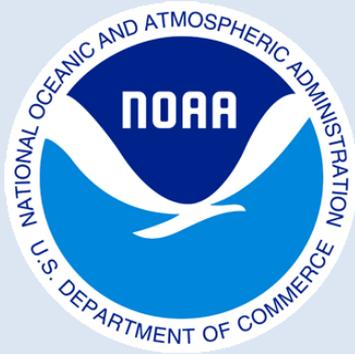


NOAA Climate Science & Services

Monthly Climate Update



Jake Crouch

Climate Scientist, NOAA's National Centers for Environmental Information

Nicholas Bond

Washington State Climatologist, Joint Institute for the Study of Atmosphere and Ocean, University of Washington

Stephen Baxter

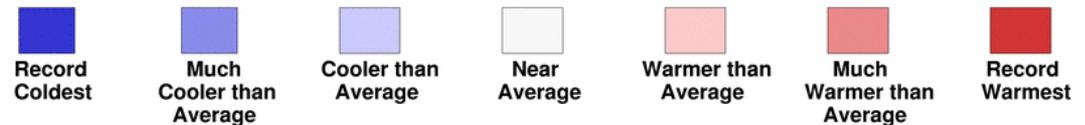
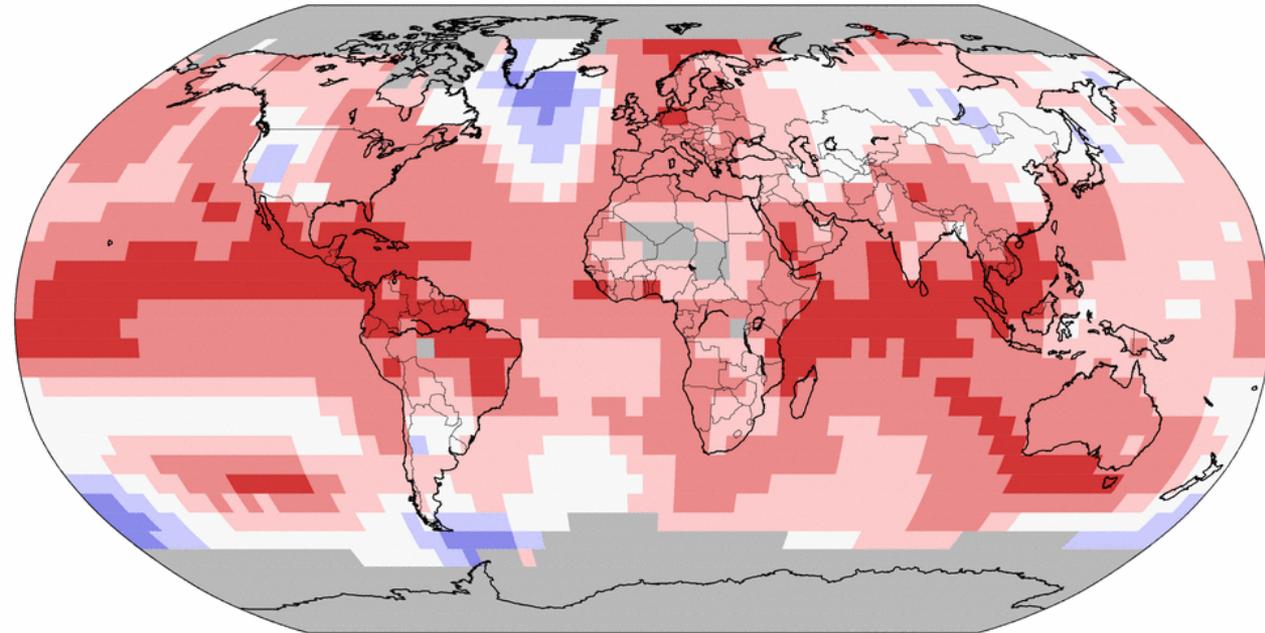
Meteorologist, Operational Prediction Branch
NOAA's Climate Prediction Center

Global Temperature: November 2015

- November $+1.75^{\circ}\text{F}$ warmer than 20th century average
 - Warmest November on record
 - 7th consecutive month of a record warm globe
 - 2nd largest monthly departure from average
- Land: $+2.36^{\circ}\text{F}$
 - 5th warmest November
- Ocean: $+1.51^{\circ}\text{F}$
 - Warmest November
 - 2nd largest monthly departure from average

Land and Ocean Temperature Percentiles November 2015

Data Source: GHCN-M version 3.3.0 & ERSST version 4.0.0



Mon Dec 14 07:16:10 EST 2015

The global temperature record dates to 1880 (136 years)



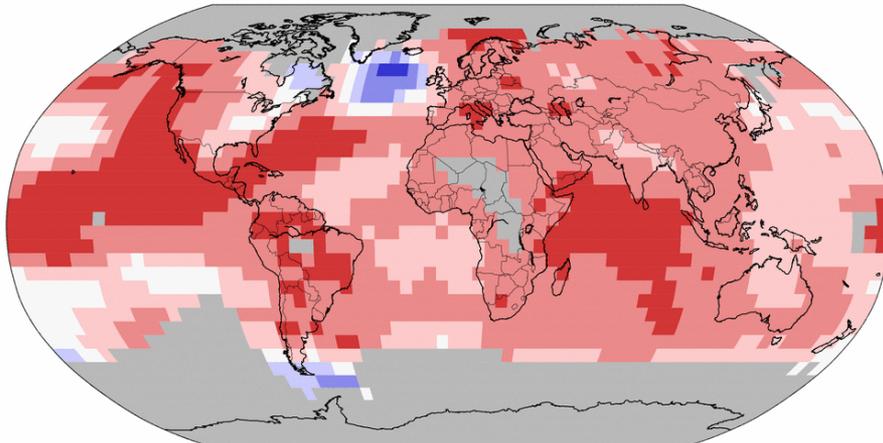
Global Temperature: Jan-Nov 2015

January-November 2015 was record warm for the year-to-date

- Global Temperature (record warm): +1.57°F
- Land Temperature (record warm): +2.29°F
- Ocean Temperature (record warm): +1.30°F
- December 2015 would have to be 0.43°F colder than the coldest December on record (1916) for 2015 not to be record warm

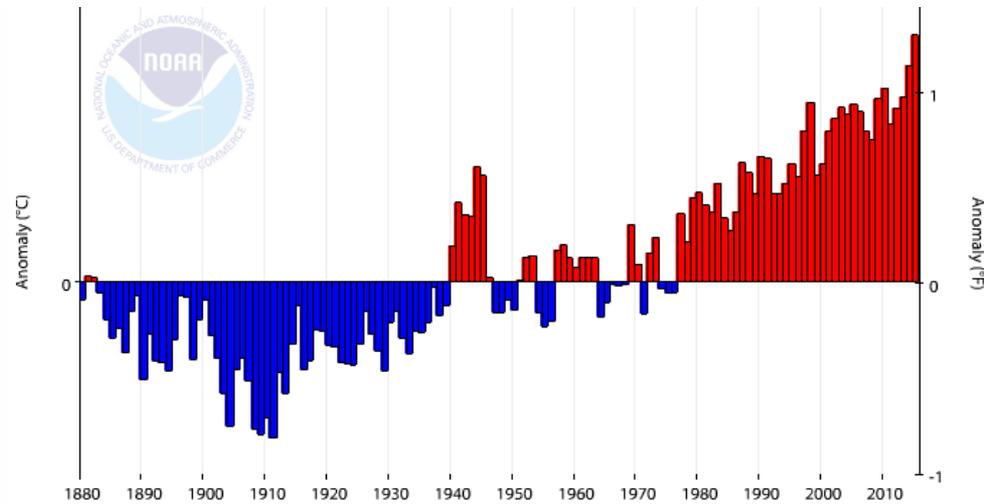
Land and Ocean Temperature Percentiles January-November 2015

Data Source: GHCN-M version 3.3.0 & ERSST version 4.0.0



Mon Dec 14 07:16:10 EST 2015

Global Land and Ocean Temperature Departure from 20th Century Average, January-November



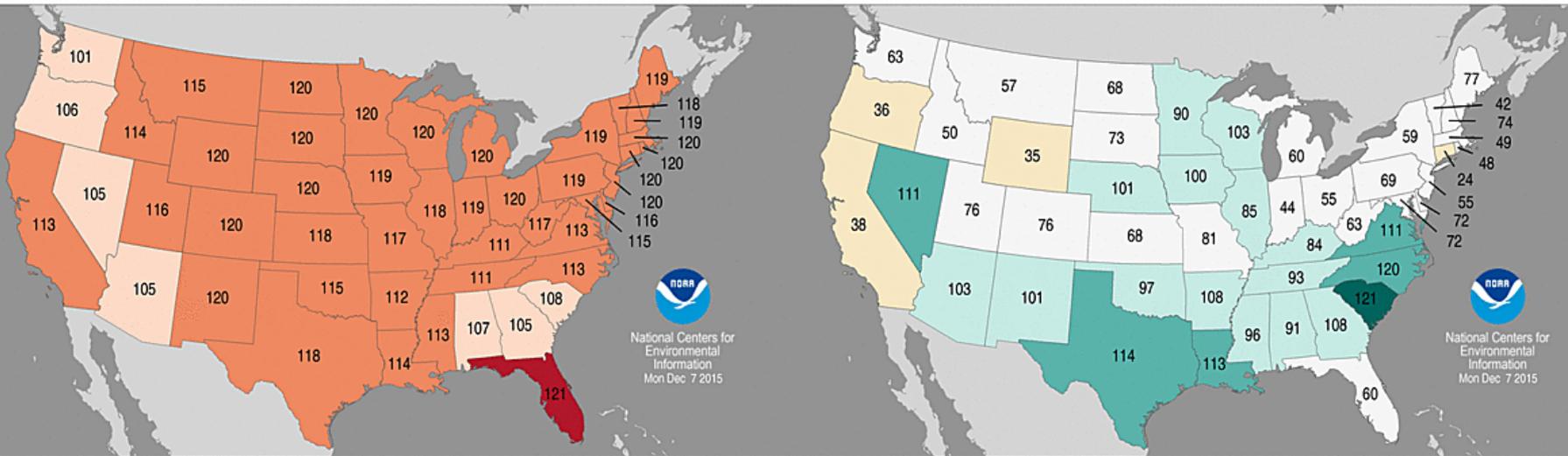
Contiguous U.S. Autumn 2015

Temperature: 56.8°F, +3.3°F, warmest autumn in 121-year period of record

Precipitation: 8.32", +1.44", 15th wettest autumn on record

Statewide Temperature Ranks, Sep-Nov 2015
Period: 1895-2015 (121 years)

Statewide Precipitation Ranks, Sep-Nov 2015
Period: 1895-2015 (121 years)



Record Coldest (1) Much Below Average Below Average Near Average Above Average Much Above Average Record Warmest (121)

Record Driest (1) Much Below Average Below Average Near Average Above Average Much Above Average Record Wettest (121)

- Every state across the contiguous U.S. was warmer than average
- Warm in the West in early autumn, warm in the East in late autumn
- Florida record warm for September-November

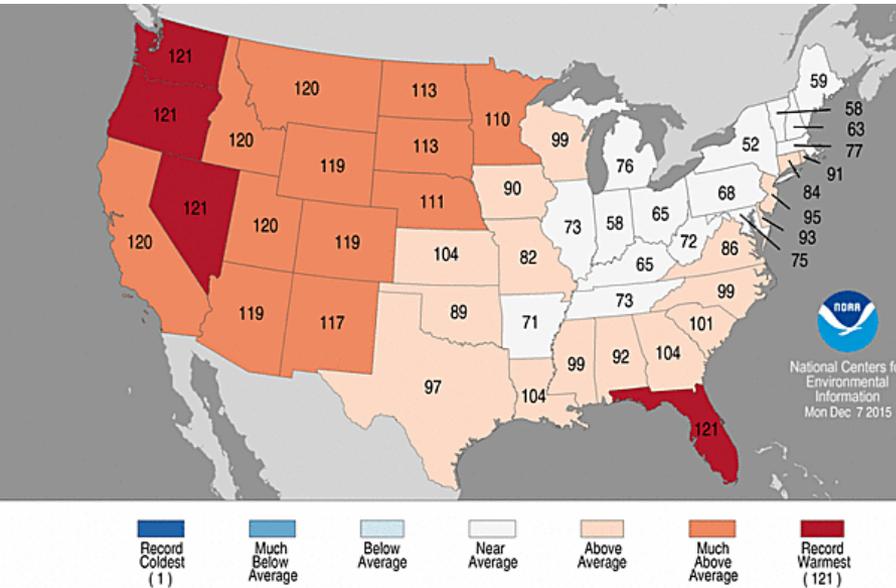
- South Carolina was record wet during autumn – early Oct precipitation
- Wetter than average in Southern Plains and Lower MS Valley – dramatic drought improvement
- AR and MO record wet for Nov



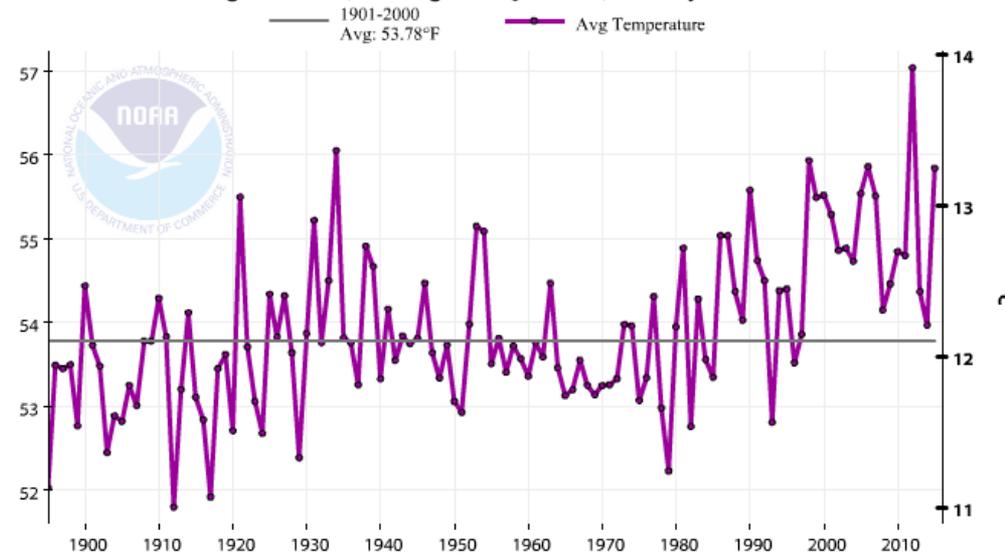
Contiguous U.S. Jan-Nov 2015

Temperature: 55.8°F, +2.0°F, fifth warmest January-November

Statewide Temperature Ranks, Jan-Nov 2015
Period: 1895-2015 (121 years)



Contiguous U.S., Average Temperature, January-November



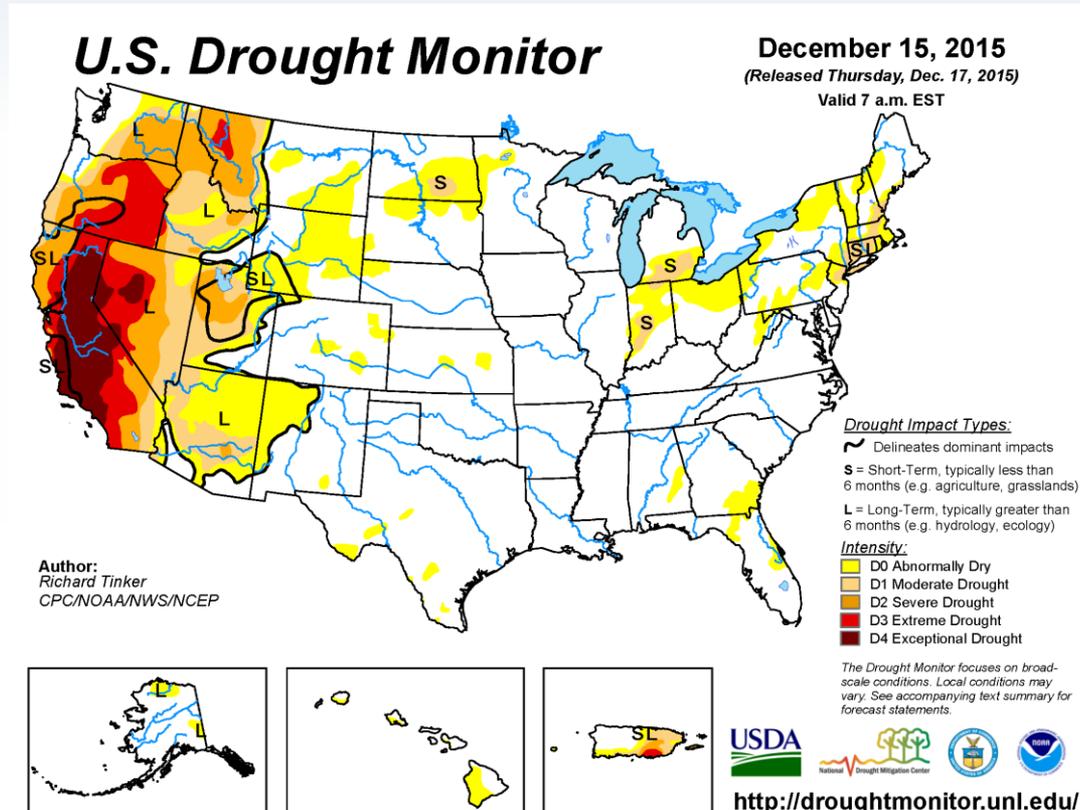
- Likely that 2015 will be a top 5 warm year for the contiguous United States
- Record and near-record warmth in the West and Florida for Jan-Nov
- Recent warmth in the Midwest and Northeast has offset a cold start to the year
- A very warm start for December across much of the Lower 48
- If Dec 2015 ranks among the 3 warmest on record, 2015 will be 2nd warmest year behind 2012

Current U.S. Drought

19.6% of Contiguous U.S. in Drought

(↓ ~6.6 percentage points since early Nov)

- **Improvement:** Central/Southern Plains, Mississippi Valley, and parts of the Northwest.
- **Degradation:** Parts of the Northern Plains, Midwest, and Northeast.
- **Outside CONUS:** Drought improvement across AK and HI. Drought continues in eastern PR.



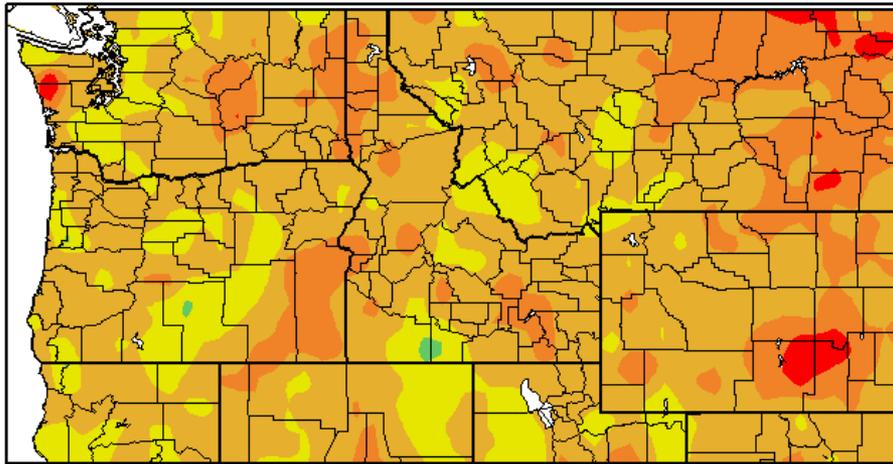
Water Year Recap for WA State: Where's El Niño?

Nicholas Bond and Karin Bumbaco
Office of the Washington State Climatologist
Joint Institute for the Study of Atmosphere and Ocean
University of Washington
December 17, 2015

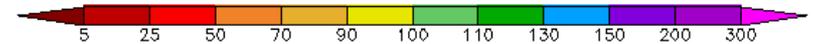
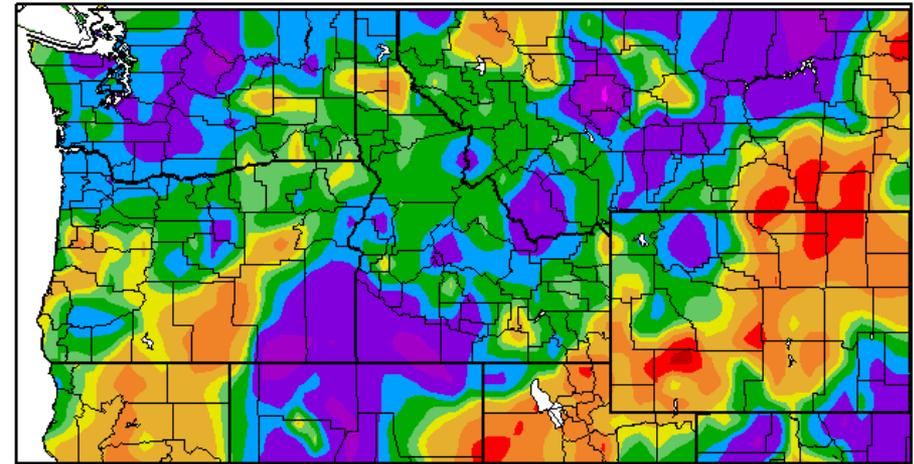


Water Year to Date in the Pac NW

Departure from Normal Temp (F)
10/1/2015 – 12/14/2015



Percent of Normal Precipitation (%)
10/1/2015 – 12/14/2015



Generated 12/15/2015 at HPRCC using provisional data.

Regional Climate Centers generated 12/15/2015 at HPRCC using provisional data.

Regional Climate Centers

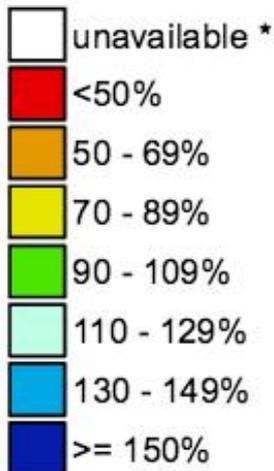
- Major to severe flooding occurred in western WA with heavy precipitation beginning early Nov
- Drought concerns alleviated in western WA, and reduced (but not eliminated) in eastern WA

[HPRCC](#)

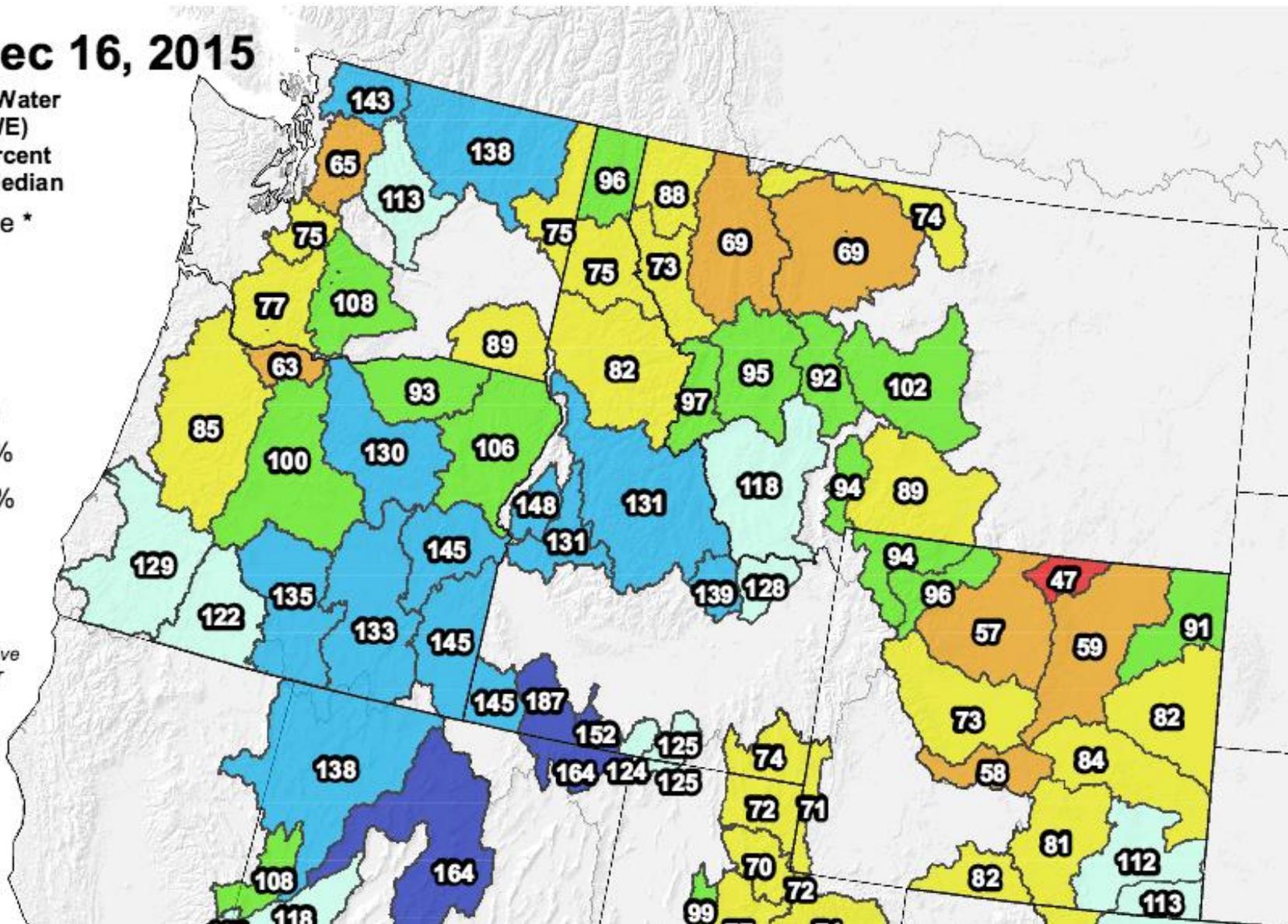
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Dec 16, 2015

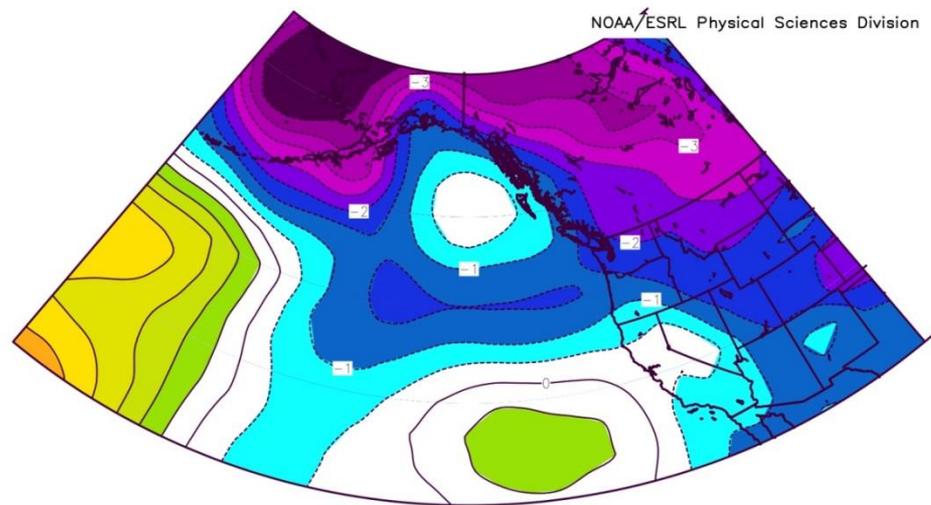
Current Snow Water Equivalent (SWE)
Basin-wide Percent
of 1981-2010 Median



* Data unavailable at time of posting or measurement is not representative at this time of year

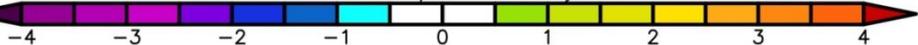


Sea Level Pressure Anomalies – 1 Oct to 14 Dec 2015

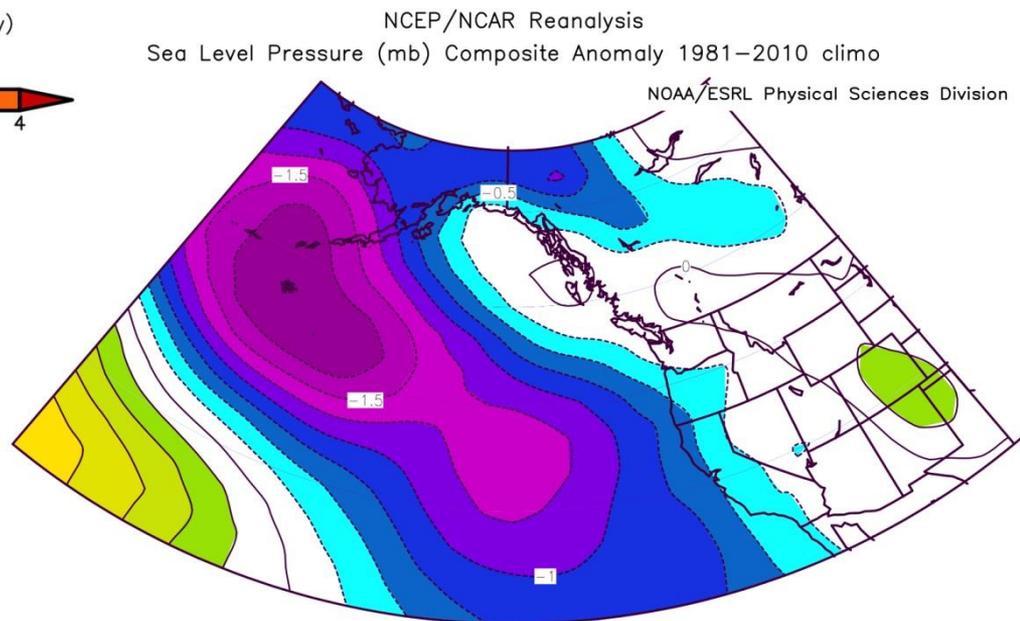


Sea Level Pressure (mb) Composite Anomaly (1981–2010 Climatology)
10/1/15 to 12/14/15

NCEP/NCAR Reanalysis



Sea Level Pressure Anomalies Oct-Dec during Past El Niños

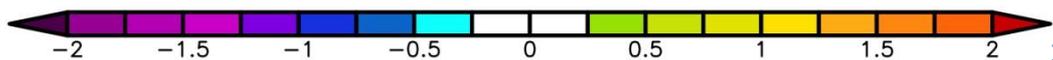


NCEP/NCAR Reanalysis

Sea Level Pressure (mb) Composite Anomaly 1981–2010 climo

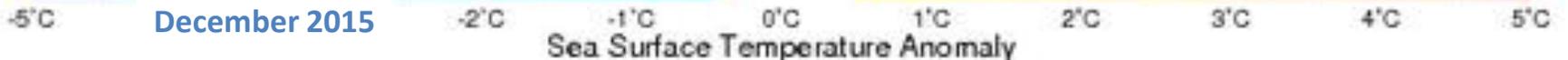
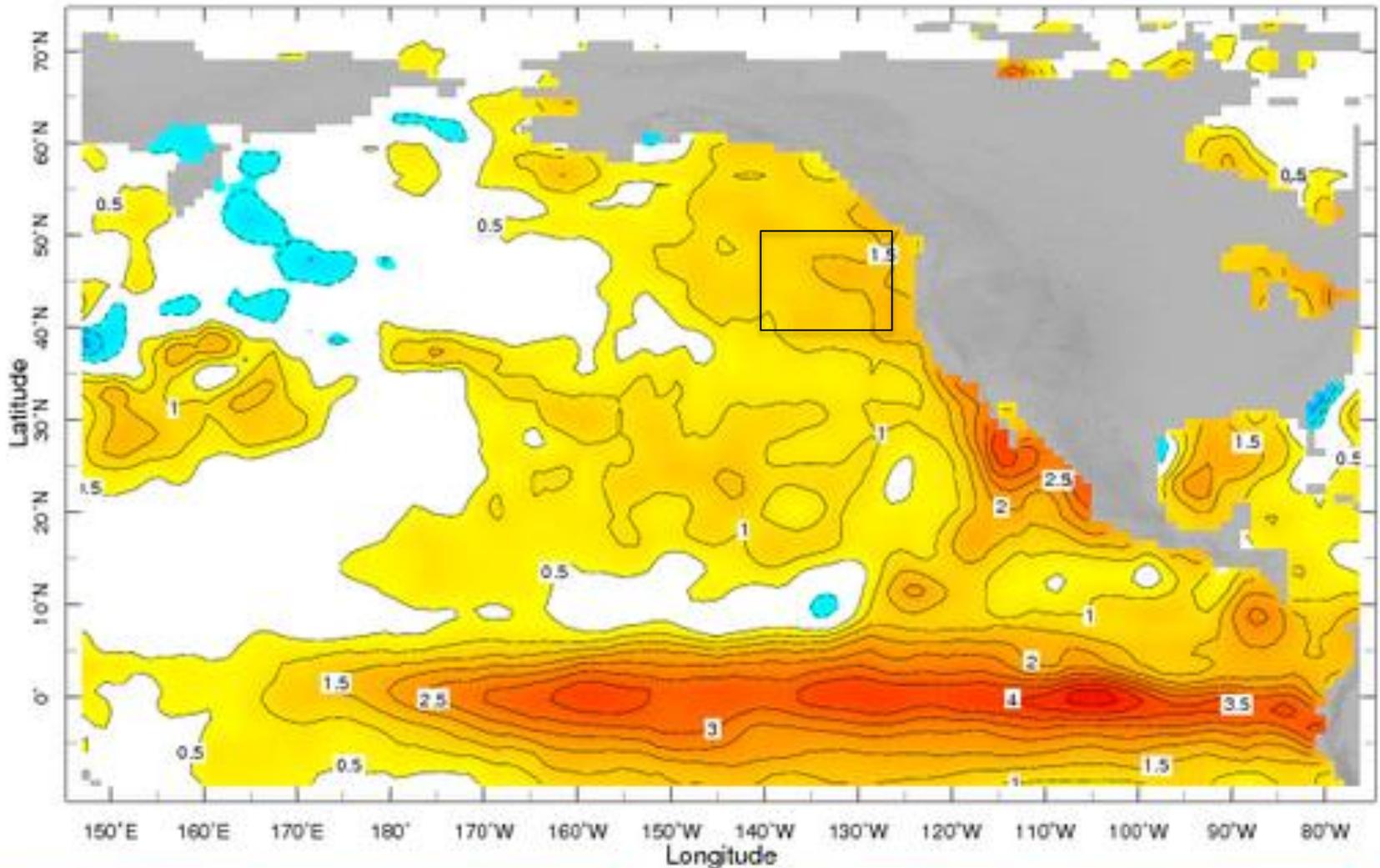
NOAA/ESRL Physical Sciences Division

Oct to Dec: 1957, 1965, 1972, 1982, 1986, 1987, 1991, 1997, 2002, 2009

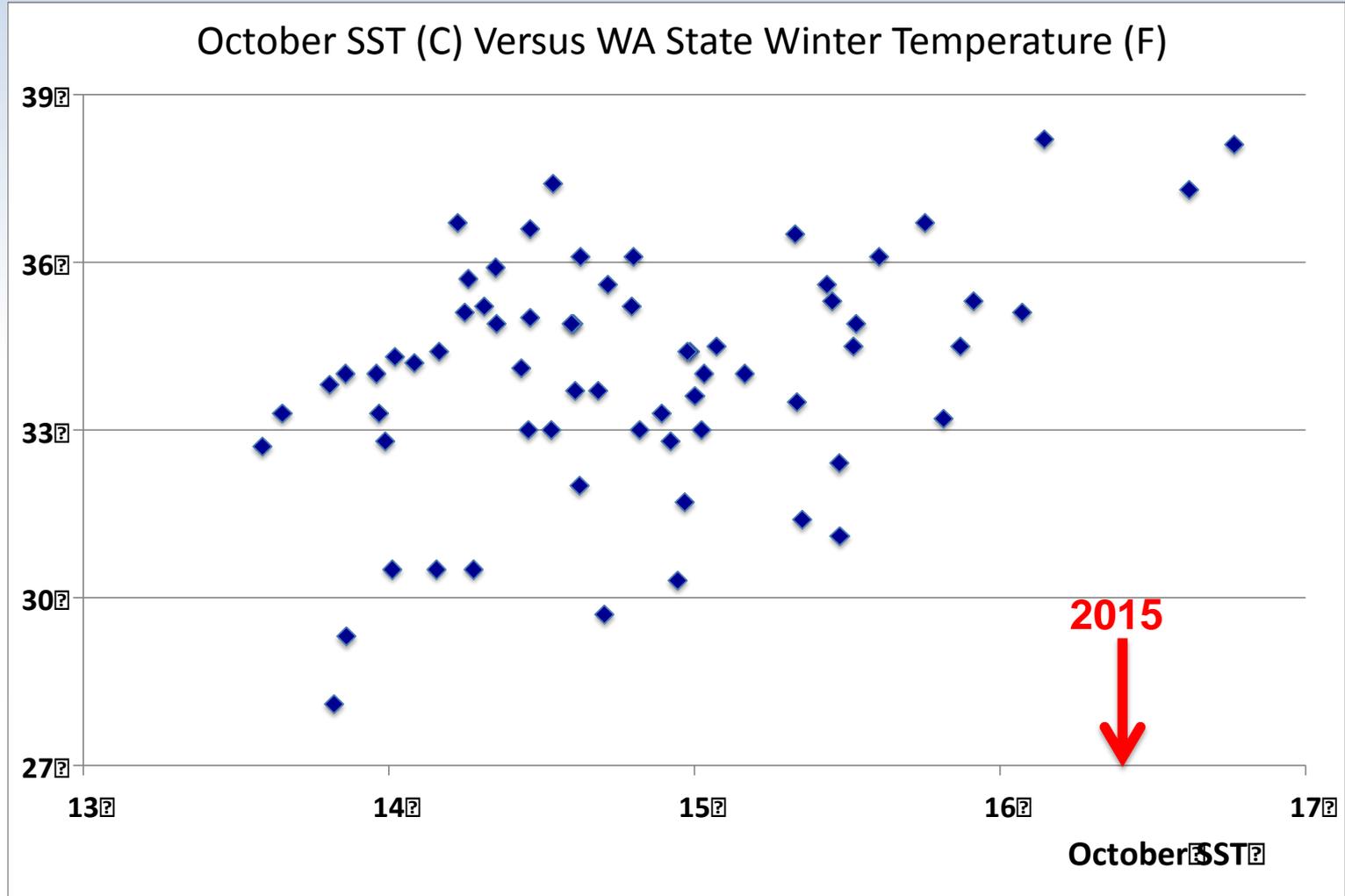


Current SST Anomalies

9 Dec 2015

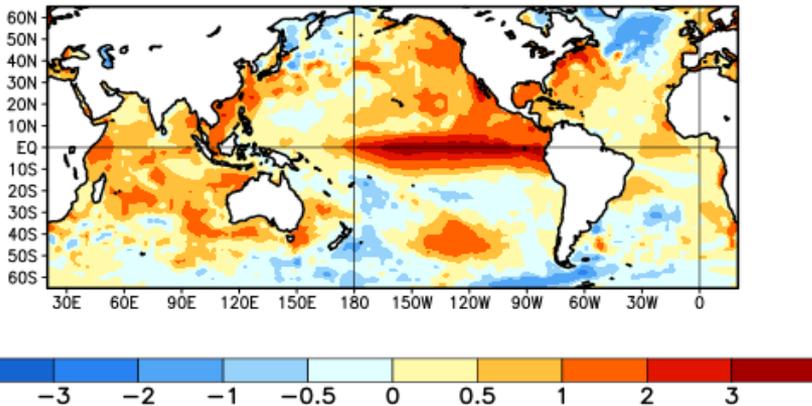


SST Connection to Winter Temperatures



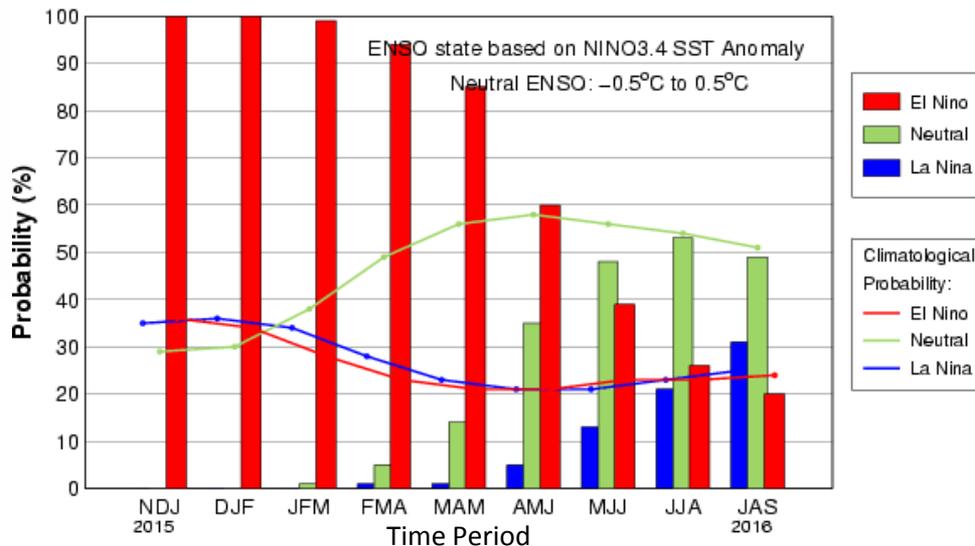
Sea Surface Temperatures and ENSO

Average SST Anomalies
15 Nov 2015 – 12 Dec 2015



- Sea surface temperatures
 - Much above normal SSTs across the equatorial Pacific
 - Above normal SSTs along the west coast of North America
 - El Niño Advisory remains in place

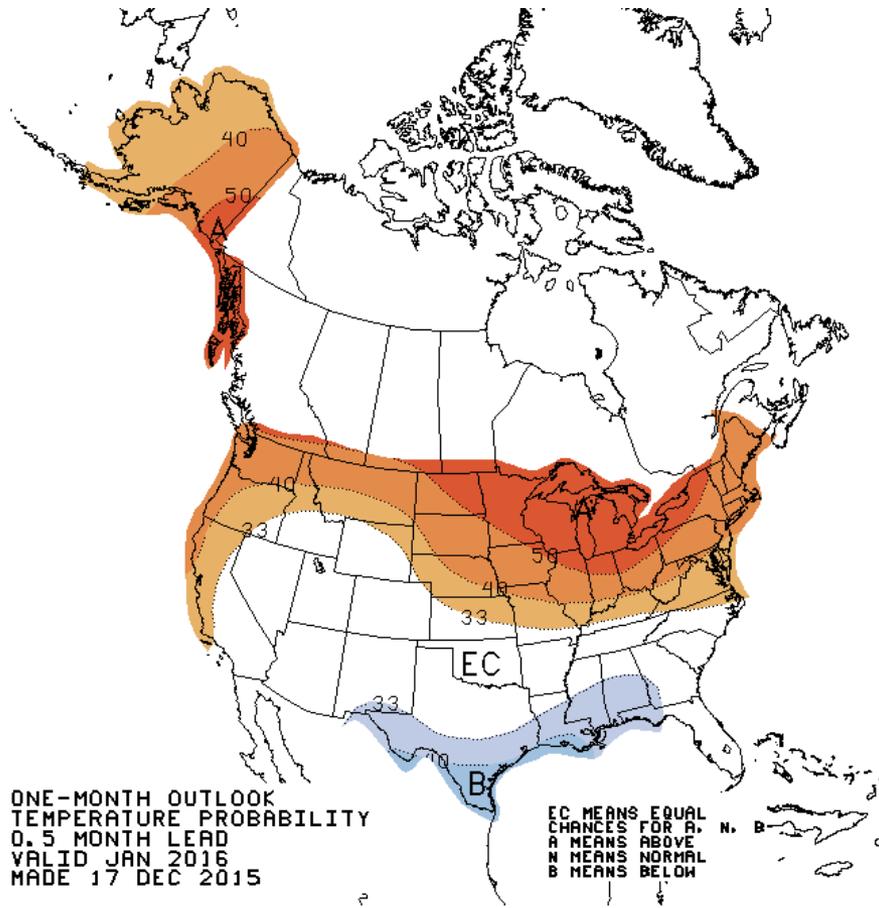
Early-Dec CPC/IRI Consensus Probabilistic ENSO Forecast



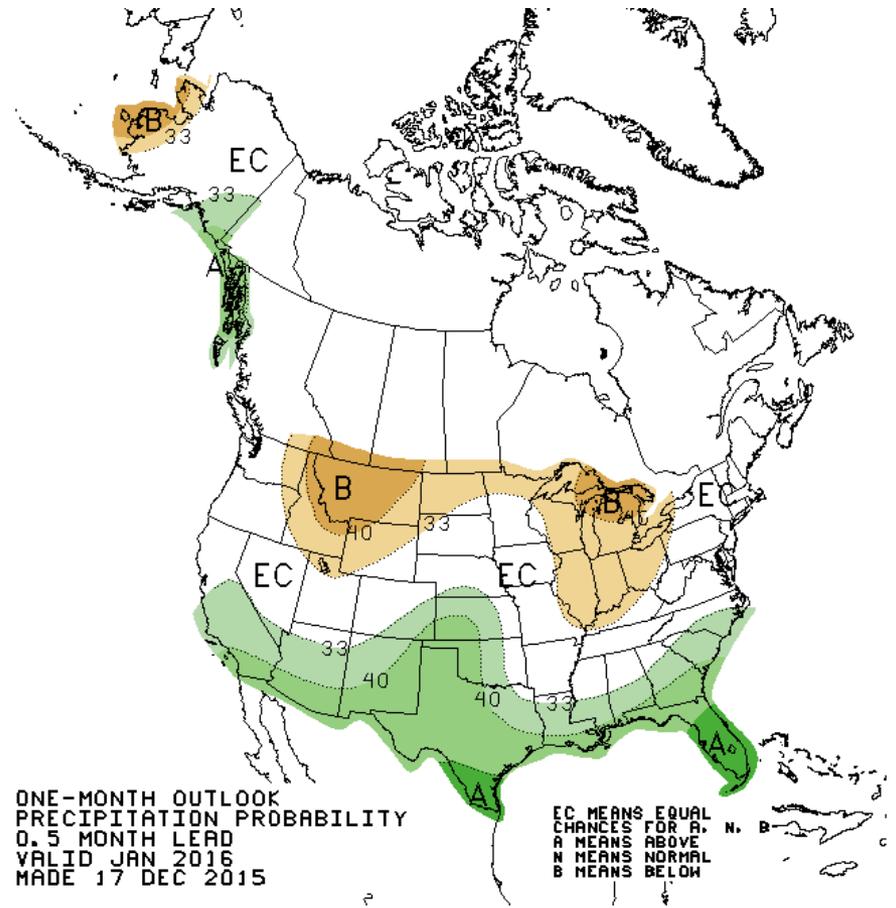
- ENSO forecast
 - El Niño is currently at its peak intensity in term of SST anomaly values
 - A transition to ENSO neutral is anticipated during the late spring or early summer 2016
 - Enhanced odds of La Niña are forecast by late summer and early fall

Monthly Forecast (January)

January Average Temperature Probability

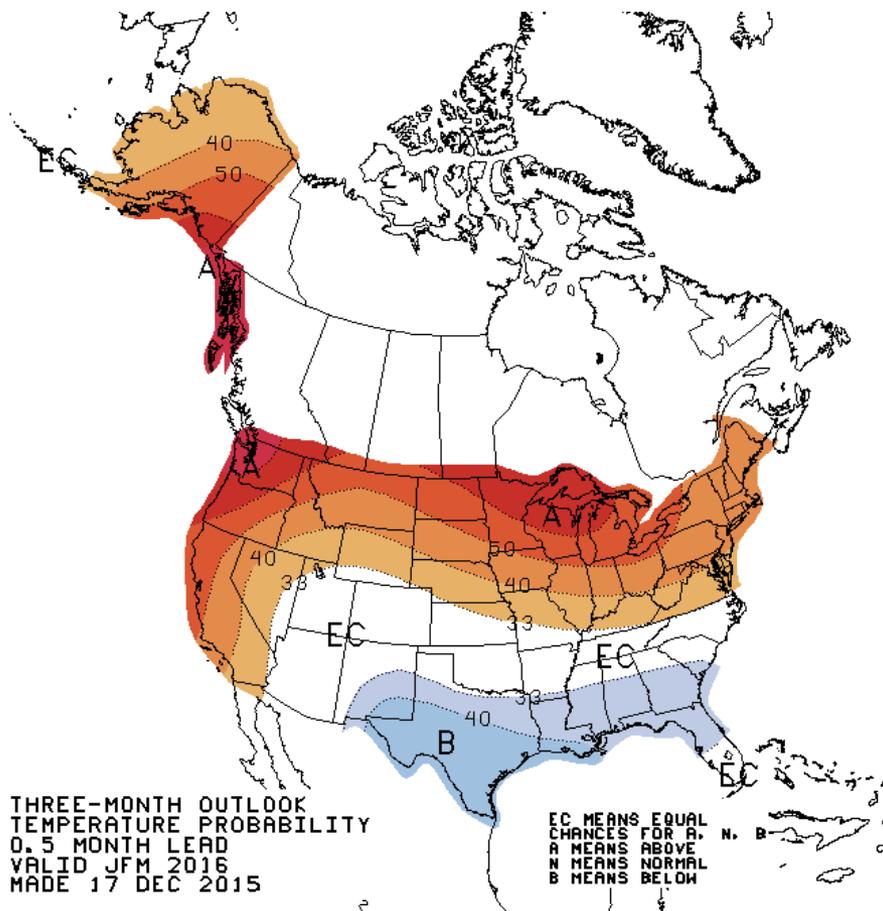


January Total Precipitation Probability

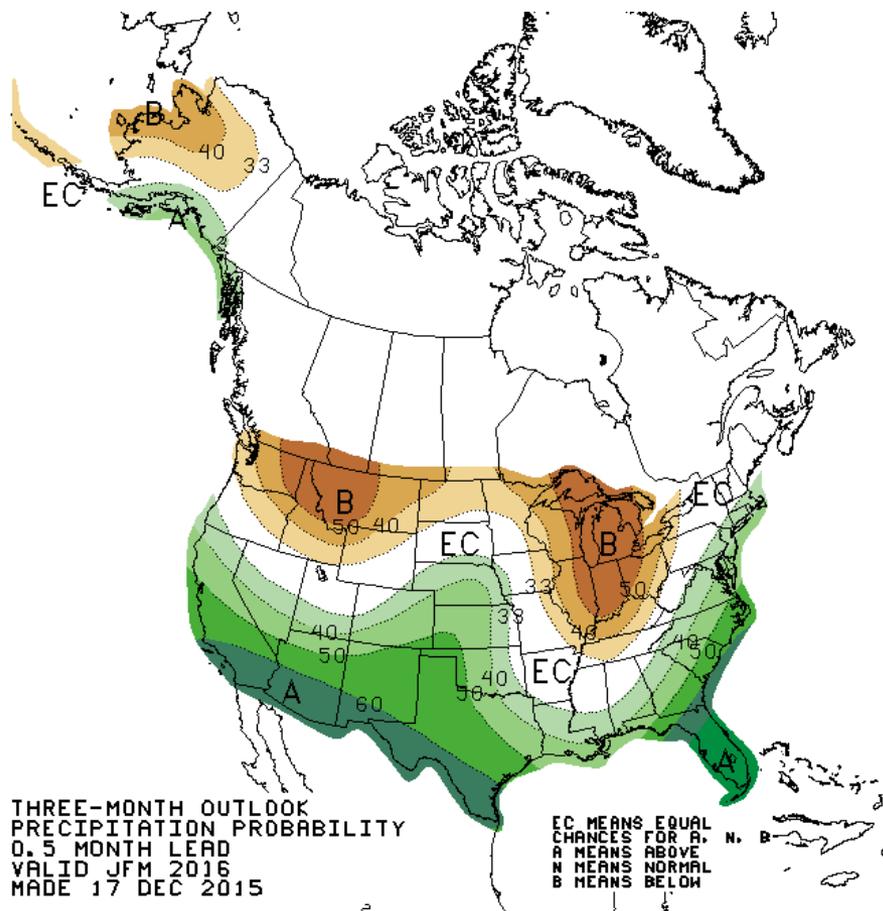


Seasonal Forecast (Jan-Feb-Mar)

Jan-Feb-Mar Average Temperature Probability



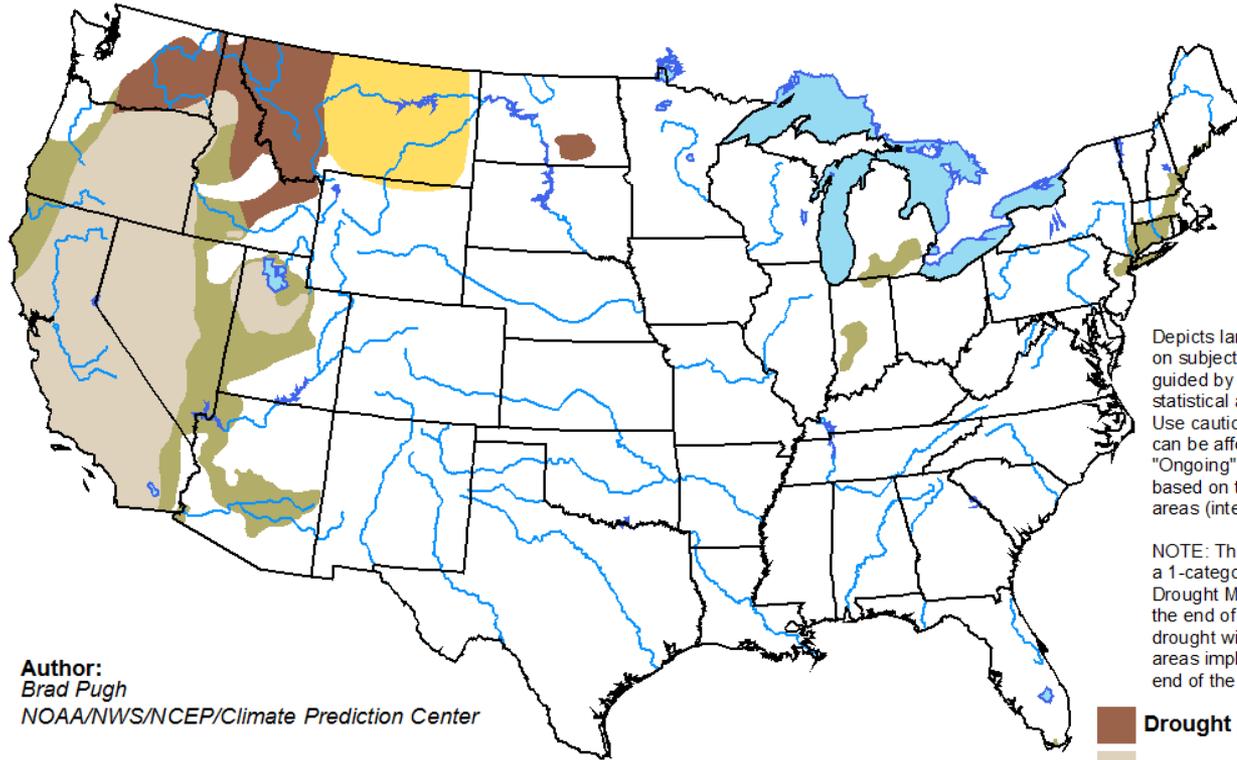
Jan-Feb-Mar Total Precipitation Probability



U.S. Drought Outlook

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for December 17 - March 31, 2016
Released December 17, 2015

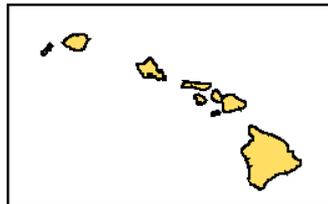
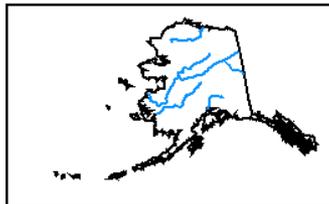


Author:
Brad Pugh
NOAA/NWS/NCEP/Climate Prediction Center

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists**
- Drought remains but improves**
- Drought removal likely**
- Drought development likely**



<http://go.usa.gov/3eZ73>

For More Information



TODAY'S PRESENTATION:

- <http://www.ncdc.noaa.gov/sotc/briefings>

NOAA's National Centers for Environmental Information:

www.ncdc.noaa.gov

- Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- Dates for upcoming reports: <http://www.ncdc.noaa.gov/monitoring-references/dyk/monthly-releases>

NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov

Office of the Washington State Climatologist: <http://www.climate.washington.edu/>

U.S. Drought Monitor: <http://drought.gov>

Climate Portal: www.climate.gov

NOAA Media Contacts:

- Brady.Phillips@noaa.gov, 202-482-2365 (Office of Communications)
- Katy.Matthews@noaa.gov, 828-257-3136 (National Centers for Environmental Information)

