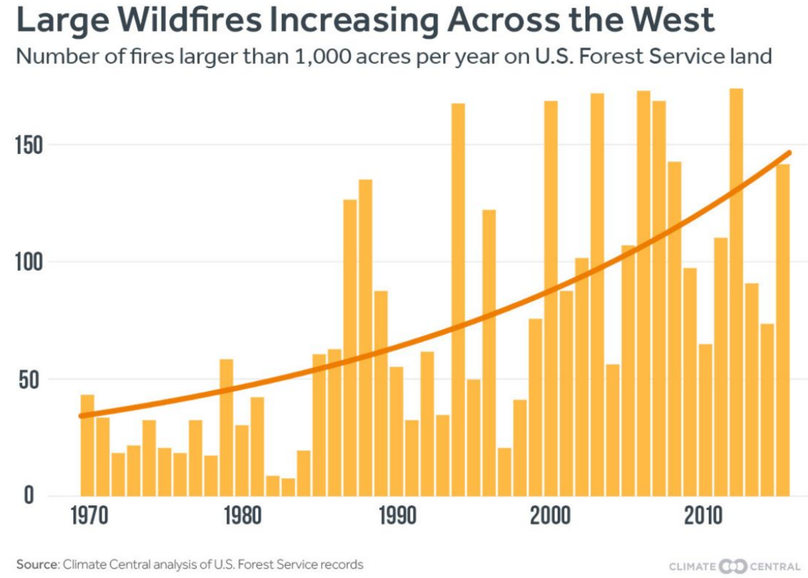
The Fire Crew

What Burns Today, Our Future Pays For Tomorrow

The Problem Statement

This project aims to create an immersive VR experience that clearly illustrates the impacts of climate change, emphasizing the increasing severity of natural disasters. By leveraging VR technology, we seek to inform, engage, and inspire users to understand the urgency of climate action



The History of Wildfires in California

Wildfires in California have grown significantly worse in recent years due to climate change, prolonged droughts, and human activity. Historically, the state's wildfire season lasted from late spring to early fall, but now fires burn year-round.

Since 2017, California has experienced some of its most destructive and deadly wildfires on record. The 2018 Camp Fire, the deadliest in state history, destroyed nearly 19,000 structures and claimed 85 lives. In 2020, the August Complex Fire became the largest wildfire in California history, burning over 1 million acres. That same year, a record-breaking 4.2 million acres burned across the state—more than double the previous record. Persistent drought and extreme heat waves have dried out vegetation, creating ideal conditions for massive fires to ignite and spread rapidly.

The combination of climate change, high winds, and human-caused ignitions has made wildfires more intense, unpredictable, and devastating. These fires not only destroy homes and displace communities but also worsen air quality and contribute to carbon emissions, further fueling climate change. As conditions continue to deteriorate, investing in better forest management, fire prevention strategies, and climate action is critical to reducing the scale of future wildfires.

Source: WFCA. (n.d.). *Where do wildfires occur?* Wildland Firefighter Coalition. https://wfca.com/wildfire-articles/where-do-wildfires-occur/

Witch Fire (California 2007)

Level 1 (Least intense):
Witch fire(2007)
The Witch Fire occurred in San Diego County in October 2007. It burned 197,990 acres and destroyed 1,650 structures, including homes and buildings, and tragically claimed the lives of two people. Fueled by strong Santa Ana winds, the fire reached heights of 80 to 100 feet and forced the evacuation of approximately 500,000 residents, marking one of California's largest evacuations. The fire was fully contained by November 6, 2007. The Witch Fire remains one of the most devastating wildfires in California's history.
Source:City of San Diego. (n.d.). *Witch Creek Fire*. San Diego Fire-Rescue Department.
https://www.sandiego.gov/fire/about/majorfires/2007witchcreek

Mendocino Complex Fire (California 2018)

Level 2 (Intense):
Mendocino Complex Fire(2018):
The Mendocino Complex Fire, which started in late July 2018, became the largest wildfire complex in California's history at that time. It burned a total of 459,123 acres across Colusa, Lake, Mendocino, and Glenn counties. The complex consisted of two fires: the Ranch Fire and the River Fire. Over 1,000 firefighters worked tirelessly to control the fire, which destroyed 280 structures, including homes, and tragically resulted in one death. The fire was fully contained by September 18, 2018, after nearly two months of intense firefighting efforts.
Source: Frontline Wildfire. (n.d.). *Mendocino Complex Fire: Causes, History & Statistics*. Frontline Wildfire.
https://www.frontlinewildfire.com/wildfire-news-and-resources/mendocino-complex-fire/

August Complex Fire (California 2020)

Level 3(Most Intense):

August Complex(2020): The August Complex Fire ignited in August 2020 within the Mendocino National Forest, affecting Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, and Colusa counties in Northern California. It burned a total of 1,032,648 acres, making it the largest wildfire in California's recorded history. The fire destroyed 935 structures and tragically resulted in one fatality. Firefighting efforts involved thousands of personnel, and the fire was fully contained by October 25, 2020.

Source: The Guardian. (2020, December 30). *California wildfires: North Complex blaze among record-setting fires*. The Guardian.
https://www.theguardian.com/us-news/2020/dec/30/california-wildfires-north-complex-record

Does Climate Change Cause Wildfires?

Link between Climate Change and Wildfires:

- **Rising Temperatures**: Global temperatures have increased by 1°C since 1880, drying out vegetation and making it more flammable. This causes fires to spread faster and burn hotter.
- **Extended Fire Seasons**: Higher temperatures and earlier snowmelt are extending fire seasons, giving wildfires more time to ignite and spread.
- **Droughts**: Longer and more severe droughts dry out forests and grasslands, creating ideal conditions for wildfires.
- **More Lightning Strikes**: Warmer temperatures increase air moisture, leading to more thunderstorms and lightning strikes that can ignite wildfires.
- **Vegetation Shifts**: Warmer temperatures and altered rainfall favor the growth of more flammable plants, increasing the risk of wildfires.
- **Human Activity**: Human-caused factors like unattended campfires, discarded cigarette butts, and faulty power lines also contribute to wildfires.

Impact of Wildfires on Climate Change:

- **Carbon Emissions**: Wildfires release large amounts of CO_2 which worsens climate change by increasing greenhouse gas levels in the atmosphere.

The Future of Wildfires and Climate Change:

- **Increased Fire Risk**: Extreme fire seasons are expected to grow by up to 50% by the end of the century, even with reduced emissions. Areas like Australia, Europe, the Americas, and the Arctic are particularly vulnerable.
- **Severe Consequences**: Global fire risk will increase by up to 14% by 2030 and 30% by 2050.

Source: International Fund for Animal Welfare. (n.d.). *Climate change and wildfires: Understanding the link and impact*. IFAW. https://www.ifaw.org/ca-en/journal/climate-change-wildfires

How You Can Help Fight Climate Change

Reduce Carbon Emissions

- **Use Renewable Energy**: Switch to solar, wind, or hydro power instead of fossil fuels.
- **Drive Less**: Walk, bike, carpool, or use public transportation when possible.
- **Energy Efficiency**: Turn off lights, unplug electronics, and use energy-efficient appliances.

Reduce Waste & Pollution

- **Reduce, Reuse, Recycle**: Minimize plastic waste and recycle paper, glass, and metals.
- **Compost**: Decomposing food waste naturally reduces methane emissions from landfills.
- **Avoid Single-Use Plastics**: Use reusable bags, bottles, and containers.

Sustainable Consumer Choices

- **Buy Local & Seasonal Foods**: Reduces transportation emissions.
- **Choose Sustainable Fashion**: Avoid fast fashion, buy secondhand, and support ethical brands.
- **Use Eco-Friendly Transportation**: Opt for electric or hybrid vehicles, if possible.

Source: Trees for the Future. (2023, June 3). *Environment and food systems*. Trees.org. https://trees.org/2023/06/03/environment-and-food-systems/