

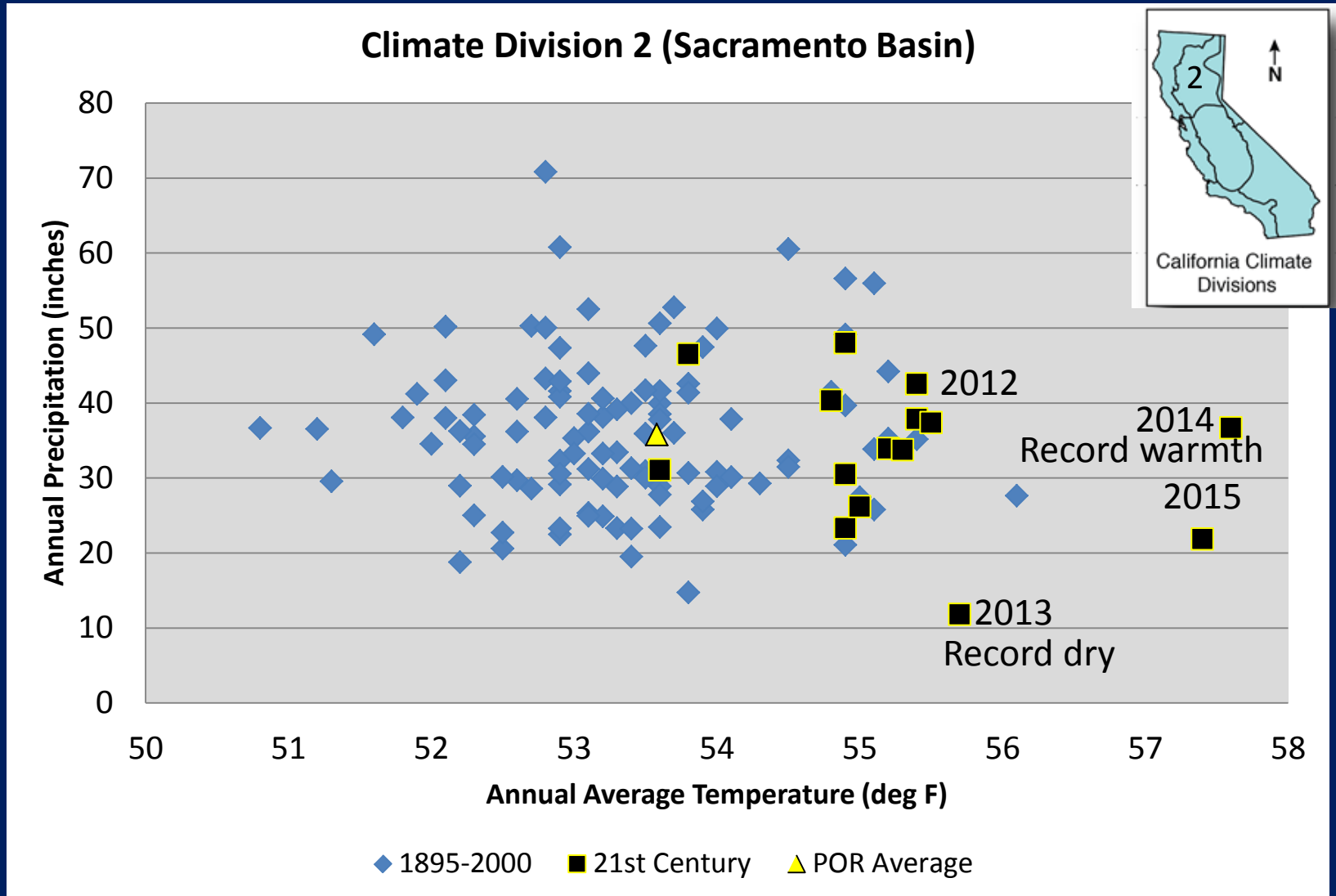
State of the Climate February 2016

Michael Anderson
State Climatologist

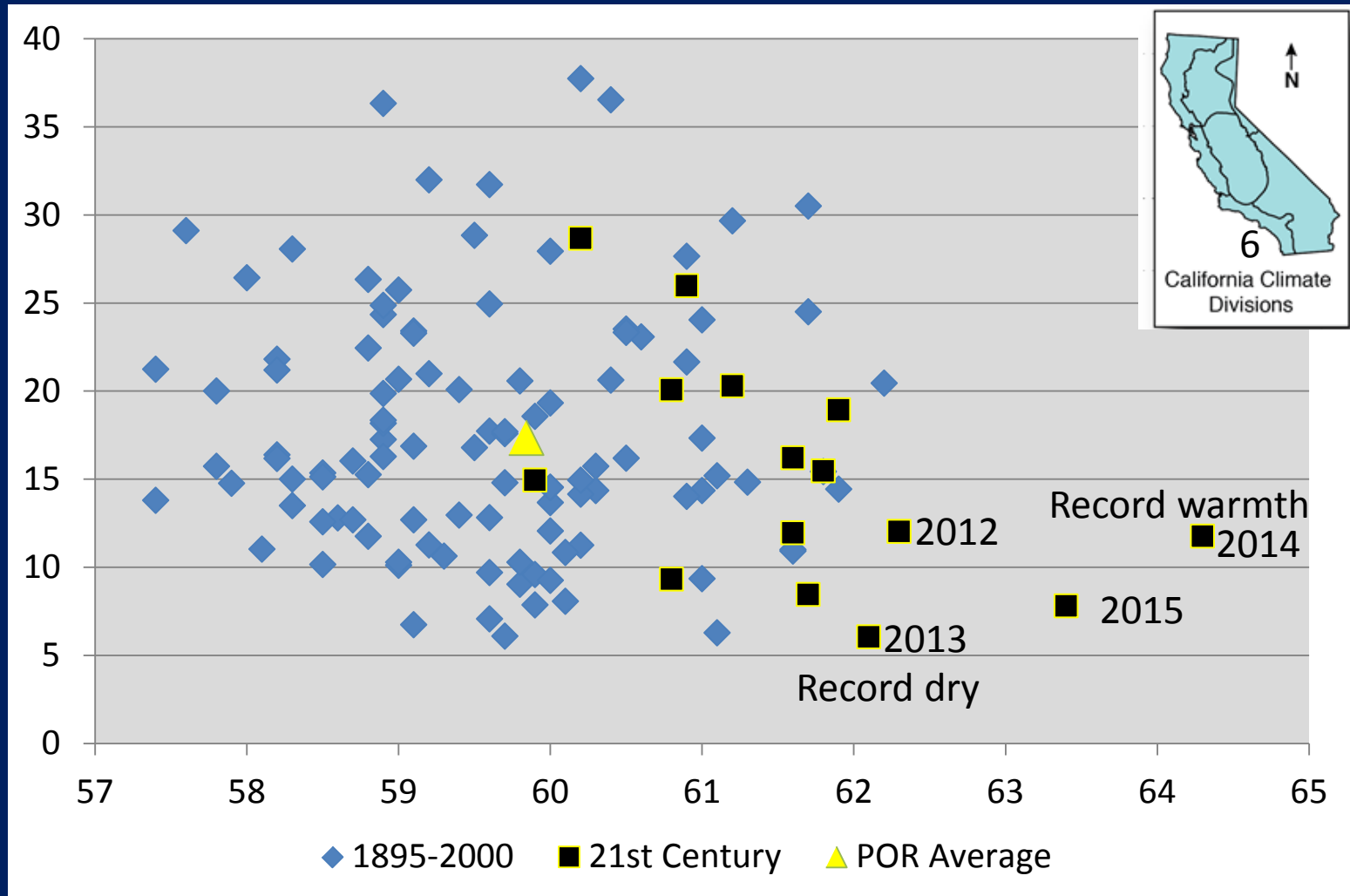
Talk Overview

- Precipitation/Temperature Distributions
- Snowpack and Sierra Temperature
- El Nino Conditions
- Outlook Update

NOAA Climate Division 2 Calendar Year Data 1895-2015

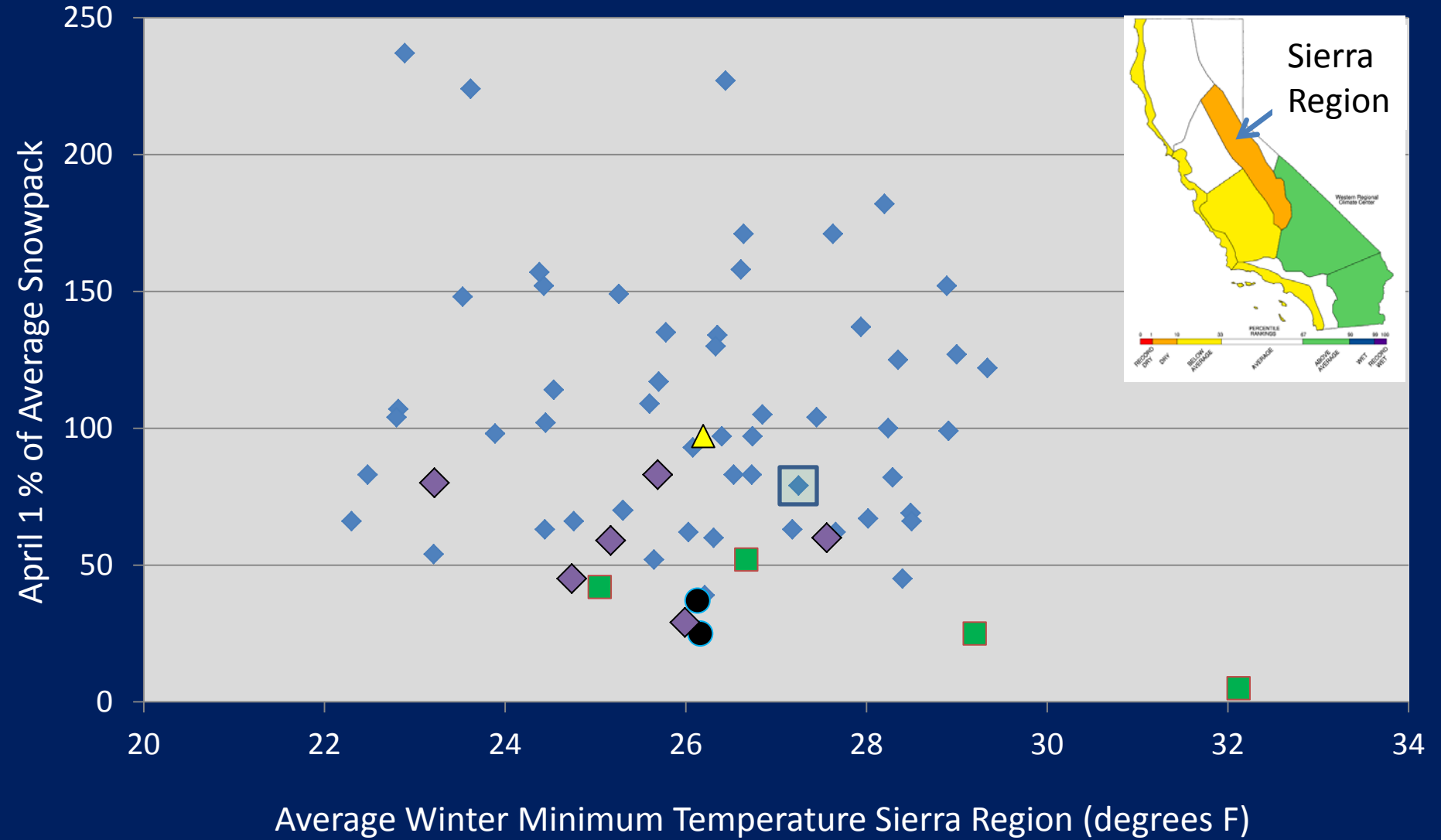


NOAA Climate Division 6 Calendar Year Data 1895-2015

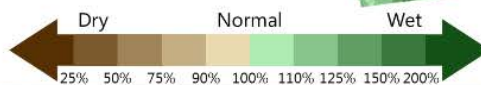
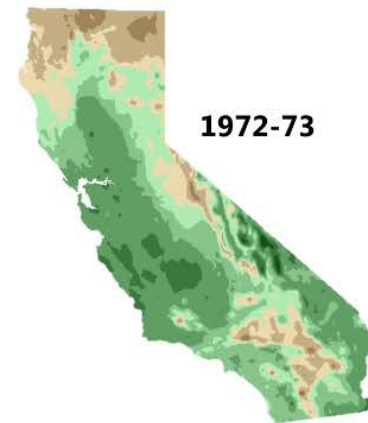
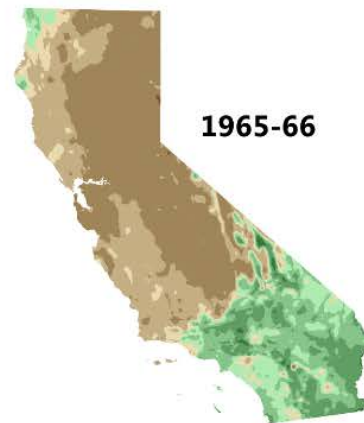
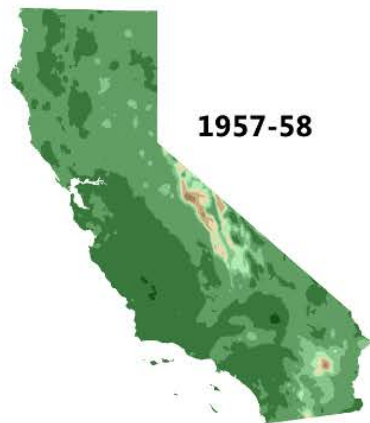


Statewide April 1 Snowpack versus Average Winter (DJF) Minimum Temperature

◆ 1950-2011 ■ 2012-2015 ● 1976-1977 ◆ 1987-1992 ▲ POR Average



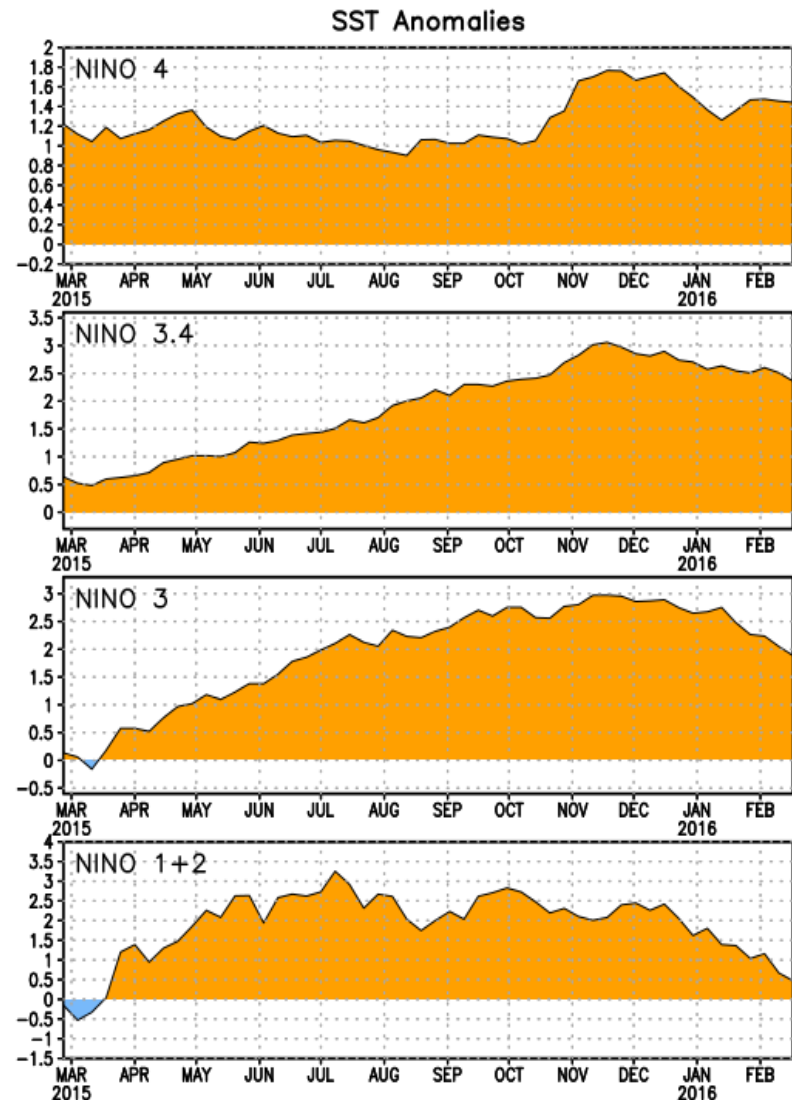
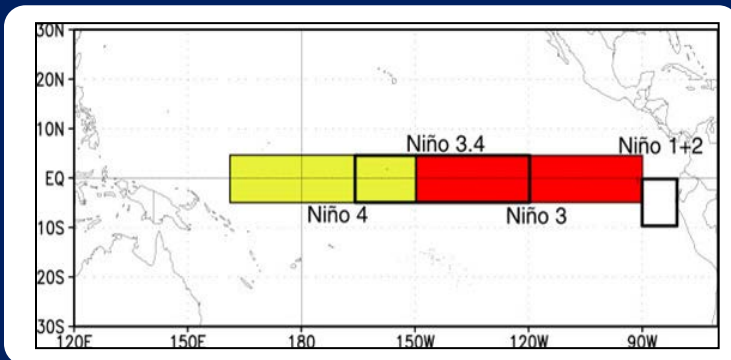
Historical Strong El Niños



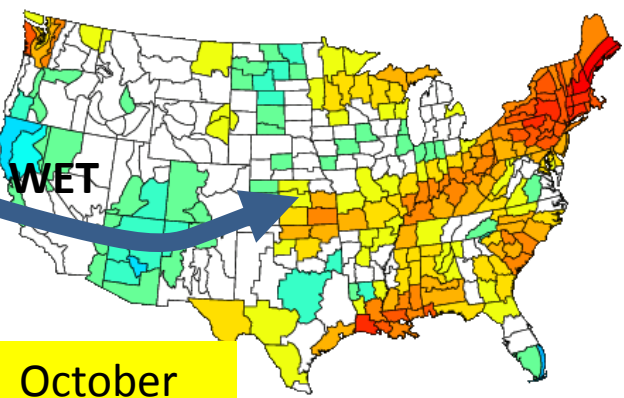
Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

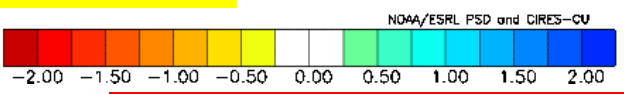
Niño 4	1.4°C
Niño 3.4	2.4°C
Niño 3	1.9°C
Niño 1+2	0.5°C



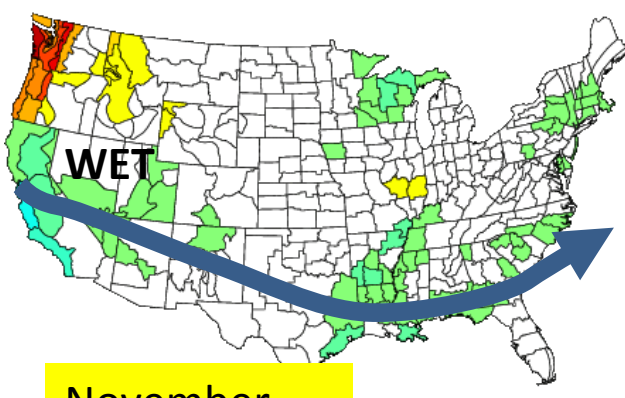
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Oct 1957,1965,1972,1982,1991,1997
Versus 1981-2010 Longterm Average



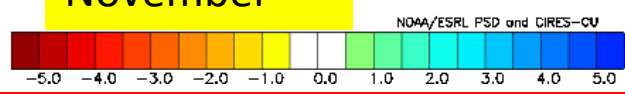
October



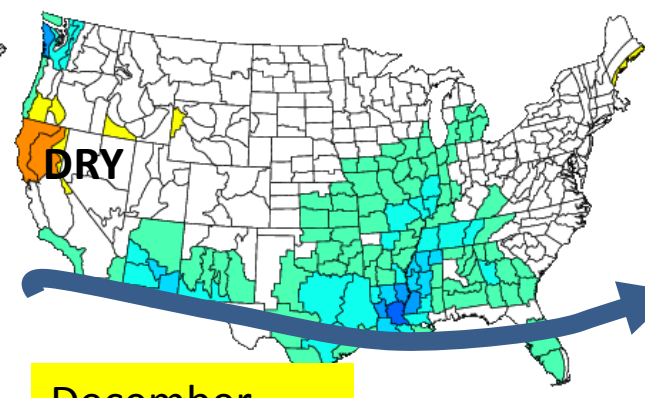
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Nov 1957,1965,1972,1982,1991,1997
Versus 1981-2010 Longterm Average



November



NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Dec 1957,1965,1972,1982,1991,1997
Versus 1981-2010 Longterm Average

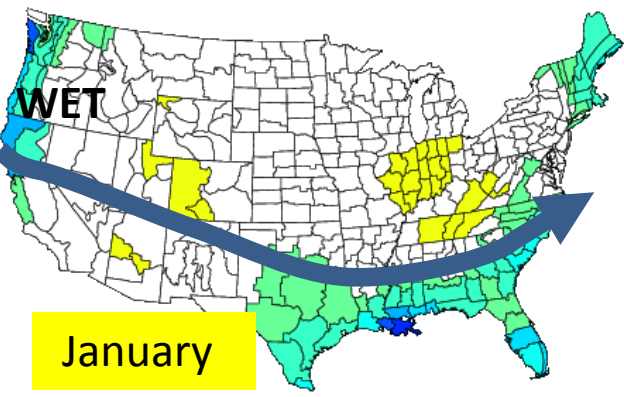


December

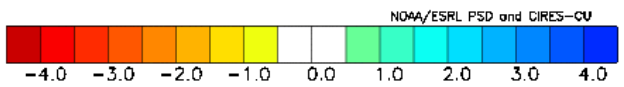


Precipitation All *Strong* El Nino Month by Month

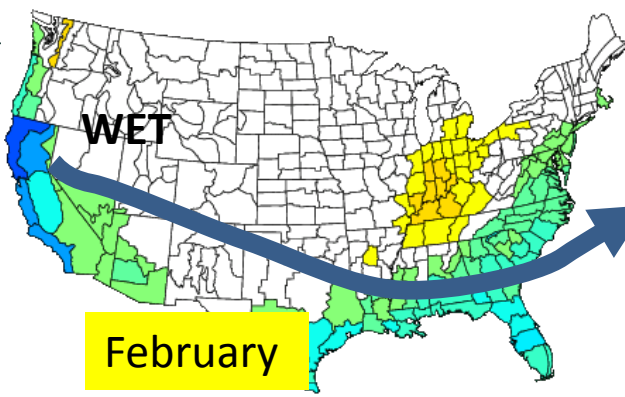
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Jan 1958,1966,1973,1983,1992,1998
Versus 1981-2010 Longterm Average



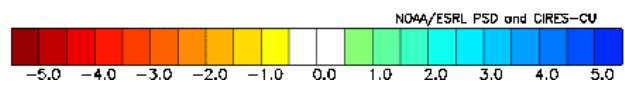
January



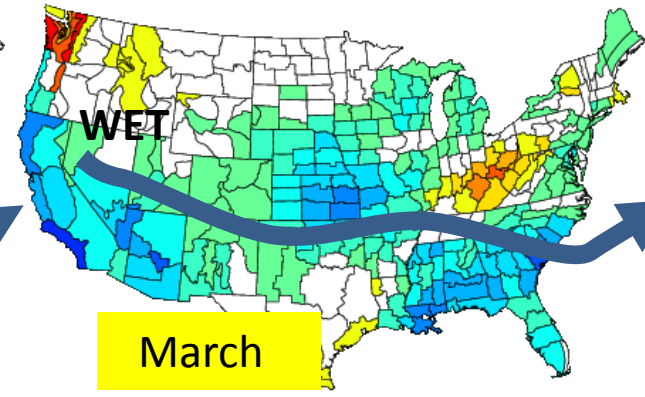
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Feb 1958,1966,1973,1983,1992,1998
Versus 1981-2010 Longterm Average



February



NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
Mar 1958,1966,1973,1983,1992,1998
Versus 1981-2010 Longterm Average



March





Northern Sierra 8-Station

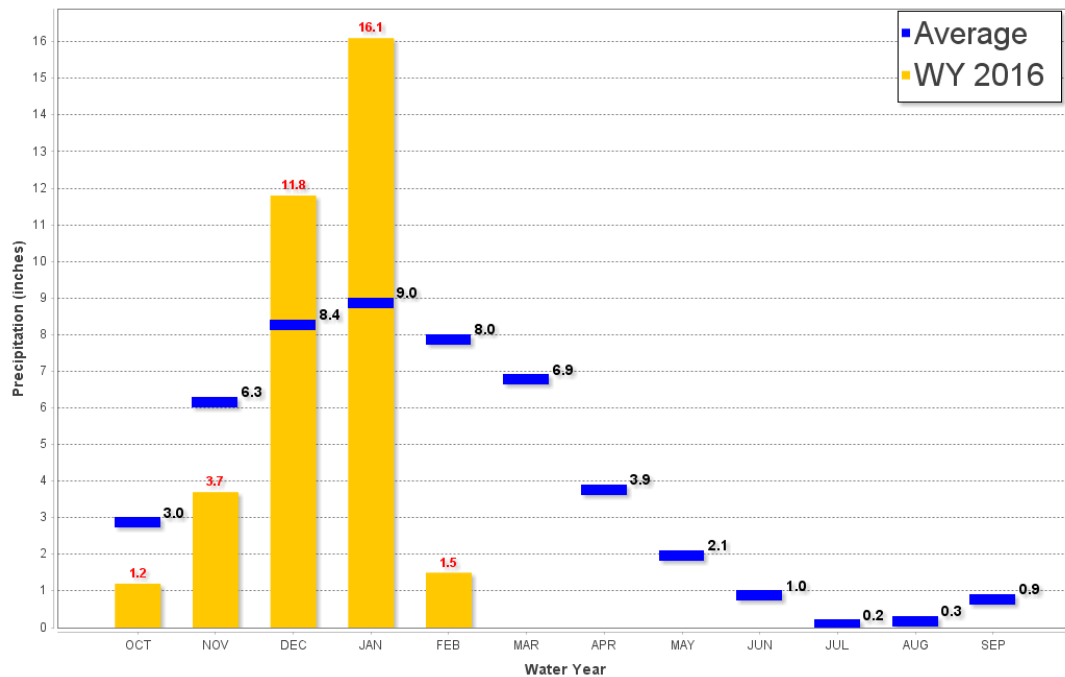
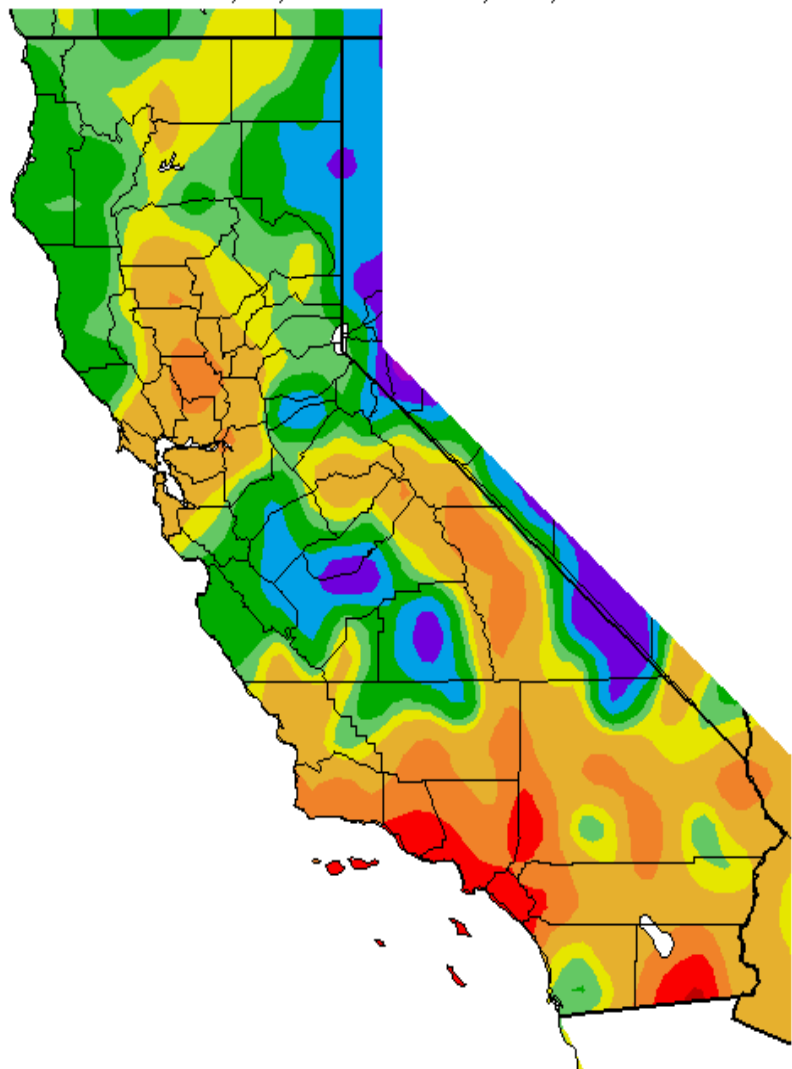
Precipitation Index for Water Year 2016 - Updated on February 18, 2016 08:30 AM

Note: Monthly totals may not add up to seasonal total because of rounding

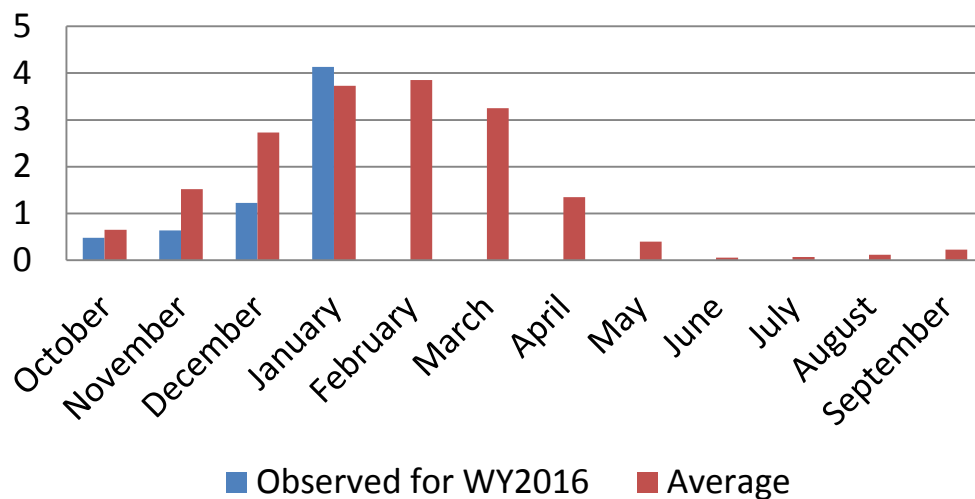
Water Year Monthly totals are calculated based on Daily precipitation data from 12am to 12am PST

Percent of Average Precipitation (%)

10/1/2015 - 2/16/2016



Southern California Coastal (CD 6)



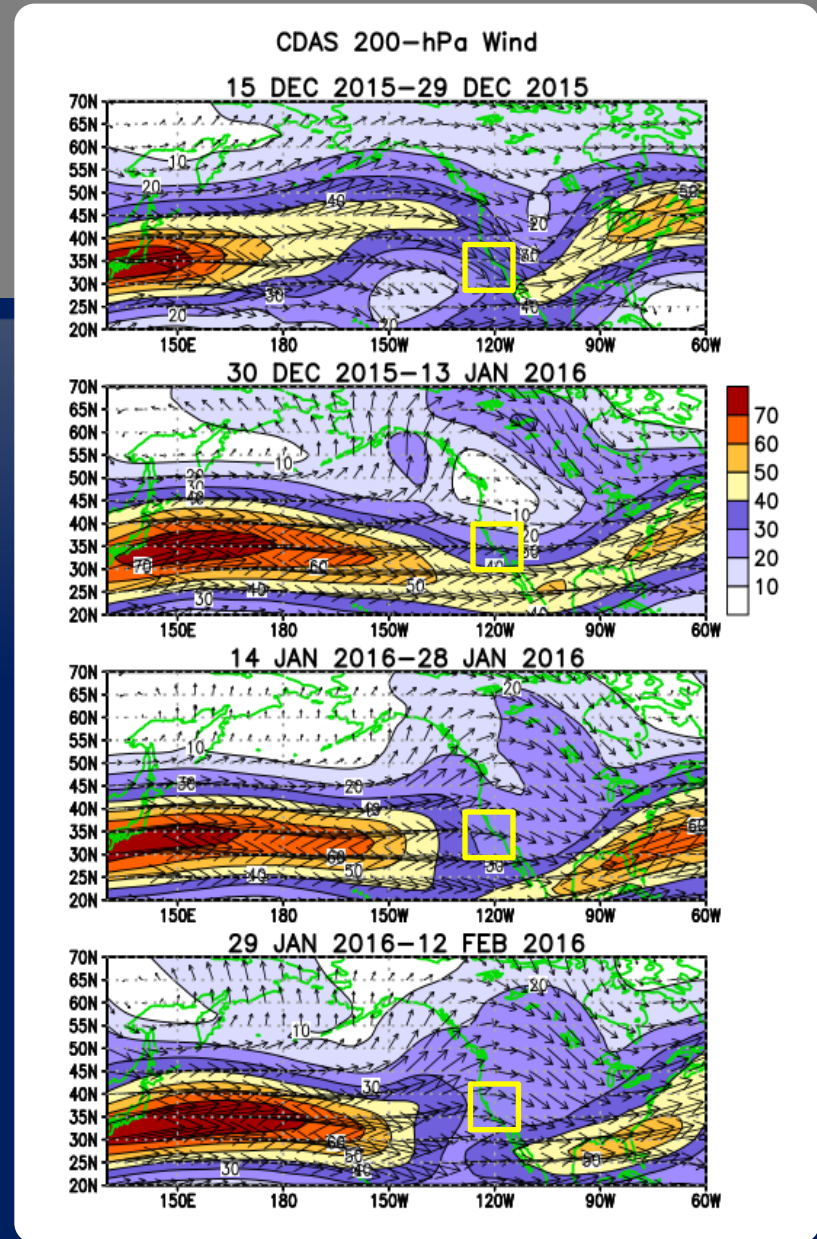
Generated 2/17/2016 at WRCC using provisional data.
NOAA Regional Climate Centers

Atmospheric anomalies over the North Pacific and North America During the Last 60 Days

During the last half of December, above-average heights/temperatures dominated over the East and near-to-below average heights/temperatures were observed over the West.

During the first half of January, the Pacific jet stream extended eastward and strengthened.

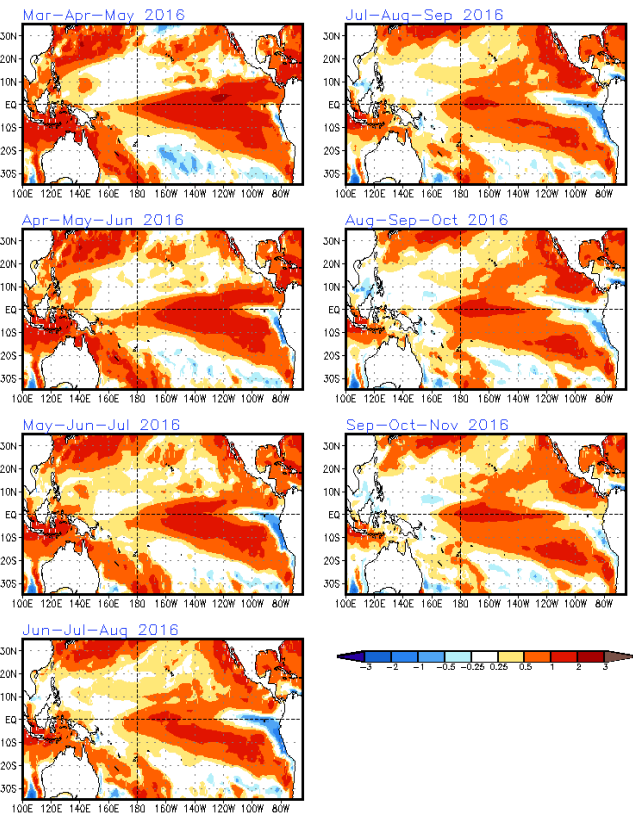
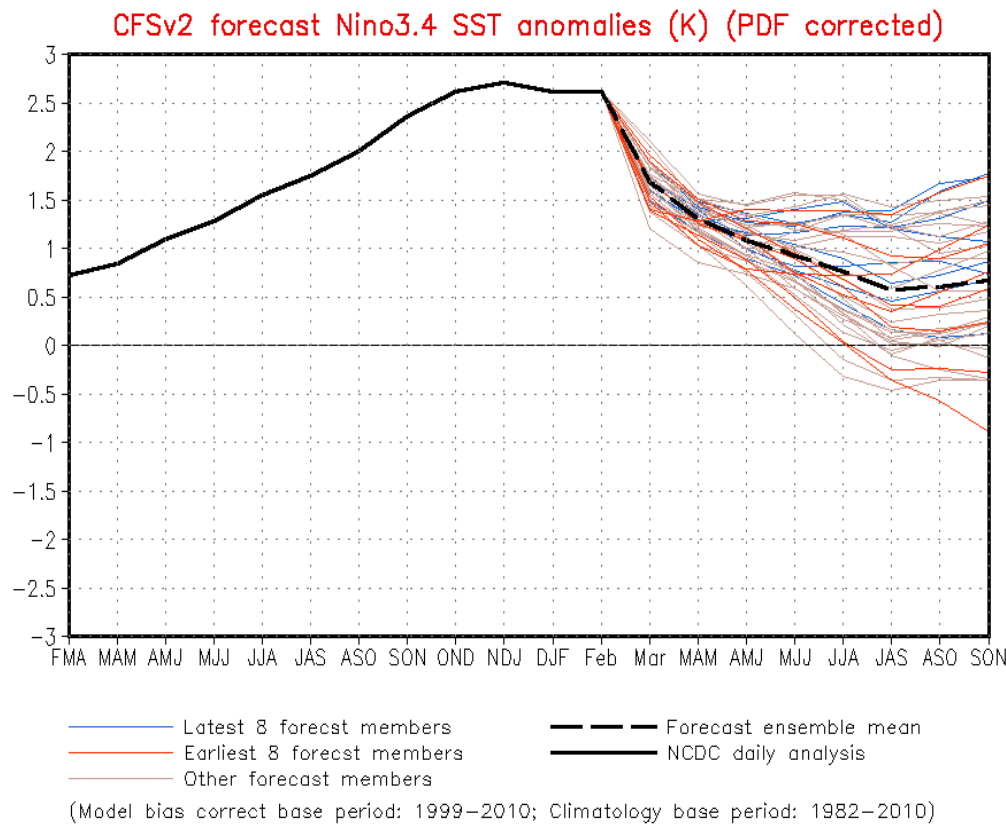
Since mid January, an anomalous trough over the eastern U.S. contributed to below-average temperatures over the region, while anomalous ridging over the western U.S. was associated with above-average temperatures.



SST Outlook: NCEP CFS.v2 Forecast (PDF corrected)

Issued: 15 February 2016

The CFS.v2 ensemble mean (black dashed line) predicts El Niño through much of 2016.



IRI/CPC Pacific Niño 3.4 SST Model Outlook

Positive Niño 3.4 SST anomalies are predicted to weaken into the Northern Hemisphere Spring 2016.

Most models suggest a transition to ENSO-neutral by May-June-July (MJJ) 2016.

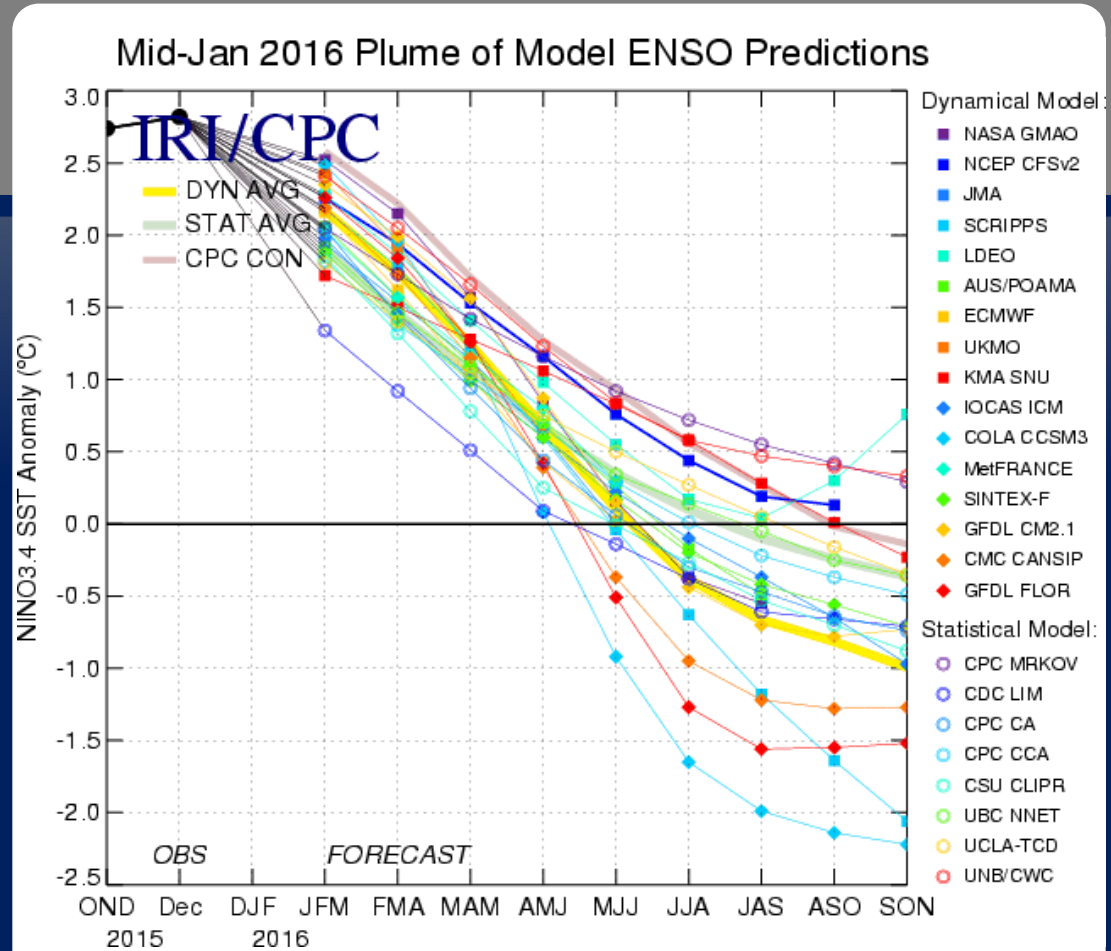
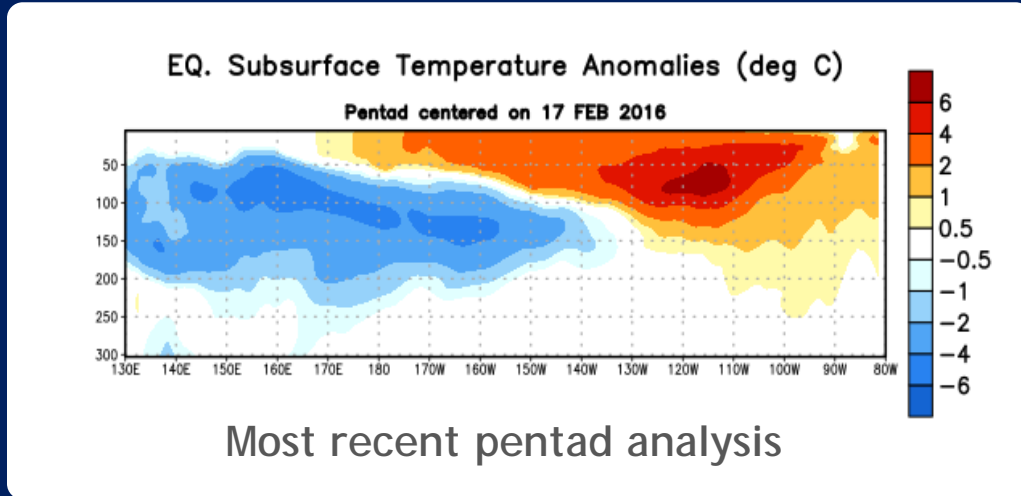


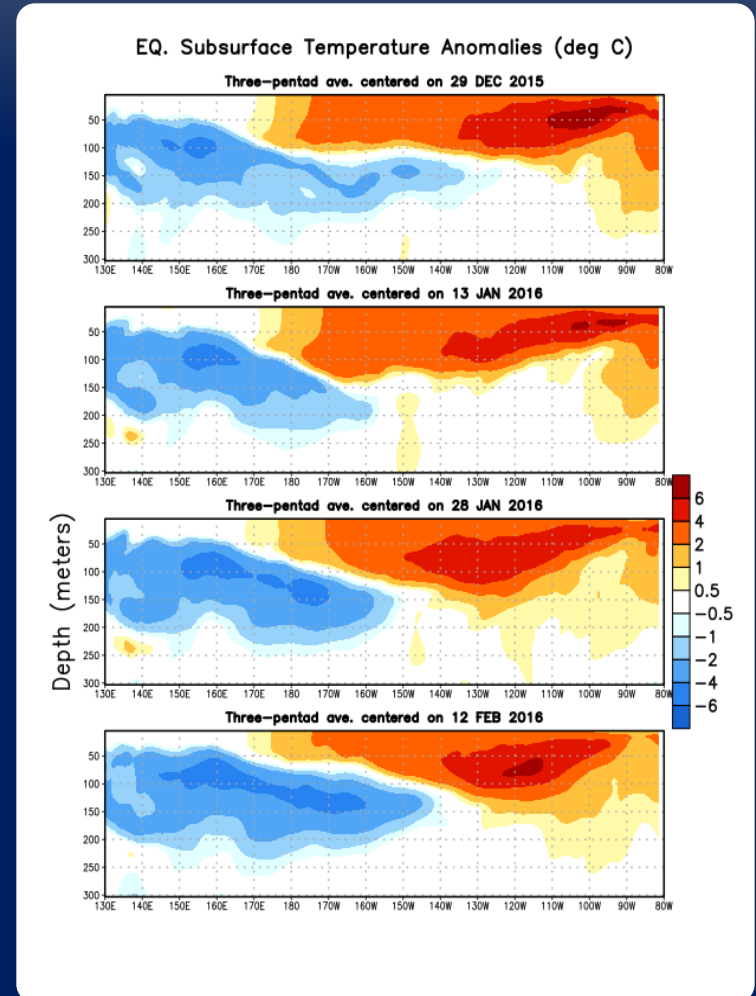
Figure provided by the International Research Institute (IRI) for Climate and Society (updated 12 January 2016).

Sub-Surface Temperature Departures in the Equatorial Pacific

During the last two months, positive subsurface temperature anomalies were observed across the central and eastern equatorial Pacific.



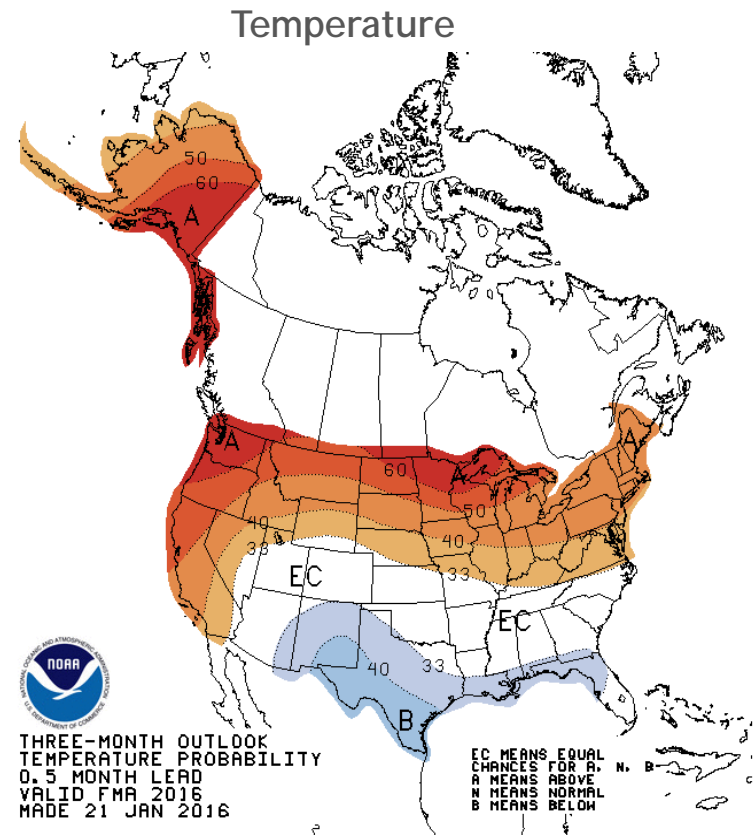
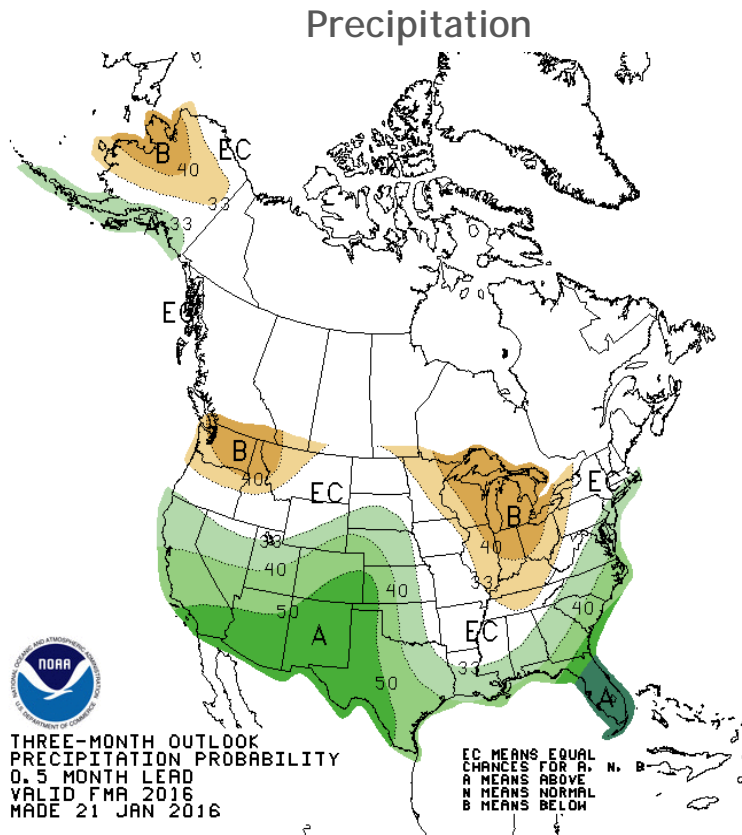
Negative anomalies in the western Pacific extend eastward to $\sim 135^\circ\text{W}$ and remain at depth.



U. S. Seasonal Outlooks

February - April 2016

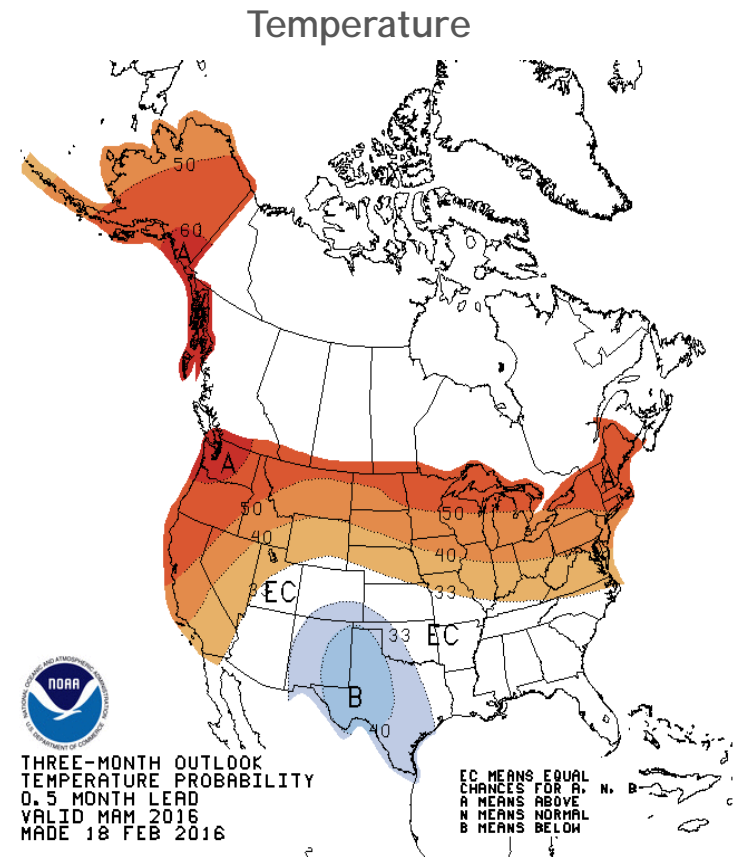
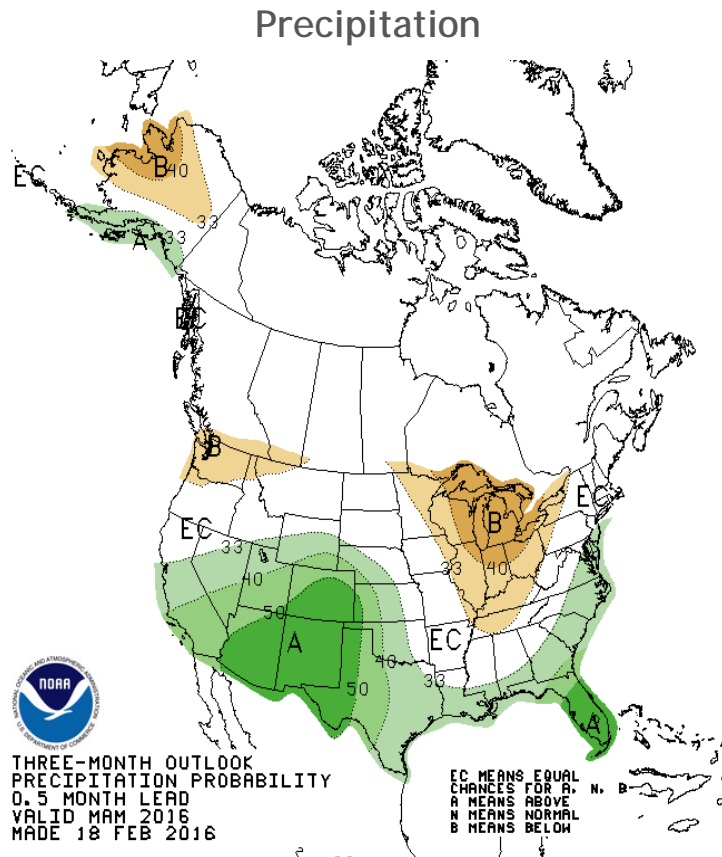
The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.



U. S. Seasonal Outlooks

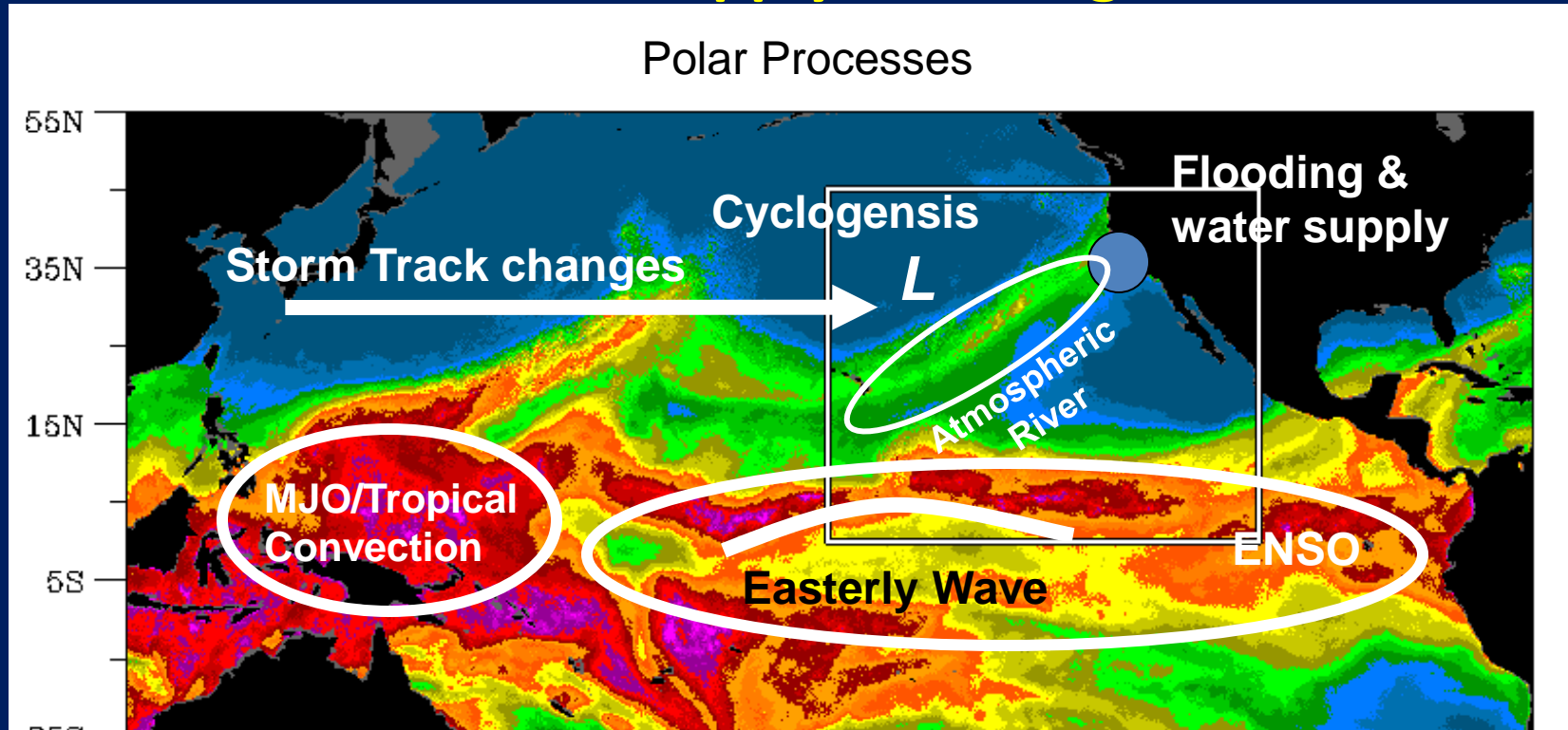
March - May 2016

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.



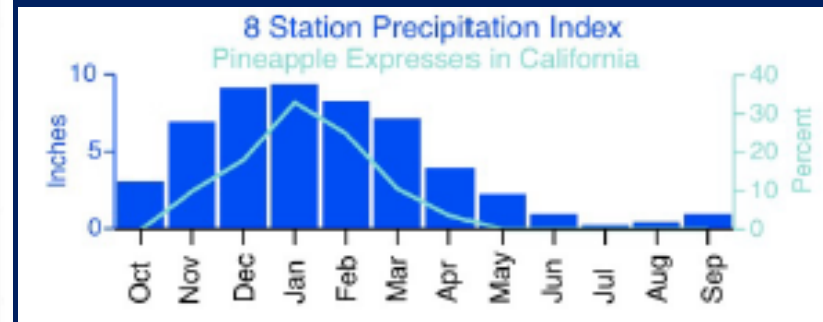
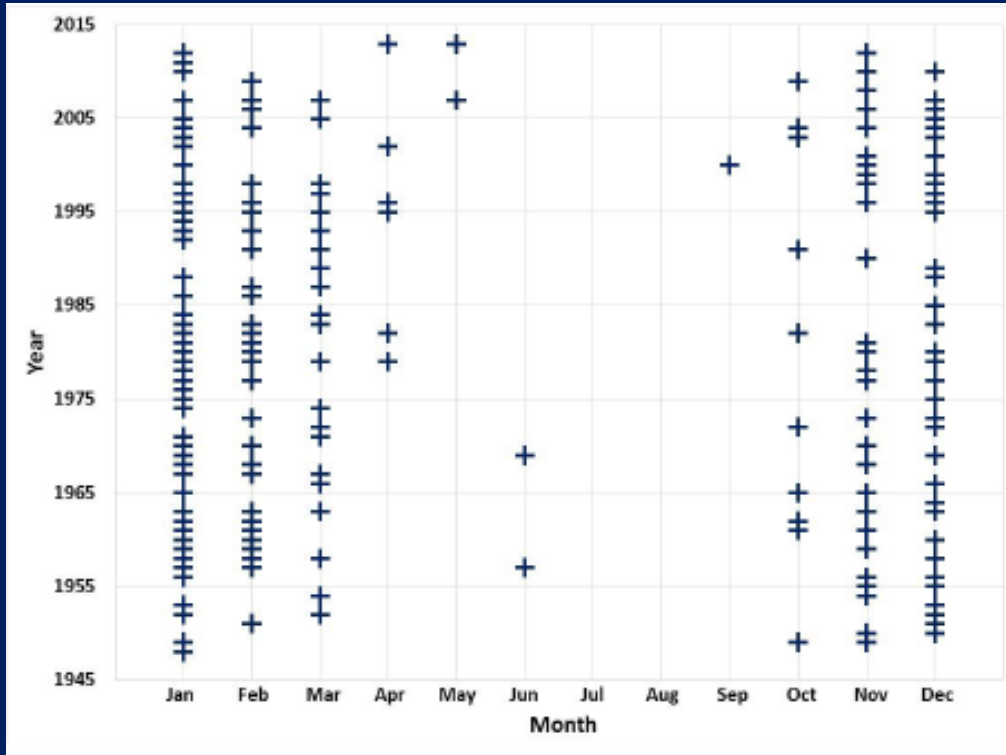
Key Phenomena Affecting California

Water Supply/Flooding:



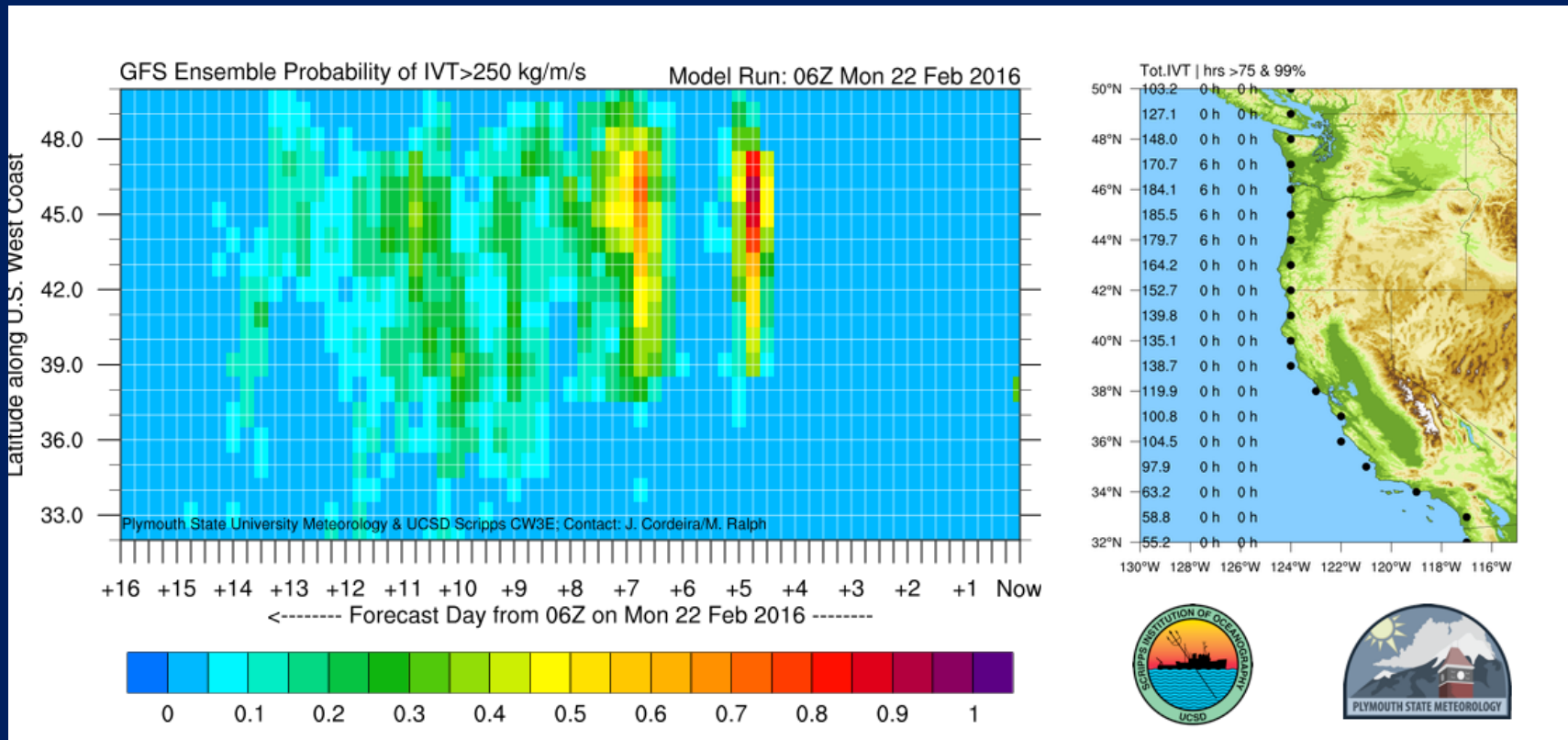
The size, number, strength, and duration of atmospheric river events (ARs) result from the alignment of key processes occurring at multiple space/time scales

Atmospheric River Timing



Pineapple Express (AR subset) catalog from Mike Dettinger

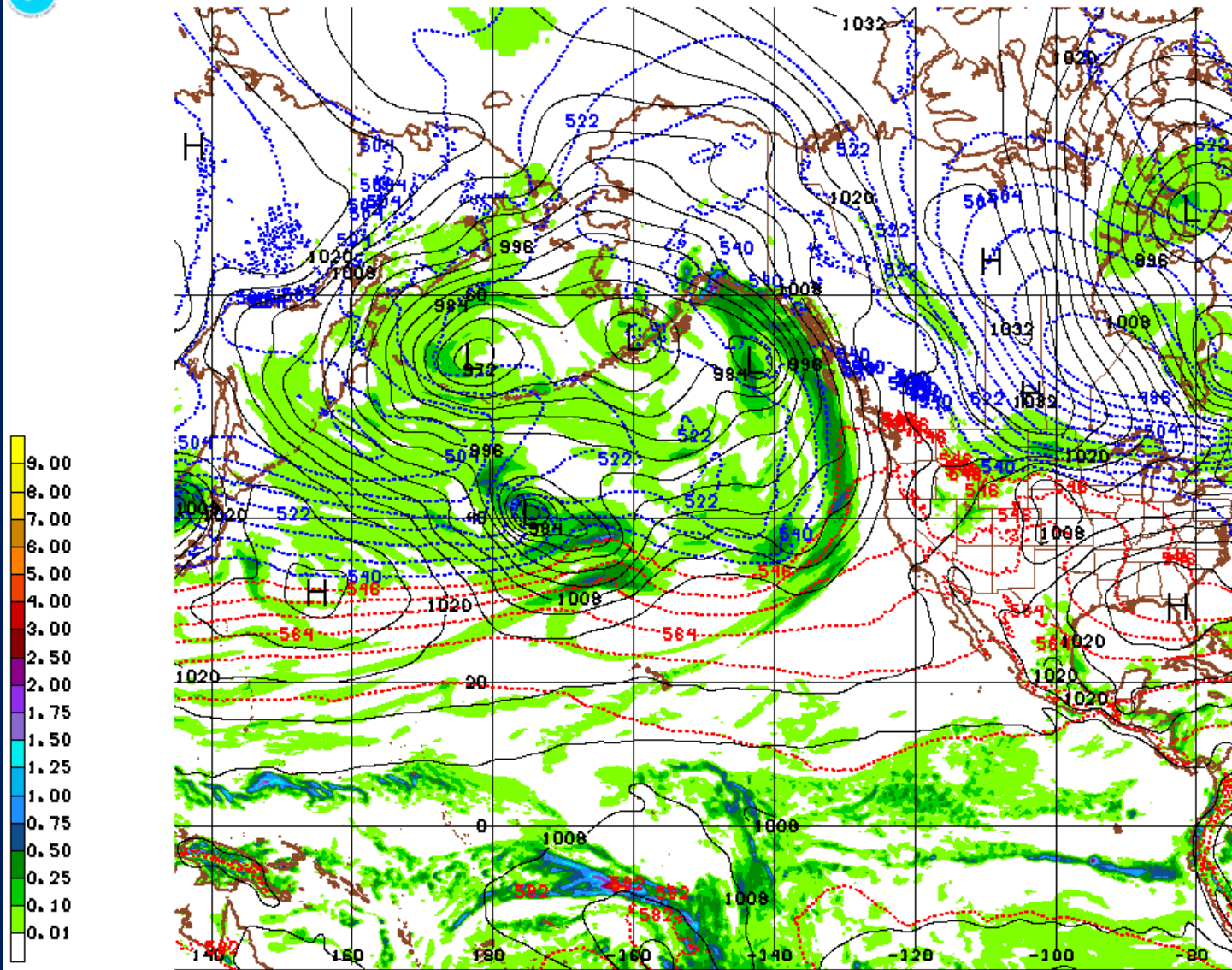
AR Forecast Tool on the AR Portal Website for CW3E



<http://mead.ucsd.edu/>



02/22/16 00UTC 156HR FCST VALID SUN 02/28/16 12UTC NCEP/NWS/NOAA



160228/1200V156 GFS MSLP, 06HR PCPN (IN), 1000-500MB THICK

Summary

- El Nino still in the strong category for SST anomalies (peak in November)
- Transition to La Nina conditions later this year is forecast
- Other climate factors are impacting how this water year is playing out
- Due to large variability and a warmer world, composites of past events may not be the best forecasting tool for California

An aerial photograph of a vast mountain range, likely the Sierra Nevada, showing rugged peaks and deep valleys. The word "Questions?" is overlaid in the center in a bright yellow, sans-serif font.

Questions?

Email: Michael.L.Anderson@water.ca.gov