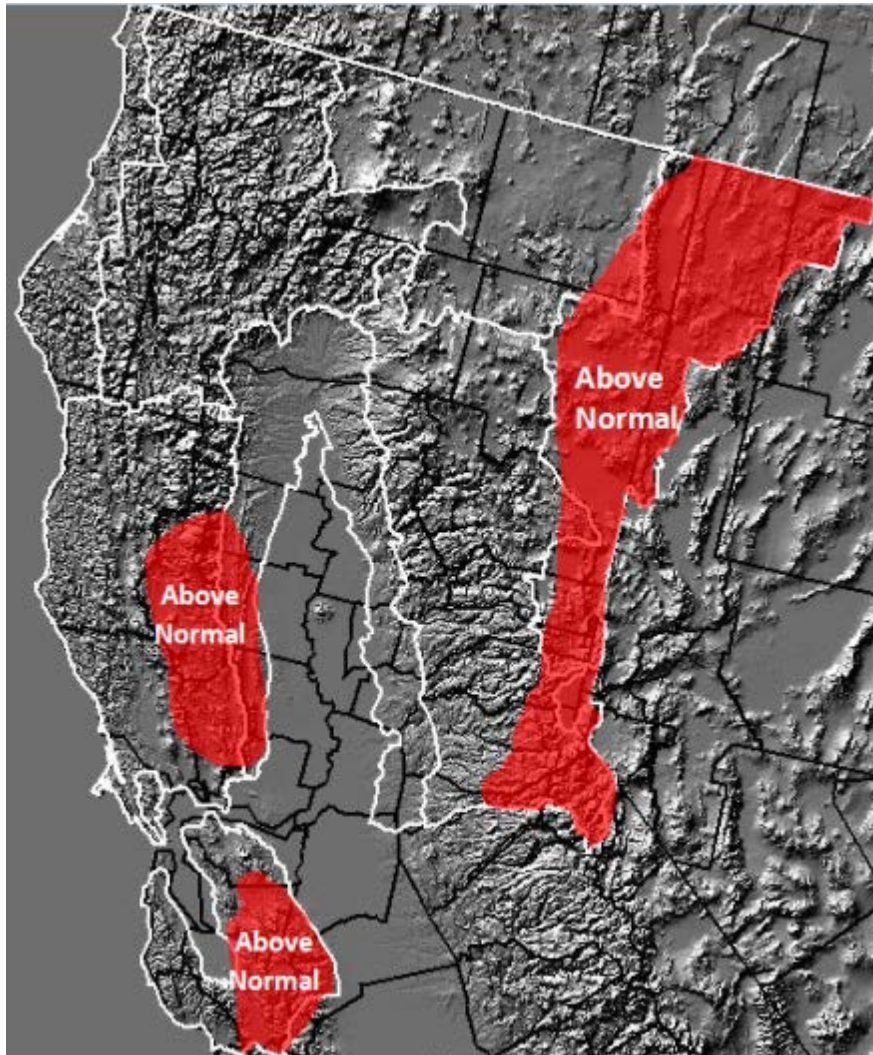


2012 Northern California Fire Season Outlook

Outlook for late June through October, 2012



- Both precipitation from October 2011 to late June 2012, and the past winter snowpack, ranged from 50-90% of normal across the bulk of Northern CA.
- North Ops drought reappeared in the dry early winter months, and it has since expanded to now cover nearly half the Geographic Area with moderate or severe drought.
- Live fuel moistures are at or below seasonal averages in many areas of the Geographic Area.
- Tall residual dead grass from last year is still standing in eastern areas of Northern California. This has proven to be a problem across much of the Western U.S. so far this fire season.
- As of mid-June, the PSA-averaged Energy Release Components (ERCs) were nearly all Above Normal for the date, and not far below record levels for the date in two of the low-elevation PSAs.
- Mid June 1000-Hour TL Fuel Moistures were all at or below normal for the date, and in two PSAs were not far off from record dryness.
- Several forests in the Northern Sierras have reported localized areas of frost-killed brush at elevations above 4,500 feet.

2012 Northern California Fire Season Outlook

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Executive Summary

This is the final 2012 'Fire Season Outlook' for North Ops, issued just prior to onset of the core fire season. It is a follow-up product to the statewide Preliminary Outlook issued in late April.

Objectives of the Executive Summary are to:

- Provide a prognosis of wildland fire potential for the core months of the 2012 California fire season.
- Provide the latest updates to the summer climate forecast, and its effects on fuel moisture and expected trends.
- Provide supporting documentation for the weather, climate, and fuels information, to include any anomalies.
- Highlight concerns and key implications for fire management.
- Show increased forecast confidence levels compared to what was issued in April.

The contents here come from subject matter experts in climatology, fire weather meteorology, fuels, fire behavior, and fire danger. This Outlook is based on past developments, current conditions, recent trends, and on the weather, climate and fuels predictions for the months of July through October. In the April preliminary outlook it was stated that there was considerable uncertainty as to whether El Nino might return by the end of spring. And if it did so, the question was asked, 'Would it occur soon enough to have atmospheric effects on this northern CA fire season?' What we know now is that El Nino is 60% or more likely to occur by late summer this year -but that its development will be slow to gradual, and it will not have much effect on the atmosphere near CA until September or October, if then. Therefore, El Nino is not being considered a significant climate contributor for the core of this 2012 CA fire season.

Meanwhile, Hawai'i continues to be plagued by drought, and it shows no signs of letting up soon. The two northwestern-most islands are abnormally dry, while the other islands each exhibit areas of moderate to extreme drought on their leeward portions (SW to NW). Some instances of very active fire behavior have been observed in June.

In addition to this fire season Outlook, the North Ops Predictive Service Unit at Redding continues to issue detailed Monthly Outlooks, and contributes to the national outlooks covering large fire potential for months 1-4, at the end of each month.

2012 Fire Season Overview

Fire season, in terms of increased wildland fire activity, began picking up in late May and early June for the lower terrain of the northern California interior. This was in time frames that ranged from average to a couple weeks ahead of average. Buildups in fire danger under periods of high pressure aloft, and/or during windy periods, were plateaued a couple of times in early and late June by Pacific low pressure troughs bringing several days of cooling, higher humidity, and some precipitation in mainly northwestern CA and near the Oregon border. Although there was light initial attack activity at higher elevations, in June several structures were destroyed in the Sacramento Valley by wind-driven fires during periods of strong wind and low humidities.

Some factors pertinent to the 2012 Northern California fire season include:

- The gradual increase in drought coverage compared to 2011 (which had none) (*Figure 1*);
- Above about 5000 feet, the areas with less-than normal snowpack. Those saw early melt-off and therefore fuels were exposed to the elements earlier, or locally much earlier, than in 2011 (*Figure 2*);
- A mild late winter period helped some fuels in some lower elevation sites green up earlier than usual;
- Tall residual dead grass from last year is still standing in eastern areas of the GACC;
- An extensive and/or drier type of lightning event, if occurring after early to mid-July, always has the potential to rapidly escalate a quiet or moderate fire season into a busy one;
- Because fuels that would normally be covered in snow were exposed for much of the winter, localized areas of frost-killed brush at elevations above 4,500 feet have been reported by the LTBMU, LNF, PNF, and TNF.

2012 Northern California Fire Season Outlook

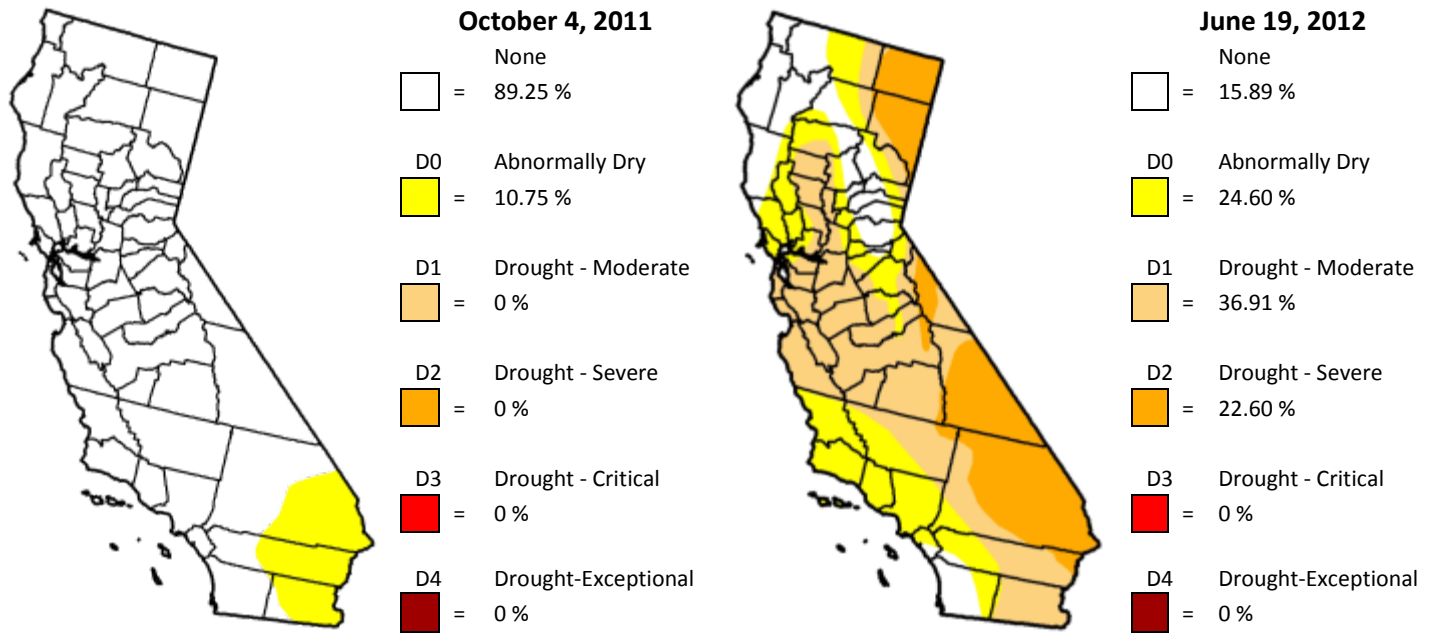


Figure 1 - Progression of California Drought Coverage during 2011-2012 Water Year (October 1, 2011 – present)
Data from the National Drought Mitigation Center - <http://droughtmonitor.unl.edu>

Mountain Snowpack in the Great Basin and Major Water Supply Basins in California as of May 1, 2011

Mountain Snowpack in the Great Basin and Major Water Supply Basins in California as of May 1, 2012

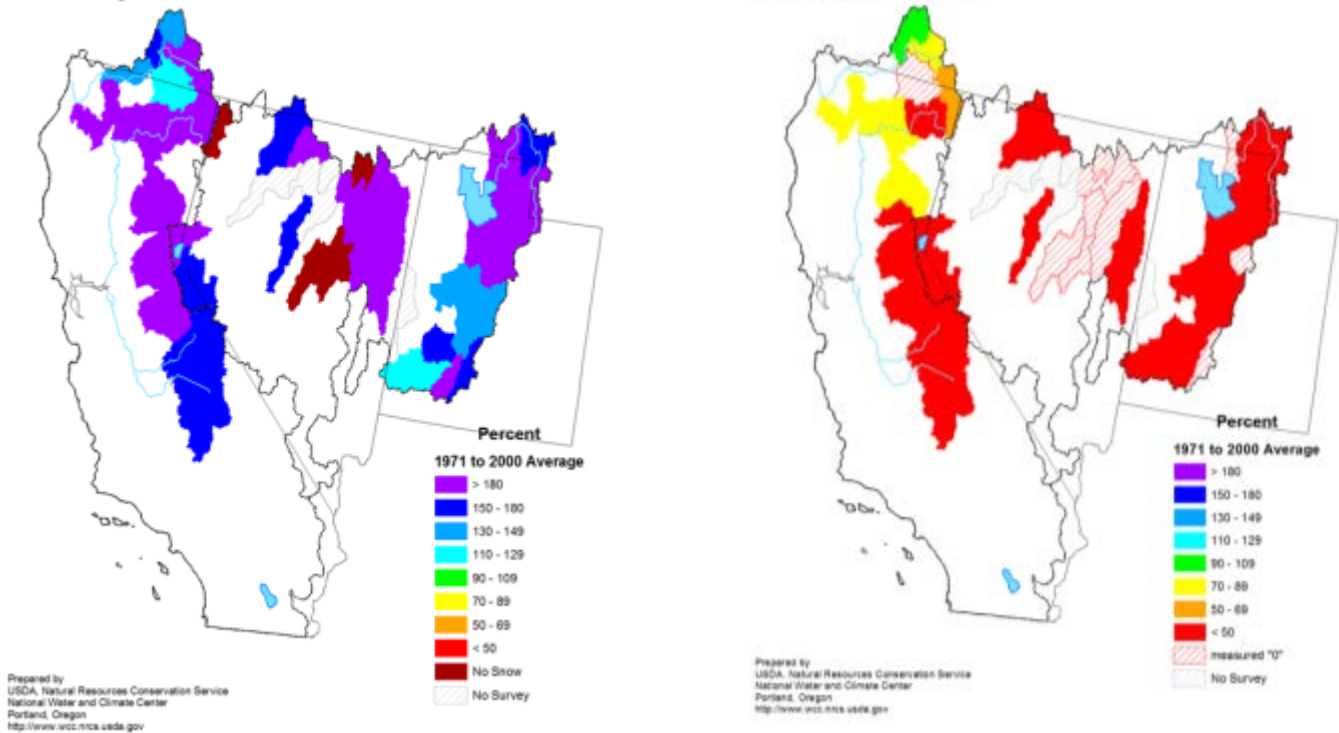


Figure 2 – Comparison of May 1, 2011 – May 1, 2012 Mountain Snowpack Percent of Average from USDA - Natural Resources Conservation Service

2012 Northern California Fire Season Outlook

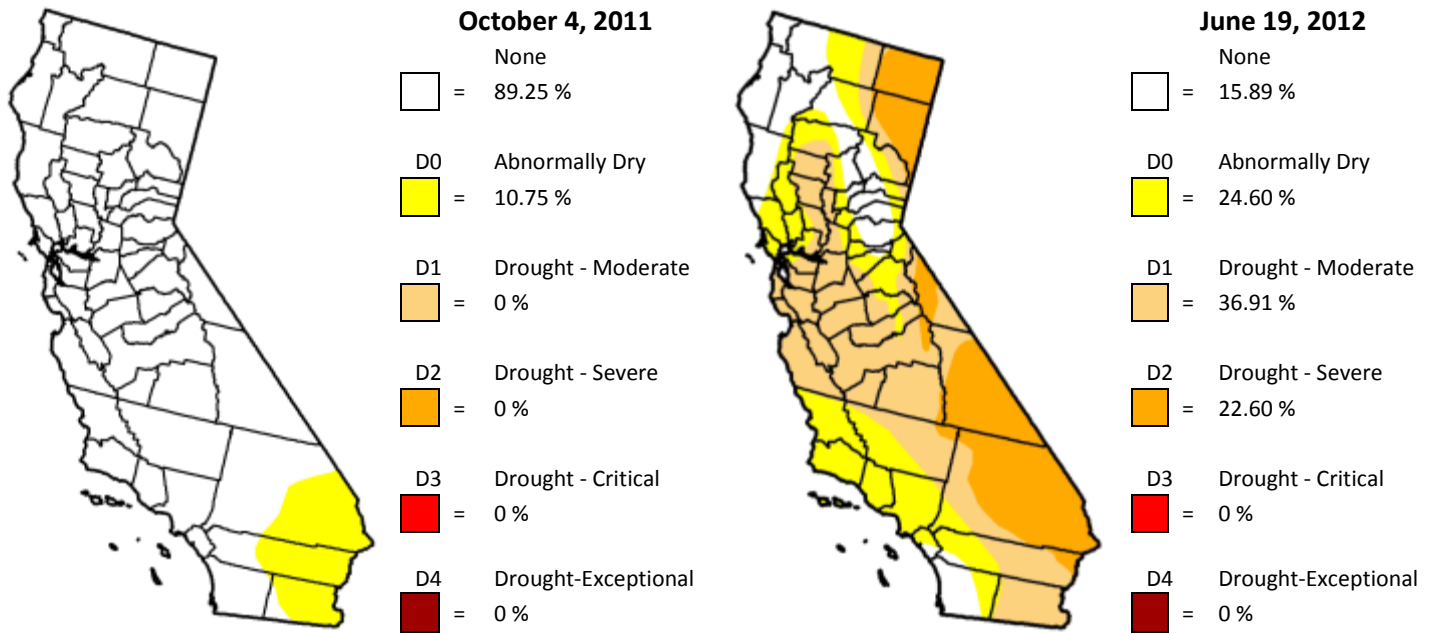


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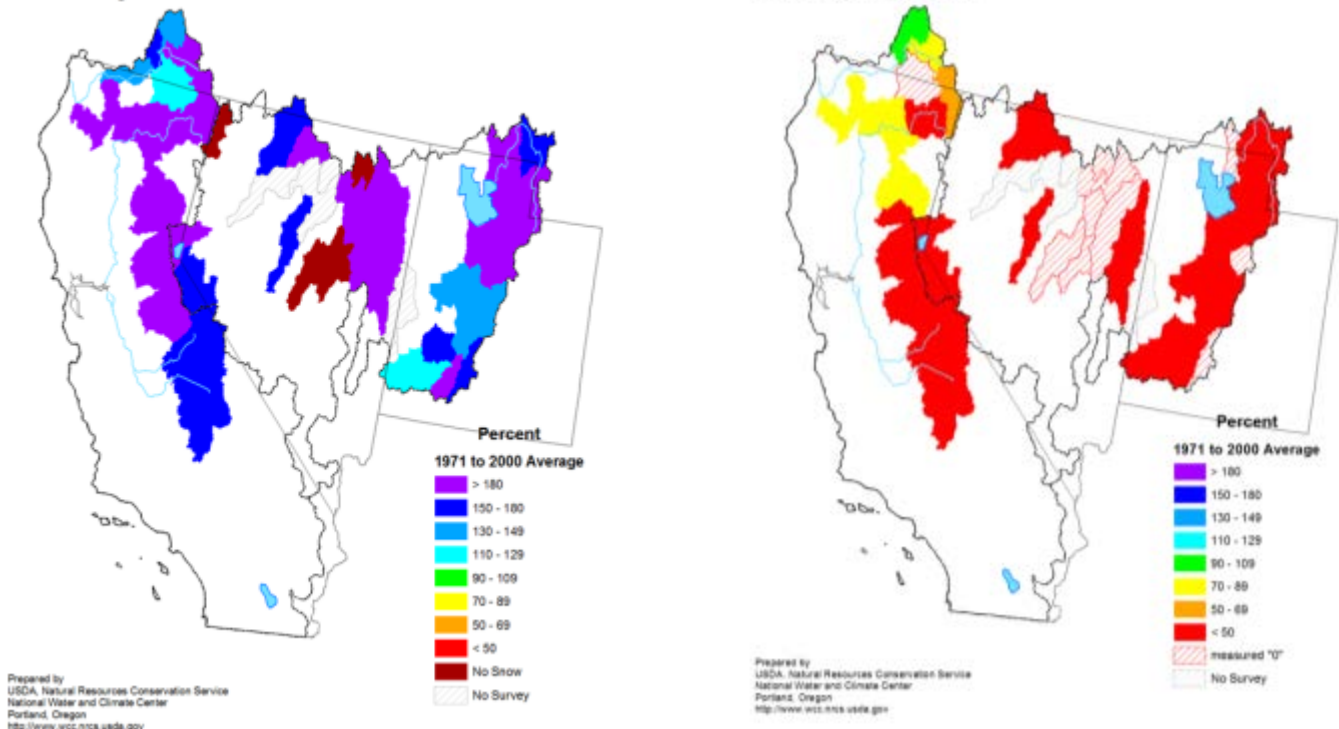


Figure 2 – Comparison of May 1, 2011 – May 1, 2012 Mountain Snowpack Percent of Average from USDA - Natural Resources Conservation Service

Review of October 2011 to mid-June 2012

A secondary La Nina pattern peaked at about the end of 2011. It produced varied weather effects in the first four months of 2012 across California, but its influence was diminishing by the end of April. Much of North Ops was very dry through early March, and by that point the seasonal precipitation POAs (percent-of-average) had dipped to a 35-65% range around the north state. The winter dryness was especially seen in December and to a lesser extent in February, with persistent high pressure ridges governing both months. Many locations had their first or second -driest Decembers on record, or at least their driest in 20 years. A few sites reported no precipitation at all! There was finally a shift in the large-scale governing pattern about 10 days into March, and many areas then had their only consistently wet period of the winter, generally of 5-6 weeks duration. Still, by late June, that had only helped season-to-date POAs to climb back to a 45-90% range in all except the far North Coast region (*see Figure 3*). Mean temperatures since October have mostly averaged within 2° F of normal, with the coolest anomalies in the Trinity- western Siskiyou area, and warmest anomalies centered on the NEU Unit of CAL FIRE. The final snowpack map (May 1st) showed a wide range of about 35 to 90% within northern CA, bordering near normal at the Siskiyou Mountains interface with Oregon. Probably the most important wind event of the offseason was an extremely strong North to East (Foehn type) event of 3-4 days duration at the start of December 2011. Biggest effects were in the Sierra, especially south of Interstate-80, with local to widespread areas of tree damage.

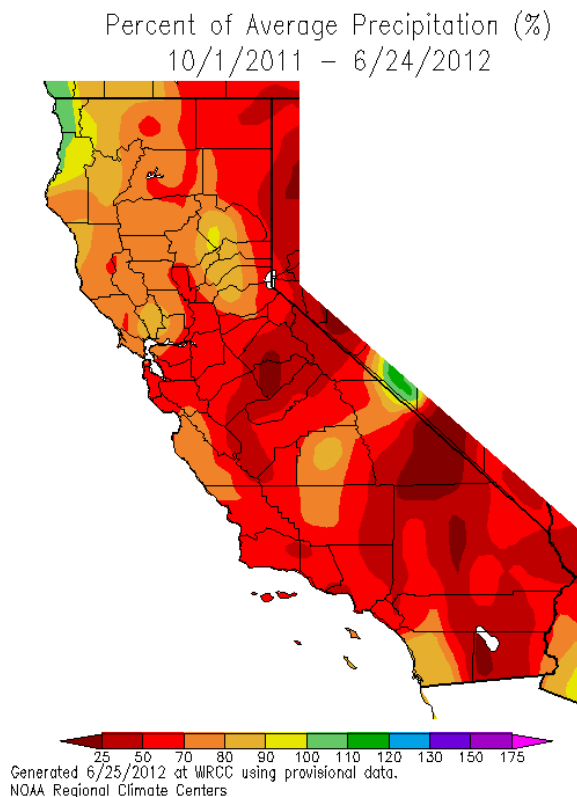


Figure 3 – Percent of Average Precipitation

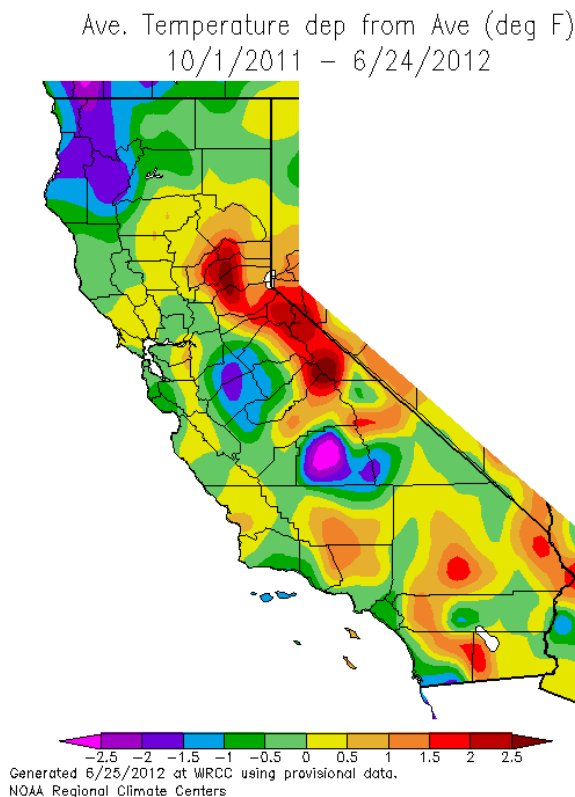


Figure 4 – Temperature Departure from Average

2012 Northern California Fire Season Outlook

Weather/Climate Forecast for Northern CA - July through October of 2012:

This Outlook period begins at the end of a June that, in terms of rainfall percentages of normal, has varied greatly around North Ops. While driest areas have had near-zero totals, a few wetter ones in the northwestern mountains, along the Cascade/Sierras, and near Monterey Bay have exceeded 150% of normal. Moving forward, July is expected to have mean temperature ranges from 1-3.5 degrees above normal in eastern North Ops, and near normal in the western sections. Rainfall is expected to be in the zero to .30 inch category, i.e. close to normals, as July is climatologically California's driest month. For August through October, temperatures are forecast to remain a little above normal in August, and then to trend downward to near or just below normal by October. Precipitation-wise, look for August-September totals to range from -50 to +50% of normal totals. But keep mind that with low (dry) normals for those two months, this may not be much variation, nor much total precipitation, for most inland areas. Most inland precipitation that does occur this summer is expected to be the result of either isolated to scattered convective cells or weak frontal systems in Oregon that just brush the north end of CA with light showers. The latest thinking (in late June) is that the southwestern monsoon will have normal or above moisture values up through Arizona, and begin in earnest around 4th of July. This is a source for some of eastern CA's summer thunderstorm potential.

Forecast Confidence: Moderate.... 60% regarding both Temperatures and Precipitation 60%

2012 Northern California Fire Season Outlook

Fuels Discussion

Although the short-term drought persisted through much of the winter and early spring, March and April storms moderated drought conditions in Northern California. However, far northeastern portions of the Geographic Area remain in a D2 – Severe Drought category.

The lack of winter compaction and moisture in the Northeastern California and east of the Sierra Crest left an abundant standing dead carryover grass crop from 2011. The sage greenup and new grass growth that is occurring in these areas will act as a heat sink and slow fuels-driven fires for May and June, but enough residual dead grass is currently available to present control problems during strong wind events throughout the season. See *Figure 5* on next page.

In most areas of the GACC, early melt-off of the below-average snowpack is exposing higher elevation fuels to drying for 1-2 months longer than in 2011. The Northwest corner of the state, including the Klamath watershed, generally received normal-to-above normal snowpack, and higher-elevation fuels will become available to burn within the normal late summer period.

Mild late February and early March weather led to early greenup for some lower elevation herbaceous fuel species. There is thus some local potential for critical LFM levels to be reached 1-4 weeks ahead of average dates this fire season. Because of the rapid green-up, new growth on brush fuel types has been limited, and Live Fuel Indices indicate some drier areas of the Sacramento Valley/Foothills PSA have already reached peak greenup and will start curing rapidly with extended hot dry weather.

An exceptionally strong 3-4 day northeast wind (Foehn-type) event in early Dec 2011 produced a lot of wind-downed trees from the El Dorado to Inyo National Forests. Access to wildland fire could be an issue for some areas. See *Figure 6* on next page.

Many fuels that would normally be covered by snow were exposed to freezing temperatures for much of the winter. Localized areas of frost-killed fuels have been reported above 5000' elevation on the Lassen, Tahoe, and Plumas National Forests, and above 6000' on the Lake Tahoe Basin Management Unit. Manzanita, snowbrush, white thorn and mahala mat/pine mat on northern and eastern aspects have been affected, although some areas on other aspects have been located also. Although the damage is patchy and will not affect overall suppression strategies, expect fires to burn more actively in pockets of frost-killed fuels. See *Figure 7, 8, 9, & 10* on next page.

Resource needs are expected to be highest in Northeast California and east of the Sierra Crest throughout the season; however, ignitions on the steeper southwest slopes throughout the GACC may cause control problems in late July and August due to lack of normal wintertime fuel compaction. At lower elevations, mild spring conditions could lead to a large grass crop and more readily-available ladder fuels, which could increase resource needs during wind events. The historical track record has been that any dry and/or extensive lightning event that occurs in Northern CA from late July through early September has a good chance of requiring outside resources.

2012 Northern California Fire Season Outlook



Figure 5 – Example of tall residual dead grass in Northeastern California / Northwestern Nevada. Photos taken in mid-April.



Figure 6 – Strong November winds resulted in areas of windthrow from the El Dorado to the Inyo NF. Access could be an issue.



Figure 7 – Frost-killed brush near Antelope Lookout on the Lassen NF.



Figure 8 – Exposed areas received the most frost damage. Photo taken near Lemon Canyon on the Tahoe NF.



Figures 9 & 10 – Although Manzanita the primary species affected, some snowbrush, white thorn and mahala mat/pine mat were damaged also.

2012 Northern California Fire Season Outlook

Hawai'i

In Hawai'i, the prolonged 4 year drought continues across the islands from Molokai southeastward, with the largest areas as you would expect, on the big Island. As of late June, each of these islands had moderate to extreme drought on their leeward portions. Some spring rains did help moderate drought on the northwestern islands, and the southern Kona coast did see some moderation due to June showers. With the wet season ended, most areas in the north and windward are expected to have ***near normal fire potential*** this summer. However, the leeward side of several islands (see the map) will continue to have ***above normal fire potential***. (Fig 11)

An El Nino tends to accentuate drought conditions, so with a new El Nino looking gradually more probably, there may be no significant or widespread relief coming to Hawai'i anytime soon.

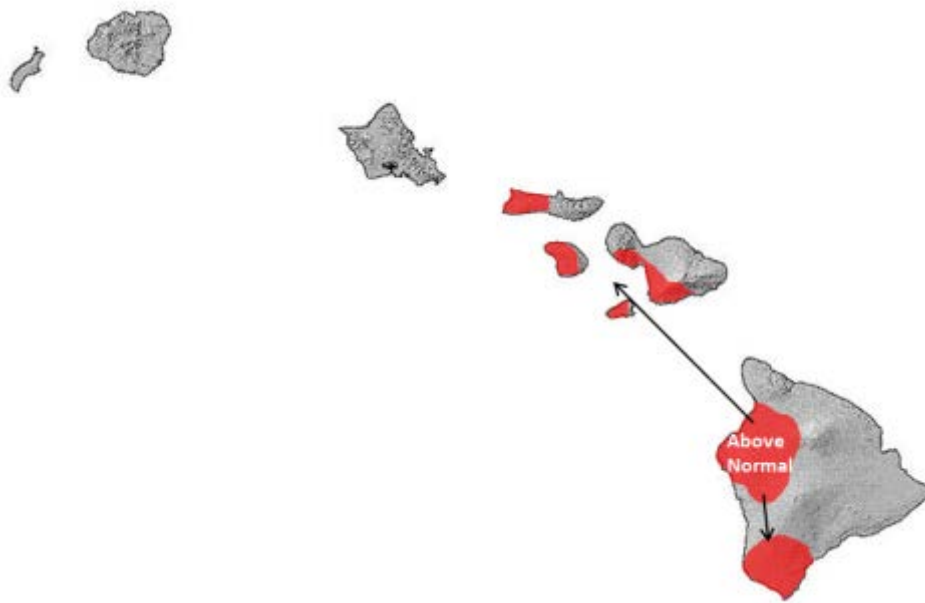


Figure 11 - 2012 Hawai'i Fire Potential Outlook

Predictive Services Contact Information

For more information about the 2012 Northern California Preliminary Seasonal Outlook or other Predictive Services products, contact:

Northern California Geographic Area (North Ops)

John Snook, Predictive Services Manager

USDA Forest Service – Redding, CA

(530) 226-2730 jsnook@fs.fed.us

Website: <http://gacc.nifc.gov/oncc/predictive/index.htm>

This document can be located on the web at http://gacc.nifc.gov/oncc/predictive/outlooks/seasonal_outlook.pdf