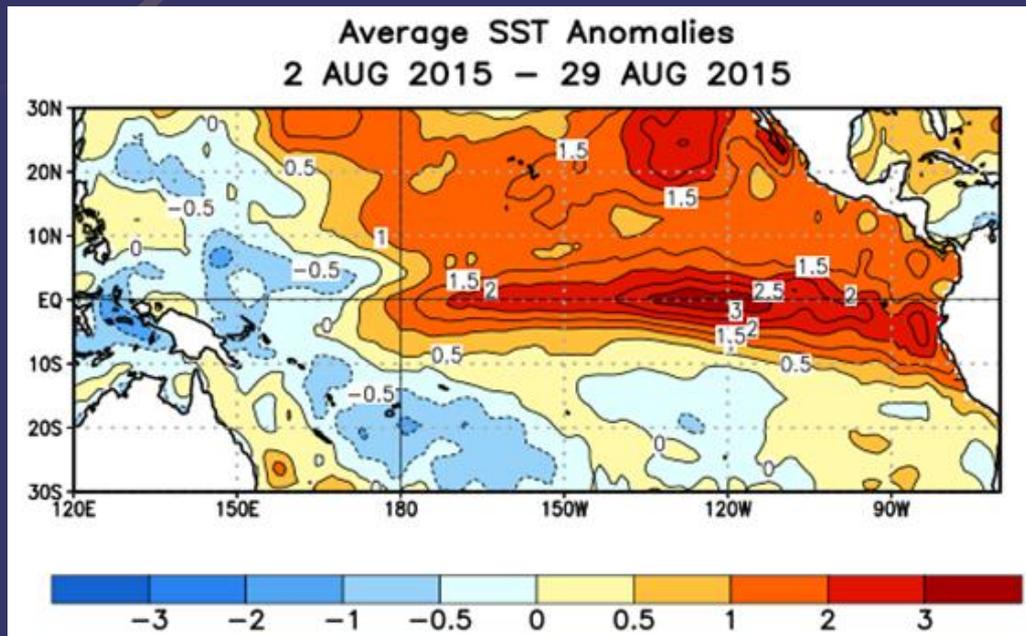


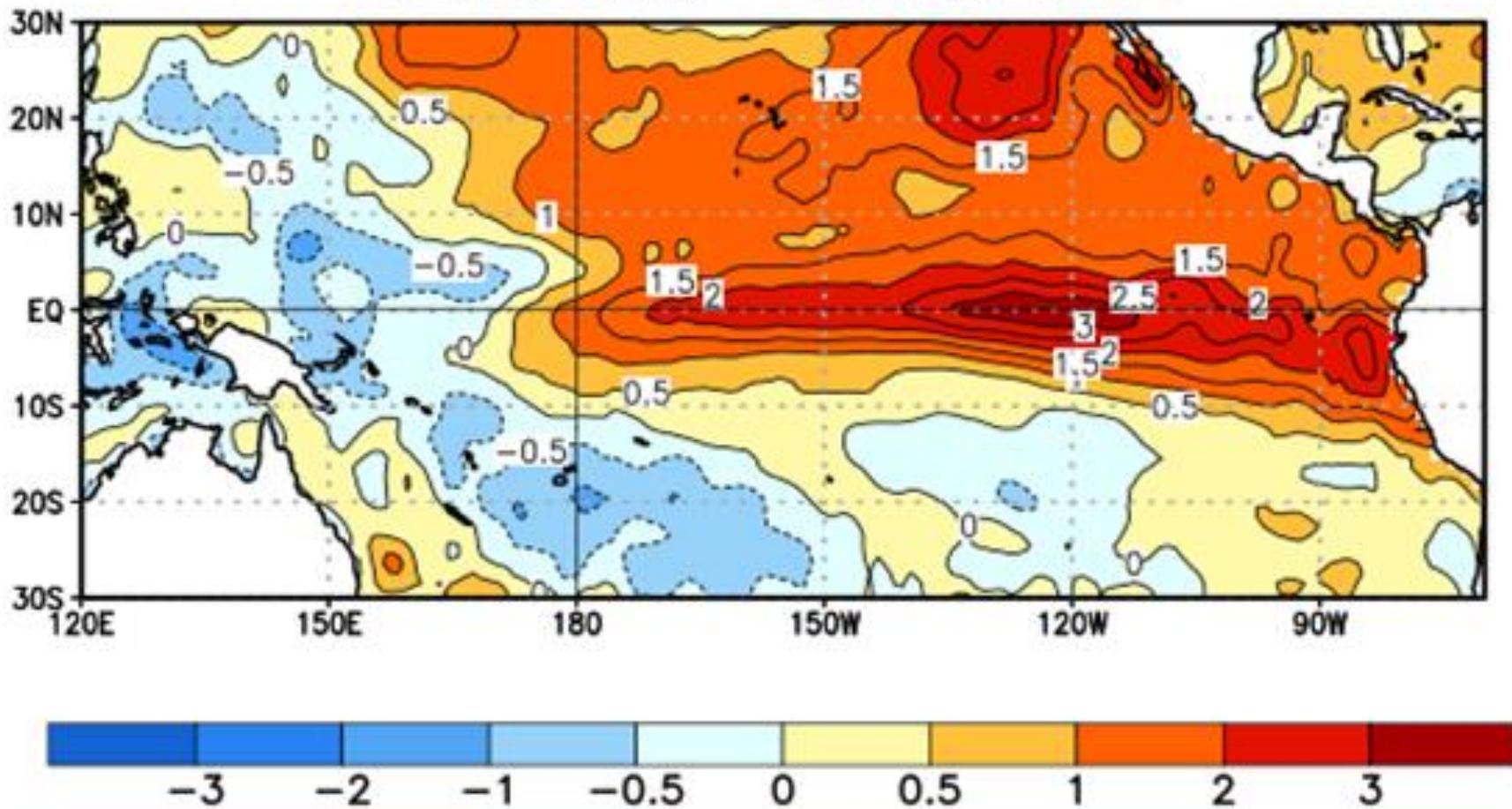


Winter Weather Outlook and El Niño



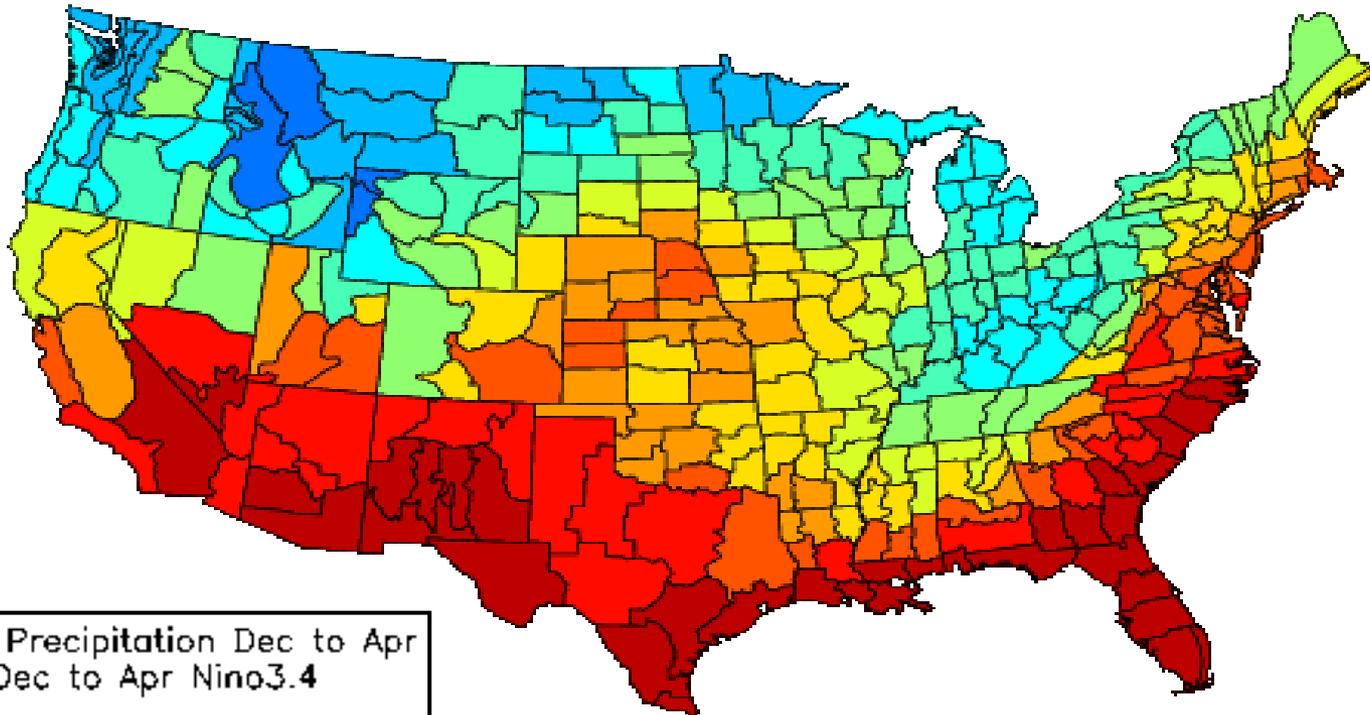
Daniel Henz
Meteorologist
Flood Warning Branch

Average SST Anomalies 2 AUG 2015 – 29 AUG 2015

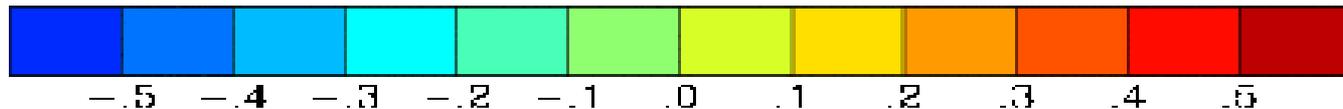


Fall/Winter/Spring Seasons

Typically, the El Niño Climate signal is more evident during November-April months "Cold Season" across U.S.



Correlation Precipitation Dec to Apr
With Dec to Apr Niño3.4
1948-15



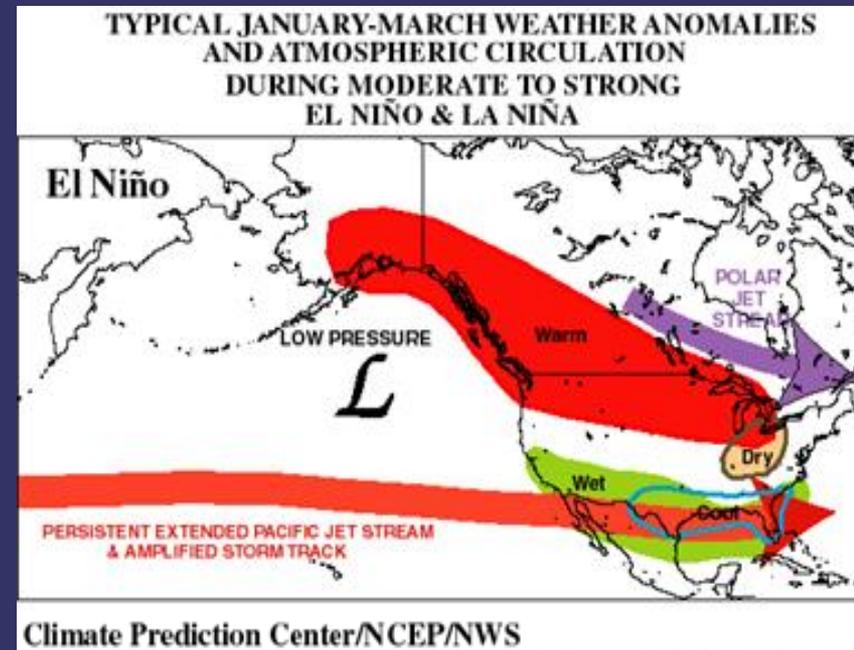
NOAA/ESRL PSD and CIRES-CU

Fall/Winter/Spring Seasons

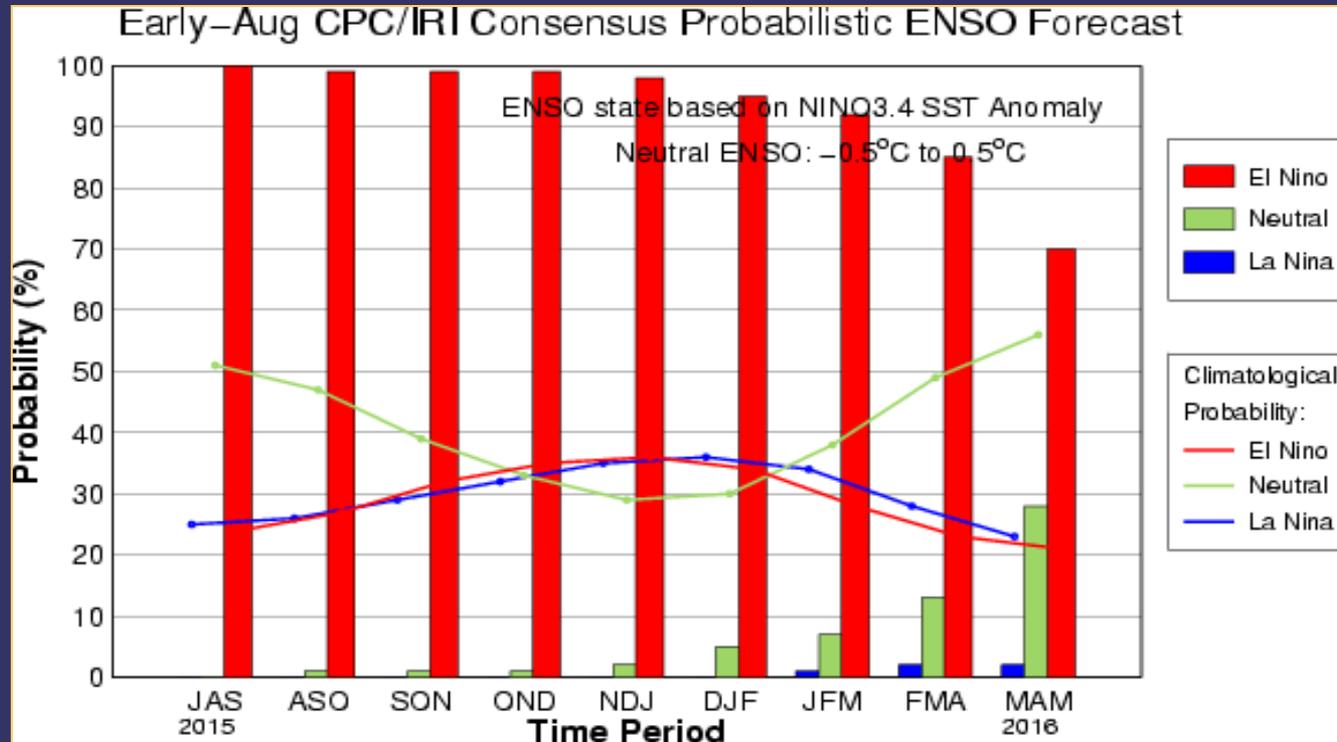
Typically, the El Niño Climate signal is more evident during November-April months “Cold Season” across U.S.

- Impacts:

- Persistent and extended Pacific Jet Stream.
- Southward shift of storm track.
- Cyclone genesis area amplified west of CA as opposed to Pac-NW.
- Wet/Cool across Southern US & Dry/mild across northern US.



CPC ENSO Forecast

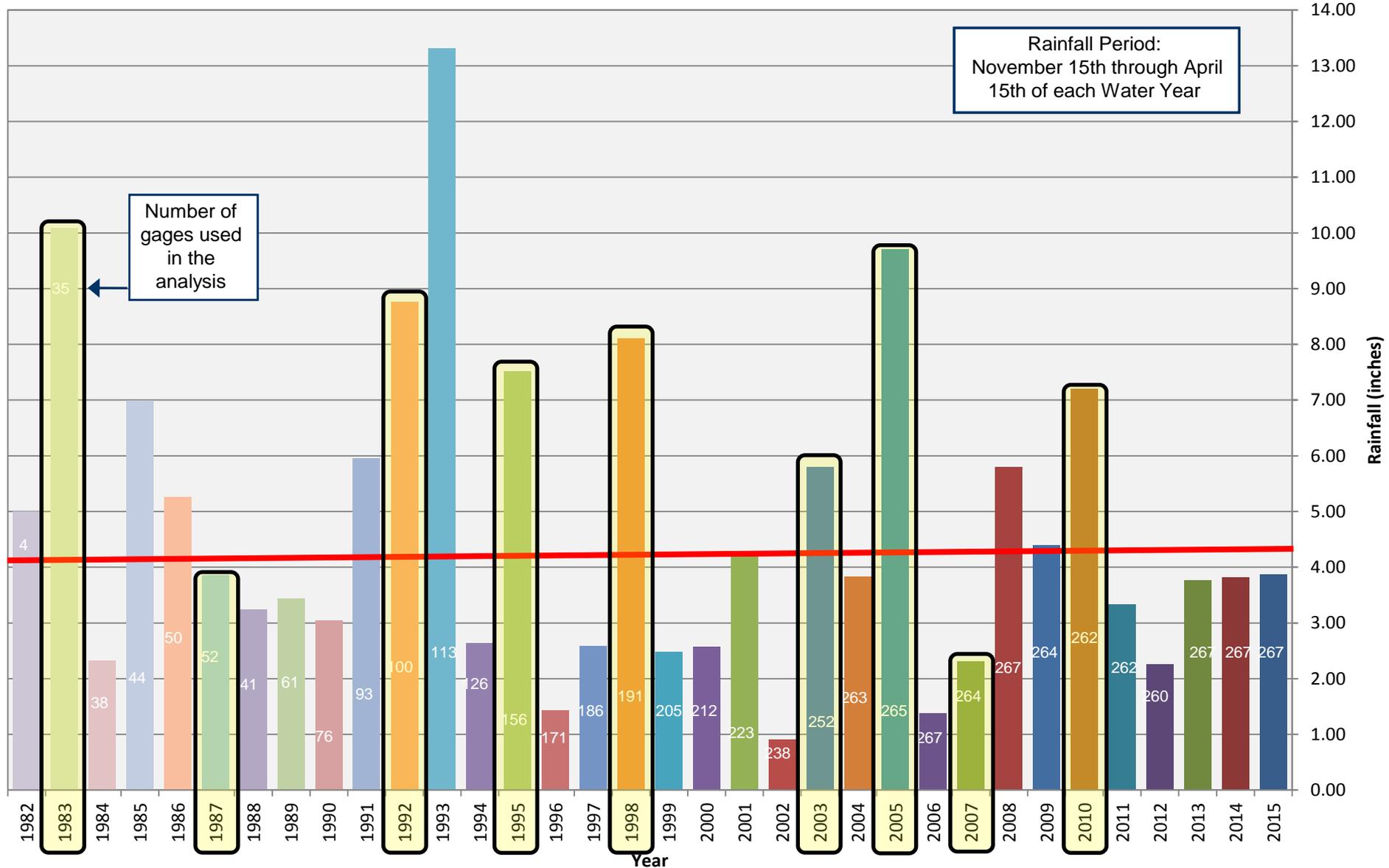


- Chances of El Niño continuation through the remainder of the year >95%, continuation through Spring 2016 >85%.



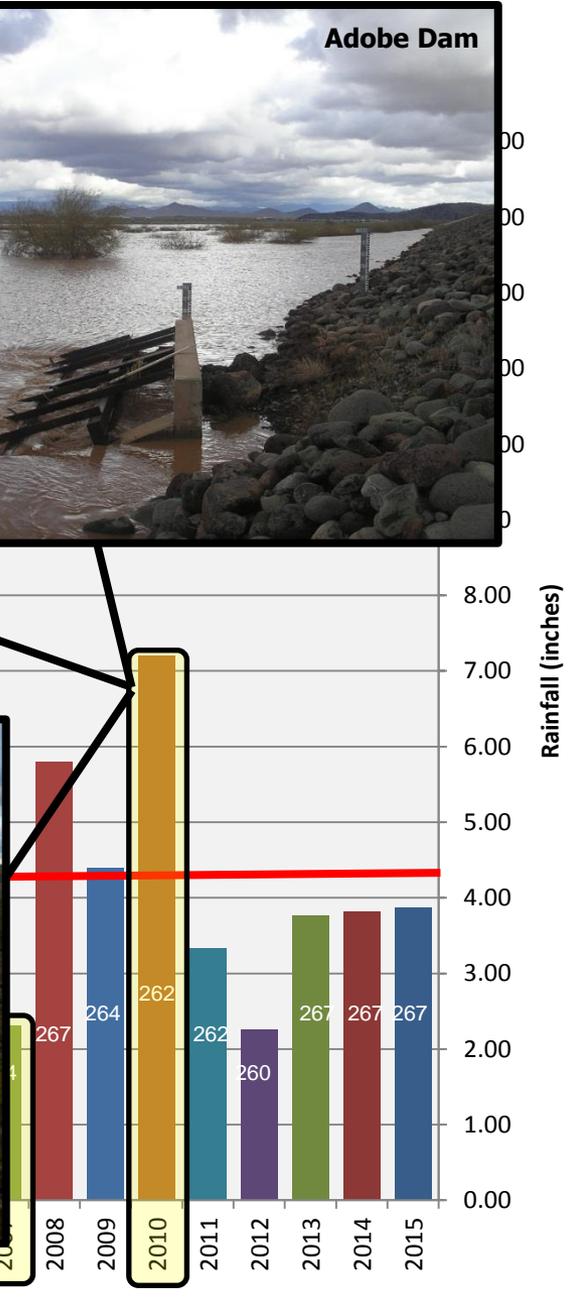
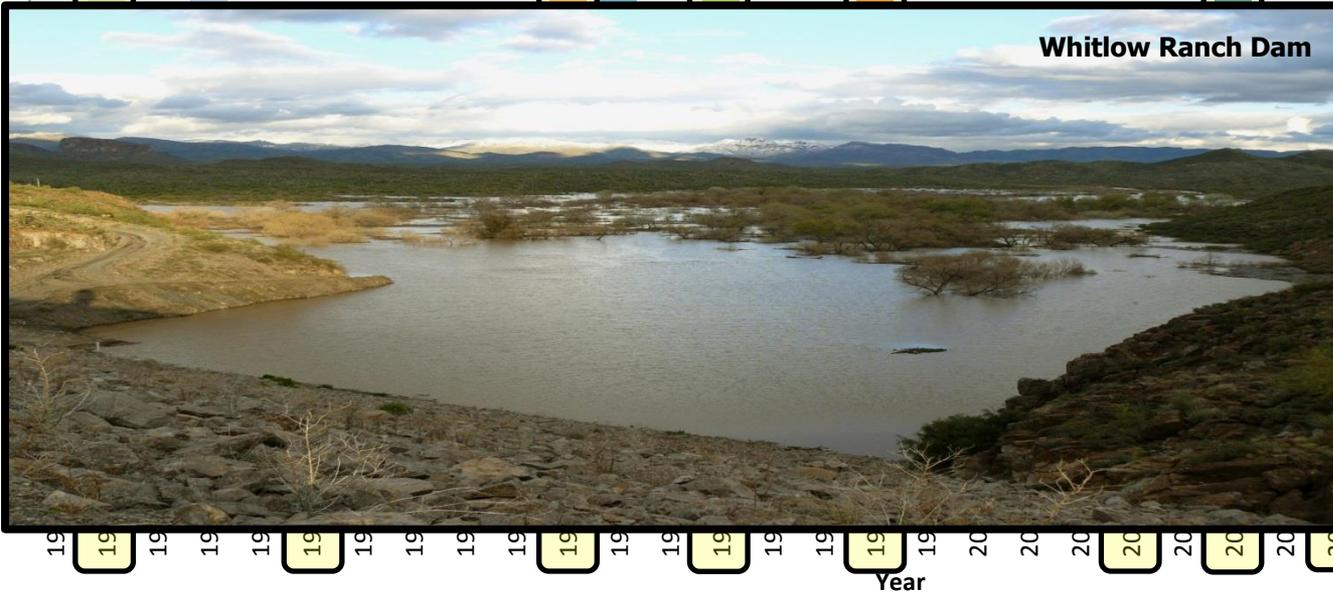
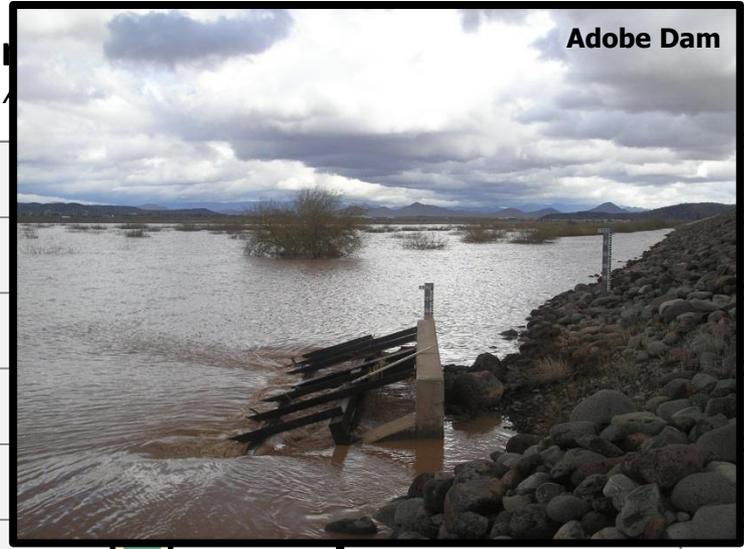
Average Winter Season Rainfall

Flood Control Distric of Maricopa County ALERT Rain Gages



— 34 year average, 4.34"

— Winter following El Niño Onset



— 34 year average, 4.34"

— Winter following El Niño Onset

Rainfall Summary

Cold Season Rainfall, Percent of Normal After Onset of El Niño			
El Niño Episodes		Maricopa County *	Phoenix Sky Harbor
Strength	# of Events	4.34	4.15
Weak	6	137.9%	95.5%
Moderate	8	146.1%	138.3%
Strong	2	182.5%	184.0%
All Episodes	16	152.4%	128.0%

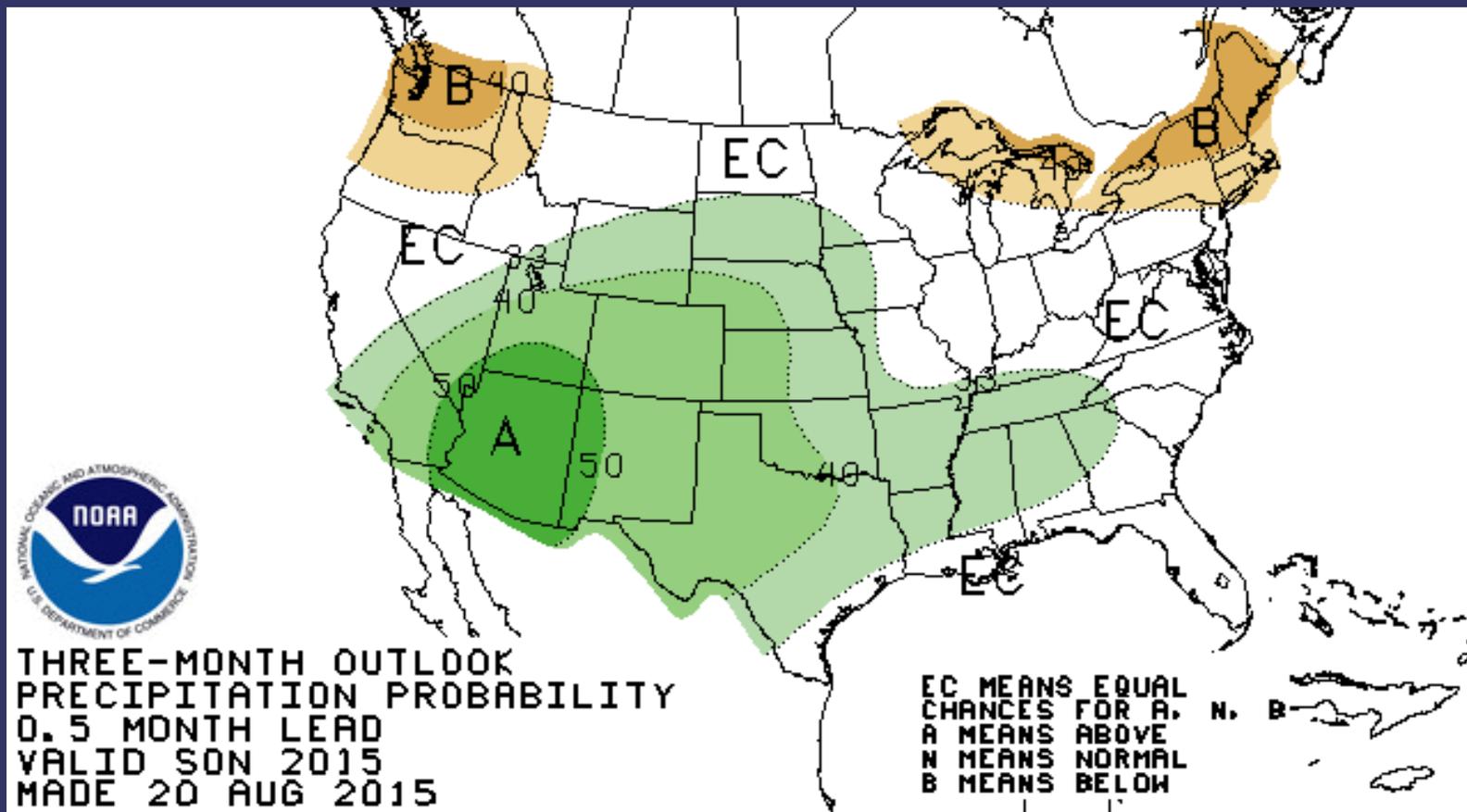
* Maricopa County Rainfall: 9 total El Niño Episodes (2 Weak, 5 Moderate, 2 Strong)

- Well Above Normal rainfall for all locations following the onset of Moderate/Strong El Niño with few exceptions.



Around the Corner...

CPC Forecast calls for above average rainfall this Fall



CPC 3-Month Outlooks (Winter 2015-2016)

CPC Forecast Calls For:

- Winter/Spring: increasing probabilities for above average rainfall (strongest El Niño response during winter months).

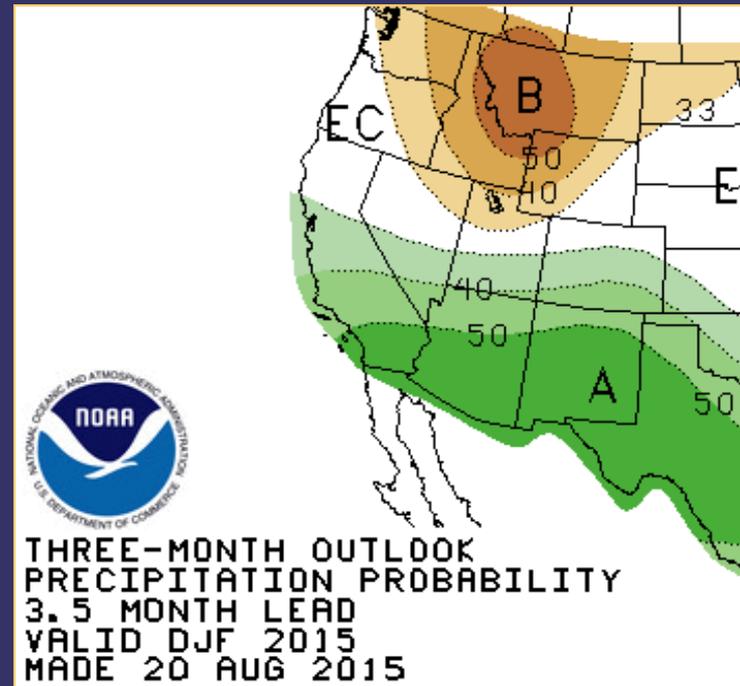
Dec-Jan-Feb



Jan-Feb-Mar



Feb-Mar-Apr



Final Thoughts

- A moderate/strong El Niño is currently established across the Equatorial Pacific. Forecast to strengthen and last into 2016. May rival 1982 & 1997 events.
- El Niño climate signal much stronger in winter than summer, meaning less variability in predictions due to other large scale drivers. No guarantees but "stacking the deck" in favor of wetter conditions.
- El Niño has no effect on individual storms or strength of passing cold fronts. Think in terms of "frequency" of passing weather systems.
- History suggests we could see upwards of 140%-180% of normal rainfall during the AZ Cold Season (averaged across ALERT gages).

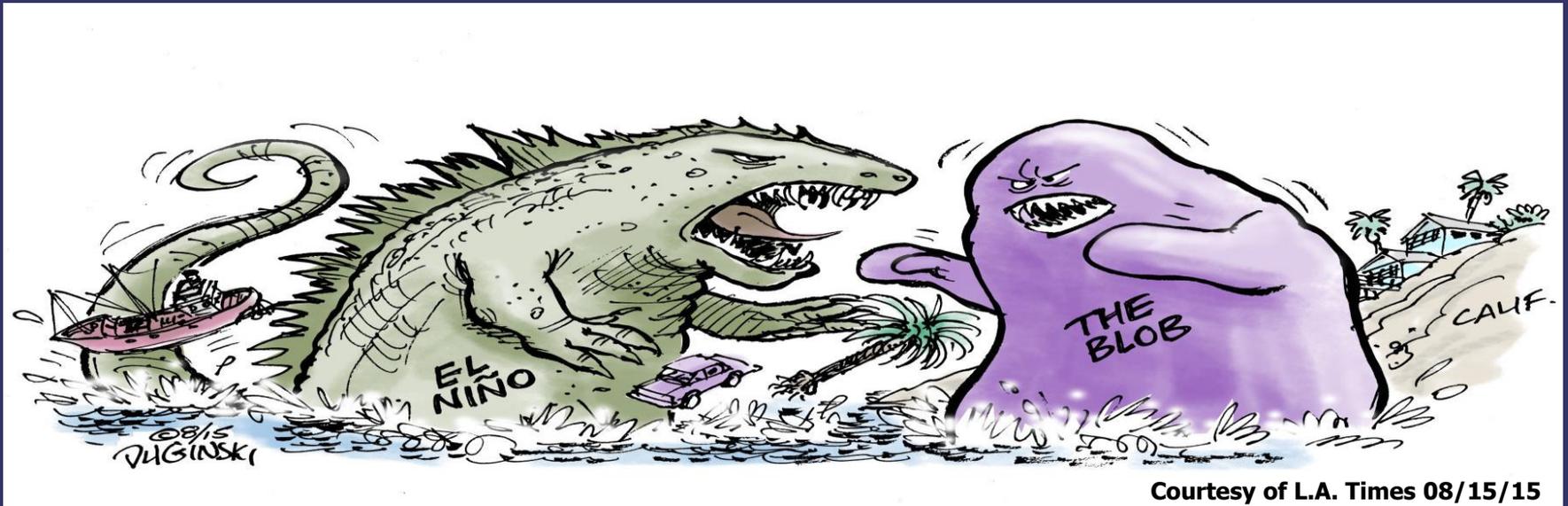


Data Sources/References

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- Historic monthly rainfall data, NOAA/NWS, NOWData:
<http://www.sercc.com/nowdata>
- Historic ALERT rainfall data, Flood Control District of Maricopa County:
<http://www.fcd.maricopa.gov/Rainfall/rainfall.aspx>
- *El Niño and La Niña Episodes and Their Impact on the Weather in the Tucson Metropolitan Area*: Glenn Lader, WFO Tucson, AZ, 2012:
<http://www.wrh.noaa.gov/wrh/talite1201.pdf>



Thank You! Questions...?



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