

# 2012 California Preliminary Seasonal Outlook

Outlook for May - August 2012



## North

- Precipitation since October 2011 has been mostly between 55-90% of normal. Drought conditions diminished in March-April, but continue in the East and South.
- As of early April, snowpack ranged from near normal in the northwest to only near 50% of normal in the southeast.
- The temperature and precipitation forecasts in this Preliminary Outlook are based on staying in an ENSO neutral condition, but this is far from certain (see details within the report).
- A mild late winter period helped 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 Northern California.
- Although most PSAs recorded seasonal record high ERC and low Fuel Moisture values, most of the Geographic Area has recovered to seasonal averages.

## South

- Winter rains throughout the Geographic Area were 50-70% of normal and snow pack in the Sierra is half of normal
- Most fuels are drier than normal and should be fully cured by June.
- Expect a normal start to fire season.
- Drought conditions are developing and expanding over the region.
- Large fire potential will be above normal over most of the mountain and foothill areas.
- This year's fire season will largely be driven by the fuel conditions. Tall residual dead grass from last year is locally still standing in eastern portions areas of the Geographic Area.

# 2012 California Preliminary Seasonal Outlook

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## Executive Summary

This Preliminary Seasonal Outlook is a product of the National Seasonal Assessment Workshop (virtual meeting) held April 17-19, 2012. The interagency workshop brought together subject matter experts from climatology, fire weather meteorology, fuels, fire behavior, and fire danger. The outlook is based on past developments, current conditions, trends, and predictions for the months May through August. A complicating factor this year is the potential for a return to an El Nino pattern by mid to late spring, and if so, timing the onset of its first effects on Western U.S. climate and large fire potential.

Objectives of the Executive Summary are to:

- Provide a prognosis of 2012 wildland fire potential in California, based on fuel conditions and available climate forecasts.
- Highlight concerns and key implications for management.
- Provide supporting documentation regarding weather and fuels information.
- Provide the framework for comprehensive final North Ops and South Ops outlooks to be completed in June.
- Alert users that the potential for a switch to El Nino presents a 'two-scenario' situation for this coming fire season.

This Executive Summary should aid California wildland fire managers in 2012 fire season preparedness, and add preliminary insight. More detailed fire season outlooks, for both North and South Ops, will be available by about mid-June. Those documents will give increased detail regarding all aspects of the coming fire season, and will have higher confidence levels than in this Preliminary version. For this year, confidence levels especially relate to how soon effects of a budding El Nino could present themselves. In addition to this outlook, the GACC Predictive Service Units at Riverside and Redding continue to issue detailed Monthly Outlooks covering expected fire weather and fire danger, as well as large fire potential.

## 2012 Fire Season Overview

### South

Winter precipitation was only 50-70% of normal across the Geographic Area and snowpack in the Sierra was about half of normal (see *Figures 1 & 2*). An extended period of warm, dry weather from mid-December into early February, combined with late season rains, has allowed the lighter fuels to be in various states of curing. These fuels however are generally ahead of the characteristic curing times by approximately a month. The larger herbaceous fuels are showing two divergent paths in their growth and curing schedule. While new growth in the shrub component is showing a vigorous uptake of available soil moisture due to recent rains, old growth of the same species is slow to exit typical dormancy due to the low rainfall totals observed throughout the entire winter period. We expect full curing of the lighter fuels to take place by June, with a normal start to fire season in general. Overall, a higher than average likelihood of large fires is expected this year over many interior areas, including all of the mountains and valleys away from the coast, beginning in July. Expect rapid fire growth in new starts and more difficulty reaching containment objectives. Multiple large fires may occur during hot, dry periods which may place a premium on resource availability.

### North

Fire season for the majority of Northern California is expected to begin in typical May to June time frames. For the eastern and southern areas most affected by developing drought, activity in lighter fuels could pick up 1-2 weeks ahead of average.

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 will see early melt-off and therefore fuels exposed to the elements earlier, or locally much earlier, than in 2011 (*Figure 2*);
- A mild late winter period helped 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;
- Uncertainty related to El Nino. If we do start to see weather effects from a developing new El Nino, then a potentially moist June could induce a 2-5 week early-summer plateau period, or even a downturn, in the typical fire season progression, particularly for mid and higher terrain.

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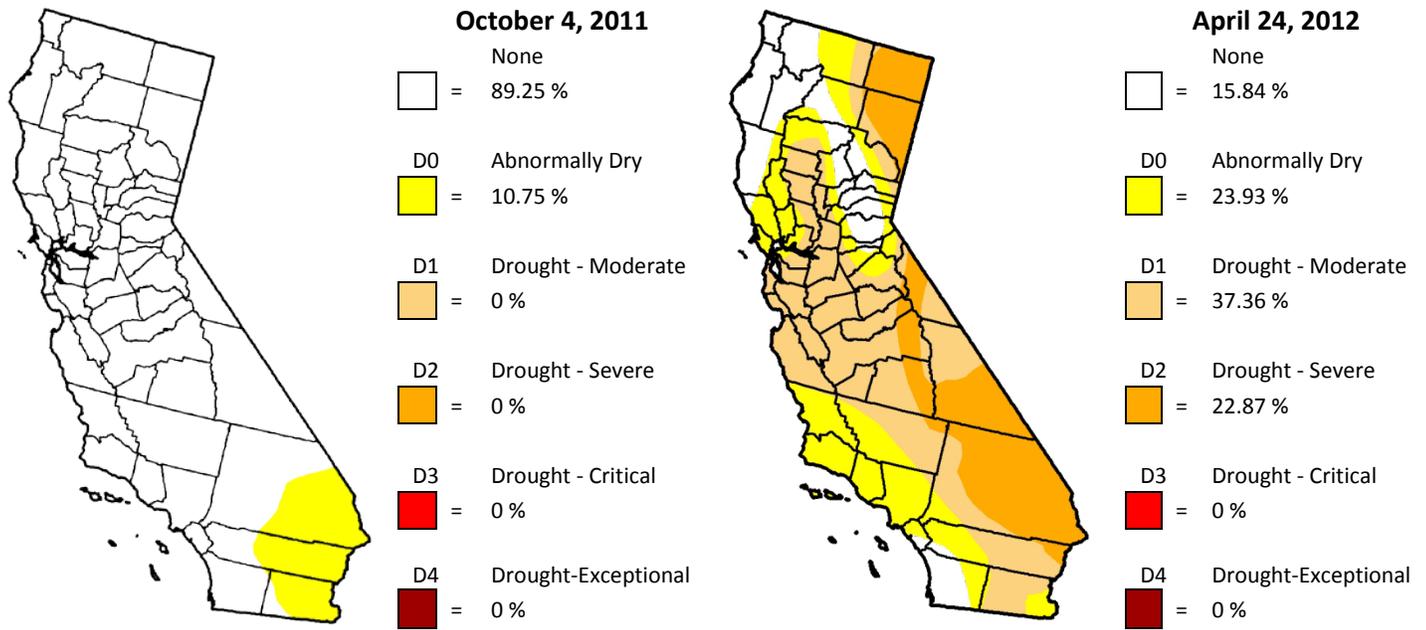
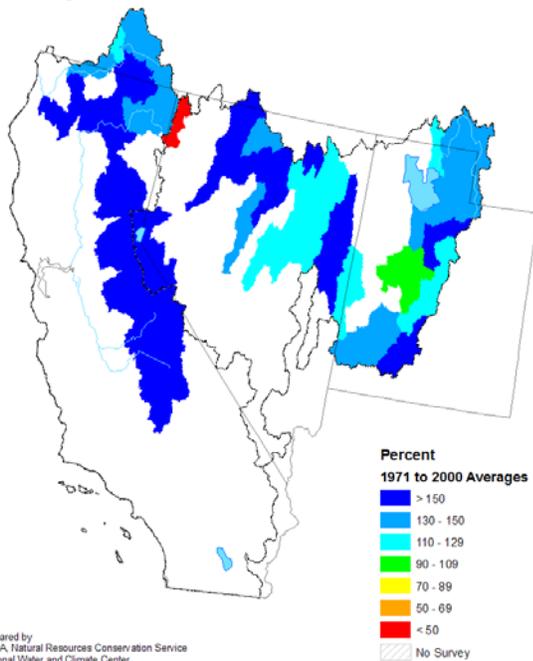


Figure 1 - Progression of California Drought Coverage during 2011-2012 Water Year (October 1, 2011 – present)  
Data from the National Drought Mitigation Center - <http://droughtmonitor.unl.edu>

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



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

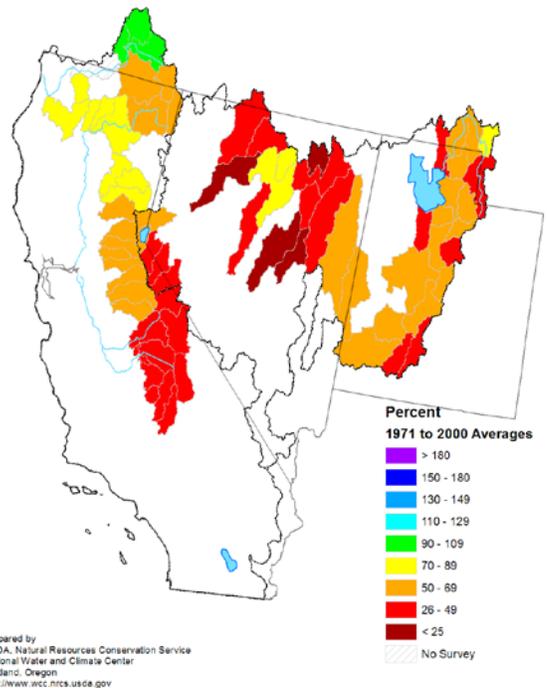


Figure 2 - Comparison of April 1, 2011 - April 1, 2012 Mountain Snowpack Percent of Average from USDA – Natural Resources Conservation Service

## Review of October 2011 to mid-April 2012

### South

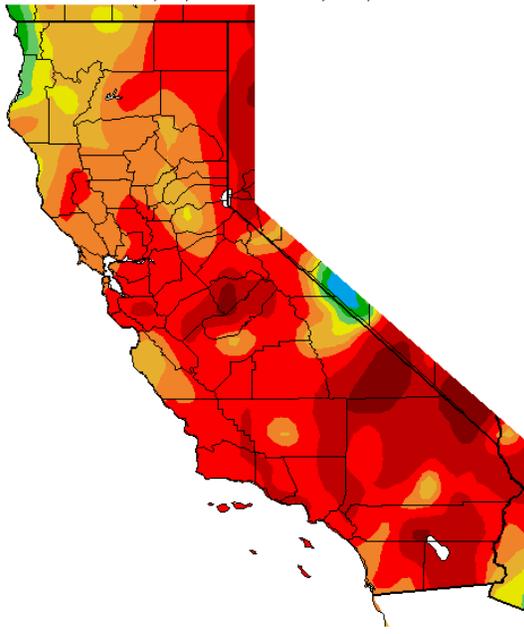
The fall of 2011 was characterized by a high frequency of offshore winds, mainly across southern California. Some of the strongest Santa Ana winds of the season occurred in early November and again in December, however none of these events resulted in large fires. Winter precipitation arrived a few weeks earlier than normal with wetting rains having fallen over most of the region by mid-to-late October. Most areas received above normal amounts of precipitation by early December but an extended period of warm and dry weather set in from mid-December through early February. Late season rains in March and April helped bolster fuel moistures over much of the region with a secondary grass crop returning to many lower elevation locations.

### North

A La Nina pattern peaked by the end of 2011, but was significantly weaker than the La Nina of late 2010. It produced varied weather effects in the first four months of 2012, though its influences were winding down quickly as we approach 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. 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 1<sup>st</sup> or 2<sup>nd</sup> -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 have had at or above normal precipitation in the 5-6 weeks since. Still, this has only helped season-to-date POAs to climb back to a 55-90% range (see *Figure 3*). The minor wetter exception is near to slightly above normal seasonal rain totals along and near the far north CA coast. *Figure 4* shows that mean temperatures since October have roughly averaged below normal west of the I-5 corridor, and above normal to the east. April snowpack ranged from near normal in the far north, to closer to 50% south of the Feather River drainage in the Sierra Nevada. As usual, there have been some wind events associated with Pacific storms over the winter, but only a couple had very strong S to SW pre-frontal winds. However, there was an extremely strong N to E (Foehn type) wind event of 3-4 days duration centered at the start of December 2011. Biggest effects were in the Sierra, especially south of I-80 with widespread areas of tree damage.

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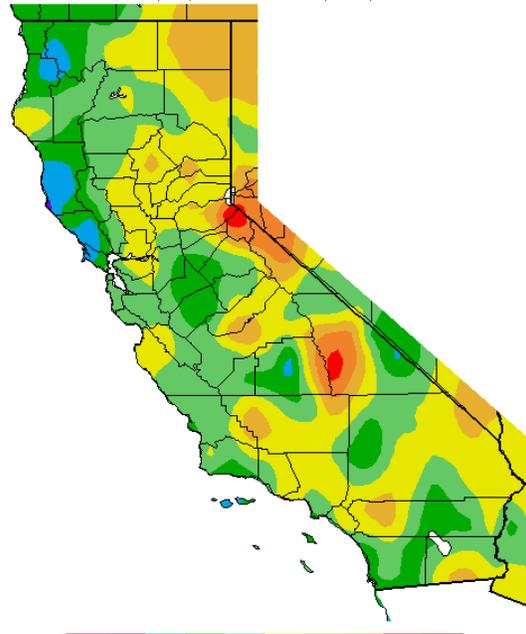
Percent of Average Precipitation (%)  
10/1/2011 – 4/22/2012



Generated 4/23/2012 at WRCC using provisional data.  
NOAA Regional Climate Centers

Figure 3 – Percent of Average Precipitation

Ave. Temperature dep from Ave (deg F)  
10/1/2011 – 4/22/2012



Generated 4/23/2012 at WRCC using provisional data.  
NOAA Regional Climate Centers

Figure 4 – Temperature Departure from Average

## Weather/Climate Forecast for May through August of 2012:

### South

Despite the recent rainy weather, precipitation is expected to taper off in May and June, as is typical in Central and Southern California. Climatologically, the state receives very little of its annual rainfall from May into the summer months. Therefore, little, if any beneficial wetting rains are expected during the late spring into the summer.

It remains to be seen whether this summer's "monsoon" season will yield appreciable rainfall. As of late April, the La Niña which was in place last winter was quickly dissipating. An El Niño may develop this summer which may, or may not, impact the summer weather patterns across the West. A comparison of similar seasons in which a La Niña evolved into an El Niño indicated summer precipitation (due to the "monsoon") was generally below normal. But should sea surface temperatures over the central Pacific evolve in such a fashion, the spring into the early summer may be cooler than average due to a higher than normal number of troughs parked off the Pacific Coast. This pattern occurred in 2010 and 2011: the propensity for the atmosphere to generate deep troughs offshore led to a cool spring with pervasive onshore flow. This same pattern also kept the summer "monsoon surge" suppressed to the south and east of the district. Overall confidence in this summer's forecasted weather pattern is low and therefore the 2012 fire season will largely be driven by the fuel conditions.

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**Forecast Confidence:** Forecast confidence is low for the 2012 fire season. This is largely due to the uncertainty of moving into El Nino pattern and the timing of such a change. Confidence in large fire potential being above normal is highest across the interior portion of the central coast where rainfall is well below normal and fuel conditions are very dry. Conversely, confidence in large fire potential being above normal is lowest over some of the mountains of southern California, mainly due to the high variations in rainfall received this past winter.

## North

This Outlook period begins after a prolonged 5-6 week cool, wet period for most of the region, except locally drier across the Eastside and the Lake Tahoe and Eldorado NF regions. The La Nina pattern has dissipated, leaving the Pacific ENSO (El Nino Southern Oscillation) in a neutral state. If this ENSO remains neutral into early summer, there is a good correlation with a transition into normal summer warmth and dryness. Precipitation would likely be scattered and mostly light, except for the occasional warm season thunderstorms which normally tend to be most prevalent along and east of the Sierra/Cascades. However, the majority of the time period should be dominated by either the Eastern Pacific High Pressure or the Four-Corners High....both of which typically bring extended periods of hot, dry conditions when they build over or towards California. The Four Corners High can also bring occasional intrusions of monsoonal moisture up the Sierra chain. Overall temperatures inland should be 1-2° F above normal. Precipitation is expected be near normal, which typically means light and isolated. No clear normality signal for lightning or wind is evident.

**However**, recent sea surface temperatures (SST's) across the tropical Pacific are beginning to trend toward a possible El Nino pattern. If an El Nino does develop by the end of May, then the overall weather pattern would be **quite different**. The dominant large scale feature would be a semi-permanent upper low off the CA coast, bringing cool temperatures and above normal shower and wet thunderstorm activity thru late June or early July. If this cool, wet pattern does occur it could link with the recent 6 week cool, wet spell and have significant prolonged effects on fuels and fire potential for this season. At this time we feel that there is only a 40% chance of this El Nino scenario unfolding, with a 60% chance of ENSO neutral conditions and related weather described in the previous paragraph. This situation will be monitored closely and by the end of next month there should be a much higher confidence in which weather scenario will unfold.

**Forecast Confidence:** Low, due to ENSO uncertainty = Temperatures 55%, Precipitation 55%

## Statewide Fuels Discussion

### South

As mentioned earlier, winter precipitation was below normal over all of the Geographic Area. The precipitation deficit generally becomes more pronounced away from the coastal locations; the inland areas of Central California as well as the inland valleys of Southern California and the Owens Valley. Many of these areas are now in a D2, or Severe Drought.

As a result of the dry weather, native grasses experienced very limited new growth during the winter months away from the coast. New growth on mesquite, chaparral and brittlebush was minimal in the inland areas. Subsurface soil moisture only extends to the first few inches of soils, even with the recent rainfall.

Prior to the most recent precipitation in the middle of April, 100-hour fuel moisture readings at many year-round severity stations were already at or dropping toward minimum recorded levels for this time of year. This recent precipitation will only result in a temporary spike in the readings and then they will continue to drop again. The 1000-hour fuel measurements show a similar trend.

At the lower elevations, there has been greenup in the form of new grasses and chaparral, but the extent and density of it is much less than normal. It is likely that this somewhat sparse new growth will cure more rapidly than normal. In the higher elevations, snow in all areas of the GACC was down significantly, especially in the mountains of Southern California. 1000-hour fuel moistures may drop substantially in the next three months due to the lack of winter and spring precipitation.

Once fuels cure by summer, any new starts will see high rates of consumption. Heavier fuels will also be receptive during peak heating hours, especially in July, August and September. Drought conditions will likely expand during the summer and fall months, which will cause a heavy draw on area reservoirs.

### North

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, expected early melt-off of the below-average snowpack will expose 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.

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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.

There is a still-to-be-fully-assessed wind damage component in the northern Sierra forests, and possibly on a few other Forests. An exceptionally strong 3-4 day northeast wind (Foehn-type) event in early Dec 2011 produced a lot of wind-downed trees on at least the El Dorado NF. Access to wildland fire could be an issue for some areas.

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.



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

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## Hawai'i

In Hawaii, the prolonged 4 year drought continues across the Big Island with widespread moderate to severe drought across leeward areas, while recent rains of the past few months have diminished the drought conditions for the remainder of the Northern/Western Islands. Still some lingering slight to moderate drought conditions for smaller areas of Maui and Molokai'i. With the wet season coming to an end, most areas should see **near normal fire potential** this summer and **above normal fire potential** expected again for most of western Hawai'i (Fig 5)

This forecast is based on a neutral ENSO (El Nino Southern Oscillation) phase. However, if recent sea surface temperature (SST) anomalies continue their trend across the equatorial Pacific, then a shift to El Nino is possible. An El Nino tends to accentuate drought conditions and we will monitor the ENSO phase very closely for any possible updates to the fire potential forecast.

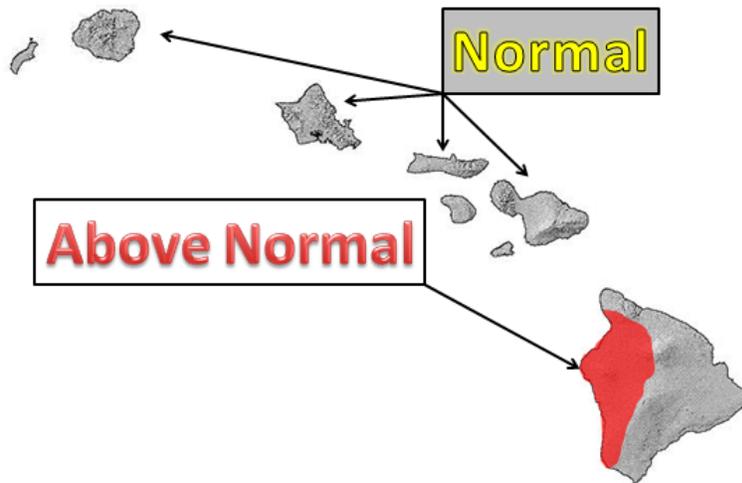


Figure 6 - 2012 Hawai'i Fire Potential Outlook

## Predictive Services Contact Information

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

### Southern California Geographic Area (South Ops)

Tom Rolinski , Predictive Services Manager  
USDA Forest Service – Riverside, CA  
(951) 782-4849 [thomasrolinski@fs.fed.us](mailto:thomasrolinski@fs.fed.us)  
Website:  
<http://gacc.nifc.gov/oscc/predictive/index.htm>

### Northern California Geographic Area (North Ops)

John Snook, Predictive Services Manager  
USDA Forest Service – Redding, CA  
(530) 226-2730 [jsnook@fs.fed.us](mailto: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](http://gacc.nifc.gov/oncc/predictive/outlooks/seasonal_outlook.pdf)