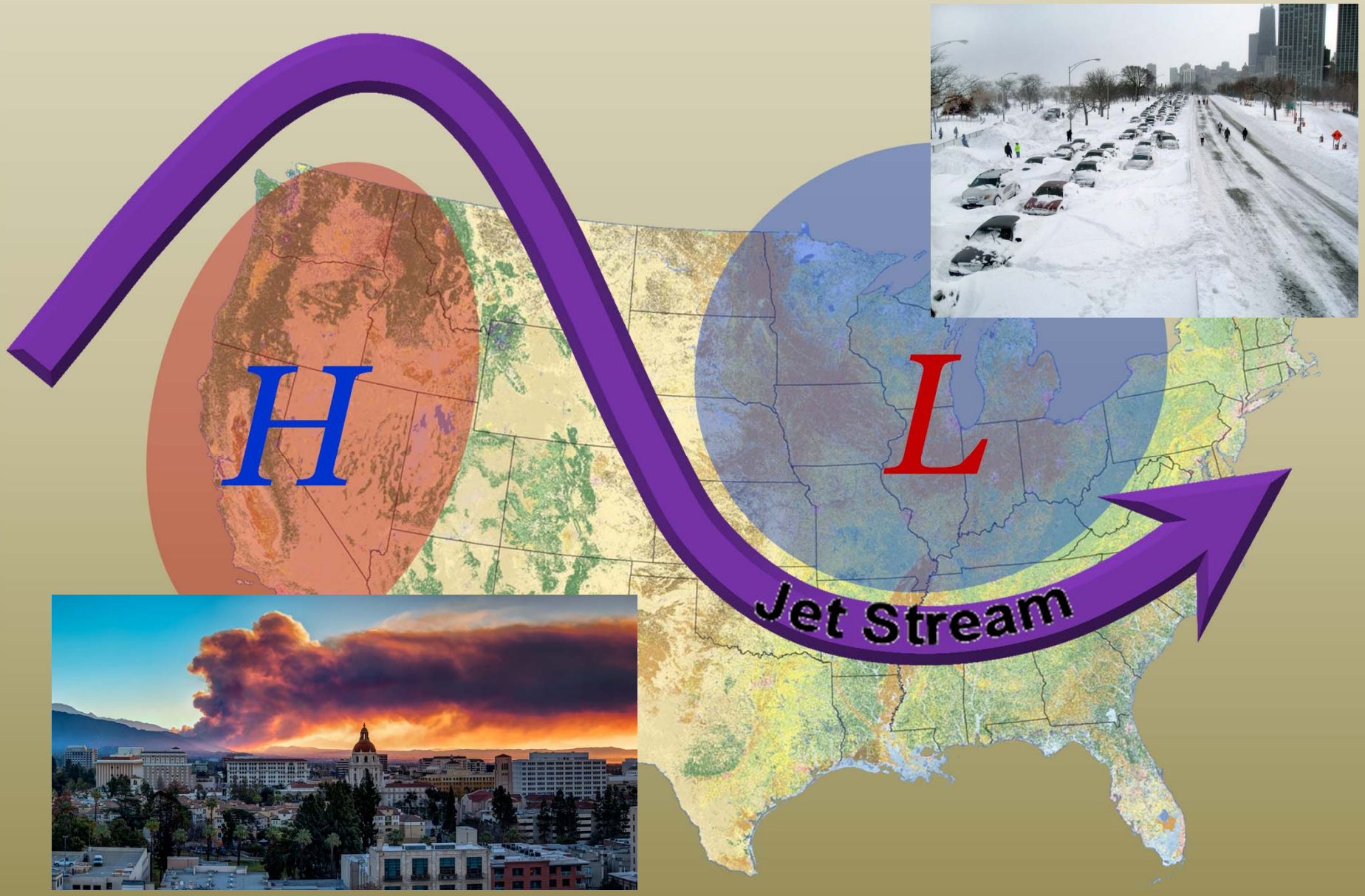
California's Drought and the 2014 Fire Season

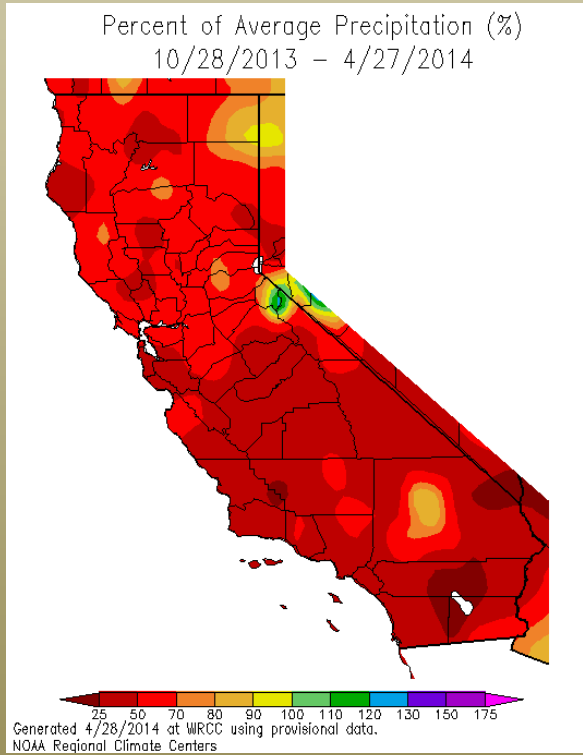
Tom Rolinski – Predictive Services

Dominant Winter Weather Pattern

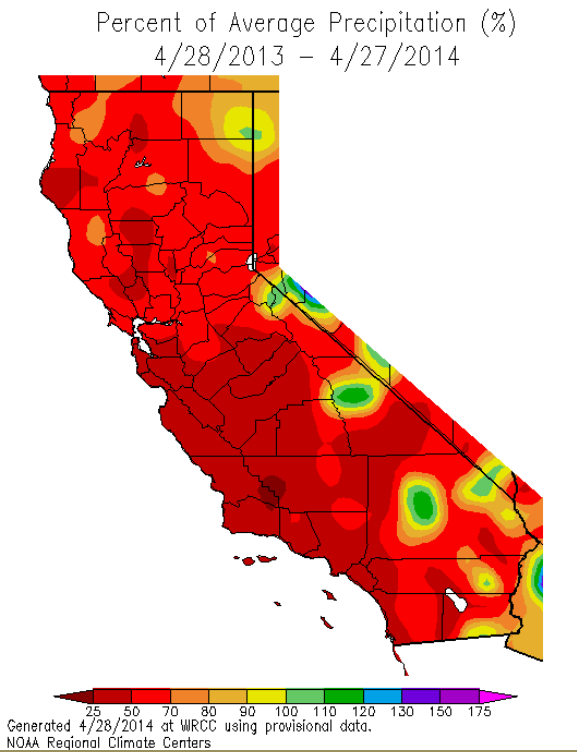


Precipitation Deficit

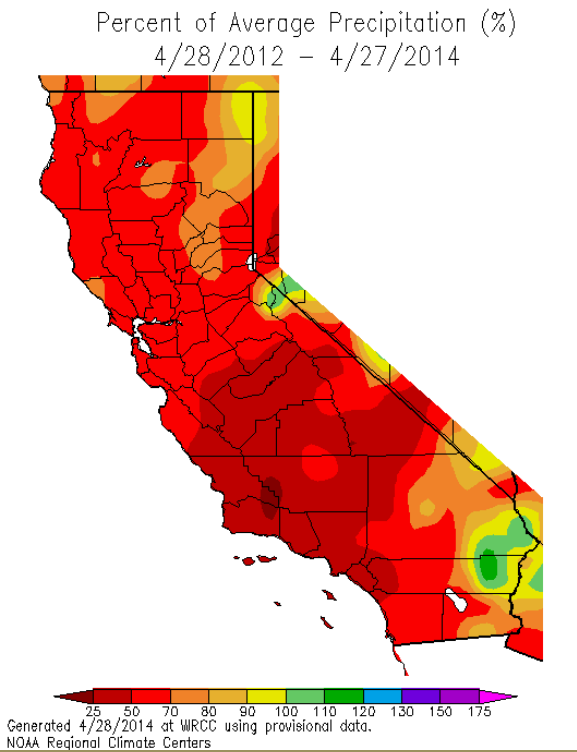
6 Months



1 Year

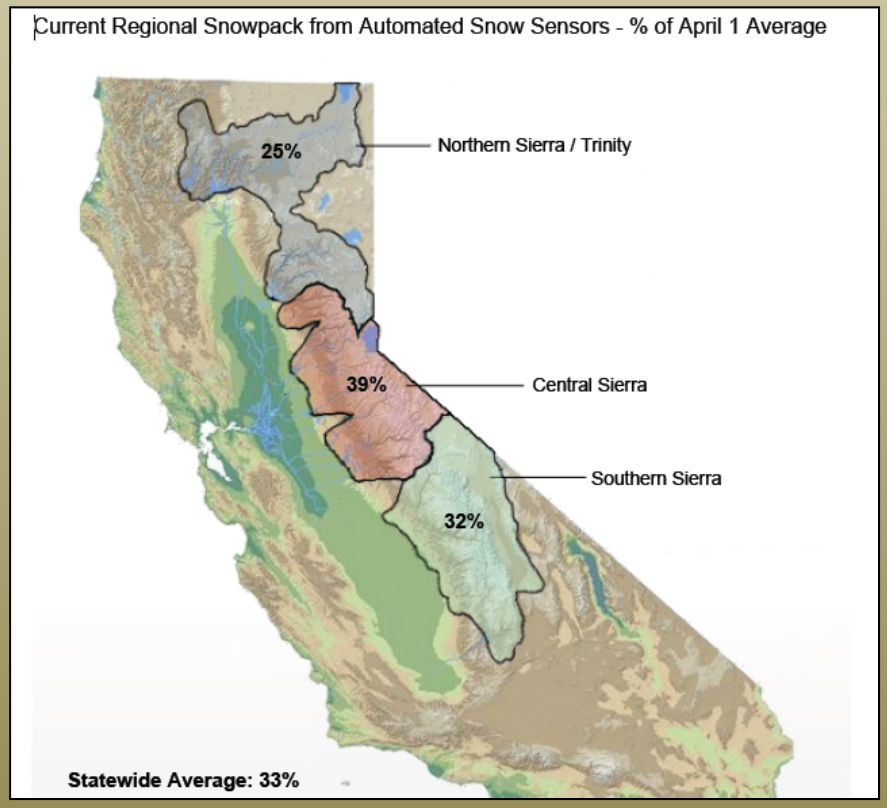


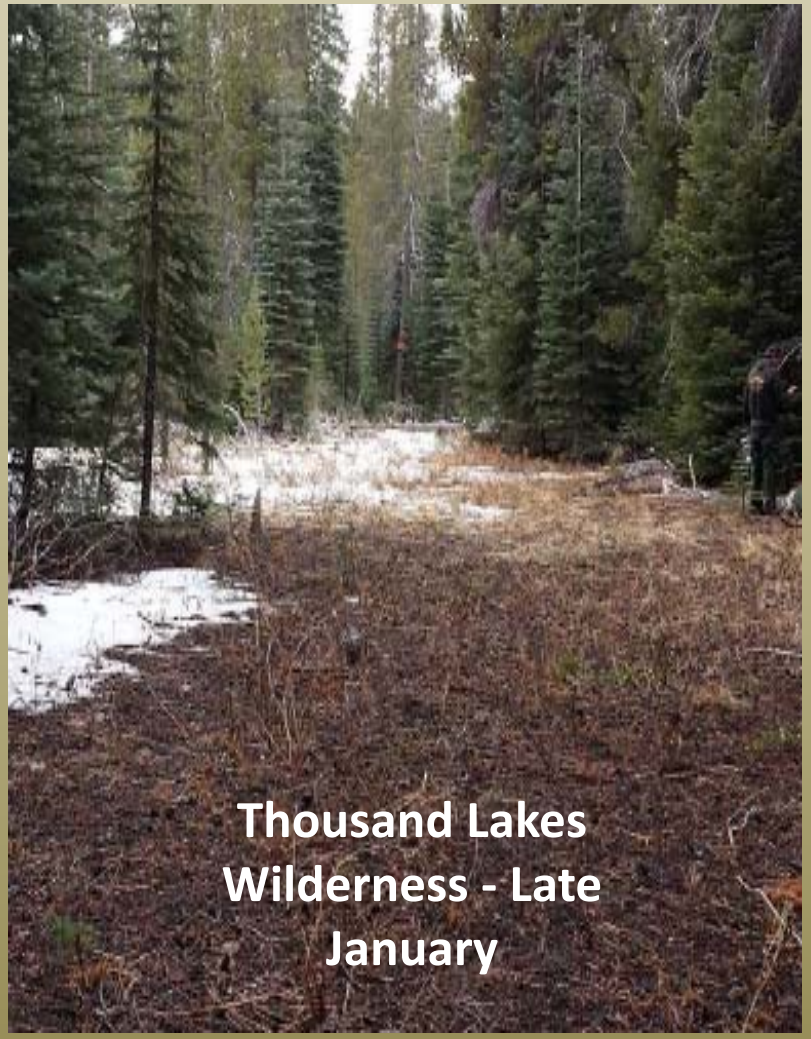
2 Years



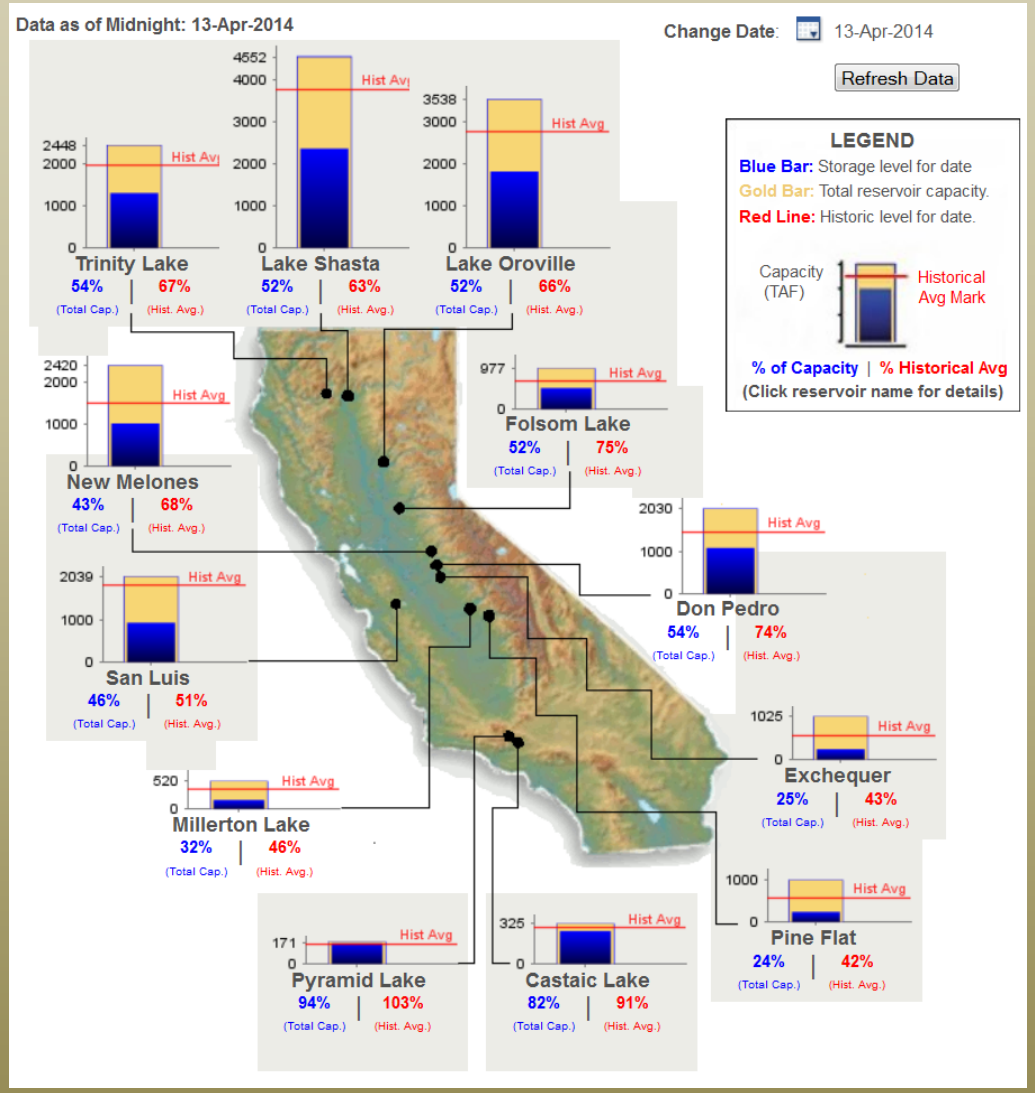
Winter Snow Pack

- **Snow pack in the Sierra is currently 30-50% of normal**
- **This year marks the 3rd consecutive winter with below normal snow pack**



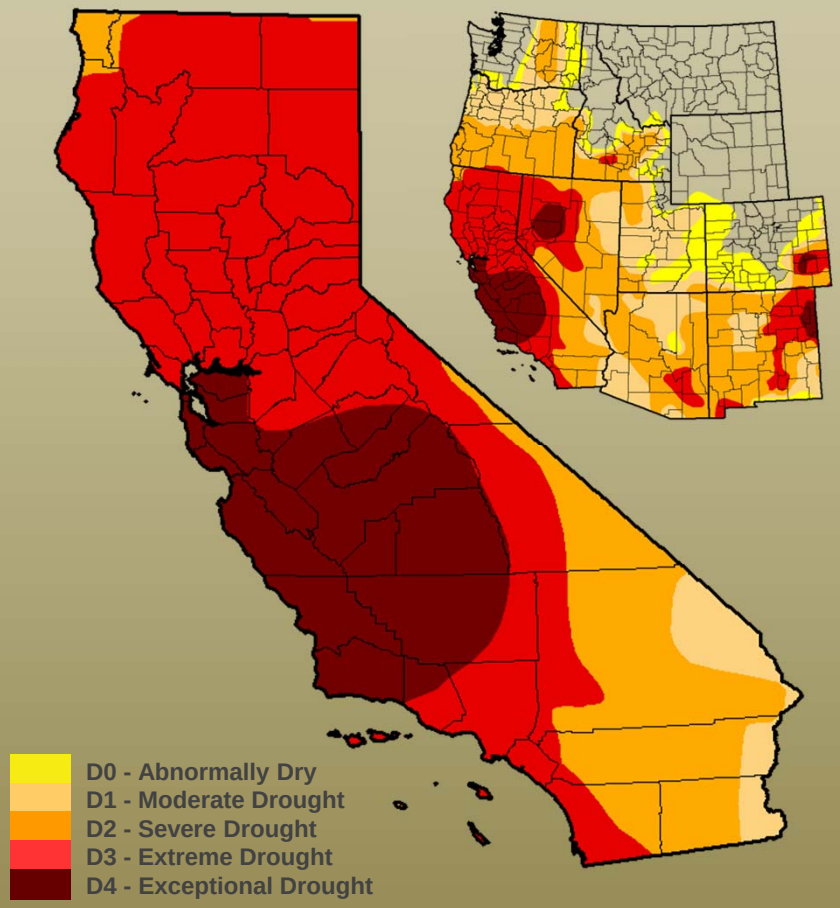


Reservoir Storage

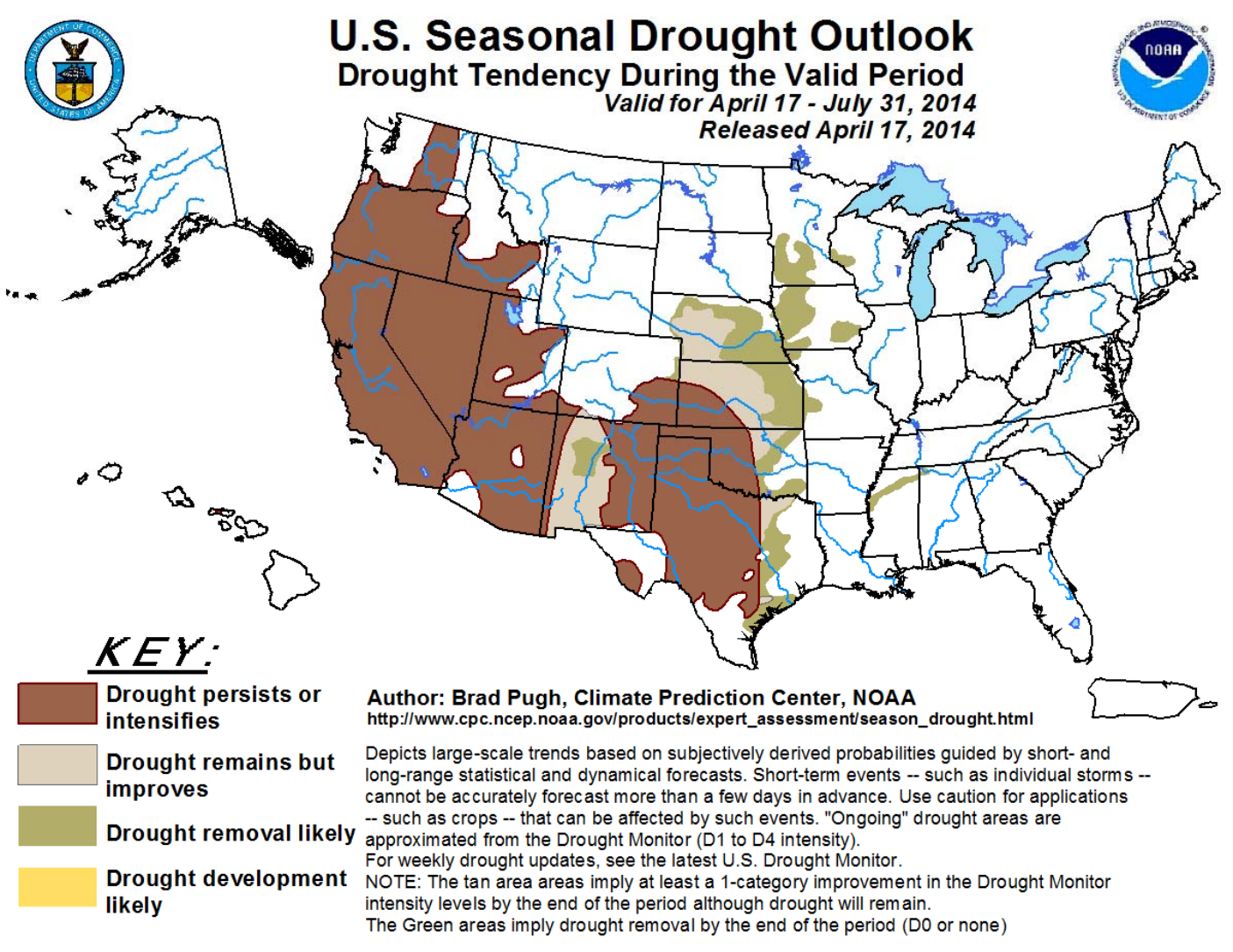


California's Ongoing Drought

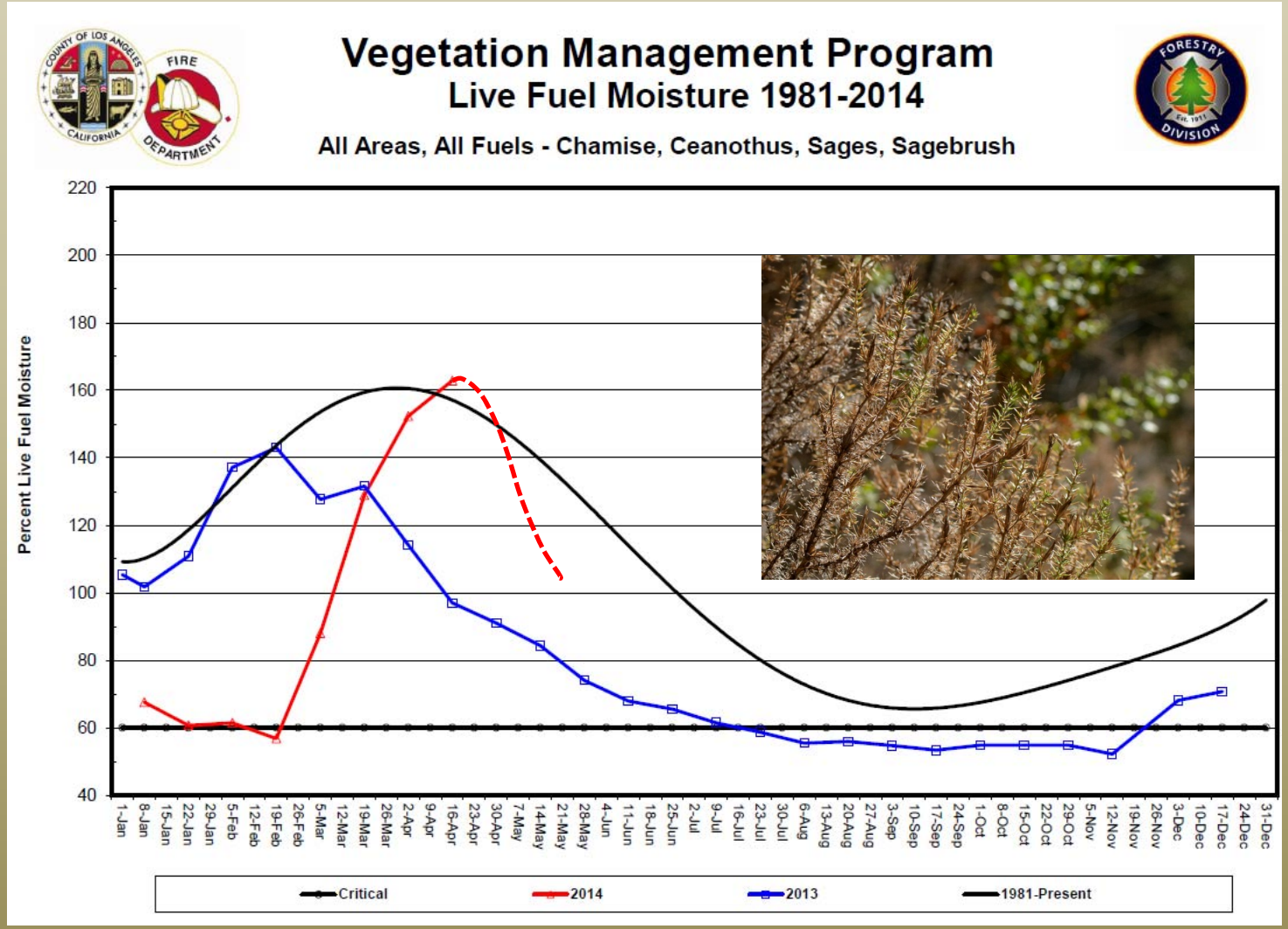
Drought Monitor – April 22nd, 2014



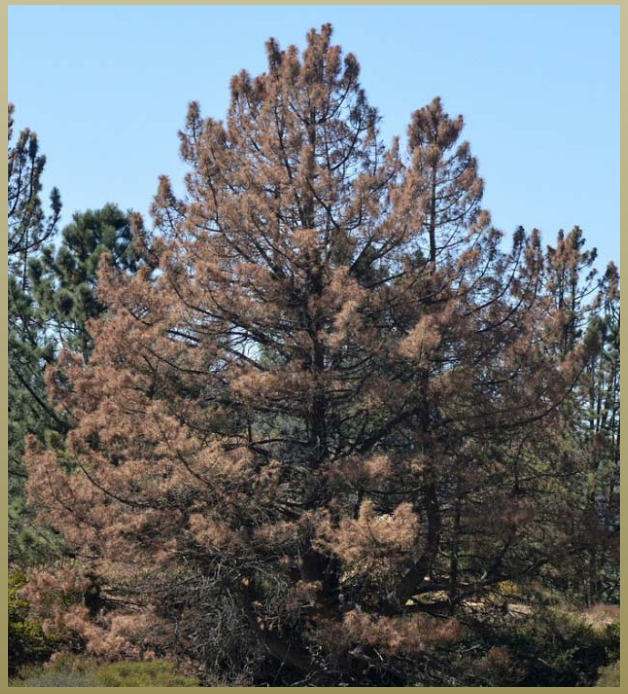
Drought Forecast



Fuel Conditions



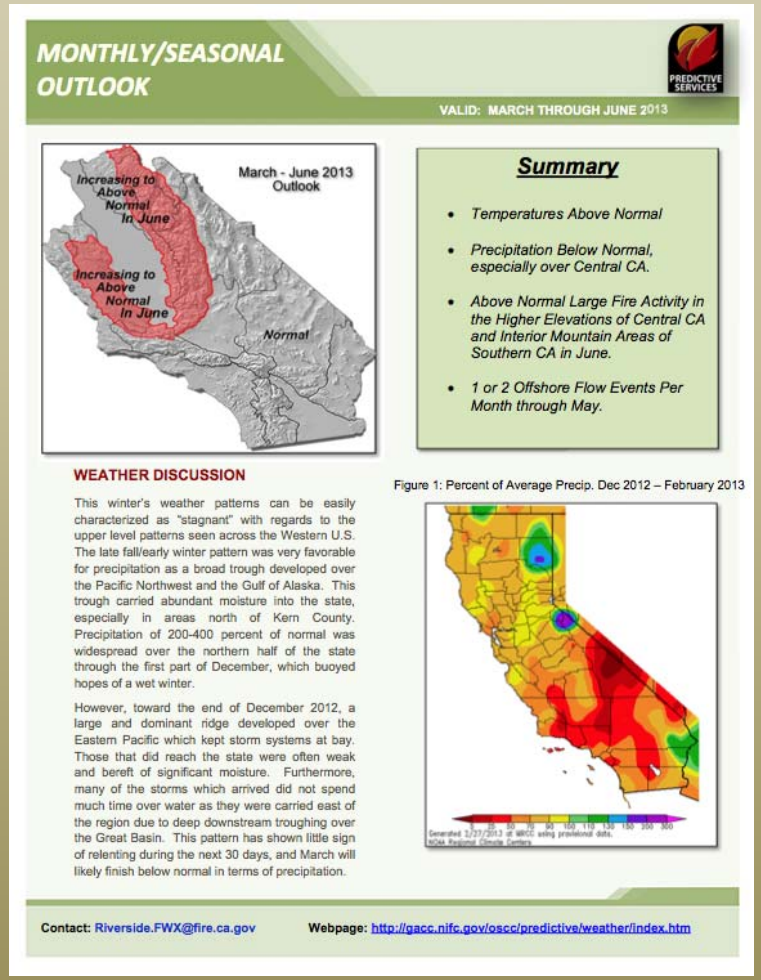
Fuel Conditions



- **Native brush is stressed due to long term drought conditions**
- **The amount of dead fuel is increasing throughout the region**

Monthly/Seasonal Outlook

http://gacc.nifc.gov/oscc/predictive/outlooks/myfiles/assessment.pdf



MONTHLY/SEASONAL OUTLOOK

PREDICTIVE SERVICES

VALID: MARCH THROUGH JUNE 2013

Summary

- *Temperatures Above Normal*
- *Precipitation Below Normal, especially over Central CA.*
- *Above Normal Large Fire Activity in the Higher Elevations of Central CA and Interior Mountain Areas of Southern CA in June.*
- *1 or 2 Offshore Flow Events Per Month through May.*

WEATHER DISCUSSION

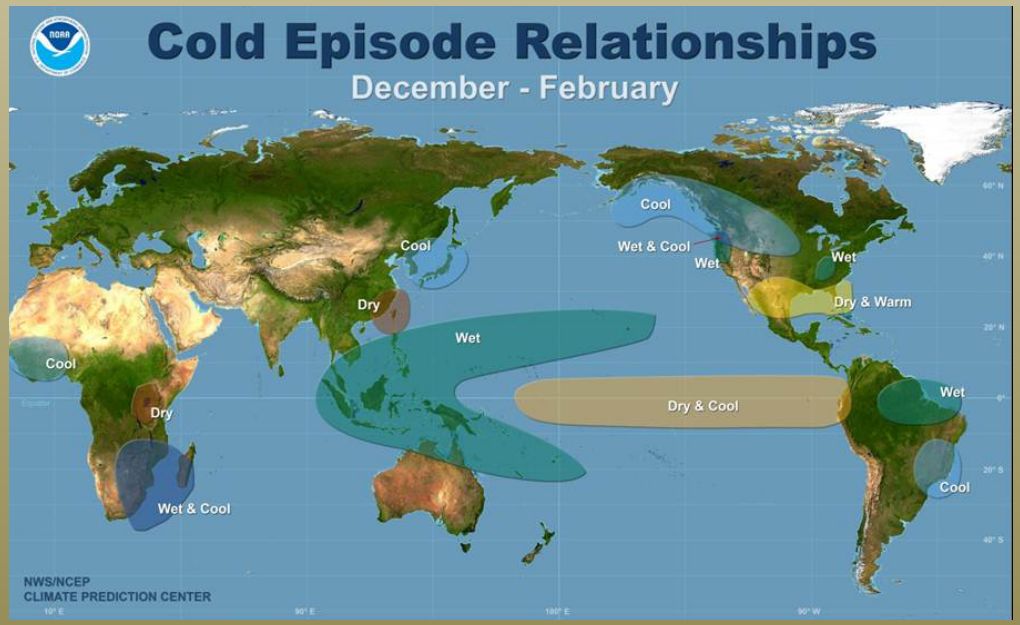
This winter's weather patterns can be easily characterized as "stagnant" with regards to the upper level patterns seen across the Western U.S. The late fall/early winter pattern was very favorable for precipitation as a broad trough developed over the Pacific Northwest and the Gulf of Alaska. This trough carried abundant moisture into the state, especially in areas north of Kern County. Precipitation of 200-400 percent of normal was widespread over the northern half of the state through the first part of December, which buoyed hopes of a wet winter.

However, toward the end of December 2012, a large and dominant ridge developed over the Eastern Pacific which kept storm systems at bay. Those that did reach the state were often weak and bereft of significant moisture. Furthermore, many of the storms which arrived did not spend much time over water as they were carried east of the region due to deep downstream troughing over the Great Basin. This pattern has shown little sign of relenting during the next 30 days, and March will likely finish below normal in terms of precipitation.

Figure 1: Percent of Average Precip. Dec 2012 – February 2013

Contact: Riverside.FWX@fire.ca.gov Webpage: http://gacc.nifc.gov/oscc/predictive/weather/index.htm

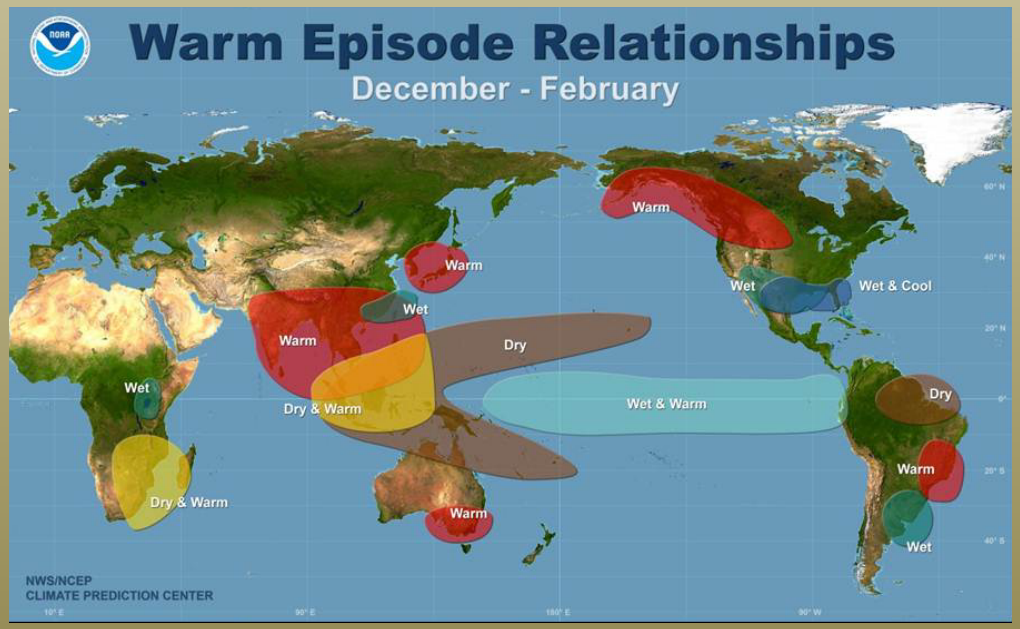
El Niño/La Niña



Cold Episodes or La Niña conditions are a result of below normal sea surface temperature anomalies. These conditions *usually* result in drier than normal winters across southern and central California.

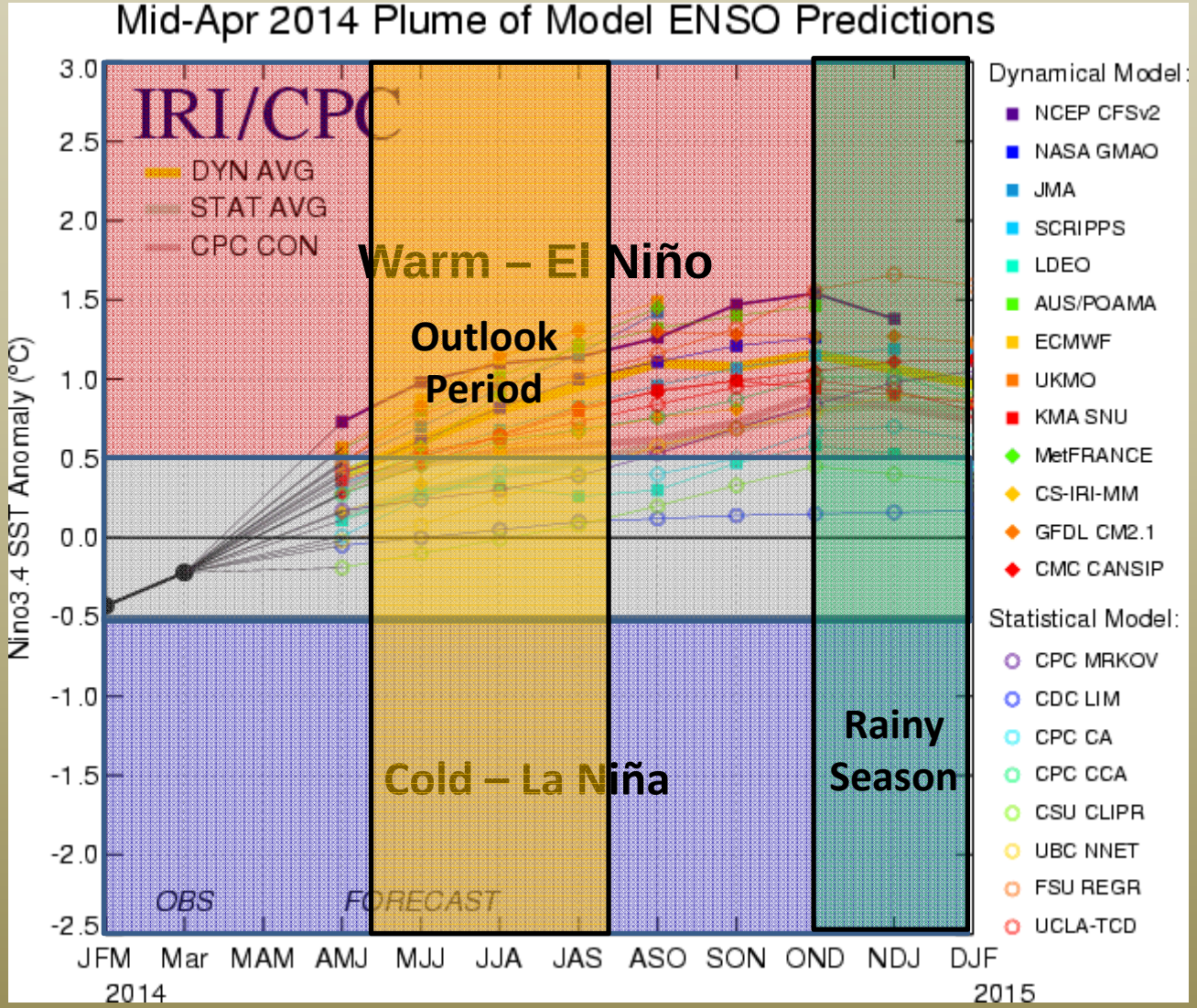
Sea surface temperature anomalies are monitored across the Equatorial Pacific region to determine whether they are above or below normal.

El Niño/La Niña



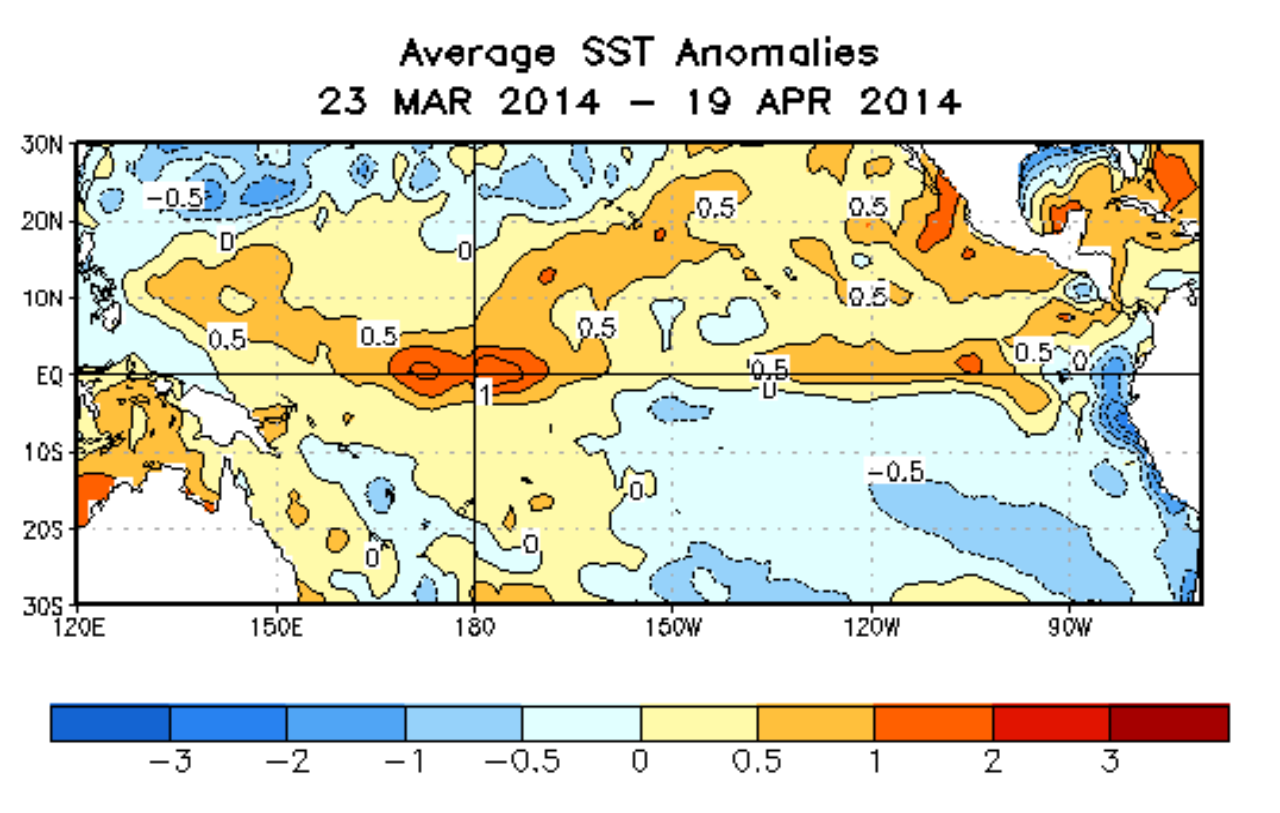
Warm Episodes or El Niño conditions are a result of above normal sea surface temperature anomalies. These conditions *usually* result in wetter than normal winters across southern and central California *when the event becomes moderate or strong.*

El Niño/La Niña



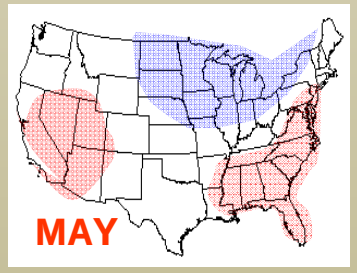
El Niño/La Niña

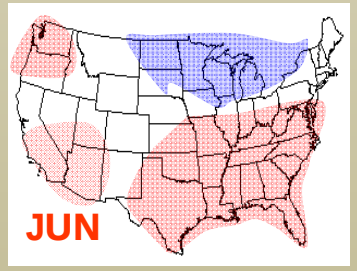
Sea surface temperature anomalies are becoming more positive across the equatorial region in the Pacific Ocean during the past 4 to 6 weeks.

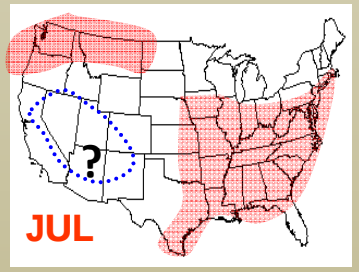


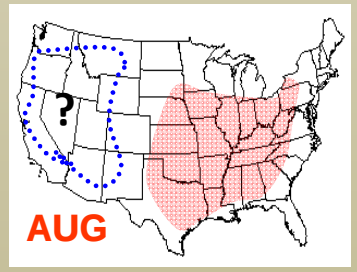
SPRING/SUMMR 2014 TEMP/PRECIP ANOMALY OUTLOOKS

Temperatures

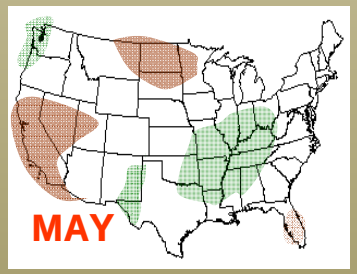


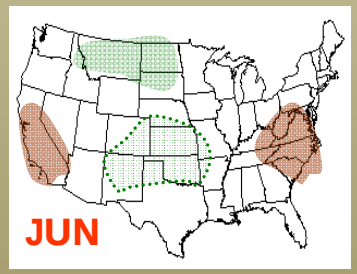


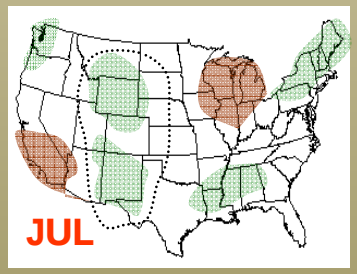


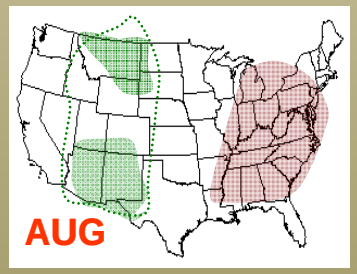


Precipitation



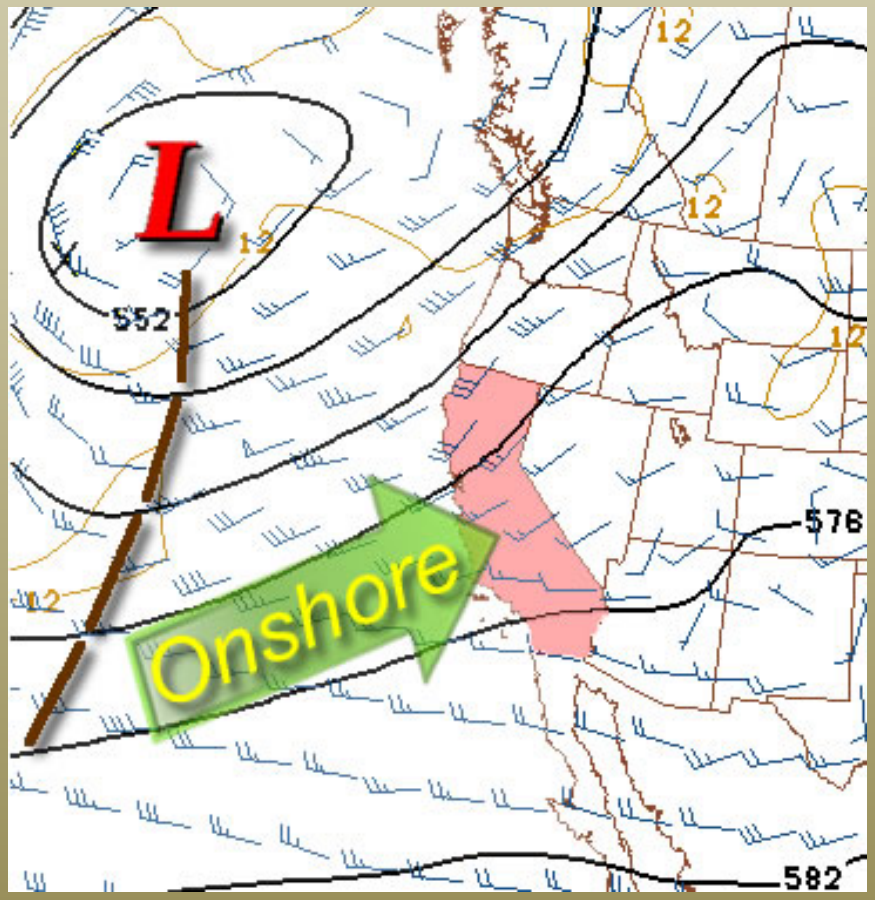






Likely Weather Pattern This Spring

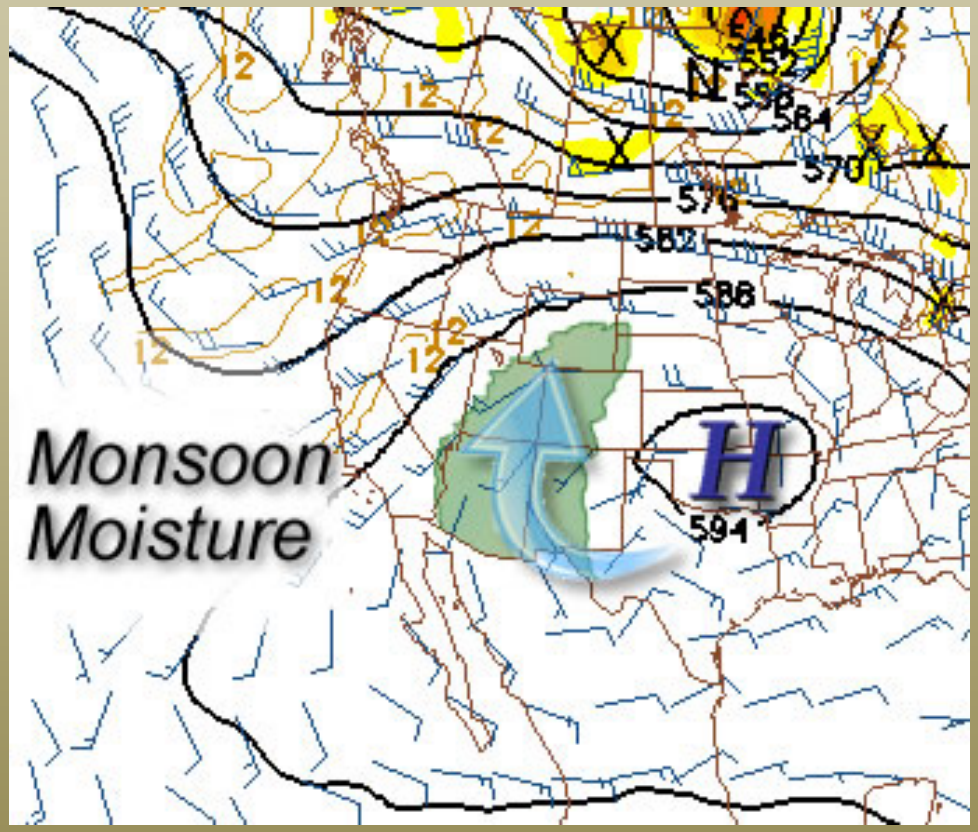
May-June



- Upper air pattern will likely remain fairly progressive with only a few extended periods (5 days or more) of above/below normal temperatures.
- Onshore flow is expected to be the rule with <u>not</u> much additional <u>offshore</u> flow anticipated.
- Expect a typical marine layer presence along the coast.
- Temperatures will average near to above normal throughout the region.
- Precipitation is expected to average below normal through the end of June.

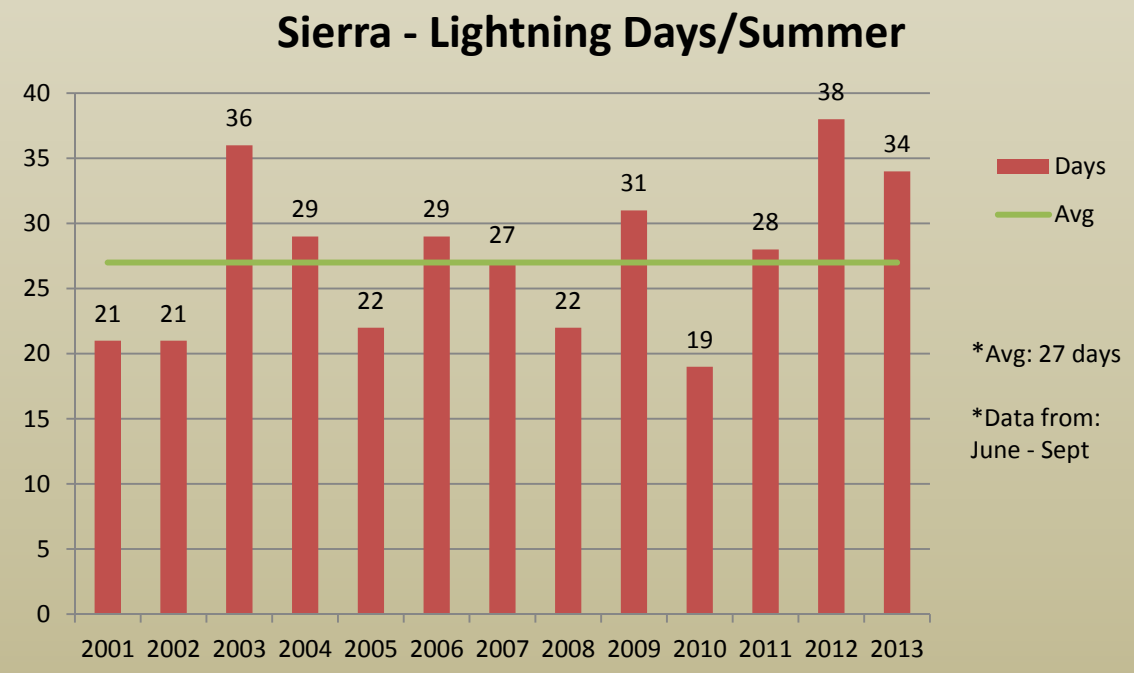
Likely Weather Pattern This Summer

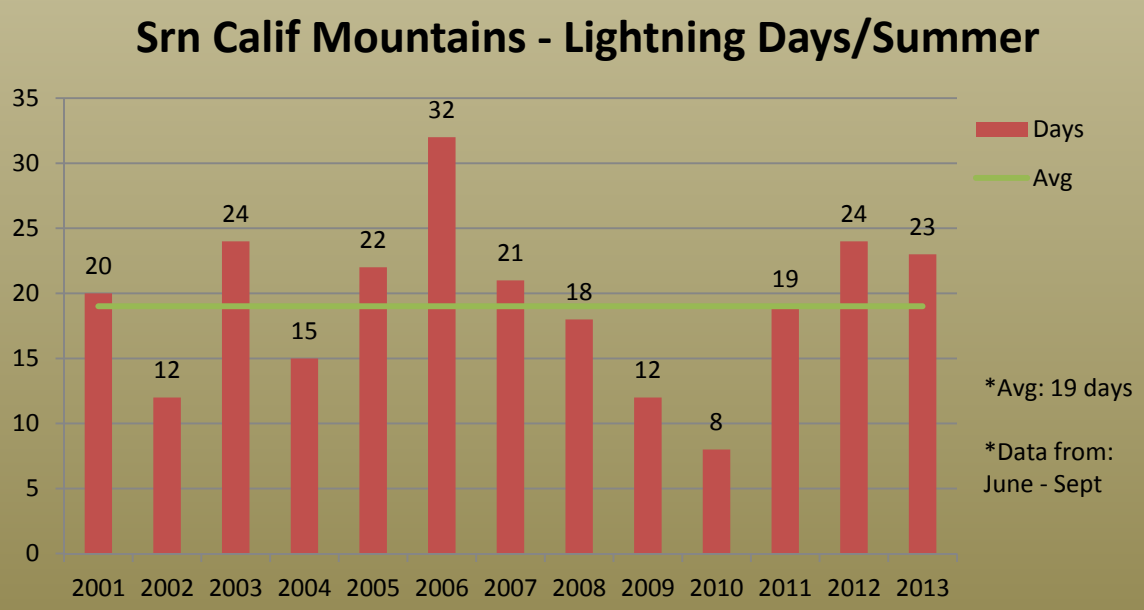
July-August



- If El Niño develops this summer as suggested by computer models, then a dry SW flow aloft may be more persistent during the July and August time period.
- This would keep the deeper subtropical moisture east of the region with fewer thunderstorm days over the local mountains.

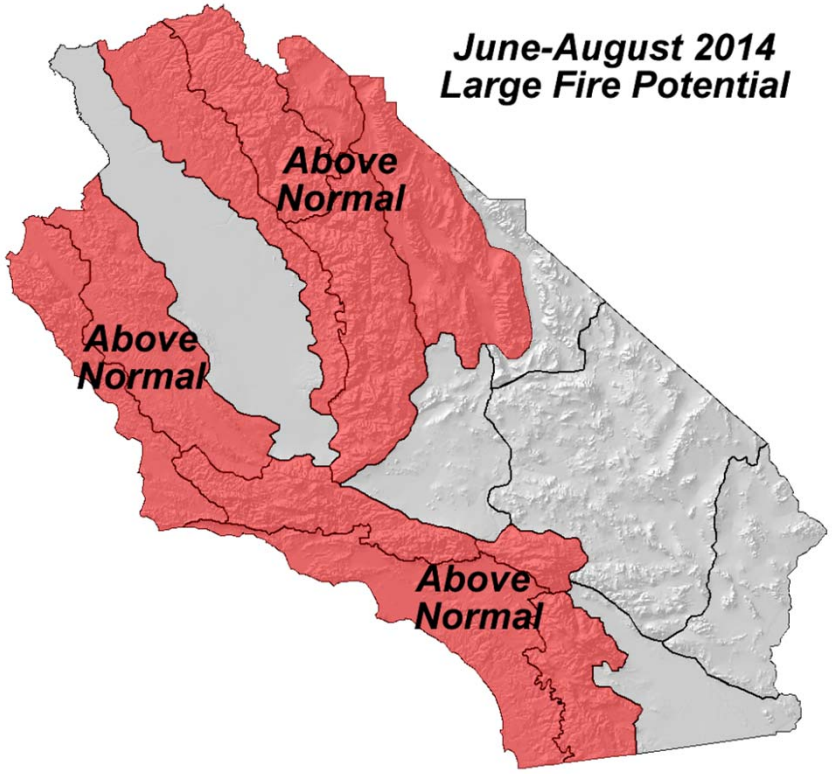
Lightning



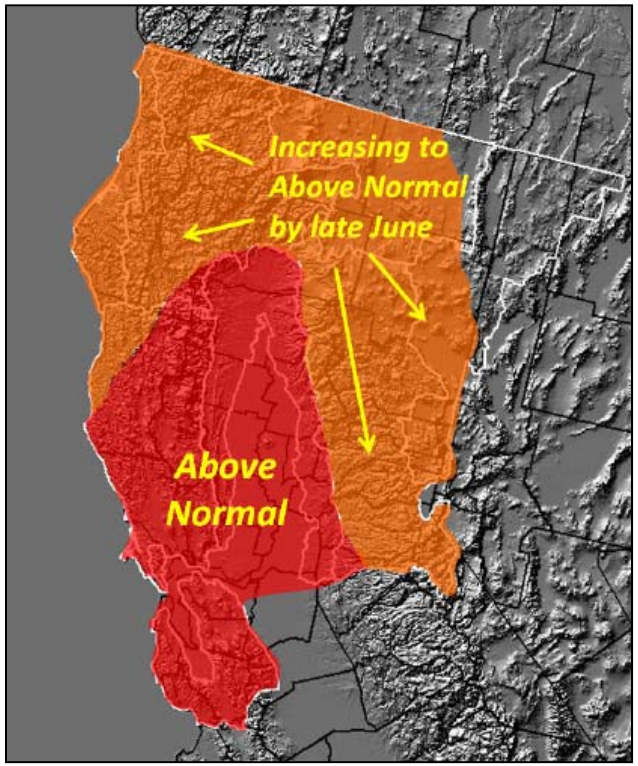


Convective activity may be below normal this summer with around 20-25 lightning days in the Sierra, and 12-18 lightning days for the mountains of southern California between June and September.

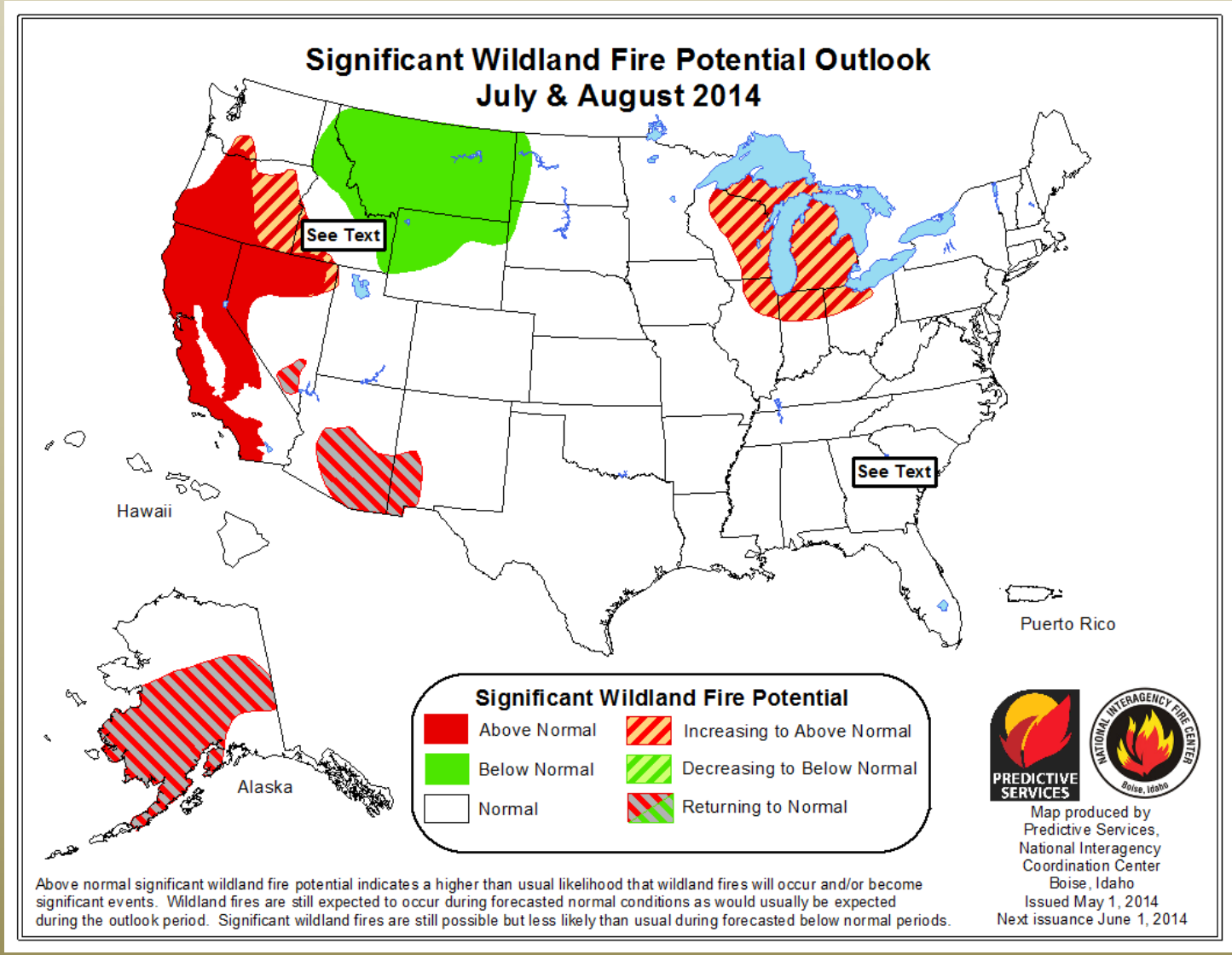
Large Fire Potential Outlook
May - August



June May August



National Map



California Fire Season Outlook Summary

- Temperatures will average near to above normal and precipitation will average below normal.
- The Monsoon may be shifted further to the east with near to below normal lightning activity this summer across the mountains and deserts.
- Lack of a mid-elevation snowpack means that in the 3500-6000 foot timber fire belt, the active fire season could start 3 to 5 weeks earlier than normal.
- Because of drought-affected fuels, dry windy periods will be a critical factor earlier than normal.
- The 2014 Fire Season will likely be longer than normal.
- The central coast interior, as well as the Sierras will be most prone to large fire activity this summer.
- **fires are expected to burn more actively, consume more fuel, and to exhibit more extreme fire behavior than in years past.**
- **There will be a greater likelihood for timber fires resulting in longer duration incidents at higher elevations.**