May - August 2024 North Ops Highlights

- Timely cool-moist intrusions are likely next few months thus mitigating the potential for extended critically dry fuel periods.

- A few resistance barriers to significant fire spread should be in place next 2-3 months thus leading to a slower start to the significant portion of the fire season.

- Herbaceous curing will be more noticeable latter half of May into June across the lowlands and likely lead to an uptick in Initial Attack fires and more growth.

- A longer window for prescribed burn projects is expected next 2-3 months.

- Significant Fire Potential is normal for May when very little activity occurs then trends Near to Below Normal June-July when the occurrence increases and Normal for August when the potential typically peaks across most PSAs.
Weather Discussion

The weather patterns during April were highly variable with cool-wet periods and warm-dry ones. There were 4 separate multi-day wetting events. Precipitation anomalies (Fig 1) were mixed with larger pockets of near to above normal found across the Modoc Plateau, Sacramento Valley, and portions of the East Bay while below normal was found elsewhere. Average temperature anomalies (Fig 2) were generally near to above normal. Around 3200 lightning strikes were recorded during the month or double the 2012-2022 April lightning strike average of around 1600 strikes. Four separate very weak drier northerly/easterly wind events occurred.

Timely cool-moist intrusions in the form of showers associated with Pacific Trough passages or higher humidity due to a dominant onshore flow are expected during the next 3-4 months. Gusty-dry westerly wind periods are likely to cause more fire growth issues versus lightning events due to a higher frequency of West Coast troughing expected this spring and summer. Lightning numbers are expected to be less this summer due to a more subdued Southwest Monsoon and less potential for influences from East Pacific tropical systems as La Nina eventually develops (Fig 5). Pacific disturbances originating from the North Pacific should create some lightning ignitions although they tend to be less problematic overall due to the lack of a significant heat signal associated with them. Heat Wave events are likely to be less frequent and shorter in duration through July and possibly August compared to what has occurred during some of the bigger fire years.
Fuels Discussion

Dead fuel moisture fluctuated due to the varying April weather patterns but were generally near to above seasonal levels. The most flammable period occurred during the 3rd week. The growing season continued to move up the slopes due to eroding snow cover and warmer temperatures while some herbaceous curing was noted across the lowest elevations.

The blue line found on the North Ops 1000-hour dead fuel moisture chart (Fig 6) shows noticeable fluctuations during April with near to above normal values during most of the month. The grey line is the historical average based on 23 years of data. The red line is the record minimum. The dashed lines represent various flammable percentile thresholds from the 40th to the 3rd.

Herbaceous fuels were in various stages of green-up to around 6000 feet depending on aspect and sheltering. Elevations between 4000-6000 ft observed their initial green-up during the latter half of April as the snow eroded and the soils warmed. Some curing was found across the lowest elevations, especially in the thin soil and most exposed areas such as near highways and rocky points. Fig 8 shows this live herbaceous transition at 2 low elevation locations. The growing season was evident for the shrub and tree canopy fuels up to around 4000-5000 feet by the end of April. Fig 9 shows oak leaf emergence trends at 2 mid elevation locations from early to late April. Shrub fuels were generally uptaking sufficient enough moisture to create a less flammable situation across the lower elevations while mixed flammability existed across the mid and upper elevations due to dormancy or the "spring dip".

Moisture found within the snowpack was 90-110% of normal on April 30th (Fig 7). A more consistent snowpack was generally found above 5600-6600 ft on April 30th in the fully sheltered areas.
NORTH OPS FIRE BUSINESS & TRENDS

Fire business increased during April, especially during the latter half of the month. An average of 3 fires occurred per day. The largest fire of 19 acres occurred the 21st on the Tahoe National Forest. One lightning ignition was reported across the east due to the abundant lightning observed on the 23rd. Pile burning transitioned into more broadcast burns the latter half of the month.

Several ingredients should be in play the next few months to keep significant fire potential at a near to below normal level. Timely cool-moist intrusions, melting snowpack and adequate live fuel moistures due to the lack of long & short term drought (Fig 3 & 4) plus transitory spring to early summer green-up will provide fire growth resistance barriers. Onshore flow is expected to be a much more dominant wind flavor during the outlook period. Forecasting critical lightning events is not possible several weeks and months in advance but the rapid transition towards La Nina foretells a delayed and less robust Southwest Monsoon as well as muted East Pacific tropical activity. Pacific disturbances originating from the North Pacific can create lightning ignitions although they tend to be less problematic overall due to the lack of significant heat associated with them. It should be mentioned that it only takes one significant lightning event, like what was experienced during 2020 and 2023, to change the course of the fire season.

More noticeable herbaceous curing will become evident across the lower elevations mid May thru June and likely lead to an increase in initial attack numbers but large fires will be dependent on the nature of the wind. Adequate herbaceous growth and drier westerly wind systems should create normal potential across portions of NE CA & Far Eastside PSAs, especially during latter half of July into August when shrubs cure to more flammable levels. Normal significant fire potential is projected areawide during August due to less confidence in the forecast and additional curing of live fuels. Favorable prescribed burn windows expected thru early summer.
Select Links Used in this Outlook

Western Region Climate Center
Temperature and Precipitation Anomalies

California Daily Snowpack Map

Monthly El Niño Southern Oscillation Analysis and Outlook

Sea Surface Temperature Anomaly Maps

Drought Monitor Product for California

Evaporative Demand Drought Index

Daily Fuels Indices Charts

NOAA/NWS Climate Prediction Center