July - October 2021 North Ops Highlights

- Very dry rainy season, weak snow melt runoff, and very low soil moisture.

- Dead fuels indices at or more extreme than peak season typical values with new records set. Live fuel moisture values below average.

- Low elevation fine fuel crop cured. Weak greenup underway above 4000'.

- Overall outlook is for drier and warmer than average through October. Near normal monsoon activity east, trending to less lightning than usual Coast Range.

- Significant Fire Potential Above Normal above 3000 ft elevations July-August, except along the coast and in eastern areas. Normal elsewhere.

- In Sept-Oct lower elevations W of the Cascade-Sierra crest join the Above Normal area due to critical dryness as offshore wind season begins.
Weather Discussion

Outside of far NW California June precipitation was well below normal across the North Ops region (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. June was warmer than normal across much of the state (Fig 3). The main exception was in coastal areas which were influenced by nearby below normal sea surface temperatures. The high elevation snow pack has melted off and drought conditions are worsening across the state (Fig 4) and the resulting weak snow melt runoff was weak. ENSO-neutral conditions are expected into the fall (Fig 5).

Summer weather patterns have now set up across the region. Through August we expect alternating periods of low pressure troughing along the coast, which would produce dry conditions with slightly warmer than average temperatures and periods of wind concerns in western and eastern areas; southeasterly flow allowing monsoon surges that produce thunderstorms and the threat of lightning ignitions, with the main focus from the Cascade-Sierra range east; and dominant high pressure, which would produce heat waves and low humidity, as well as poor overnight humidity recovery, and push fuels indices into record territory. Impactful moderate or stronger dry N-NE/Offshore wind events are not expected until September. The 4-month outlook calls for dry and warm weather.
Fuels Discussion

The dry rainy season has led to widespread drought conditions throughout California. The spring months, April, May, and June, were particularly dry. The Evaporative Demand Drought Index, which quantifies the “thirst of the atmosphere” over a specified period, also shows intensifying drought conditions since late March (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 have now 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 1000-hour dead fuel moisture averaged across the North Ops region shows near record values due to the very dry spring (Fig 8). The current values are equivalent to peak season values in an average year, or near the 10th percentile values. Many stations are well into record territory in multiple indices. Middle and upper elevations are seeing a weak greenup among live fuels come to an end after peaking at lower than usual values earlier than usual. Live fuel moisture values will decline to critical values weeks ahead of usual.

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

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

3-month EDDI categories
June 19, 2021

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 through October (Fig 9). There is some indication of a semi-regular low pressure trough positioned along the west coast during the summer, which could lead to shorter stretches of intense dry heat. Fuels, both dead and live and of all size classes, are extremely dry and very active fire behavior and spread rates were noted in late June. In general, fuels are 4-6 weeks ahead of schedule in their drying process. 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 through August. In areas dominated by timber, generally above 3000 ft, fuels will be vulnerable to fire spread, and any lightning will pose a threat of new large fires. Significant Fire Potential for the North Ops region is Above Normal above 3000 ft through August, with the exception of areas near the coast (which may benefit from more onshore flow) and in the far east (where drought has led to less continuous fuels). The remainder of the region has Normal Significant Fire Potential during July-August. The Above Normal category will persist in the same areas in September-October, and lower elevations west of the crest are added due to the onset of N-NE/Offshore wind season combined with the persistent drought, despite the light fine fuel loading.

Normal Significant Fire Potential in July is defined as 1 large fire or less in coastal areas and 1.5-3 large fires inland. August is typically the peak of fire season, with near 1 large fire in the Bay Area PSAs and between 2.2 and 5.6 large fires per PSA elsewhere. In September Normal 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.
Northern Operations
MONTHLY/SEASONAL OUTLOOKS
ISSUED JULY 1, 2021  VALID JULY - OCTOBER 2021

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