The Drought Story and Impact

Record warmth has occurred from January to December 2014 (4.1 F for California), and October 2013 to September 2014 received much below average precipitation (third year in a row) and second driest in California since 1976-77. This continued into 2015 with the winter months being the warmest on record for California and receiving only 40 to 70 percent of average precipitation statewide. The past 48 months or 4 consecutive seasons were the driest period on record for California (deficit of 26 inches of precipitation statewide). December and February precipitation has allowed for the most significant green up across the state since 2011, but these grasses combined with the ongoing historic drought will create above normal fire danger across most of California. To make the situation worse, the state snowpack was measured at an all-time record low of 5 percent on April 1 which will lead to further significant decreases in water supply. Along the Pacific coast sea surface temperature continue to run 3 to 6 degrees above normal and are contributing to the warm temperatures. Across the equatorial Pacific Ocean average sea surface temperatures warmed into the expected weak El Nino conditions. The resultant weather pattern only brought an increased southern storm track in December and late February. Historically, several El Nino winters have brought normal and below normal precipitation. It is important to note, only the strong phase of the El Nino has been the most consistent with above normal precipitation for southern California. The strengthening El Nino conditions increased storm activity during the month of May.

Currently, state water supply is 59 percent of historical average capacity and snow melt runoff and recharge was very little spring 2015 due to historical low snowpack. Water supply is nearing all-time lows but remains higher than 1976-77. The diminished water supply will be further impacted by the record low snowpack in the Sierra Nevada and very warm temperatures. The combination of below normal precipitation this past year, and the past 4 years combined being the driest on record, have all led to the extreme drought conditions.

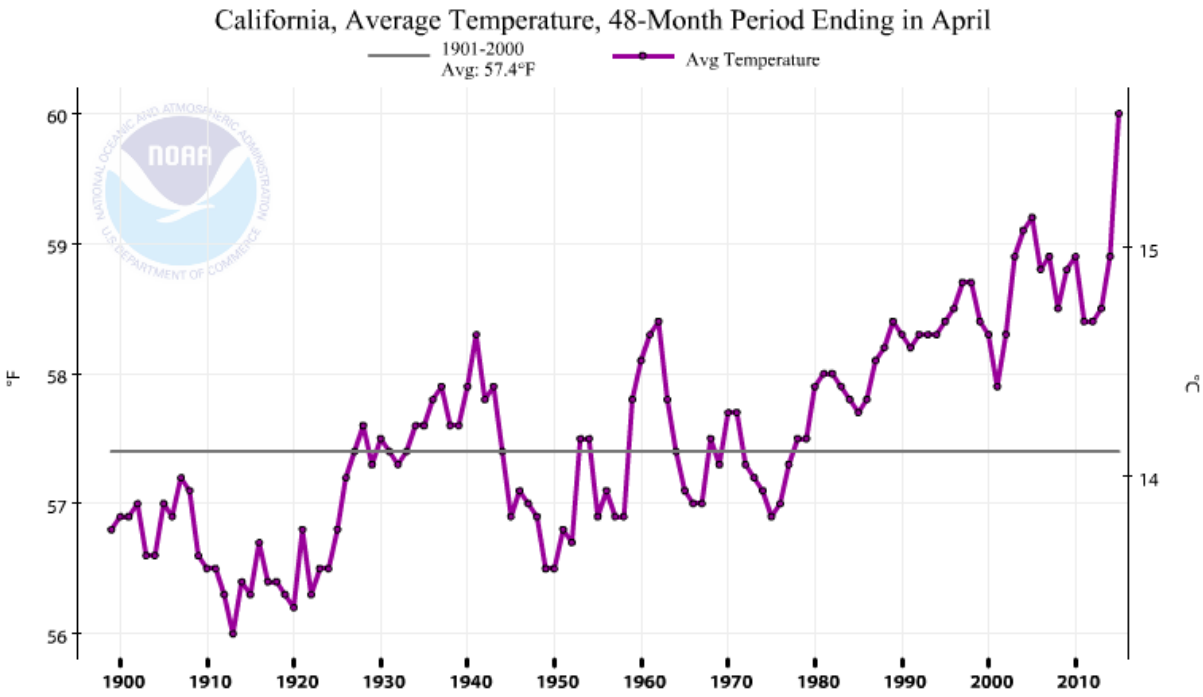
The **month of May 2015** was above normal in southern California and the Sierra Nevada for precipitation and it was the first month since December 2013 where temperatures in California were NOT above normal. San Diego had 2.39 inches of precipitation (normal is 0.12 inches), which made it the second wettest month of May on record. The average temperature was exactly normal.

FACTS:

- 2014 warmest year on record for California (4.1 F degrees above normal)
- 2014-2015 warmest 12-month period on record for California (4.4 F degrees above), the south coast and San Diego
- Through April 2015, warmest 48-month period for California at 2.6 F degrees above
- Sierra Nevada California snowpack on April 1 was 5 percent of average (next closet was 25 percent 2014 and 1977)
- Current California water supply is 17.0 million acre feet or 59 percent of average storage
- 2014-15 precipitation in California was 40 to 70 percent of average (most in December and February)
- January 2011 to April 2015 is the driest 48 month period on record for California (-26 inches)
- 1923-24 and 1976-77 years were drier than 2013-2015
- Historically tree rings records indication a similar drought 1653-55
- Southern California is missing 1.5 to 2.5 seasons of precipitation since January 2011
- Weak El Nino conditions were observed during the start of the 1976-77 and 2006-07 droughts
- Strong El Nino conditions (1.5 or higher) have produced above normal precipitation in southern California
- El Nino years (weak to moderate) have produced a range of 4 to 22 inches at San Diego
- Last wet year for California was 2010-11 which was during La Nina conditions

Past Weather and Climate

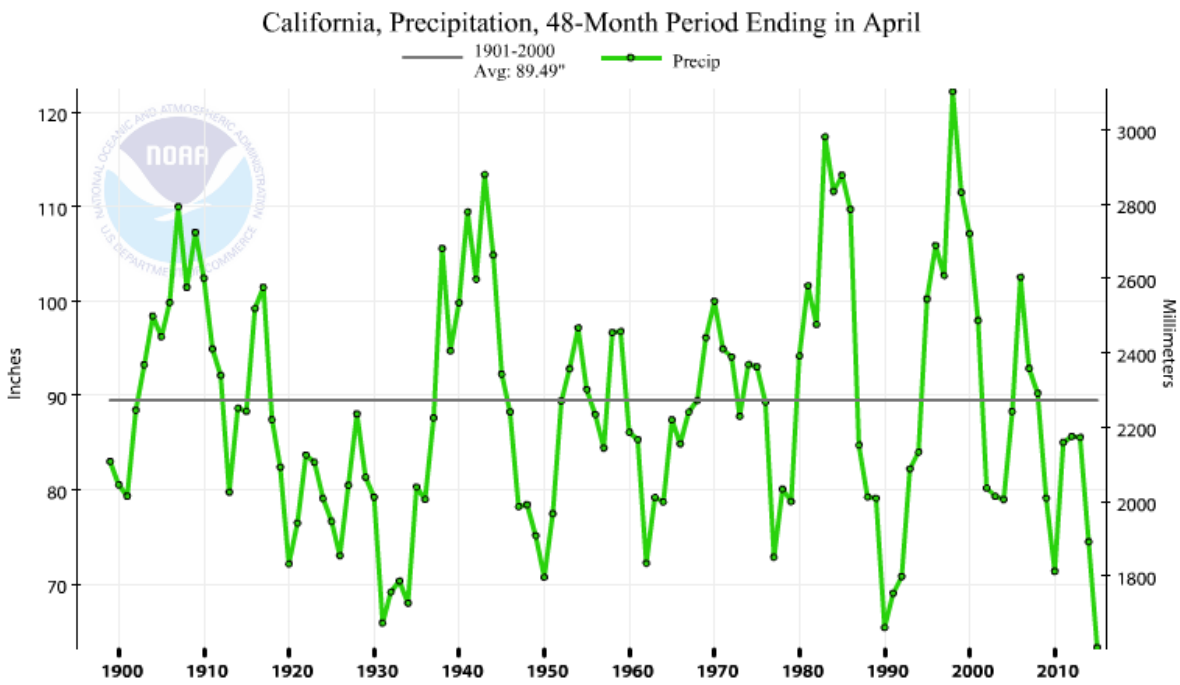
May 2014 to April 2015 the warmest period on record for all of California..



Download: XML

DATES	VALUE	RANK	ANOMALY (57.4°F) 1901-2000 BASE PERIOD
201105 - 201504	60.0°F	117	2.6°F
200105 - 200504	59.2°F	116	1.8°F
200005 - 200404	59.1°F	115	1.7°F
199905 - 200304	58.9°F	114	1.5°F
200305 - 200704	58.9°F	114	1.5°F

The past 48 consecutive months through April 2015 are the warmest on record for California (+2.6 F).



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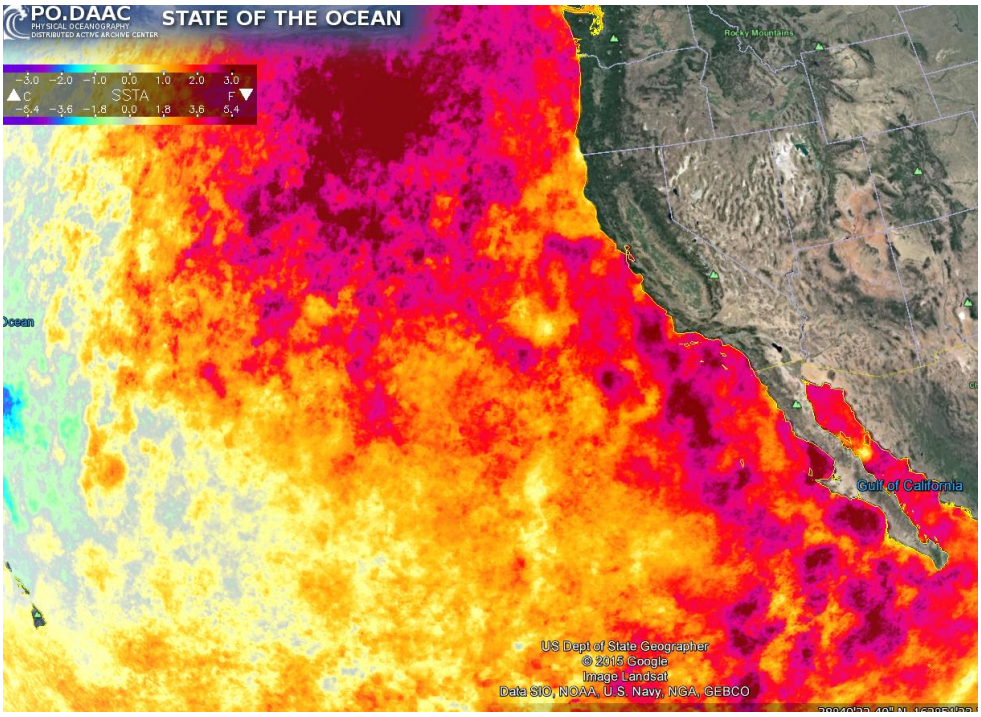
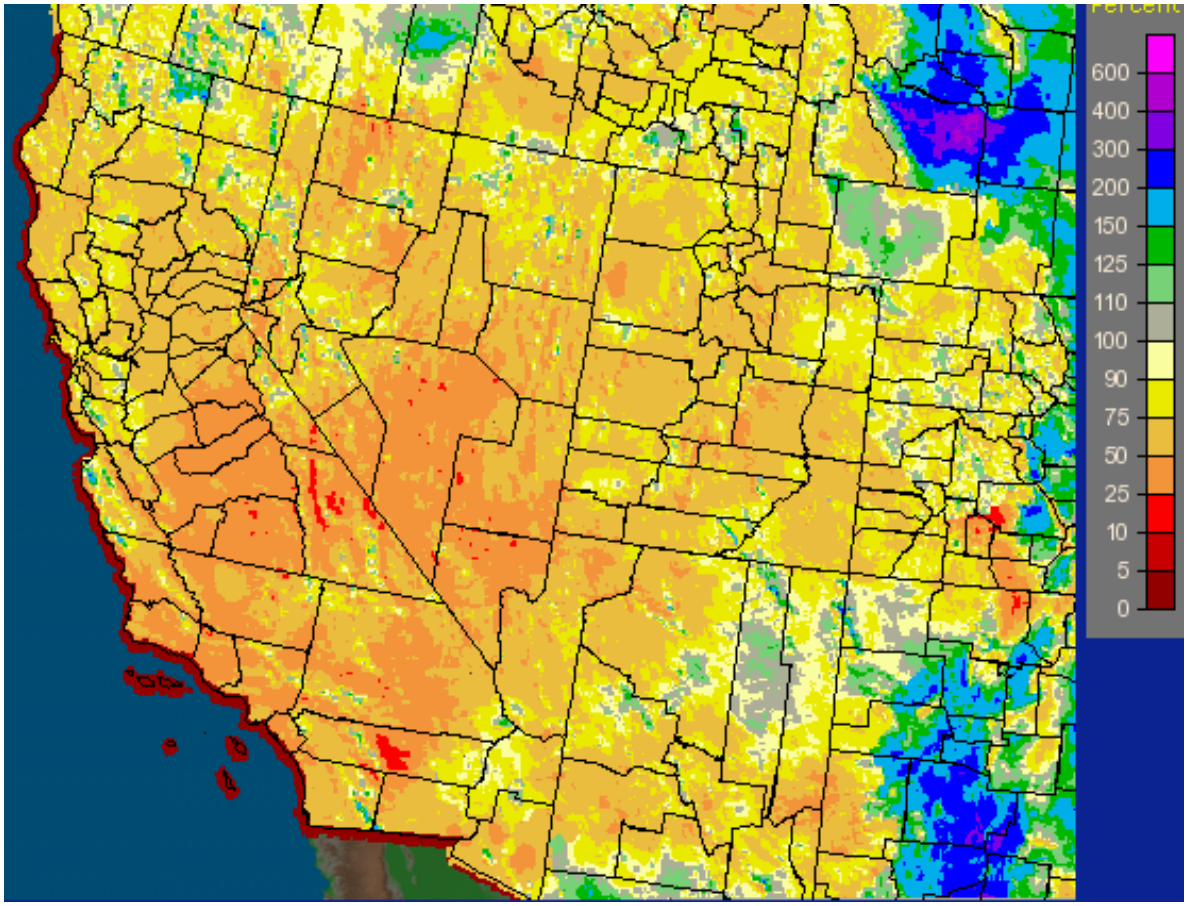
DATES	VALUE	RANK	ANOMALY (89.49") 1901-2000 BASE PERIOD
201105 - 201504	63.25"	1	-26.24"
198605 - 199004	65.39"	2	-24.10"
192705 - 193104	65.86"	3	-23.63"
193005 - 193404	67.98"	4	-21.51"
198705 - 199104	69.00"	5	-20.49"
192805 - 193204	69.16"	6	-20.33"

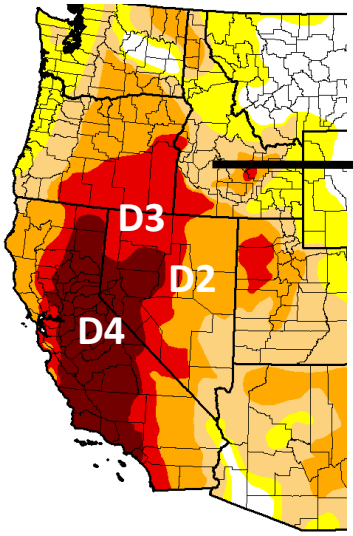
The past **48 consecutive months in California** were the driest on record with a deficit of 26 inches. Note: Most of southern California is missing 1 to 2 seasons of precipitations in the past 4 years.



Sea surface temperature anomalies (departure from normal) continue to be several degrees above normal. Red shading is 3 to 6 F.

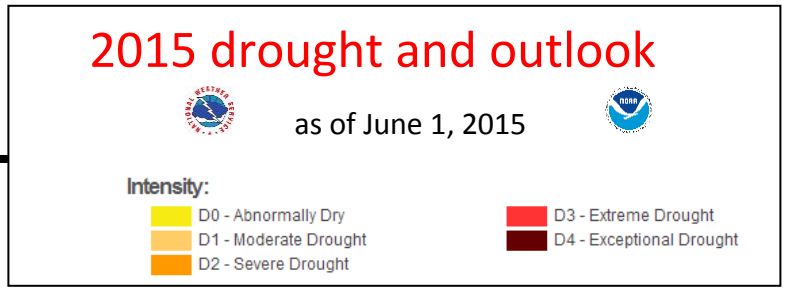


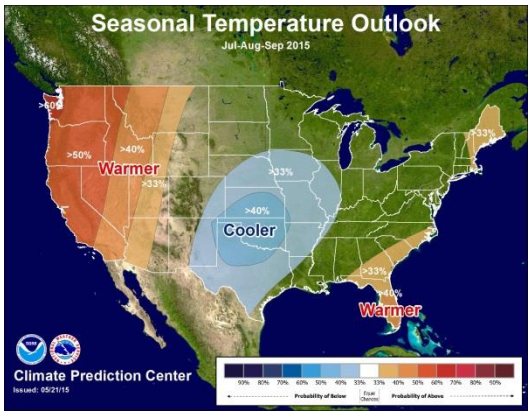
Percent of normal precipitation since **October 1, 2014** (40 to 75 percent)



Short and Long Term

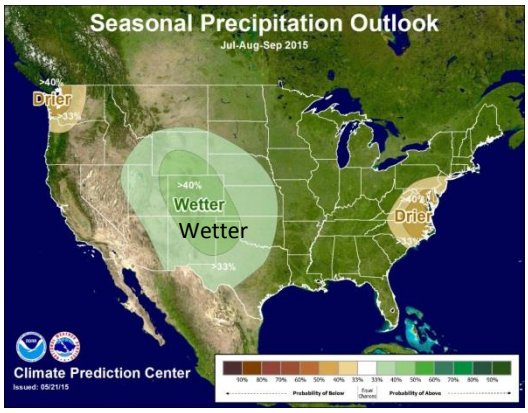
94% California is D2 to D4 conditions



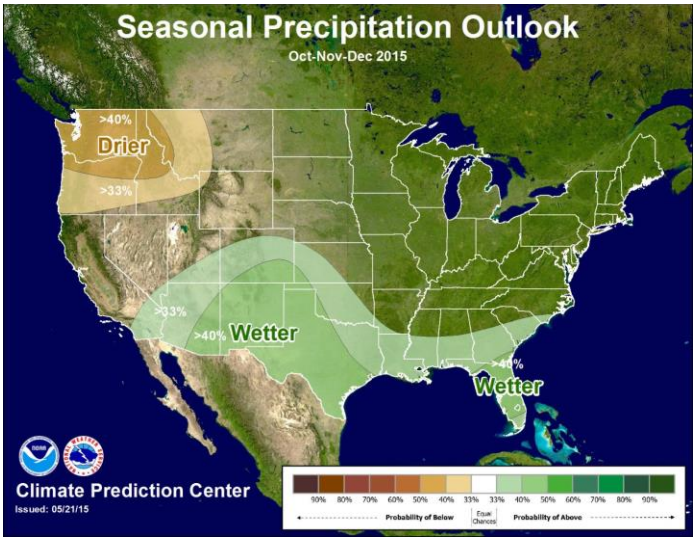


July to Sept 2015

Outlook



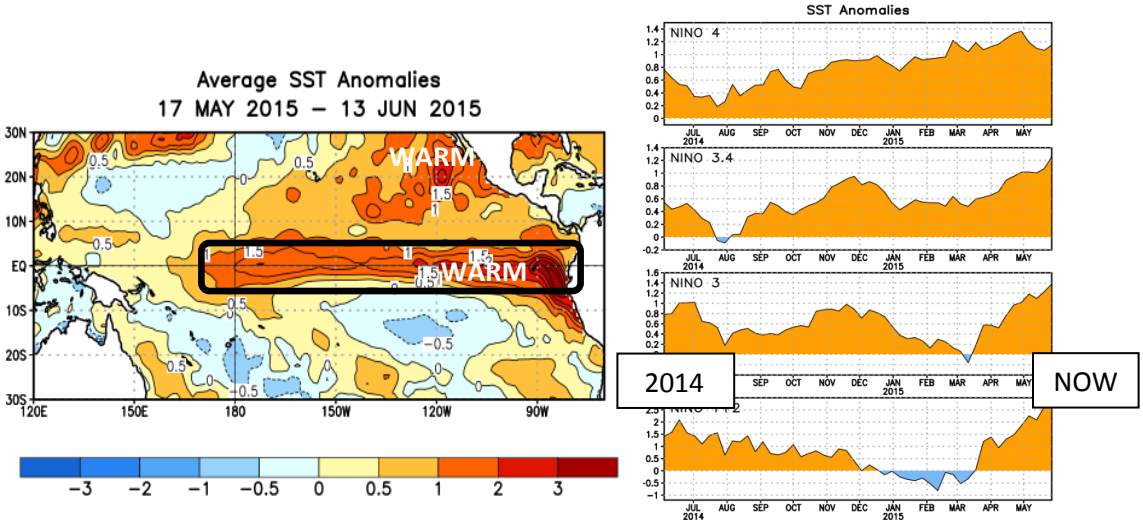
Temperature (left) and precipitation (right) outlook for the period July to September 2015.
Green is 33 to 40 percent chance of "above normal" precipitation. Source: Climate Prediction Center.



Precipitation outlook for October to December 2015.

ENSO El Nino Current Conditions

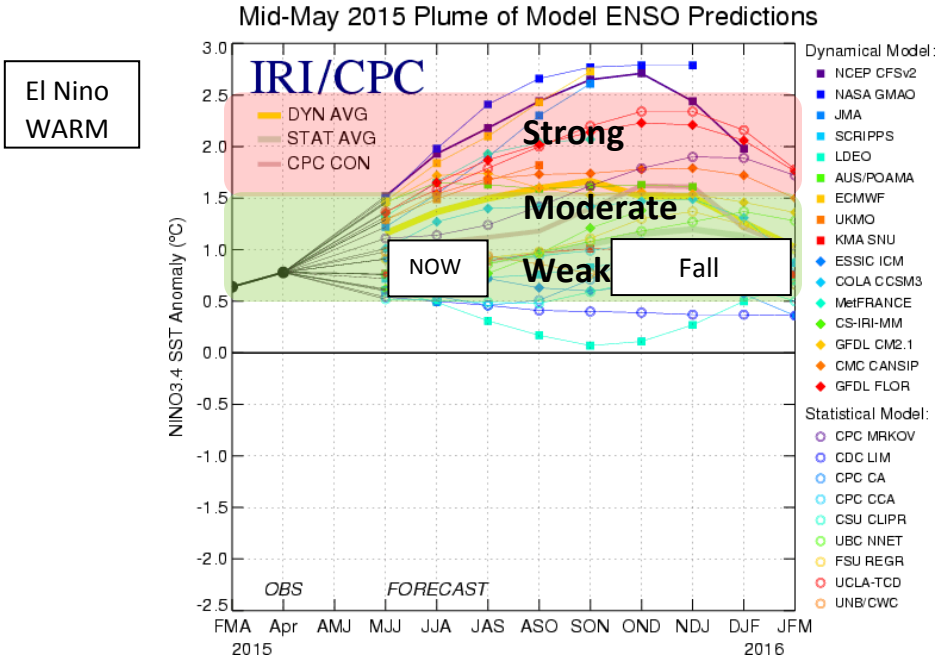
<u>Weak El Nino conditions are observed</u> in the equatorial Pacific as seen in sea surface temperatures.



Rectangle area is monitoring zone for ENSO and image is departure from normal (orange and red is warm).

ENSO El Nino *predictions* as of May

ENSO forecast for 2015. Consensus (yellow line).



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