National Weather Service

- Issue official warnings for flash flood, tornado, and tsunami to Emergency Alert System and Wireless Emergency Alert (phone)
- Issue Amber alerts from CHP through NOAA weather radio
- Spot weather forecasts for Wildfires and Prescribed Burns (CalFire, USFS)
- Official climate advisories (e.g., El Nino, drought) and databases
- National gridded forecast database out to 7 days
- Social media posts on Facebook, Twitter, and YouTube

Start of El Nino talks 2015

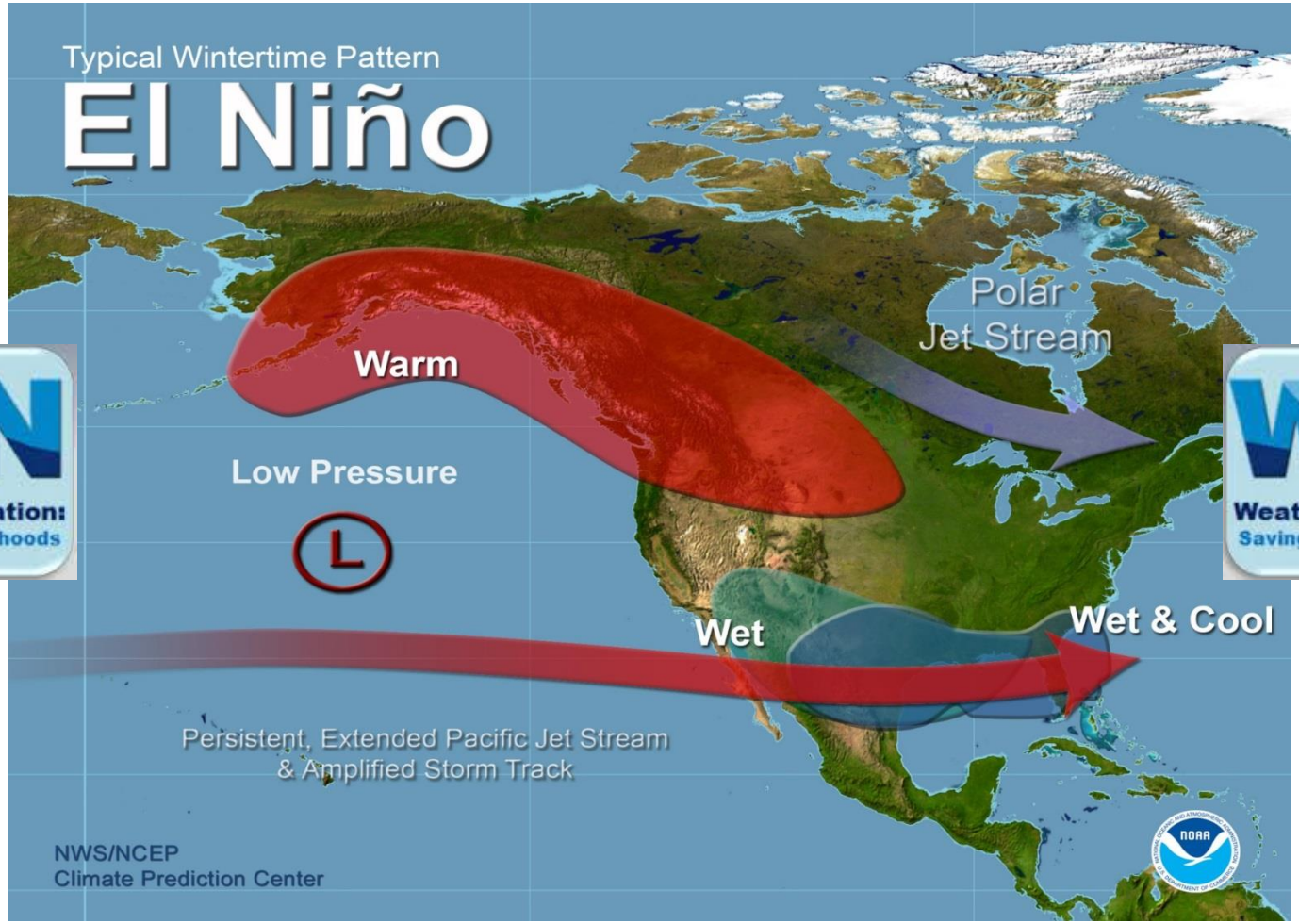
- SonTek international webinar September 2015
- El Nino flood TTX briefing material provided to Riverside OES – September 2015
- Southern California chapter CESA annual meeting September 2015
- Idyllwild Community Preparedness meeting – September 2015
- Coachella Valley EM Communication group – September 2015
- Orange County marine safety briefing – September 2015
- City of Newport Beach marine safety briefing – August 2015
- Office of Homeland Security San Diego City briefing - August 2015
- US Power Squadron annual meeting briefing in San Diego – August 2015
- Santa Margarita Water District - August 2015
- City of Riverside and OHS area partners - August 2015
- DHS and Port of San Diego briefing at WFO – August 2015
- San Diego County Lifeguards swiftwater and dive rescue quarterly meeting briefing – August 2015
- Floodplain Management Association luncheon briefing at San Diego County – August 2015

NWS SGX Service Area

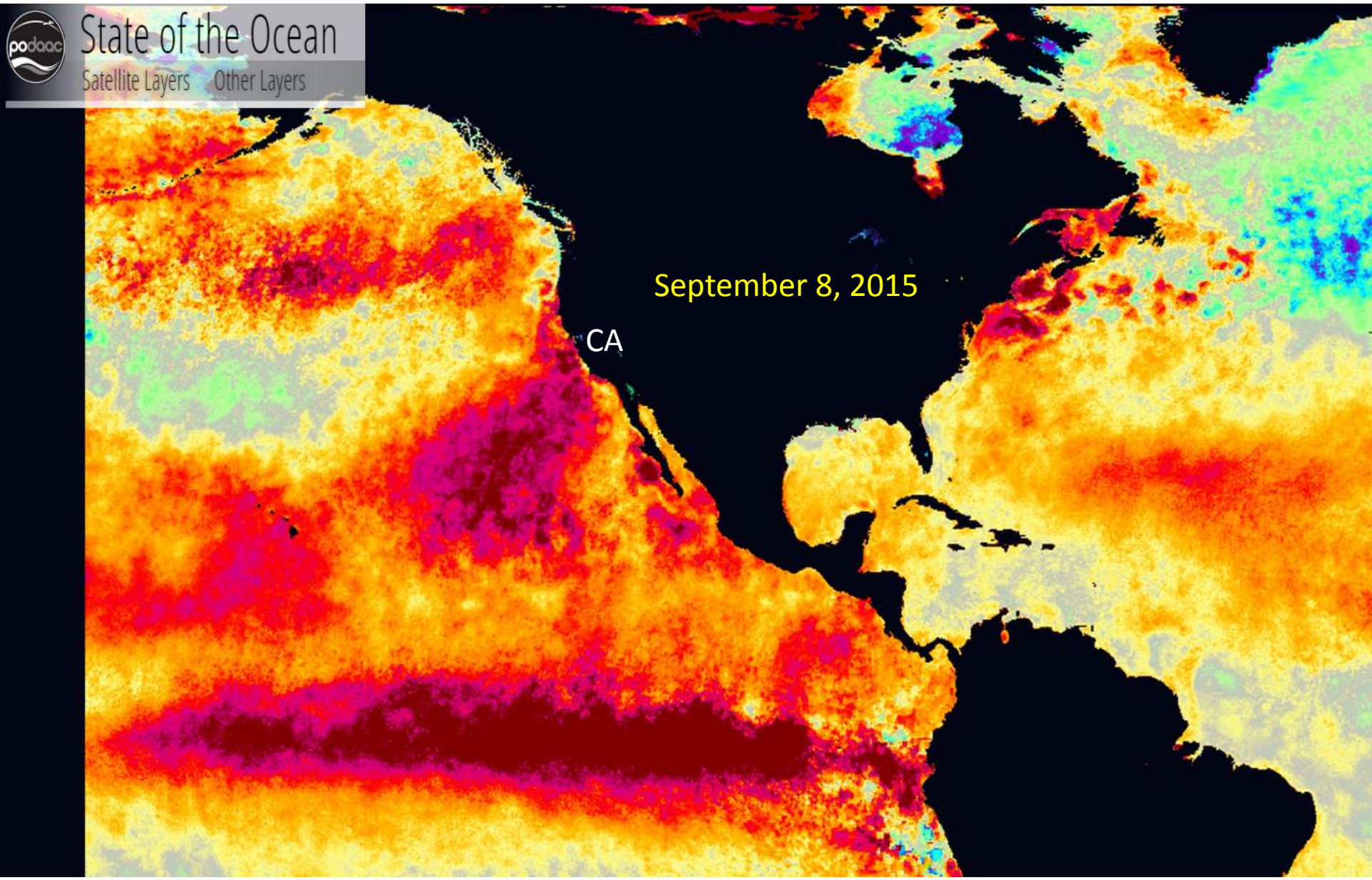
Weather Outlook 2015-16

El Nino can bring:

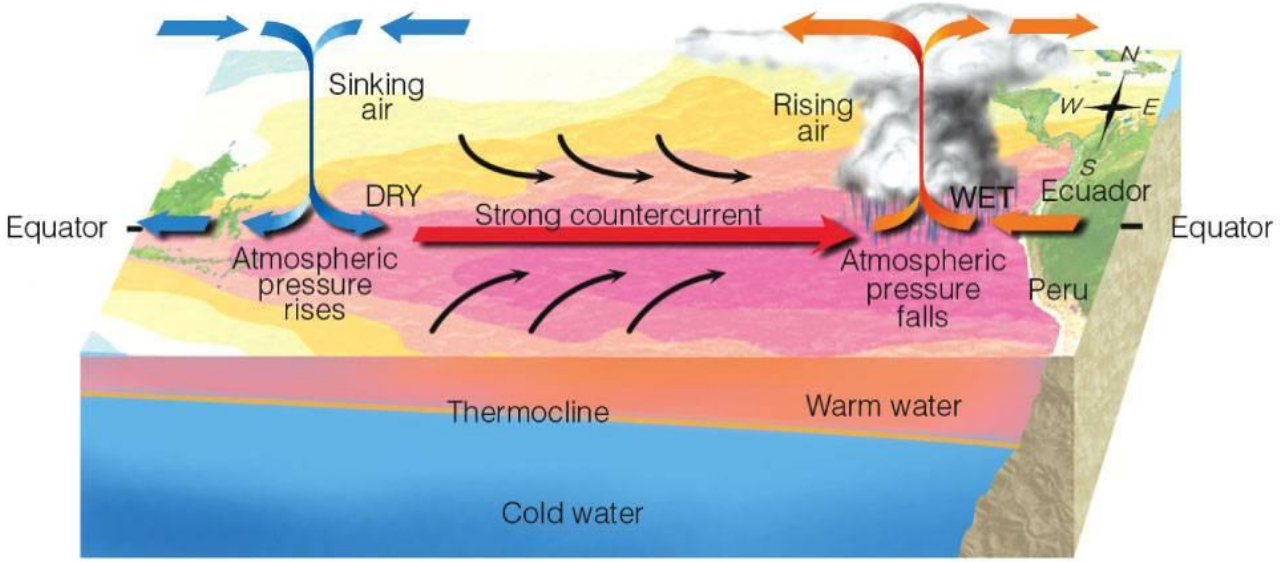
more of a consolidated elongated Pacific Jet



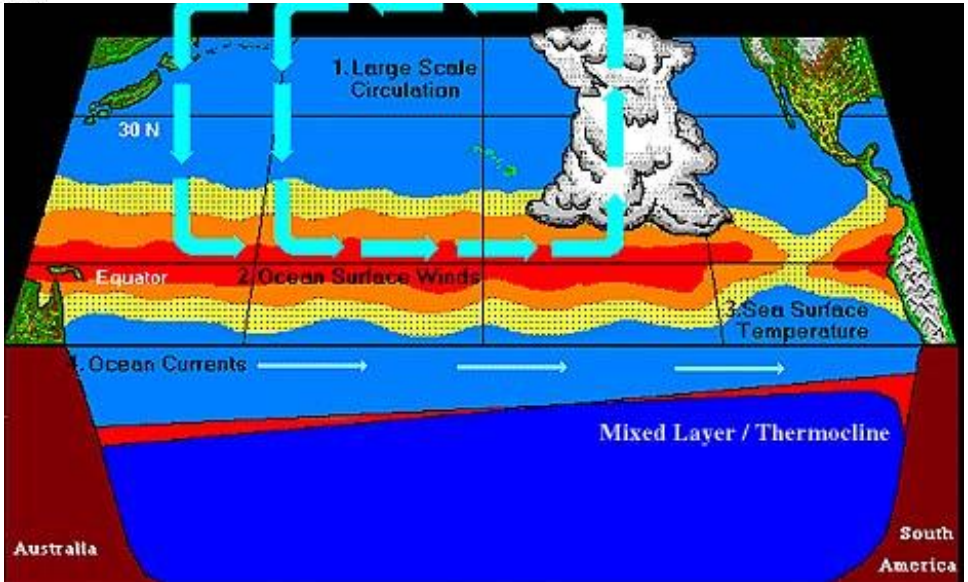
Heavy Rain and Flooding
Turn Around Don't Drown


State of the Ocean
Satellite Layers
Other Layers
September 8, 2015
CA

El Nino development and then influences on atmosphere

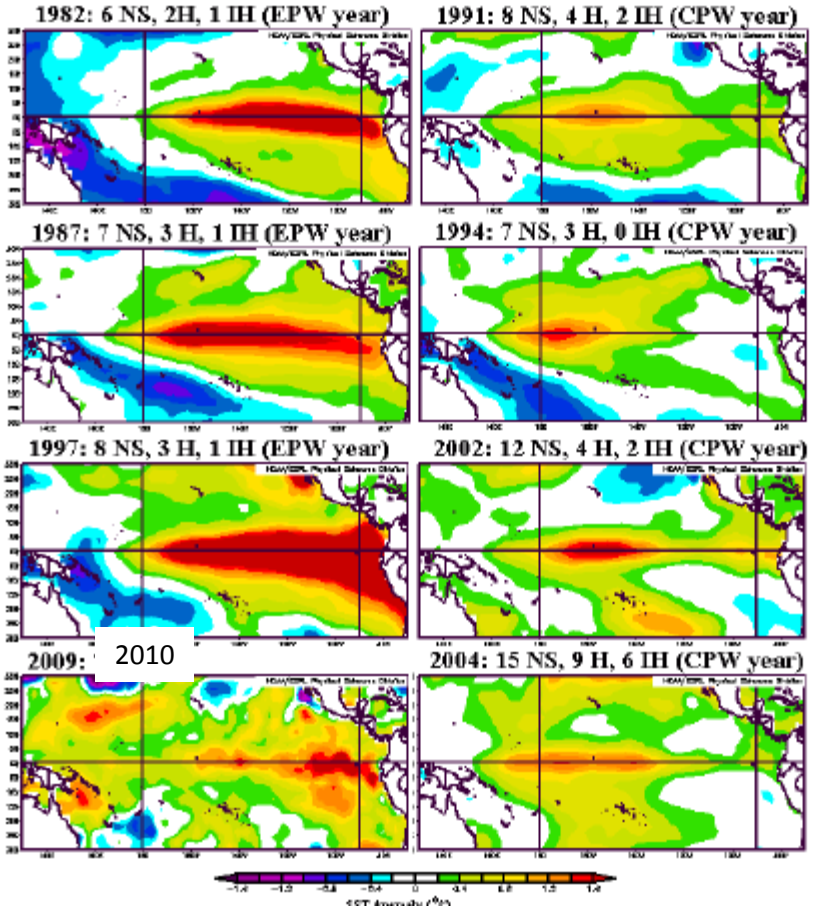


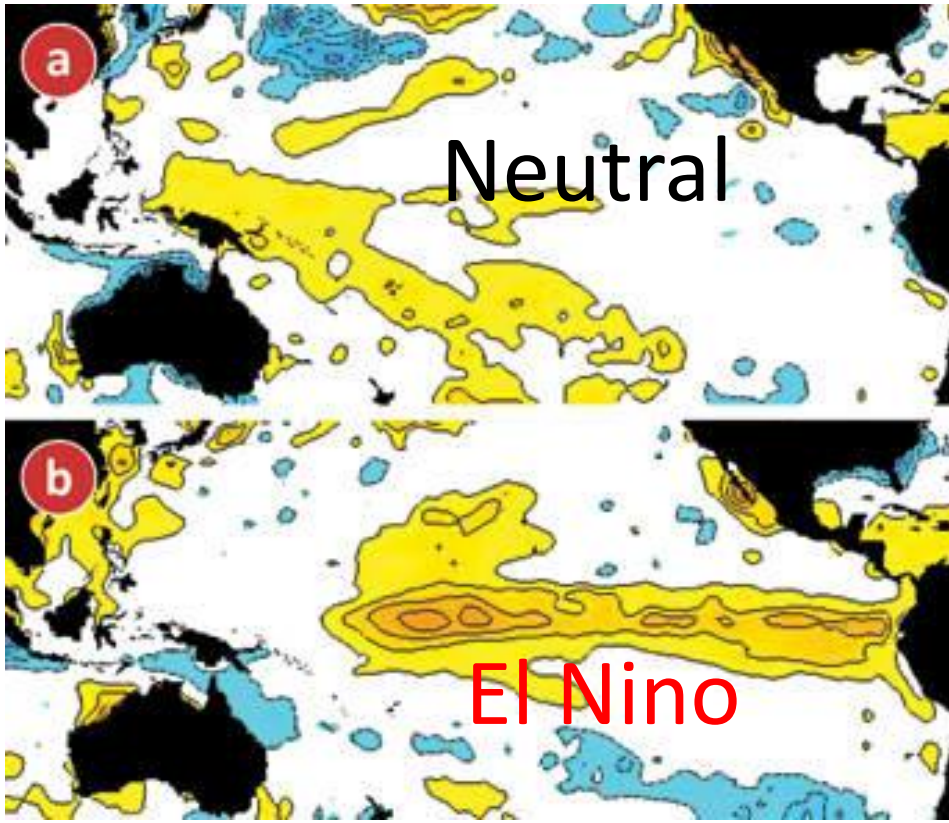
El Niño Conditions



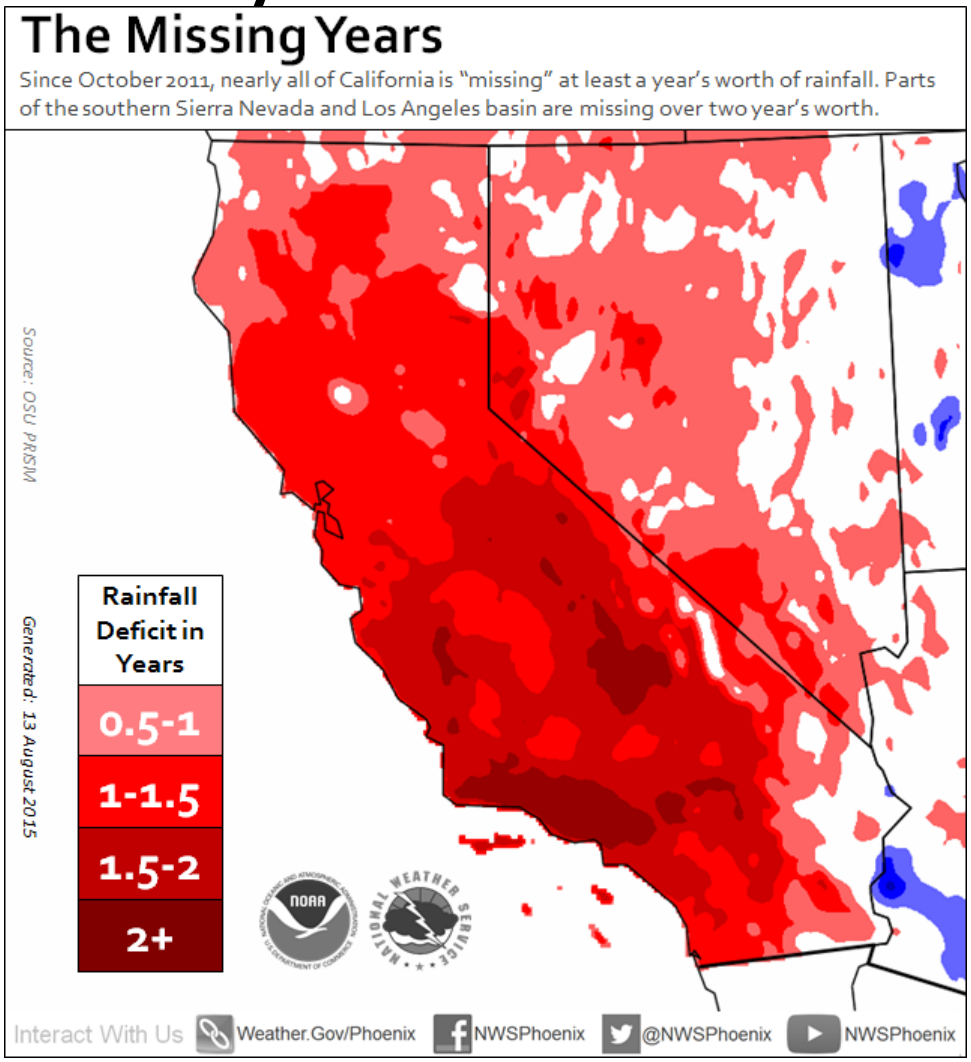
ENSO El Nino correlation with precipitation in California

What strength is forecast?





Missing Years of Precipitation
1 to 2 years worth needed



Credit Paul Iniguez

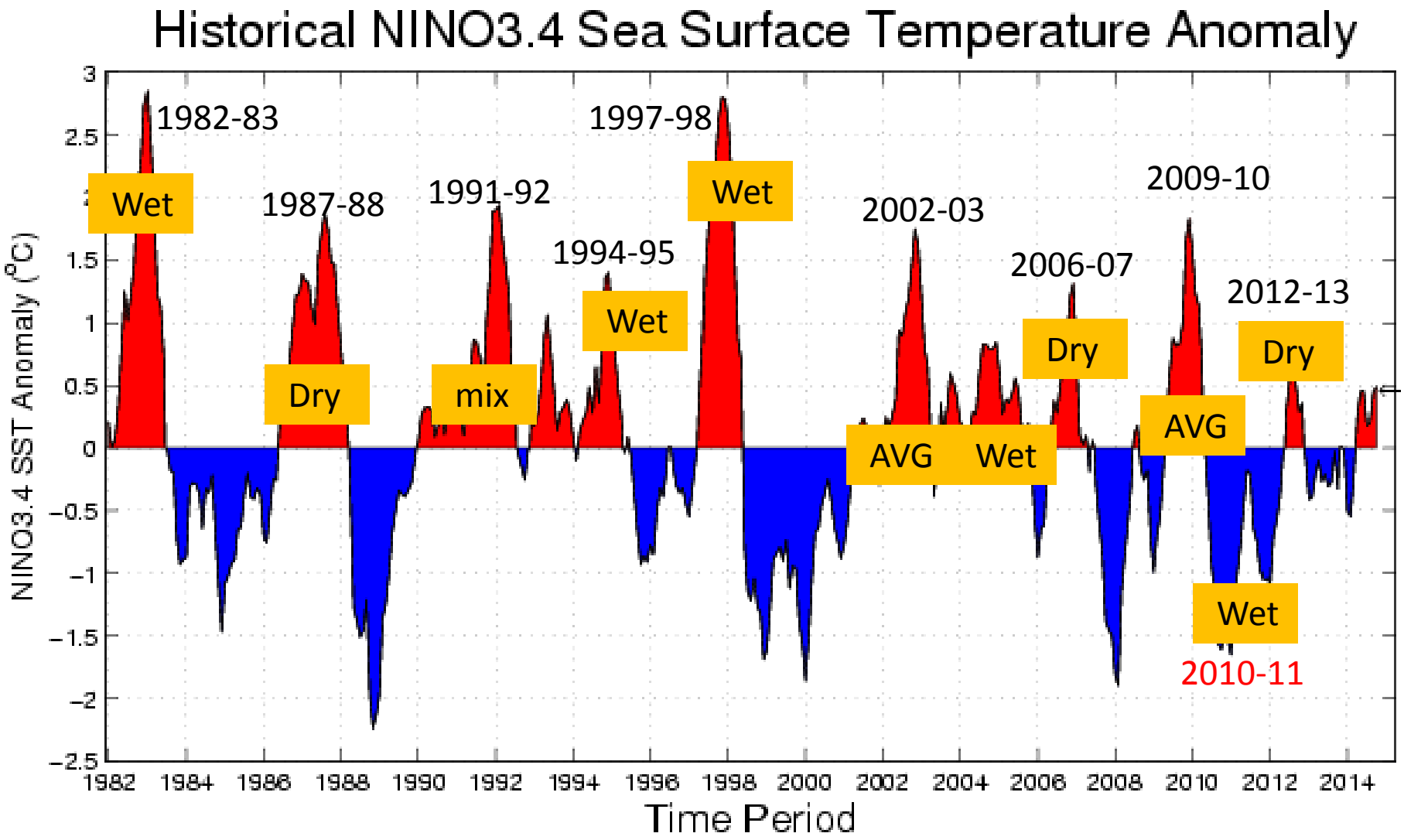
4 year precipitation since January 2011

August 18, 2015

Station 4 year precipitation	Needed by 09/30/2016 Deficit	2014-15 Season %	Annual average	Lost precipitation
San Diego (SAN)	24.08			
34.84	13.58 inches	10.66 or 100%	**10.34**	1 ½ season
Santa Ana (Fire stn)	46.98			
30.97	33.13 inches	7.01 or 51%	**13.63**	2 ½ seasons
Riverside (Fire stn)	29.95			
29.24	19.44 inches	7.96 or 77%	**10.33**	2 seasons
Palomar Mtn	76.54			
95.98	45.50 inches	16.15 or 53%	**30.20**	1 ½ season
Idyllwild	67.33			
78.79	41.15 inches	16.86 or 64%	**26.18**	1 ½ season
Palm Springs	16.05			
11.68	10.84 inches	3.10 or 64%	**4.83**	2 ½ seasons

Historical ENSO periods

warm = red blue=cool phase



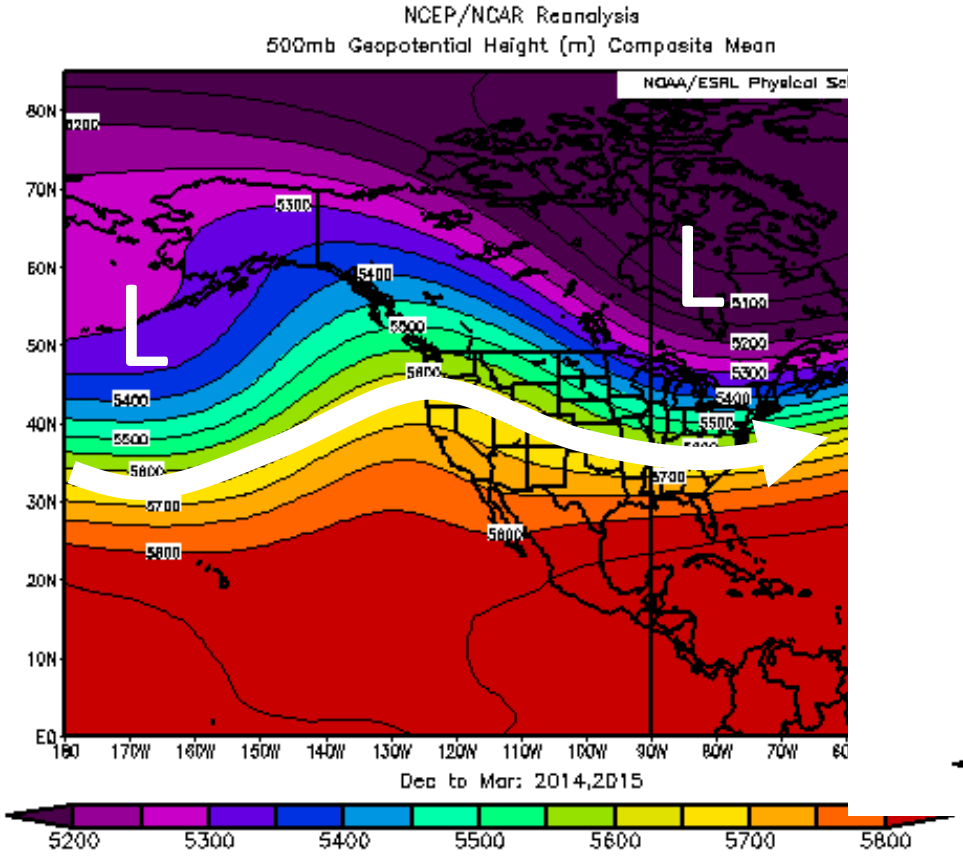
Water Year	ENSO ONI (NDJ)	October-April (inches)
1951-52	0.6	17.13
1957-58	1.6	13.13
1963-64	1.1	4.92
1965-66	1.5	14.74
1968-69	0.8	11.28
1972-73	**1.9**	**10.97**
1982-83	**2.1**	17.83
1986-87	1.1	8.53
1987-88	1.1	12.36
1991-92	1.4	12.29
1994-95	1.0	16.03
1997-98	**2.3**	16.19
2002-03	1.1	**10.01**
2006-07	1.0	3.80
2009-10	1.3	**10.52**
*1976-77 and 1977-78	0.8	
11.98	average	179.73

Normal is 9.95 inches

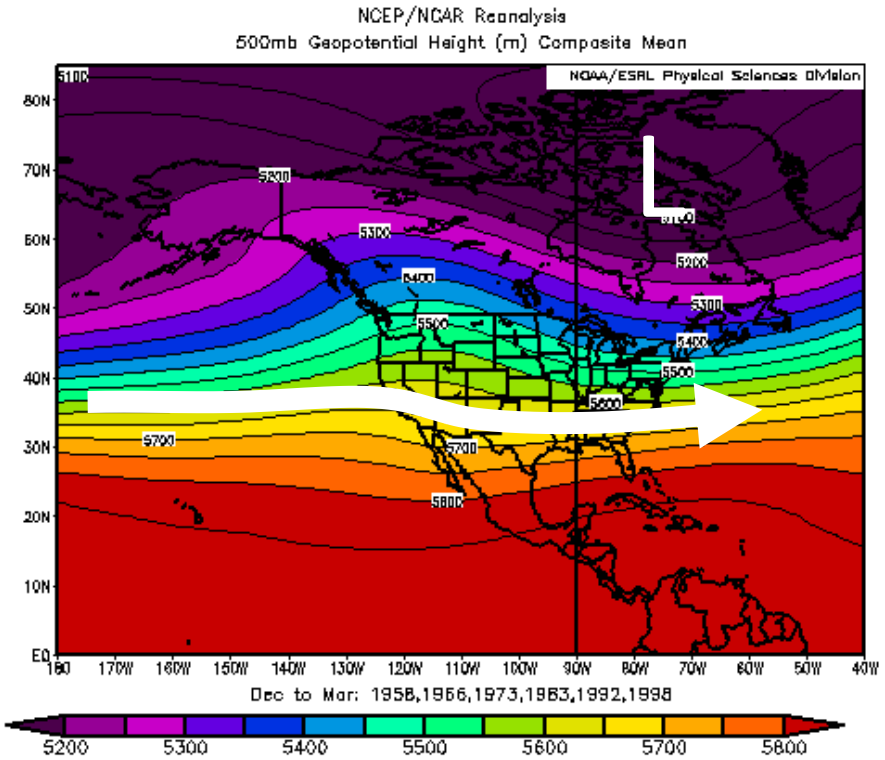
Past Years
Does El Nino mean wet weather and drought relief?

- Would need 150 percent of normal precipitation in the Sierra Nevada and statewide for “drought buster” with a snowpack
- Past El Nino seasons have resulted in variable precipitation
- Moderate to Strong correlate to wet in southern California but only very strong correlates for northern California as wet
- Above normal snowpack is needed!

Comparing Jet Stream

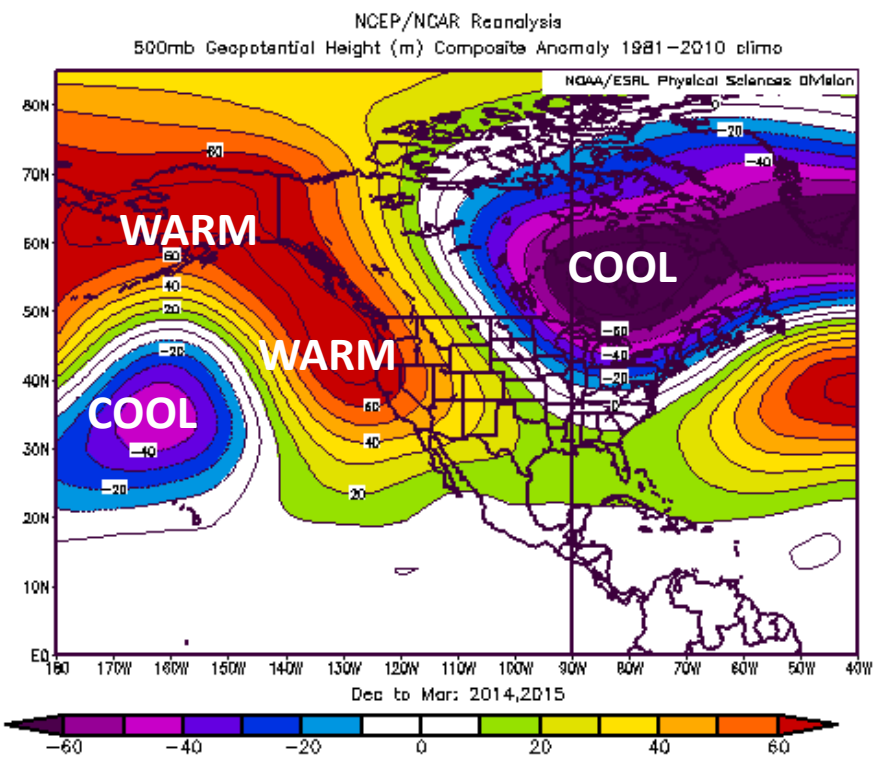


2013-2015

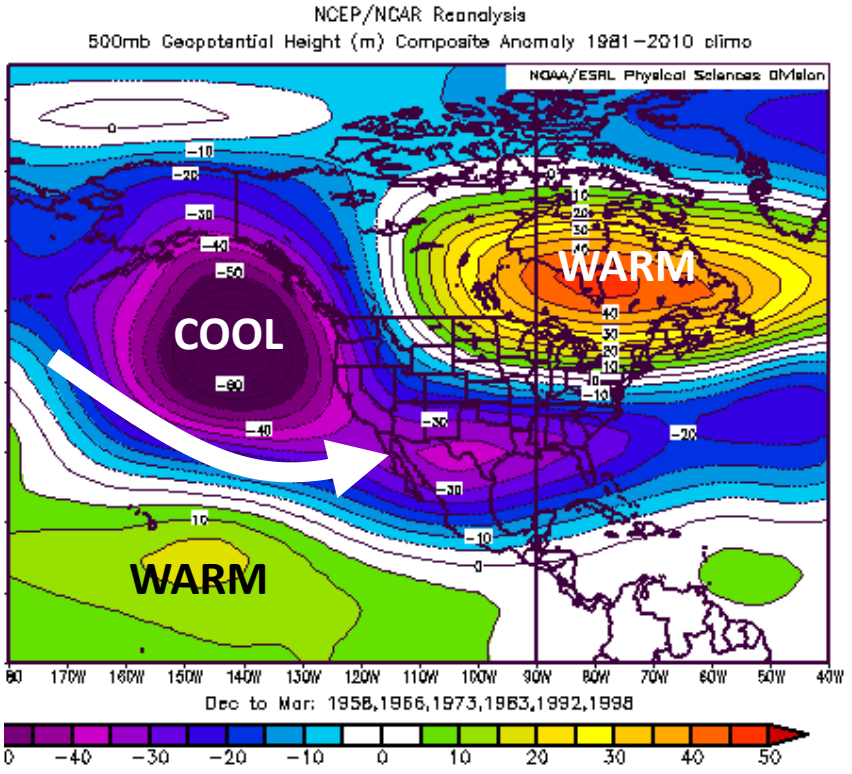


Strong El Nino

Jet Stream Departure from normal

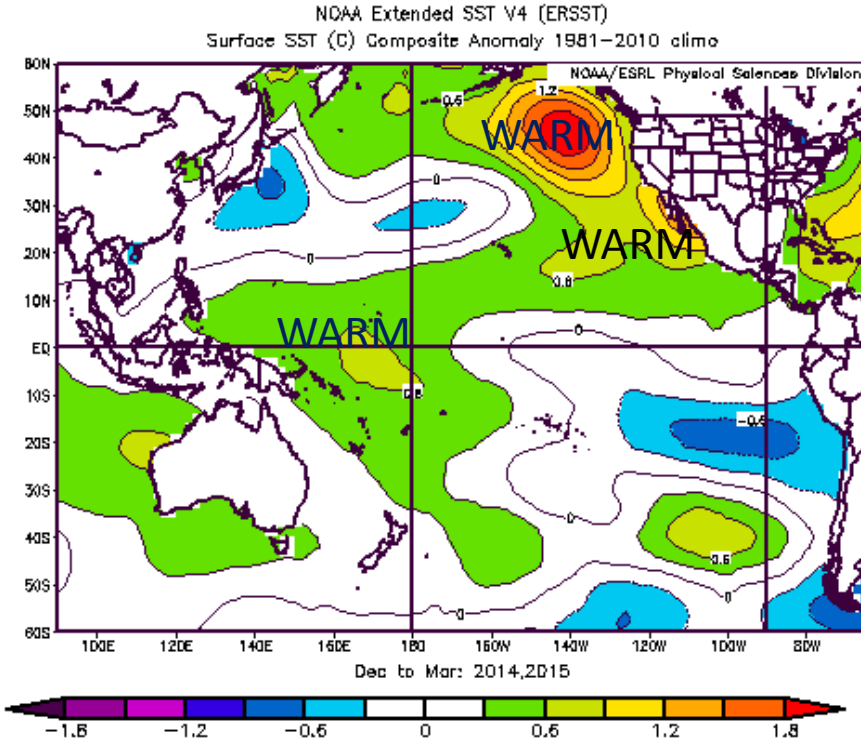


2013-2015

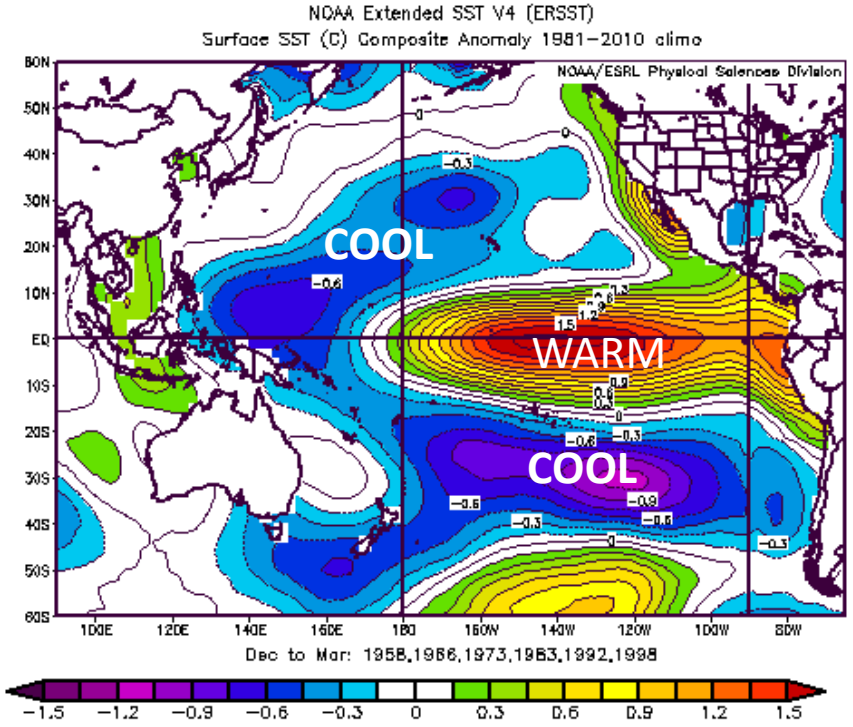


Strong El Nino years

Sea Surface Temperature Anomaly

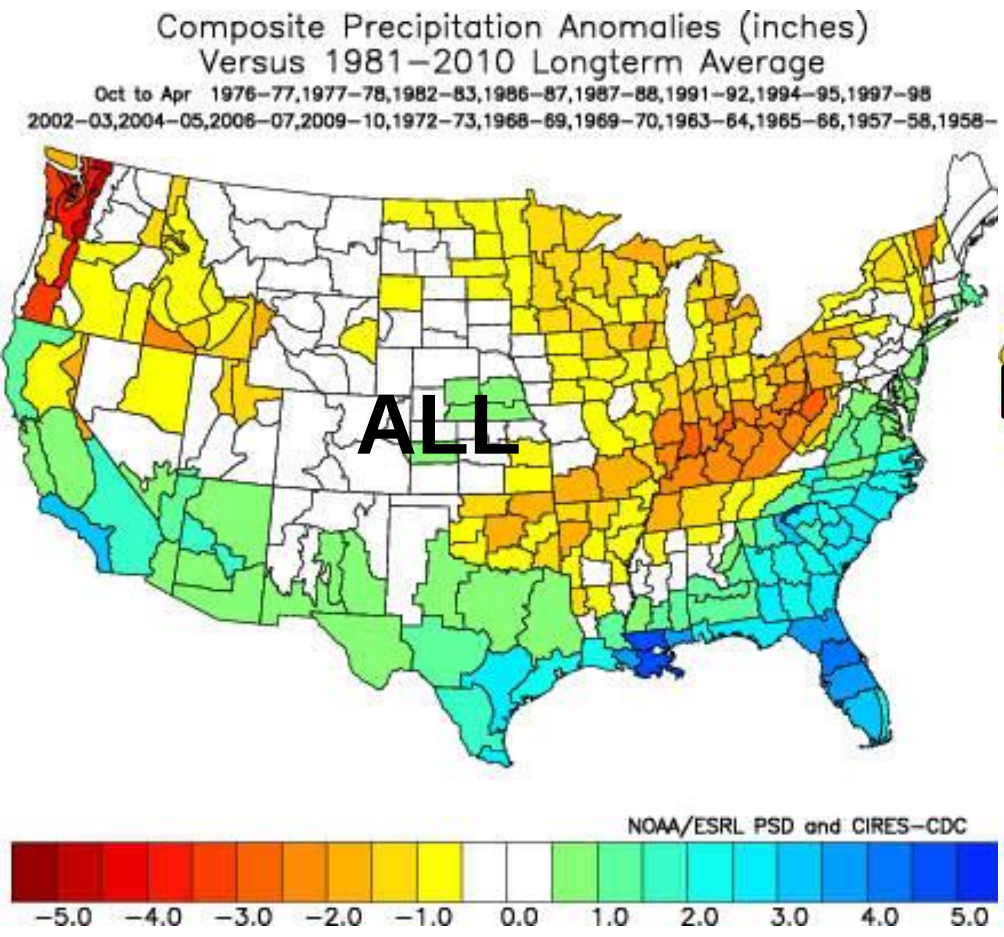


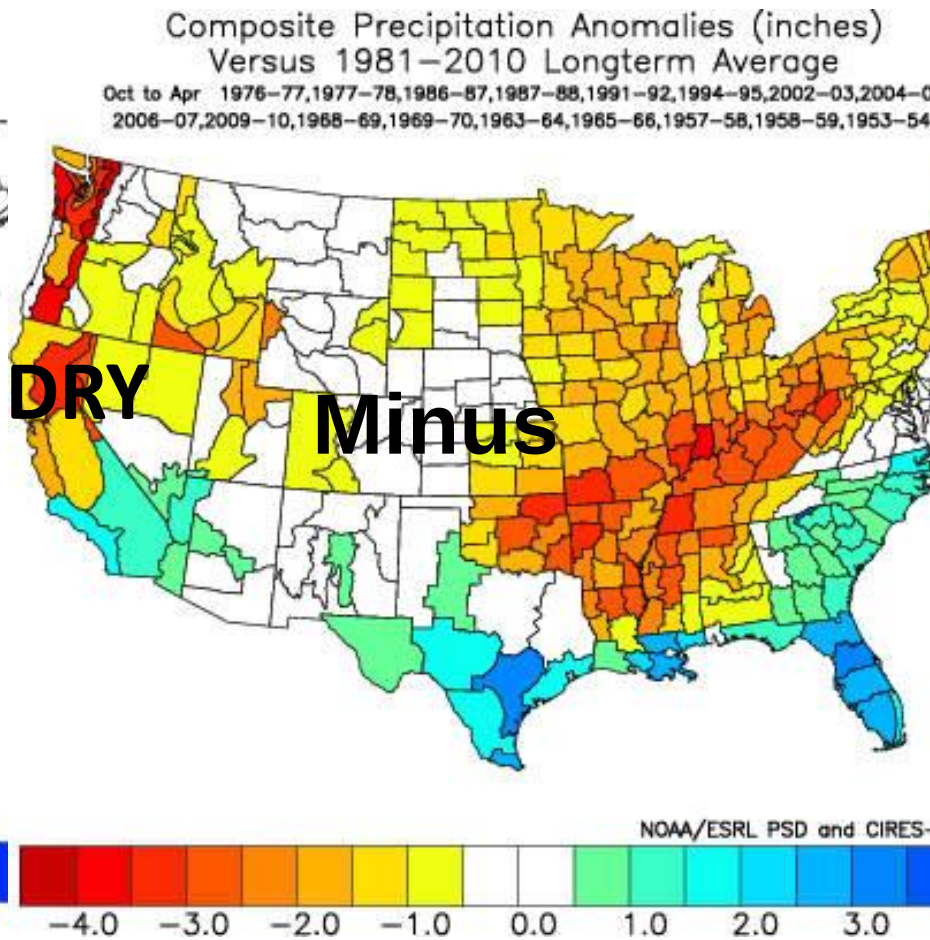
2013-2015



Strong El Nino years

All ENSO + and All ENSO minus 1972, 1982 and 1997



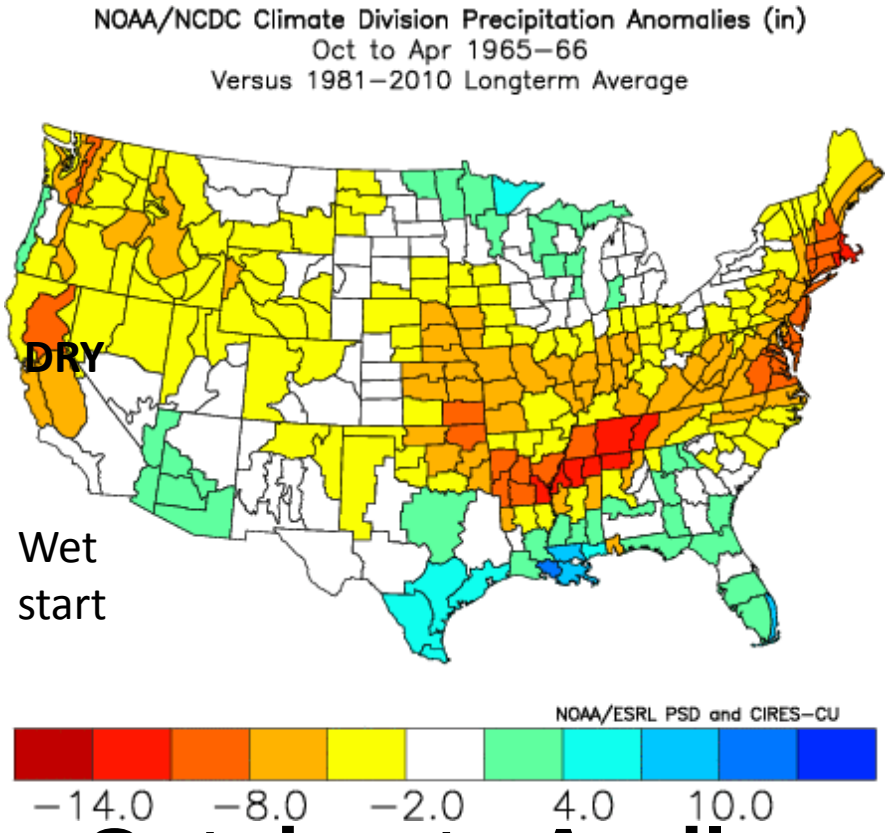


Precipitation October to April

1.5 strong El Nino ONI
but peaked too early at 1.8 in OND

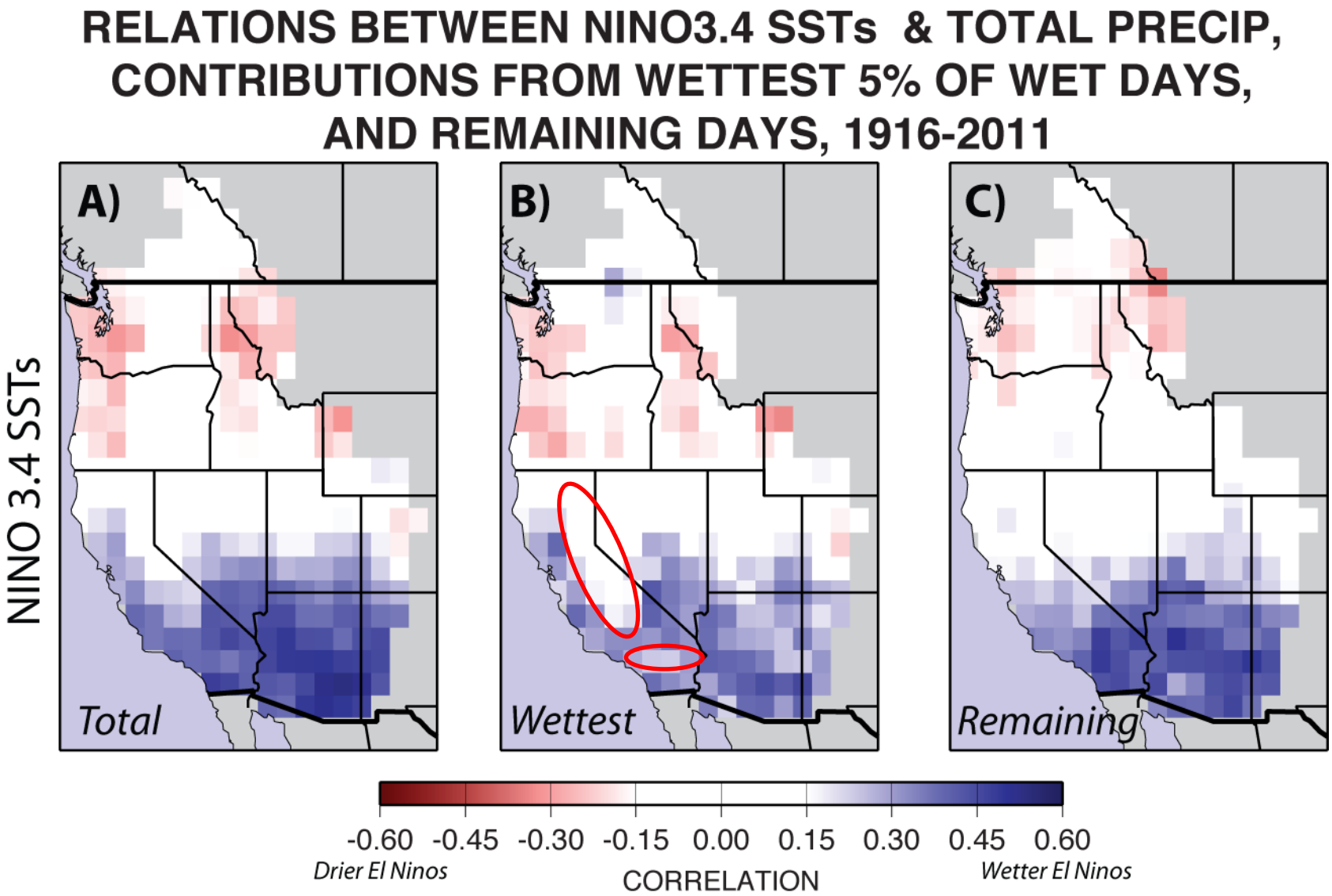
Strong El Nino but dry in Norcal

1965-66



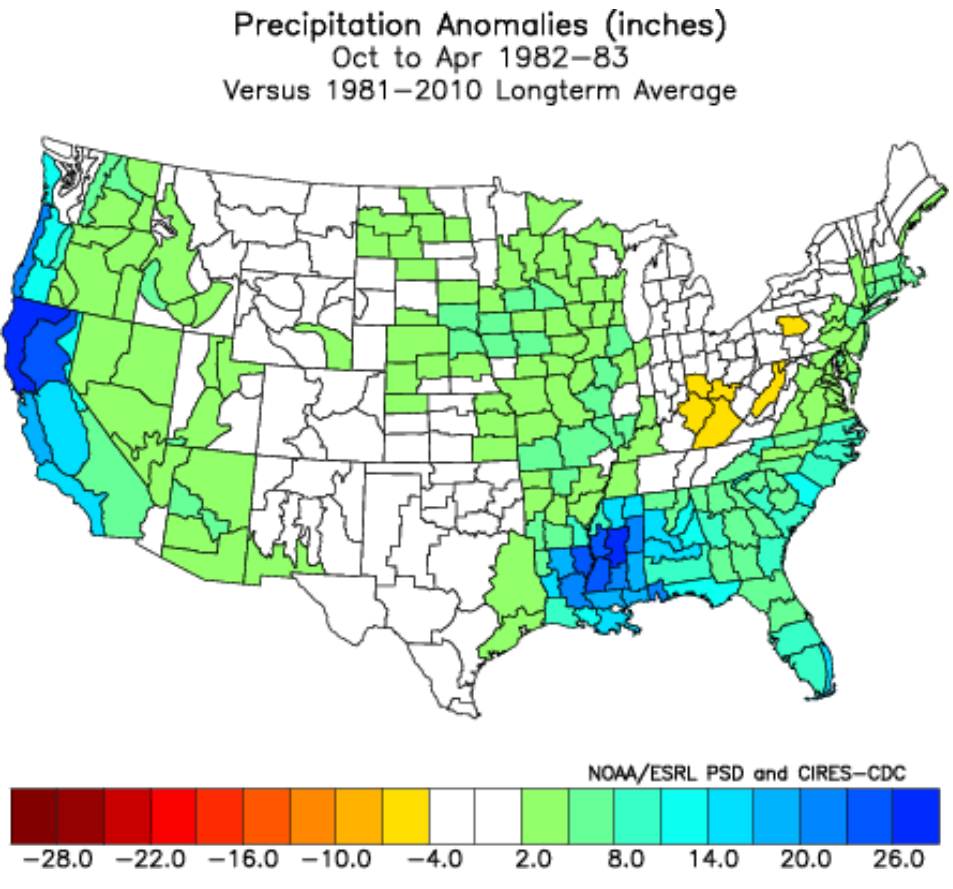
October to April

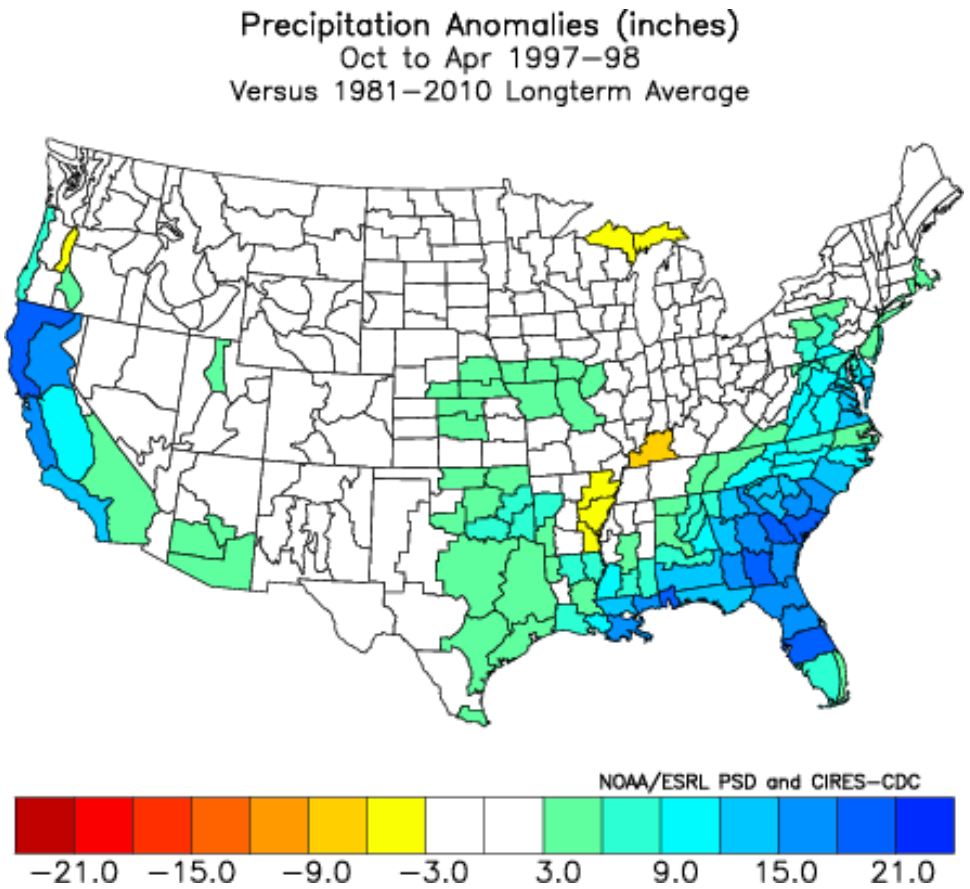
Atmospheric River major events can be any year



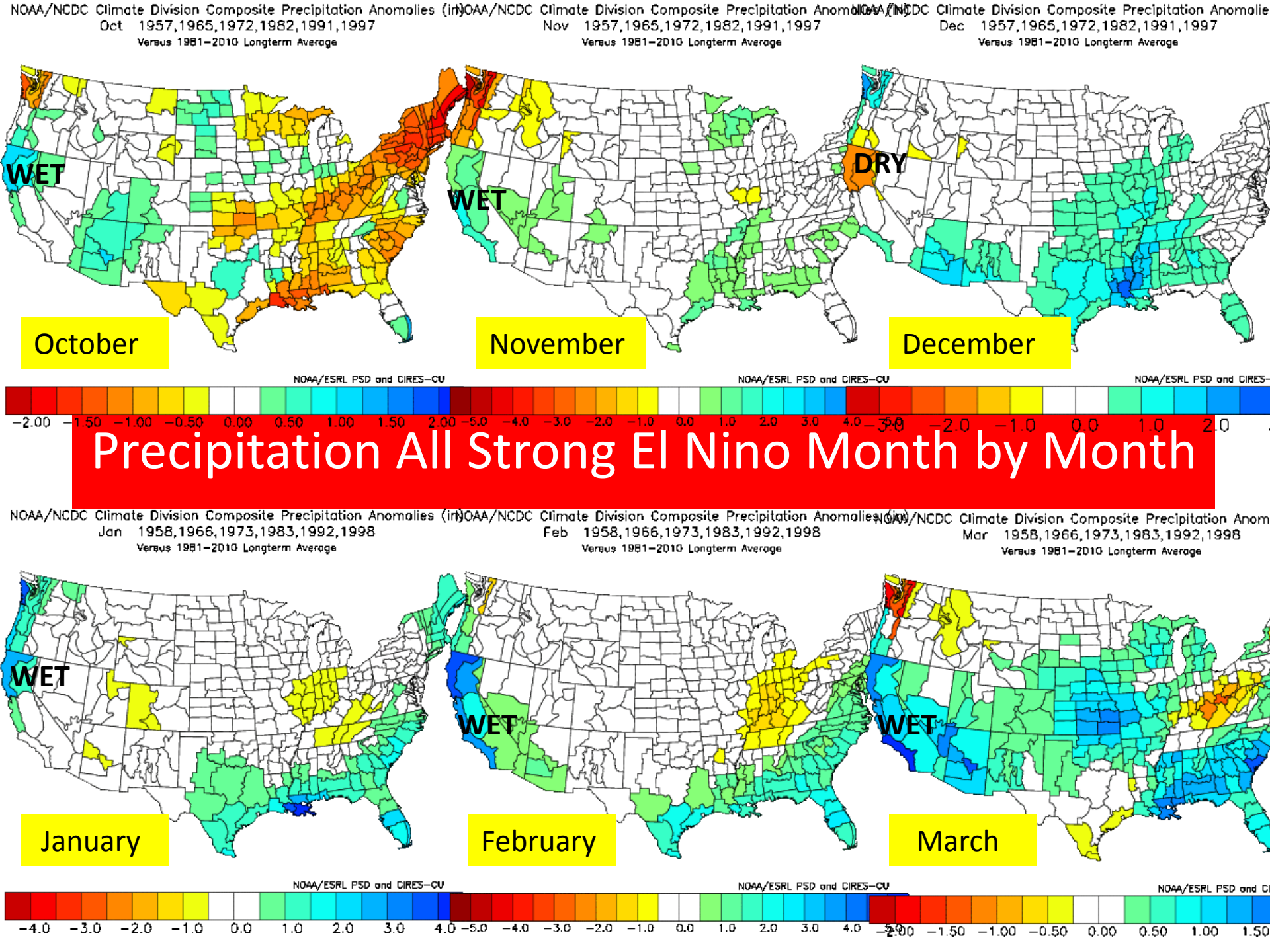
Credit: Scripps Institute of Oceanography

Major El Nino 2.0-2.3 ONI
Classic seasons of ENSO +



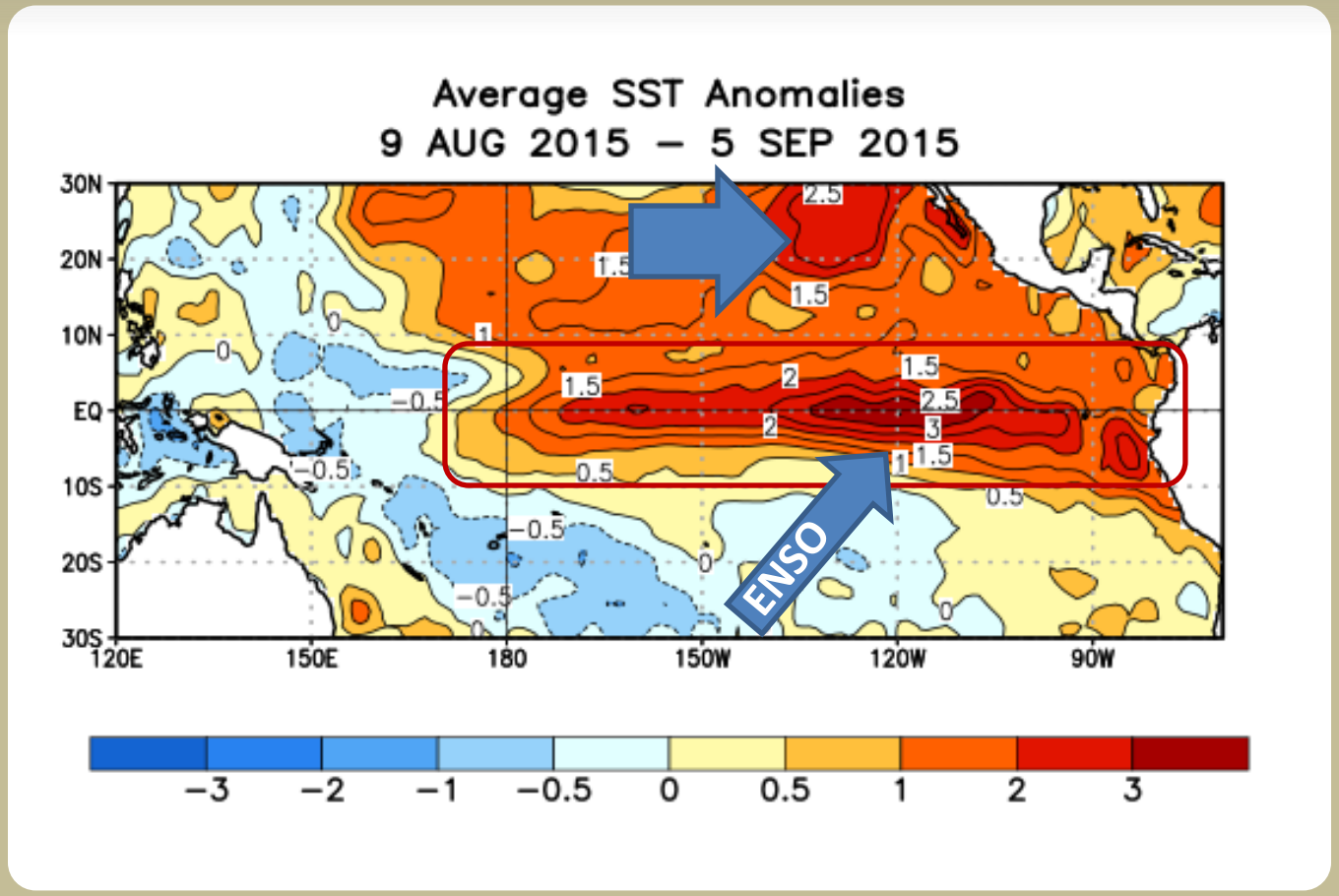


1982-83 **October to April** **1997-98**


NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Oct 1957,1965,1972,1982,1991,1997
Versus 1981-2010 Longterm Average
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Nov 1957,1965,1972,1982,1991,1997
Versus 1981-2010 Longterm Average
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Dec 1957,1965,1972,1982,1991,1997
Versus 1981-2010 Longterm Average
WET
WET
DRY
October
November
December
NOAA/ESRL PSD and CIRES-CU
-2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50 2.00
-5.0 -4.0 -3.0 -2.0 -1.0 0.0 1.0 2.0 3.0 4.0
-3.0 -2.0 -1.0 0.0 1.0 2.0
Precipitation All Strong El Nino Month by Month
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Jan 1958,1966,1973,1983,1992,1998
Versus 1981-2010 Longterm Average
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Feb 1958,1966,1973,1983,1992,1998
Versus 1981-2010 Longterm Average
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Mar 1958,1966,1973,1983,1992,1998
Versus 1981-2010 Longterm Average
WET
WET
WET
January
February
March
NOAA/ESRL PSD and CIRES-CU
-4.0 -3.0 -2.0 -1.0 0.0 1.0 2.0 3.0 4.0
-5.0 -4.0 -3.0 -2.0 -1.0 0.0 1.0 2.0 3.0 4.0
-2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50

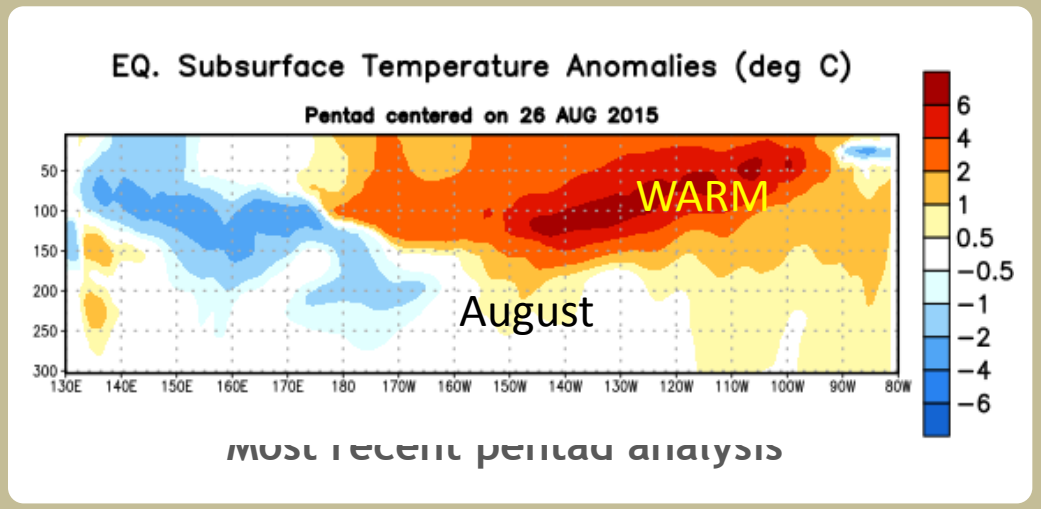
SST Departures (ºC) in the Tropical Pacific During the Last Four Weeks

During the last four weeks, equatorial SSTs were above average across the central and eastern Pacific, with the largest anomalies off the coast of S. America.



Sub-Surface Temperature Departures in the Equatorial Pacific

During the last two months, positive subsurface temperature anomalies were observed across most of the equatorial Pacific



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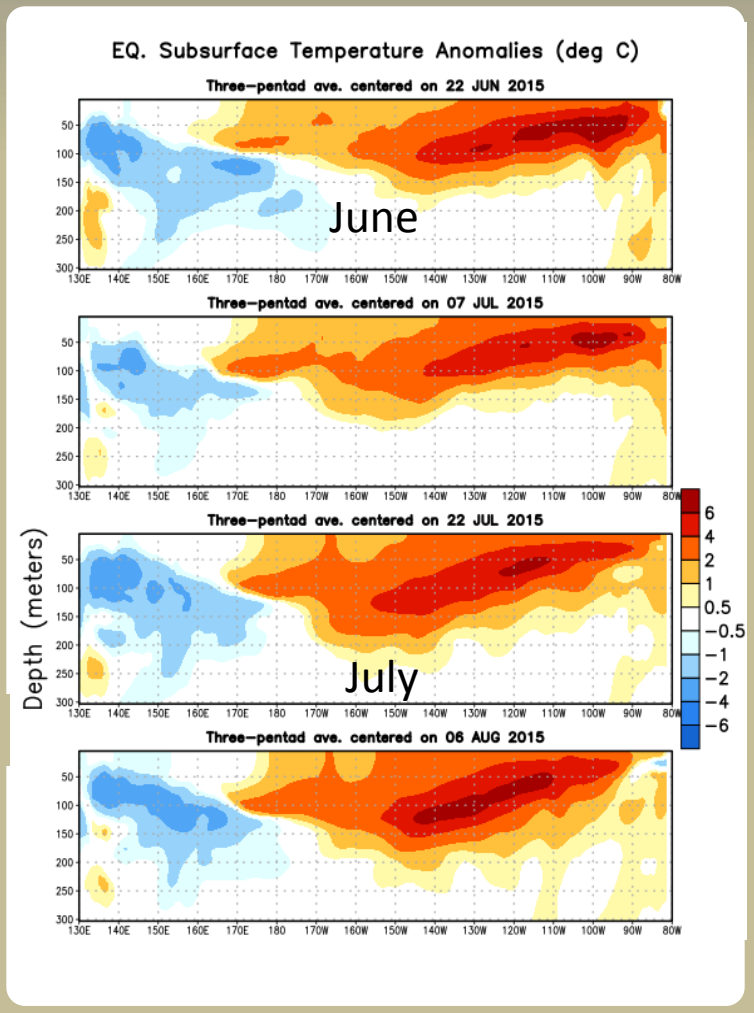
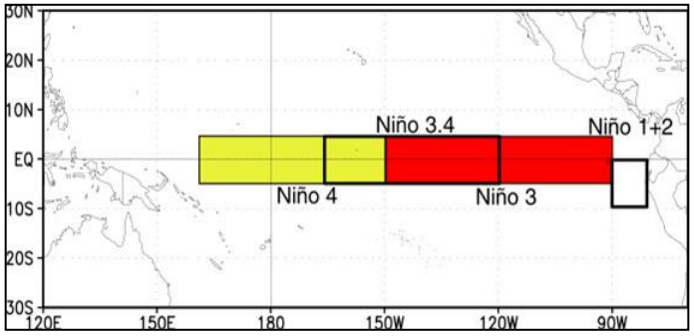
Deep Warm Waters

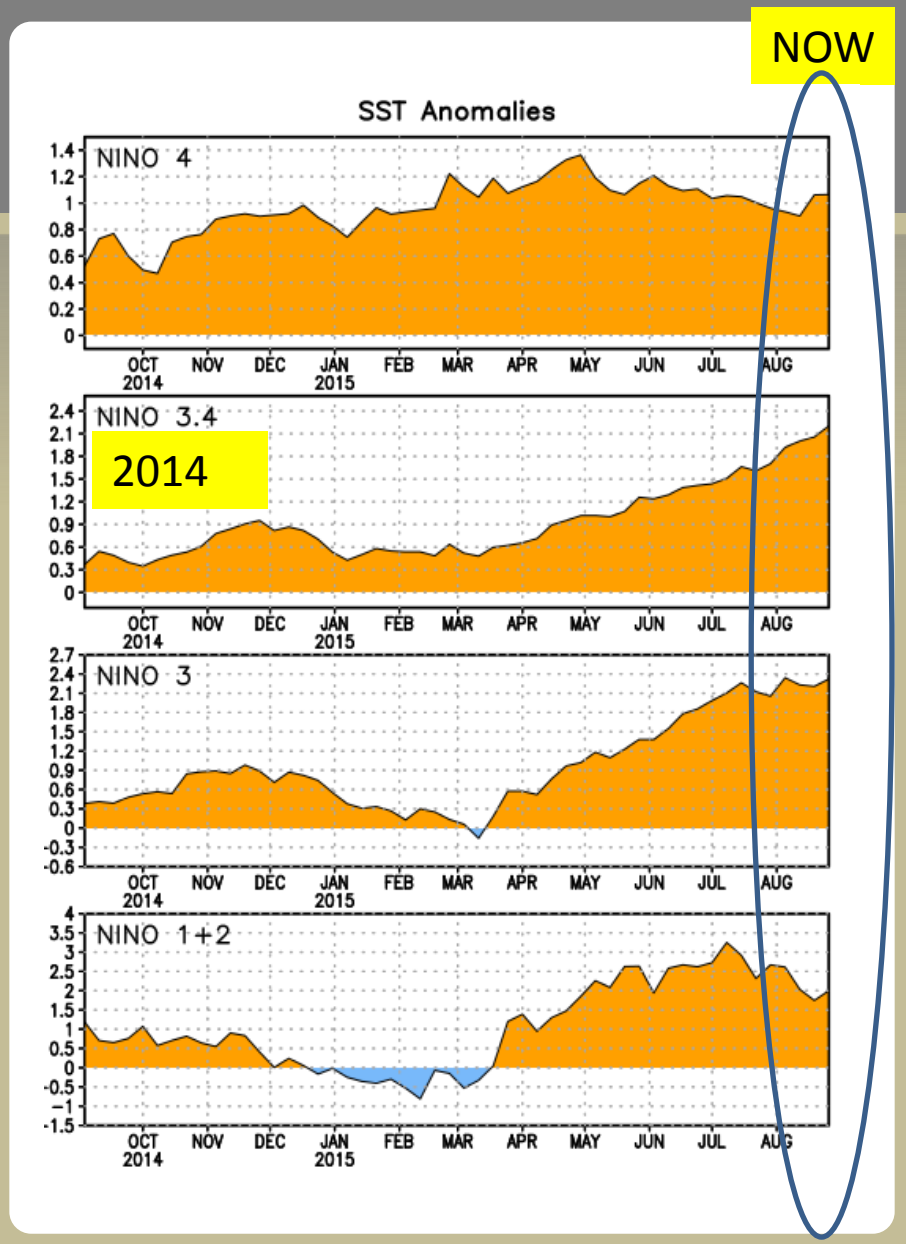


Niño Region SST Departures (ºC) Recent Evolution

The latest weekly SST departures are:

Niño 4	1.0ºC
Niño 3.4	2.1ºC
Niño 3	2.4ºC
Niño 1+2	2.2C



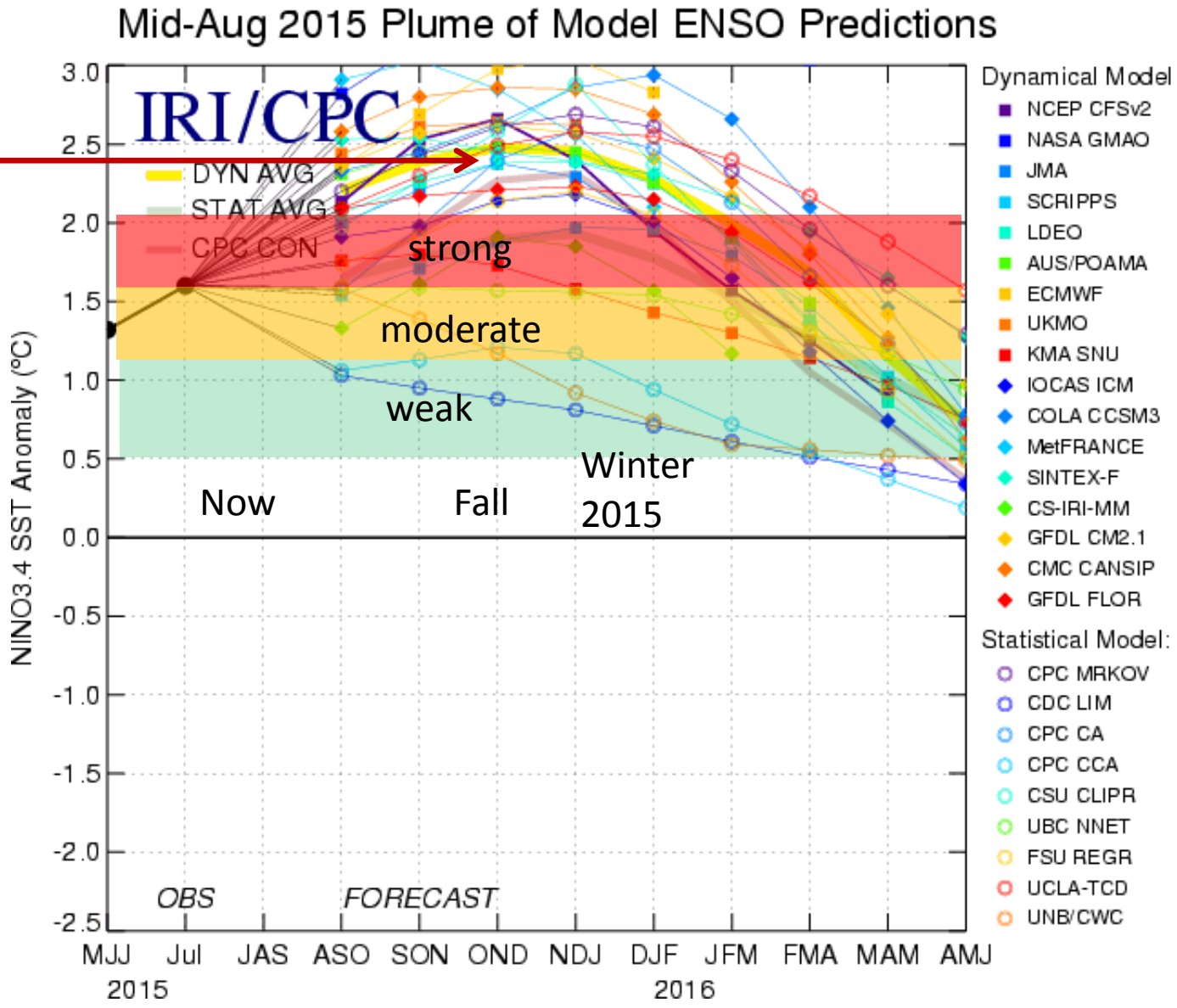


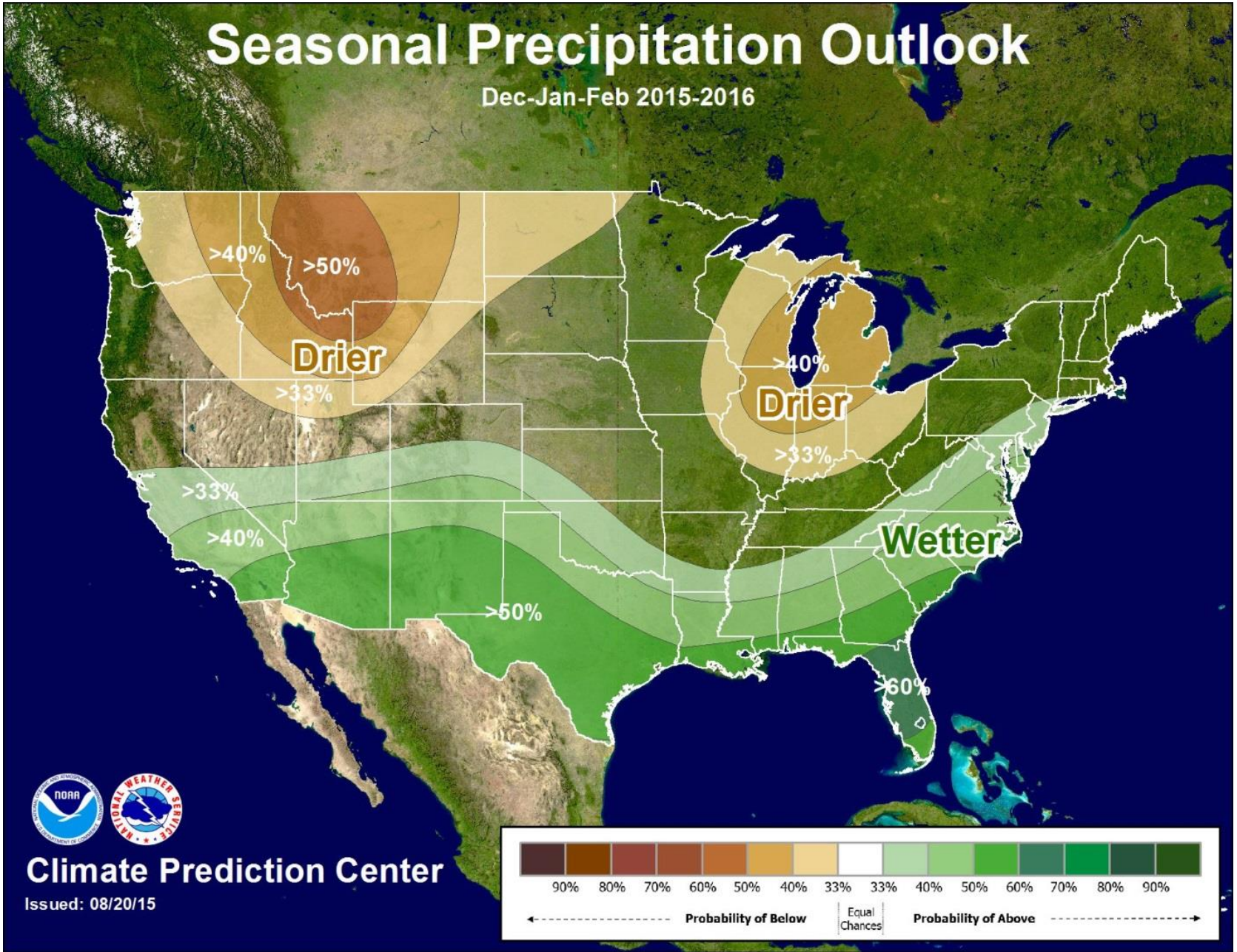
ENSO forecast

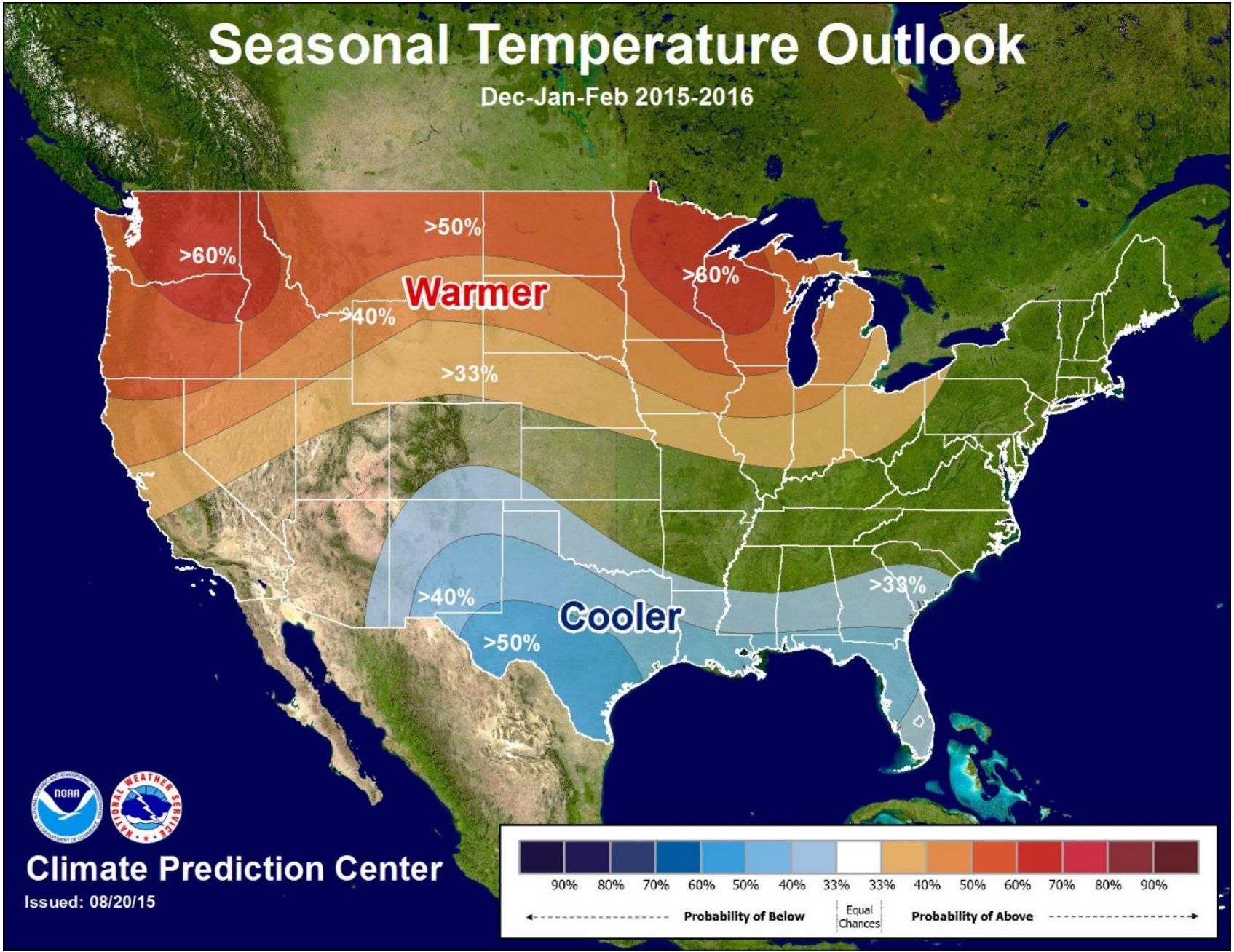
Yellow Line is Average

El Nino/ Warm SST

2.5 C average line



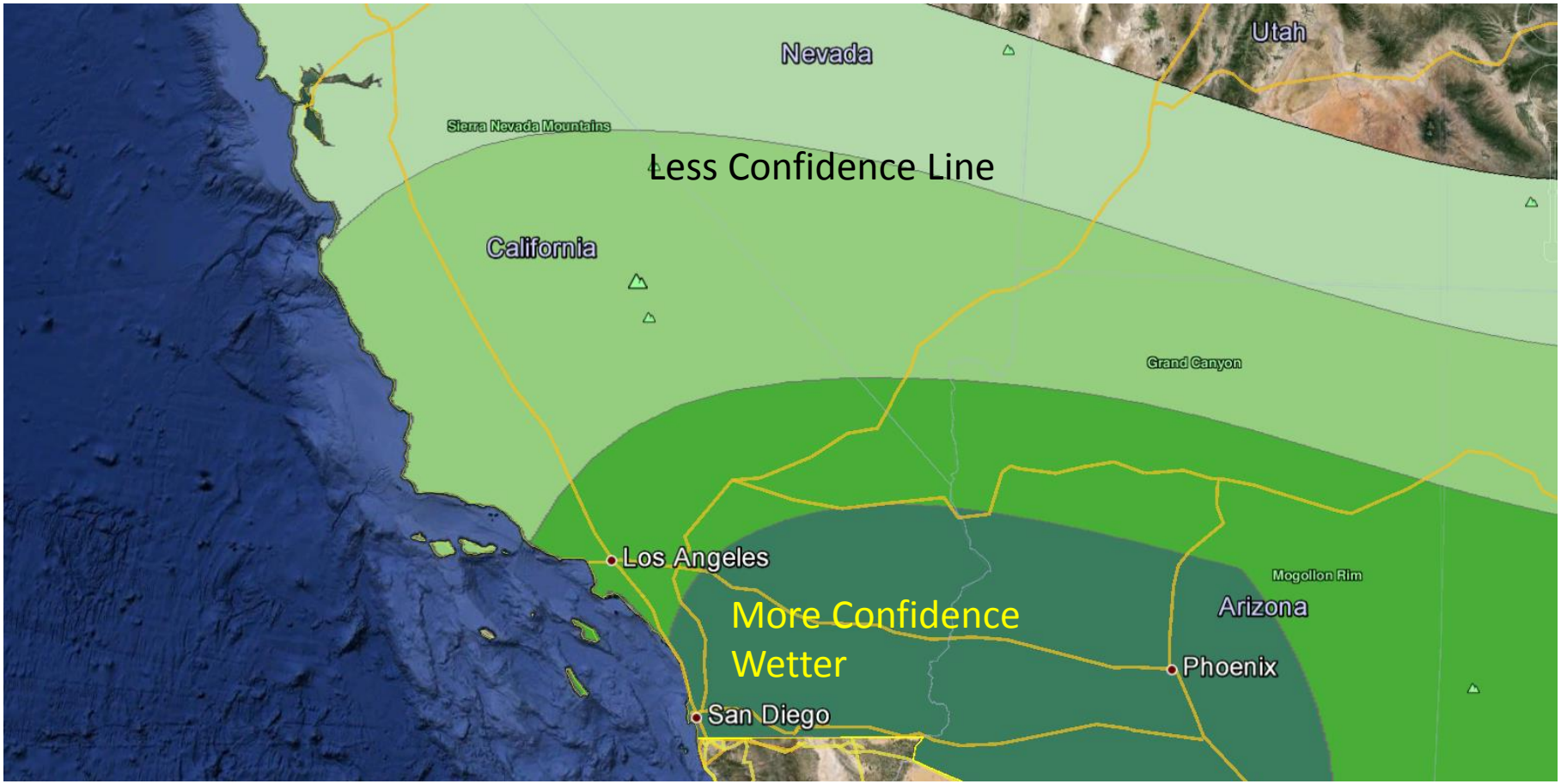

Seasonal Precipitation Outlook
Dec-Jan-Feb 2015-2016
>40%
>50%
Drier
>33%
>40%
Drier
>33%
>33%
>40%
Wetter
>50%
>60%
Climate Prediction Center
Issued: 08/20/15
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Equal Chances
Probability of Above


Seasonal Temperature Outlook
Dec-Jan-Feb 2015-2016
>60%
>50%
>40%
>33%
Warmer
>60%
>40%
>33%
>50%
Cooler
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Equal Chances
Probability of Above
Climate Prediction Center
Issued: 08/20/15

Southern California

January to March

Precipitation



Summary

- Moderate (1.3 C) El Nino is present and strengthening
- Good chance to see a Strong El Nino in fall 2015
- El Nino at the strong phase correlates to above normal precipitation in southern California but not necessarily the whole state
- El Nino can impact the jet stream to bring more frequent storms during the wet season but not necessarily stronger storms
- El Nino does not guarantee above normal precipitation and there have been several dry or average years in California during El Nino
- Drought will continue since 4-year deficits are 1 to 2 seasons missed and the entire state will need much above normal precipitation and above normal snowpack

Impacts and Actions

- Moderate snow levels (not the tropical high snow events and not the artic air mass)
- Flooding (river, urban, small stream) from repeated storms and saturated soils (not necessarily major storms) – locations may not have flooded for 5 to 25 years
- Beach and coastal erosion from repeated elevated surf and wind
- Clean storm drains, remove debris that can cause back-ups, contact city public works for road and drainage changes, or areas with historical flood impacts
- Do you live near a slope, downstream of known debris flows or a fire burn scar (excessive rain will saturate soil and could cause steeper slopes move earth)
- Check your home owners insurance to see if it covers FLOODS
- Are you in a Flood Plain? http://gis.bam.water.ca.gov/bam/
- Download the FEMA flood plain app by Atkins

Resources

Alex Tardy
alexander.tardy@noaa.gov
Warning Coordination Meteorologist
http://weather.gov/sandiego

Monitor Hazards

http://www.wrh.noaa.gov/wrh/whv/?wfo=SGX (all graphical hazards)

http://www.nws.noaa.gov/wtf/udaf/area/?site=sgx (area forecast)

http://www.weather.gov/forecasts/wfo/sectors/sgx.php (digital graphics)

Monitor weather

http://www.wrh.noaa.gov/mesowest/gmap.php?map=sgx

visit http://weather.gov/sandiego

for WATCHES, ADVISORIES and WARNINGS

Report and Follow on

El Nino updates

http://cpc.ncep.noaa.gov