

Seasonal Wildfire Outlook 2014

Timothy Brown

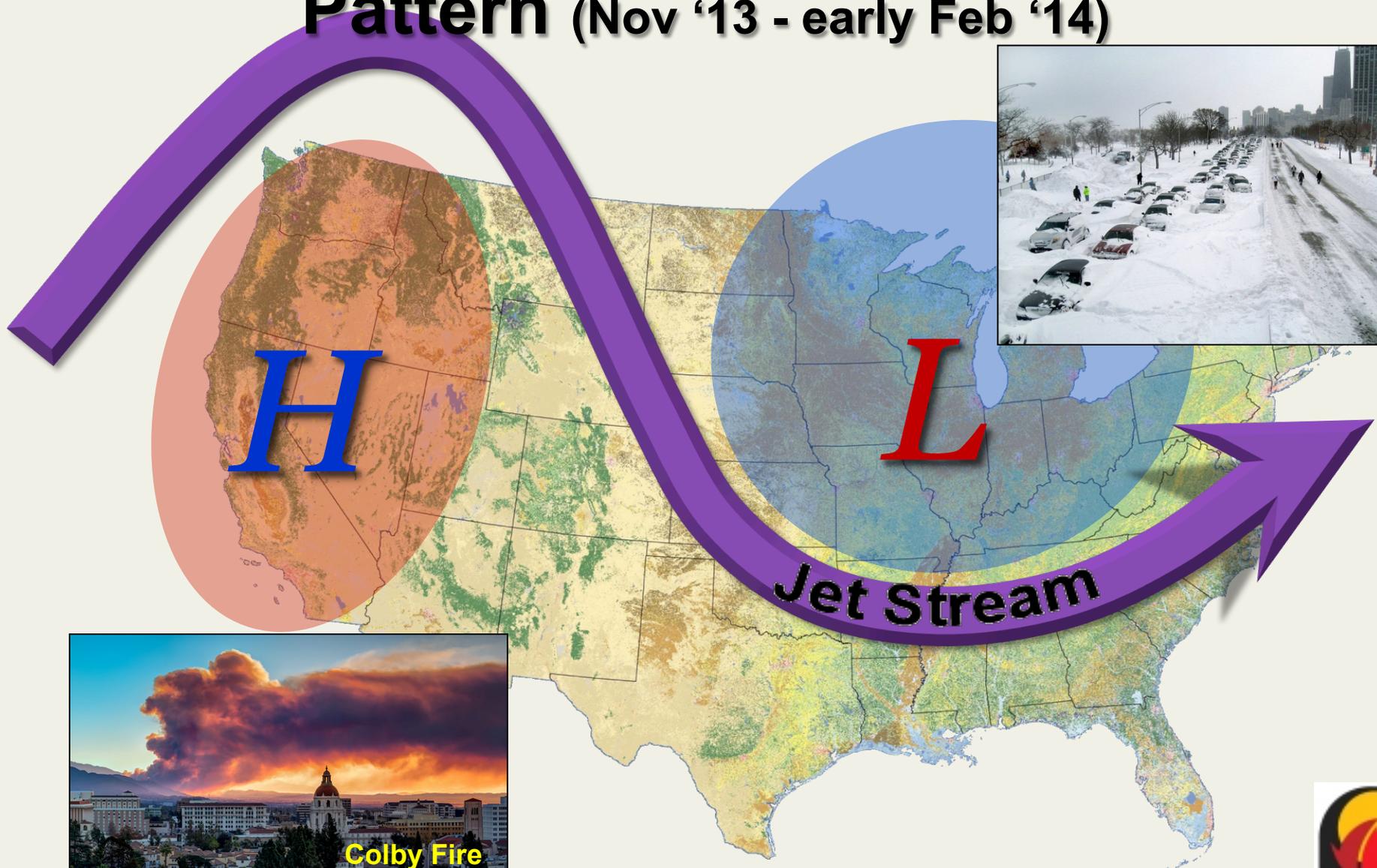
Desert Research Institute, Reno, Nevada
Program for Climate, Ecosystem and Fire Applications
Western Regional Climate Center

California Drought Forum Sacramento, CA 15 May 2014

Many thanks to California Predictive Services

- John Snook (USFS)
- Tom Rolinski (USFS)

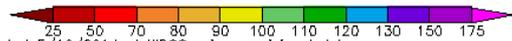
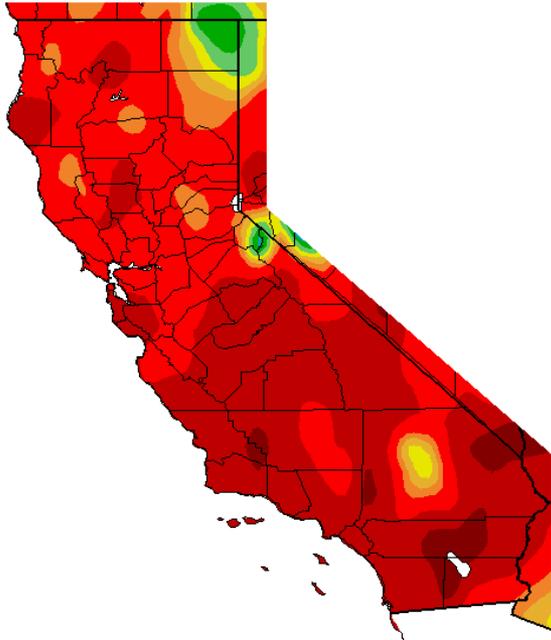
Predominant Winter Weather Pattern (Nov '13 - early Feb '14)



Precipitation (% of average)

Past 6 months

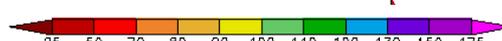
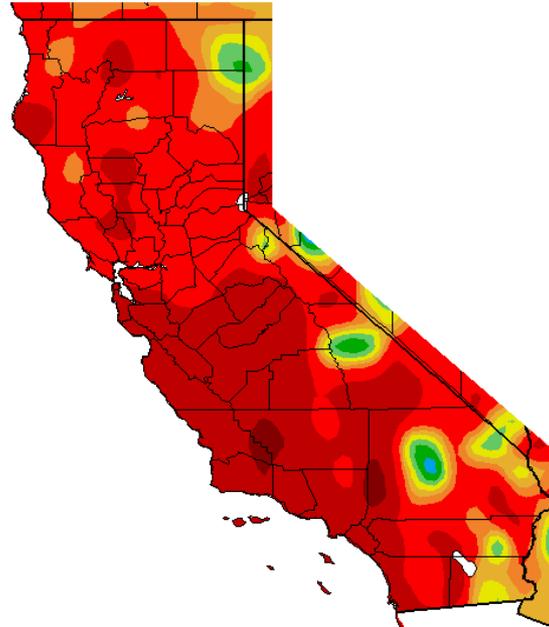
Percent of Average Precipitation (%)
11/12/2013 – 5/11/2014



Generated 5/12/2014 at WRCC using provisional data.
NOAA Regional Climate Centers

Past Year

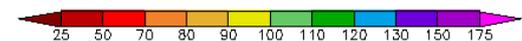
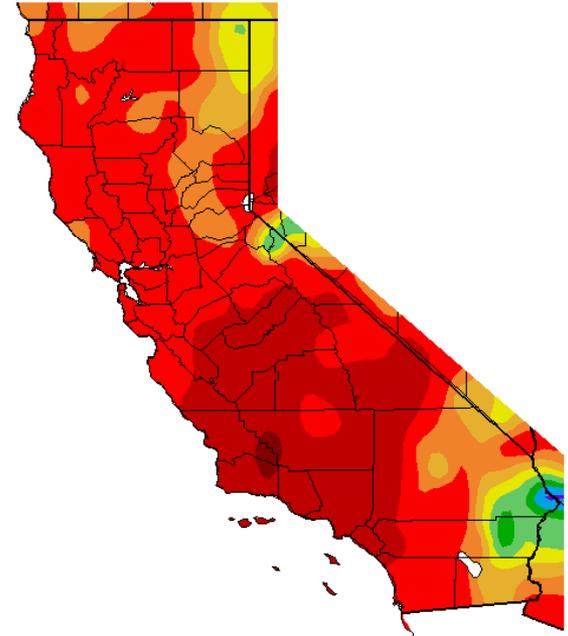
Percent of Average Precipitation (%)
5/12/2013 – 5/11/2014



Generated 5/12/2014 at WRCC using provisional data.
NOAA Regional Climate Centers

Past 2 years

Percent of Average Precipitation (%)
5/12/2012 – 5/11/2014



Generated 5/12/2014 at WRCC using provisional data.
NOAA Regional Climate Centers

California

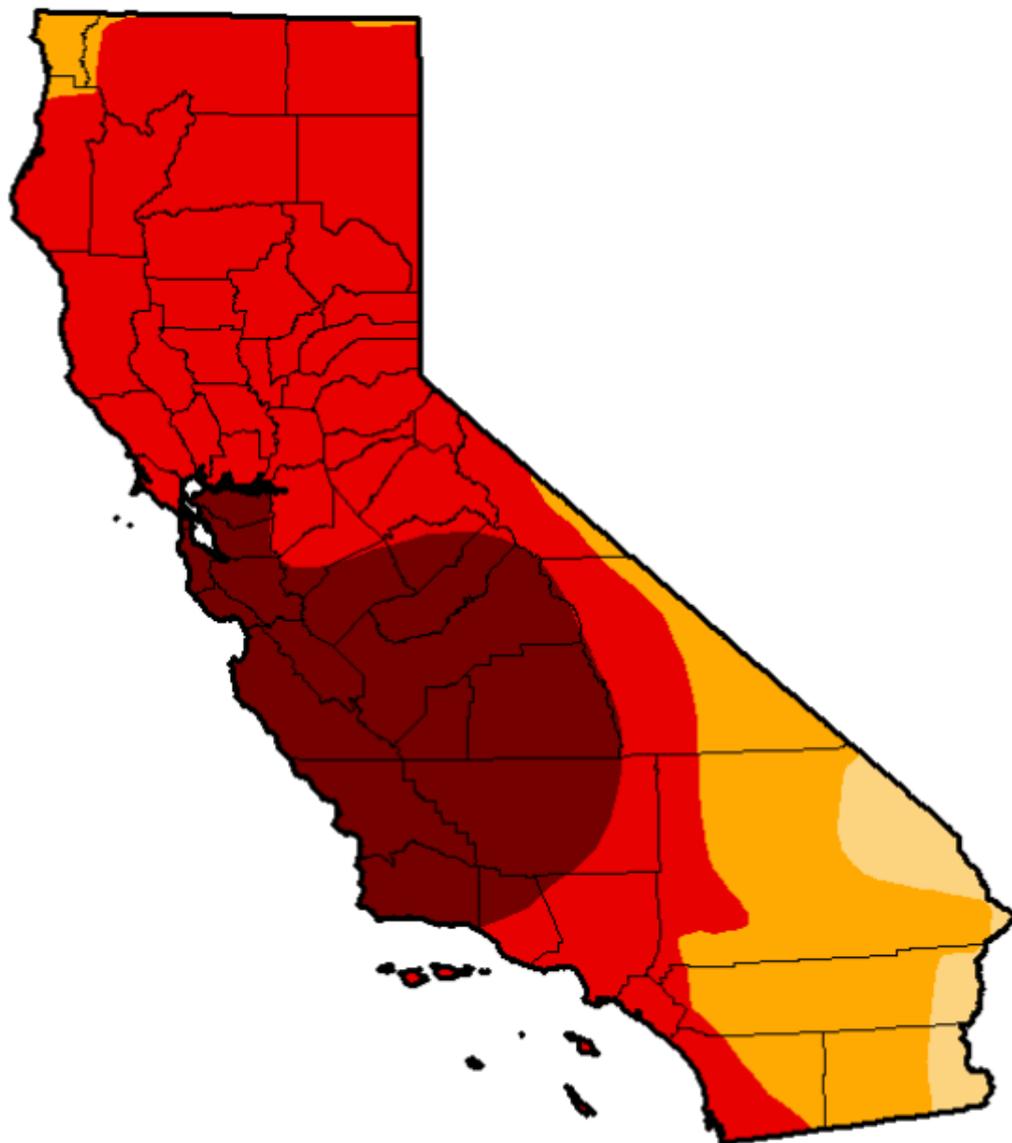
May 6, 2014

(Released Thursday, May 8, 2014)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	95.93	76.68	24.77
Last Week <i>4/29/2014</i>	0.00	100.00	100.00	96.01	76.68	24.77
3 Months Ago <i>2/4/2014</i>	1.43	98.57	94.18	89.91	67.13	9.81
Start of Calendar Year <i>12/31/2013</i>	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year <i>10/1/2013</i>	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago <i>5/7/2013</i>	0.00	100.00	98.16	46.25	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

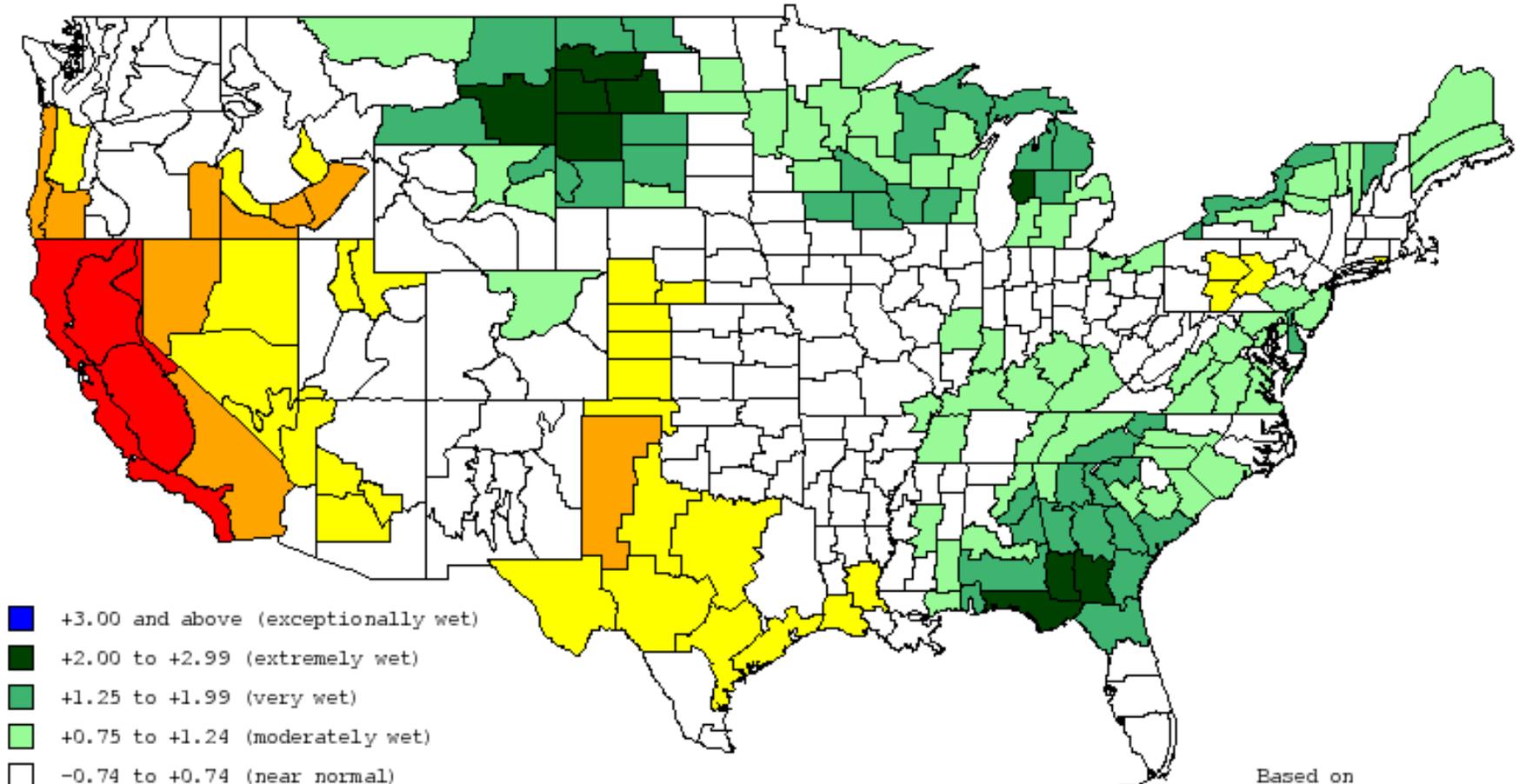
Mark Svoboda

National Drought Mitigation Center



Standardized precipitation index

15-month Standardized Precipitation Index through the end of April 2014



- +3.00 and above (exceptionally wet)
- +2.00 to +2.99 (extremely wet)
- +1.25 to +1.99 (very wet)
- +0.75 to +1.24 (moderately wet)
- -0.74 to +0.74 (near normal)
- -1.24 to -0.75 (moderately dry)
- -1.99 to -1.25 (very dry)
- -2.99 to -2.00 (extremely dry)
- -3.00 and below (exceptionally dry)

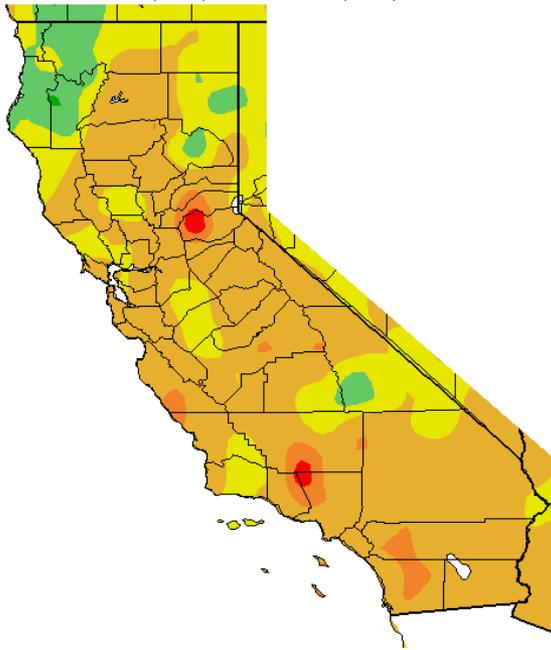
Based on
Divisional Precipitation Data
1895 to present
Provisional data provided by
NOAA/NWS/CPC & NOAA/NESDIS/NCDC
Western Regional Climate Center
Desert Research Institute
Reno, Nevada

Temperature (departure from normal)

Past 6 months

Average

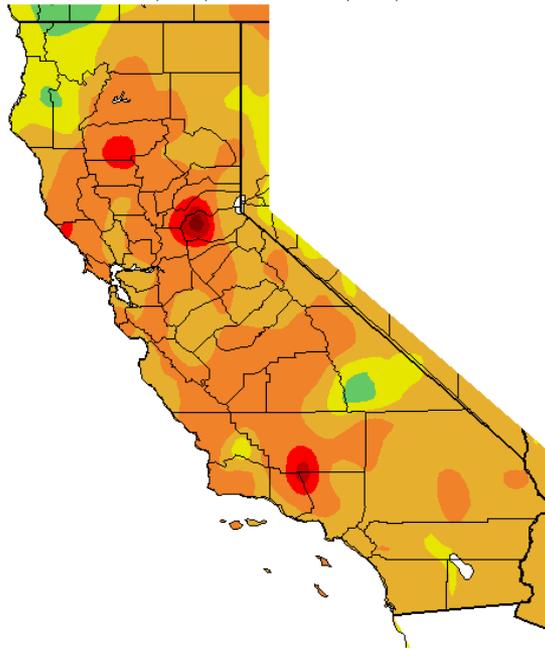
Ave. Temperature dep from Ave (deg F)
11/12/2013 – 5/11/2014



Generated 5/12/2014 at WRCC using provisional data.
NOAA Regional Climate Centers

Maximum

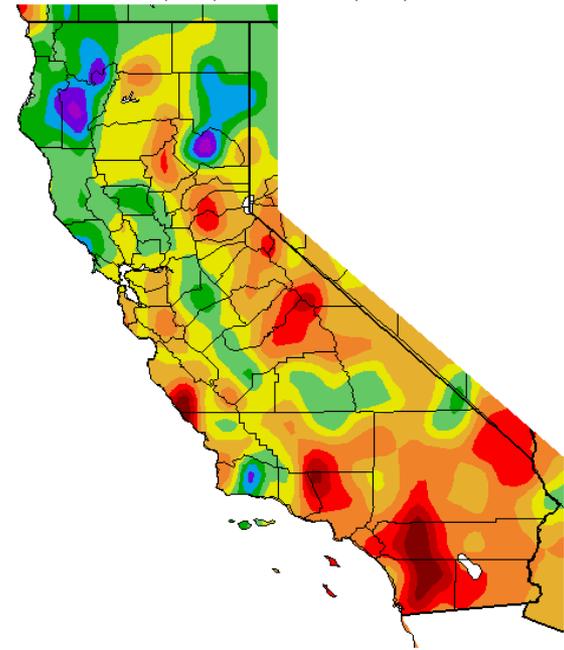
Av. Max. Temperature dep from Ave (deg F)
11/12/2013 – 5/11/2014



Generated 5/12/2014 at WRCC using provisional data.
NOAA Regional Climate Centers

Minimum

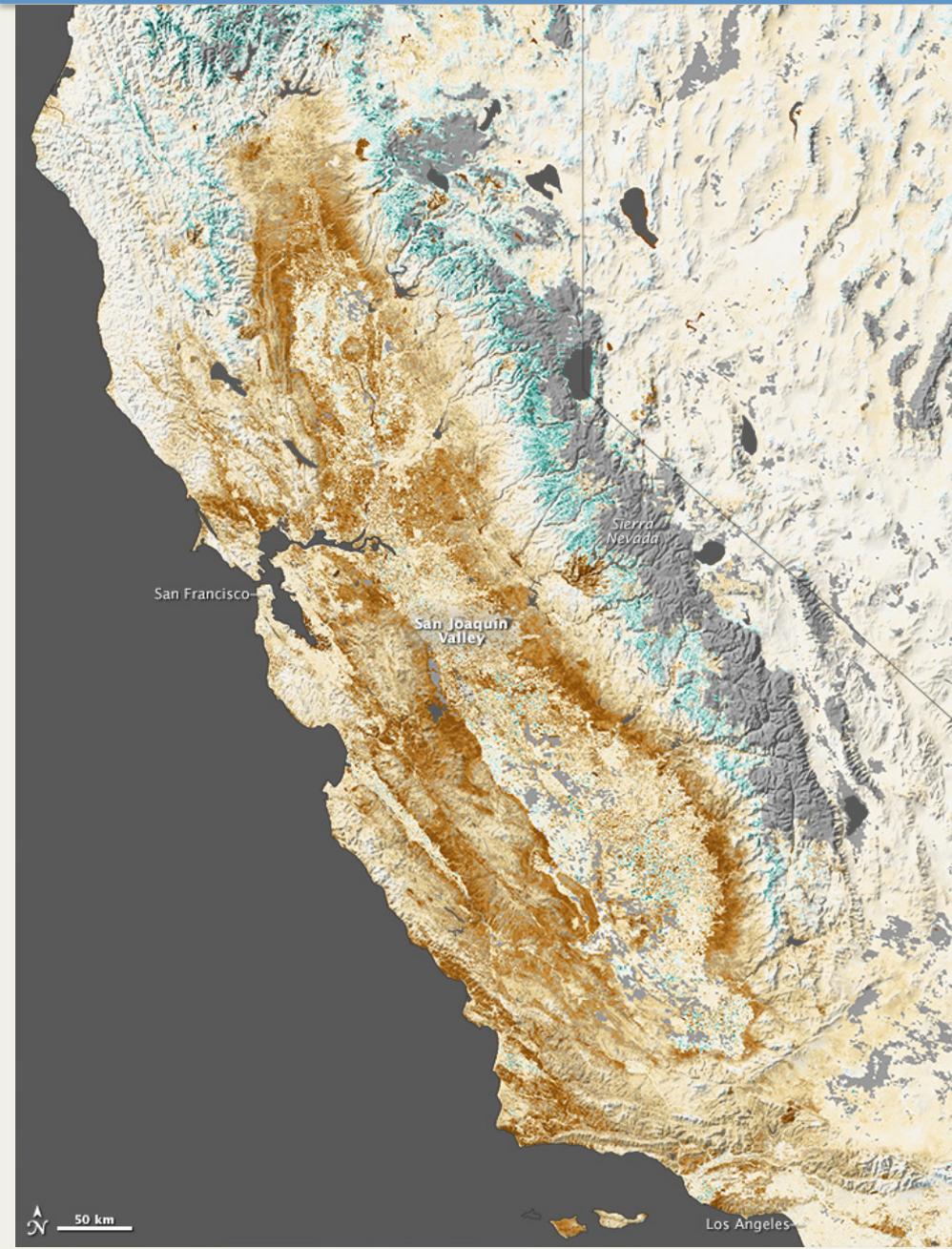
Av. Min. Temperature dep from Ave (deg. F)
11/12/2013 – 5/11/2014



Generated 5/12/2014 at WRCC using provisional data.
NOAA Regional Climate Centers

Vegetation health

17 January – 01 February 2014
Compared to recent 10-year average



Seasonal Outlook (continued)

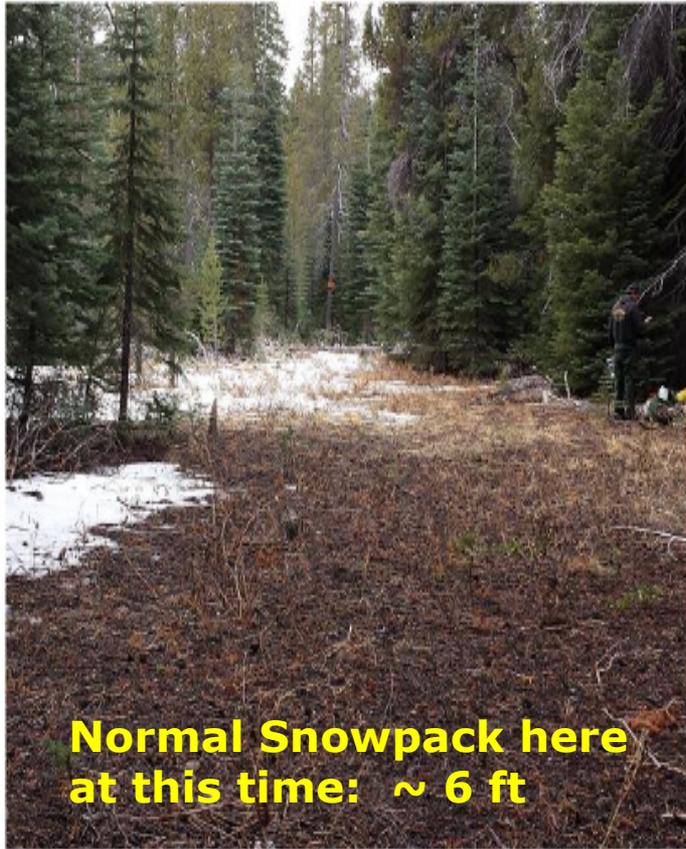


Fig 1: Late January - Thousand Lakes Wilderness



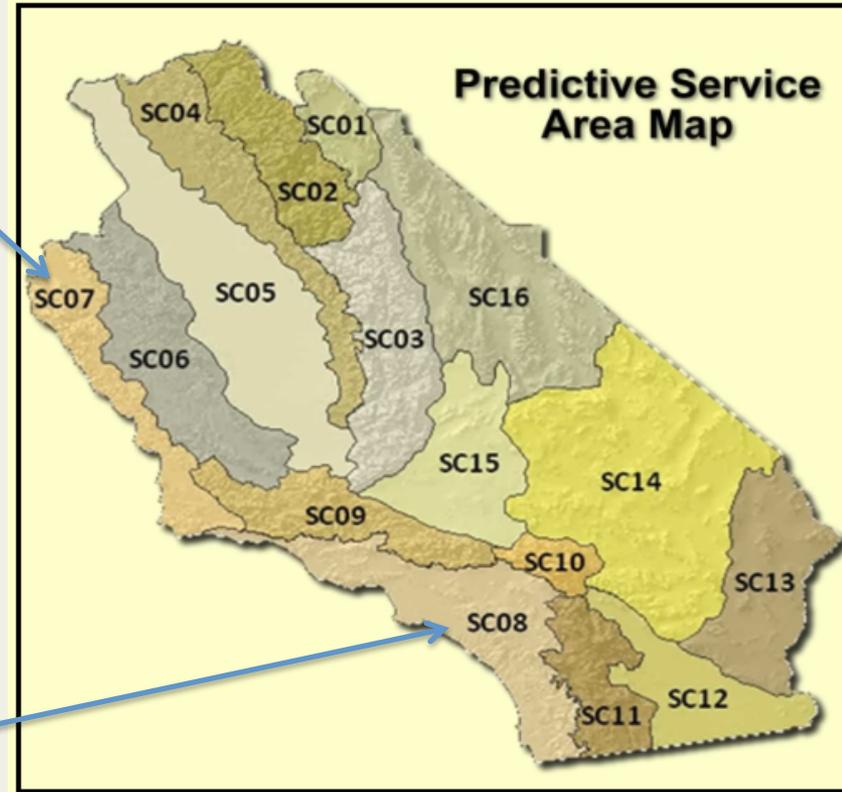
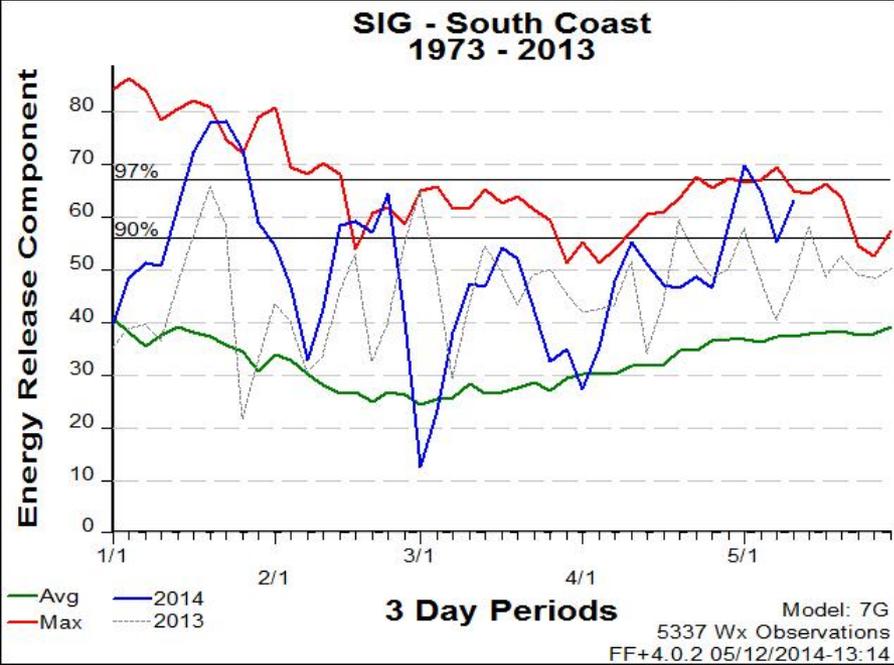
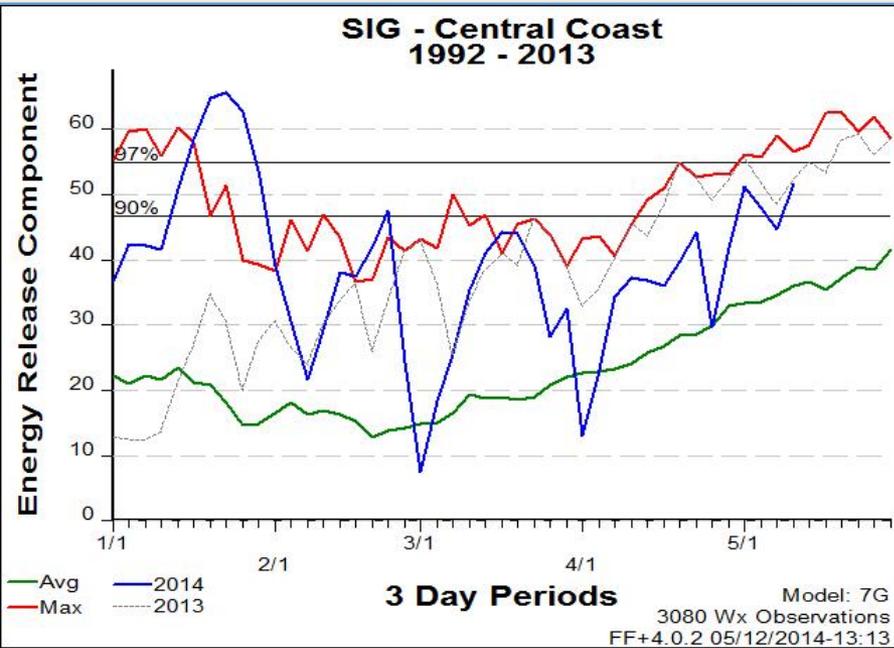
Fuel conditions



- Native brush is stressed due to long term drought conditions
- The amount of dead fuel is increasing throughout Region
- (Photos from SoCal)



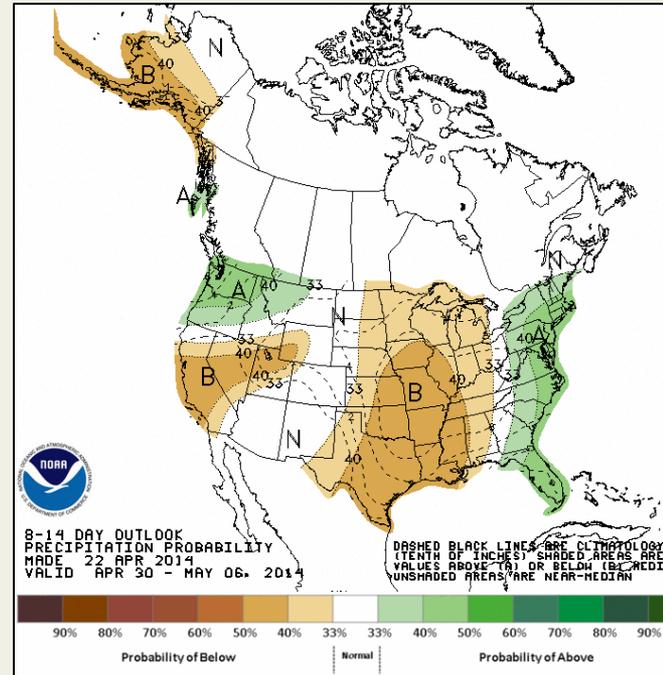
Fire danger



Monthly/Seasonal Outlooks – some tools we use

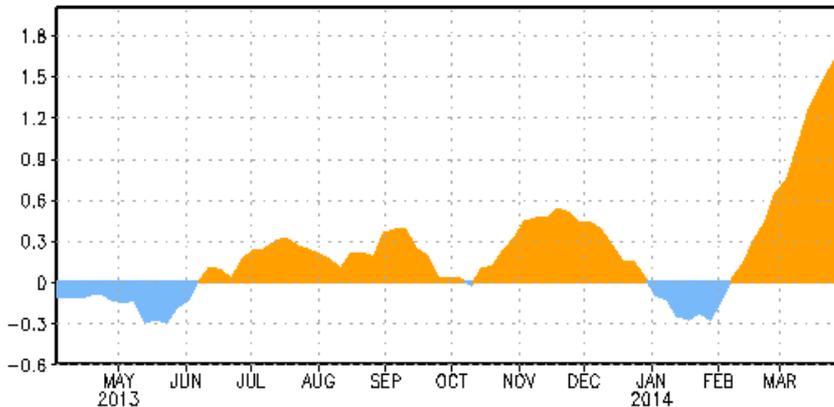


Determination of which of the several 'Oscillations are in play at the time, and then what 'phase' they are presently in (most of these have a cold or warm phase).

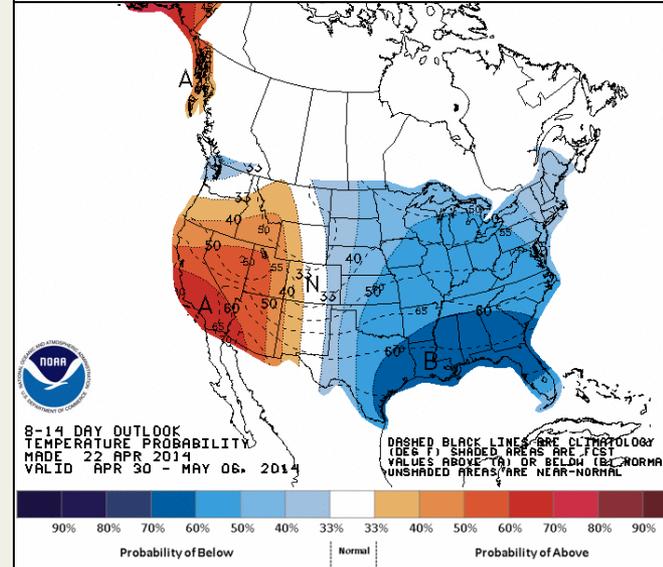


NWS 6-10 and 8-14 day Precip and Temp forecasts (shown here are valid April 23-29)

EQ. Upper-Ocean Heat Anoms. (deg C) for 180-100W



Upper Ocean heat content anomalies. This one is in (°C) in the equatorial Pacific (5°N-5°S, 180°-100°W). Comparison is to 30-yr means.



Drought forecast

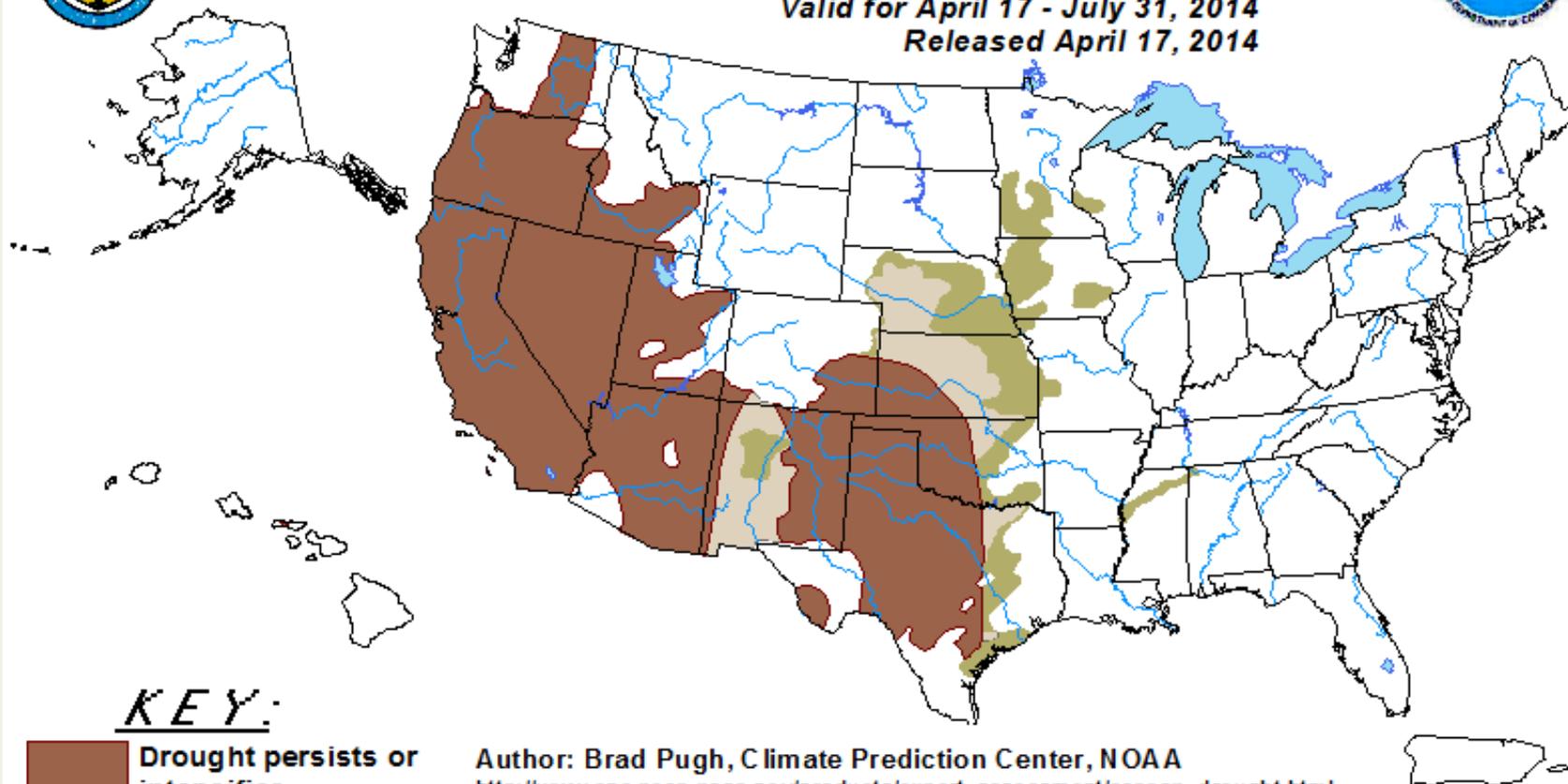


U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for April 17 - July 31, 2014

Released April 17, 2014



KEY:

-  Drought persists or intensifies
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely

Author: Brad Pugh, Climate Prediction Center, NOAA

http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.html

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity).

For weekly drought updates, see the latest U.S. Drought Monitor.

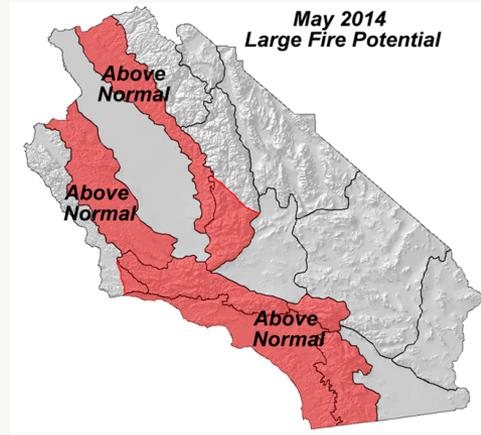
NOTE: The tan area areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain.

The Green areas imply drought removal by the end of the period (D0 or none)

MONTHLY/SEASONAL OUTLOOK

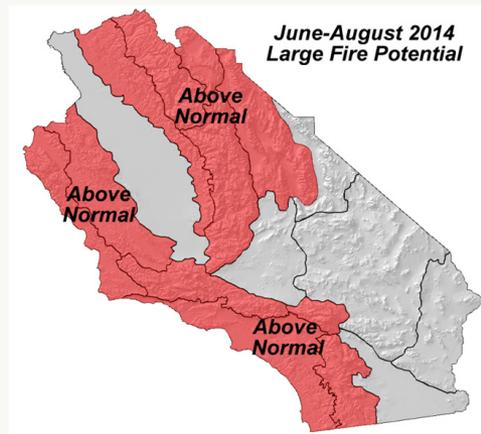


VALID: MAY THROUGH AUGUST 2014



Overview:

- Above normal large fire potential will continue in over the interior Central Coast Region, the Sierra Foothills and most of Southern CA.
- Large fire potential returning to above normal in June for most other areas.
- Severe and exceptional drought conditions to continue unabated.
- Near to slightly above normal temperatures. Possibility of above average "monsoonal" precipitation this summer across the eastern deserts



WEATHER DISCUSSION

After a terribly dry start to the year, precipitation during the past 6-8 weeks has been closer to normal over the state. The strong ridge which was parked off the coast dissipated, which allowed a few troughs to finally reach the state. This emergence of a wetter weather pattern may be related to the development of a negative Pacific North American Pattern (PNA) in February. Through much of the winter, the PNA as well as the Pacific Decadal Oscillation (PDO) was strongly positive, which typically results in an increase in ridging across the west as well as long-wave blocking patterns across the Continental U.S. The blocking pattern of December-February resulted in record dry conditions across California while much of the rest of the country dealt with an onslaught of Polar Vortexes.

Fortunately for water interests across the state, this pattern has been broken and a transition to a positive ENSO (El Niño) may be underway. At the current time, the Oceanic Niño Index (ONI) is currently negative, but sea-surface temperatures across the Equatorial Pacific indicate rapid warming is continuing. Most of this warming is occurring far



SEASONAL OUTLOOK

For Northern California and Hawaii

Issued May 1st 2014

Valid for June-August 2014



June 2014



July-August 2014

Weather and Fuel/Fire Potential

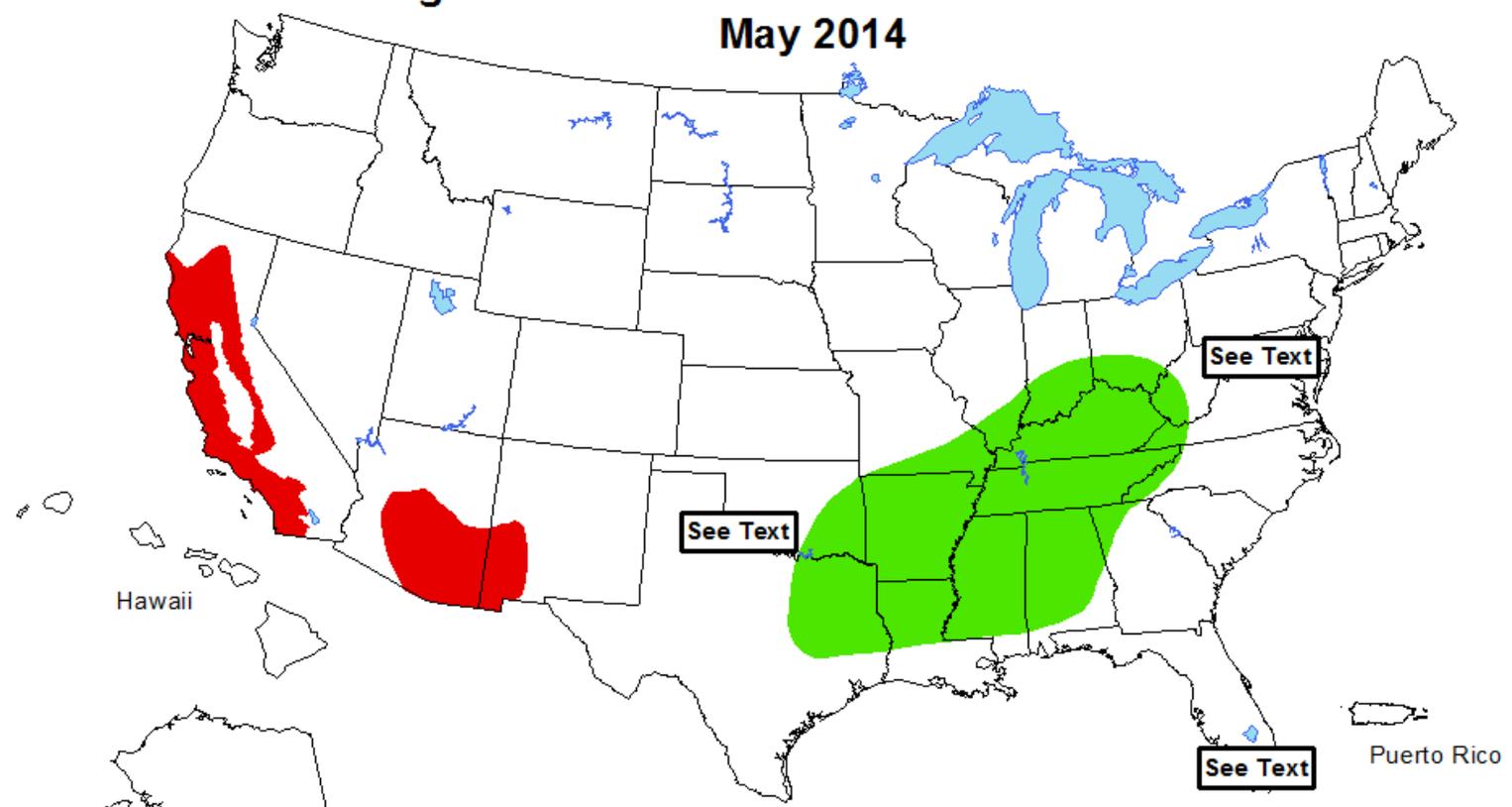
Drought conditions have reached record levels across Nrn CA, with *Extreme to Exceptional* drought overspreading nearly the entire region (Fig 1). This would be unprecedented for the typical peak drought period of early fall, but is off the charts for the end of the wet season. April snowpack is also at or near record low levels across many areas (Fig 2).

The extreme dryness will only worsen thru the summer as the Climate Prediction Center expects warmer than normal conditions across the entire region from July-August (Fig 3). With ridges exposed from snow for an unusually extended period of time, lightning strike ignitions could have the potential to rapidly grow into large fires by mid-June, 4-6 weeks sooner than normal. The late-June upper pattern by the CFS model shows low pressure off the CA coast which is a favorable position for lightning across Nrn CA (Fig 4), as well as for critically strong SW winds across NE CA. The 1st monsoon lightning event could occur in early July with a westward shift of the 4-Corners High (Fig 5). The "wildcard" will be the expected formation of El Nino later this year with climate models trending towards a "Moderate" to "Strong" El Nino. (Fig 6). If the El Nino develops quicker than expected, it could minimize the influence of the SW Monsoon, but also bring an increased number of weak Pacific disturbances onshore. In other words, this could bring less overall lightning strikes to the region from July onwards, but bring increased frequency of small-scale lightning events off the Pacific.

All factors point to *Above Normal Large Fire Potential* expanding to all areas by the latter half of June (upper left map) and remaining that way thru July-August (upper right map). A very active & long fire season appears increasingly likely.

Outlook - May

Significant Wildland Fire Potential Outlook May 2014



Significant Wildland Fire Potential

 Above Normal	 Increasing to Above Normal
 Below Normal	 Decreasing to Below Normal
 Normal	 Returning to Normal

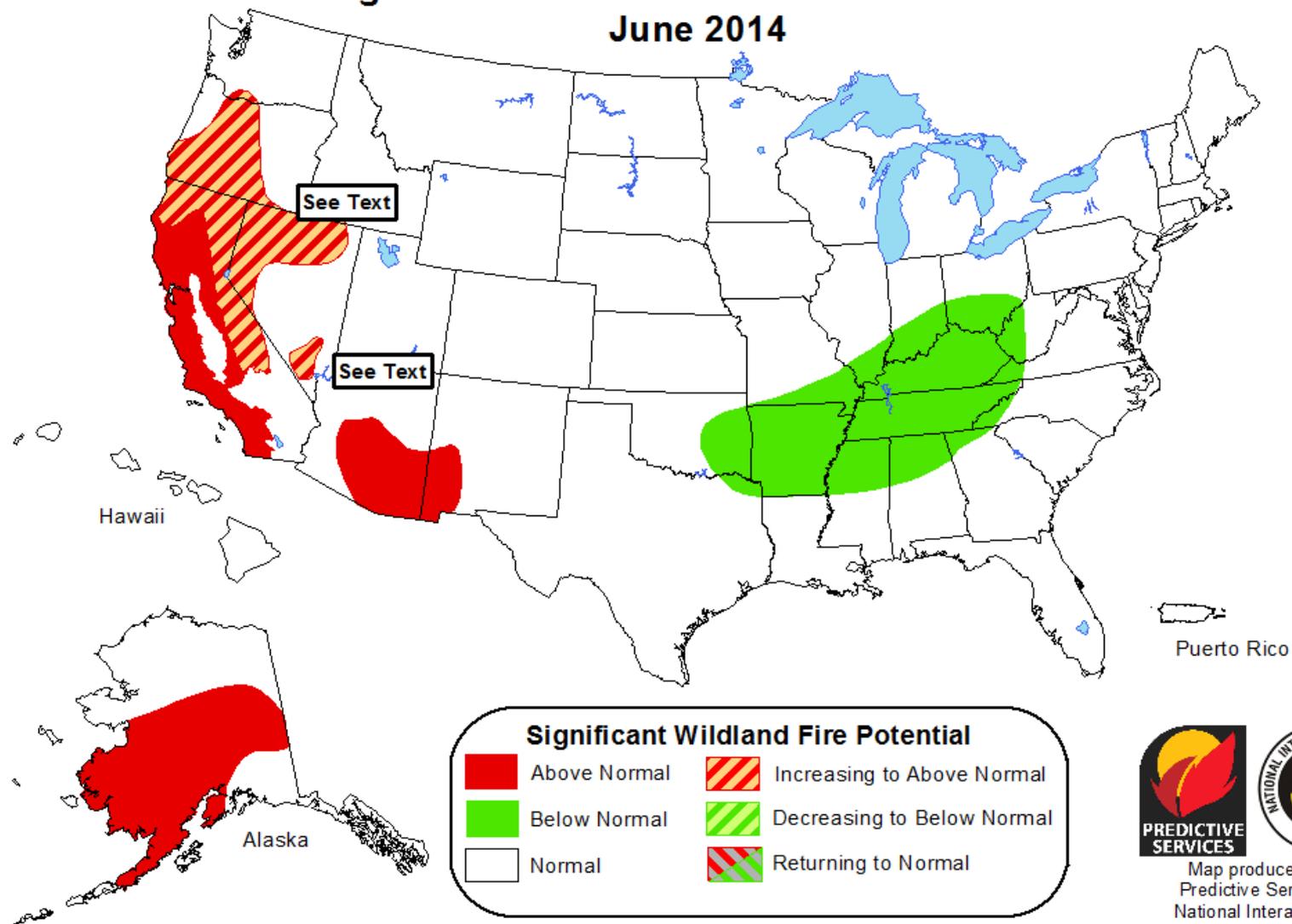


Map produced by
 Predictive Services,
 National Interagency
 Coordination Center
 Boise, Idaho
 Issued May 1, 2014
 Next issuance June 1, 2014

Above normal significant wildland fire potential indicates a higher than usual likelihood that wildland fires will occur and/or become significant events. Wildland fires are still expected to occur during forecasted normal conditions as would usually be expected during the outlook period. Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.

Outlook - June

Significant Wildland Fire Potential Outlook June 2014



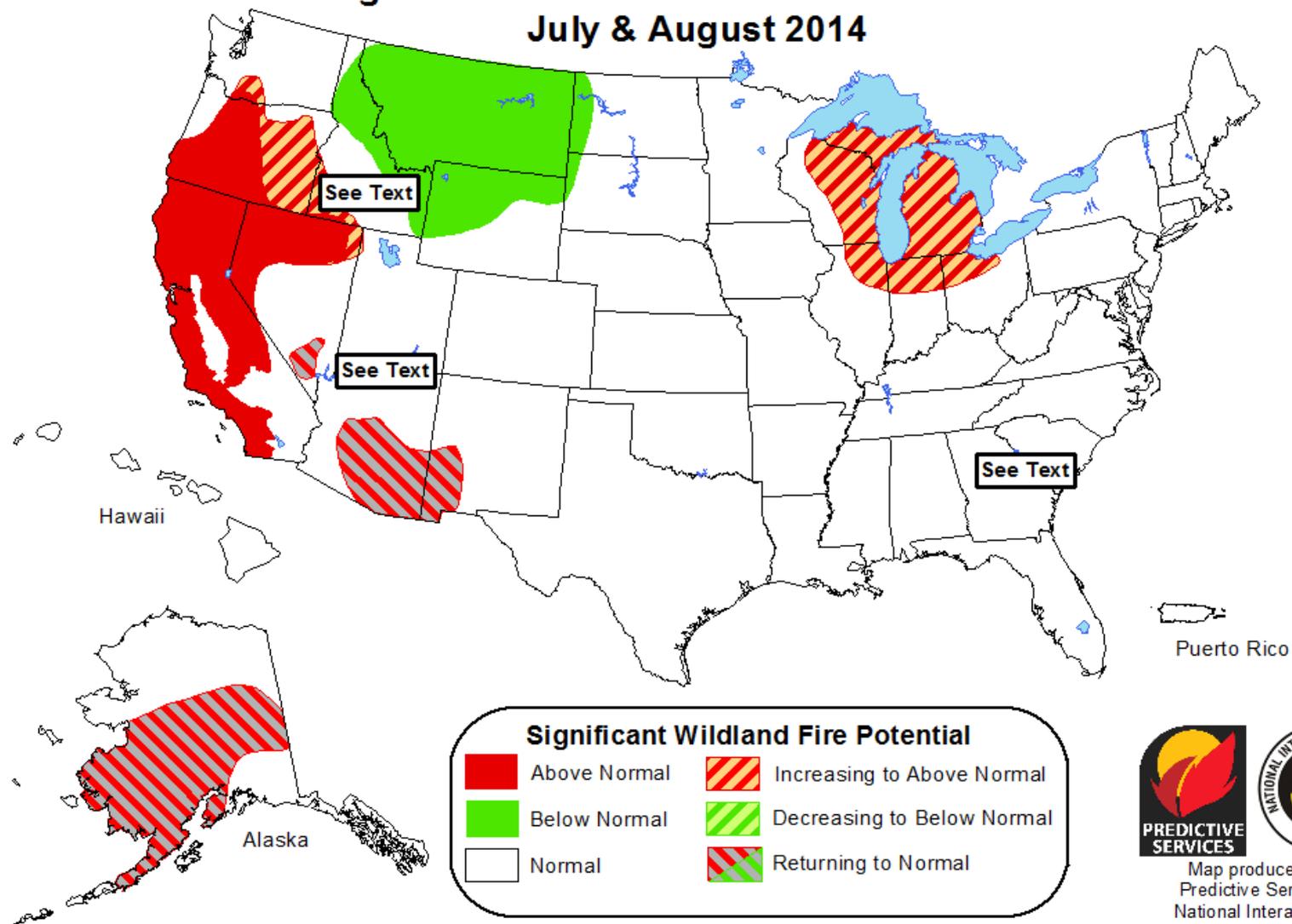
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Map produced by
Predictive Services,
National Interagency
Coordination Center
Boise, Idaho
Issued May 1, 2014
Next issuance June 1, 2014

Outlook – July/August

Significant Wildland Fire Potential Outlook July & August 2014



Significant Wildland Fire Potential

	Above Normal		Increasing to Above Normal
	Below Normal		Decreasing to Below Normal
	Normal		Returning to Normal



Map produced by
 Predictive Services,
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 Boise, Idaho
 Issued May 1, 2014
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Potential outcomes

- Longer-term drought reached worst or second- worst intensities in known CA history by early Feb. '14. Despite 7 weeks of wetter NorCal weather, drought will likely remain a very significant contributor in 2014 season
- Possible areas of enhanced fire behavior, due to presence of freeze-killed live fuels
- Areas of drought-triggered die-off for some species
- Because of drought-affected fuels, dry windy periods will be a critical factor earlier than normal
- The 'wild card' of lightning events will become an ignition source sooner than average
- The central coast interior, as well as the Sierras will be most prone to large fire activity this summer

Management implications

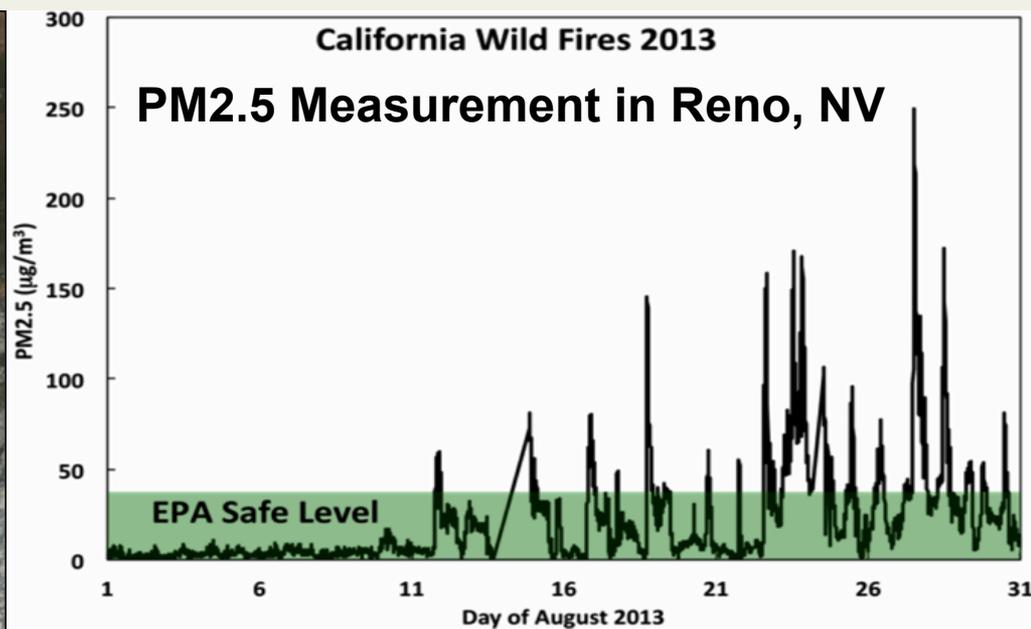
- Lack of a mid-elevation snowpack in NCal means that, especially in the 3500-6500 ft. timber fire belt, the active fire season could start between 3 and 7 weeks earlier than normal
- There will be a greater likelihood for timber fires resulting in longer duration incidents at higher elevations
- The 2014 Fire Season will likely be longer than normal
- If the season starts early as expected, firefighting resources could get drawn down sooner than is typical
- Fires are expected to burn more actively, consume more fuel, and to exhibit more extreme fire behavior than in years past

Public implications

- Public safety and evacuations
- Economic costs of suppression, community losses and health
- Smoke impacts



July 2008 – NASA MODIS



Source: Pat Arnott, University of Nevada - Reno

*Greetings From
Reno!*

Fire near Tim's house



