

# Wildfire Impacts on Valley Air Quality

South Central Fresno CSC Meeting  
August 9, 2023

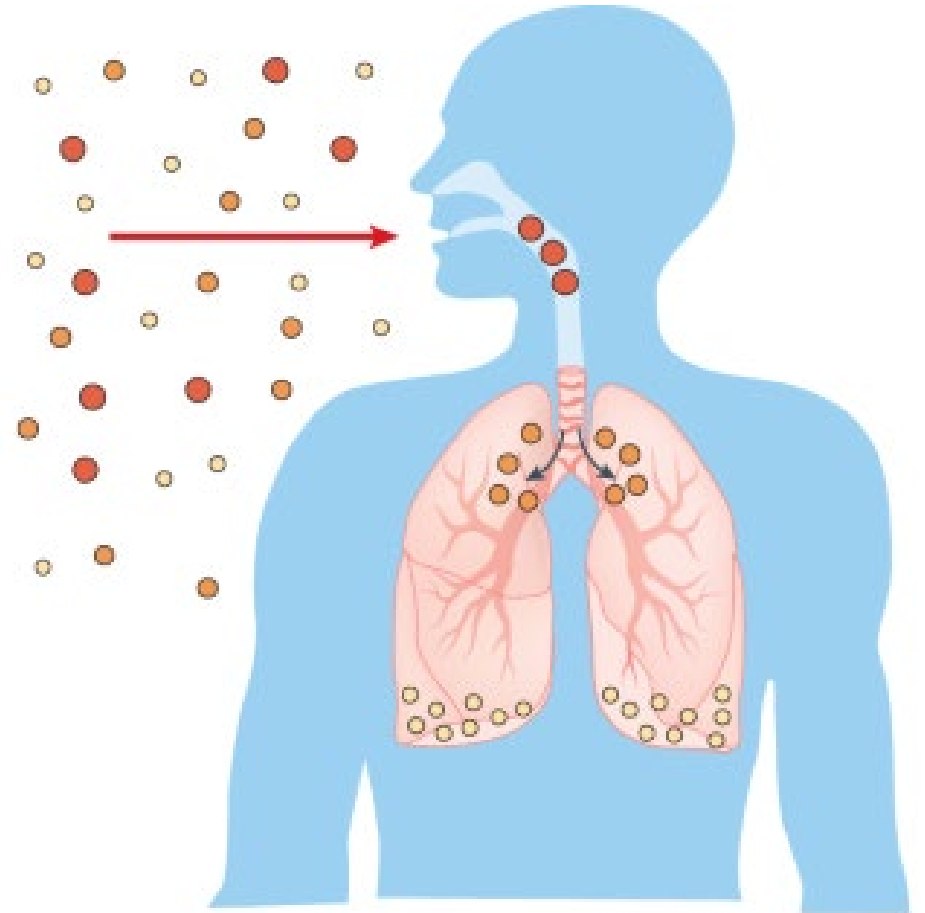
# Ongoing Wildfire Challenges

- Emissions from wildfires are enormous, can well exceed total mobile (cars, trucks) and industrial source emissions in the Valley
  - Leads to excessively high PM and ozone concentrations
- Decades-long fire suppression policies and excessive fuel build-up, widespread tree mortality, changing climate conditions (higher temperatures and drier conditions) causing intense wildfire seasons in Western U.S. in recent years
- District ongoing efforts:
  - Supporting local/state/federal fuel reduction efforts to help reduce frequency/severity of wildfires
  - Conducting extensive public outreach concerning wildfire health dangers and potential health-protective actions



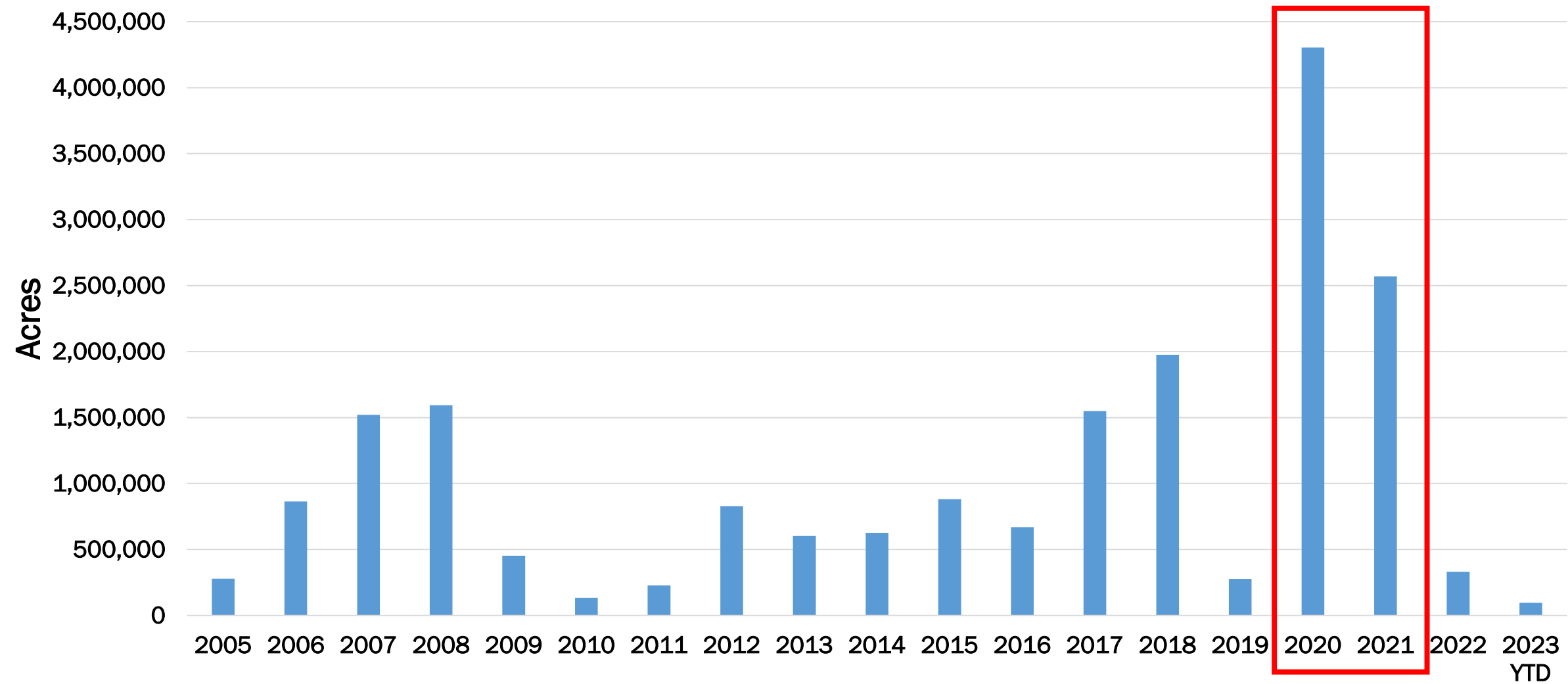
# Public Health Impacts

- Scientific research links prolonged inhalation of smoke to a variety of health effects
  - Lung disease and decrease in lung function for children
  - Pulmonary arterial hypertension and pulmonary heart disease, may lead to cancer or heart failure





# 2020 & 2021 Worst CA Wildfire Seasons on Record



Source: CalFire


# Top 20 Largest California Wildfires

- 9 of top 20 largest wildfires in California history occurred during 2020 & 2021 wildfire seasons
  - 5 fires from 2020 season
  - 4 fires from 2021 season
- Evidence of increasingly intense and destructive fire activity

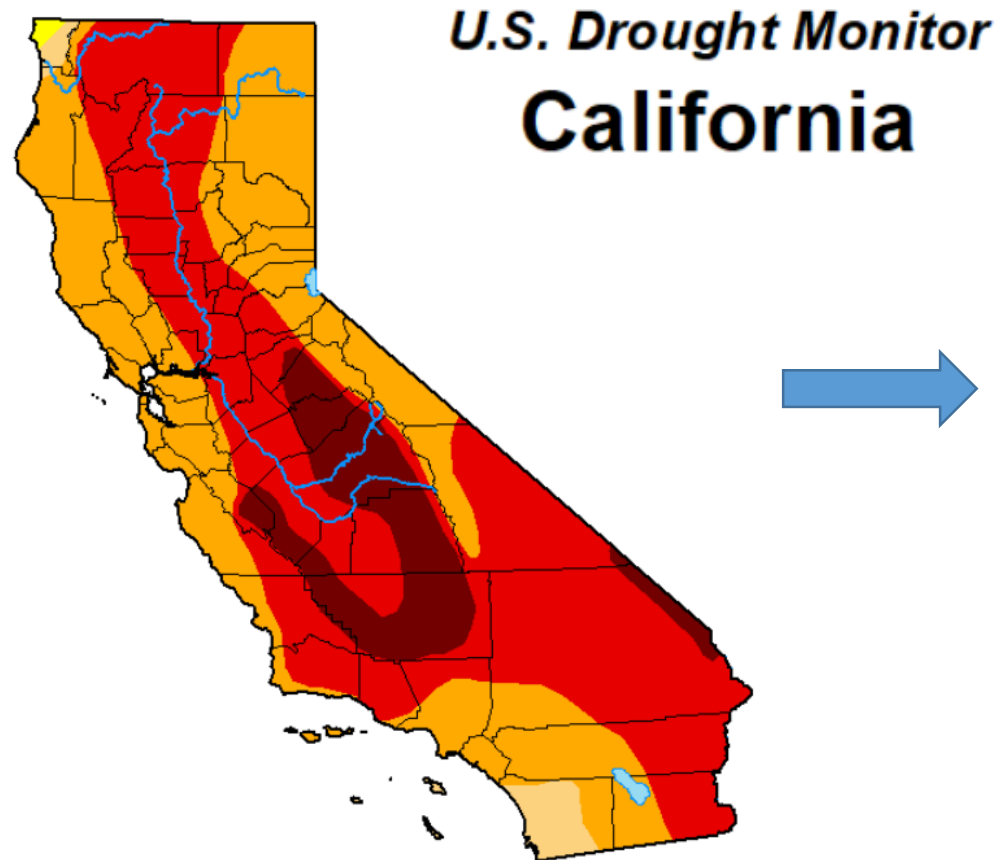
	FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1	AUGUST COMPLEX (Lightning)	August 2020	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	1,032,648	935	1
2	DIXIE (Powerlines)	July 2021	Butte, Plumas, Lassen, Shasta & Tehama	963,309	1,311	1
3	MENDOCINO COMPLEX (Human Related)	July 2018	Colusa, Lake, Mendocino & Glenn	459,123	280	1
4	SCU LIGHTNING COMPLEX (Lightning)	August 2020	Stanislaus, Santa Clara, Alameda, Contra Costa, & San Joaquin	396,625	225	0
5	CREEK (Undetermined)	September 2020	Fresno & Madera	379,895	858	0
6	LNU LIGHTNING COMPLEX (Lightning/Arson)	August 2020	Napa, Solano, Sonoma, Yolo, Lake, & Colusa	363,220	1,491	6
7	NORTH COMPLEX (Lightning)	August 2020	Butte, Plumas & Yuba	318,935	2,352	15
8	THOMAS (Powerlines)	December 2017	Ventura & Santa Barbara	281,893	1,060	2
9	CEDAR (Human Related)	October 2003	San Diego	273,246	2,820	15
10	RUSH (Lightning )	August 2012	Lassen	271,911 CA / 43,666 NV	0	0
11	RIM (Human Related)	August 2013	Tuolumne	267,314	112	0
12	ZACA (Human Related)	July 2007	Santa Barbara	240,207	1	0
13	CARR (Human Related)	July 2018	Shasta County & Trinity	229,651	1,614	8
14	MONUMENT (Lightning )	July 2021	Trinity	223,124	28	0
15	CALDOR (Human Related)	August 2021	Alpine, Amador, & El Dorado	221,835	1,005	1
16	MATILIJIA (Undetermined)	September 1932	Ventura	220,000	0	0
17	RIVER COMPLEX (Lightning)	July 2021	Siskiyou & Trinity	199,359	122	0
18	WITCH (Powerlines )	October 2007	San Diego	197,990	1,650	2
19	KLAMATH THEATER COMPLEX (Lightning)	June 2008	Siskiyou	192,038	0	2
20	MARBLE CONE (Lightning)	July 1977	Monterey	177,866	0	0

There is no doubt that there were fires with significant acreage burned in years prior to 1932, but those records are less reliable, and this list is meant to give an overview of the large fires in more recent times. This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.

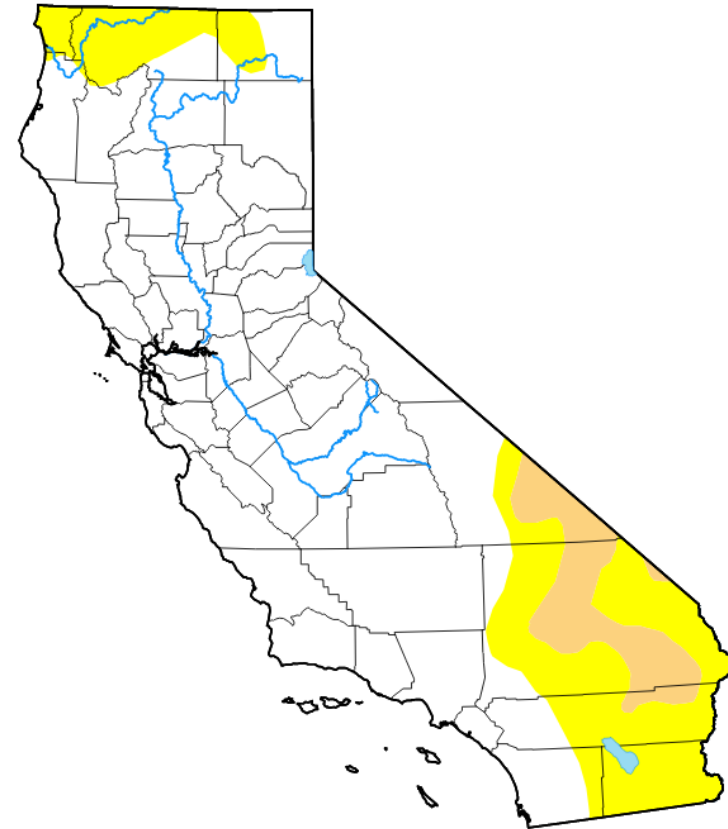
\*Numbers not final.

 10/24/2022

# Drought Conditions Improving in California

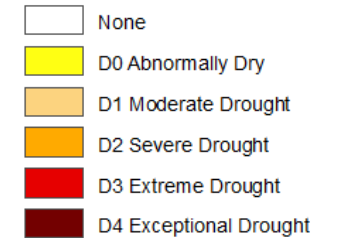


June 7, 2022



July 25, 2023

Intensity:



*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>*

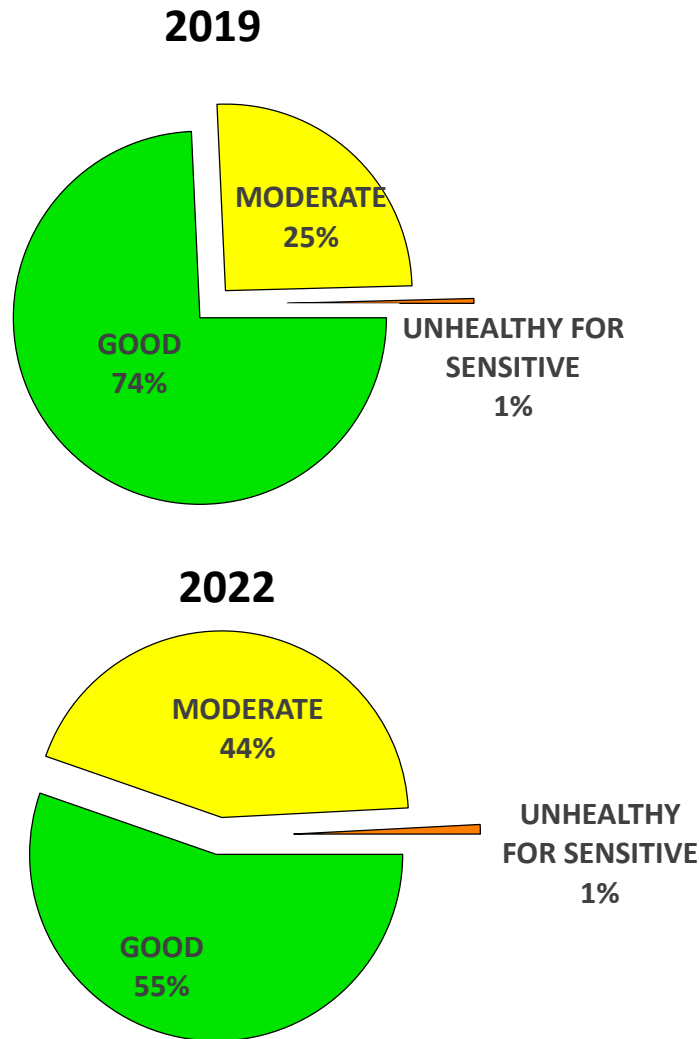
Author:

David Simeral  
Western Regional Climate Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

# Summer-Fall PM2.5 AQI Comparison

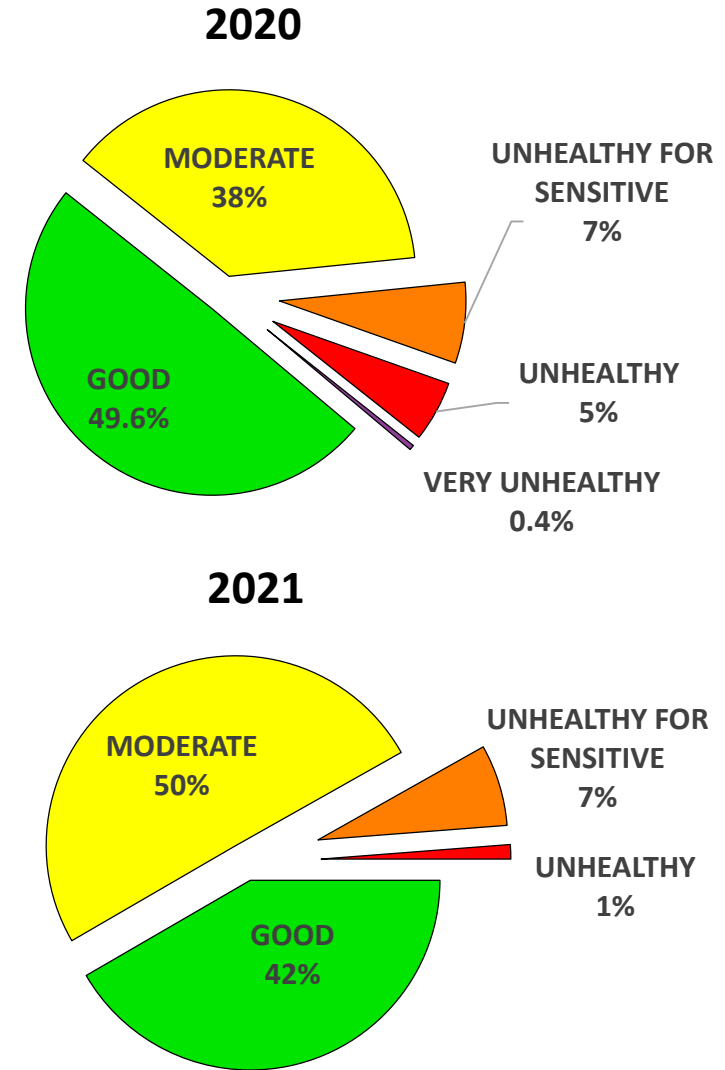


- Ozone season is the time of year when PM2.5 is typically lowest
- Any Unhealthy PM2.5 AQI days in this season are typically only caused by wildfire smoke
- 2019 & 2022 were low wildfire years and had few PM2.5 days in the Unhealthy AQI categories



# Summer-Fall PM2.5 AQI Comparison

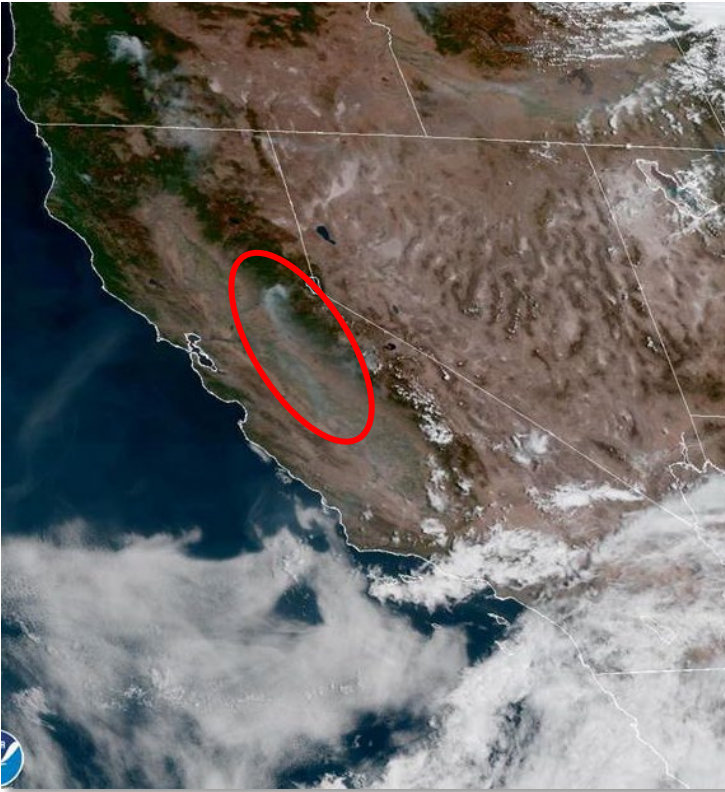
- 2020 & 2021 saw more summer and fall days when wildfire smoke impacted the Valley
- Increased wildfire years will have more PM2.5 days in the Unhealthy AQI categories



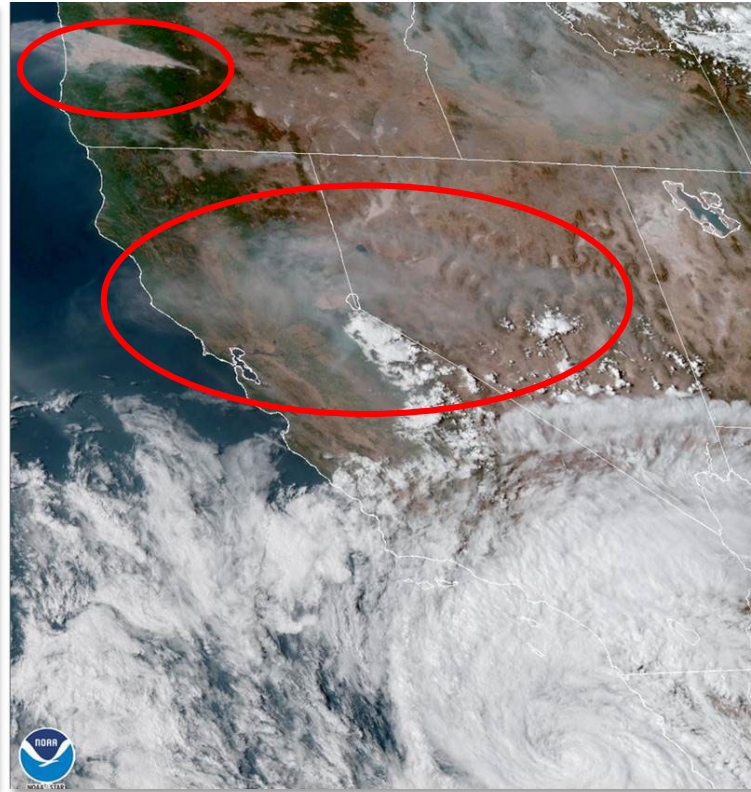


# Progression of Wildfire Smoke (Sept 8-10, 2022)

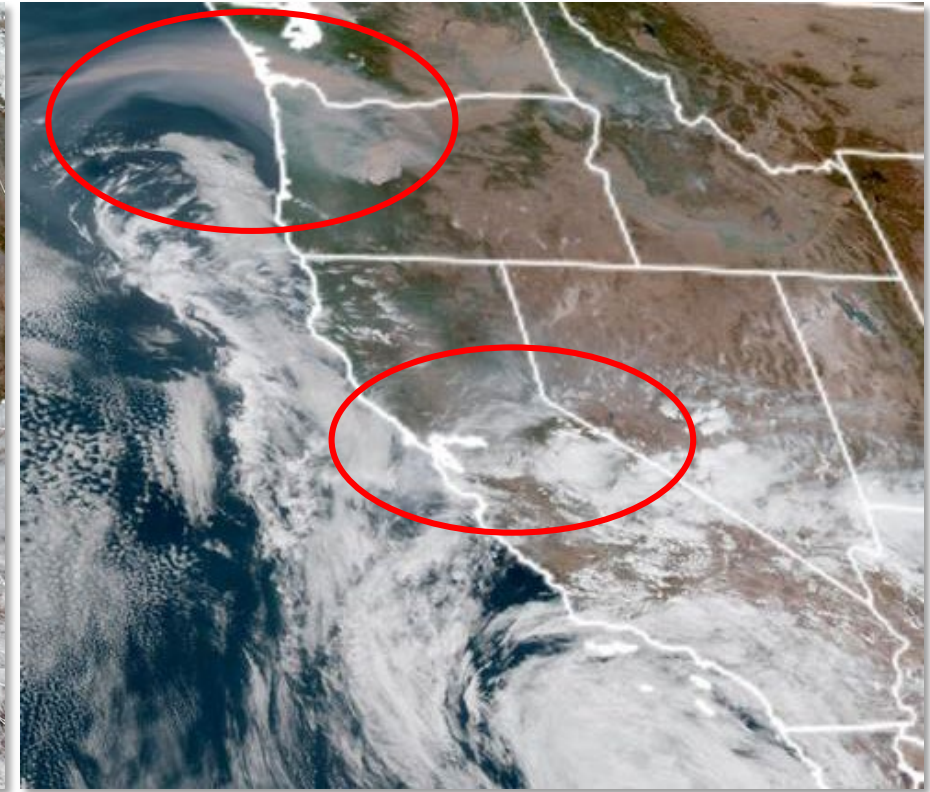
- Smoke impacts from Mosquito Fire (Placer County), various CA/NV fires, Oregon fires transporting over Pacific, tropical storm Kay approaching from the south



Sept 8, 2022



Sept 9, 2022

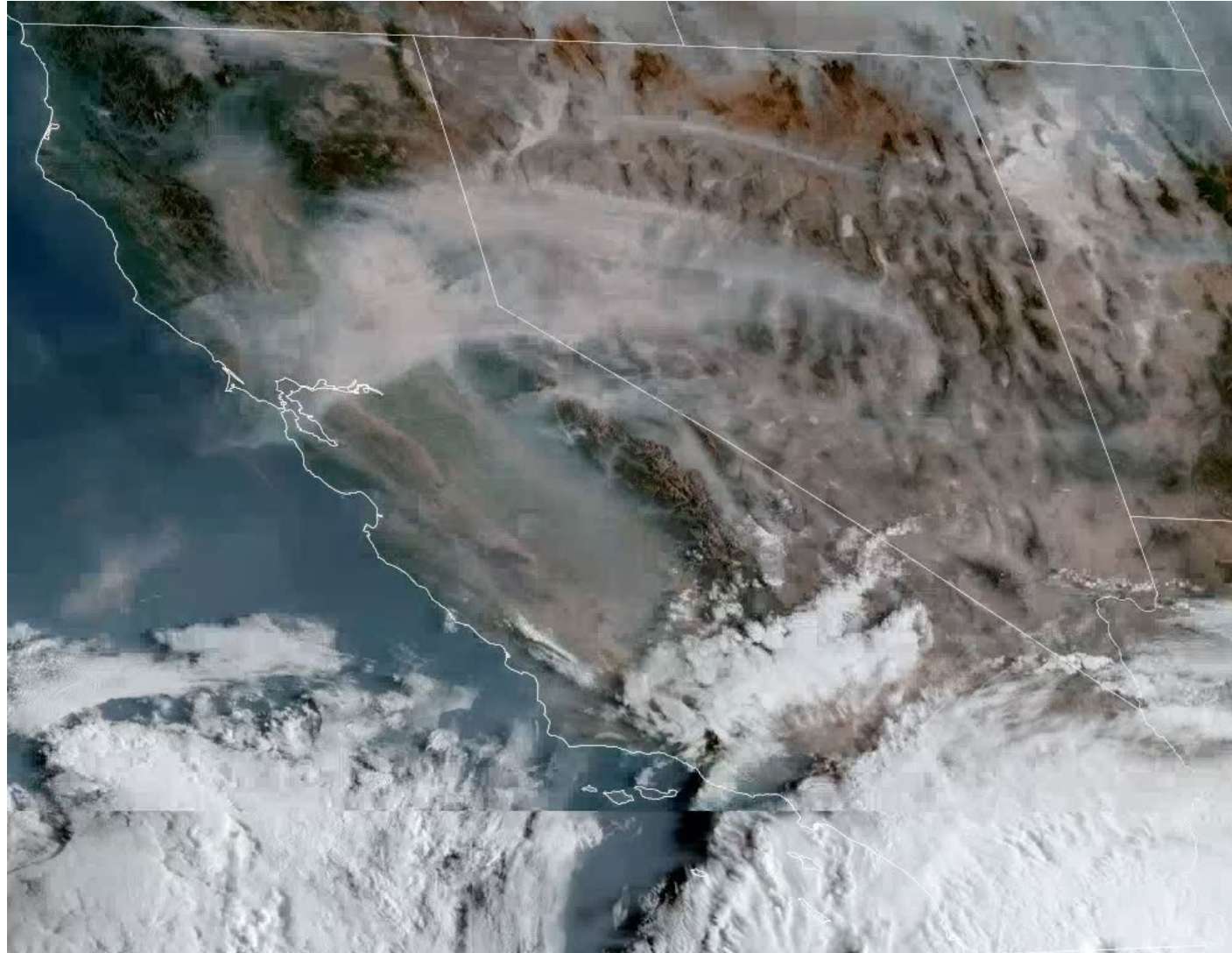


Sept 10, 2022

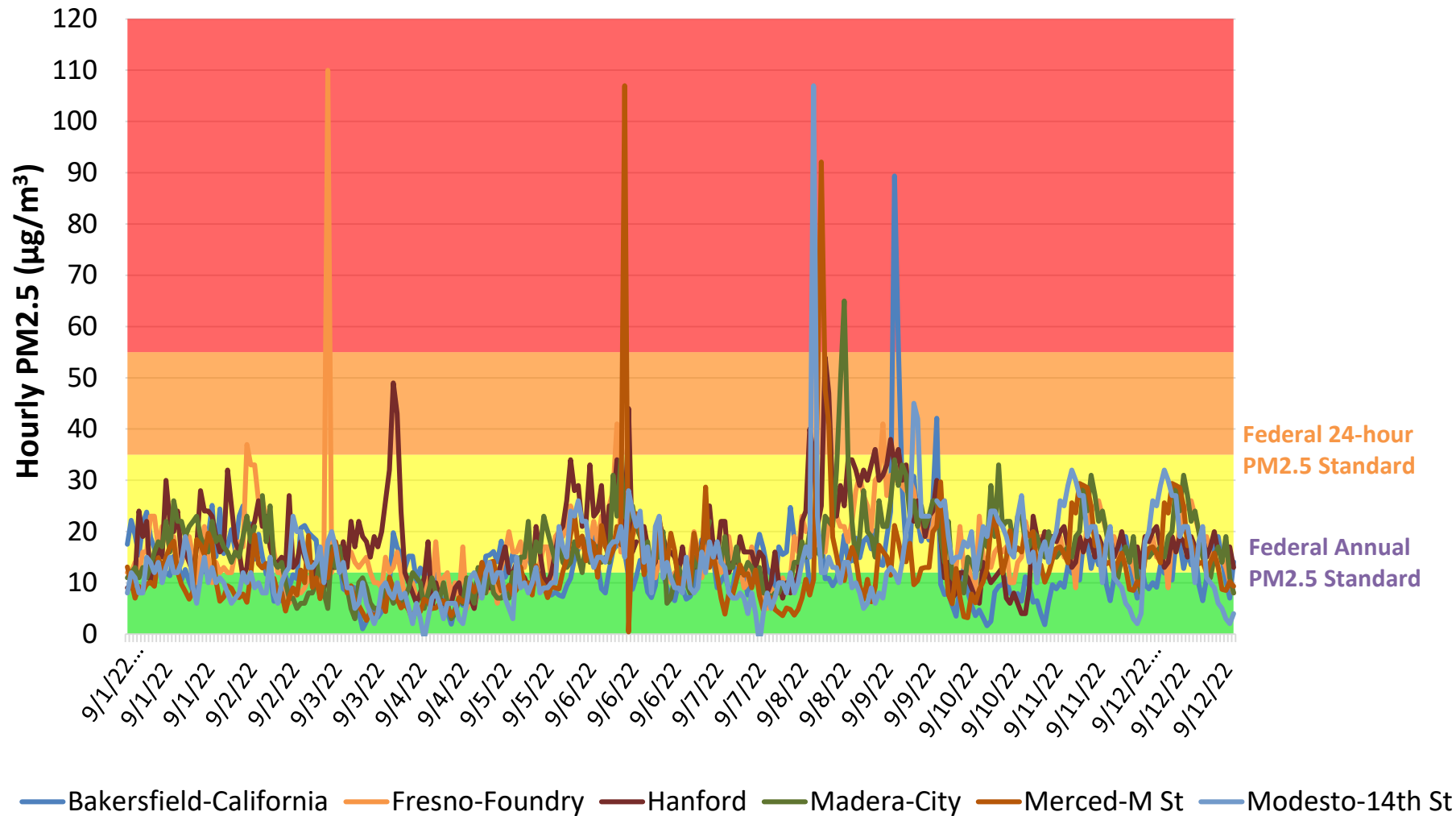


# Satellite View of Wildfire Activity

*(September 9, 2022)*



# Example: Elevated PM2.5 in Early September 2022



- Hourly PM2.5 concentrations reflect short-term impacts from wildfire smoke
- Values exceeding  $100 \mu\text{g}/\text{m}^3$  in multiple Valley locations

# Coordination with Land Managers

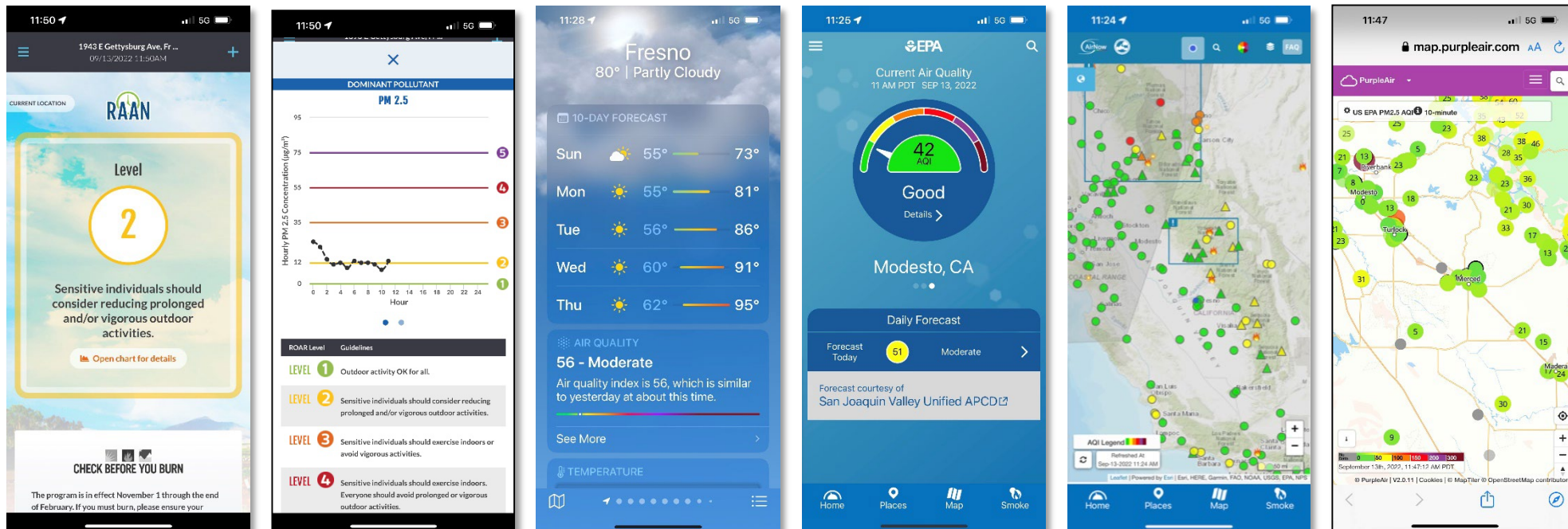
- District works closely with land management agencies on a daily basis to provide technical support and enhance wildfire response coordination efforts and public outreach
- District assists in deployment of temporary PM2.5 monitors to impacted communities
- District works with land management partners to support enhanced forest management efforts to address extreme fuel build-up





# Educating Residents on Available Air Quality Tools

- Residents have found mobile applications useful as they provide real-time air quality information in an easily consumable way
- New air quality tools have become available in recent years
  - District promotes these tools to ensure public has full range of information



# Links to Tools

- Valley Air District (English/Spanish)
  - Real-time Air Advisory Network Webpage
    - <https://www.valleyair.org/myraan/>
  - Smartphone apps
    - <https://www.valleyair.org/app/>
- Weather Channel (English/Spanish)
  - [Smartphone apps](#)
    - Apple - <https://apps.apple.com/us/app/weather-the-weather-channel/id295646461>
    - Android - [https://play.google.com/store/apps/details?id=com.weather.Weather&hl=en\\_US&gl=US](https://play.google.com/store/apps/details?id=com.weather.Weather&hl=en_US&gl=US)
- EPA Airnow Website (English/Spanish)
  - <https://www.airnow.gov/>
- EPA Fire and Smoke Map (English/Spanish)
  - <https://fire.airnow.gov/>
- EPA Smoke Spotter App (English/Spanish)
  - Apple - <https://apps.apple.com/us/app/california-smoke-spotter/id1531391671>
  - Android - [https://play.google.com/store/apps/details?id=com.prescribedfiresapp&hl=en\\_US&gl=US](https://play.google.com/store/apps/details?id=com.prescribedfiresapp&hl=en_US&gl=US)