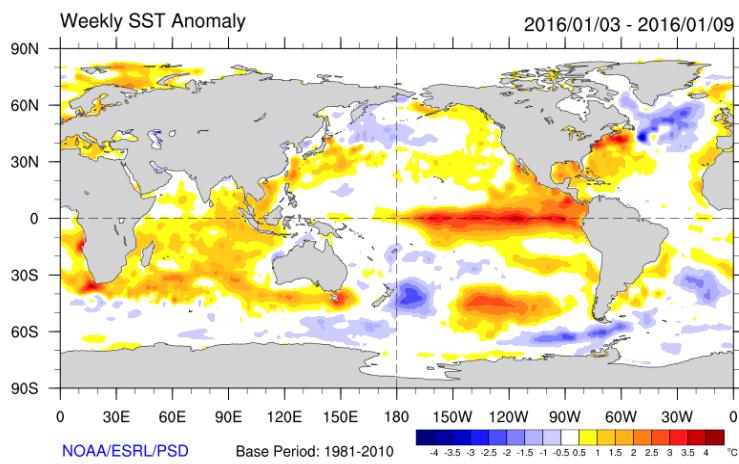


# A Report on the Presentation Given to the Association of Water Agencies (AWA) on January 21 by Eric Boldt, Warning Coordination Meteorologist, NOAA/National Weather Service, Oxnard/Los Angeles

Reported by Stacy Roscoe

El Nino is not a storm. It is a condition that influences storms. El Nino works in the tropics, where the West Pacific normally has thundershowers and the East Pacific is cooler than the western waters. El Nino is responsible for moving warm water in the Pacific that is hundreds of feet deep to the east where the warmer water has a huge ability to change normal North American weather patterns.

Our current El Nino started last March and we saw summer impacts such as tropical cyclones (hurricanes). There were a record-setting 9 hurricanes in the Eastern Pacific, the biggest number on record since tracking started in 1970. (We had a tornado in Fillmore on 1/6/16 with 85 mph winds.) El Ninos typically last 10-14 months, and it looks like we will see the end of this one in May. Southern California has had warm and humid weather, but the expected drier weather to the North has not been experienced as it normally would be with El Nino. This time, so far, the North has been wetter.



Pacific Ocean that measure these temperature changes that come with El Nino.

Rainfall timing is a bit behind 82/83 and 97/98 but we can catch up.

Historically we get a large amount of rain in February and/or March with this kind of El Nino. Locally, the mountain areas in LA / Ventura are ahead of average rainfall but the low lands are below normal. Last year was the worst snow pack ever at 5%

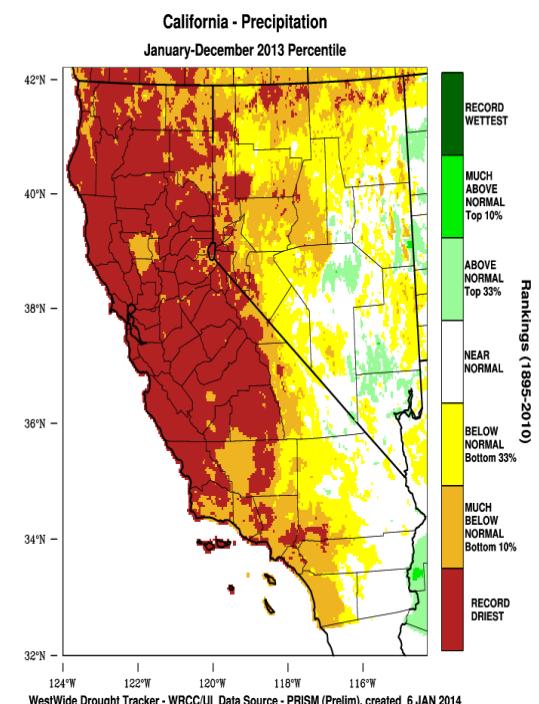
In mid-December the measured rain was over 20 inches in the northern mountains which is 7-8 inches above normal. We see 125% of normal in Sierras versus 31% last year.

Normal conditions usually bring 5-6 rain storms while El Nino conditions will usually bring 10-12 storms. There will be more storms, not necessarily more intense storms.

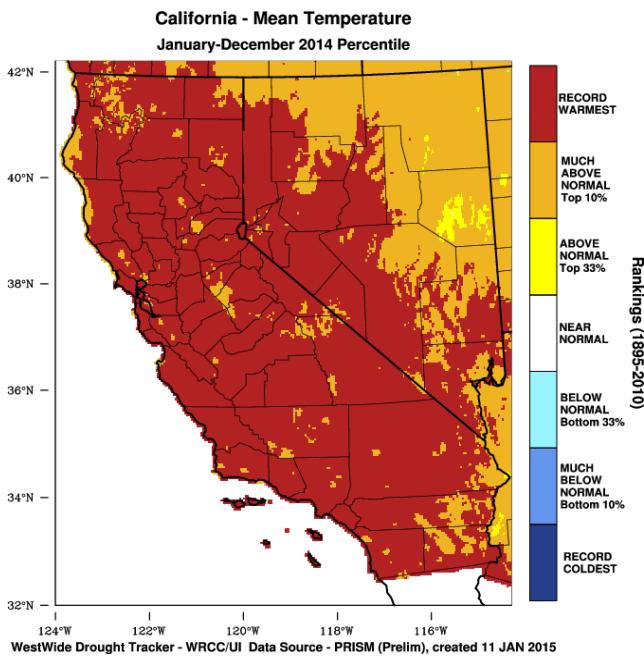
**So what does all of this mean for the drought?** In the last 4-5 years the drought is the worst it has ever been. 2013 was the driest on record (measured over the last 119 years). 2014 had below normal precipitation

El Nino is now strong. There are more storms just a few 100 miles to the north. There is great snow pack. Most experts expect the rain to drop south over the next few months bringing water to Southern California.

This current El Nino is comparable to the two most powerful El Ninos measured since 1950 when records started: the 97/98 and 82/83 events. To date, our 15/16 El Nino best matches the 97/98 one. Ocean temperatures have already peaked at 3.2 degrees above normal, but the warming will stay because of the depth. There are 70 buoys in critical areas of the

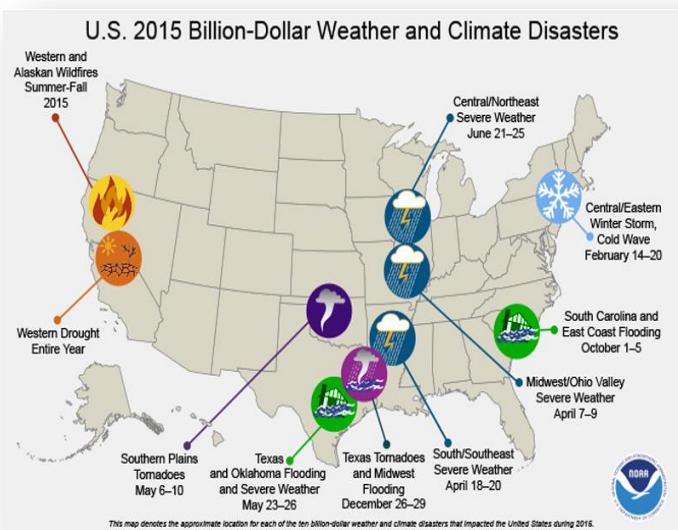
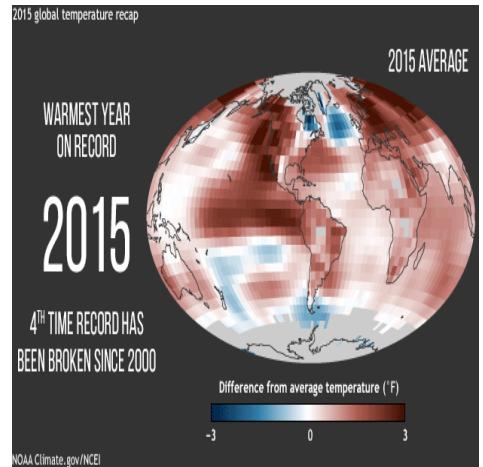


registering in the bottom 1/3 of historic measurements.



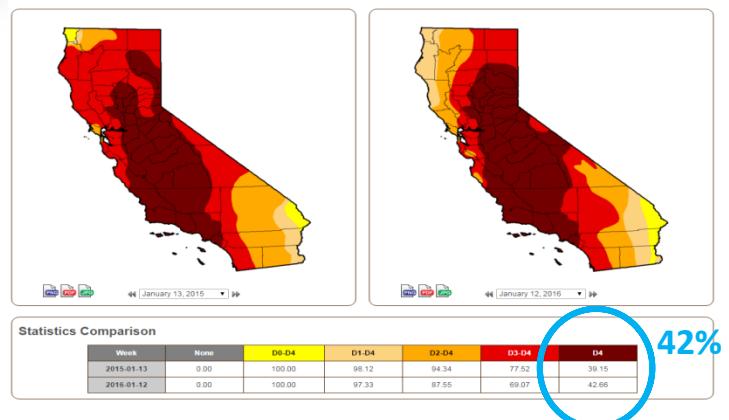
In 2015, global land and ocean temperatures were measured to be the warmest on record.

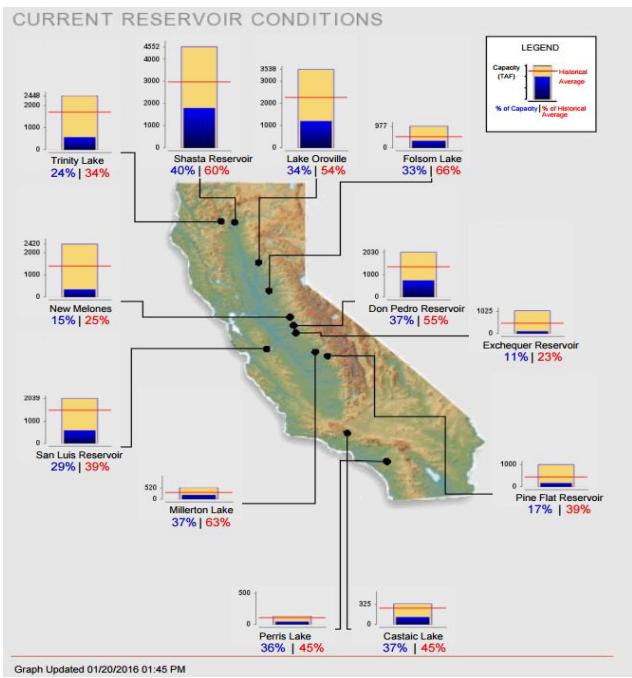
When it comes to temperature, 2014 delivered a record high summer temperature (measured over the last 120 years). 2015 rainfall was also below normal in the bottom 1/3 of measurements, while 2015 registered the 2nd warmest U.S. temperatures on record, measuring 2 1/2 degrees above average.



2015 also brought many disasters costing billions of dollars, and 10 were in the United States.

The California drought monitor shows that 2016 is predicted to be the same as 2015 except for part of Northern California. 42% of California will be in category D4 - Exceptional Drought. It has taken many years to get to this point and it is likely that getting out of it will take just as long.





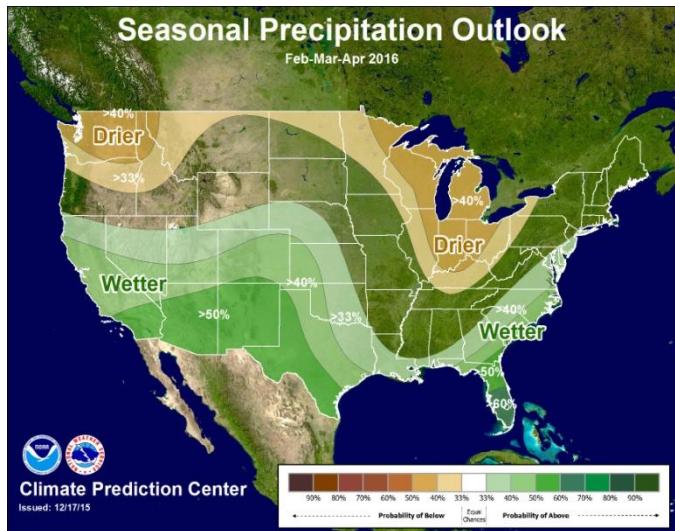
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**Lake Nacimiento:**  
**2015 23% capacity**  
**2016 20% capacity**



**Ventura County Capacity**  
**Casitas Lake = 42.2% / 51.6% Last Year**  
**Lake Piru = ~12.5% / ~20.0% Last Year**

**So what does this mean for our reservoirs?** Reservoirs were low through last year, many below 50% capacity. It takes time to see rain impact. Lake Shasta is at 40% (it is below last year's level). Oroville is at 34%. One bright spot is that the Colorado River is running slightly above normal at 105%.



**So what is next for the rest of the winter?** The storm system that hit Southern California at the end of January might be the start of normal El Niño weather pattern. Record snow from the South up to East Coast showed part of this normal path, and when it gets settled we will see more rain.

February, March, April, and May are typically above normal in the El Niño years:

	<b>February</b>	<b>March</b>
1983	4.37 inches	8.57 inches
1998	13.68 inches	4.06 inches

Similar rain patterns are predicted in 2016 based on the last 6 strong El Niño patterns.

The North sees the storms first and then the pressure shifts south and the storms follow. Federal projections now call for wetness for all of California along with a warmer winter. Climate change models predict earlier snow melt in the spring. The Pineapple Express which is south of Hawaii is coming our way. If storms are spread out over time there should be no flood problems. If they are close together flooding will be an issue.

**What happens after all of this?** According to current projections for the rest of the year, next winter we may experience a La Niña condition, which will have characteristics that are just the opposite of those brought to us by El Niño. The trend lines of 25 models show neutral to below ocean temperatures that should bring La Niña by this fall.

For questions or more detail regarding any of this information, contact Eric Boldt at eric.boldt@NOAA.gov / 805 988-6623