

A topographic map of the state of Oregon, showing terrain elevation with green for lower elevations and tan/brown for higher elevations. The map is the background for the title text.

2017 Vintage Overview and Initial 2018 Forecast

Gregory V. Jones
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Linfield College



Outline of Talk

- Global to Regional Climate Summary for 2017
- Weather/Climate in Oregon for 2016-17
- Current Conditions and Regional Forecast for 2018



Global to Regional Climate Summary for 2017

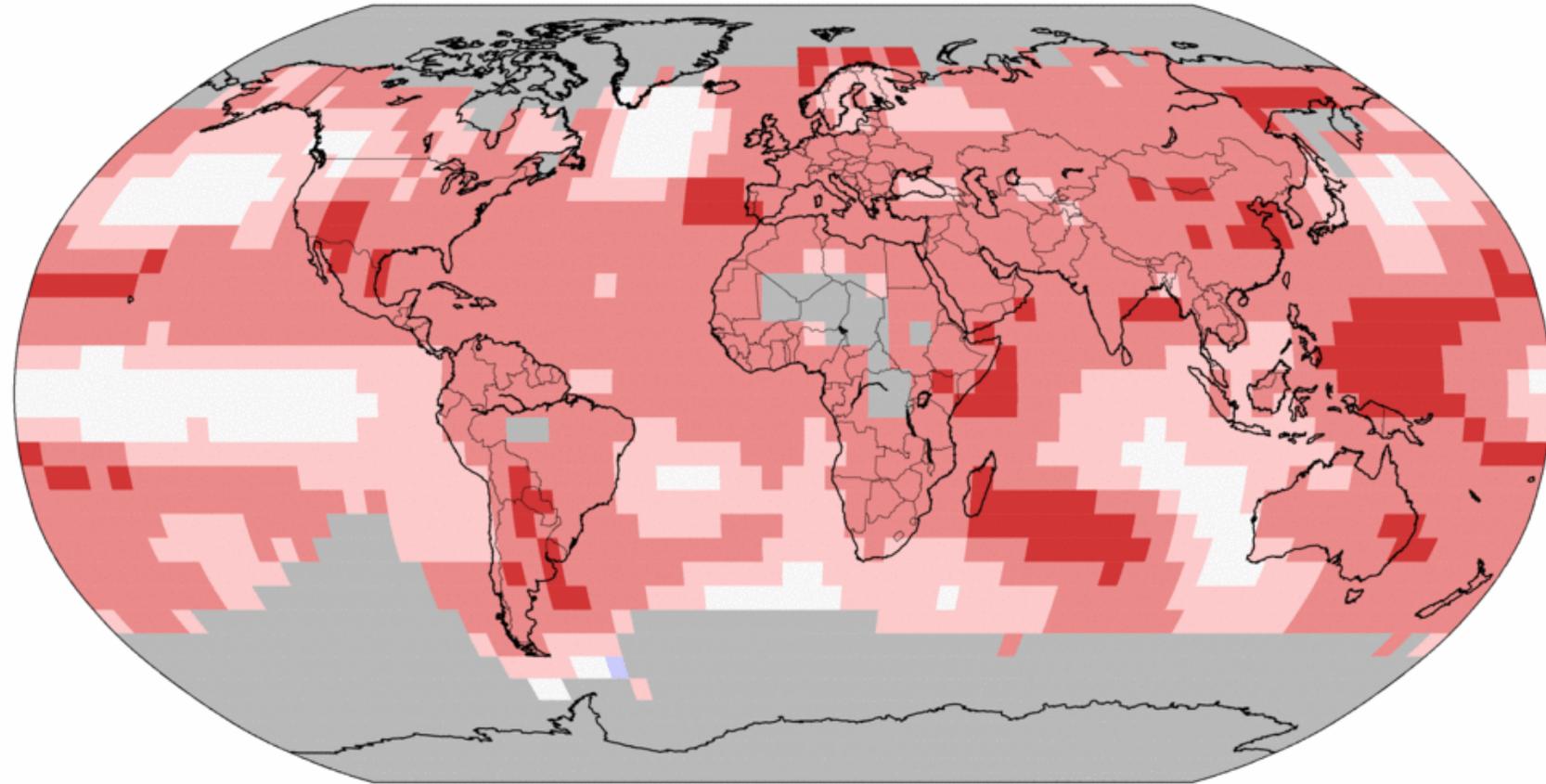
Global Temperature Departures 2017

Land & Ocean Temperature Percentiles Jan–Dec 2017

NOAA's National Centers for Environmental Information

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

- 3rd warmest year on record, 1.51°F above average, just below 2015 and 2016
- 2017 was the warmest year without an El Niño in the Tropical Pacific Ocean
- The Arctic saw its warmest year ever, and both poles continue to lose ice mass at record paces



Record Coldest



Much Cooler than Average



Cooler than Average



Near Average



Warmer than Average



Much Warmer than Average



Record Warmest



Global Wine Production in 2017

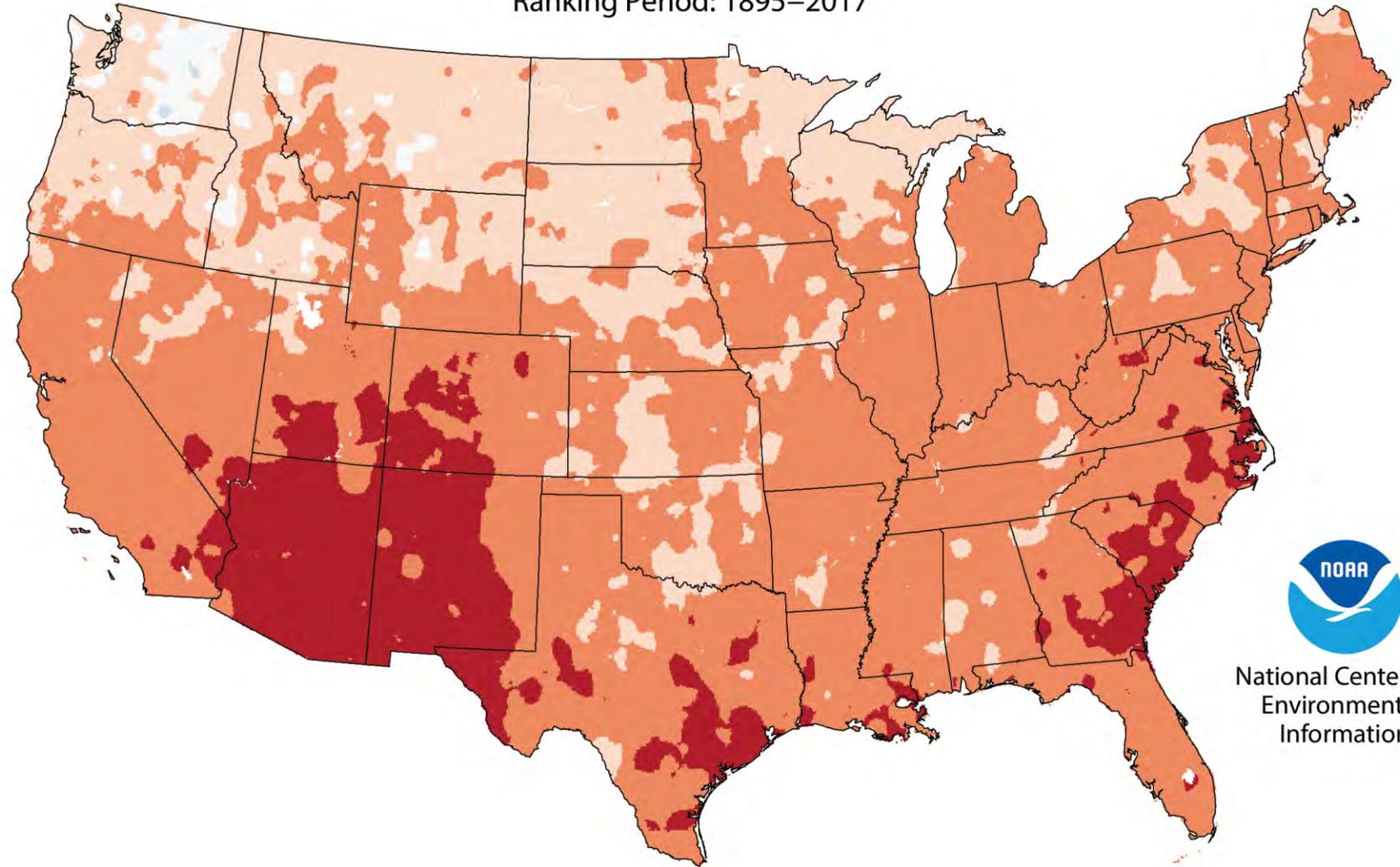


Mean Temperature Percentiles

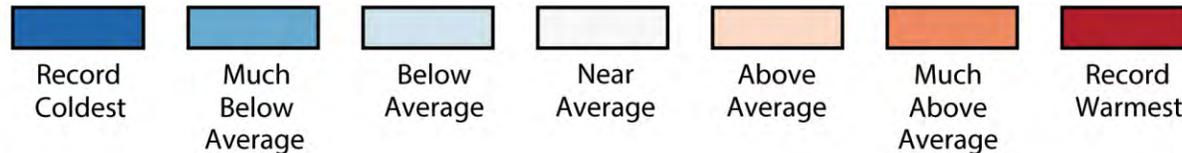
January–December 2017

Ranking Period: 1895–2017

- CONUS +2.6°F above average in 2017
- 3rd warmest in the 123-year period of record
- 21st consecutive year above average
- Both Tmax and Tmin above average



National Centers for
Environmental
Information



Created: Thu Jan 04 2018

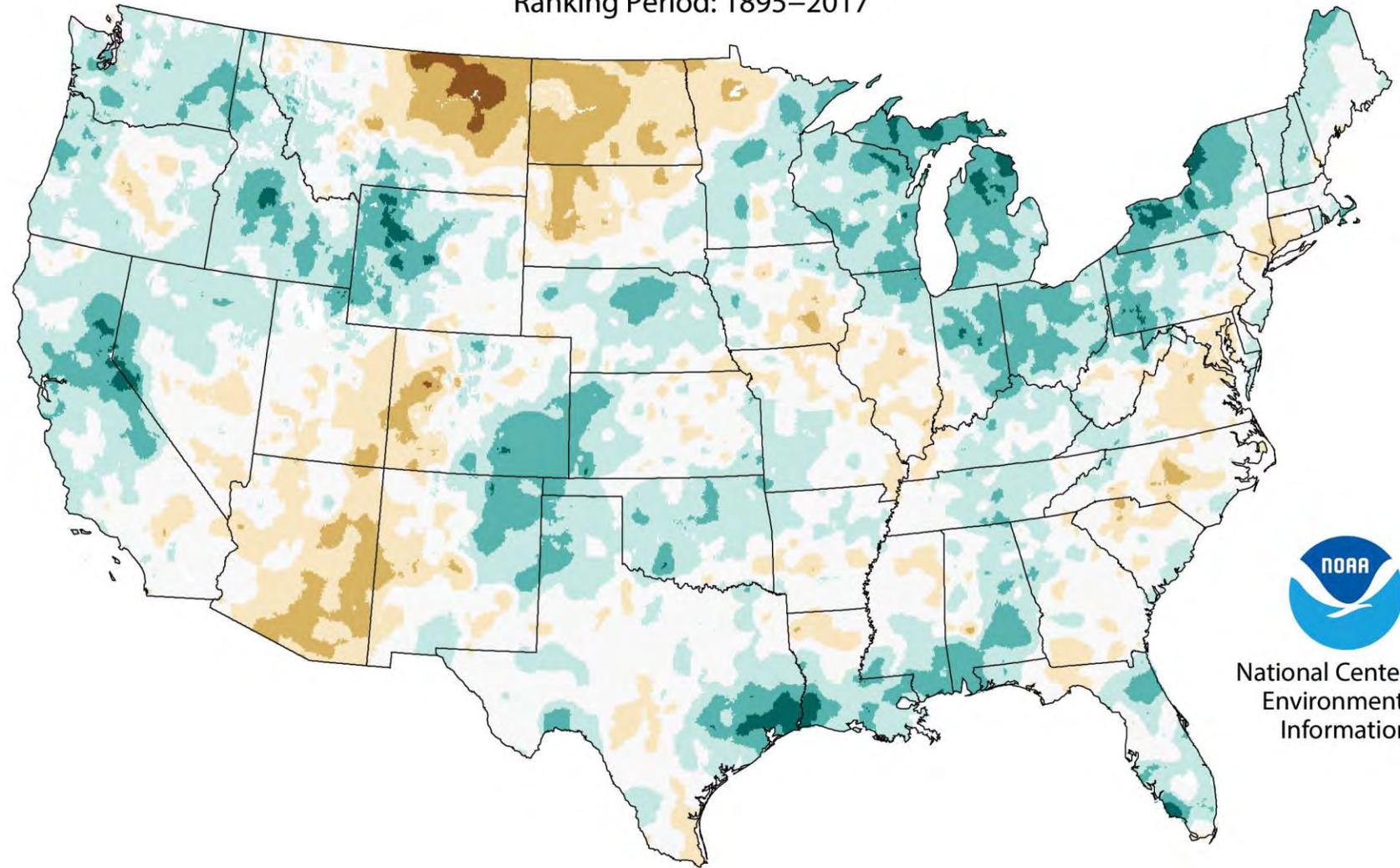
Data Source: 5km Gridded Dataset (nClimGrid)

Total Precipitation Percentiles

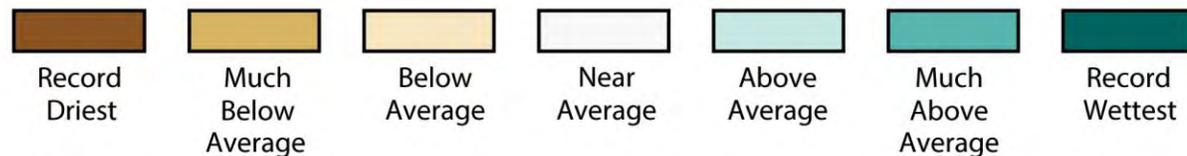
January–December 2017

Ranking Period: 1895–2017

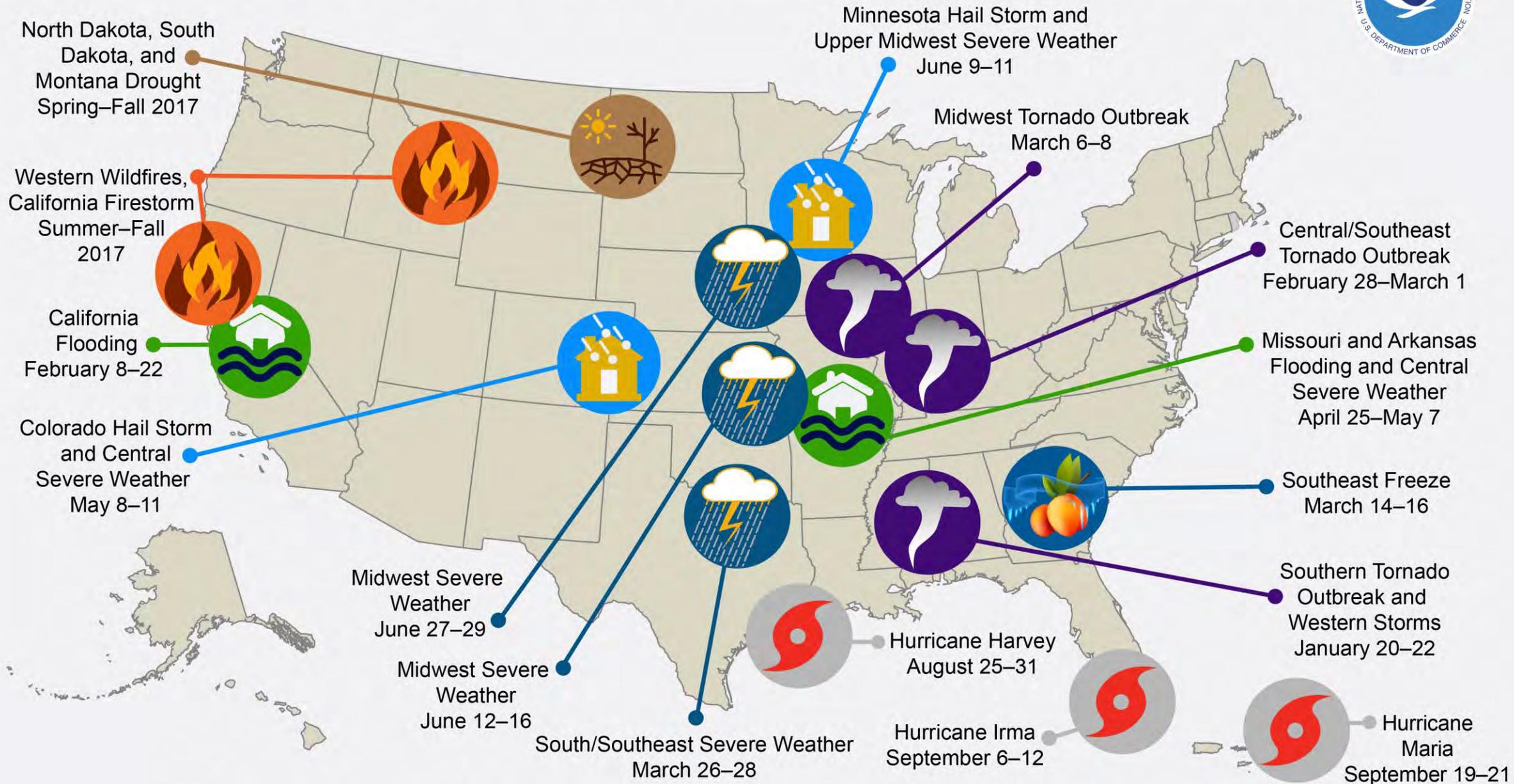
- CONUS above average in 2017
- 20th wettest in the 123 year period of record
- US drought footprint hit a low of 4.5% in late May, lowest in 18 years
- Great Plains and Four Corners drought areas developed



National Centers for
Environmental
Information



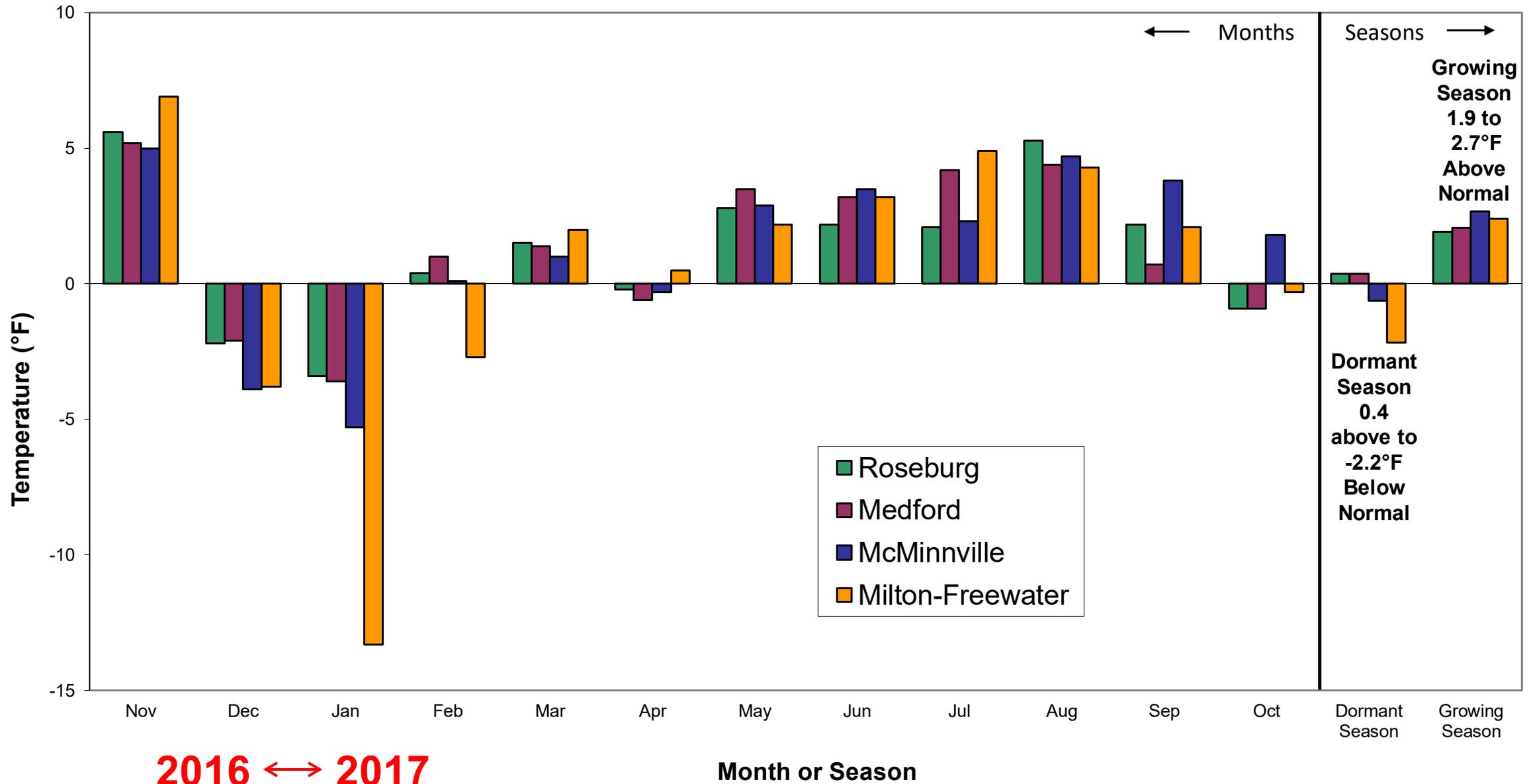
U.S. 2017 Billion-Dollar Weather and Climate Disasters



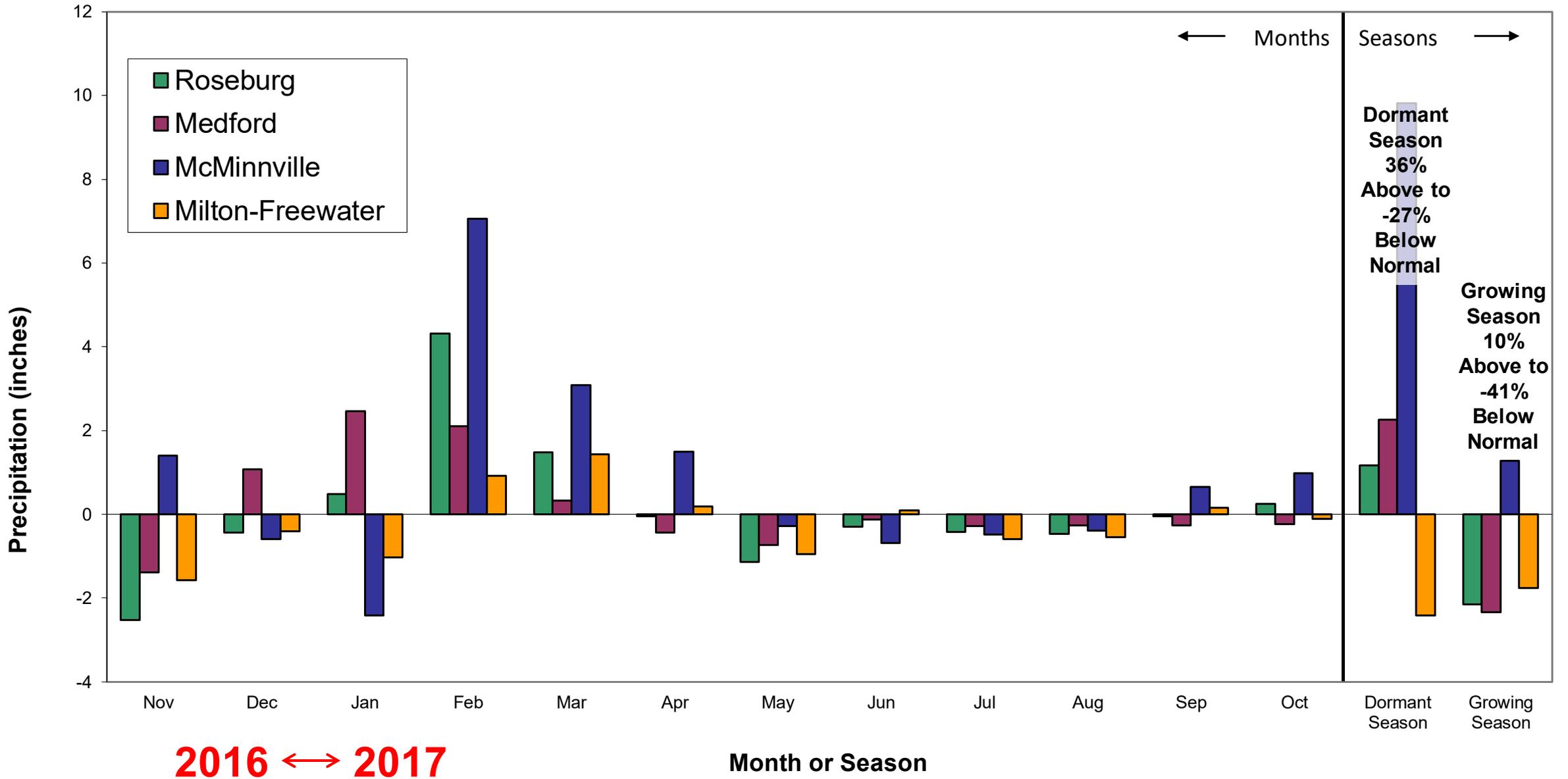
This map denotes the approximate location for each of the 16 billion-dollar weather and climate disasters that impacted the United States during 2017.

Oregon 2016-17
Weather/Climate Summary

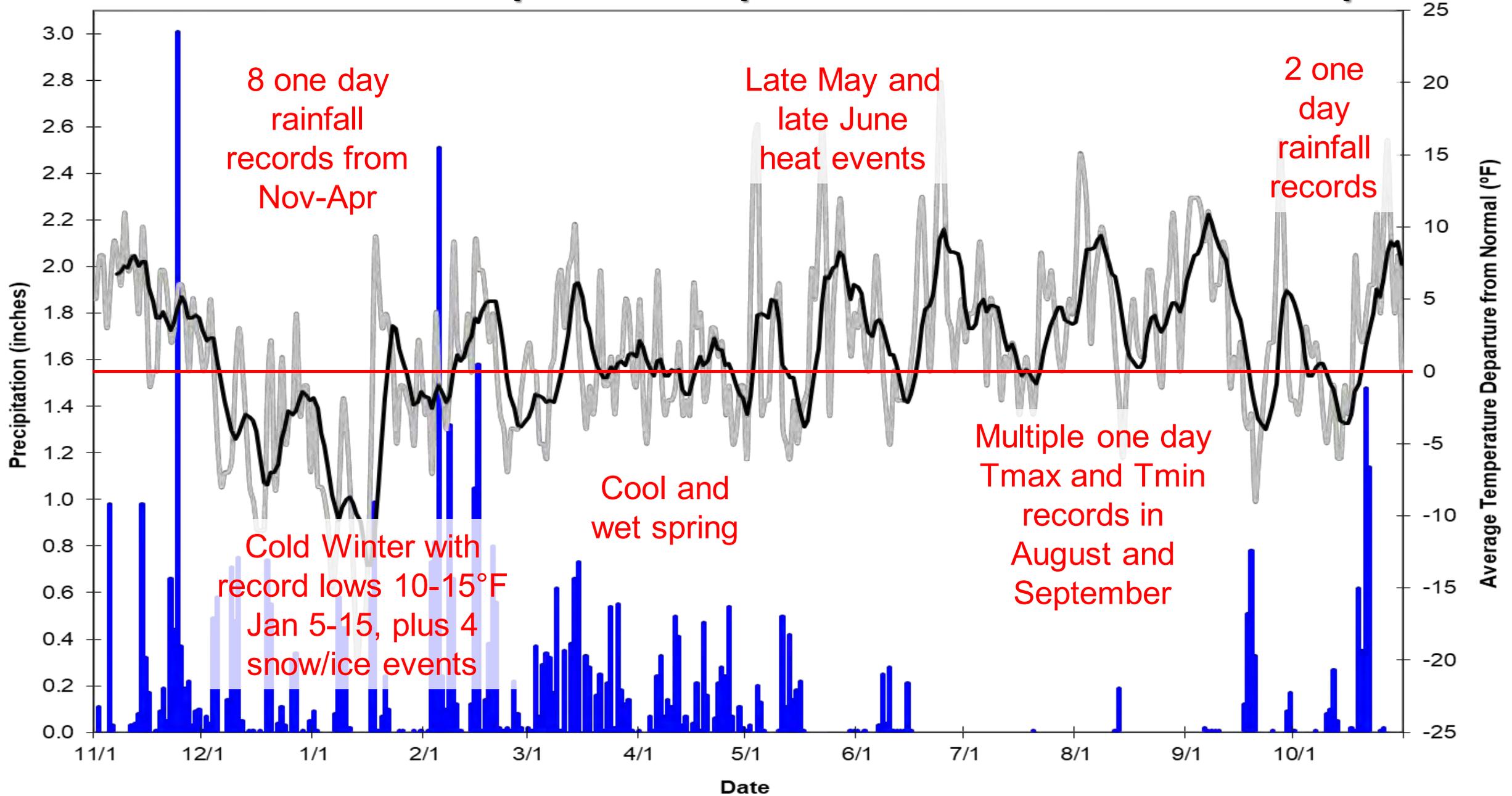
2016-17 Regional Temperature Departures from Normal



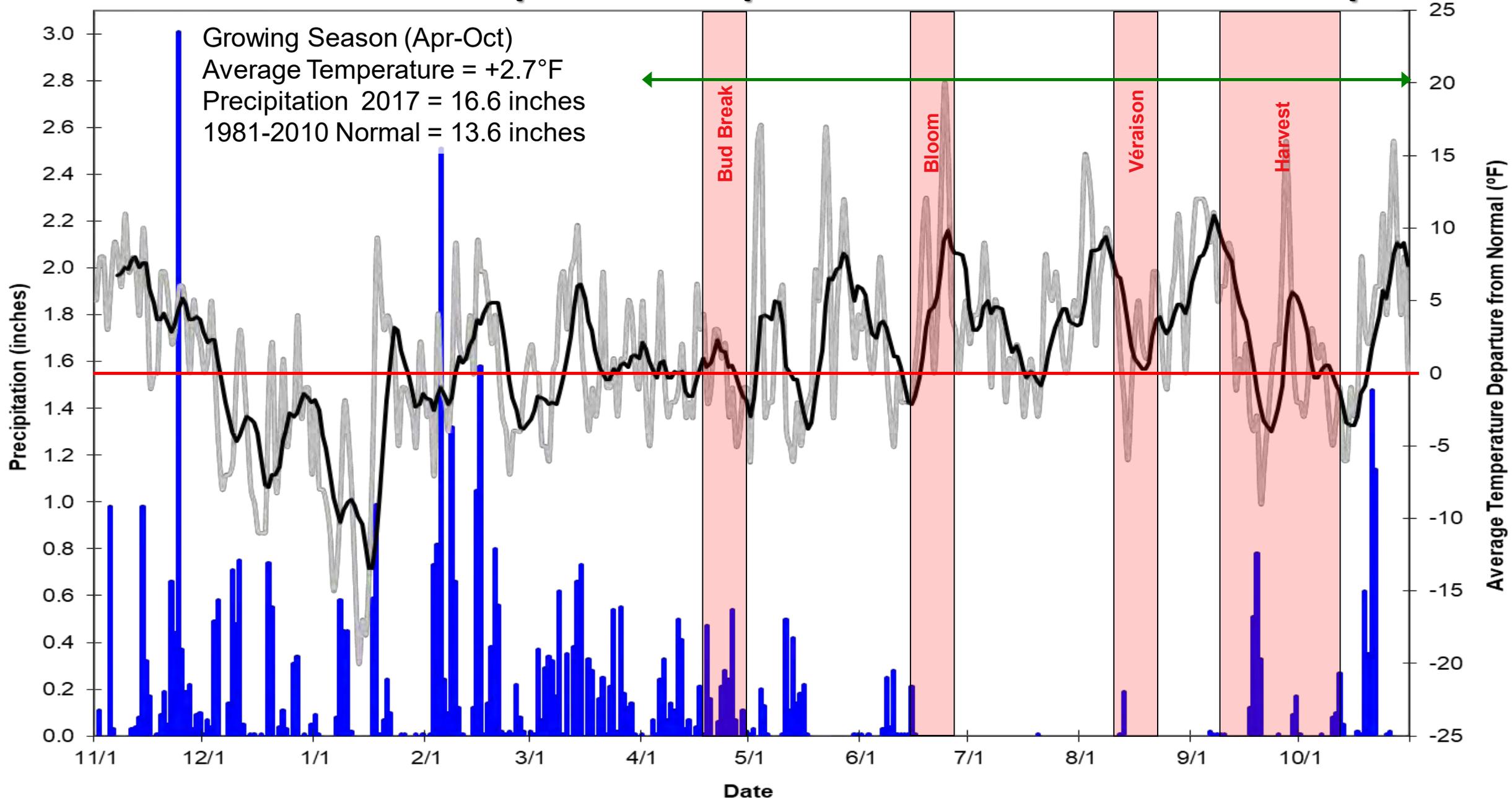
2016-17 Regional Precipitation Departures from Normal



McMinnville 2016-17 Temperature Departures from Normal and Precipitation

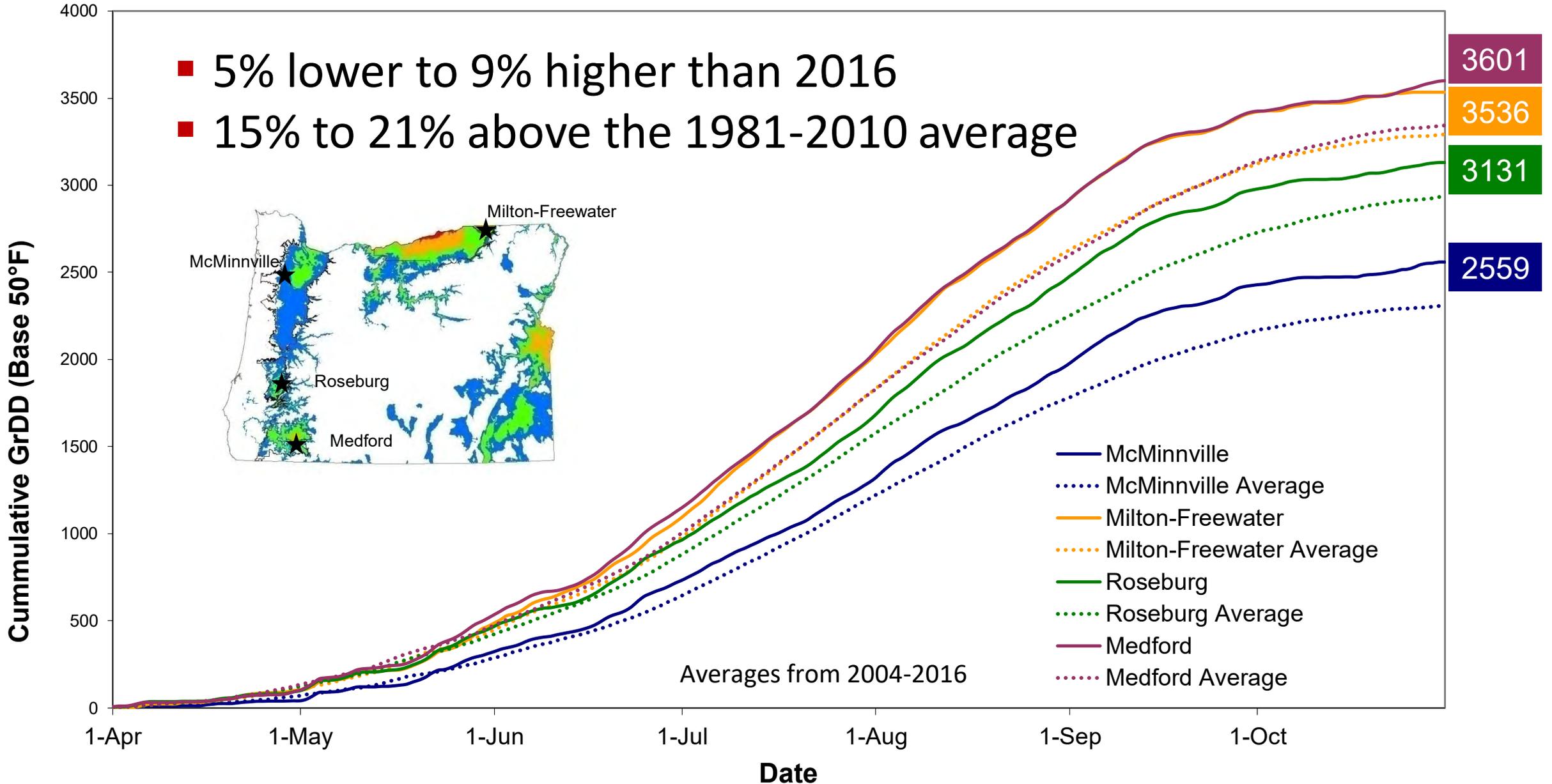


McMinnville 2016-17 Temperature Departures from Normal and Precipitation



2017 Growing Season Cumulative Degree-Days

- 5% lower to 9% higher than 2016
- 15% to 21% above the 1981-2010 average



This chart represents the 2017 cumulative growing degree-days compared to the average for 2004-2016 for the growing season (Apr-Oct) from the NWS stations (www.noaa.gov)

2017 Vintage Observations

- Winter Freeze, Snow Insolation
- High Fruitfulness, more clusters per vine and larger clusters, plus a good fruit set
- Fires and Smoke
- Effects on Temperatures and Ripening
- Heat Stress, Ripening Dynamics and Timing
- Water Berries, Sugar Accumulation Disorder
- Production ~10-15% over 2016, largest ever

Current Conditions

A Tale of Two Winters ...

This Winter

- La Niña
- Coolish North Pacific
- Ridiculously Resilient Ridge
- Record dry winter
- Forecast for a cool spring

Last Winter

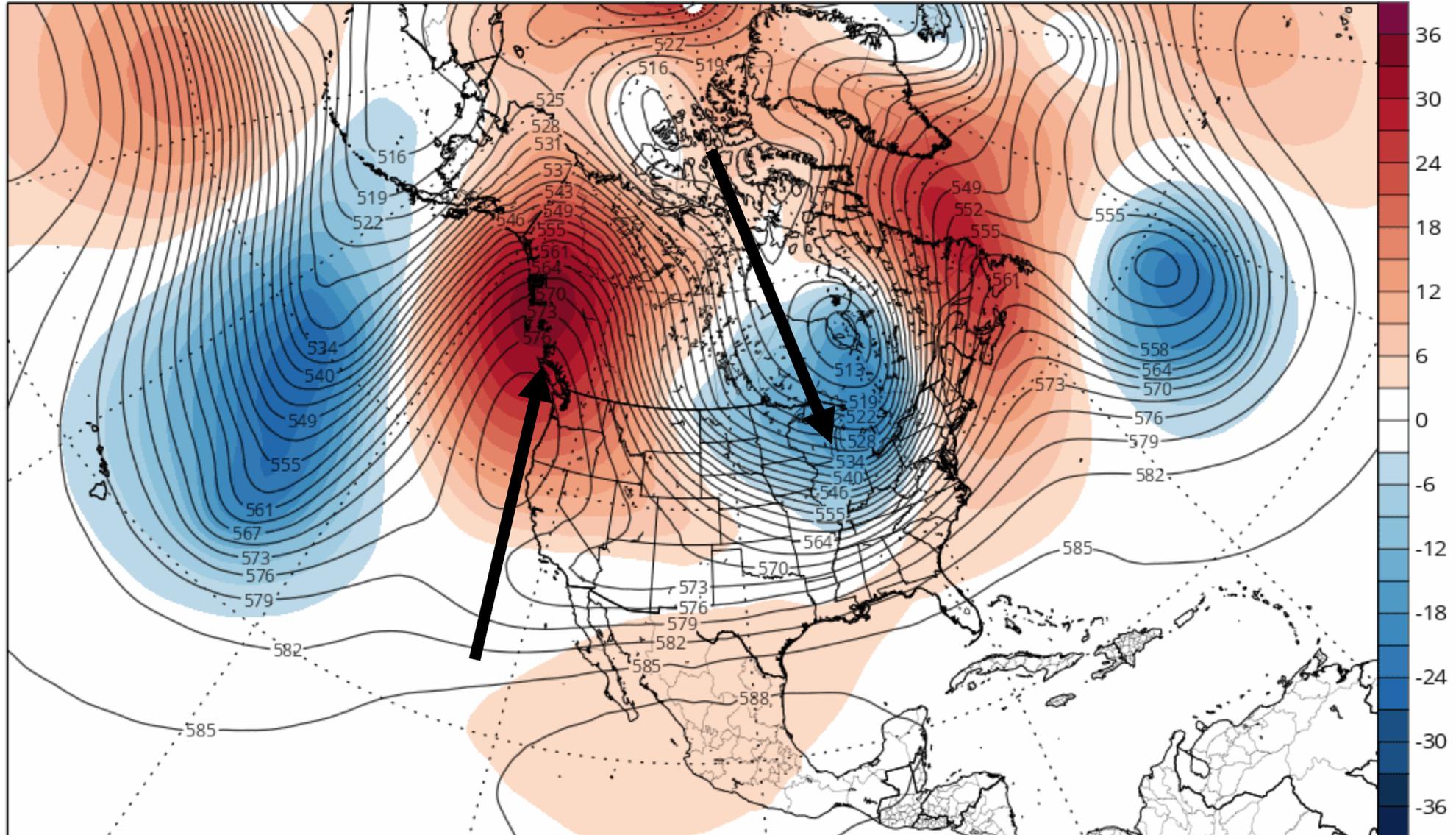
- La Niña
- Cold North Pacific
- Atmospheric Rivers
- Record precipitation
- Forecast for a cool spring

“Ridiculously Resilient Ridge”

GEFS 500mb Geopotential Height & Anomaly (dam) (based on CFSR 1981-2010 Climatology)

Init: 06z Dec 03 2017 Forecast Hour: [72] valid at 06z Wed, Dec 06 2017

TROPICALTIDBITS.COM

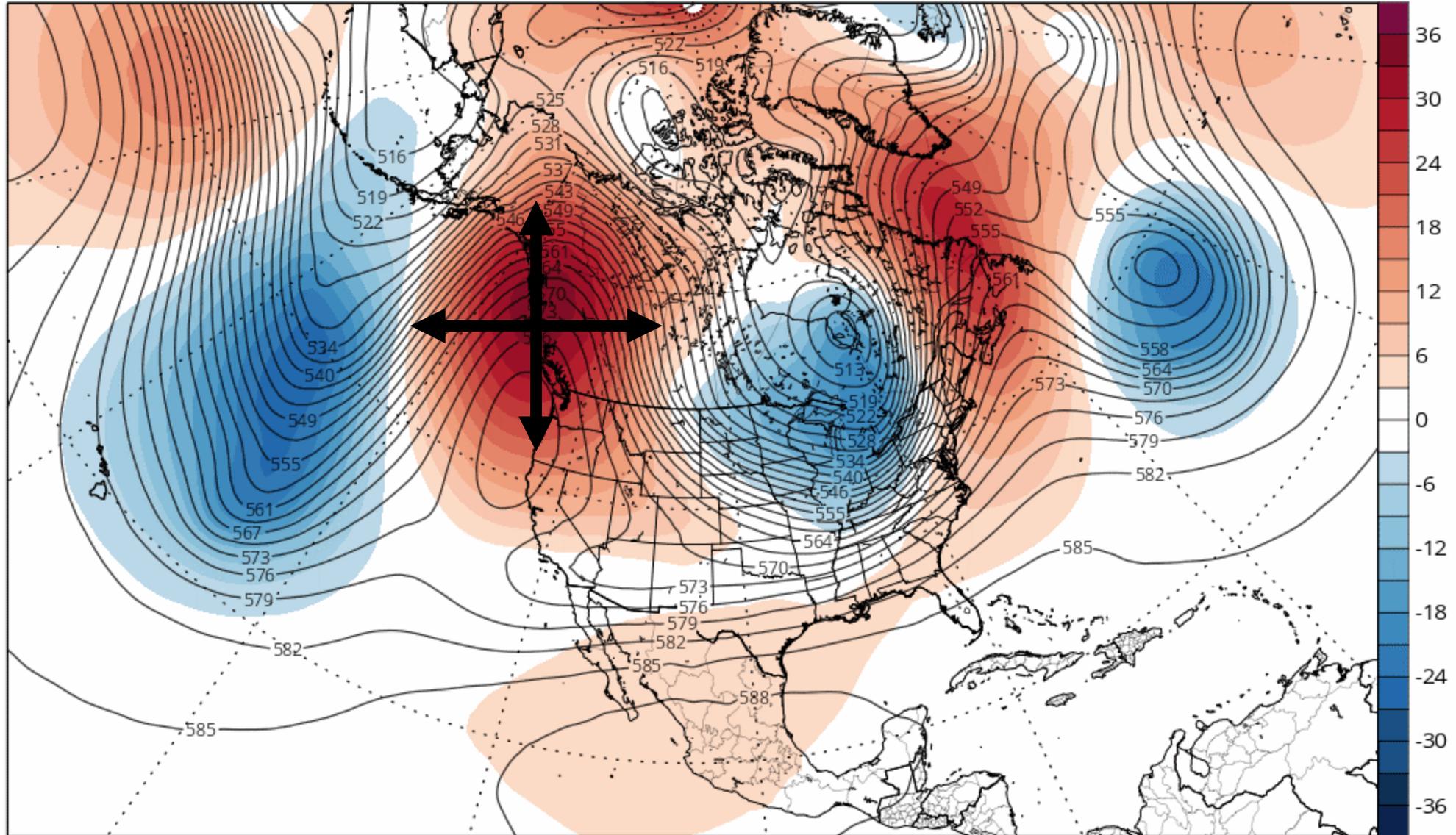


“Ridiculously Resilient Ridge”

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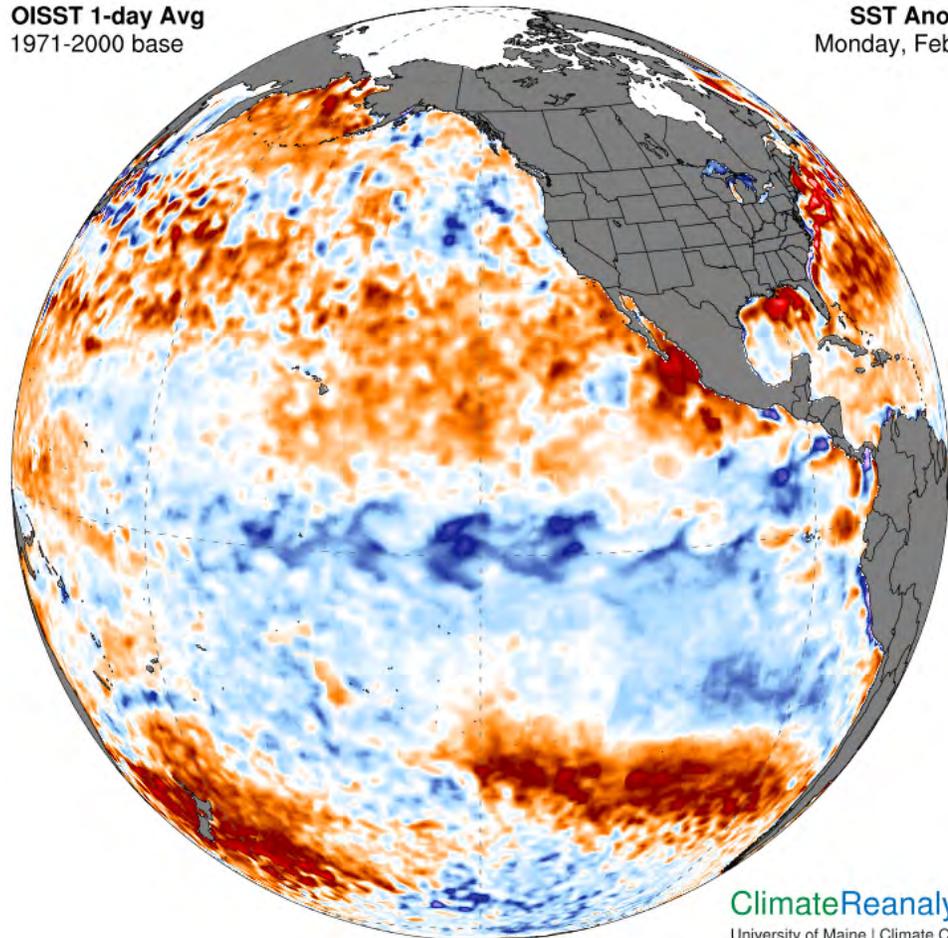
TROPICALTIDBITS.COM



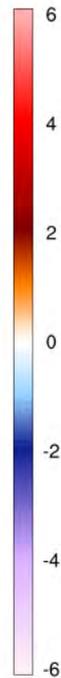
Current Sea Surface Temperatures

February 16, 2018

OISST 1-day Avg
1971-2000 base



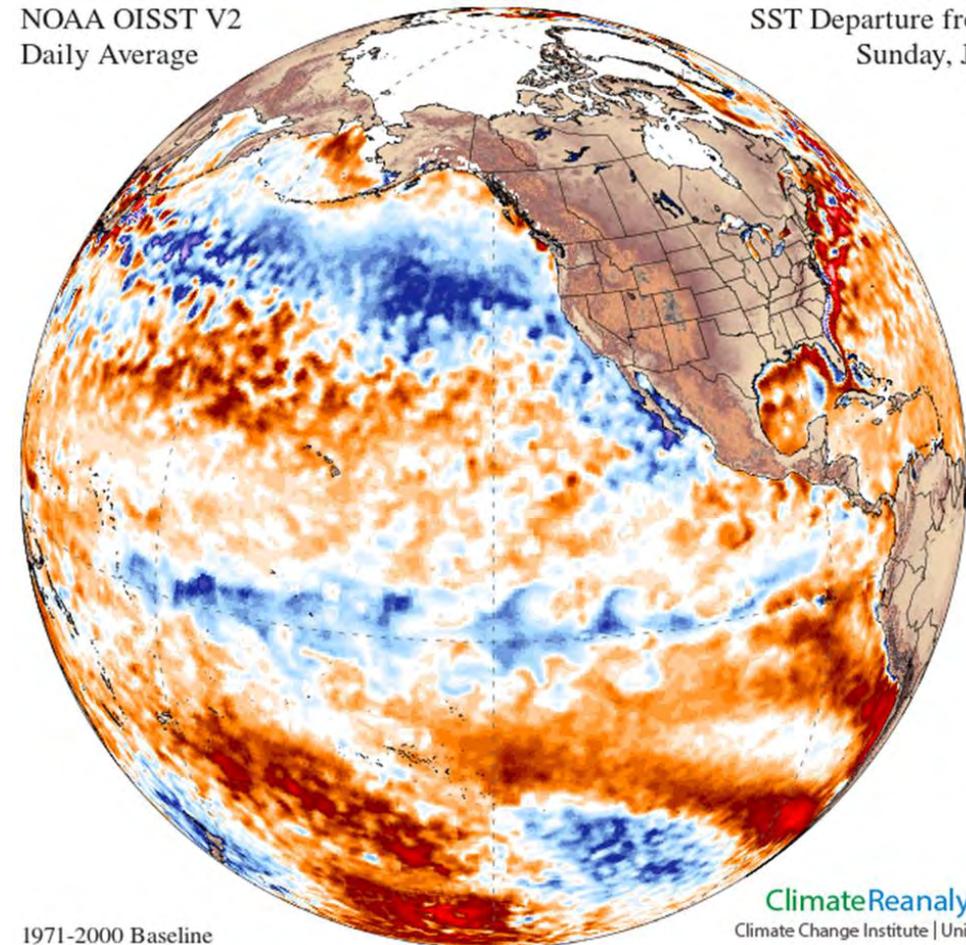
SST Anomaly (°C)
Monday, Feb 19, 2018



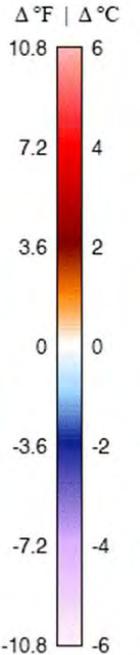
ClimateReanalyzer.org
University of Maine | Climate Change Institute

January 29, 2017

NOAA OISST V2
Daily Average



SST Departure from Average
Sunday, Jan 29, 2017

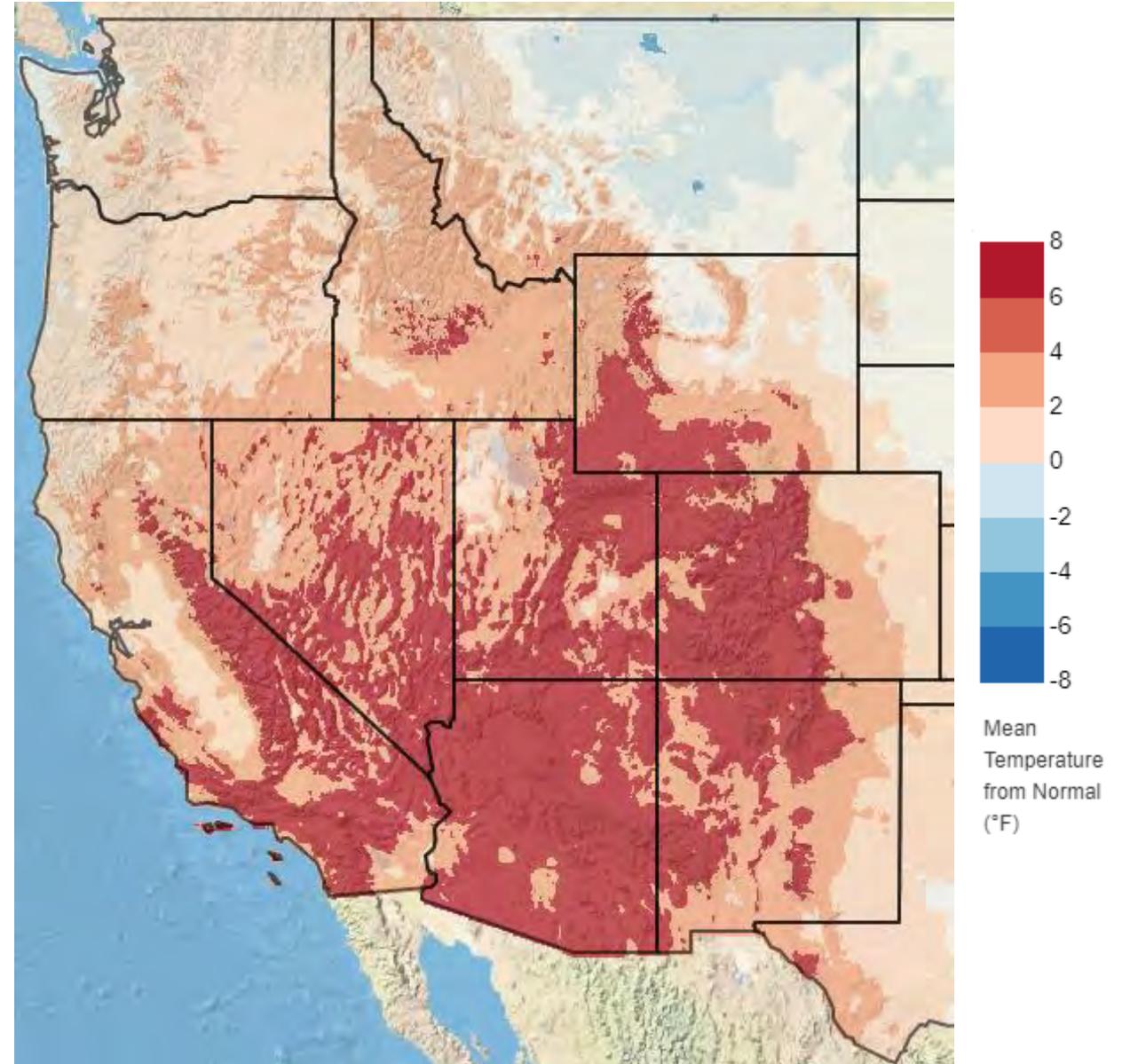


1971-2000 Baseline

ClimateReanalyzer.org
Climate Change Institute | University of Maine

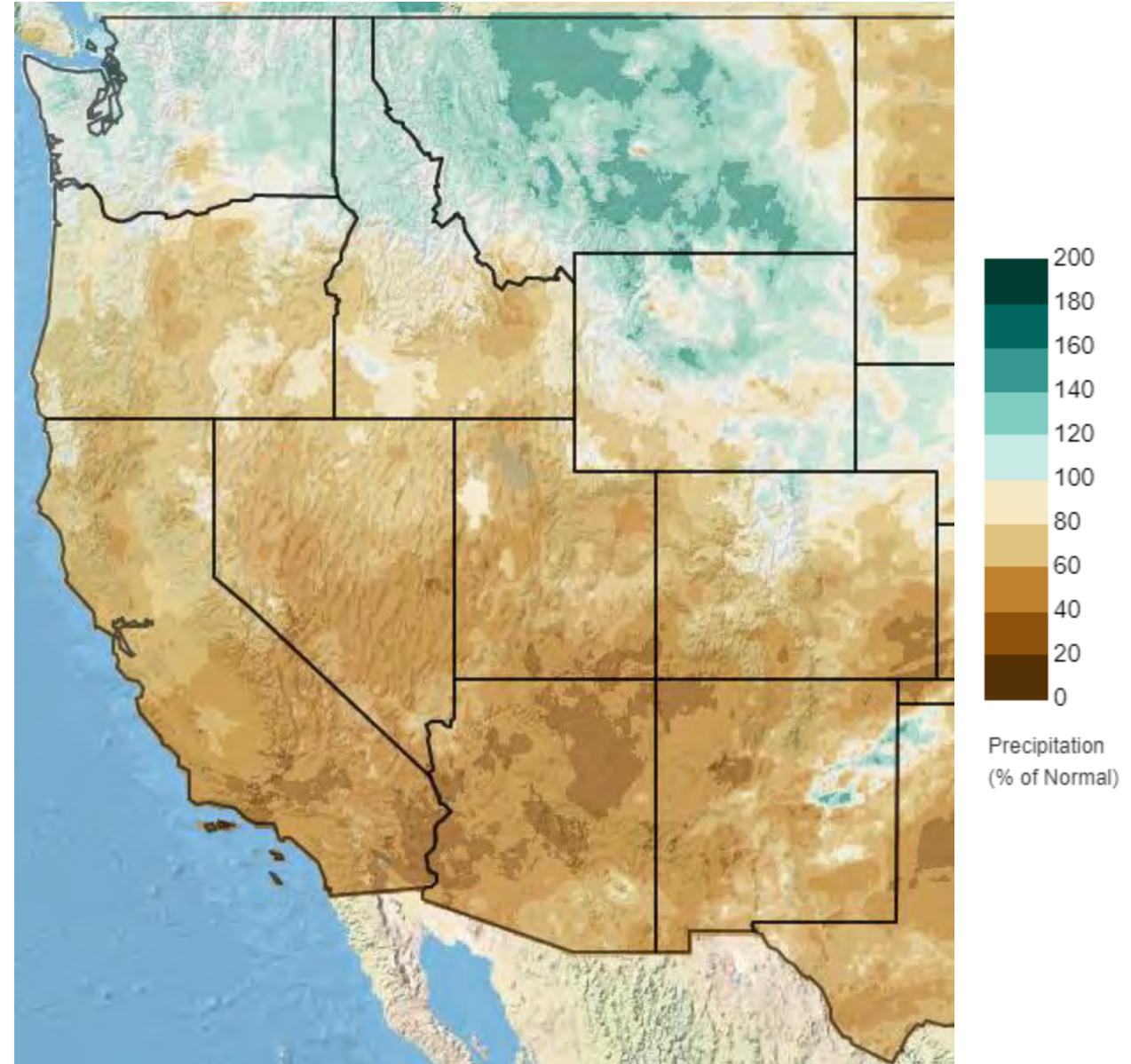
- Temperatures close to the pattern expected from a weak La Niña winter, but much warmer

Water Year Mean Temperature Departure from Normal
Oct 1, 2017 to Feb 19, 2018

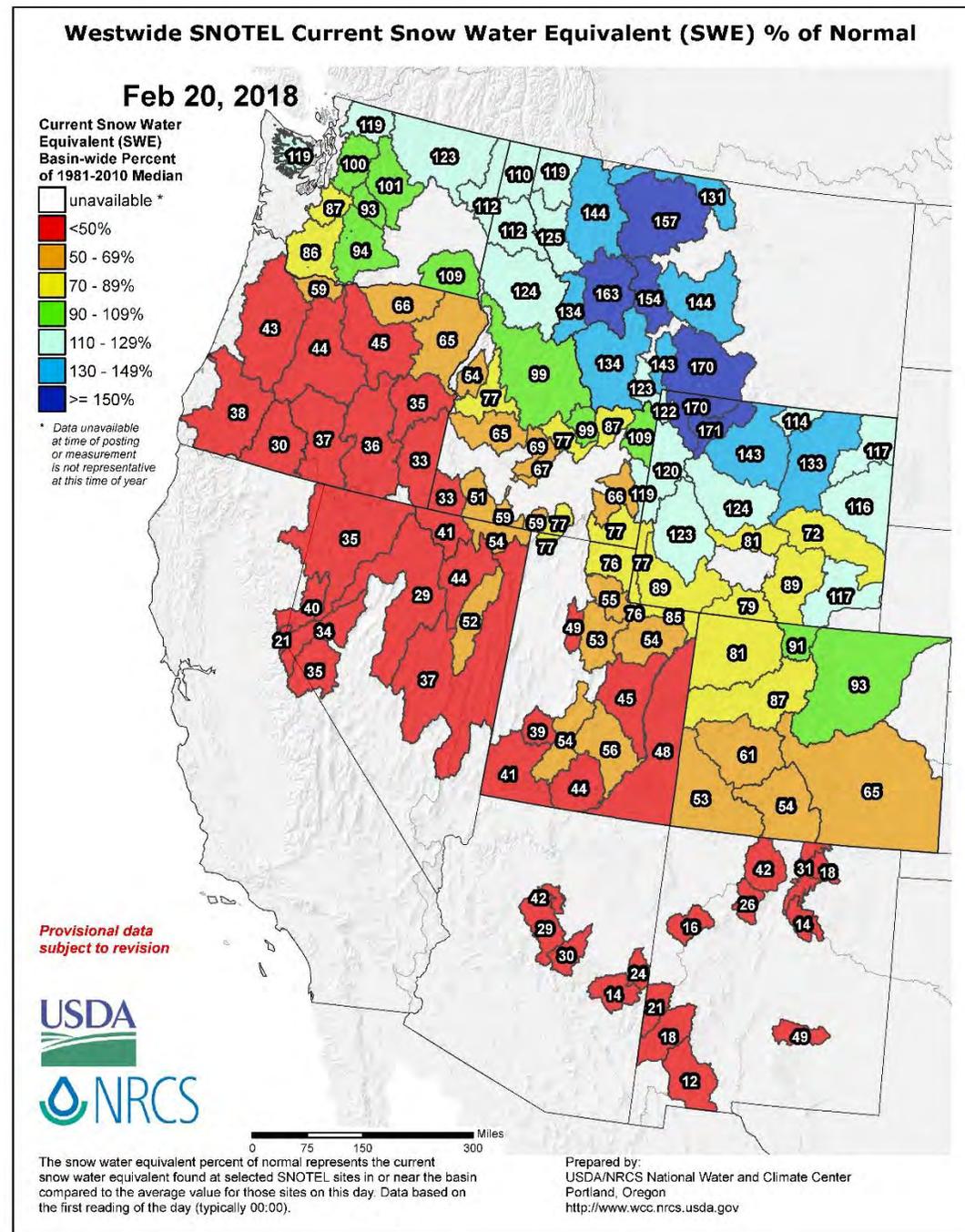


- Temperatures close to the pattern expected from a weak La Niña winter, but warmer south
- Precipitation pattern is close to expected from a weak La Niña, but substantially drier

Water Year Precipitation % of Normal
Oct 1, 2017 to Feb 19, 2018



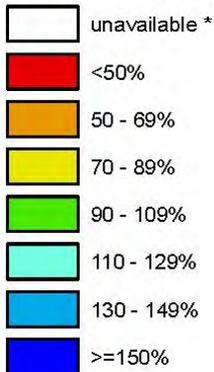
- Temperatures close to the pattern expected from a weak La Niña winter, but warmer south
- Precipitation pattern is close to expected from a weak La Niña, but substantially drier
- SWE ↓ ↓ most everywhere except in the Northern Rockies, low probability of catching up



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

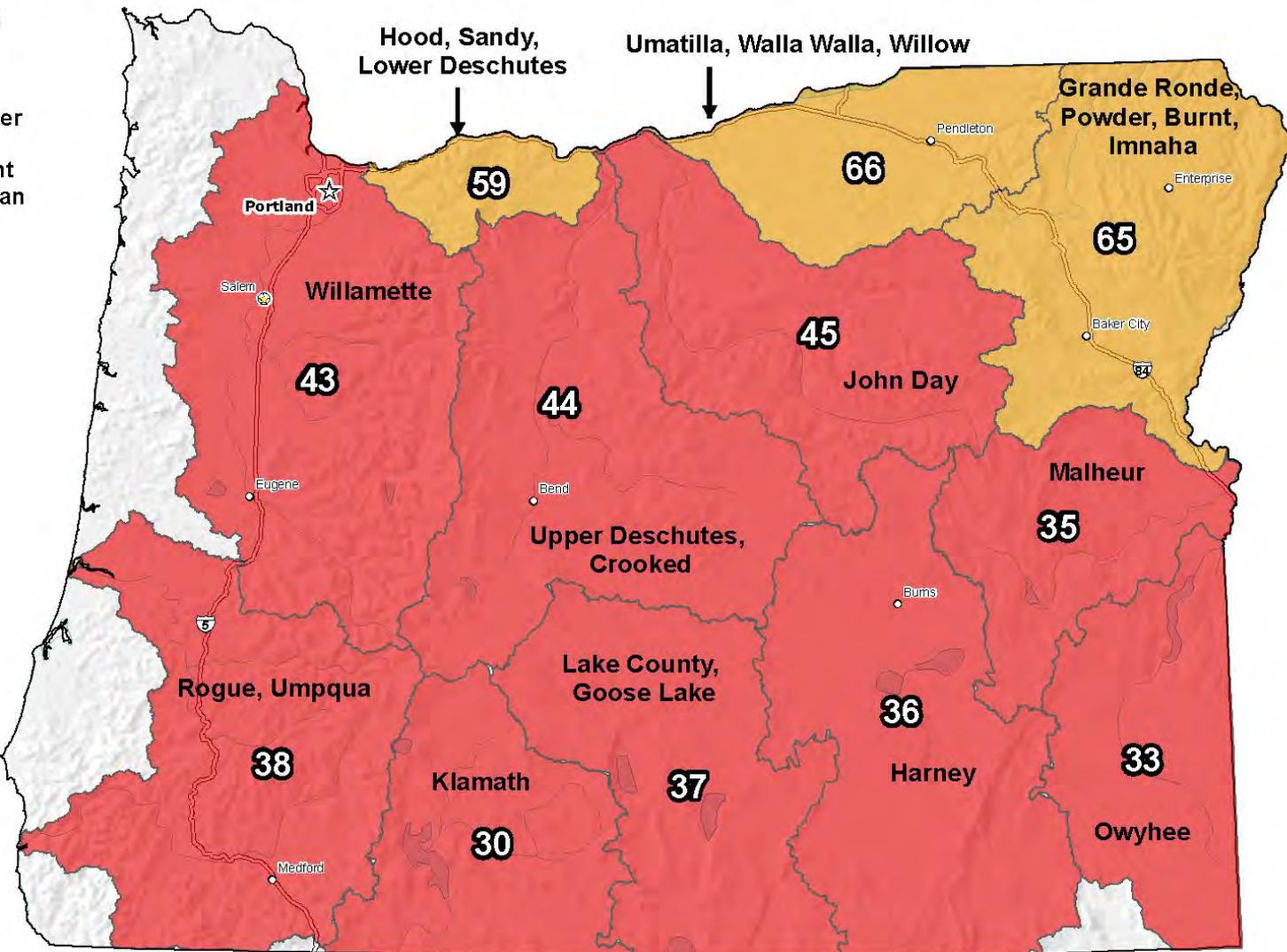
Feb 20, 2018

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

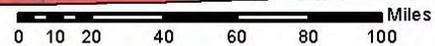


* Data unavailable at time of posting or measurement is not representative at this time of year

**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 reading of the day (typically 00:00).



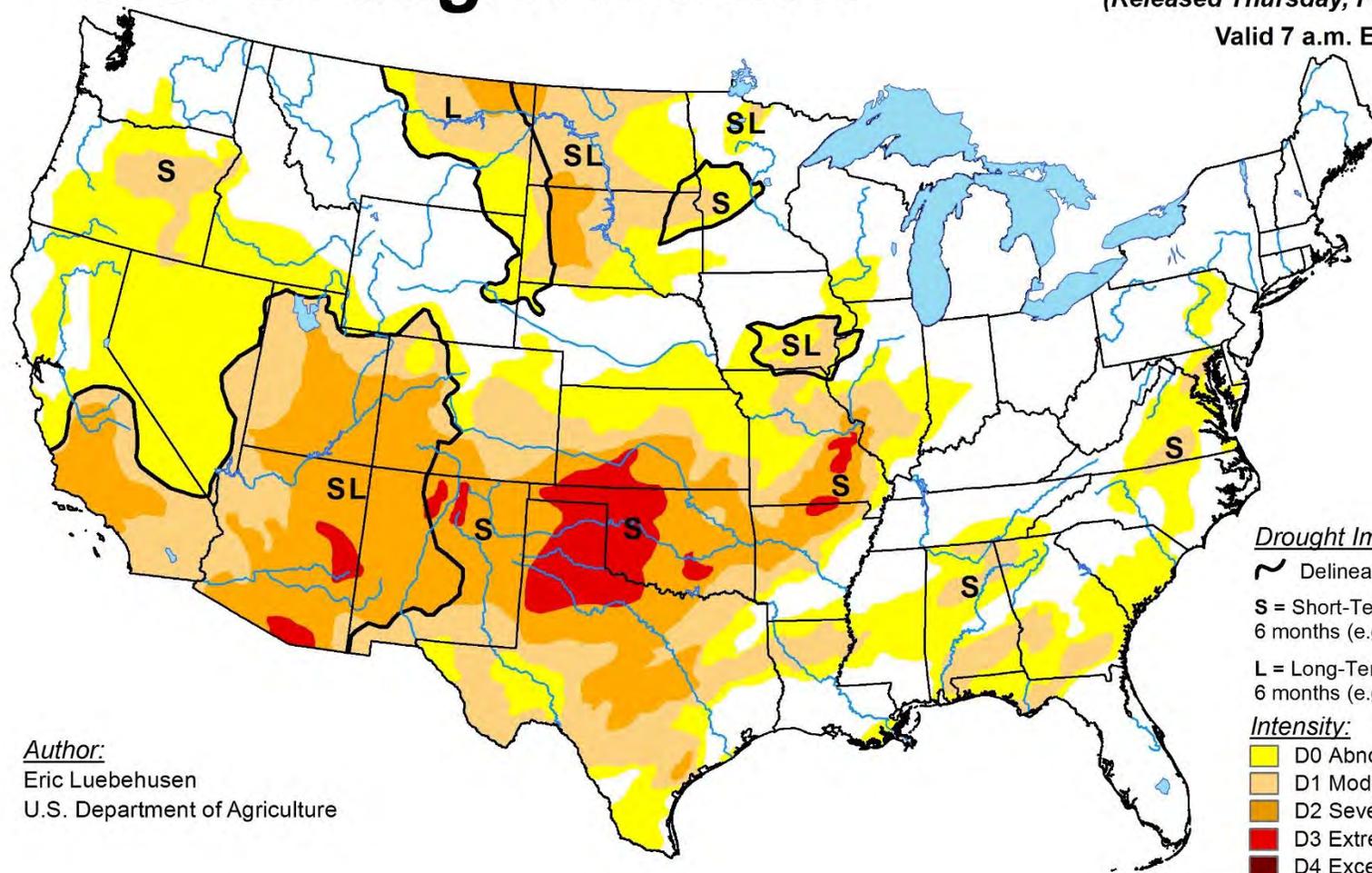
Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

U.S. Drought Monitor

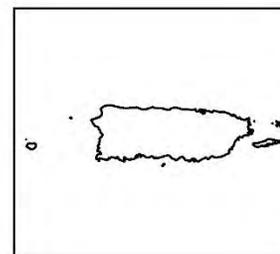
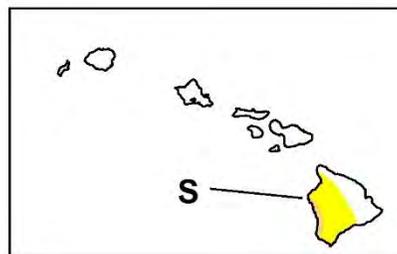
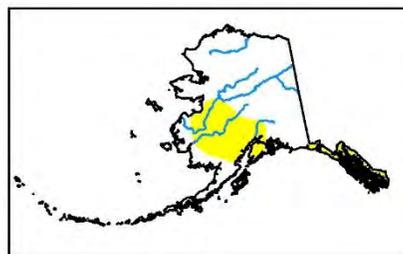
February 13, 2018
(Released Thursday, Feb. 15, 2018)

Valid 7 a.m. EST

- 61% of CONUS in some level of drought, up 29% from last year at this time
- Nationwide there are no areas in exceptional drought intensity, first time in 6 years for California



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.



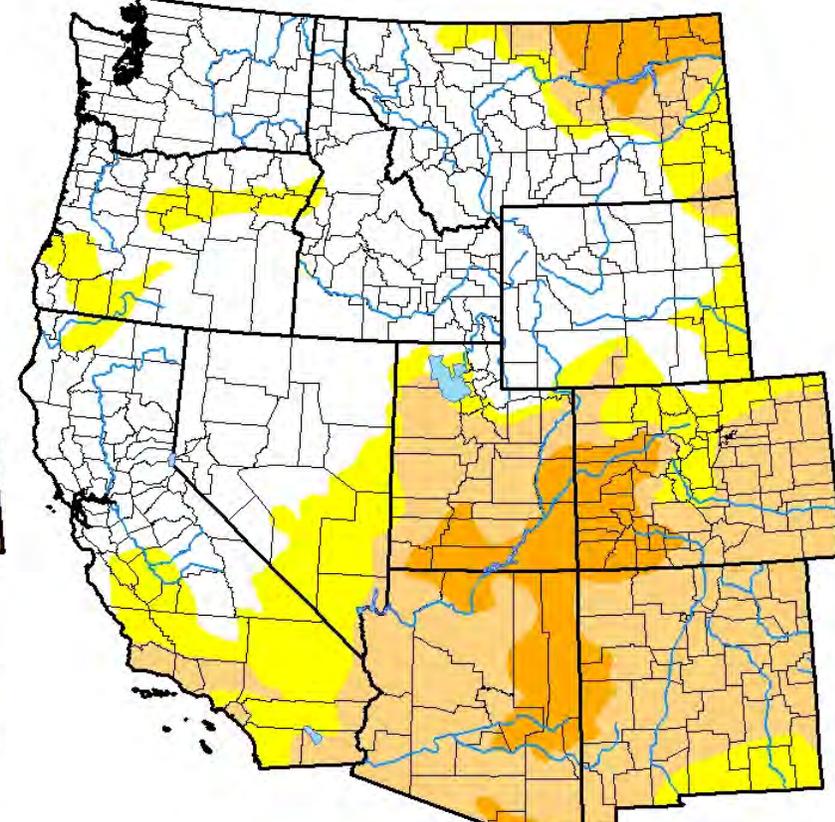
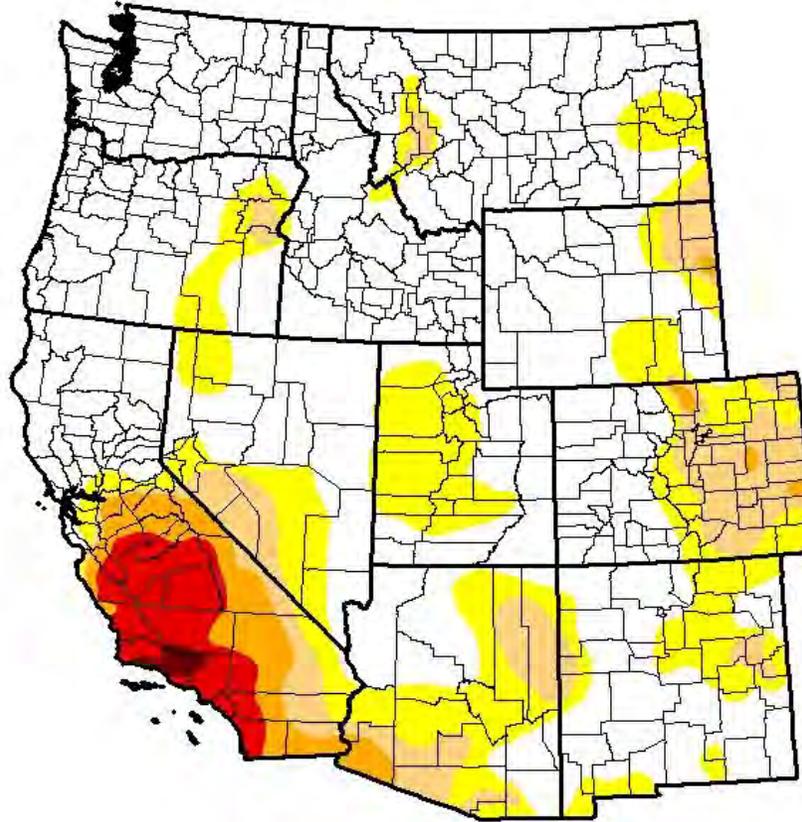
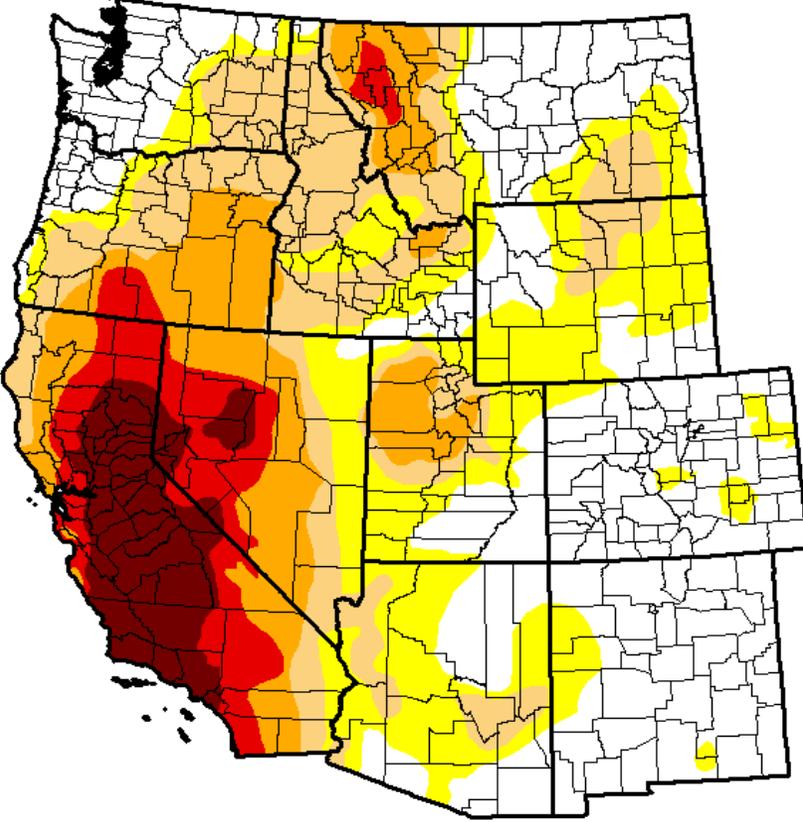
<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor – Western Region

January 12, 2016

January 10, 2017

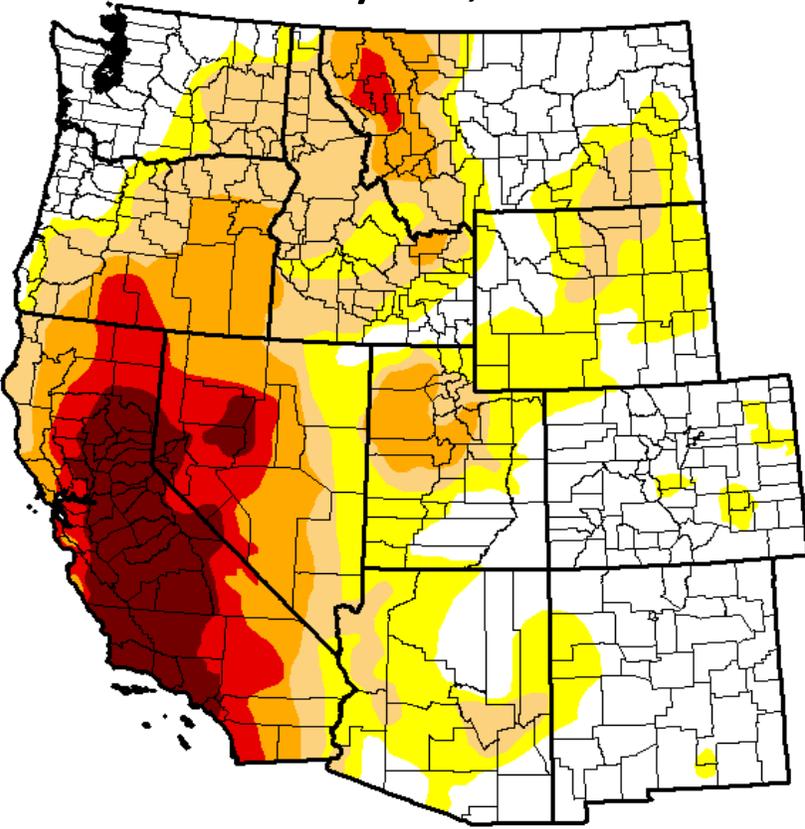
January 11, 2018



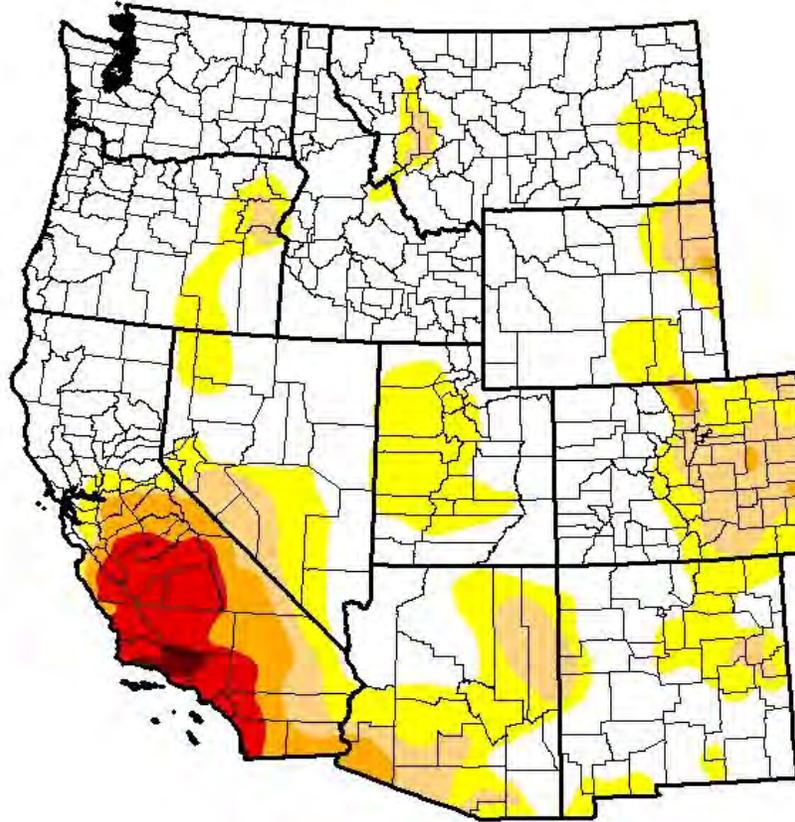
- West 20% increase in area in moderate to severe drought
- California 45% reduction in area in moderate to severe drought, and 28% reduction in area in extreme to exceptional drought

U.S. Drought Monitor – Western Region

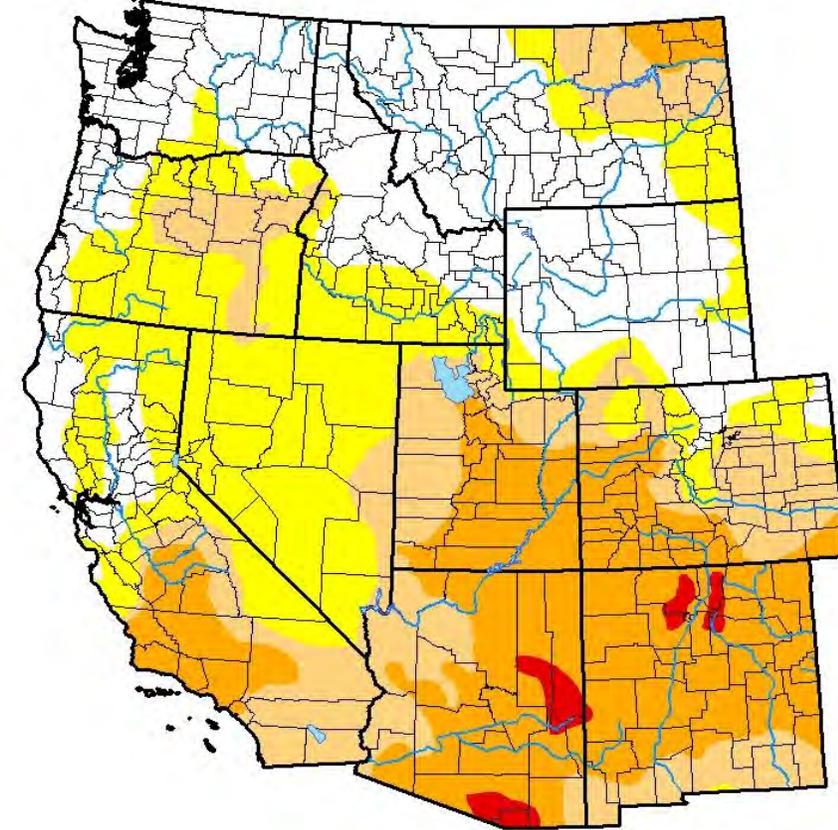
January 12, 2016



January 10, 2017



February 13, 2018



- Currently 72% of the west in drought
- Severe to extreme drought setting in across the south

Summary/Forecast

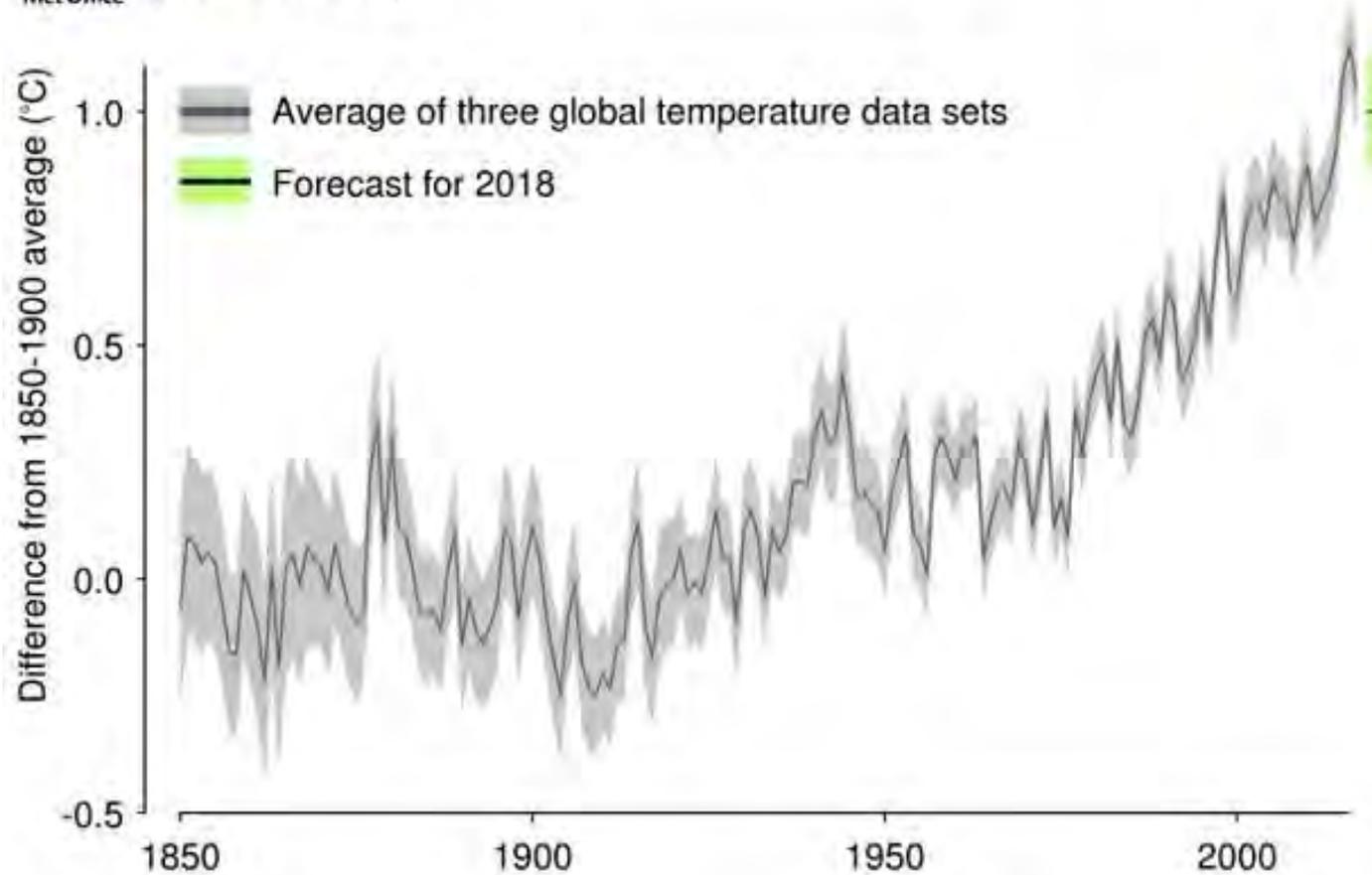
Summary/Forecast

- Substantial variability in weather/climate factors globally and regionally in 2017
- Without El Niño 2018 is likely to be cooler than 2015 and 2016, similar to 2017 and 2012-2014

Summary/Forecast



Global average temperature anomaly from pre-industrial (1850-2017)



Summary/Forecast

- Substantial variability in weather/climate factors globally and regionally in 2017
- Without El Niño 2018 is likely to be cooler than 2015 and 2016, similar to 2017 and 2012-2014
- **Weather/Climate extremes will likely continue near record numbers in the US, especially the West**

Summary/Forecast

- Spatial extent of drought in the US has increased, declined in California but lack of snowpack sets the dry-down back on again
- Warming Arctic producing strong mid-latitude variability, the 'Ridiculously Resilient Ridge' one result
- Mixed signal from the North Pacific, warmer but more surface temperature variability, still favoring a cooler start to the year for the western US

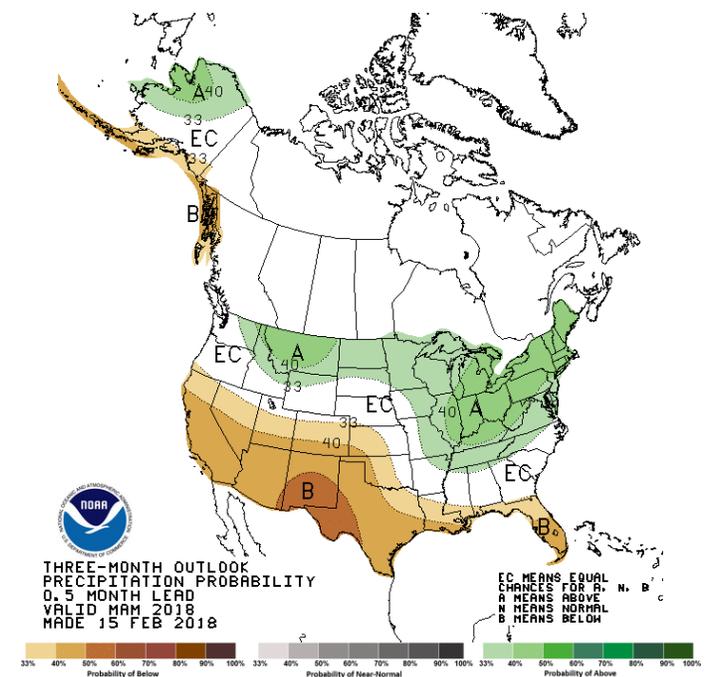
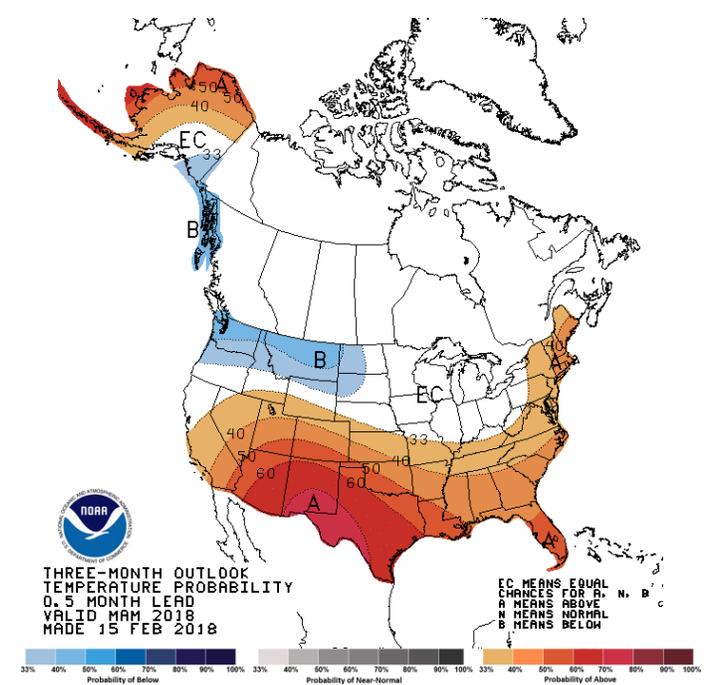
NOAA Spring 2018 Forecasts

The March-April-May (MAM) temperature forecast indicates cool north, warm south, equal chances in between (probability increases for warmer western US for AMJ and beyond).

The March-April-May (MAM) precipitation forecast points to spring being dry south, wetter north, and equal chance of being slightly wetter/drier in between (shifts to drier in AMJ and beyond).

Both show a classic weak to moderate La Niña correlation pattern in model forecasts moving into the spring

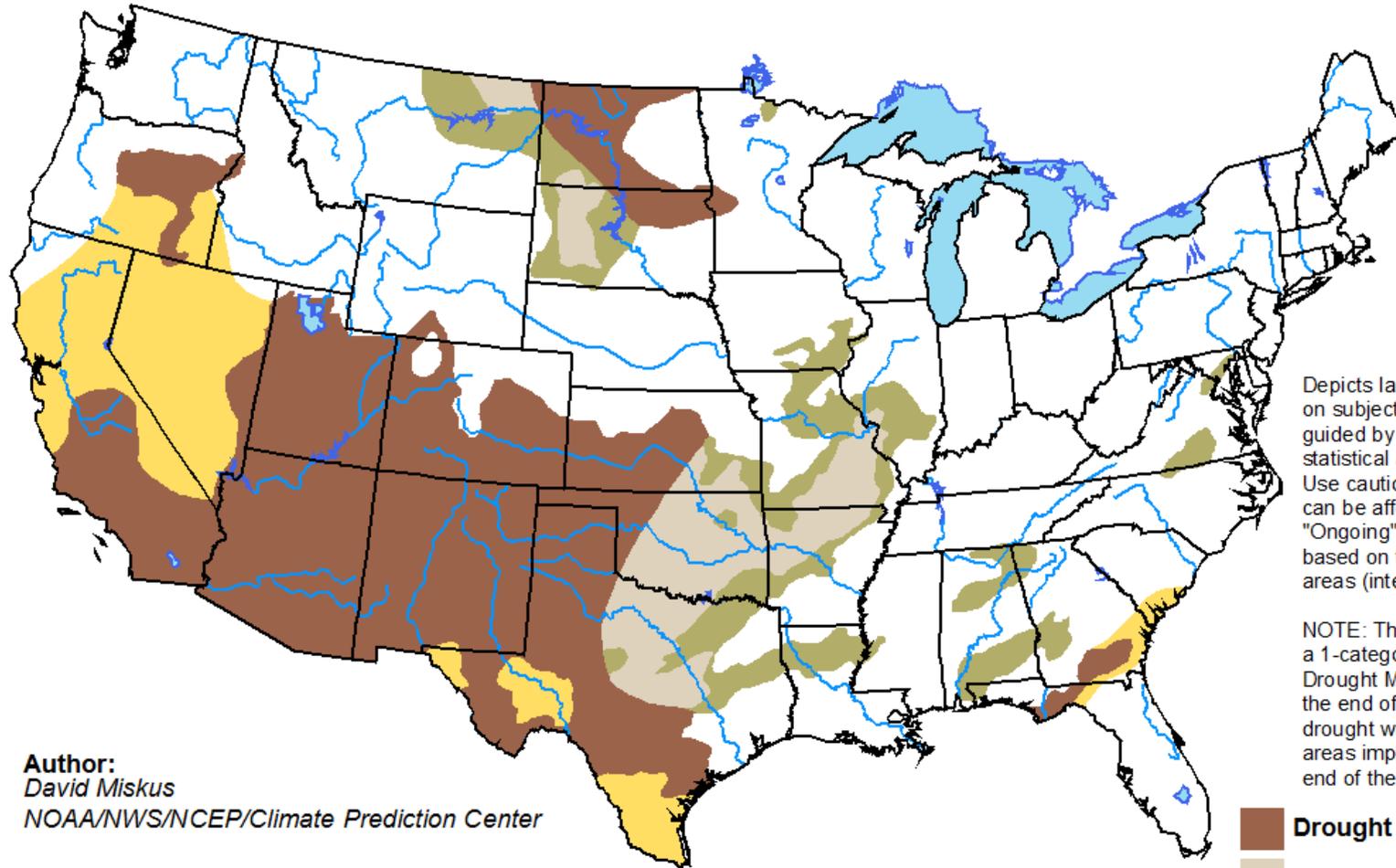
The seasonal forecasts should be interpreted as the tilting of odds towards general categories of conditions, and should not be viewed as a guarantee that the specified conditions will be realized.



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for February 15 - May 31, 2018
Released February 15, 2018

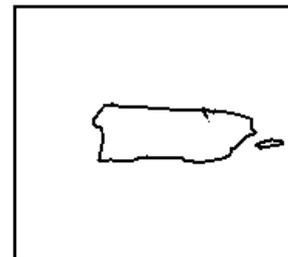
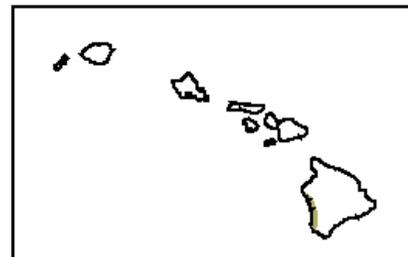
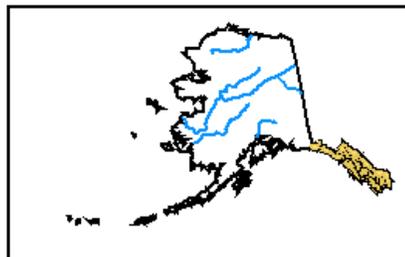


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

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



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

Spring/Summer 2018 Forecast Summary

- Tropical SST conditions are forecast to transition from La Niña to neutral (normal) by late spring or early summer
- North Pacific SST conditions mixed, but signs of warming along the coast
- Taken together the conditions tilt the odds in favor of;
 - PNW cool and wet late winter/early spring
 - California cool and normal precipitation to slightly drier late winter/early spring

Spring/Summer 2018 Forecast Summary

- Spring frost frequency and severity over the entire west tends to be higher in years with these conditions (probability increases northward)
- While growing seasons tend to be slightly cooler in these types of conditions, persistence in the climate system will likely have 2018 being on average like the 2012-2017 seasons
- Drought conditions in California and portions of Oregon will return unless a major turnaround occurs

CLIMATE

GRAPES

WINE

Thank You!

Gregory V. Jones

Director: Center for Wine Education

Professor: Environmental Studies



Linfield College