Northern Operations
MONTHLY/SEASONAL OUTLOOKS
ISSUED AUGUST 26, 2021 VALID SEPTEMBER - DECEMBER 2021

September - December 2021 North Ops Highlights

- After a very dry rainy season fuels indices are setting new records for extreme dryness in many areas.
- Live fuel moisture values have dropped below critical values in most areas.
- Low elevation fine fuel crop cured.
- Overall outlook is for drier and warmer than average through November then potentially wetter than average in December.
- **Significant Fire Potential Above Normal** west of the Cascade-Sierra crest through November, except Normal in the N Coast PSA. Normal also east of the crest.
- **Significant Fire Potential** returns to Normal all areas in December.

*Monthly Images will only be shown when there are changes
Weather Discussion

A few monsoon thunderstorm patterns developed in CA in August and produced only light precipitation (Fig 1). The rain year, which began on October 1st, is drier than average statewide (Fig 2). Most of the North Ops region received less than half of the normal precipitation. Temperatures in August were closer to normal than in June or July (Fig 3). Cooler than average areas were those in the west that were influenced by the marine layer and nearby below normal sea surface temperatures, and near and downwind from the Dixie fire where persistent thick smoke caused the greatest reduction in average temperatures. Drought conditions continue to worsen throughout the state (Fig 4). ENSO-neutral conditions are expected into the fall (Fig 5), followed by a return to a La Niña pattern this winter.

A weather pattern in which frequent low pressure troughs move through the North Ops region developed in the middle of August. This pattern limited and in some cases altogether prevented lightning events in the region. The troughs have been dry and stronger than we typically see this time of year. This trend is expected to continue in September, with little to no rainfall or lightning expected through the middle of the month. These strong troughs will continue to bring strong winds that will elevate the potential for new fires with extreme fire behavior and rapid spread rates, and exacerbate efforts to control the many large ongoing wildfires. The 4-month outlook calls for dry and warmer than average weather into November, followed by a wetter than average December.
Fuels Discussion

The dry rainy season has led to widespread drought conditions throughout California. Very dry conditions since April 1 have led to extreme values in the Evaporative Demand Drought Index, which quantifies the “thirst of the atmosphere” over a specified period (Fig 6), especially in southern and western areas. The dry spring led to normal or below normal fine fuel loading at lower elevations, and these annual grasses and weeds cured several weeks ahead of usual (Fig 7). Brush growth at lower elevations has also been very light, and the outer branches and twigs in some species may end up dying as the plants attempt to hold on to the limited moisture available. This process increases the flammability of the brush crop. The fine fuel and brush flammability will be the primary concern as we move into the fall N-NE/ Offshore wind season until fall wetting rain patterns develop.

The 1000-hour dead fuel moisture averaged across the North Ops region shows that there has been a slight improvement in August, but values still remain in the extreme range, near the 3rd percentile level (Fig 8). This situation is found at all elevations in all fuel types and sizes, as confirmed by the ongoing extreme fire activity.

**Fig 7** – Low elevation fine fuel crop May 21st - Sacramento Valley PSA

**Fig 8** – 1000-hr Fuel Moisture – North Ops Composite

**Fig 6** – Evaporative Demand Drought Index
NORTH OPS OUTLOOK

The Predictive Services 4-month outlook for the North Ops region calls for drier and warmer than average weather into November, with only small exceptions, followed by wetter than average conditions in December (Fig 9). Lightning events will be few and brief into October, if they develop at all. Fuels at all elevations, both dead and live, and of all size classes, are extremely dry and very active fire behavior and spread rates have been noted with wildfires this summer. At elevations below 3000 ft in fine fuels it is possible that the lighter than usual fine fuel crop will allow more successful initial attack efforts when ignitions occur, but in dry gusty winds the current fuels situation may offset the effects of the lighter fine fuel and brush load. In areas dominated by timber, generally above 3000 ft, fuels are vulnerable to fire spread, and any ignition will pose a threat of new large fires.

Significant Fire Potential for the North Ops region is Above Normal in areas west of the Cascade-Sierra crest through November due to extremely dry fuels combined with the onset of N-NE/Offshore wind season. The exception is the North Coast PSA, which has Normal Significant Fire Potential because intense offshore wind patterns only impact a small portion of that PSA. Areas east of the crest have Normal Significant Fire Potential through November, and the entire North Ops region is in the Normal category in December.

Normal Significant Fire Potential in September is defined as up to 1 large fire in the Bay Area PSAs and east of the crest and 1-3 large fires elsewhere. Normal is defined as up to 1.2 large fires per PSA in October and less than 1 large fire in all PSAs in November and in December.

Fig 9 – Predictive Services 4-month Temperature and Precipitation Outlook
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