
# Climate Report

Greg Jones, Director Evenstad Center for Wine Education
Linfield College

OREGON WINE BOARD

OREGON WINEGROWERS ASSOCIATION

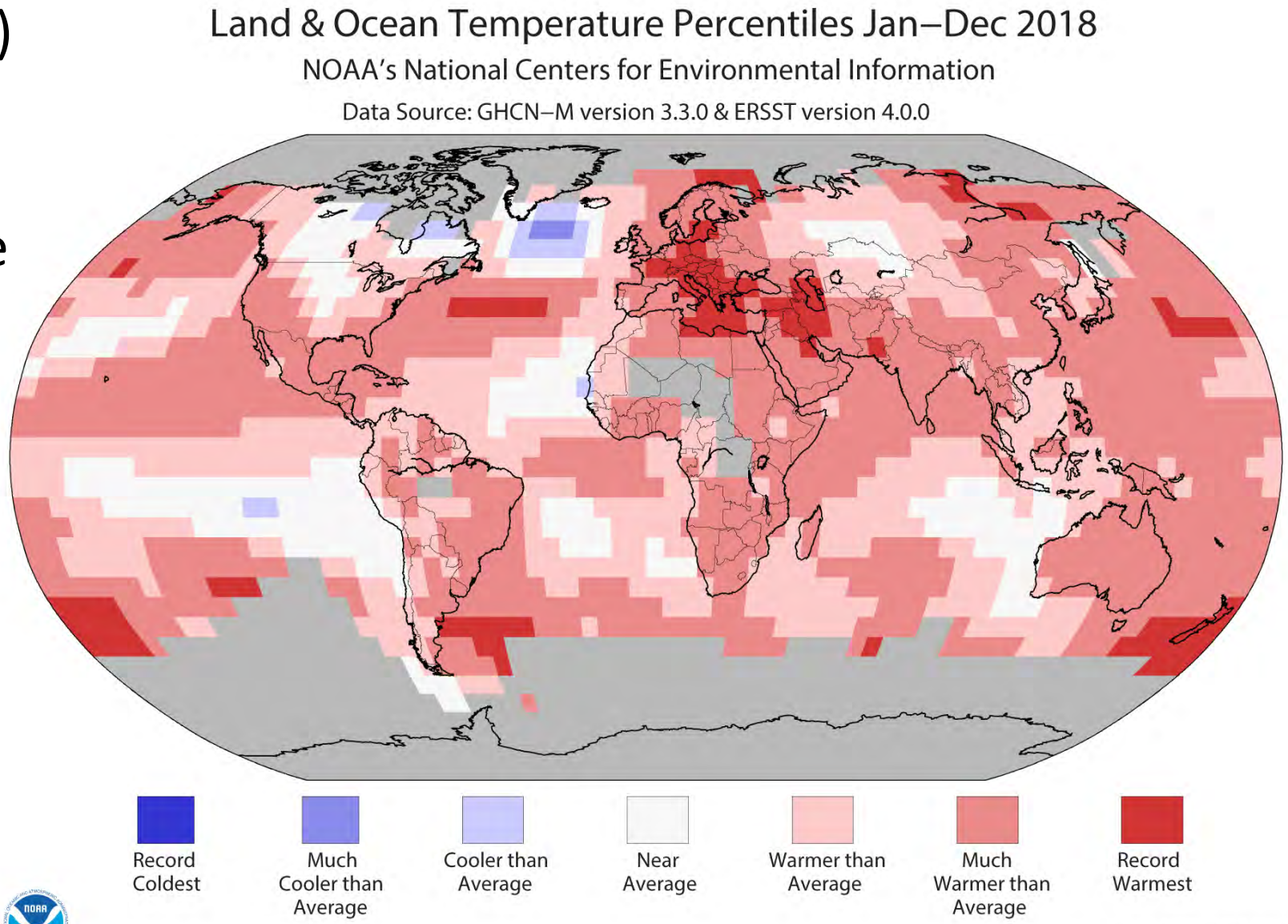
# Outline of Talk

- Global to Regional Climate Summary for 2018
- Weather/Climate in Oregon for 2017-18
- Current Conditions and Regional Forecast for 2019

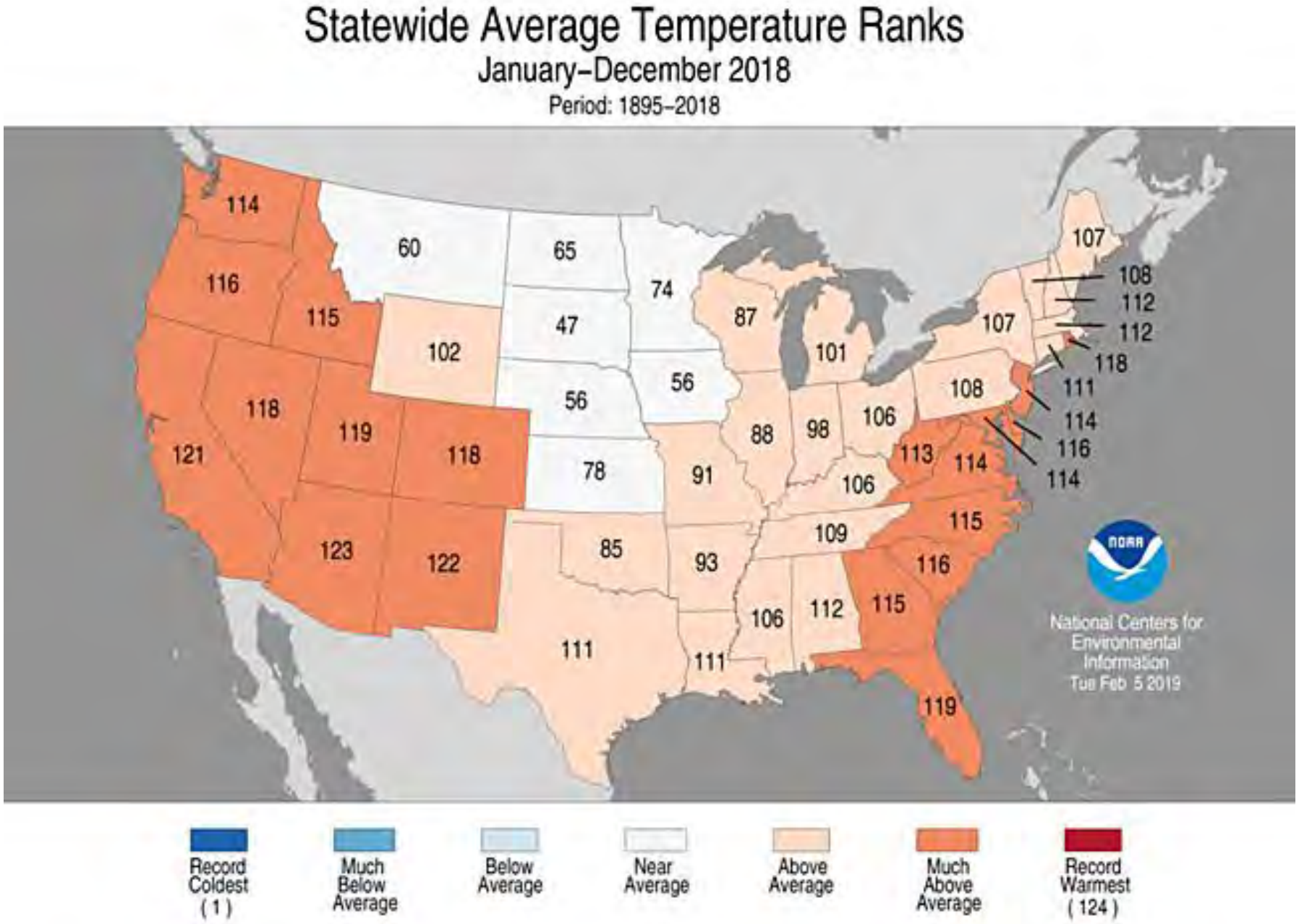
# Global to Regional Climate Summary for 2018

# Global Temperature Departures 2018

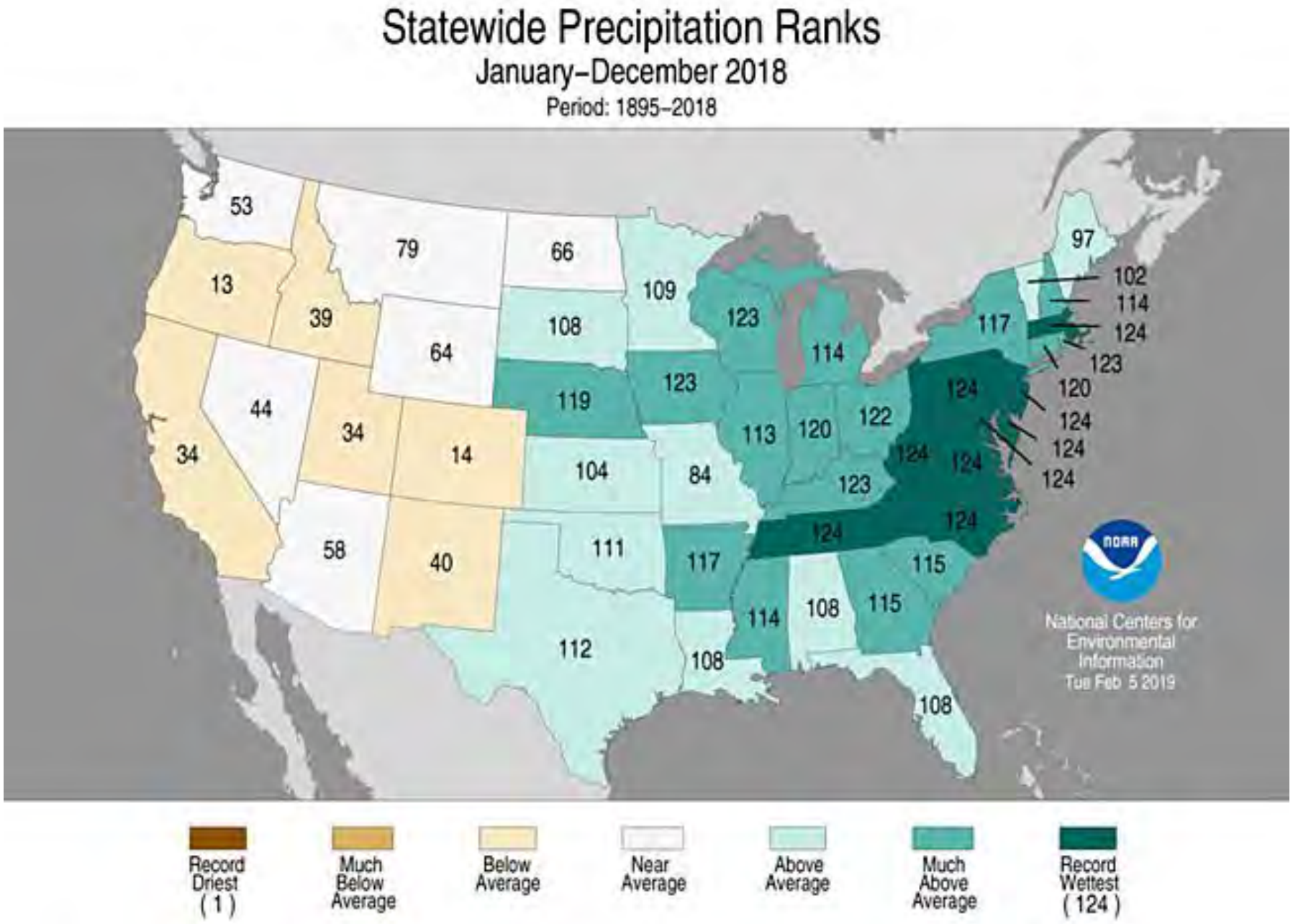
- 2018 was the 4th (+1.5°F) warmest year on record
- The last five years are, the warmest years in the modern record
- 2018 was the warmest year ever in the world's oceans
- 2018 was the Arctic's warmest year ever, and both poles continue to lose ice mass at record paces



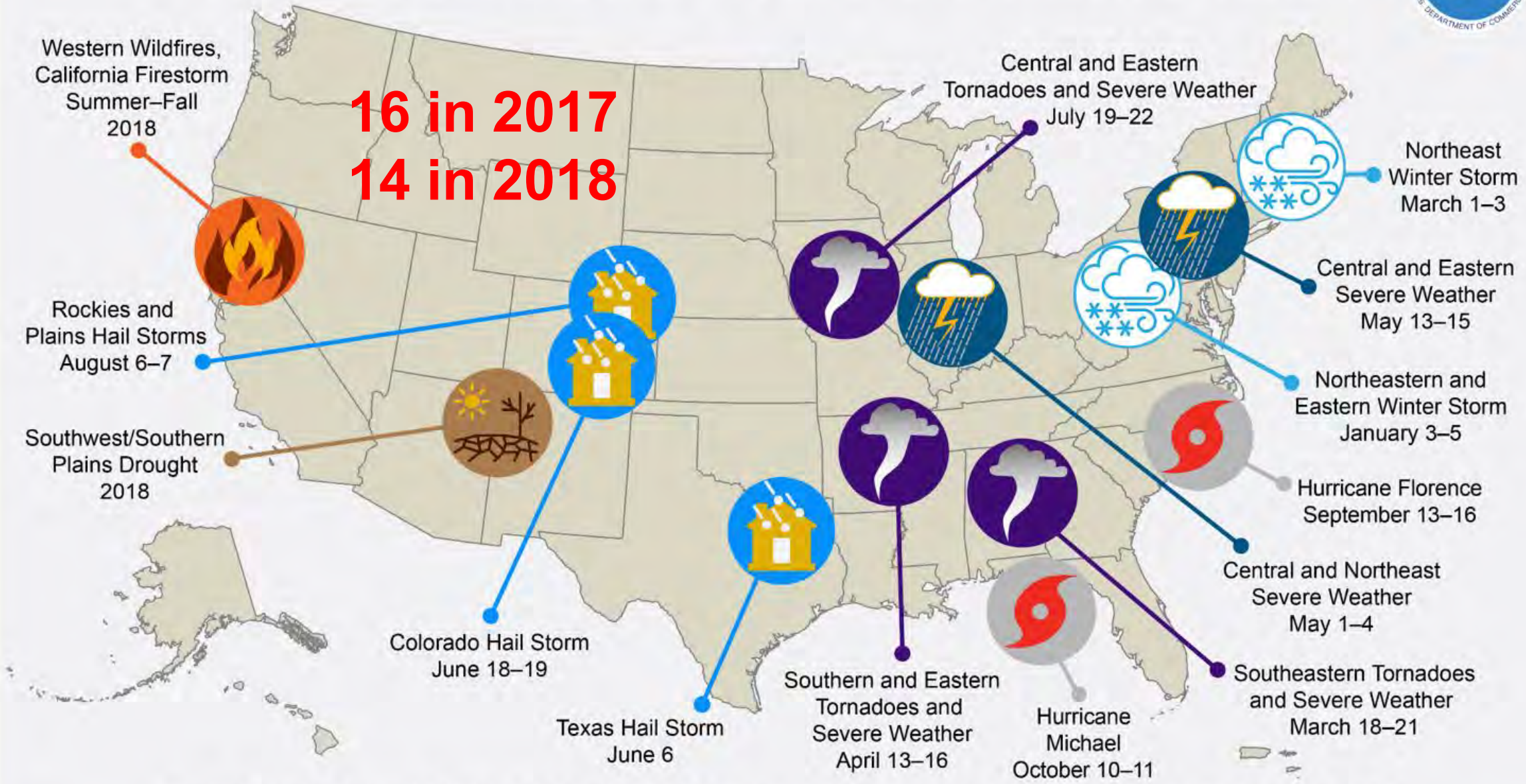
- CONUS +1.5°F above average in 2018
- 14th warmest in the 124-year period of record
- 22nd consecutive year above average
- Tmin more above average than Tmax



- CONUS wet east, dry west
- Major tropical events in 2018
- 3rd wettest in the 124 year period of record
- US drought footprint lowest in 20 years
- Four Corners and PNW drought areas developed



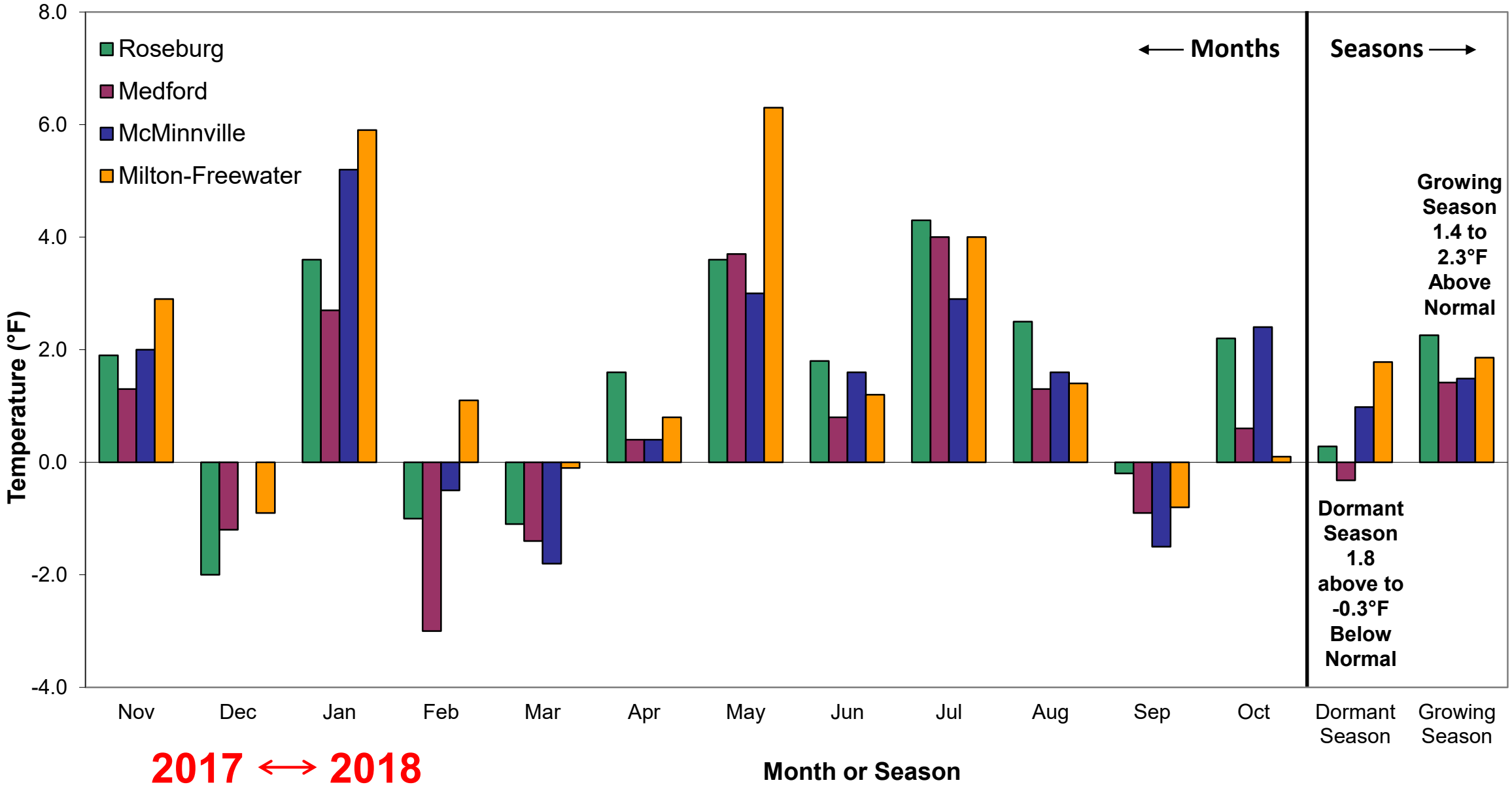
# U.S. 2018 Billion-Dollar Weather and Climate Disasters




*This map denotes the approximate location for each of the **14 separate billion-dollar weather and climate disasters** that impacted the United States **during 2018**.*

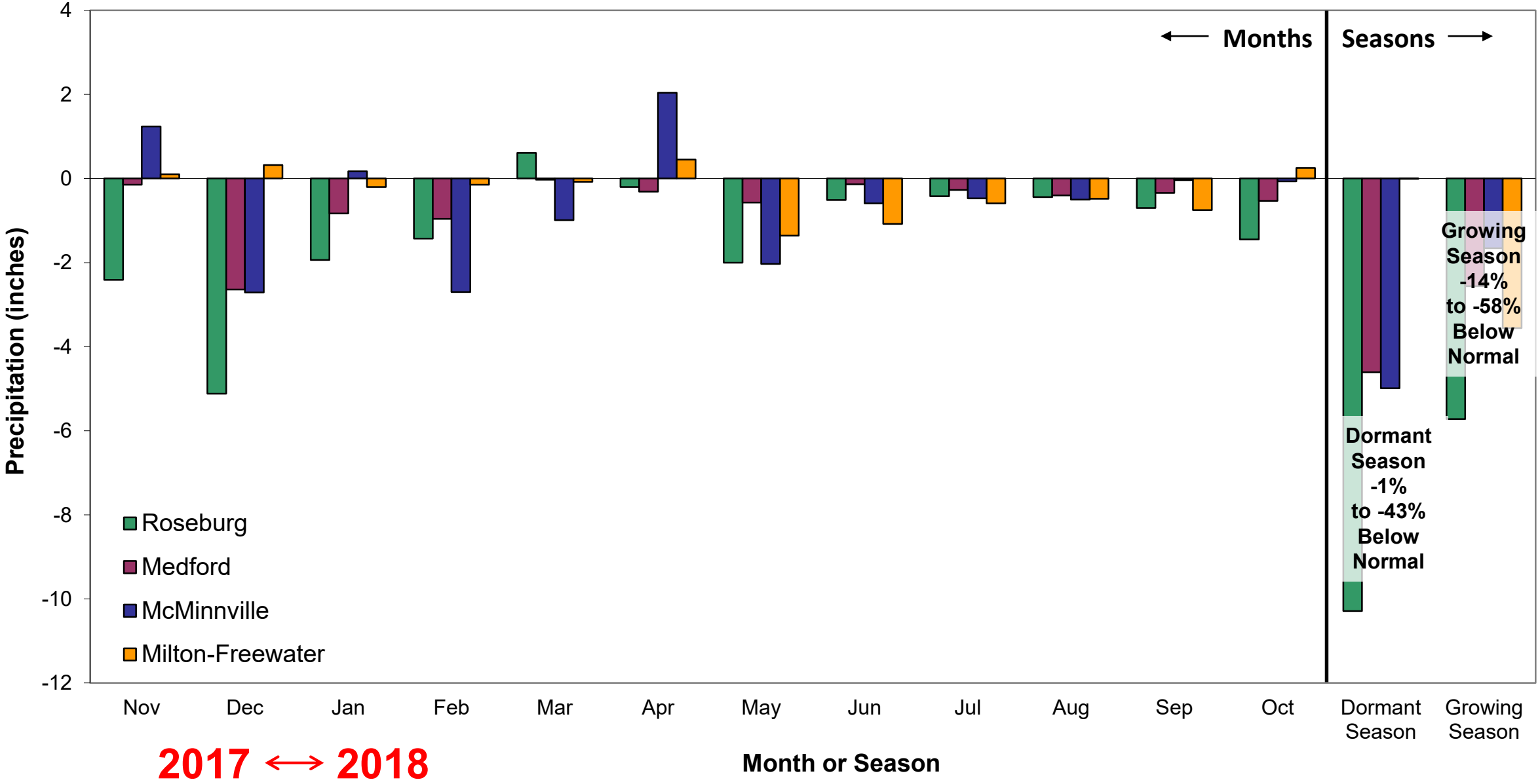
# Oregon 2017-18
# Weather/Climate Summary

# 2017-18 Regional Temperature Departures from Normal




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)

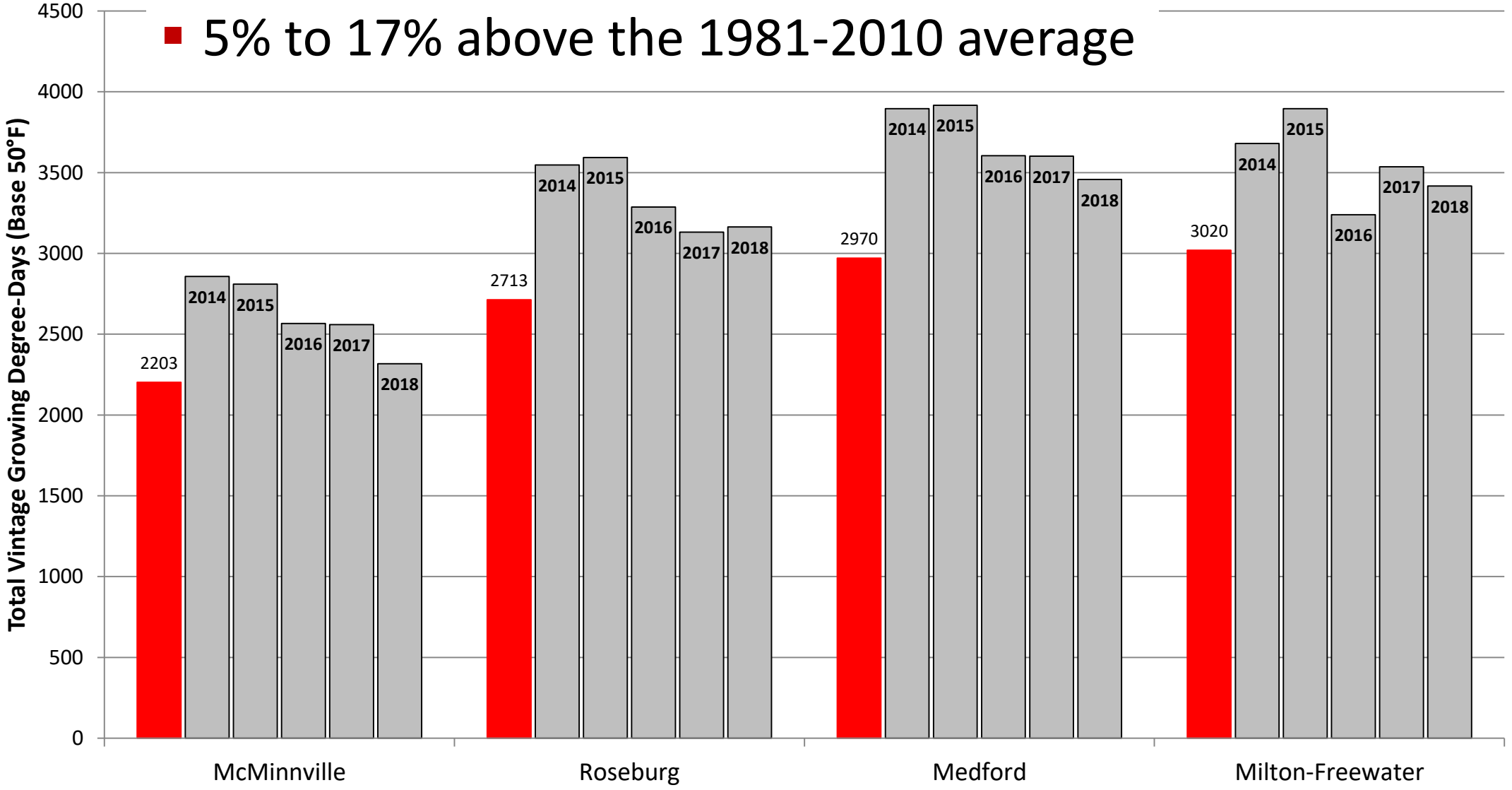
# 2017-18 Regional Precipitation Departures from Normal




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)

# Growing Degree-Days for Recent Vintages and Climate Normals

- 9% lower to 1% higher than 2017
- 5% to 17% above the 1981-2010 average



# 2018 Vintage Observations

- Late bud break, bloom and véraison average
- Moderate variation in fruit set and crop load
- Fires and smoke, role in regional Tmax and Tmin temperatures
- Broke records for consecutive days over 90°F, consecutive days without rain

# 2018 Vintage Observations

- Low heat stress, but greater drought stress
- Coastal upwelling influence
- Low bird pressure, but high yellow jacket #s
- Harvest slow and steady
- Harvest Brix, TA, pH all near average
- Production 5-15% over 2017

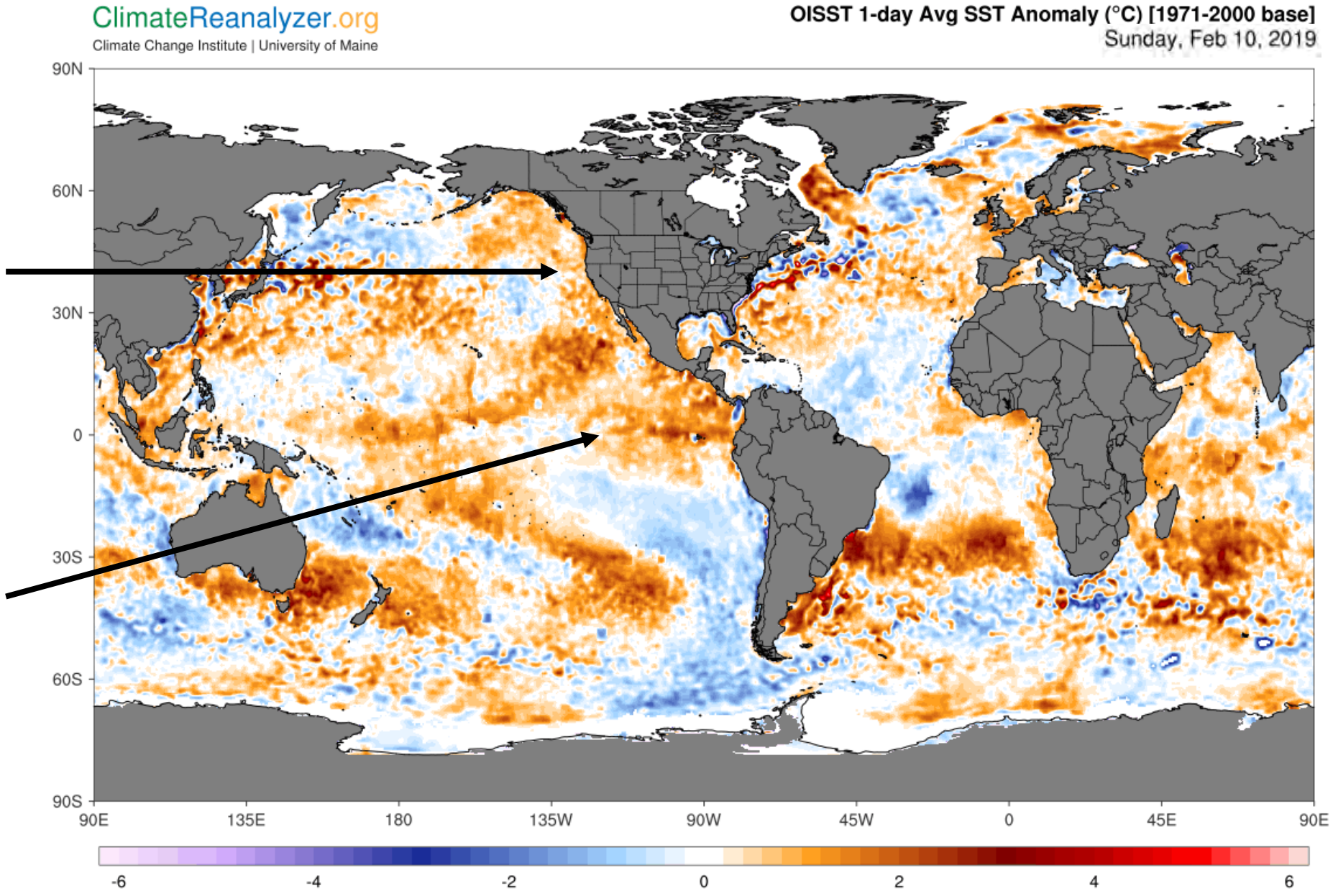
# Current Conditions

# Real or Fake News

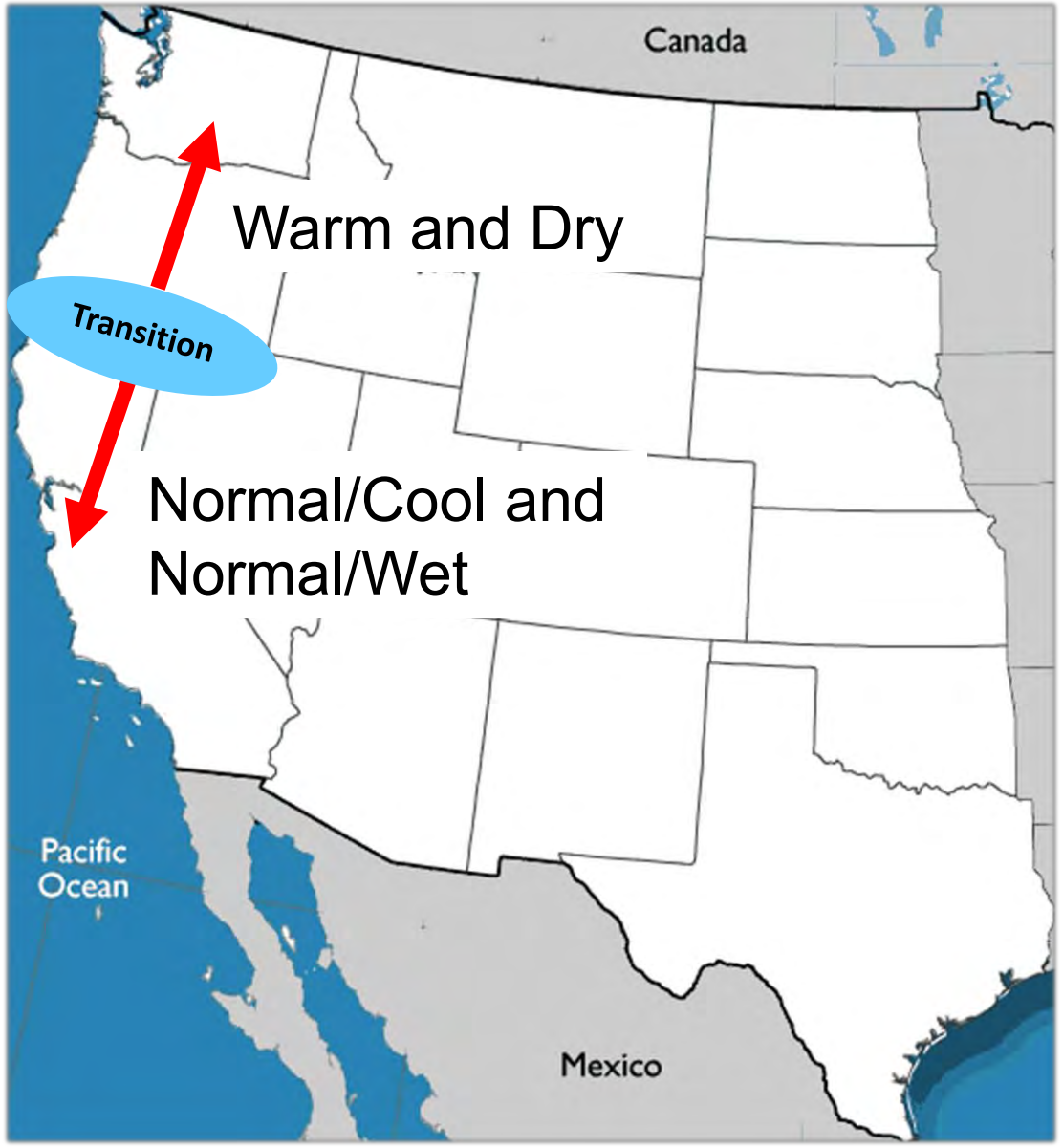
- Polar Vortex
- Ridiculously Resilient Ridge
- Atmospheric Rivers
- The Blob

# Current Sea Surface Temperatures

- North Pacific has been very warm currently displaying +Pacific Decadal Oscillation (PDO) conditions
- Tropics transitioned from neutral ENSO (most of 2018) to weak/moderate El Niño currently

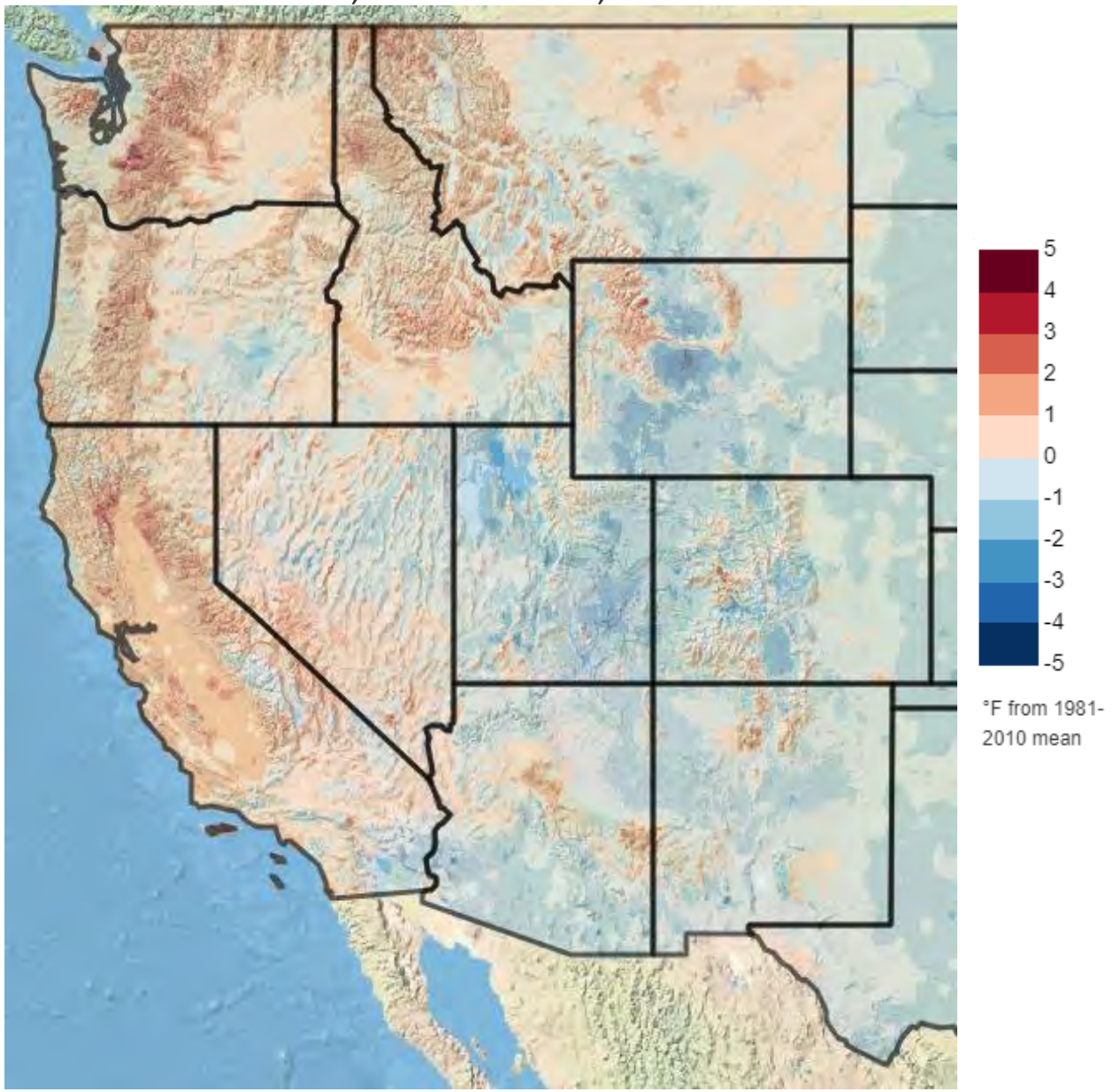


# Typical El Niño Winter?



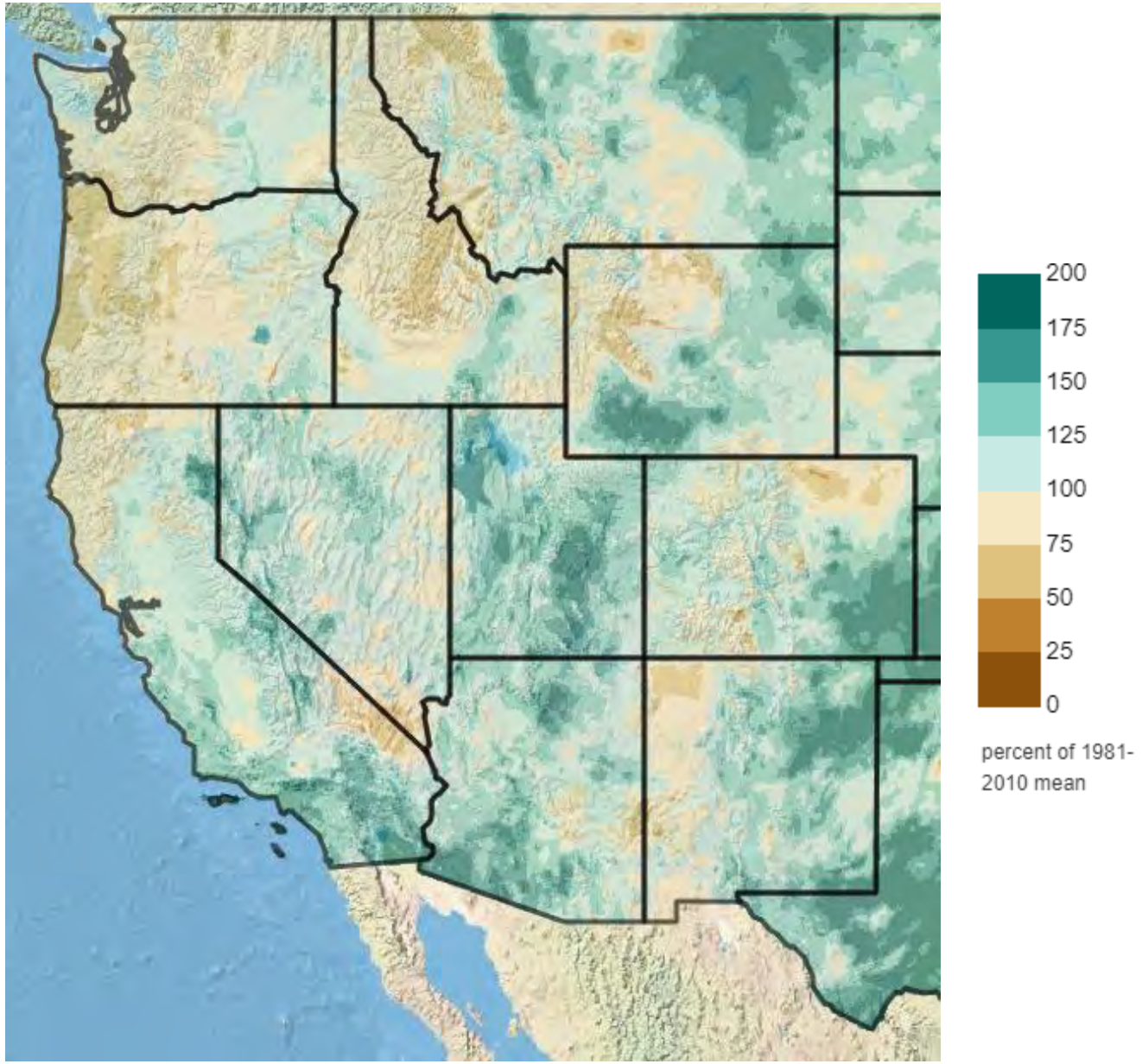
- Temperatures somewhat close to the pattern expected from a weak to moderate El Niño winter

Water Year Mean Temperature Departure from Normal
Oct 1, 2018 to Feb 11, 2019

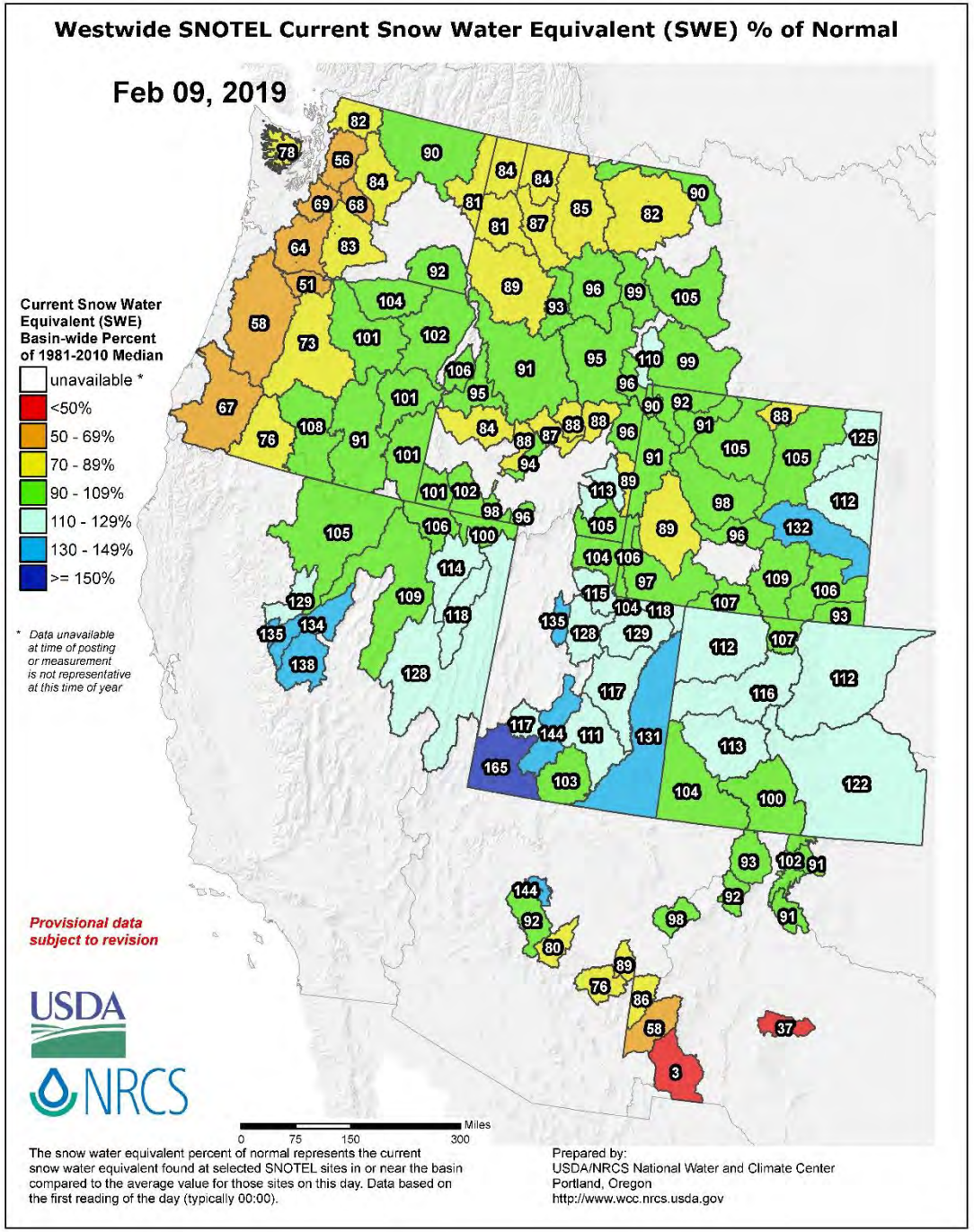


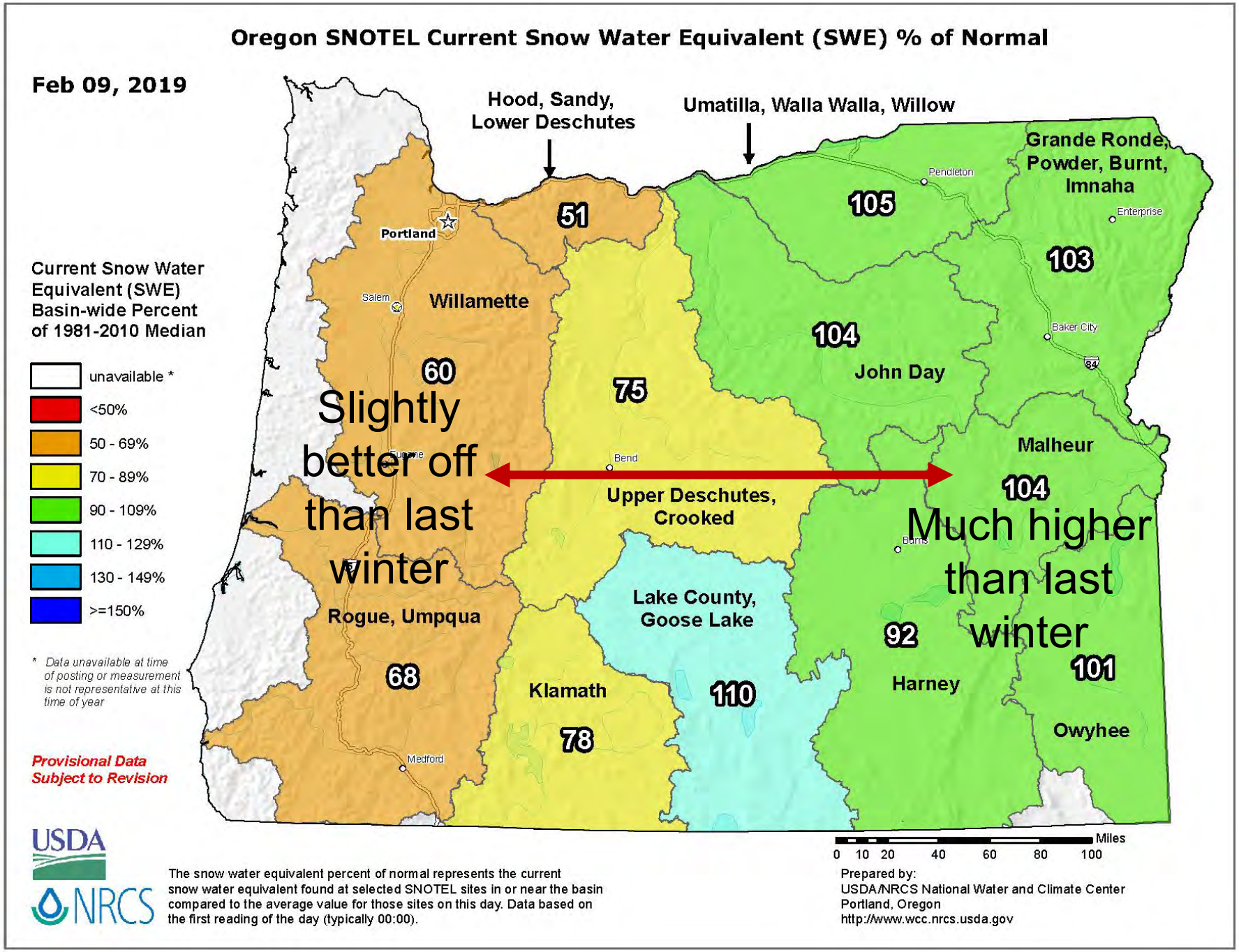
- Temperatures somewhat close to the pattern expected from a weak to moderate El Niño winter
- Precipitation pattern is close to that expected from a weak to moderate El Niño

Water Year Precipitation % of Normal
Oct 1, 2018 to Feb 11, 2019

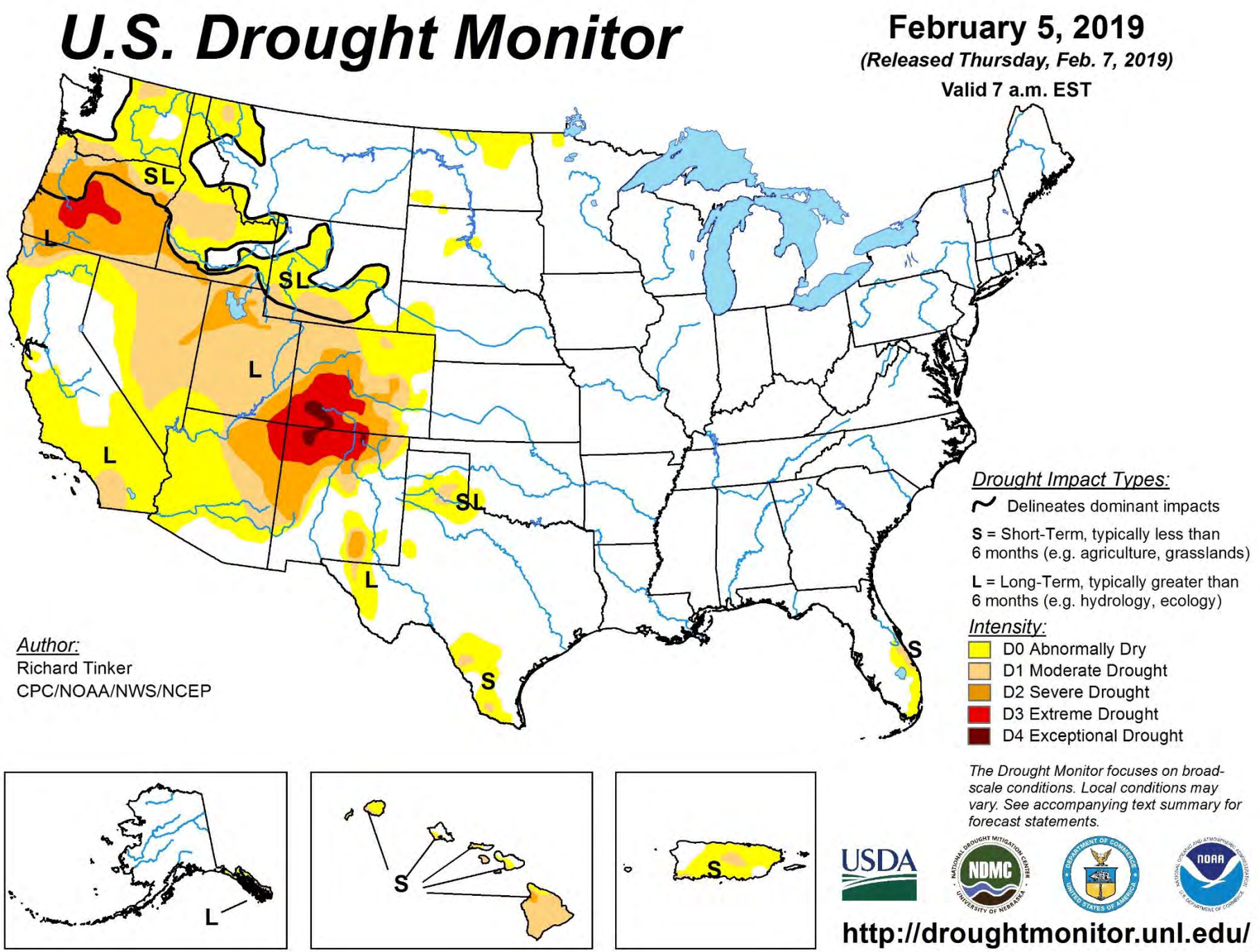


- Temperatures somewhat close to the pattern expected from a weak to moderate El Niño winter
- Precipitation pattern is close to that expected from a weak to moderate El Niño
- SWE near average to moderately down across the west, still time for accumulation




Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Feb 09, 2019
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
* Data unavailable at time of posting or measurement is not representative at this time of year
Provisional Data Subject to Revision
Hood, Sandy, Lower Deschutes
Umatilla, Walla Walla, Willow
Grande Ronde, Powder, Burnt, Imnaha
Portland
Salem
Pendleton
Enterprise
Baker City
Bend
Burns
Medford
51
105
103
104
60
75
104
92
101
68
110
78
Willamette
John Day
Malheur
Upper Deschutes, Crooked
Lake County, Goose Lake
Harney
Owyhee
Rogue, Umpqua
Klamath
Slightly better off than last winter
Much higher than last winter
Miles
0 10 20 40 60 80 100
USDA
NRCS
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

- Nationwide lowest drought footprint in nearly 20 years
- West drought continues, Four Corners most extreme with further developments in the PNW
- California lowest in many years

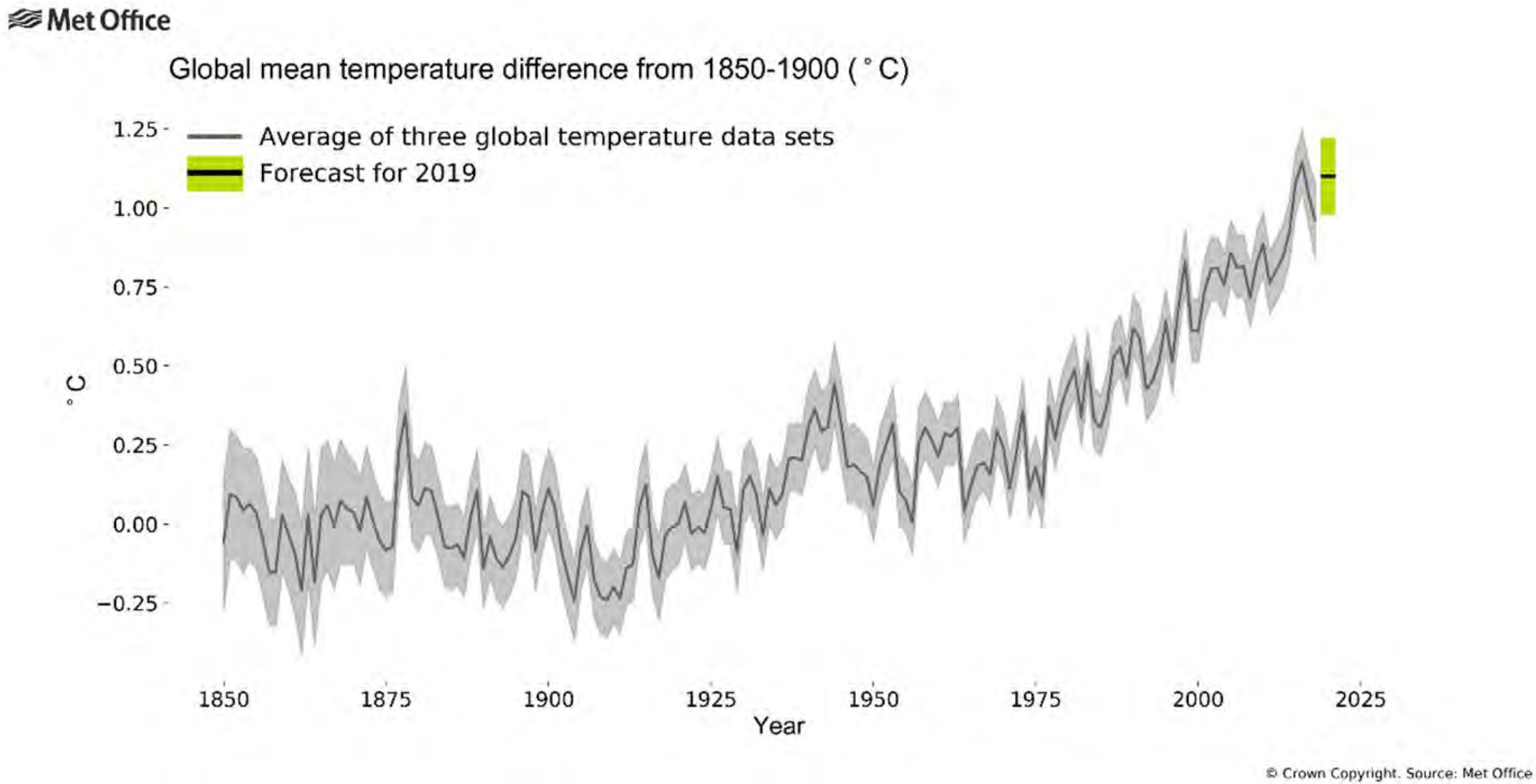


# Summary/Forecast

# Summary/Forecast

- Substantial variability in weather/climate factors globally and regionally in 2017 and 2018
- With a warm North Pacific and a weak El Niño in the tropics, expect 2019 globally to be a top 5 warmest year, very close to 2015 and 2016

# Summary/Forecast



# Summary/Forecast

- Substantial variability in weather/climate factors globally and regionally in 2017 and 2018
- With a warm North Pacific and a weak El Niño in the tropics, expect 2019 globally to be a top 5 warmest year, very close to 2015 and 2016
- Weather/Climate extremes will likely continue near record numbers in the US, especially the South

# Summary/Forecast

- Spatial extent of drought in the US has declined, especially in the south and east, but snowpack development in the west is still a concern
- Warming Arctic continuing to produce strong mid-latitude variability, the ‘Ridiculously Resilient Ridge’ flip-flopping between flow patterns in the US
- Warm North Pacific should enhance current weak El Niño effects with dry/warm conditions across the north and coolish/wet conditions across the south

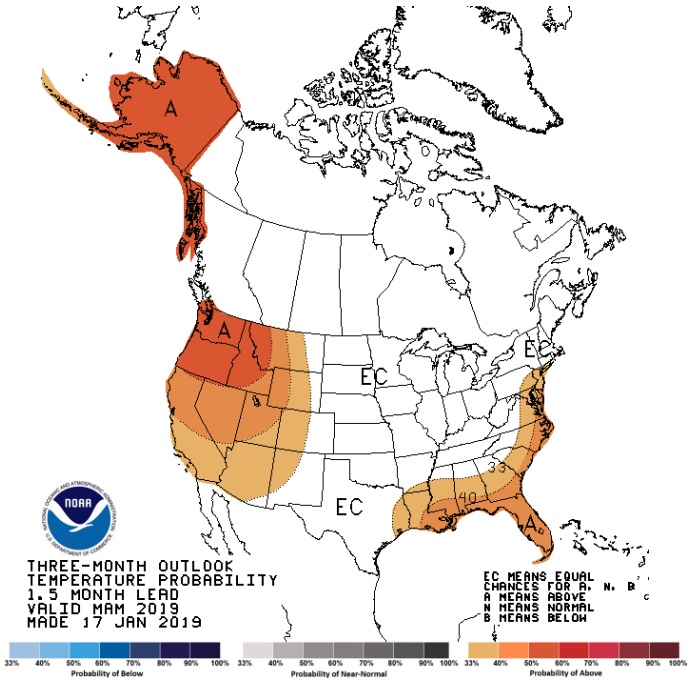
# NOAA Spring 2019 Forecast

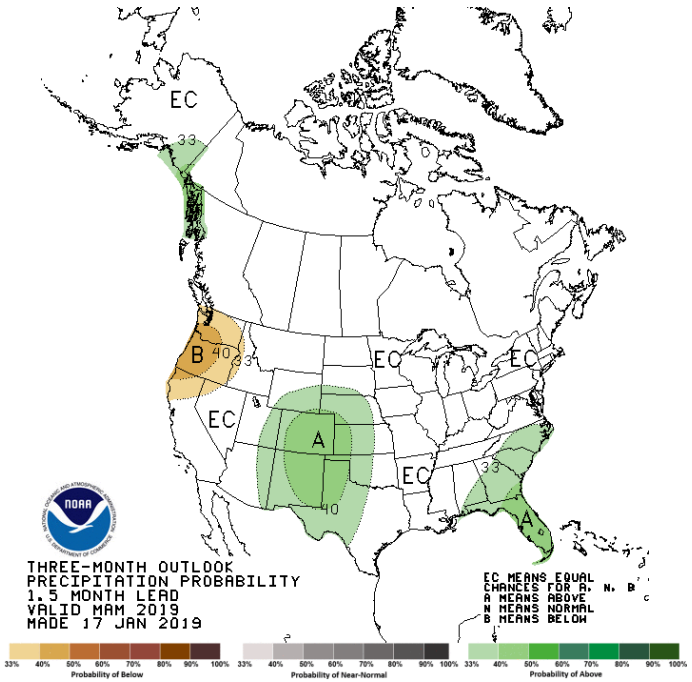
The March-April-May (MAM) temperature forecast indicates warm west and southeast, equal chances in between (probability increases for warmer western US for AMJ and beyond).

The March-April-May (MAM) precipitation forecast has a mixed pattern with some of the south likely wet, but much of the country having an equal chance of being slightly wetter/drier, except in the PNW which will likely be dry (pattern continues AMJ).

Both resemble a classic weak/moderate El Niño correlation pattern in model forecasts moving into the late spring and early summer

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.

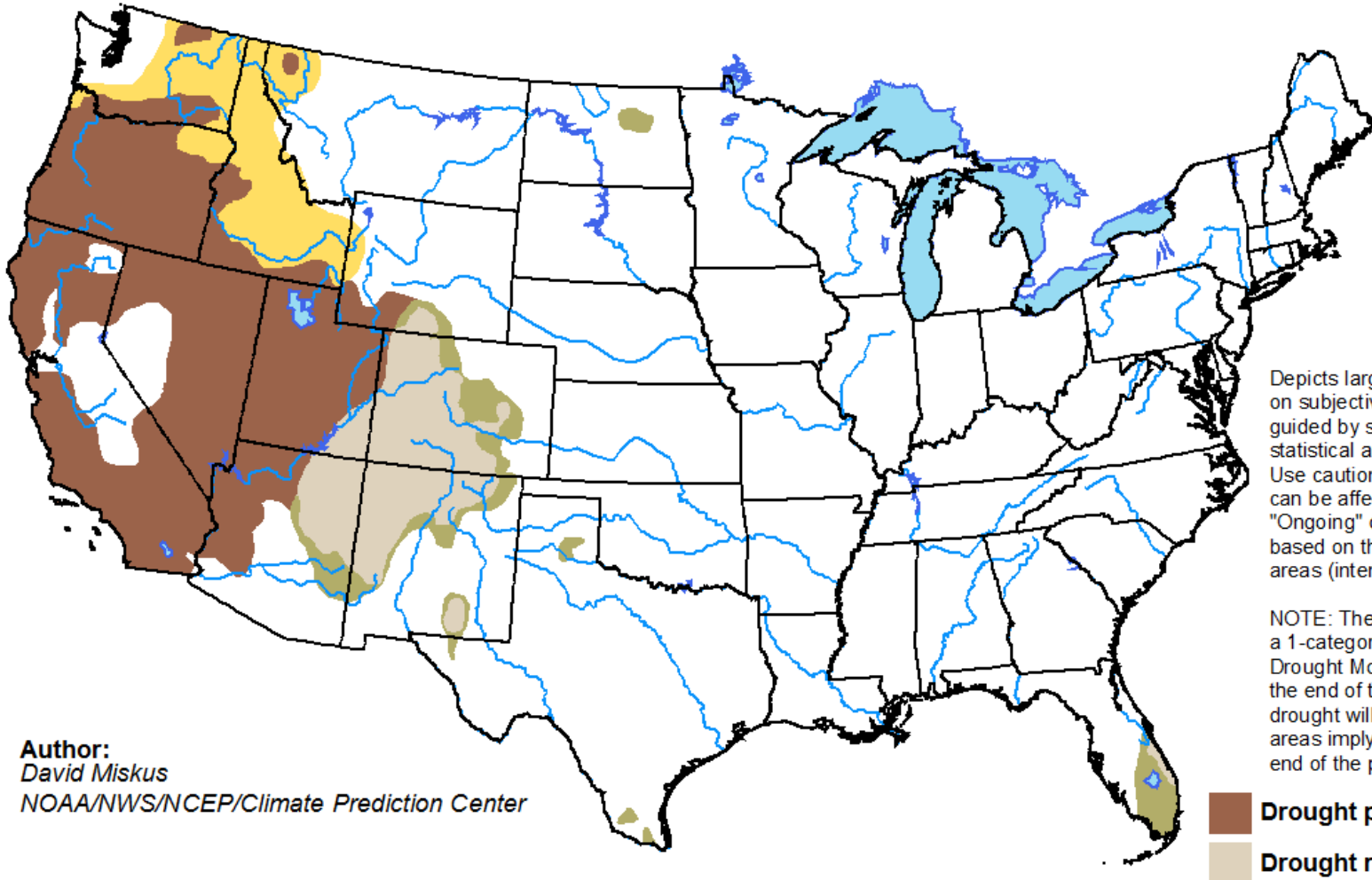


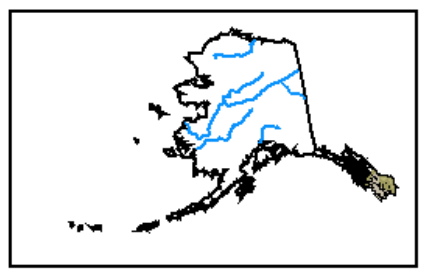



# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

*Valid for January 17 - April 30, 2019*
*Released January 17*





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**

**Author:**
*David Miskus*
*NOAA/NWS/NCEP/Climate Prediction Center*

**http://go.usa.gov/3eZ73**

# Spring/Summer 2019 Forecast Summary

- Tropical SST conditions are forecast to transition from the weak El Niño to neutral (normal) by late spring or early summer
- North Pacific SST conditions warm, but signs of relatively strong upwelling along the coast
- Taken together the conditions tilt the odds in favor of;
  - California relatively warm and normal precipitation to slightly drier late winter/early spring
  - PNW warm and dry late winter/early spring

# Spring/Summer 2019 Forecast Summary

- Spring frost frequency and severity over the entire west tends to be lower in years with these conditions (probability increases northward and inland)
- Growing seasons tend be warmer in years with these type of conditions, and persistence in the climate system tilts the odds to 2019 being similar to 2015 and 2016
- Increasing drought conditions in the PNW, and not enough moisture yet in California, are a concern for the 2019 fire season


# Climate Report

Greg Jones, Director Evenstad Center for Wine Education
Linfield College

OREGON WINE BOARD

OREGON WINEGROWERS ASSOCIATION