



# Wildfires In California

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# Wildfires

Wildfires are uncontrolled fires that spread through wild land and vegetation

## **Why are wildfires common in California?**

- In recent years, California has experienced severe droughts and increased temperatures
  - Sparks are easily able to catch onto dry vegetation and spread quickly



# History of Wildfires in California



## Largest

August Complex Fire(2020)  
Burned through more than a  
million acres

## Most Destructive

Camp Fire(2018)  
Burned through the entire  
city of Paradise

## Deadliest

Camp Fire(2018)  
Killed 85 people

## Most destructive year

2020  
Almost 4.4 million acres  
burned





Paradise, California



August Complex Fire





# Impacts of Wildfires



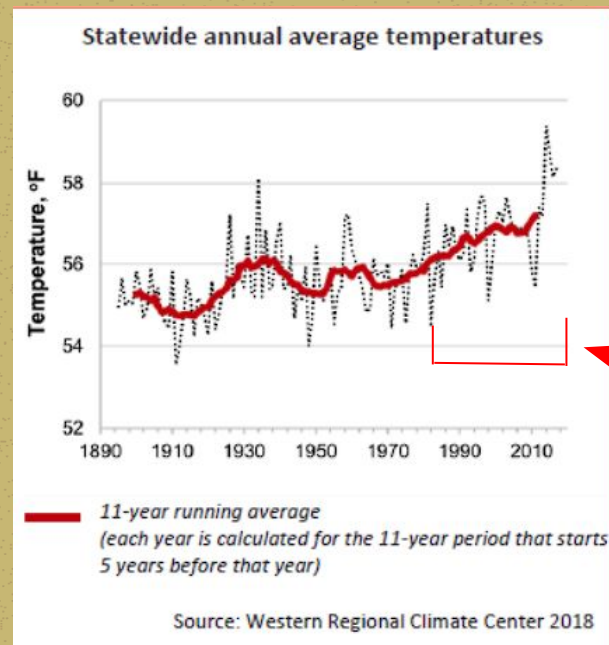
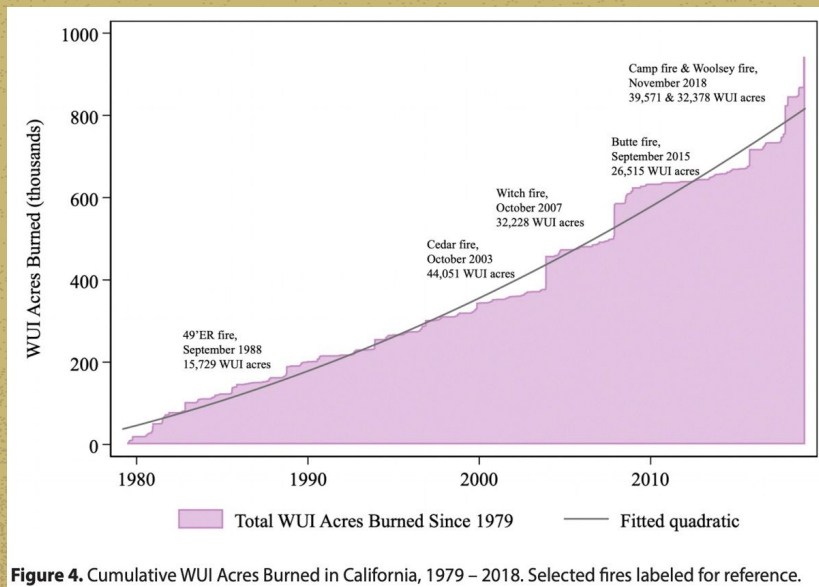
# Impact of Wildfires: Smoke

- By burning trees, wildfires release large amounts of smoke into the air
  - Smoke contains lots of Carbon Dioxide(CO<sub>2</sub>) and Carbon Monoxide(CO)
- Smoke causes damage to the environment as well as damage to people
  - Environmental Issues of smoke
    - Rising Temperatures in California

Smoke in San Francisco(2020)



# Wildfire frequency vs annual California temperature





# Impact of Wildfires: Forestry

- Less trees means that less carbon is captured and stored
- 
- Over the last 2 years, over 20% of the giant sequoia trees in California have burned down due to fires
- 
- Large parts of fires burning down means whole ecosystems break down
  - Wildlife loses habitat
    - Example: Turkey Vultures were unable to fly near Lake Tahoe due to wildfires
- Tourist Industry
  - National Parks close down due to fires

Sequoia burns in Sequoia NP





# Impact of Wildfires: Tourism

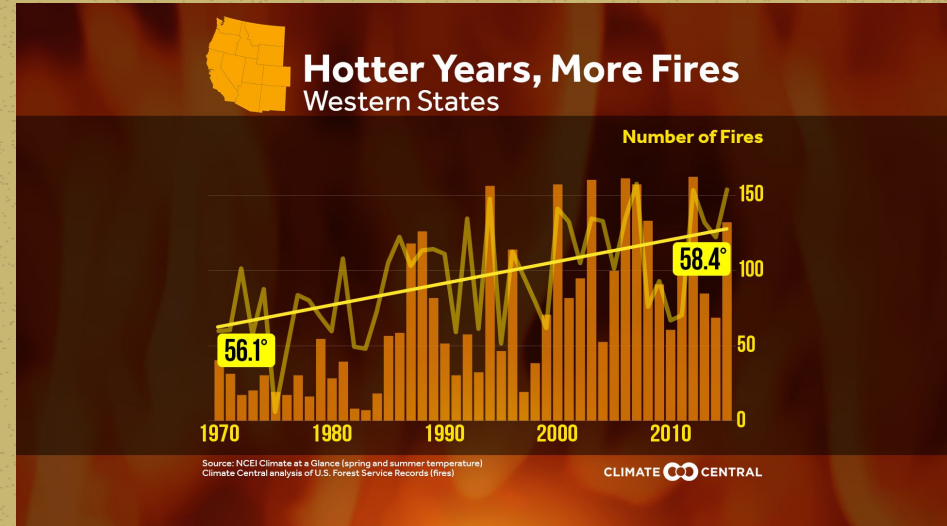
- National Parks close down due to fires
  - Yosemite NP
  - Sequoia NP
- Lake Tahoe
  - Popular holiday destination forced to close due to wildfires
- Wine Country
  - Napa County and Sonoma County
    - Glass Fire burned through thousands acres of vineyards

Vineyard on fire



# Climate Change

- Temperatures in California are predicted to rise 2 degrees by 2040
  - Wildfires are both a cause and result of this
    - Wildfires could get almost 50% more common if action isn't taken to prevent climate change
- Precipitation
  - More wildfires would lead to less evaporation and a longer dry season
  - Further exacerbating the drought, which in turn leads to more wildfires





# Impact on people

- Health issues
  - Firefighters
    - Increased rates of chronic bronchitis and abnormal lung funguses
  - People
    - Irritation in the eyes and nose
    - Risk of exacerbating existing conditions
      - In 2020&2021, studies showed that smoke increased severity of Covid 19
    - Mental health
      - Wildfires and smoke was proven to have increased levels of anxiety, stress and depression
- Costs
  - Property Damages, Disaster Relief, Victim aid, Clean up efforts
  - In 2020, fires caused almost \$2.3 Billion in damages

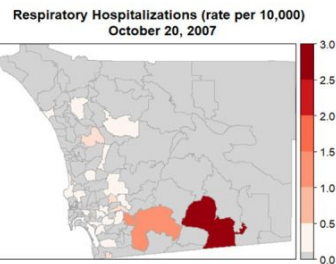
# Wildfires vs Respiratory hospitalizations in San Diego county

October 20, *Pre-fire*

A



B

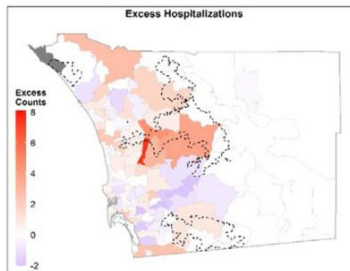


October 22, *Exposed Day 1*

C



D

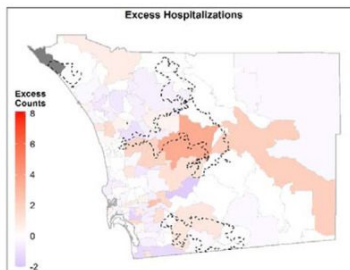


October 26, *Exposed Day 5*

E



F





Firefighters in the front lines without  
adequate masks or filters



Wildfire Evacuation Camp



# What is California doing?

## Legislation

- California added wildfires as a threat to the Climate Adaptation Strategy in 2009
- Gov. Newsom committed \$15B to fighting fires

## Regulation

- California has cracked down on companies such as PG&E to make sure things like electrical poles are sturdy and won't fall and start more fires
- Suspending dangerous projects such as oil pipelines

## Planning

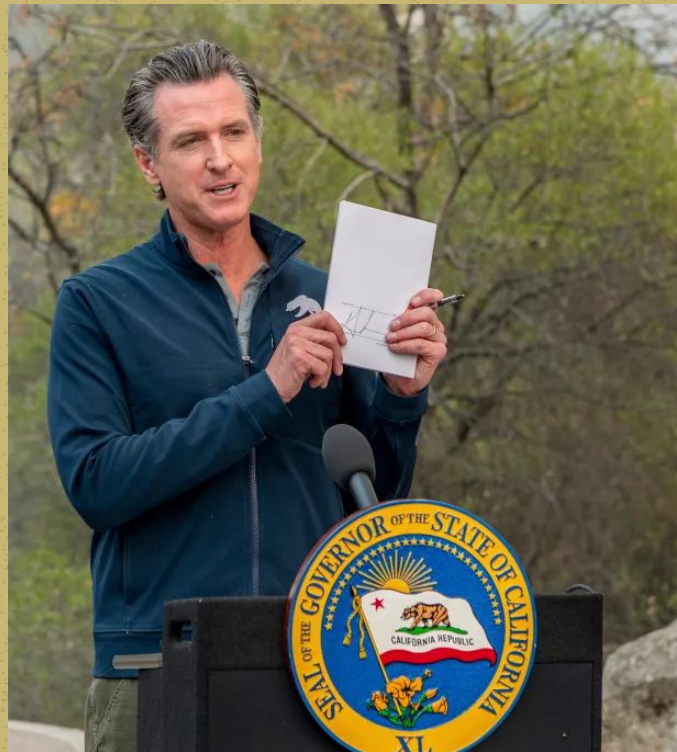
- California's main goal is to prevent fires from starting
- Safety in and around homes
- Clearing dangerous brush and foliage
- Fire Breaks



PG&E checking power lines that are near trees



Gov. Newsom signs \$15B wildfire relief bill



# What can we do?

## Prevent Climate Change

- Keep track of our carbon footprint and emissions to prevent global warming
- Reduce water usage
  - Reducing drought will reduce wildfires

## Safe Campfires

- Campfires are the biggest cause of wildfires
  - Tips
    - Put out fires thoroughly
    - Only start fires in safe places under safe conditions

## Other fire starters

- Safely dispose of cigarette butts
- Don't operate heavy machinery that can spark
- Don't do anything that could start a fire especially in a dry place



# Technologies for fighting wildfires

## Thermal Images

Thermal imaging cameras and headsets can help firefighters see better in hazy conditions

## Drones and Satellites

- Can be used to monitor dry/vulnerable land to make predictions and alert firefighters early
- Help spread fire retardant easier and autonomous with higher precision

## Robots

Sending autonomous robots into fire zones can help prevent injuries and deaths. A Swedish company is already working on a search and rescue robot

# Reflection

- My project talks about the effects of wildfires on the environment as well as solutions that people, as well the state can implement.
  - We discussed many things that people can do to reduce the effects of climate change and I talk about some ways that are related to wildfire prevention
- I found it interesting that California halted projects related to oil pipes to prevent wildfires.
  - Oil leaks and pipeline bursts are concerns that could cause wildfires
- I also found that there was a strong positive correlation between drought levels and wildfires.
  - As drought levels increase, the soil and vegetation gets drier, which makes it susceptible to wildfires



# Reflection: My actions

- The best thing I can do is keep track of my water usage
  - By using less water, I contribute to the drought reduction effort
- I can also be wary of my carbon footprint and make sure I'm not contributing as much to global warming
- Be extra cautious when outdoors
  - Especially in hot, dry areas



# Sources

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