

Wildfire Season Update 2023

March 2023

Presented by:

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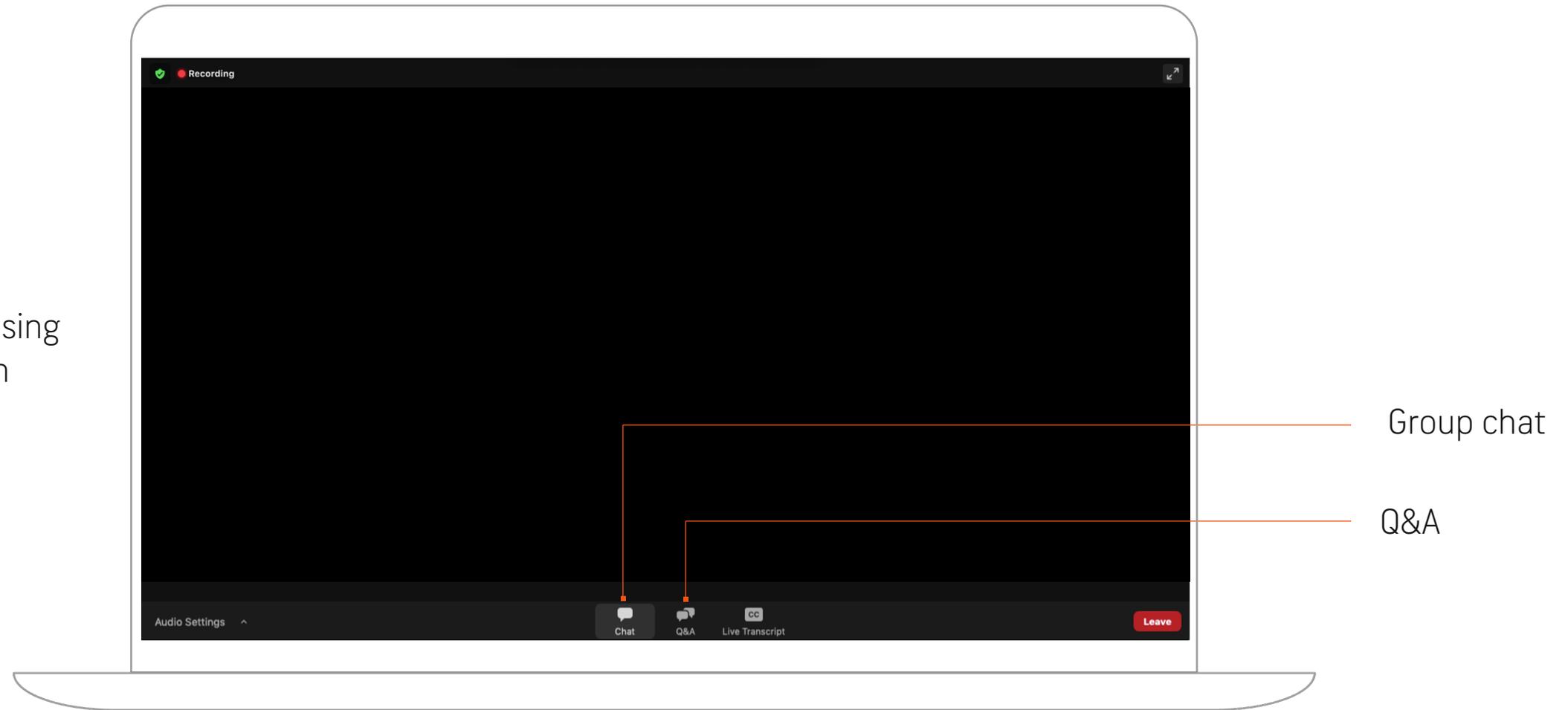
Tyler Knowlton, Director Communications, Communities, Partnerships - Plume Labs by AccuWeather

Brian Fennessy, Fire Chief of the Orange County Fire Authority (OCFA)



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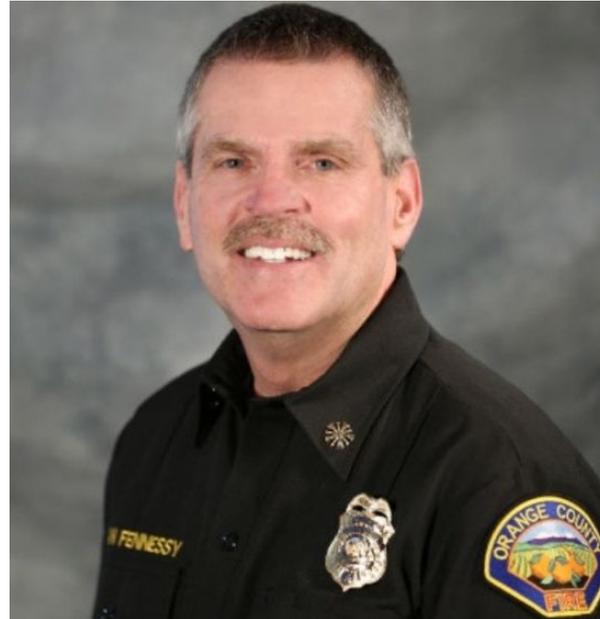


Meet the Team



Paul Pastelok

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Brian Fennessy

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Director of Communications,
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Wildfire Season Update 2023

Outline:

1. Summary of the 2022 Wildfire Season
2. Wildfire Trends
3. Fire Outlook 2023 Season



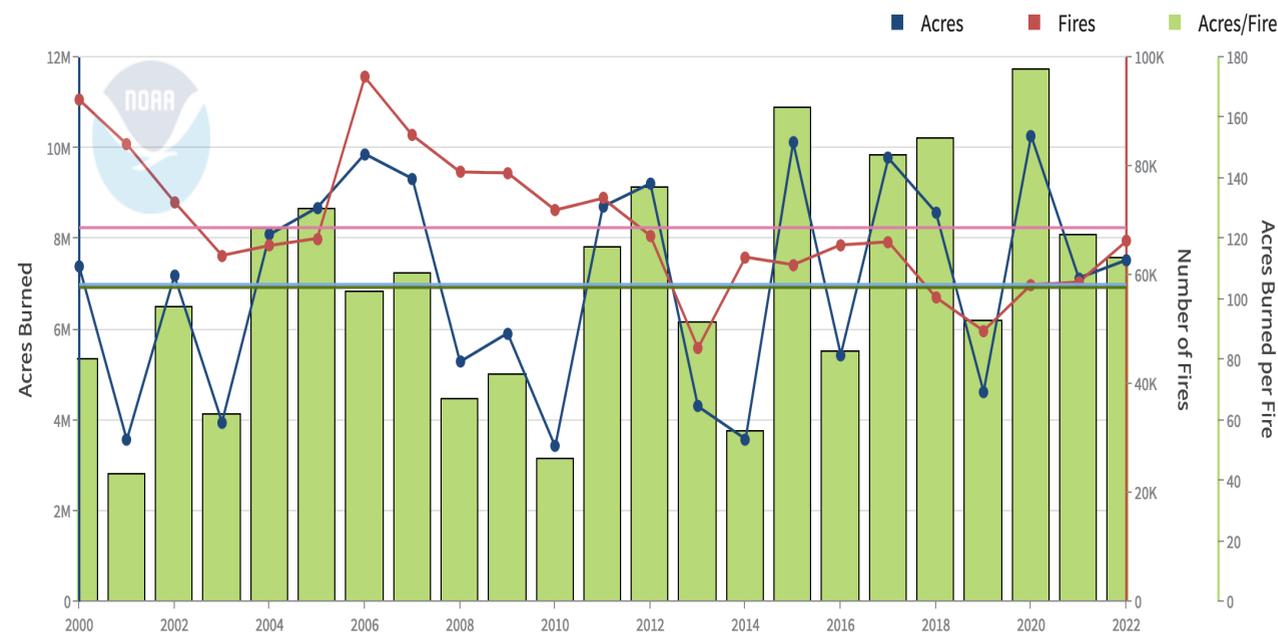
2022 U.S. Fire Summary

- The third year of La Nina – La Nina “usually” favors less precipitation across Southern California and Southwest, more in the Northwest
- Fires broke out early in 2022 (late winter) in the Southwest then increased in the Northwest by mid-summer
- Alaska's 7th biggest fire season is big tundra fires; most of the fires were away from major towns and cities and left to burn
- Northwest heat and dryness returned mid-summer and wildfire spread across most of the interior Northwest and Northern Rockies, extending into southwest Canada. Season lasted into the early fall before October rain and snow
- California saw a lack of large fires in 2022, rather quiet compared to recent years (since 2019). Mosquito Fire was the biggest and most difficult to contain

2022 Statistics:

66,255 U.S. Wildfires - 120% of 10 yr. Historical Average
 7,534,403 U.S. Acres Burned (11th most) - 104% of 10 yr. Historical Avg.

U.S. Wildfires



2001-2020 Average: 7,000,513.55 Acres 68,707.25 Fires 103.92 Acres/Fire

Source: [National Interagency Fire Center \(NIFC\)](#)

Powered by [ZingChart](#)



Regional Breakdown and Factors in 2022

Southwest

- 904,422 Acres (95-15 Climo. Avg. – 270,000)
- Season: Late Feb. – late Aug.

Factors:

1. Low previous winter snowpack
2. Extreme drought
3. Windy at times
4. Extreme High Temp. Periods (Mar.-Apr.)

Interior Northwest

- Season – late summer – end of October
- Washington's numbers were the lowest in 10 years
- Late-season fires continued interior through mid Fall

Factors:

1. A warm, dry period east of the Cascades in the Fall allowed fires to burn later in the Fall
2. True wet season east of the Cascades delayed

Alaska

- 3.08 million acres burned in 2022 (7th biggest)
- Season: Late May – early August
- 1.84 million acres burned in June, nearly tying the all-time record for June
- 18,000 lightning strikes in 2 days in July

Factors:

1. Hot and dry early summer
2. Longer dry and warm season
3. Many of the fires are let go to burn in Alaska

California (Not as active)

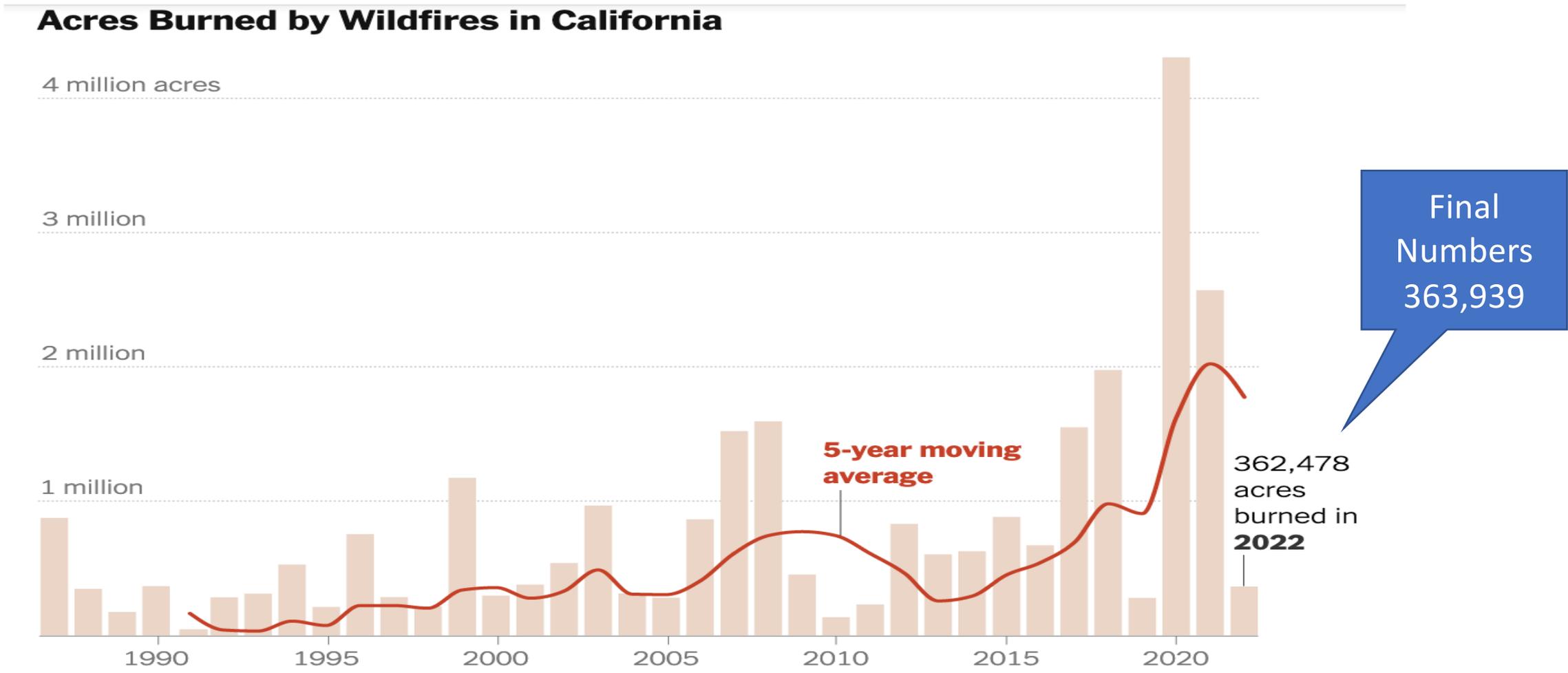
- 363,939 acres burned, below 2.5 million 2021, and well below 4.3 million in 2020; 7,667 fires
- Season – Brief period in spring, then early September with Mosquito Fire

Factors for California will be discussed later.



Acres Burned in California Past Three Decades – Recent Rise

However, weather cycles and patterns still make an impact to fire season shown by the peaks and valleys

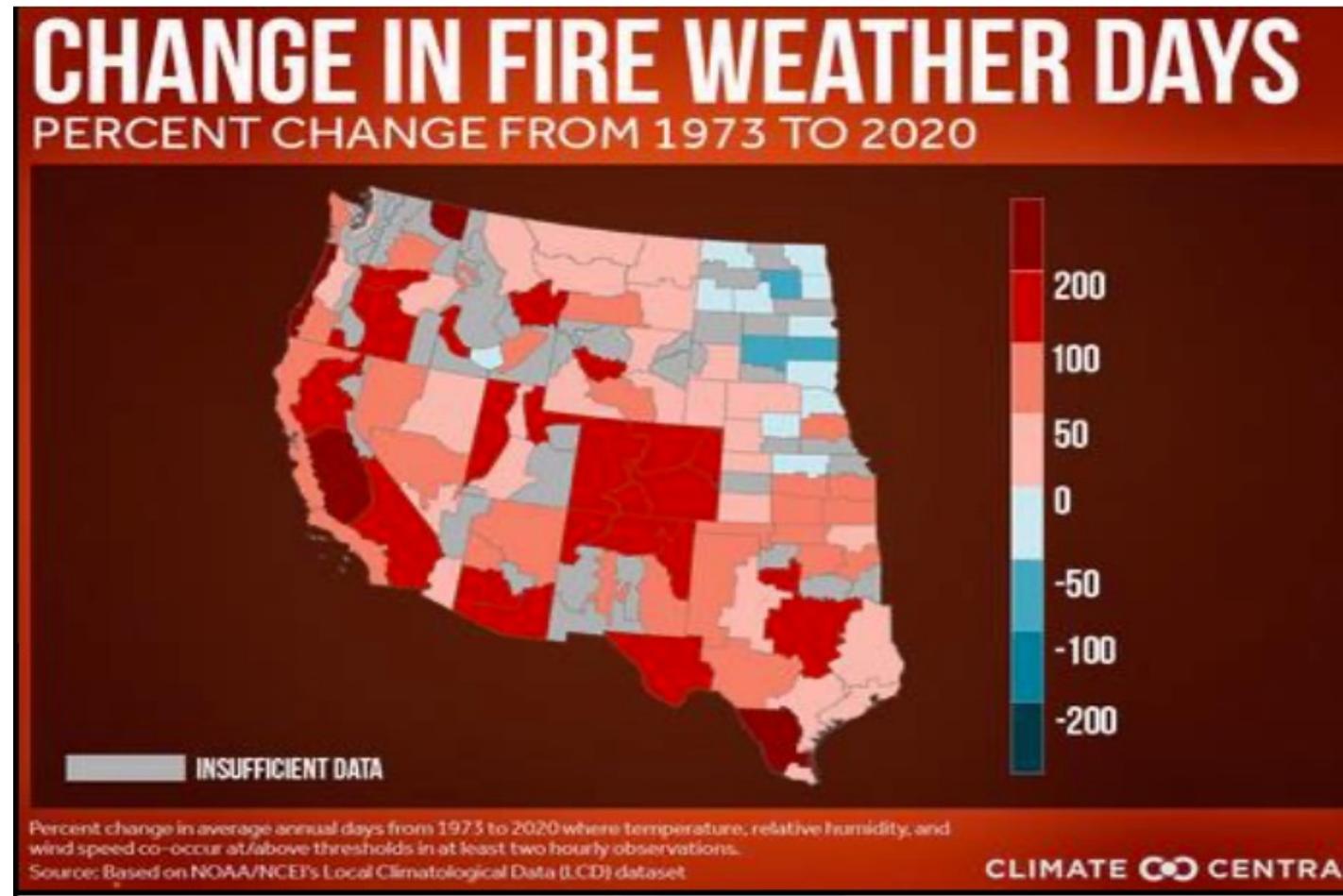


Source: The California Department of Forestry and Fire Protection, or [CalFire](#)



Wildfire Season Trending Longer

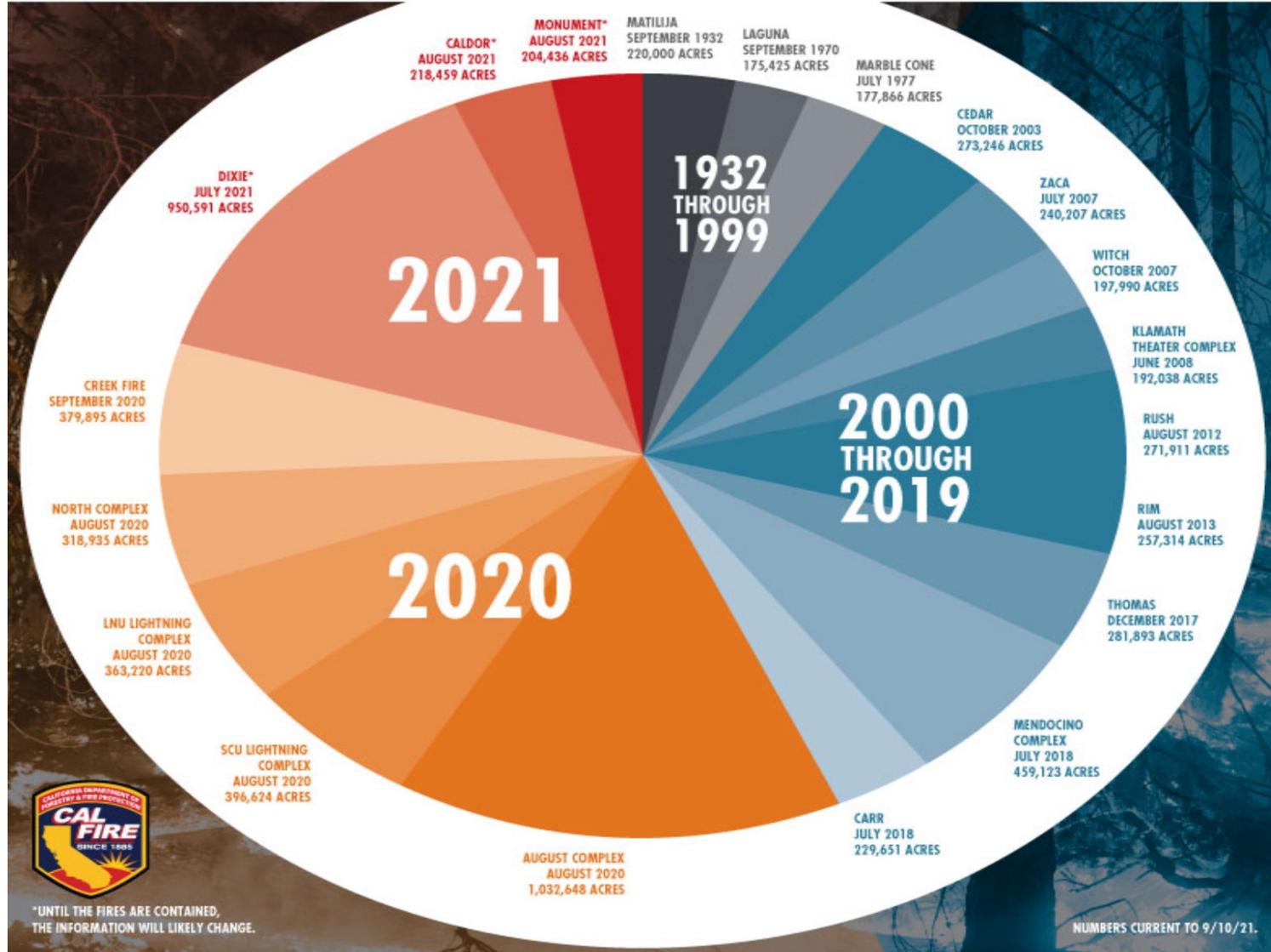
Extended wildfire season, through climate change, may explain one reason for larger fires and increased acreage burned.





2023 Wildfire Season Update

TOP 20 LARGEST CALIFORNIA WILDFIRES

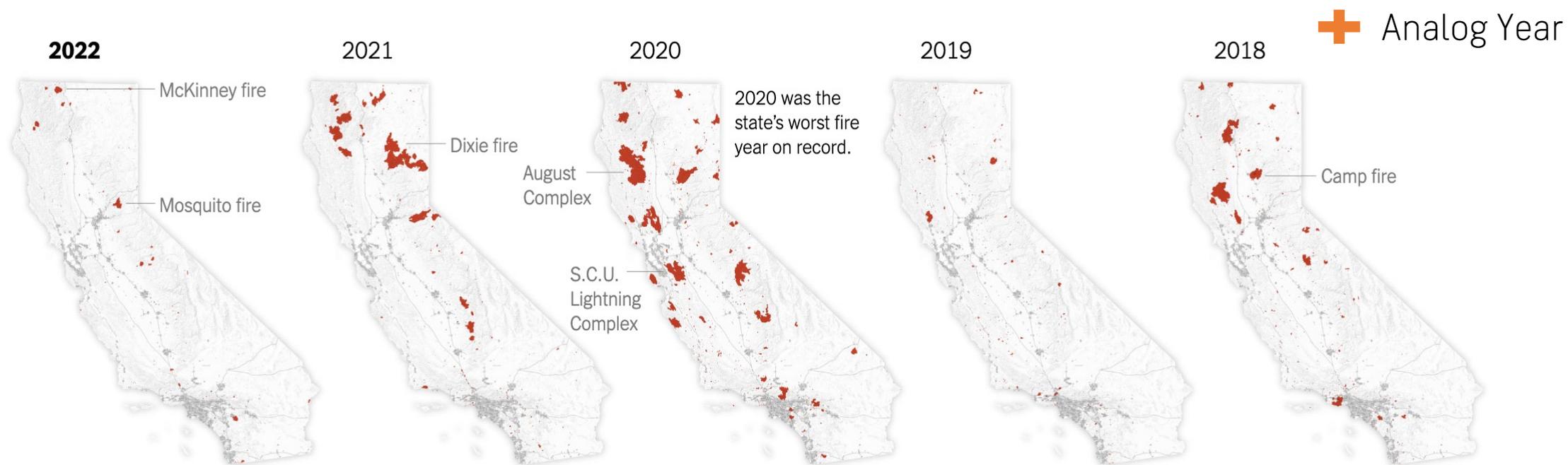




Main Burned Areas in the Past Five Years in California

Record Breaking
Acreage

Many Deaths
and High Destruction



Source: [National Interagency Fire Center](#)



Factors That Impacted California Wildfires in 2022

- The previous wet season started well (Fall), with significant drying mid-season (Winter), then a modest end (spring)
- Higher elevations had wetter fuels which held back a rampant early fire season
- Long-term drought conditions remained through the summer
- Timely rainfall in the late summer and fall prevented smaller fires from growing – weaker La Nina and change in water temperatures in the eastern Pacific
- With the lack of larger fires, there were more available firefighters (not being spread thin)
- Lack of trigger makers in 2022, less lightning, and less wind (weaker Santa Anas and Diablos)
- Tropical moisture and an out-of-season storm in mid-September lowered risk in southern/central California
- Covid restrictions lifted in 2022, fewer people escaping to the mountains, less human fire starts
- An increasing number of arson arrests over the past few years – 163 in 2022



Factors For 2023 Fire Season (Plains and East)

Southeast

- Rainfall in the Florida peninsula averaged less than 50% of historical averages, especially the central peninsula. With storms passing to the north at times into April, the wind combined with the dry conditions can lead to brush fires this spring.

Central and Southern High Plains

- Long-term drought conditions should hold across western Texas and Oklahoma and expand north into Kansas and southwest Nebraska. Dry periods combined with windy periods can lead to early spring fires before any greening occurs.

Northern High Plains and northern Rockies

- Snowpack followed by high soil moisture will hold back any early attempt at fire development this spring and most of the summer. The risk may increase late summer into fall with a decrease in precipitation events.



Wildfire Factors for West in 2023

Southwest

- Many sections of the west are wetter than in 2022, with more mountain snow
- Strengthen, position, and shifting period of the seasonal upper high (May-June) can impact monsoon arrival (ending of fire)
- El Nino summers tend to show weaker signals for the Southwest monsoon with a later arrival, though the tropics can speed that up; mixed signal

Northwest

- Can precipitation reach interior areas of the Northwest in a back-and-forth pattern this spring or more confined to the Cascades?
- EL Nino may arrive mid to late summer, with a higher chance for extended dry periods starting in June and lasting into the start of fall
- Dry periods can lead to some very warm to hot periods as well, increasing evaporation rates, and fuels dry out setting up favorable
- fire conditions. Keep close tab on upper patterns, dry lightning. Next will be determining the wet season arrival, is it on time or late?

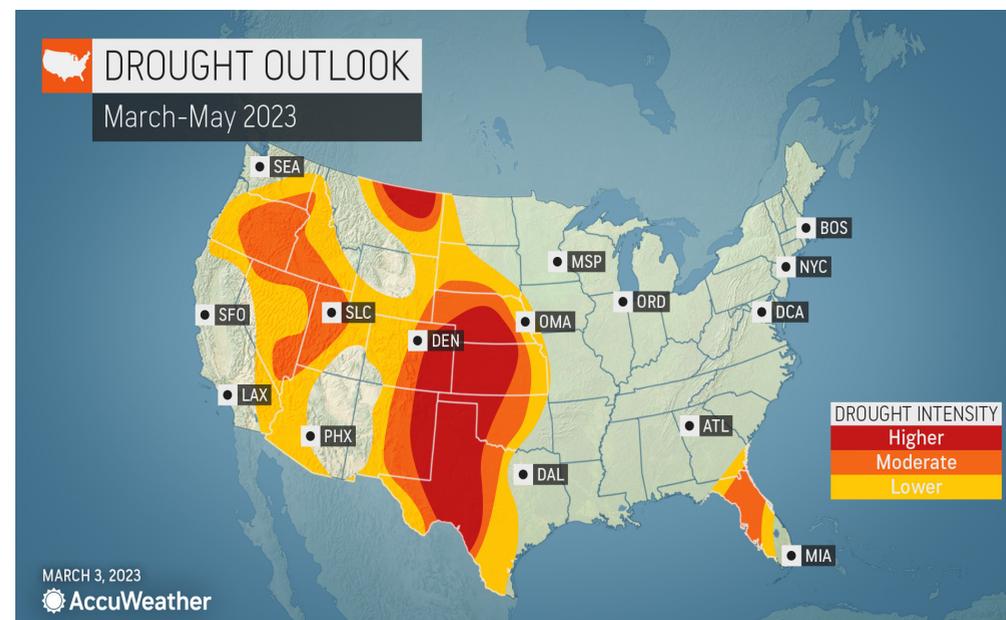
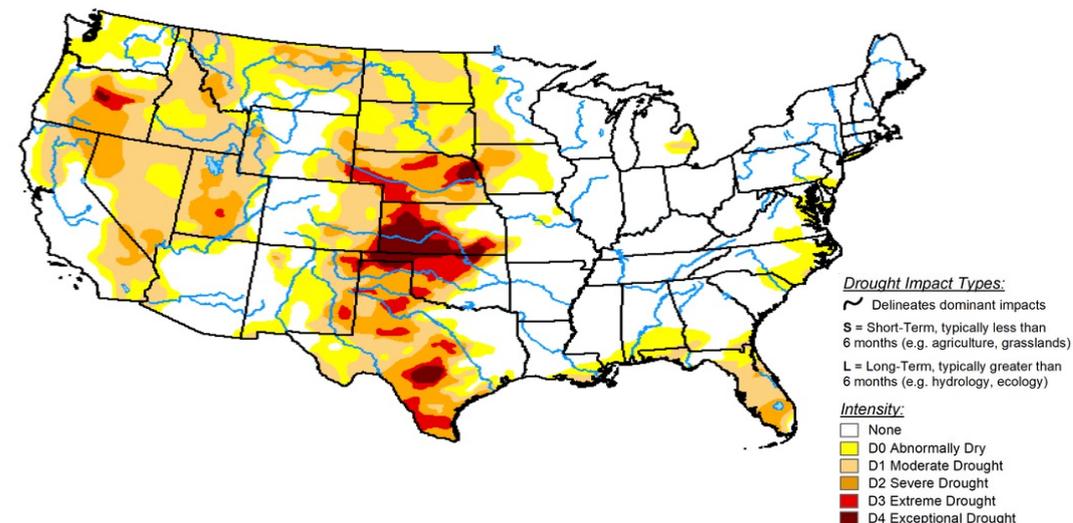
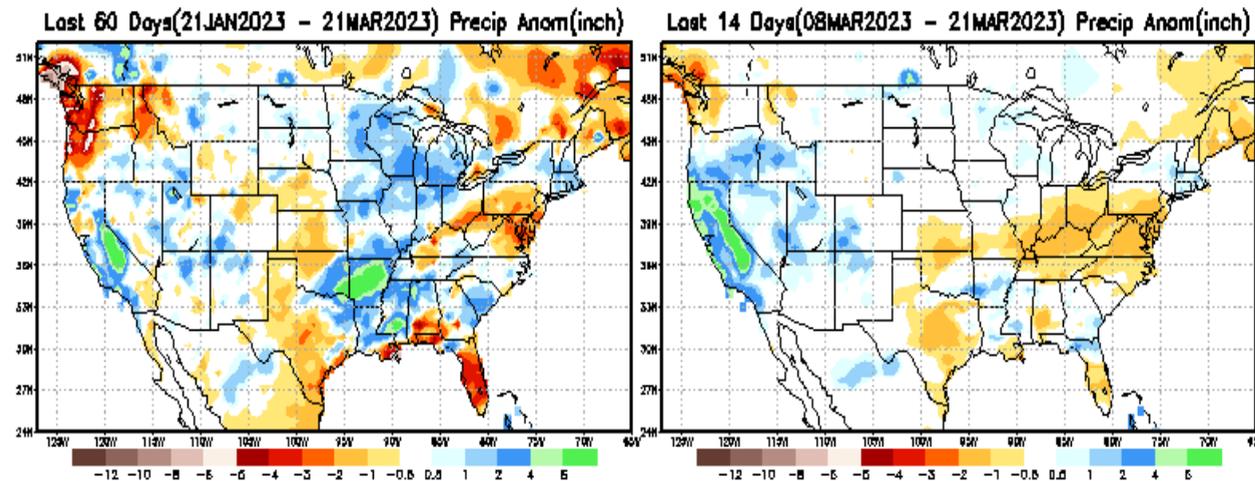
California

- One of the most intense wet seasons in years – Heavy snowpack with high water equivalent. This should lead to intense growth during the spring and early summer period; increasing fuels; storms knocked down many trees and limbs increase more fuel material.
- Active March, mid and late-season occasional storms can shorten the dry season on the front side
- Extended periods of dry weather during the summer can lead to drier short-term fuels
- El Nino may arrive mid to late summer which can lead to a more active eastern Pacific tropical season with the potential for rain spreading into southern and/or central California (interrupting the dry season toward the backside or triggering fires and causing wind)
- Does the Santa Ana season start earlier in 2023, more like August and September, rather than winter (like in the 2022/23 season)?
- Lack of wind and lightning in 2022, trigger mechanisms; does pattern support a change in 2023? Nearly 90% of fires are started by people



U.S Drought and Recent Rainfall

U.S. Drought Monitor - March 21, 2023



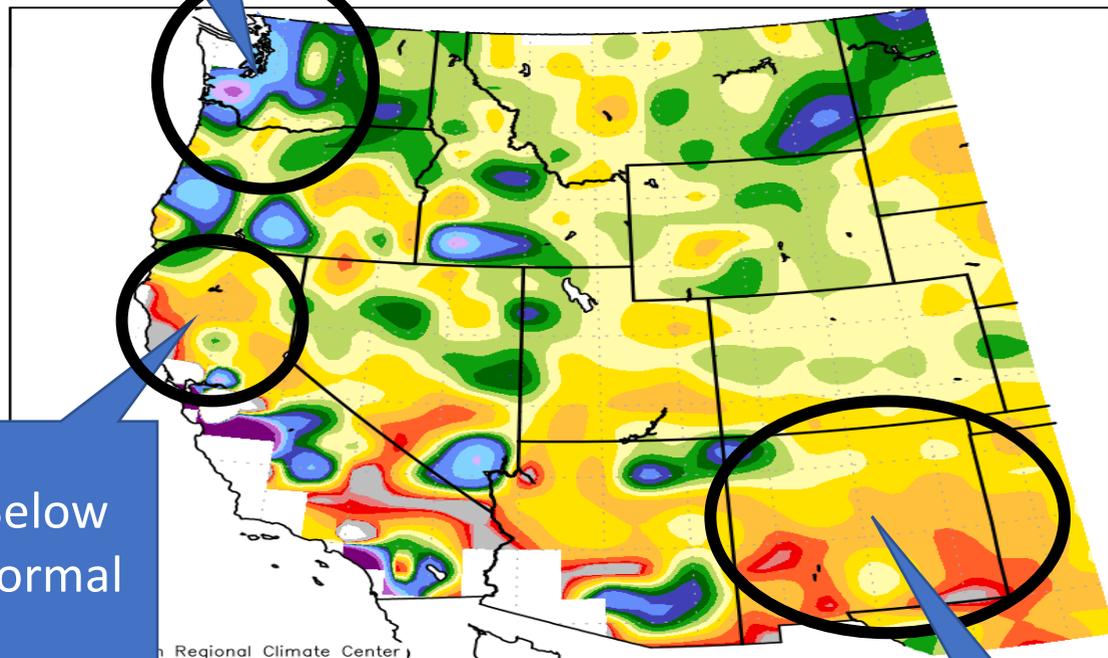


Percentage of Snowfall Current Season vs. Last Season

Abundance of Snow

2021/22 Season

Accumulated Snowfall: Percent of Mean
September 1, 2021 to June 15, 2022

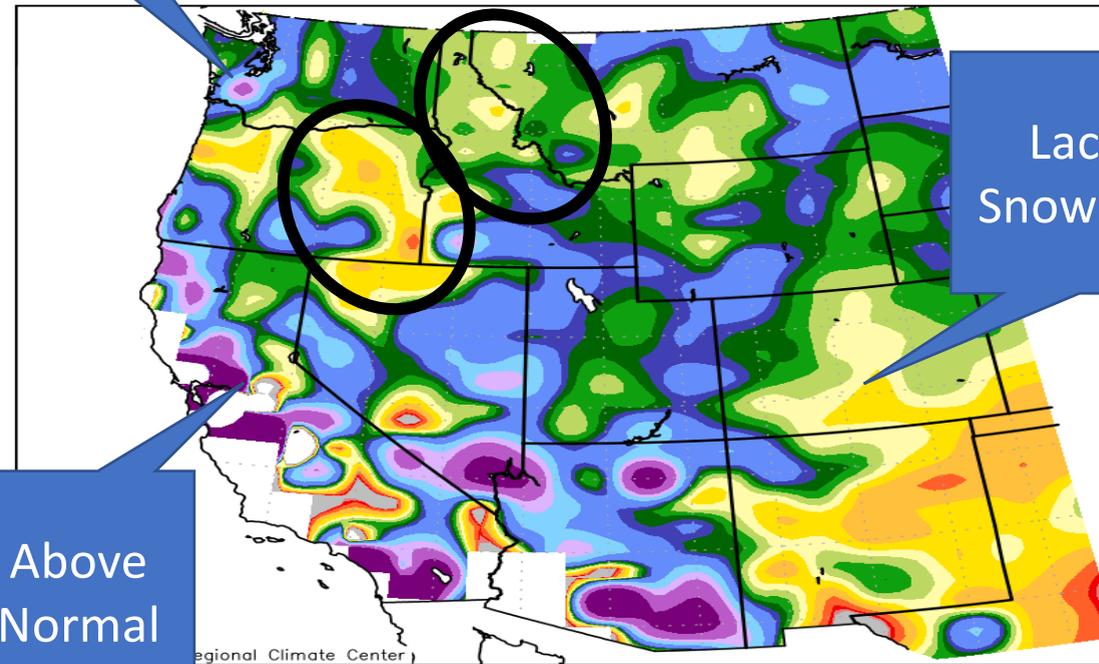


Below Normal

Abundance of Snow

2022/23 So Far

Accumulated Snowfall: Percent of Mean
September 1, 2022 to March 22, 2023



Lack of Snow Again

Above Normal



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 12/21/2022 11:19:54 AM CST

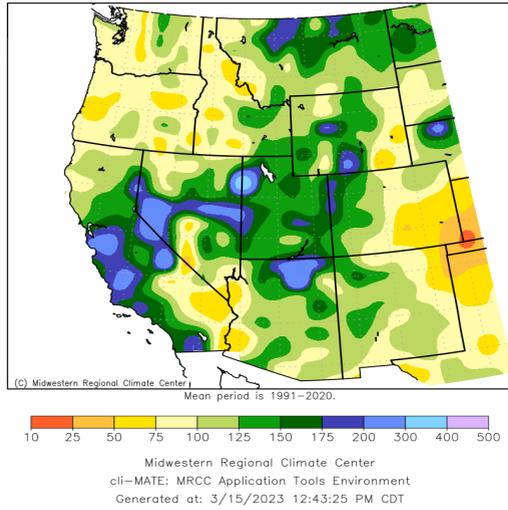


Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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Lack of Snow

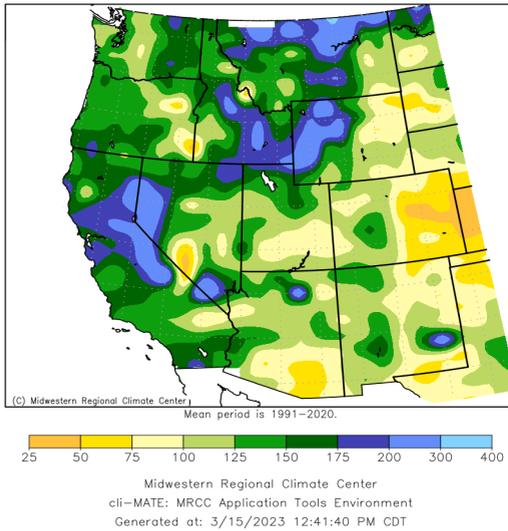
Wet Season Comparisons October 1 – March 14

Accumulated Precipitation: Percent of Mean
October 1, 2022 to March 14, 2023



2022-23
Mod. La Nina

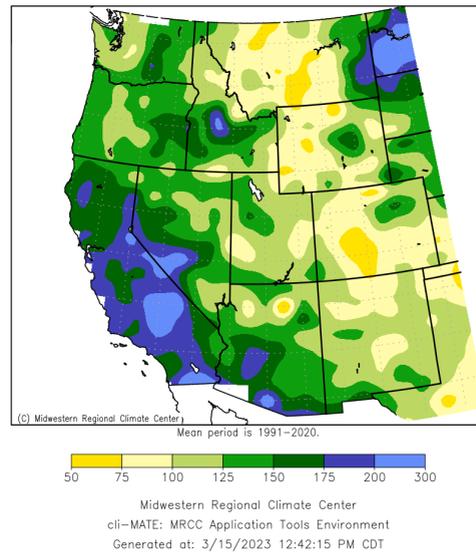
Accumulated Precipitation: Percent of Mean
October 1, 2016 to March 14, 2017



2016-17

La Nina > Neutral > La Nina

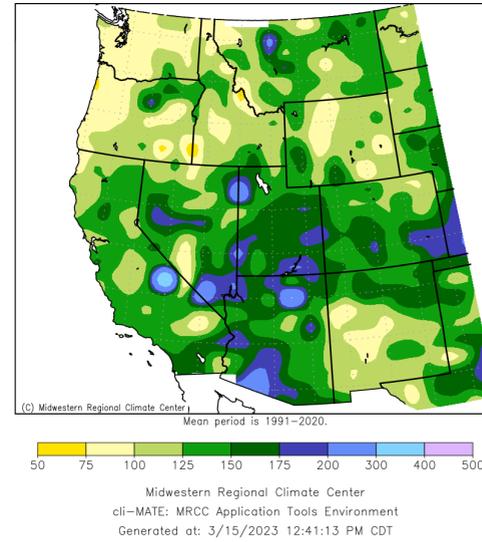
Accumulated Precipitation: Percent of Mean
October 1, 1982 to March 14, 1983



1982-83

S. El Nino > Neutral > La Nina

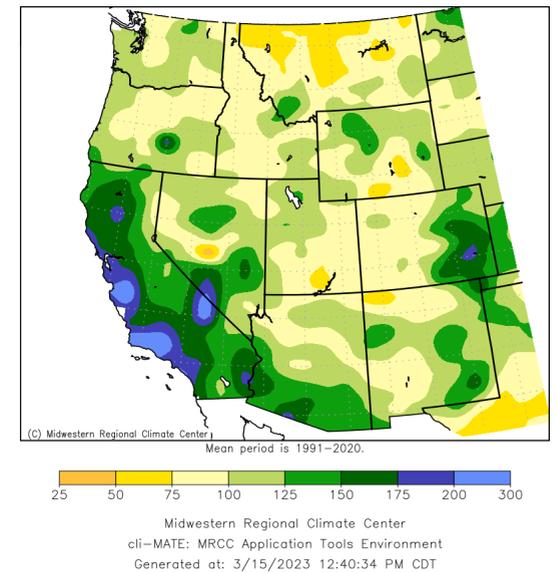
Accumulated Precipitation: Percent of Mean
October 1, 2018 to March 14, 2019



2018-19

Weak El Nino > Neutral

Accumulated Precipitation: Percent of Mean
October 1, 1997 to March 14, 1998



1997-98

S. El Nino > S. La Nina



California Wildfire Seasons Following Well Above Normal Wet Seasons (Most of the Data from NIFC)

Fire Season	Fire Numbers	Fire Acreage
2017	9,270	1,548,429
2018	8,527	1,975,086
2019	7,148	277,285
1983*	8,500	275,000
1984*	7,300	200,000
1985*	8,200	325,000

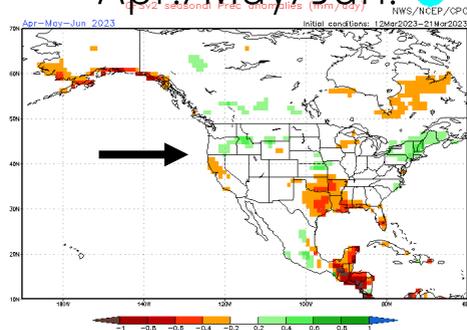
Fire Season	Fire Numbers	Fire Acreage
2019	7,148	277,285
2020	8,648	4,304,379
2021	7,396	2,569,386
1998*	7,800	220,000
1999*	8,900	350,000
2000	7,622	295,026

* Data from these years provided by the Western Fire Chiefs Association (rounded figures)

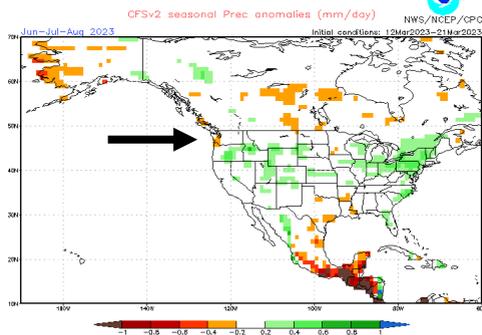


Spring Thru Summer Rainfall Outlook

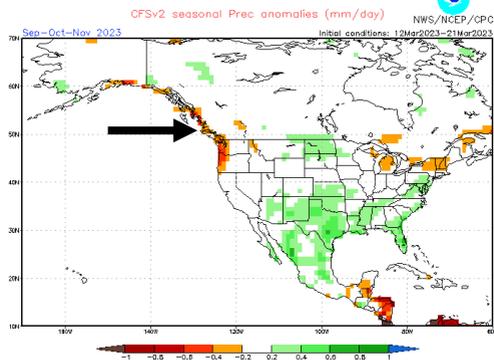
CFS
Apr./May/Jun.



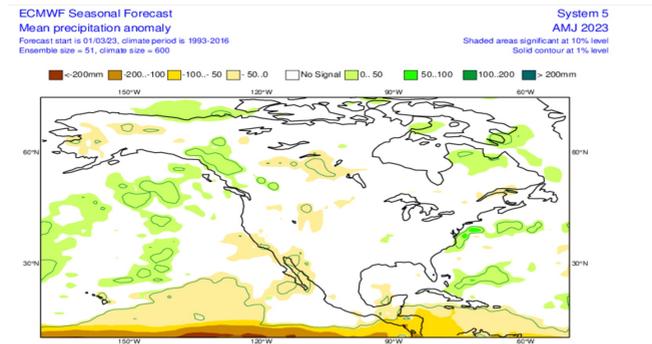
Summer



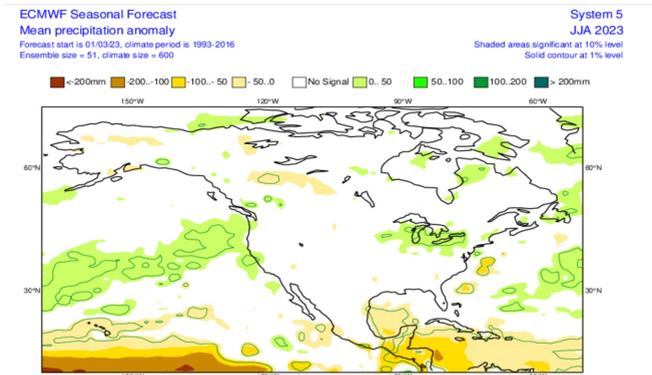
Fall



European
Apr./May/Jun.



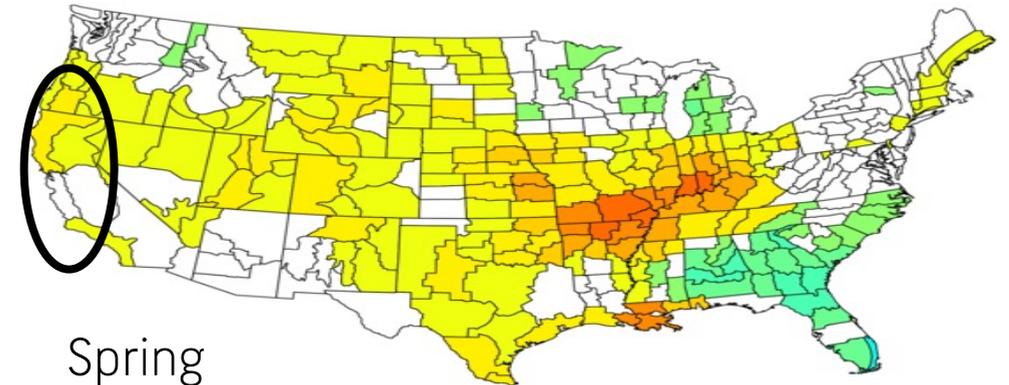
Summer



Analog Years and Weights

2018(2x), 2012(2x), 2001(2x), 2002, 2009, 2000, 1976

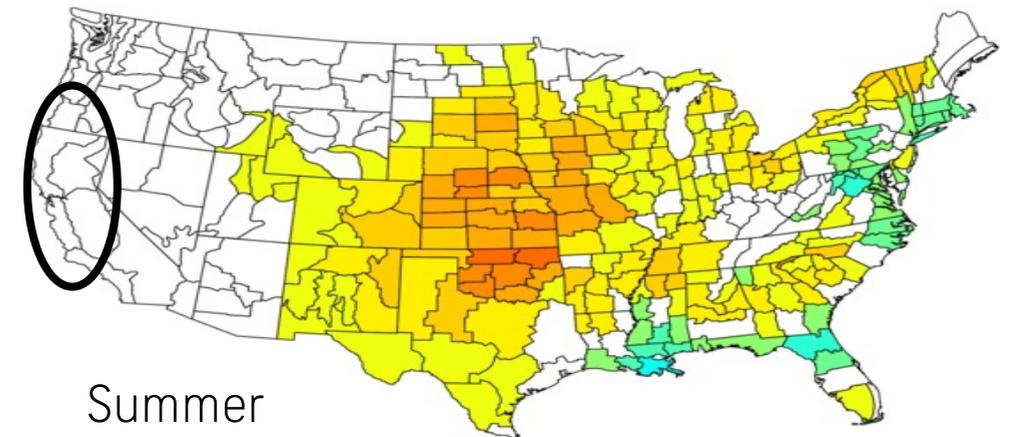
NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Mar to May 2018, 2018, 2012, 2012, 2001, 2001, 2002, 2009, 2000, 1976
Versus 1991-2020 Longterm Average



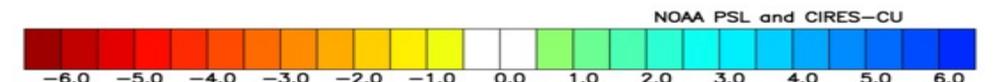
Spring



NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Jun to Aug 2018, 2018, 2012, 2012, 2001, 2001, 2002, 2009, 2000, 1976
Versus 1991-2020 Longterm Average



Summer





AccuWeather Temperature and Precipitation Forecasts Thru Summer

March

June

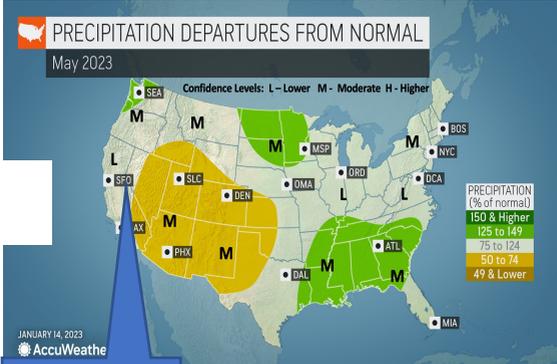
April

July

May

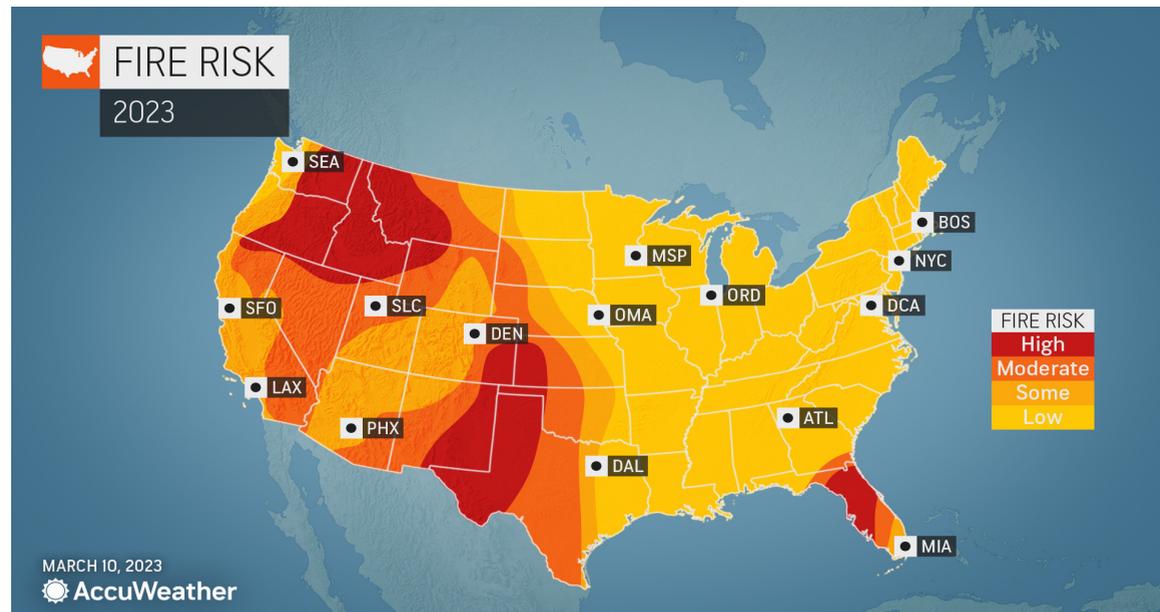
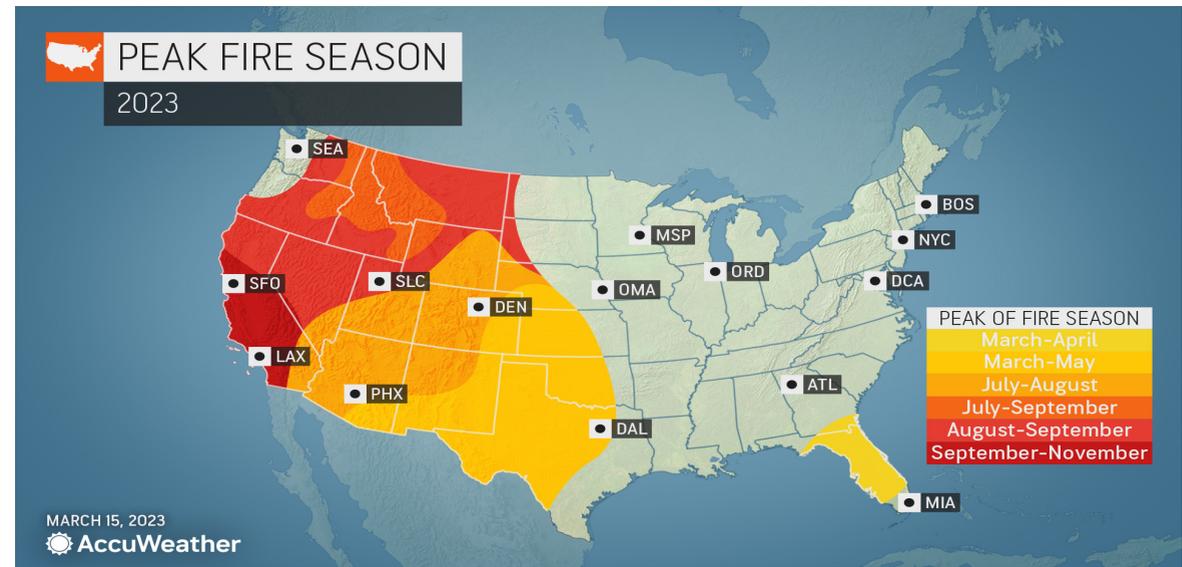
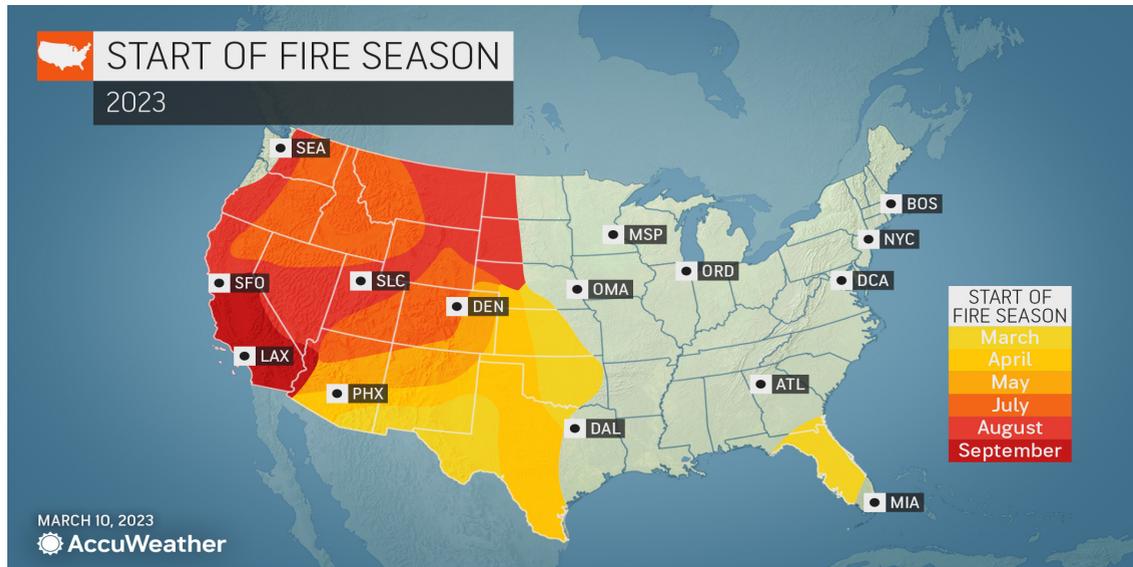
August

Wetter?





Fire Season 2023 Outlook – Start, Peak and Risk





U.S./California Wildfires and Burned Acreage Analog Years

Analog Years	2018	2012	2009	2002	2001	2000	Average (2001-2020)	Preliminary Outlook 2023
U.S Wildfires	58,083	67,265	78,792	73,457	84,079	92,250	68,707	60,000-75,000
U.S Acreage Burned	8,767,492	9,221,639	5,921,786	7,184,712	3,570,911	7,393,493	7,000,514	6,500,000-8,250,000
Cal. Wildfires	8,527	7,950	9,159	8,328	9,458	7,622	8,329	7000- 8000
Cal. Acreage Burned	1,975,086	869,599	422,147	969,890	329,126	295,026	1,002,822	400,000-1,000,000



Wildfire Summary

- Fire numbers in 2023 can be closer to the historical averages, but acreage is slightly above.
- Southwest has started here in March, one month later than 2022 but could last through mid or late summer depending on monsoon arrival which we are leaning toward early to mid-July, 2-3 weeks later than 2022 and 2021.
- Alaska wildfire count in 2022 exaggerated total U.S. wildfire numbers. The wildfire-burned acreage in Alaska can be less than 2022, but numbers will still be rather high, as fire season can be shorter during the summer. Model trends, after a near to normal winter season, show a drier late spring and early summer, warm midsummer with near-normal precipitation late.
- Increase growth in the Northwest in late spring and early summer can turn to drier fuels quickly mid to late summer with an active fire season possible late summer into early fall. El Nino's arrival may or may not extend the dry season in the Northwest. Forecast models support dryness, but the 2012 and 2018 analog years were wetter in the mid to late Fall.
- Florida Peninsula is running drier-than-historical averages in 2023. Dry conditions and storms passing north create more wind. These conditions can lead to brush fires this spring.

California:

- Potential later start of fire season due to significant moist fuels and occasional interruptions to the dry season.
- Wildfires may increase in the north by late summer after a period of early to midsummer drying, in early fall southern areas.
- Mid-to high-elevation snowpack will lower any chances of early summer wildfires, and may wait until fall; (many fallen trees and limbs)
- Watching tropics for Southern California late summer and fall, which can interrupt the dry season
- Significant growth should dry out this summer as usual in SoCal, but will there be more wind and lightning compared to 2022 to start these fires? Fires started by people are nearly impossible to predict.



Last Notes

- Predicting Wildfire numbers and acreage is very difficult, due to the fact, that 90% of fires are caused by humans.
- There are more causes for an active fire season than just increased fuels. Looking back at last season in California, there was a lack of strong Santa Ana wind events and lightning storms to ignite and push the fires which led to a below normal season for the state, despite significant dry fuels.
- A fire season is more defined on the impact to the public and not by the acreage burned. A fire in the middle of nowhere burns a lot of trees but hardly any other damage. But a fire in a much more populated area can have immensely higher impact on humans. Ex. Paradise fire, and the one that recently burned in southern CA across high residential areas from the Santa Clarita Valley to Malibu.
- The pre-extreme weather decisions and improving technology is important for future fire seasons (shutting down power before wind and lightning events, more advanced equipment to remove the fuels, controlled line burns, and the use of drones **safely** and satellites to detect hot spots.



2023 Wildfire Season Update

Brian Fennessy, Fire Chief of the Orange County Fire Authority (OCFA)

Q & A

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Thank you

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