



11th International Terroir Congress

Willamette Valley, Oregon July 10-14, 2016

Society of International Terroir Experts (SITE)

leading scientists working in climate, geology, soil and plant studies in viticulture and wine research around the globe are coming to Oregon

July 10-14, 2016

Linfield College, McMinnville

For more information visit terroircongress.org
or email terroir@sou.edu

A topographic map of Oregon, showing the state's terrain with green representing lower elevations and brown representing higher elevations. The map is the background for the entire slide.

Oregon's 2015 Vintage Overview and 2016 Forecast

Gregory V. Jones
Director
Division of Business, Communication
and Environmental Studies

SO Southern OREGON
U UNIVERSITY

OREGON WINE

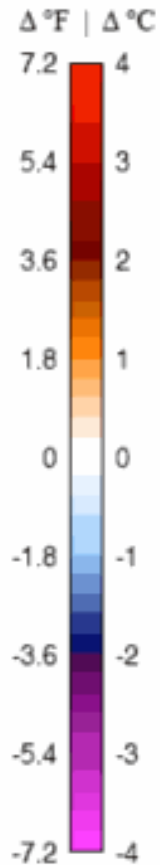
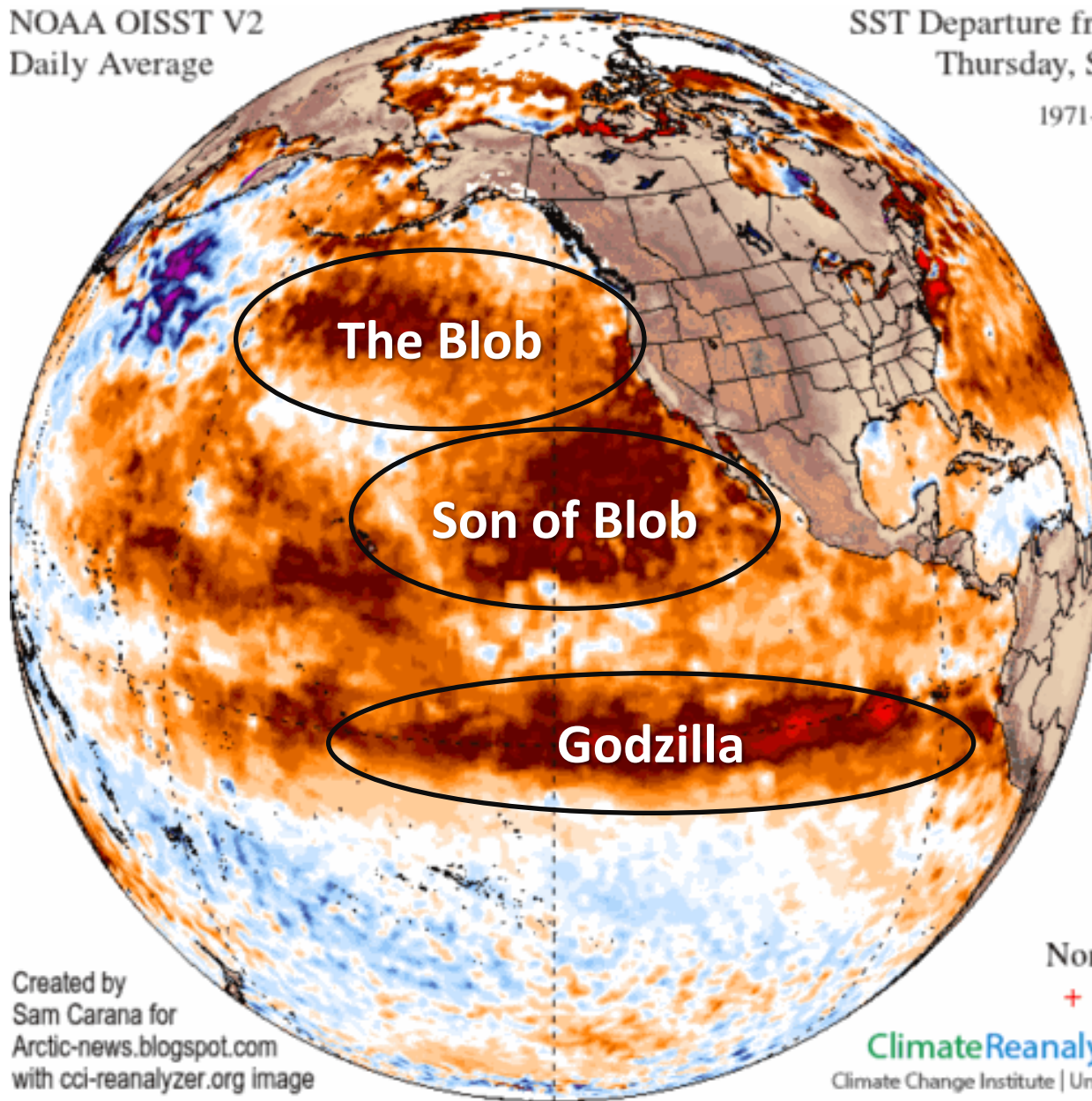
PORTLAND
SYMPOSIUM

February 23-24, 2016

NOAA OISST V2
Daily Average

SST Departure from Average
Thursday, Sep 03, 2015

1971-2000 Baseline



North Pacific
+ 1.02 °C

Created by
Sam Carana for
Arctic-news.blogspot.com
with cci-reanalyzer.org image

ClimateReanalyzer.org
Climate Change Institute | University of Maine

Outline of Talk

- Global to Regional Climate Summary for 2015
- Vintage 2015 in Oregon
- Current Conditions and Regional Forecast for 2016



Global to Regional Climate Summary for 2015

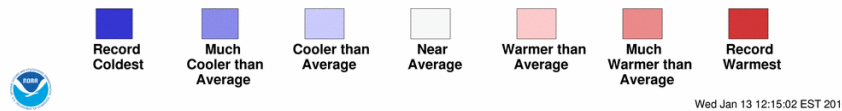
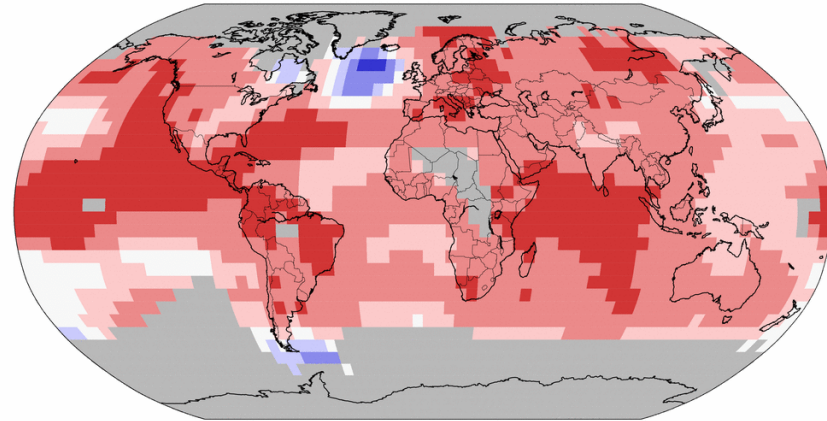
Global Temperature Departures 2015

- Globally 2015 was the warmest year since 1880 (+1.62°F above average)
- Beat the record set just last year by 0.29°F

Land & Ocean Temperature Percentiles Jan–Dec 2015

NOAA's National Centers for Environmental Information

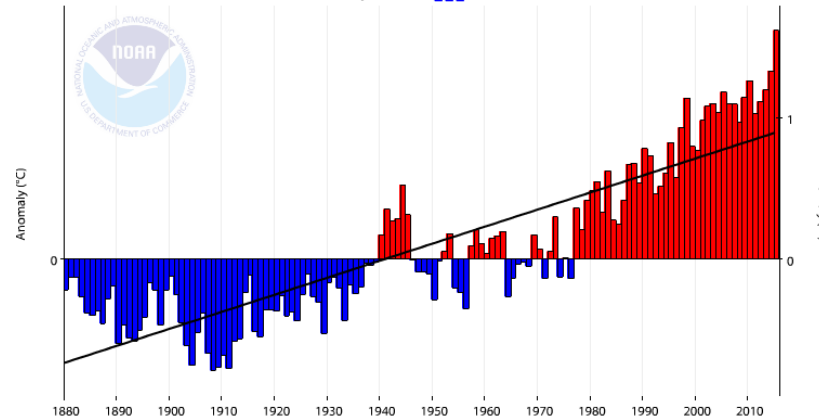
Data Source: GHCN–M version 3.3.0 & ERSST version 4.0.0



- The US ended up having its 2nd warmest year on record
- Continued global ocean warming and strong El Niño assured 2015 the record

Global Land and Ocean Temperature Anomalies, January–December

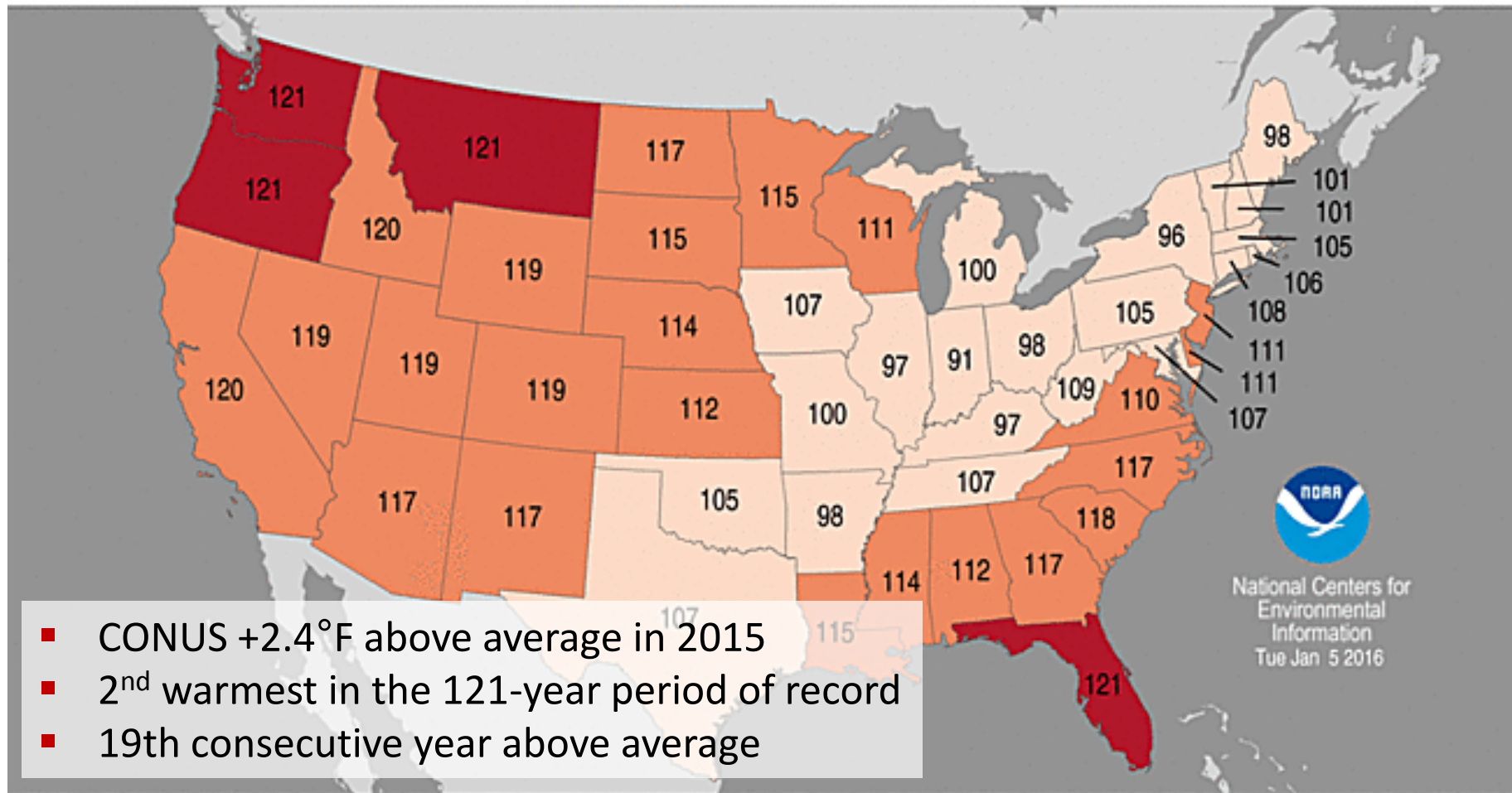
— 1880–2015 Trend +0.67°C/Century
■ Temperature Anomalies



Statewide Average Temperature Ranks

January–December 2015

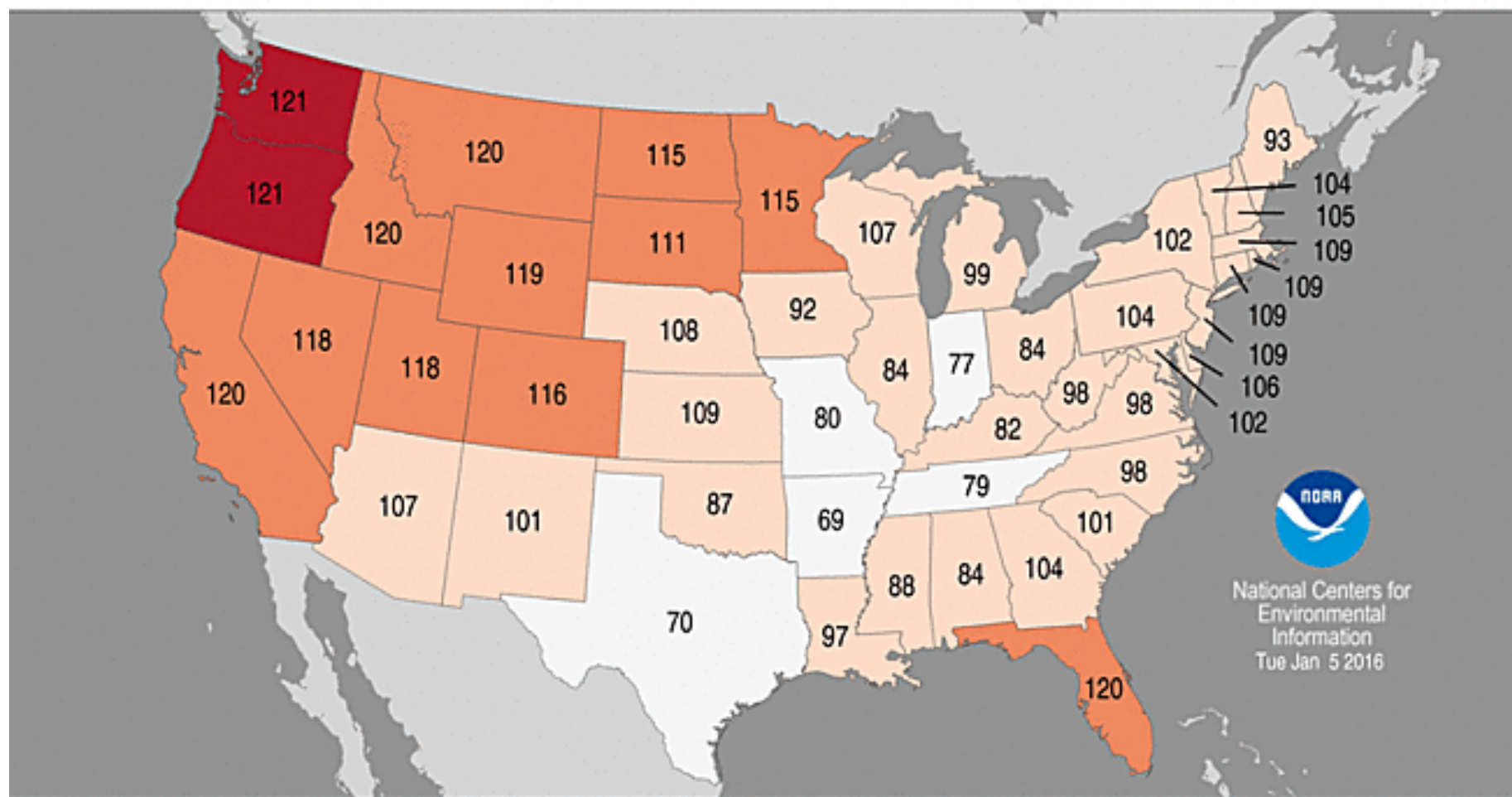
Period: 1895–2015



Statewide Maximum Temperature Ranks

January–December 2015

Period: 1895–2015



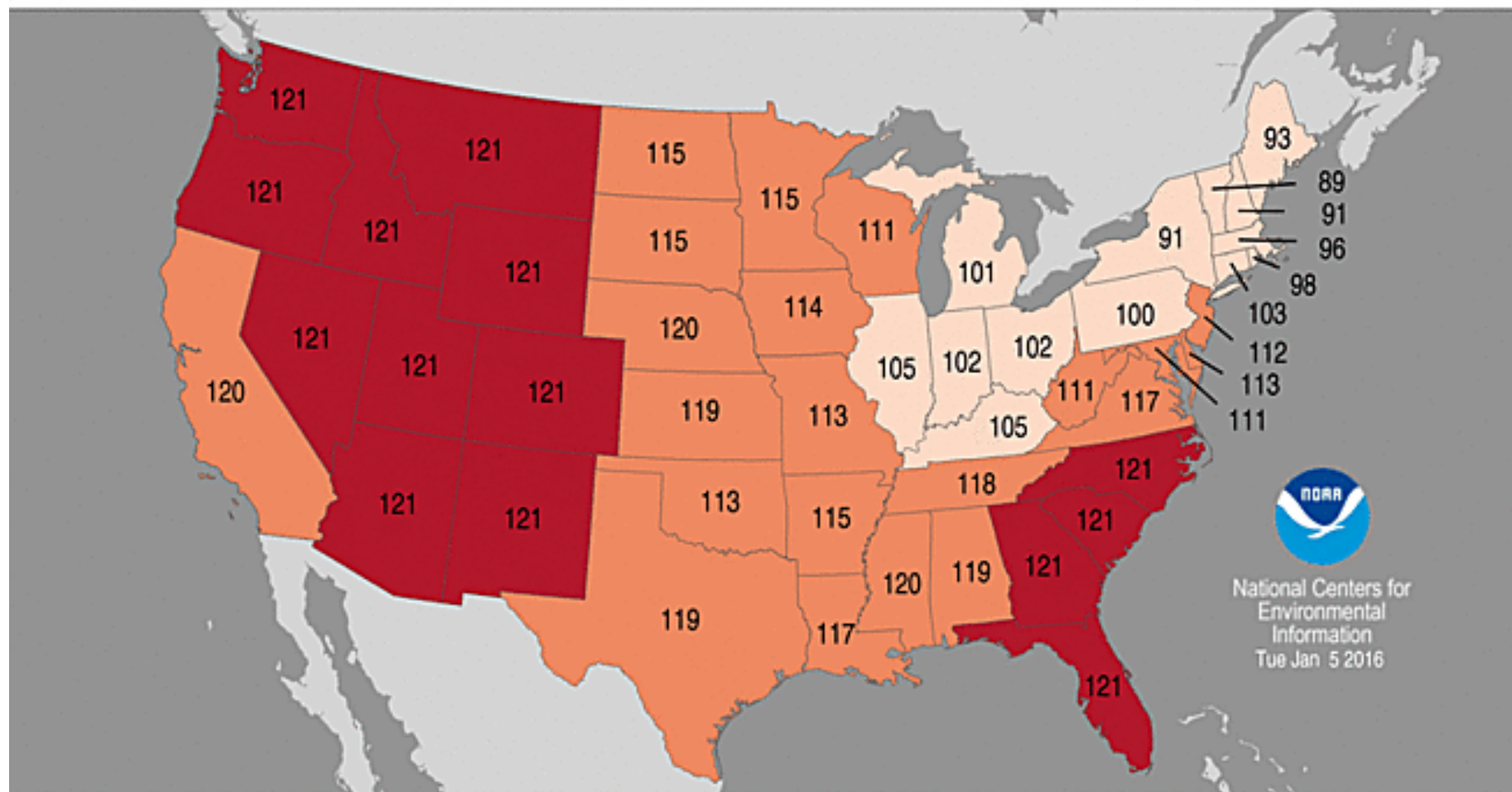
National Centers for
Environmental
Information
Tue Jan 5 2016



Statewide Minimum Temperature Ranks

January–December 2015

Period: 1895–2015



National Centers for
Environmental
Information
Tue Jan 5 2016

Record
Coldest
(1)

Much
Below
Average

Below
Average

Near
Average

Above
Average

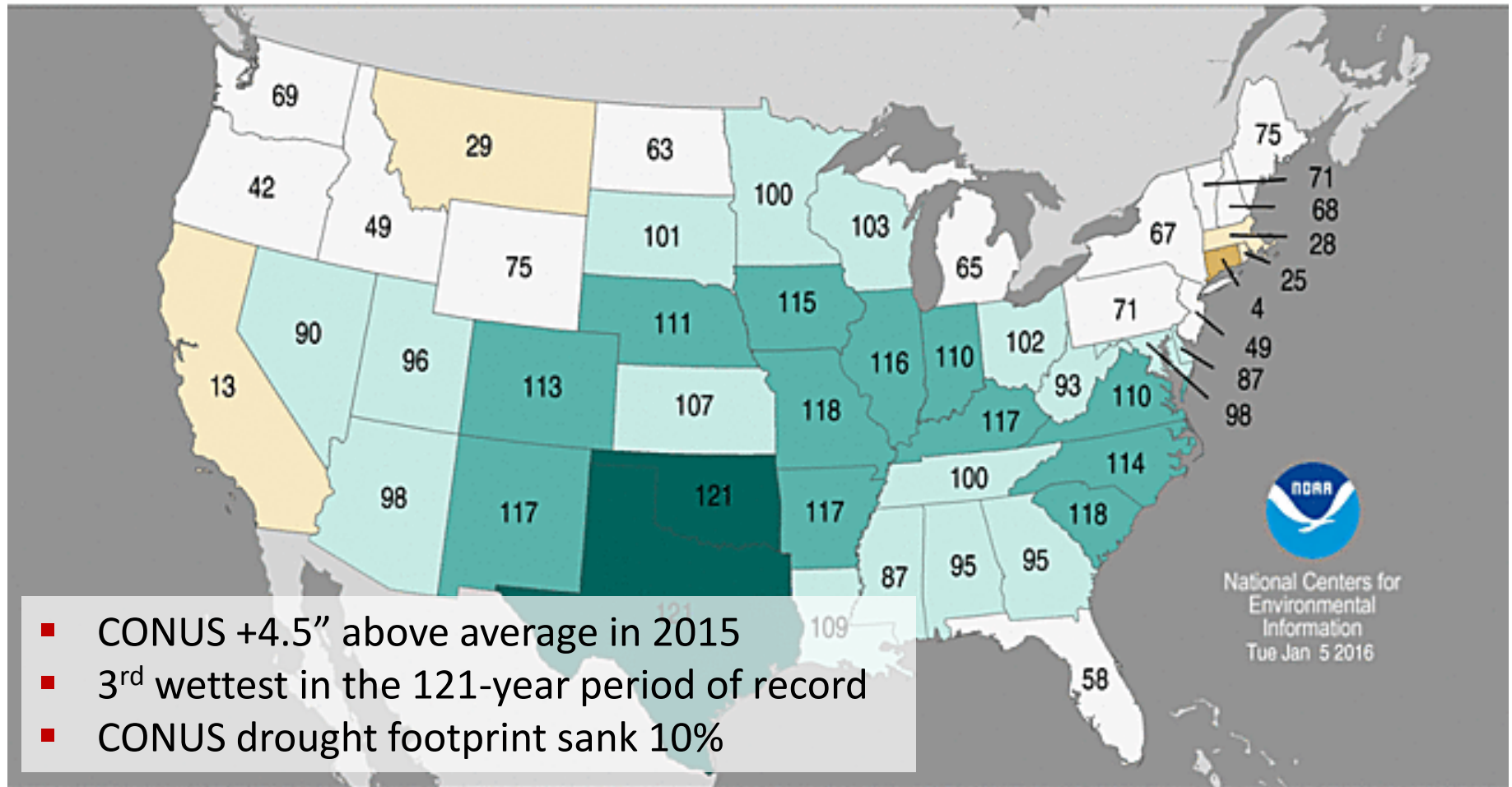
Much
Above
Average

Record
Warmest
(121)

Statewide Precipitation Ranks

January–December 2015

Period: 1895–2015



Record
Driest
(1)

Much
Below
Average

Below
Average

Near
Average

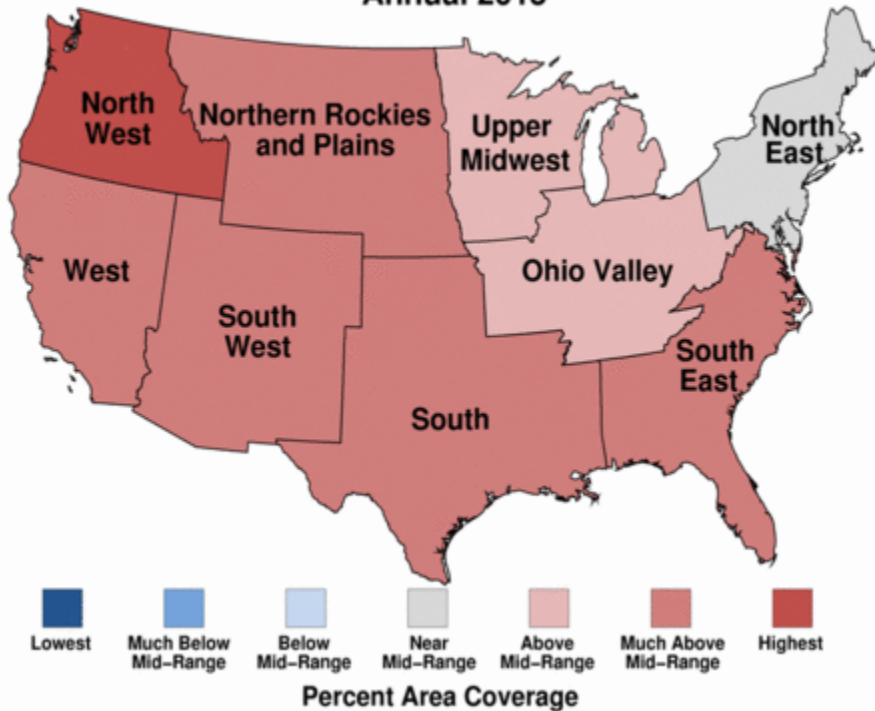
Above
Average

Much
Above
Average

Record
Wettest
(121)

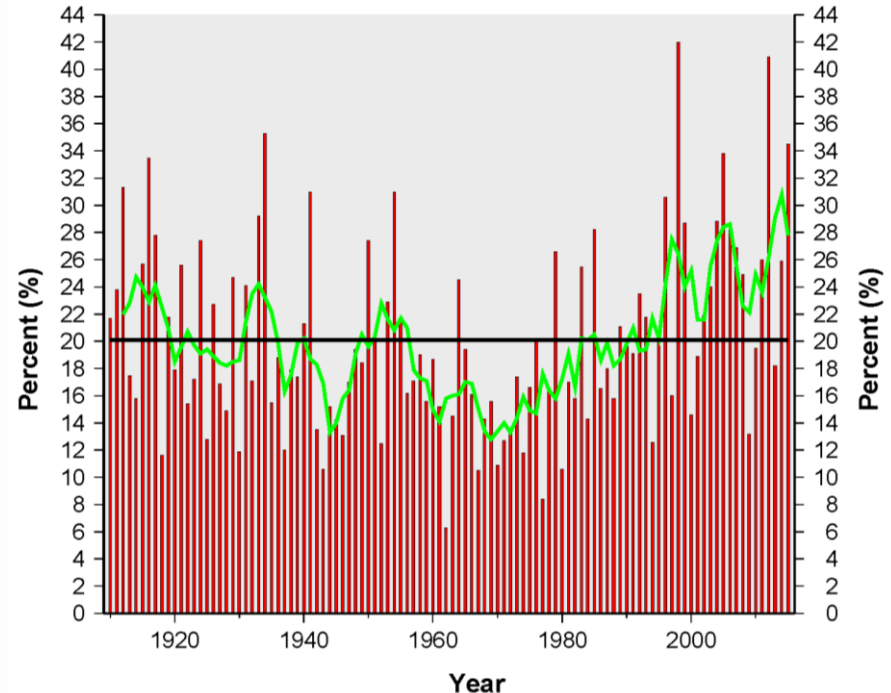
US Climate Extremes Index

Regional Climate Extremes Index
Annual 2015



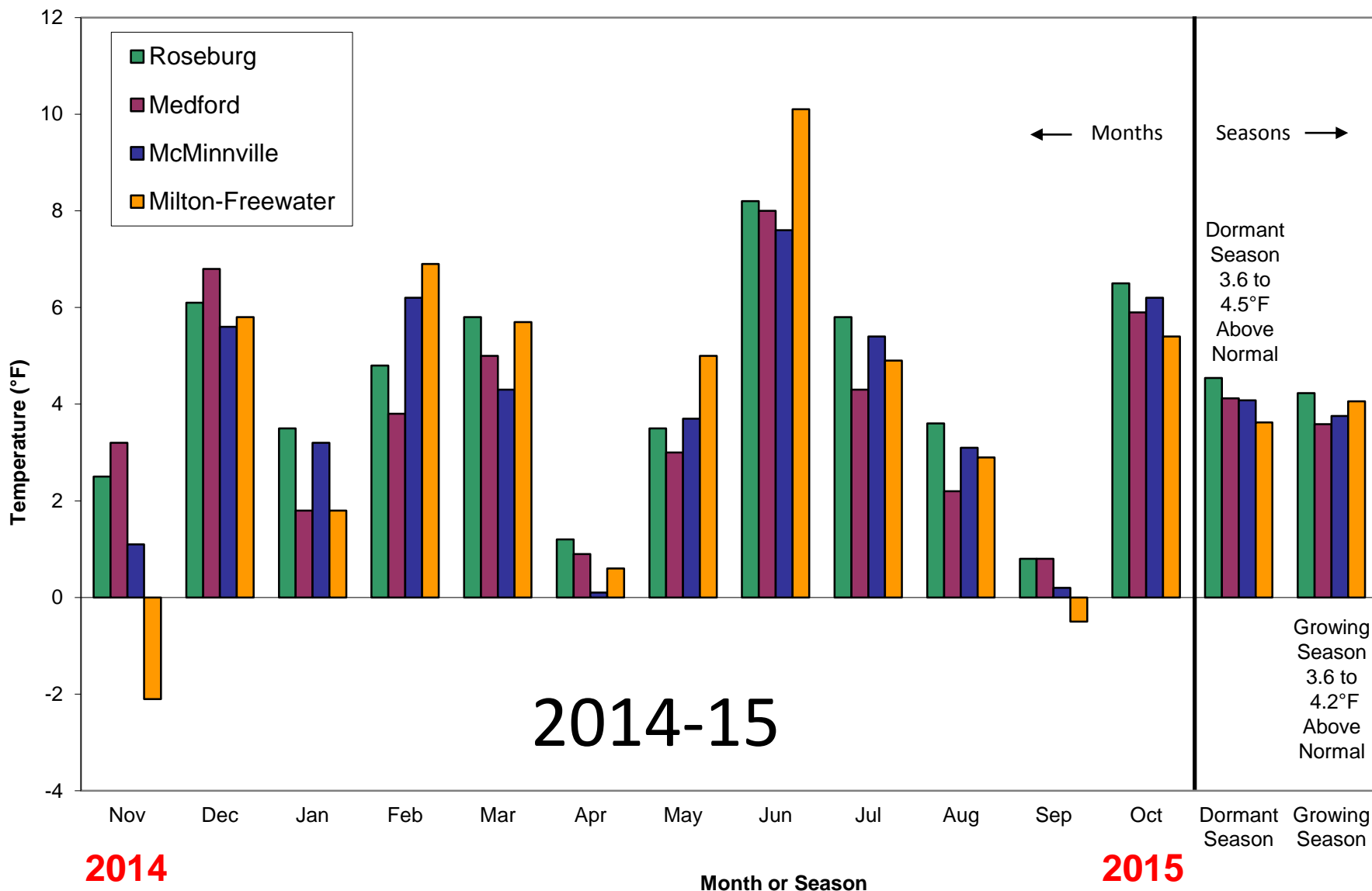
U.S. Climate Extremes Index

Annual (Jan-Dec)
1910-2015



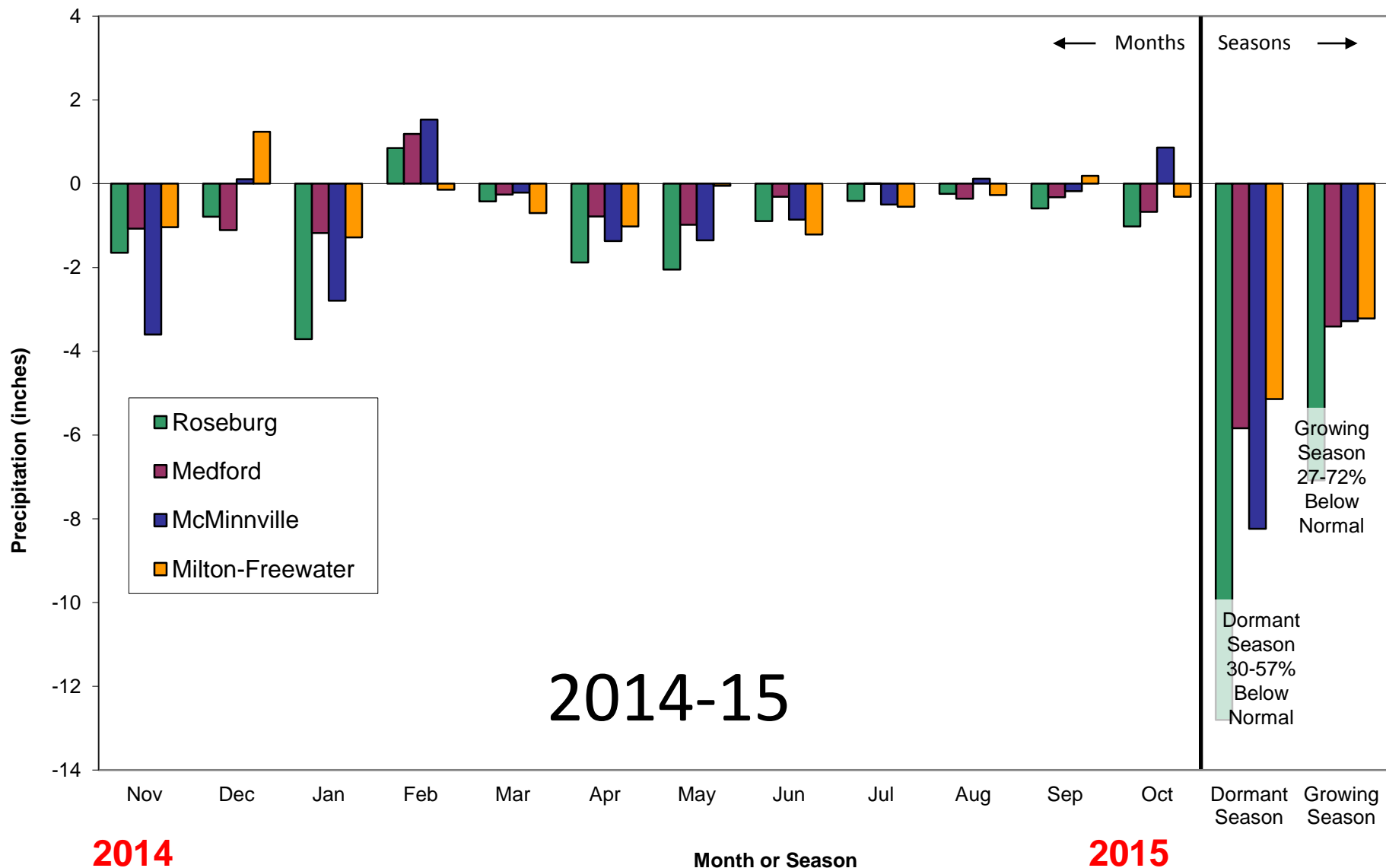
- US Tmax, Tmin and 1 day precipitation totals much above average
- NW, West elevated extremes in warm Tmax/Tmin, spatial extent of drought
- NW had its highest annual CEI on record, the West had its second highest

2014-15 Regional Temperature Departures from Normal



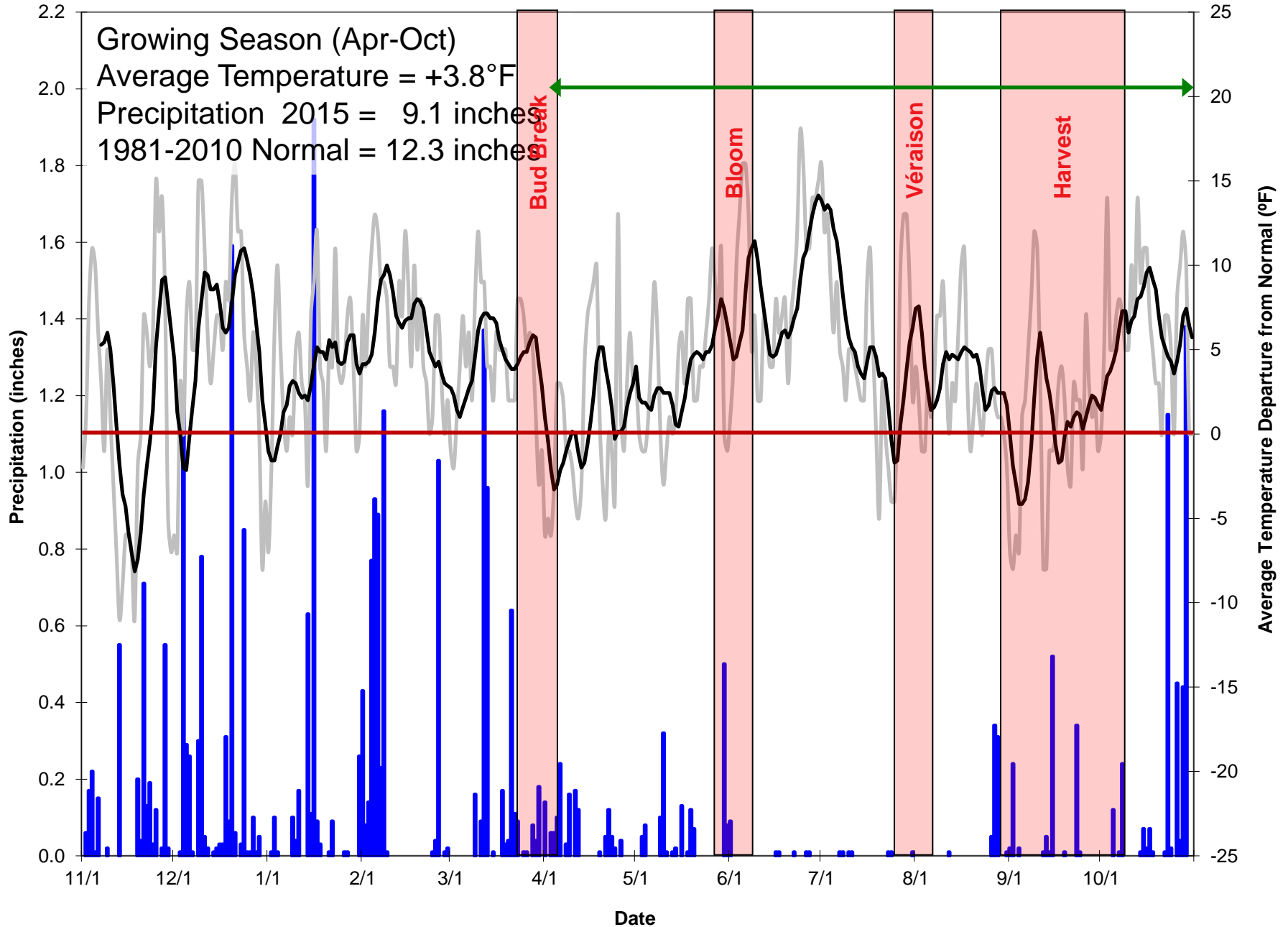
This chart represents a summation of daily temperature departures by month, the dormant period (Nov-Mar) and the growing season (Apr-Oct) compared to the 1981-2010 climate normals from the NWS stations (www.noaa.gov)

2014-15 Regional Precipitation Departures from Normal



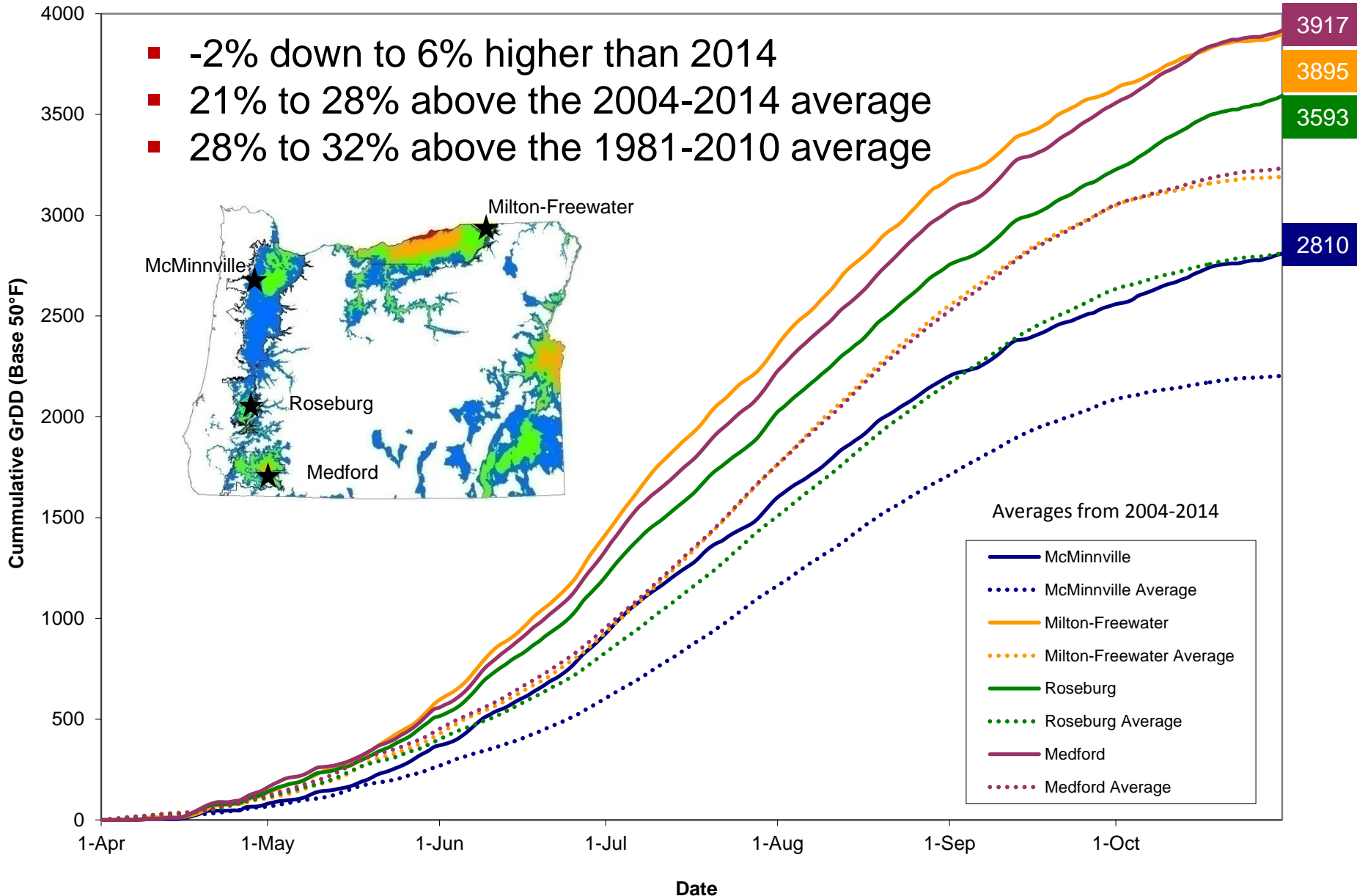
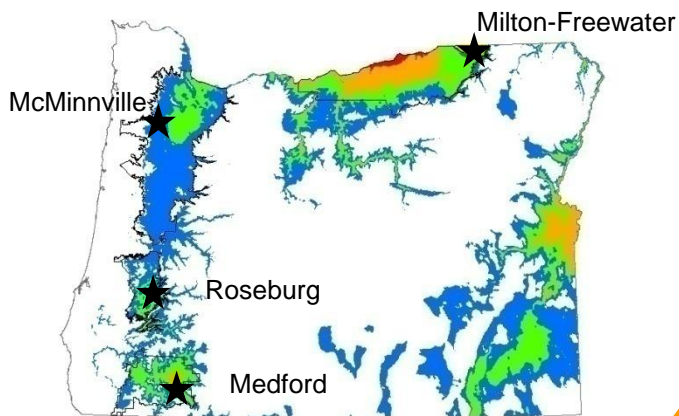
This chart represents the summation of daily precipitation departures by month, the dormant period (Nov-Mar) and the growing season (Apr-Oct) compared to the 1981-2010 climate normals from the NWS stations (www.noaa.gov)

McMinnville 2014-15 Temperature Departures from Normal and Precipitation



2015 Growing Season Cumulative Degree-Days

- -2% down to 6% higher than 2014
- 21% to 28% above the 2004-2014 average
- 28% to 32% above the 1981-2010 average



This chart represents the 2013 cumulative growing degree-days compared to the ten year average for 2004-2013 for the growing season (Apr-Oct) from the NWS stations (www.noaa.gov)

Oregon 2015 Vintage Summary

Weather/Climate

- Extremely warm winter, 4-6°F above normal; overall very dry but February rains critical
- November 2014 Tmin extremes east side caused moderate damage
- Spring continued warm/dry, isolated frost pressure at only the coolest of sites statewide

Oregon 2015 Vintage Summary

Weather/Climate

- Both maximum and minimum temperatures significantly higher than normal, more heat spikes and records set in 2015
- Heat accumulation on par with 2014 or at all time records for many locations
- August smoke coupled with September cool down slowed heat accumulation and helped usher in a paced harvest

Oregon 2015 Vintage Summary

Phenology

- Bud break 2-4 weeks ahead of normal
- Bloom continued trend, very little rain resulting in a rapid, very clean and heavy fruit set
- Véraison 2-4 weeks earlier, carrying large crop
- Harvest likely the earliest ever throughout Oregon, no rain pressure

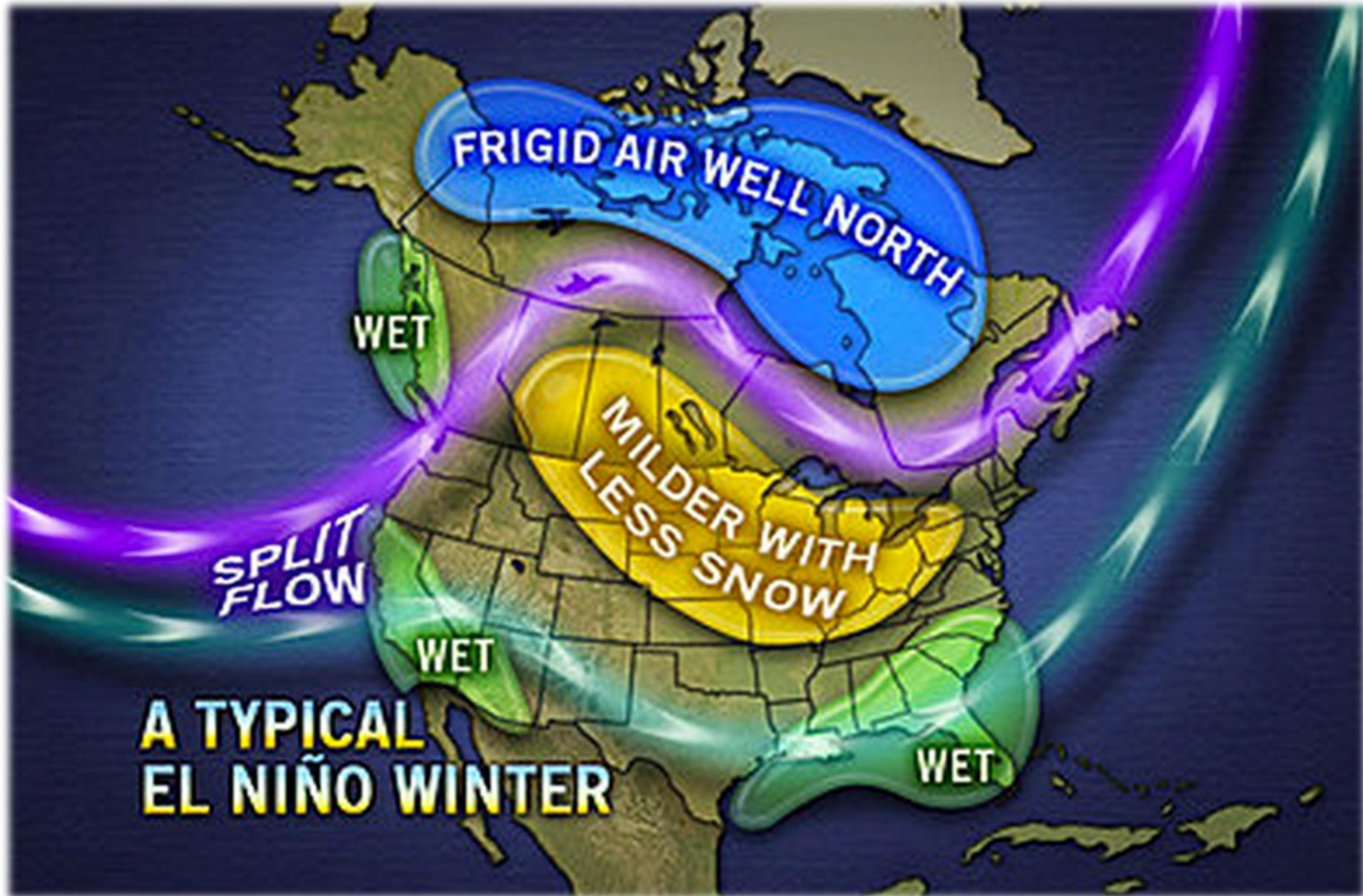
Oregon 2015 Vintage Summary

Harvest Composition

- **Brix** : ↑ mostly;
- **TA** : average to ↓,
- **pH** : average to ↑,
- **Yields** : overall ↑ by 10-20%, lower in areas impacted by November 2014 winter damage

Current Conditions

Typical El Niño Winter?

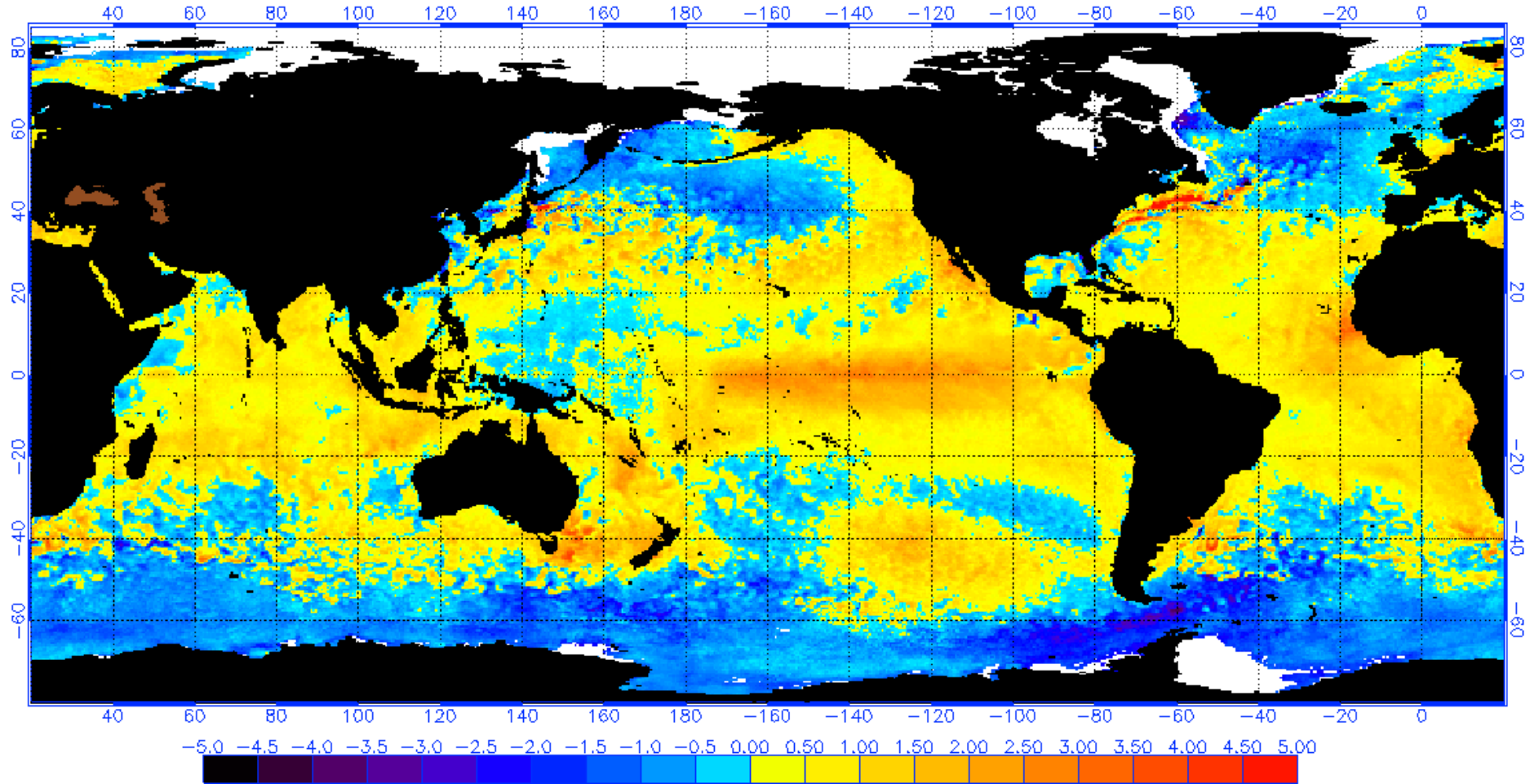


Typical El Niño Winter?



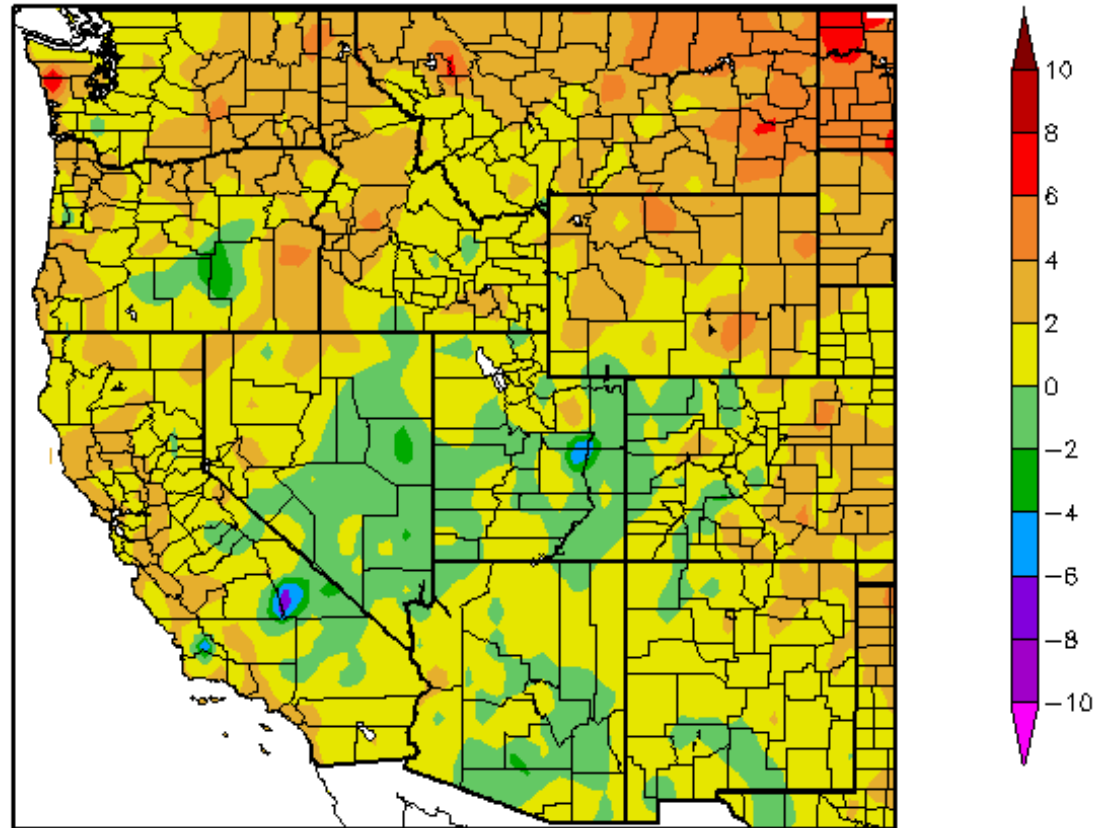
Current Sea Surface Temperatures

NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 2/18/2016
(white regions indicate sea-ice)



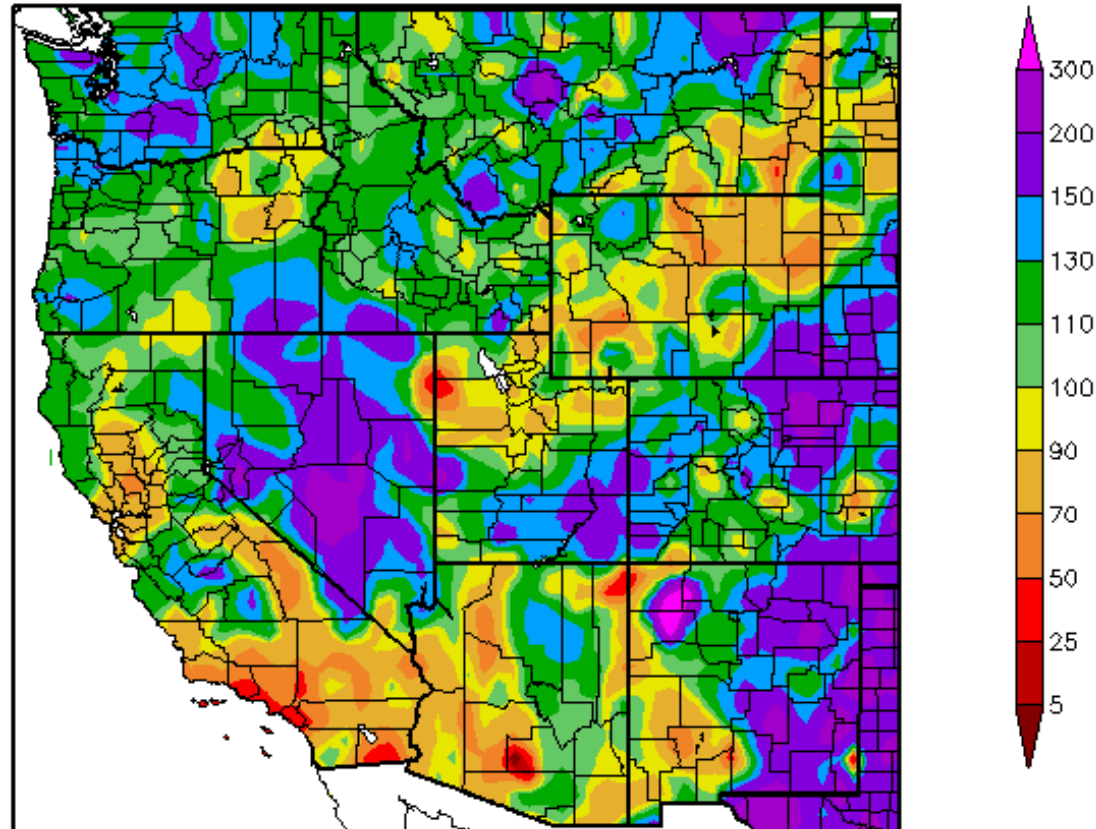
- Temperatures not completely following normal El Niño winter pattern

Departure from Normal Temperature (F)
10/1/2015 – 2/20/2016

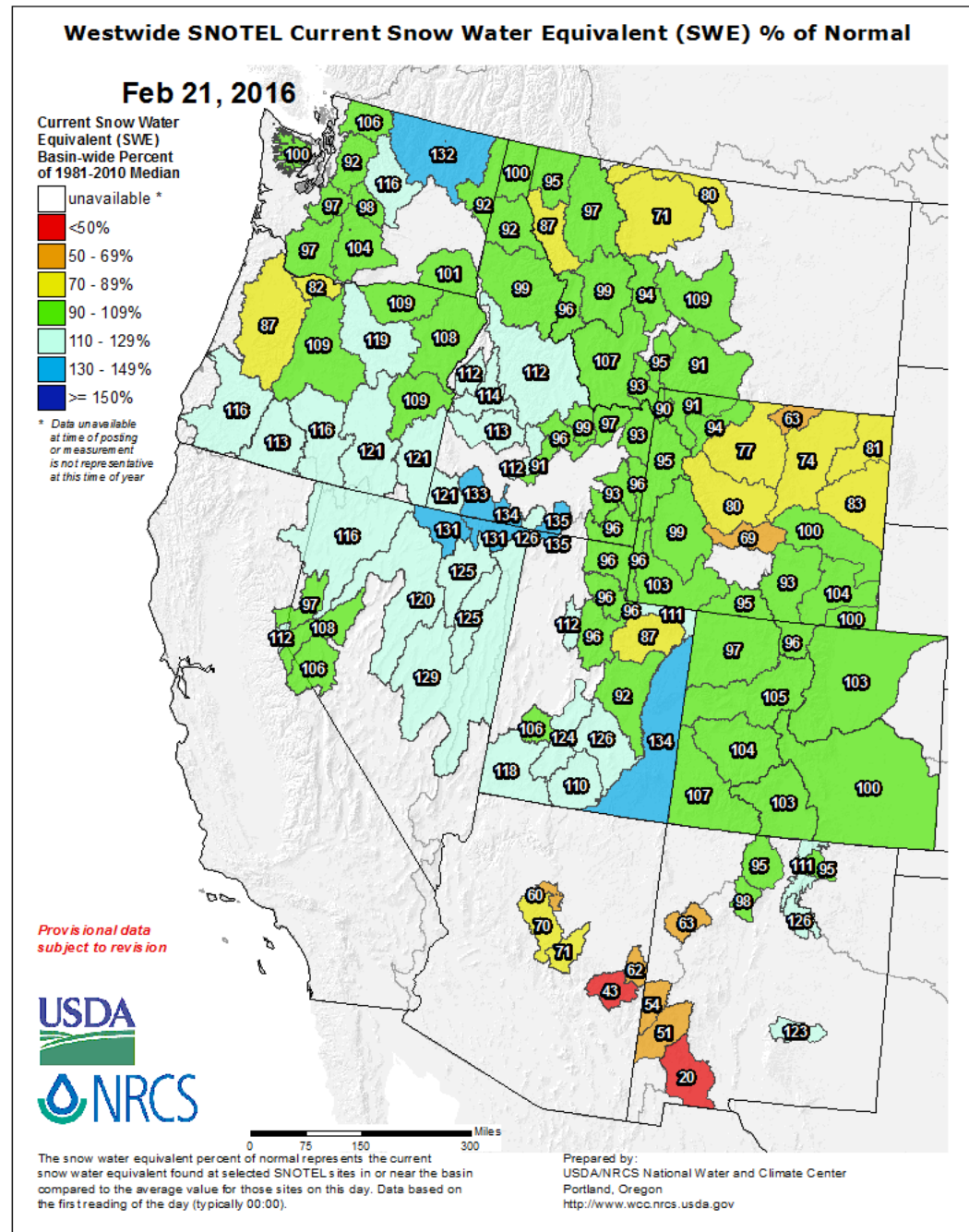


- Temperatures not completely following normal El Niño winter pattern
- Precipitation amounts at lower elevations mixed, but still better than past four winters

Percent of Normal Precipitation (%)
10/1/2015 – 2/20/2016



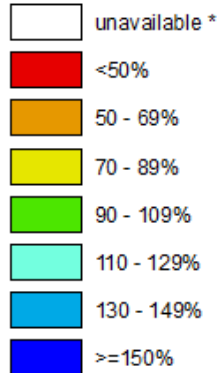
- Temperatures not completely following normal El Niño winter pattern
- Precipitation amounts at lower elevations mixed, but still better than past four winters
- SWE above normal, but a long way to go to end of snow season



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

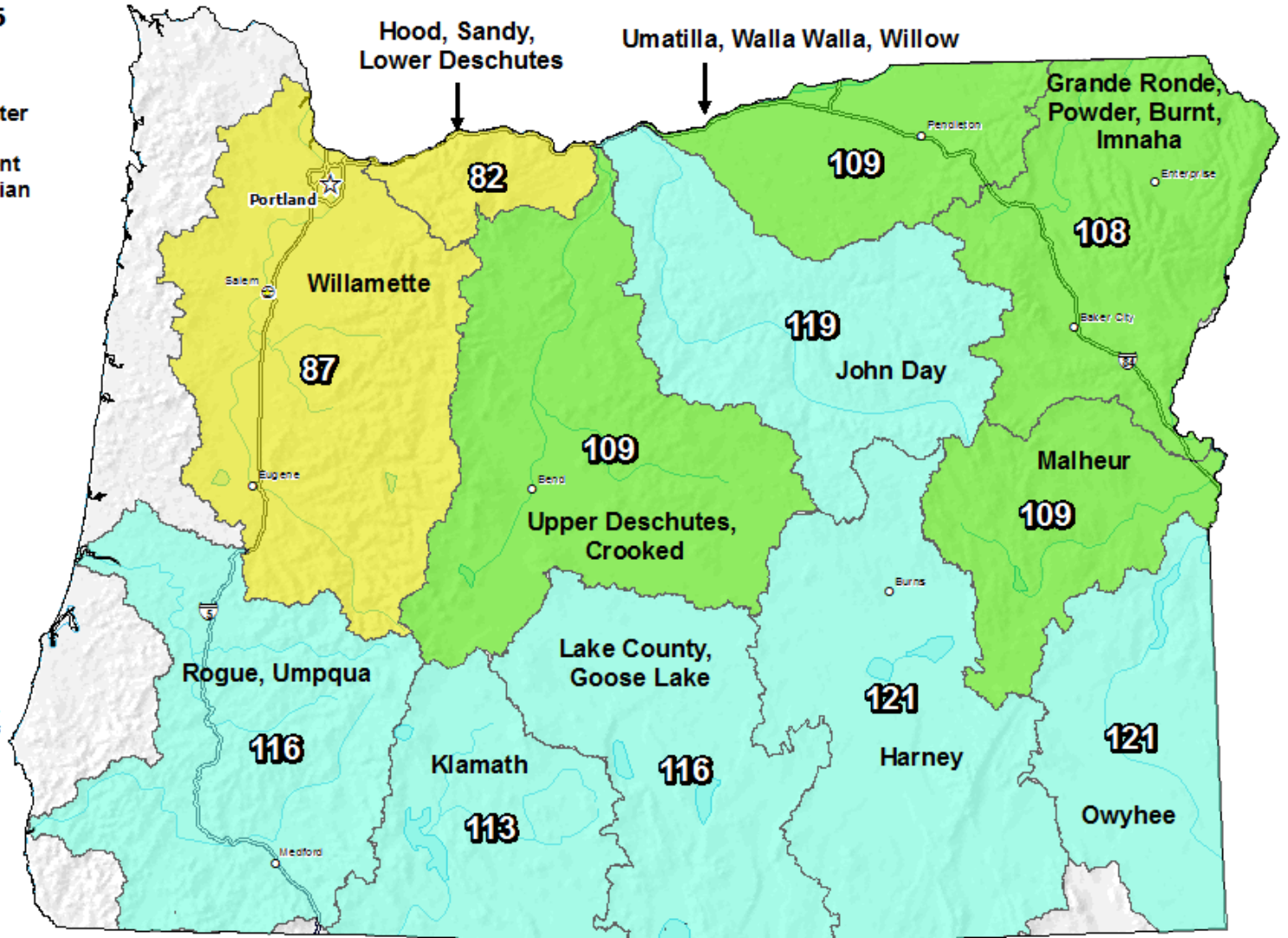
Feb 21, 2016

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

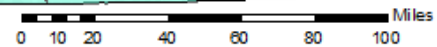


* Data unavailable at time of posting or measurement is not representative at this time of year

Provisional Data
Subject to Revision



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first treading of the day (typically 00:00).

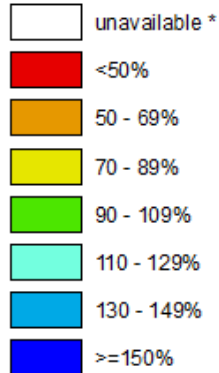


Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

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

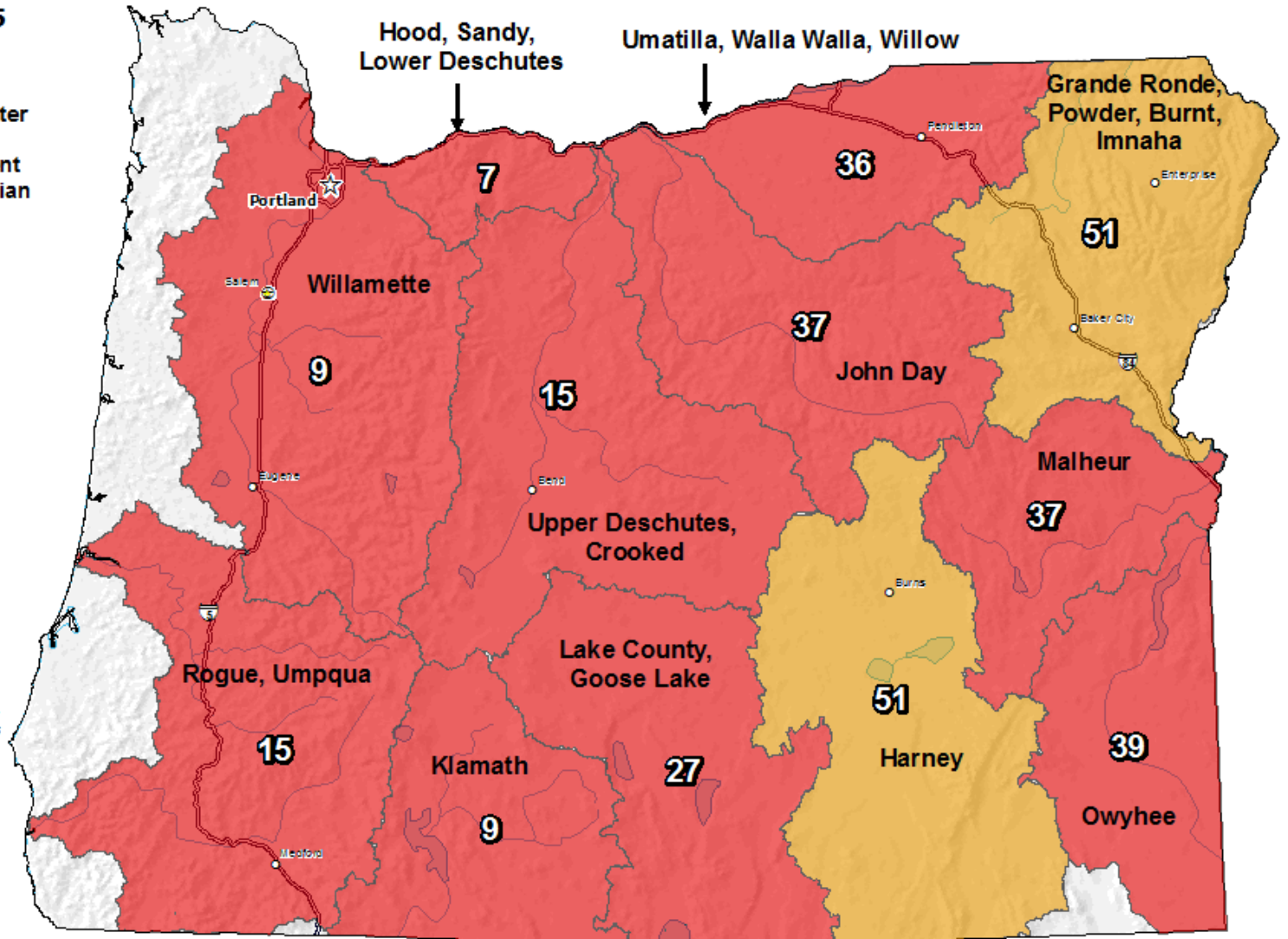
Feb 23, 2015

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

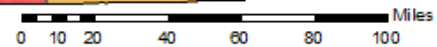


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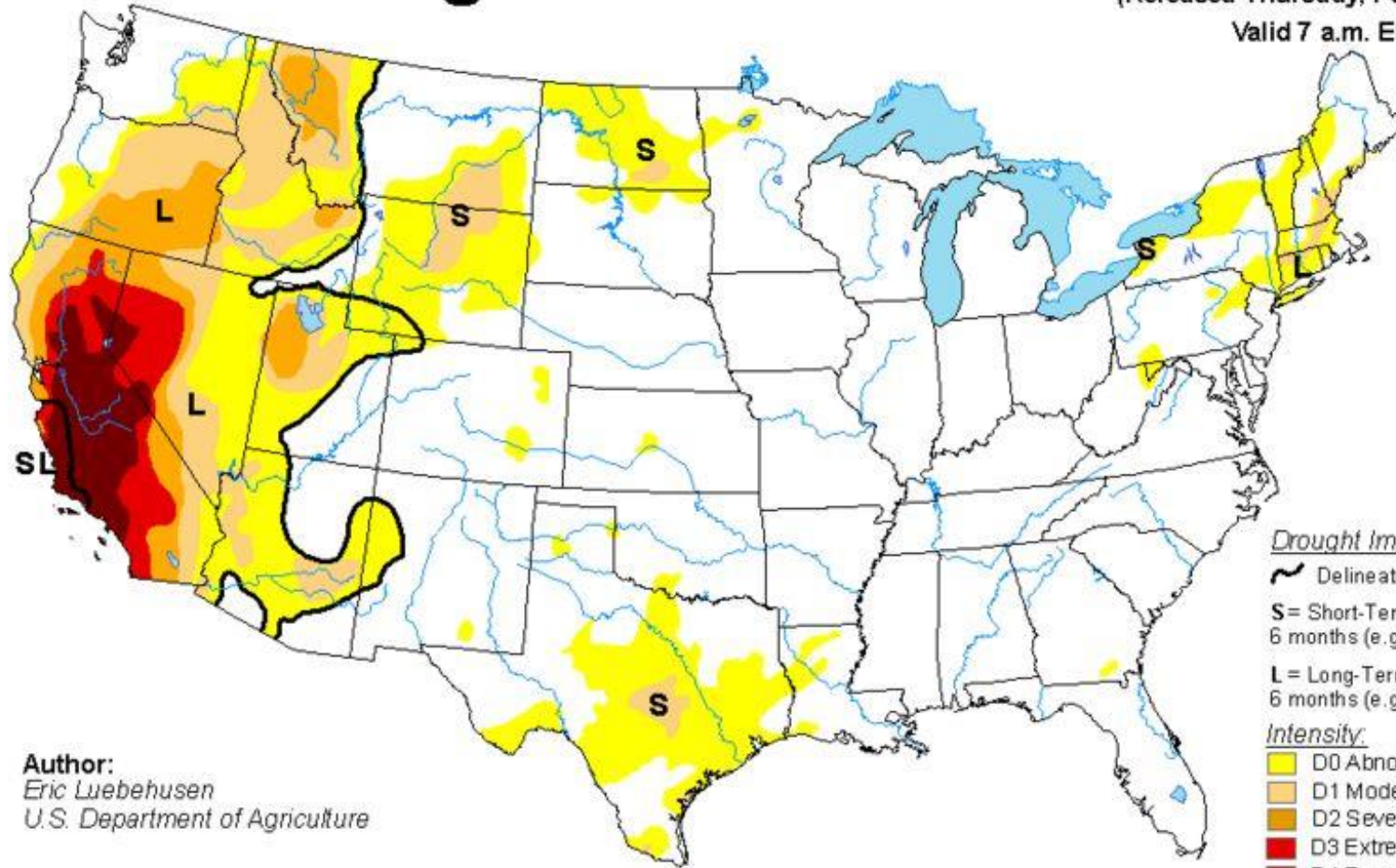


Prepared by:
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Portland, Oregon
<http://www.wcc.nrcs.usda.gov>


U.S. Drought Monitor

February 16, 2016
(Released Thursday, Feb. 18, 2016)






Valid 7 a.m. EST



Drought Impact Types:

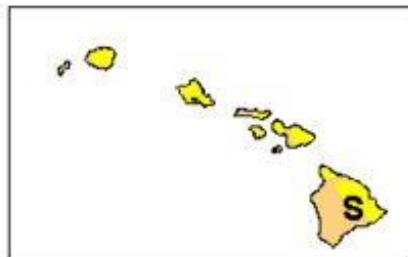
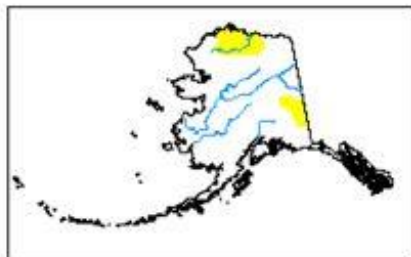
-  Delineates dominant impacts
- S** = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L** = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

Author:
Eric Luebehusen
U.S. Department of Agriculture

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



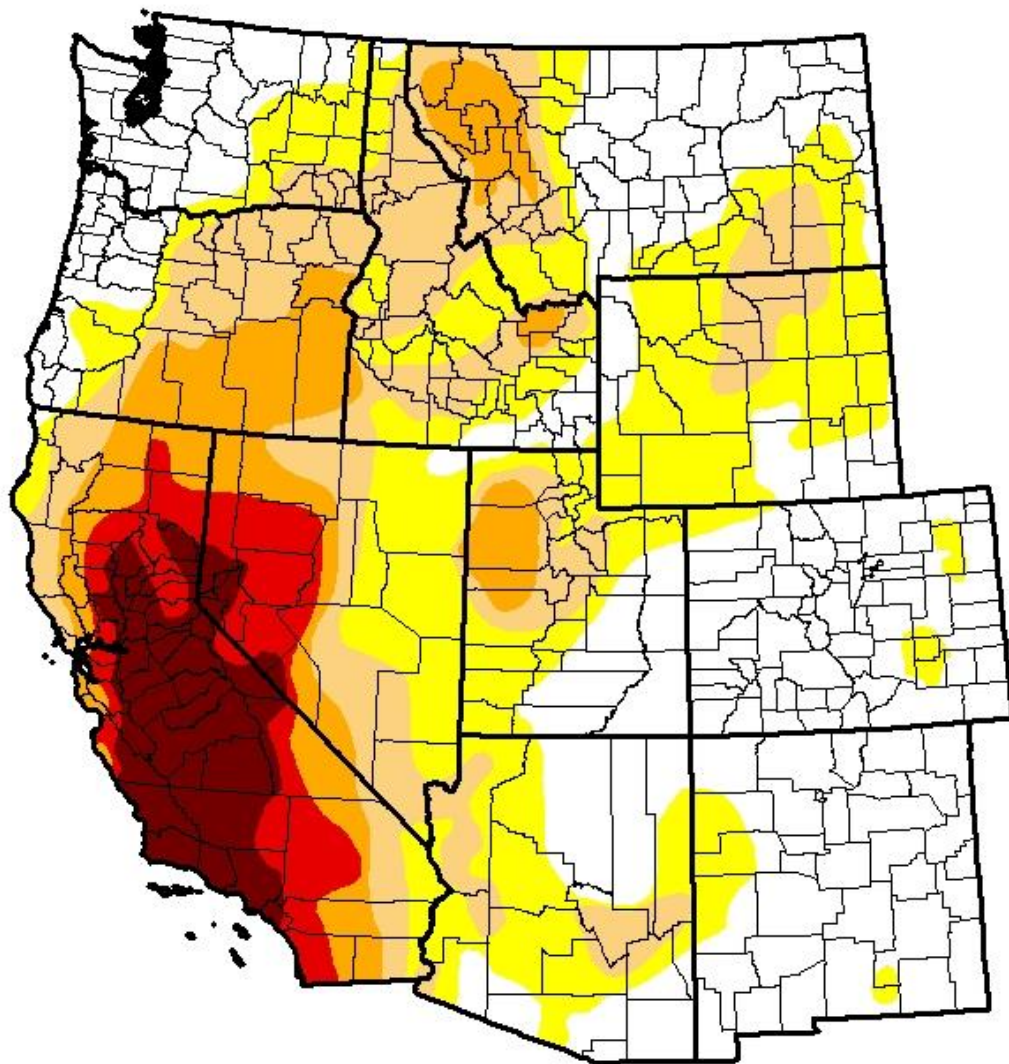
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor West

February 16, 2016

(Released Thursday, Feb. 18, 2016)

Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.88	61.32	36.57	19.60	10.35	5.55
Last Week <i>2/8/2016</i>	38.22	61.78	37.15	19.90	10.79	5.55
3 Months Ago <i>11/17/2015</i>	26.63	73.37	51.19	37.73	21.46	6.85
Start of Calendar Year <i>12/29/2015</i>	33.17	66.83	45.07	29.30	15.92	6.85
Start of Water Year <i>9/29/2015</i>	22.77	77.23	57.81	42.42	26.50	7.62
One Year Ago <i>2/17/2015</i>	31.20	68.80	58.53	30.61	17.23	7.21

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Eric Luebehusen

U.S. Department of Agriculture



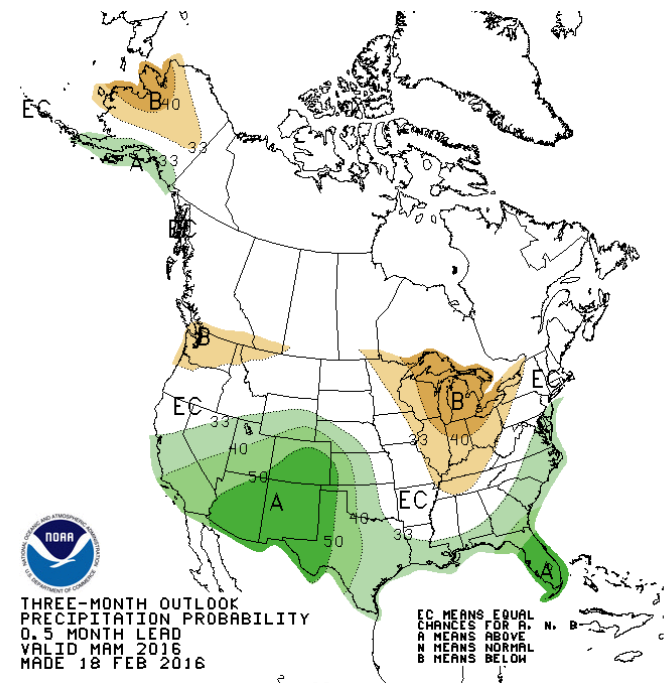
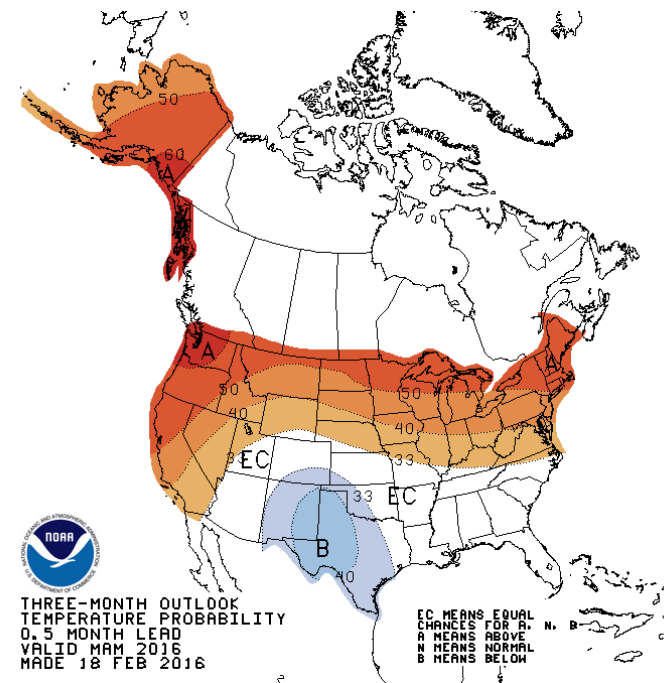
What's in Store ... Vintage 2016

NOAA Spring 2016 Forecasts

The March-April-May (MAM) temperature forecast indicates an increased likelihood of a warm spring over the west (probability holds for warmer western US for AMJ and beyond).

The March-April-May (MAM) precipitation forecast indicates an increased likelihood of dry north and wetter southward (shifts to equal chance wetter/drier in AMJ and beyond).

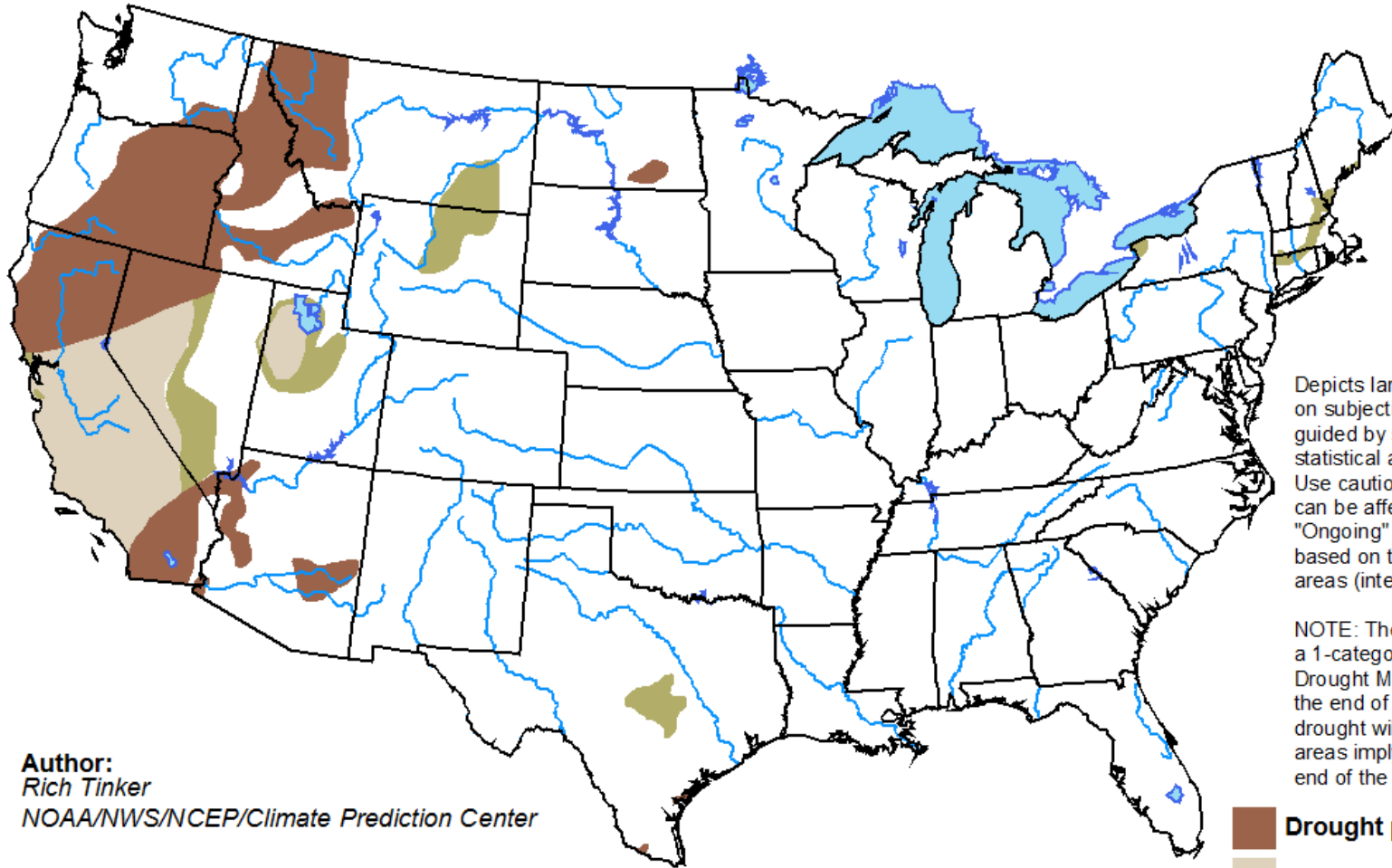
The seasonal forecasts should be interpreted as the tilting of odds towards general categories of conditions, and should not be viewed as a guarantee that the specified conditions will be realized.



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period





Valid for February 18 - May 31, 2016
Released February 18, 2016

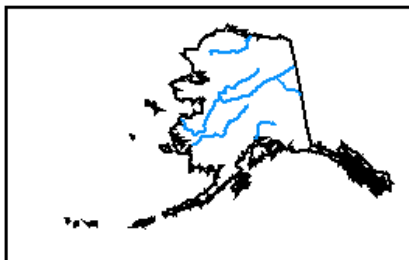


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center

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



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

Summary

- Continued warming, dynamics of the climate system and overall persistence of atmosphere and ocean conditions should continue trend in 2016
- Weather/Climate extremes near highest on record in the US, especially the PNW/West (e.g., heat stress events, both Tmax and Tmin, and spatial extent of droughts)

Summary

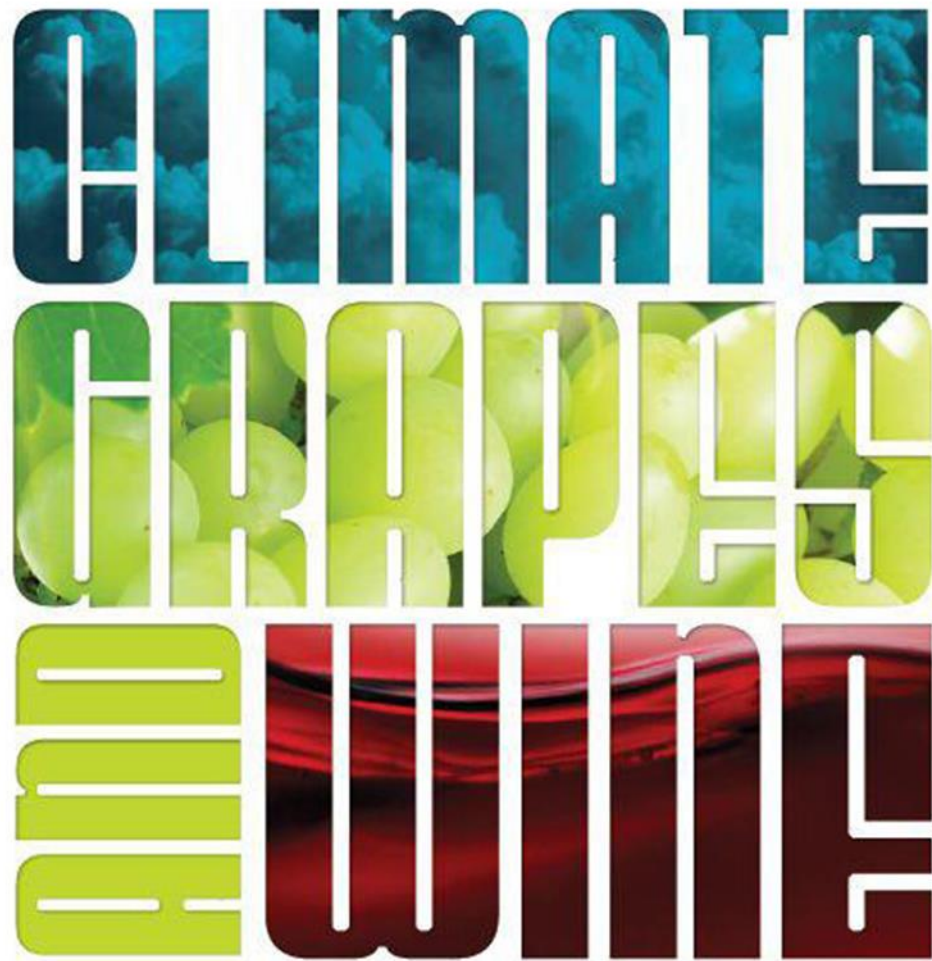
- Effects of El Niño occurring mostly as expected in other areas of the world
- Western US conditions have deviated from expected El Niño effects during the first half of winter
- El Niño influences have been hit and miss of late, still time ...
- However, El Niño conditions (SST) already starting to wane

Spring/Summer 2016 Forecast Summary

- Tropical SST conditions forecast to transition from El Niño to neutral (normal) by late spring or early summer (then La Niña likely)
- North Pacific SST have cooled, but remain warmer than normal
- The conditions tilt the odds in favor of;
 - PNW/Oregon warm and drier late winter/early spring
 - California warm and wet late winter/early spring

Spring/Summer 2016 Forecast Summary

- Spring frost frequency **tends** to be less in these type of years, but heat extremes higher
- Potential for continued drought **relief** during the spring, moderate **recovery overall**, but still a long way to go
- Dynamic models, historical analogs, and persistence of the past few years point to normal to greater than normal heat accumulation during the summer, likely between 2012-2015



Thank You!

Gregory V. Jones

Director: Business, Communication
and the Environment

Professor: Environmental Science
and Policy

