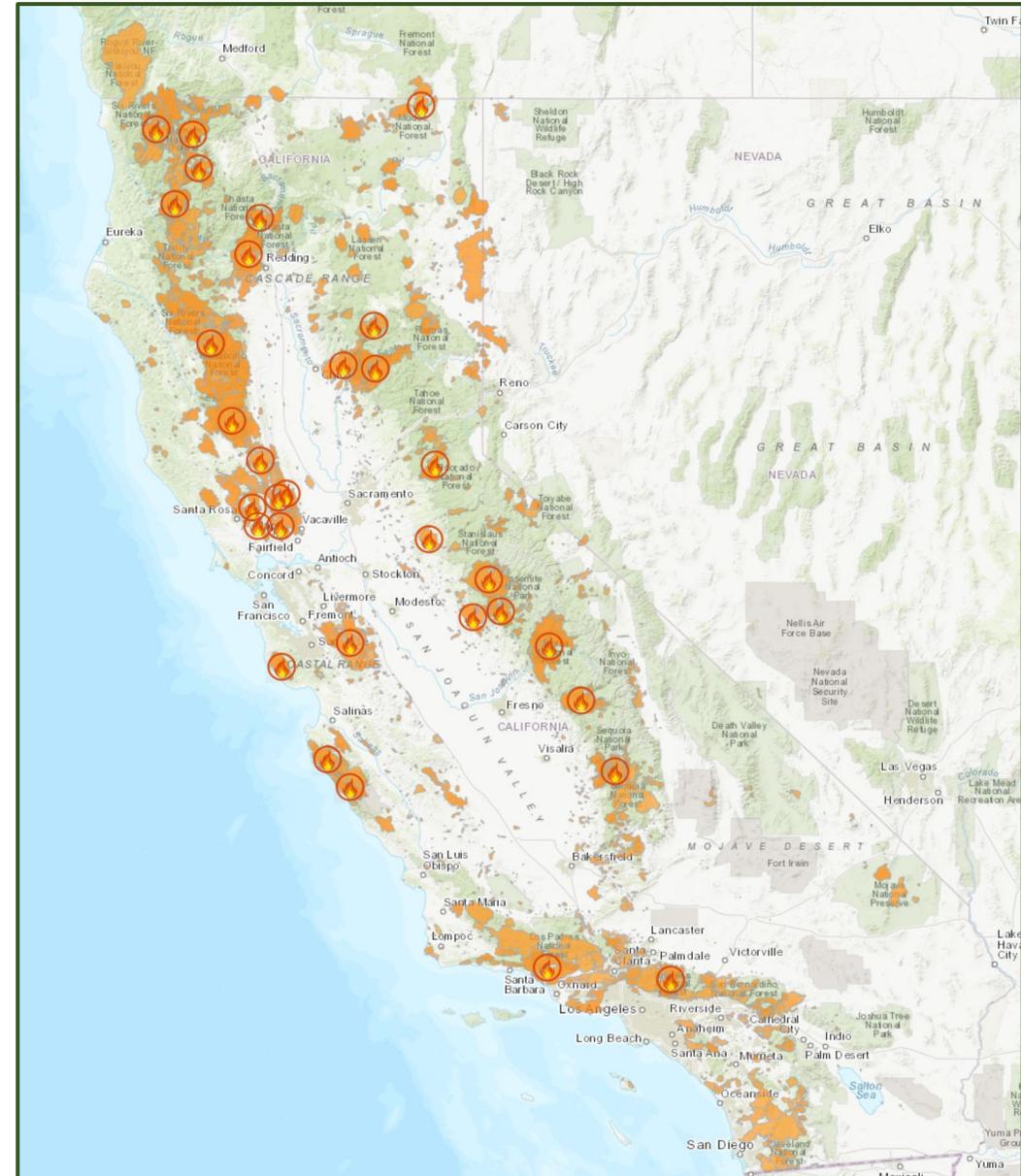
UCLA Center for Climate Science

Wildfires in California

Burned area (acres)

8,000,000

6,000,000

4,000,000

2,000,000

0

1991-1995 1996-2000 2001-2005 2006-2010 2011-2015 2016-2020

Year (5-year sum)   CAL FIRE database

CA Fires 2001-2020

California 4th Climate Assessment

Wildfires in California

Burned area (acres)

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1991-1995   1996-2000   2001-2005   2006-2010   2011-2015   2016-2020

Year (5-year sum)   CAL FIRE database

The Center for Ecosystem Climate Solutions
https://california-ecosystem-climate.solutions/

Map 4.J: Population/Social Vulnerability Base Map

Population/Social Vulnerability Base Map

Relative Vulnerability

High

Low

Grid cell size approximately one square kilometer. Cells with population < 75 are not mapped.

Sacramento

San Francisco

San Jose

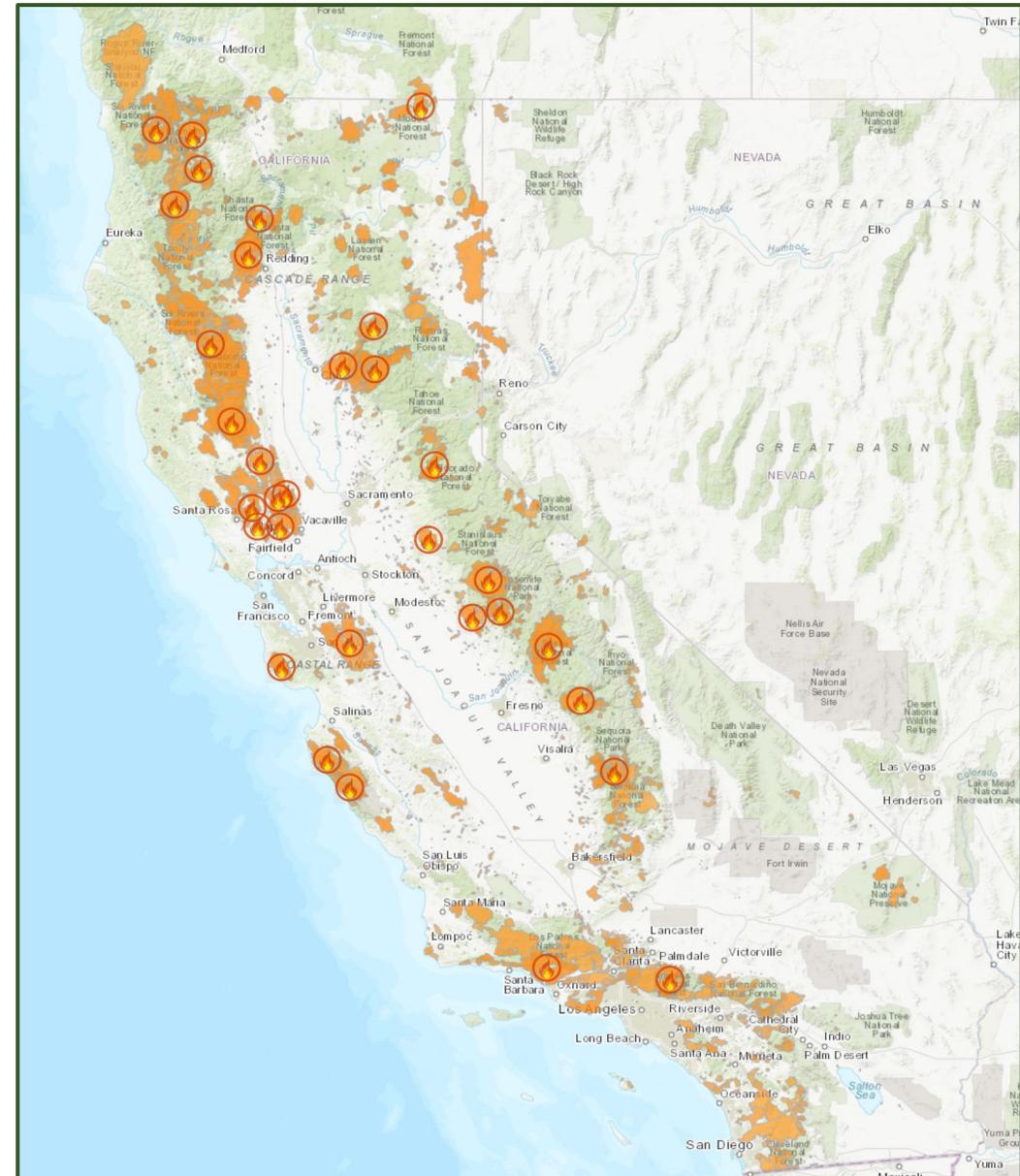Fresno

San Bernardino

Los Angeles

San Diego
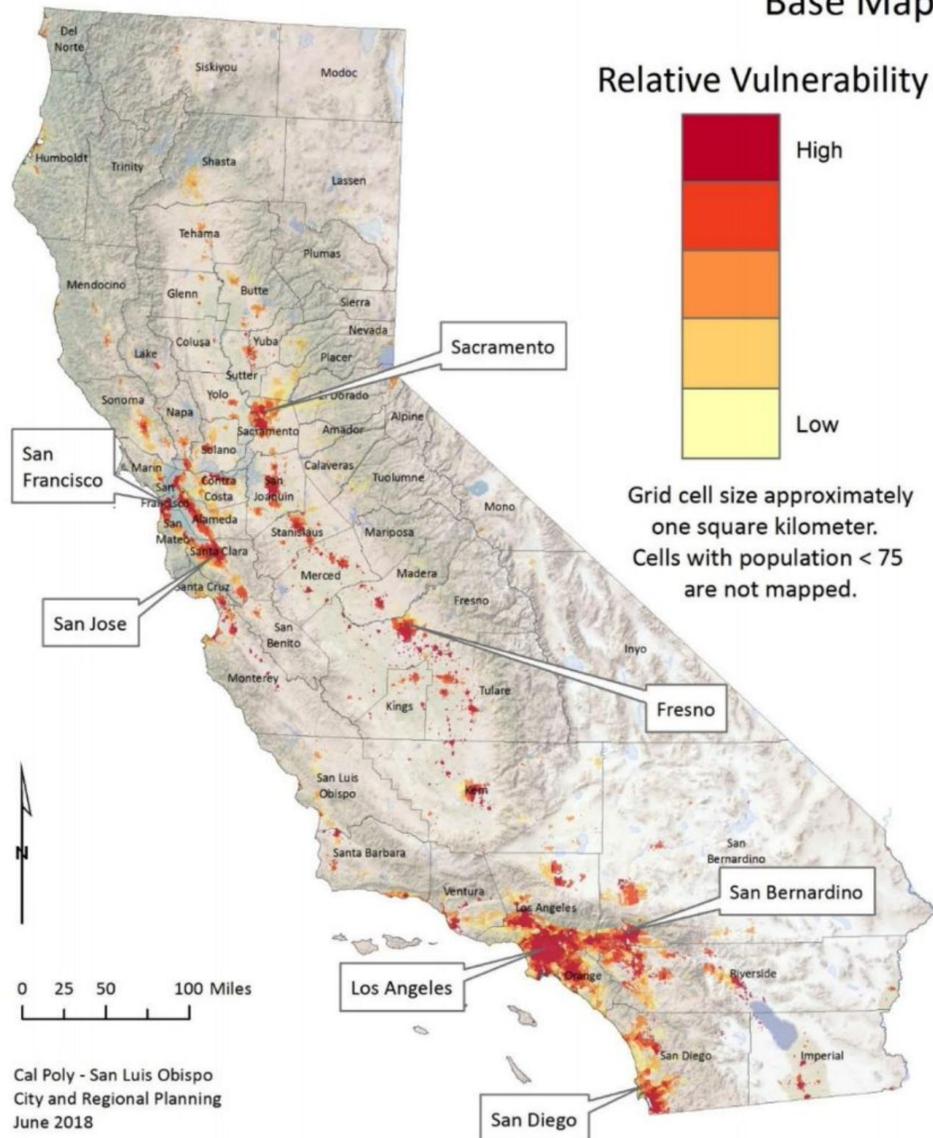
Cal Poly - San Luis Obispo
City and Regional Planning
June 2018

Source: ORNL LandScan 2015 Global Population Database.
UT-Battelle, LLC; 2015 American Community Survey (ACS) 5-year estimates.

Created by: C. Schuldt (4.J–Population-Social Vulnerability Base Map.mxd)

CA Fires 2001-2020

The Center for Ecosystem Climate Solutions
https://california-ecosystem-climate.solutions/

San Francisco, September 2020

Brittany Hosea-Small / AFP-Getty Images

Can we prevent megafires?

Prescribed fire: local emissions

Can we prevent megafires?

Prescribed fire: local emissions

Megafires: regional emissions

Policy challenge: Who gets the smoke?

Prescribed fire: local emissions

Megafires: regional emissions

To develop policies that are effective and equitable, we need...

To quantify the benefits of strategies like prescribed burns on air quality throughout the State.

A focus on vulnerable communities, but also on communities where prescribed burns occur.

To develop this understanding in the context of a changing climate.

We need **expertise** and **deep collaboration** from a number of areas:

- climate and weather modeling
- forest and vegetation modeling
- fire behavior modeling
- air quality modeling
- medicine and public health
- policy
- government

Today I've spoken about a few societal needs relating to climate change, wildfire, and equity.

Clean Air

Healthy Human Population

Social, Economic, & Racial Equity

SOCIETAL NEEDS

Effective Financial Risk Management/Insurance

Resilient Energy Infrastructure

Clean Air

Resilient Built Environment

Compensation for Wildfire Victims

Effective Water Infrastructure

Healthy Human Population

Effective Local Governance

Social, Economic, & Racial Equity

Net Negative GHG Emissions

Healthy Ecosystems

The Climate & Wildfire Institute

A boundary organization focused on delivering climate and wildfire related research services to decision-makers

April 15, 2021

Key Elements

Convening: A new independent boundary organization, in the form of a 501(c)(3), that brings together broad Climate and Wildfire research and practitioner communities in academia, government, and the private sector to sustain agile knowledge development that is responsive to public policy needs.

Policy and Decision-Making Context: An inclusive framework for research, policy, and solutions that are coordinated and linked to state and federal program priorities and legislative needs. Use research sites to demonstrate important findings to policymakers and managers.

Research, Pilots, and Solutions as a Service: Develop research, pilot projects, and solutions as a service with a focus on a needs-driven approach. Priorities are defined by the scale of need, ability to make an impact, and resource availability. Prioritized research services are co-developed collectively among academic, public, tribal, and private partners. They build on and collaborate with state, federal, and private initiatives, including the California Strategic Growth Council's Innovation Centers, the California Fire Science Consortium, and the Joint Institute for Wood Products Innovation (among many others), so that those initiatives, research, and programs can be expanded rather than reproduced.

Science and Technology Transfer: Develop science and technology transfer strategies for both policymakers and practitioners. The CWI will streamline the translation of scientific information to support decision-making, becoming a clearing house for data-driven policy and action.

Open Digital Infrastructure: Coordinate the development of open access and transparent information products that are current, accessible, and democratized, building on existing data sets and expanding them.

Adapting to climate change and protecting vulnerable communities requires deep and sustained cross-disciplinary and cross-sector engagement.