

PORT SLAND SYMPOSIUM

Climate Report

Gregory V. Jones, Director Evenstad Center for Wine Education

Linfield College









Vintage 2019 – Hit or Miss?

- Globally a top 5 warmest year ... a hit
- Continued strong climate variability ... a hit
- Spring frost risk low ... a partial miss
- Increasing PNW drought concerns ... a hit
- Lower heat stress ... a hit
- Warmer growing season ... early hit, later miss

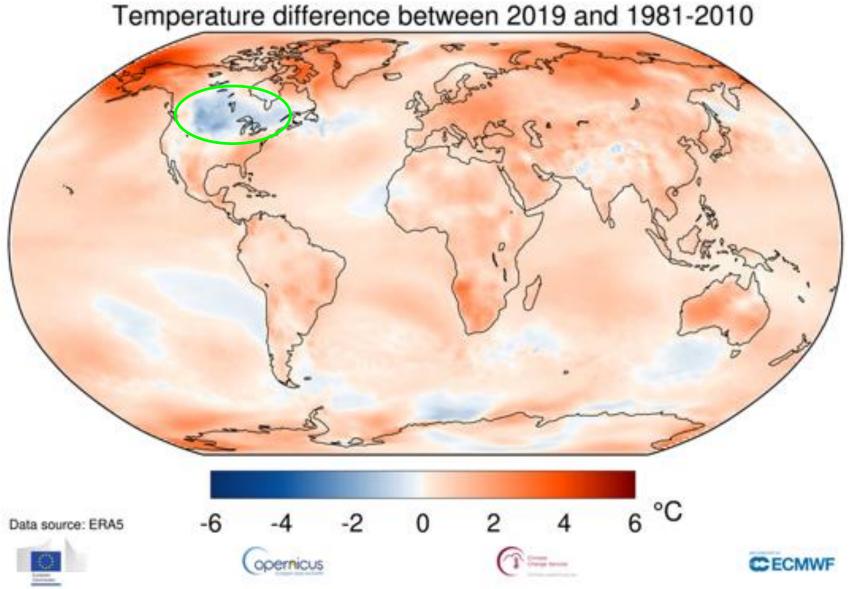
Talk Outline

- The State of the Climate
 - 2019 Global to Regional Perspective
- Current Conditions
- Summary and Vintage 2020 Forecast

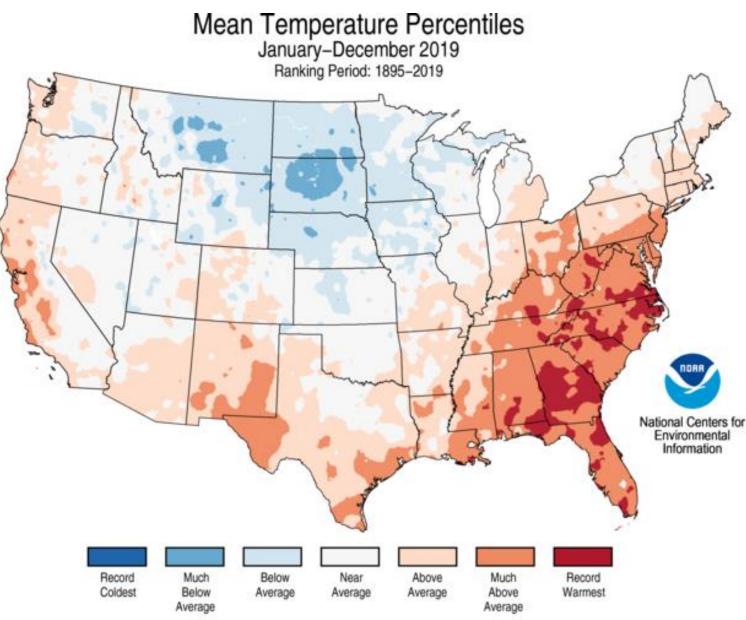
Global to Regional Climate Summary for 2019

Global Temperature Departures 2019

- 2019 was the 2nd warmest year on record, last 5 years the warmest ever
- 2019 was the warmest year ever in the world's oceans
- 2019 also was the Arctic's warmest year ever, and both poles continue to lose ice mass at record paces



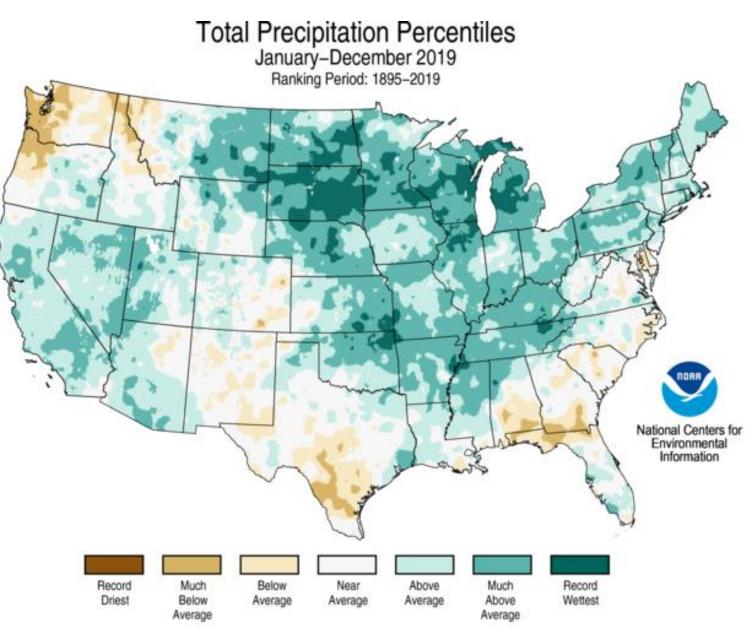
- CONUS -1.2°F below to 2.7°F above average in 2019, overall +0.7°F
- 23rd consecutive year CONUS above average
- Tmin up more than Tmax in 2019



Created: Mon Jan 06 2020

Data Source: 5km Gridded Dataset (nClimGrid)

- CONUS 2nd
 wettest year on record
- Great Plains, upper Midwest, Ohio
 River valley record
 wettest year
- California above average
- PNW, Texas and Southeast below average

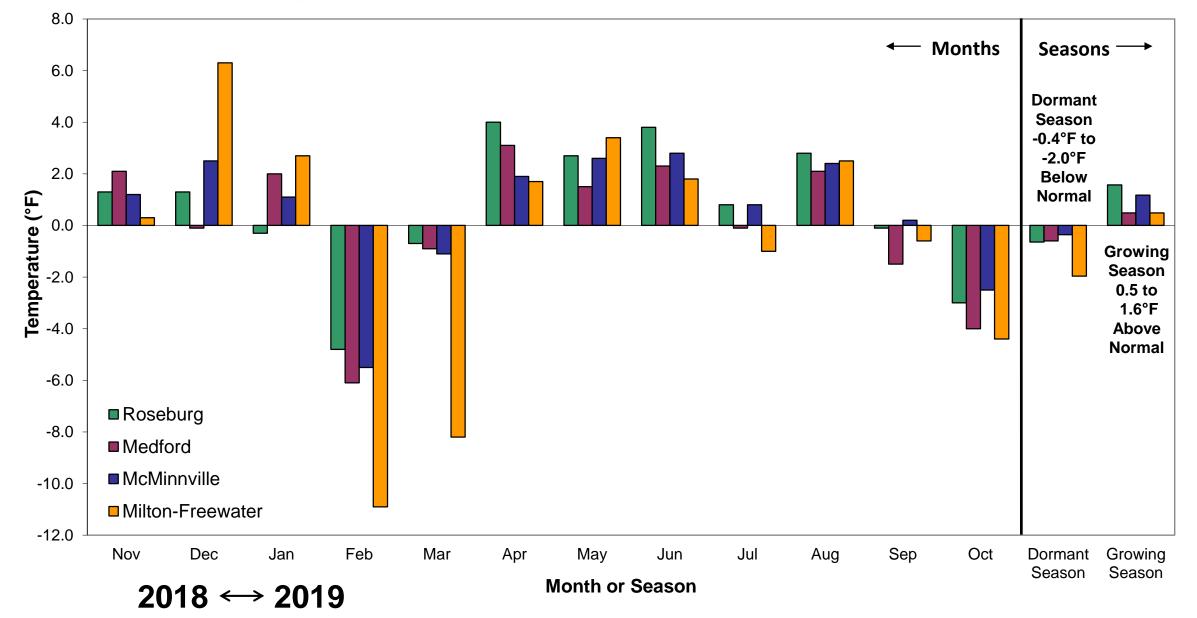


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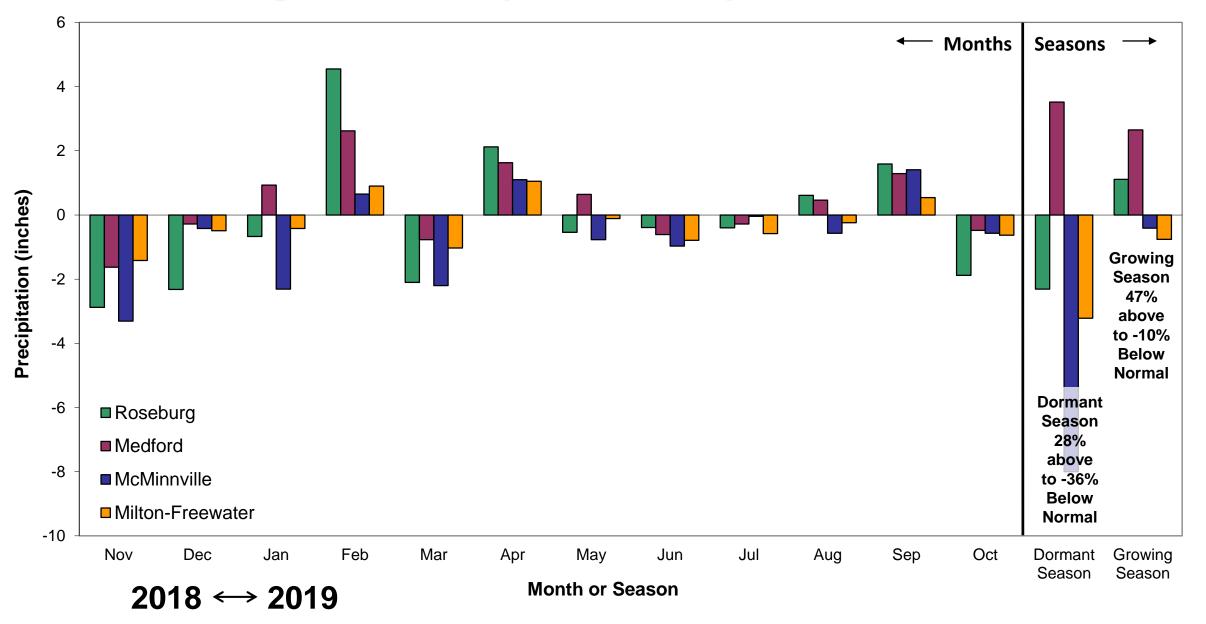
Oregon 2018-19 Weather/Climate Summary

2018-19 Regional Temperature Departures from Normal



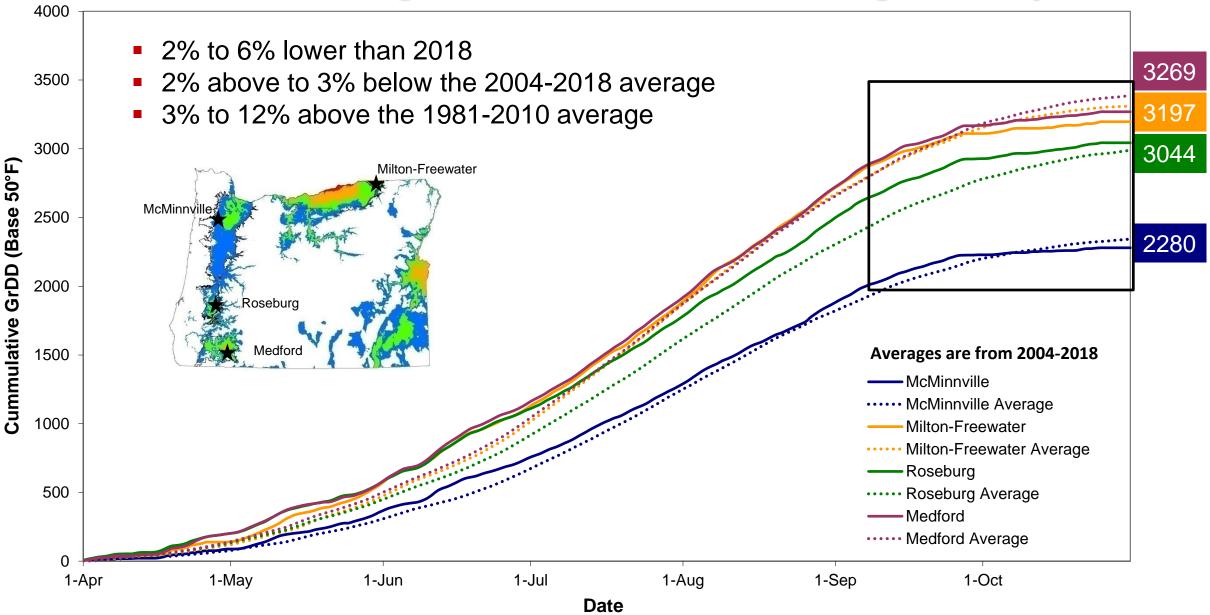
Summation of daily temperature departures by month, the dormant period (Nov-Mar) and the growing season (Apr-Oct) compared to the 1981-2010 climate normals from the NWS stations (www.noaa.gov)

2018-19 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)

2019 Growing Season Cumulative Degree-Days



This chart represents the 2019 cumulative growing degree-days compared to the average for 2004-2017 for the growing season (Apr-Oct) from the NWS stations (www.noaa.gov)

2019 Vintage Observations

- Major temperature swings in April-June; frost for some, rain during bloom to set, then heat spike in June
- Slightly late bud break; bloom and véraison average
- Fruit set, crop load average to above average
- Many thankful for a year without major fires and smoke

2019 Vintage Observations

- 2nd year in a row with low heat stress, humidity levels kept Tmax lower
- Rapid cool down/wet September, cold
 October
- Many said sugars plateaued, little gain afterward
- PM, botrytis, black rot, sour rot reported

2019 Vintage Observations

- Bird pressure varied statewide depending on harvest timing
- Harvest °Brix \downarrow , TA \uparrow , pH \downarrow , flavors there
- Producers indicate good to excellent wines
- Production varied substantially statewide
 - 15% down to 15% up
 - Some fruit not harvested
 - Likely ending up near average to slightly down

Current Conditions

Current Sea Surface Temperatures

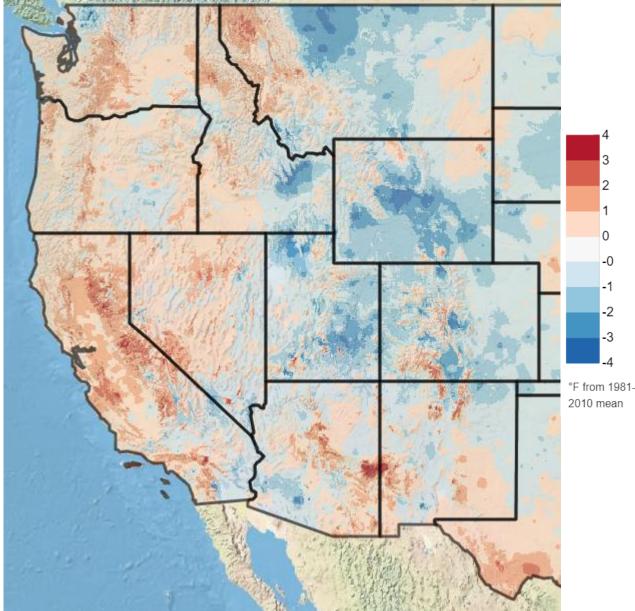
 North Pacific continues to be warmer than average, currently displaying +Pacific Decadal
 Oscillation (PDO) conditions

 Tropics transitioned from weak/moderate
 El Niño to neutral
 ENSO currently

OISST 1-day Avg SST Anomaly (°C) [1971-2000 base] ClimateReanalyzer.org Saturday, Feb 08, 2020 Climate Change Institute | University of Maine 90N 60N 60S 90S 135W 45E 135E 180 90W 45W 0 90E 90E -2 0 2

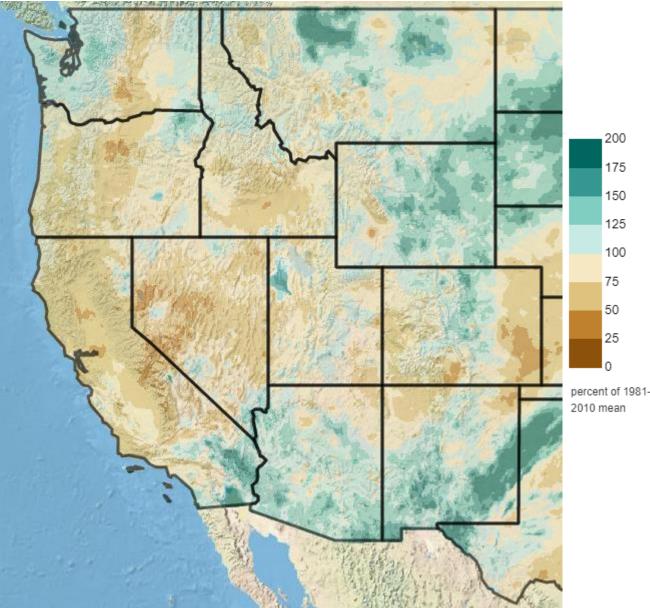
 Mixed temperatures over the west, western valleys warmer than average other areas slightly up/down



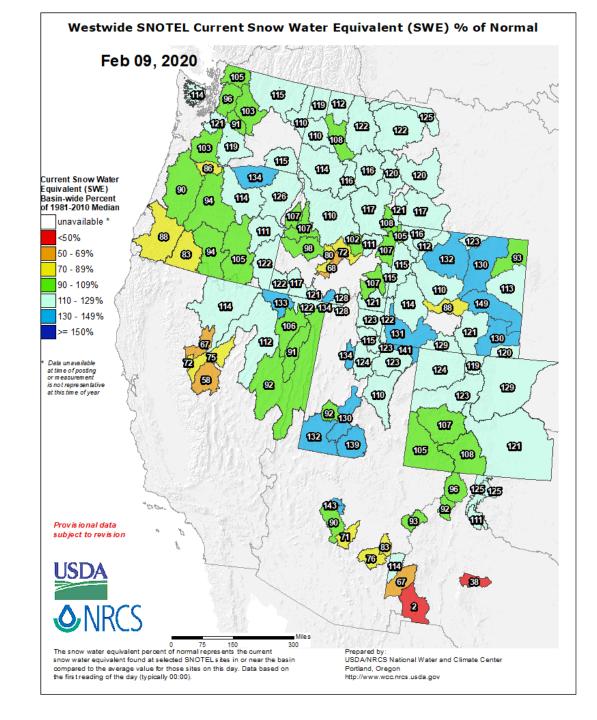


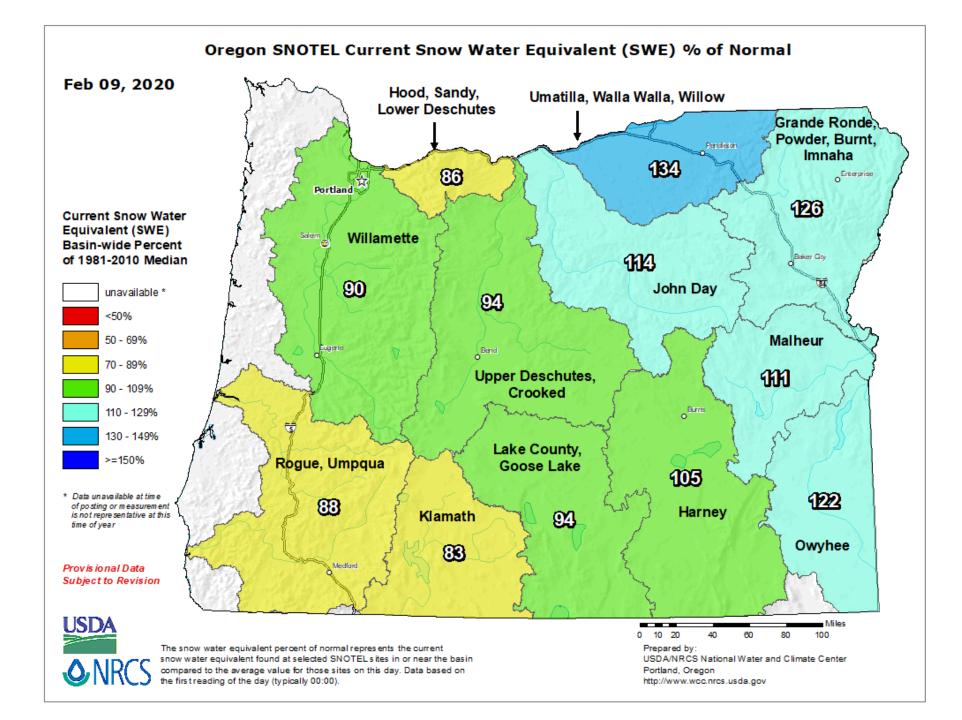
Water Year Precipitation % of Normal Oct 1, 2019 to Feb 9, 2020

- Mixed temperatures over the west, western valleys warmer than average other areas slightly up/down
- Dry start to the water year for most regions, except western WA, Socal, and southwest

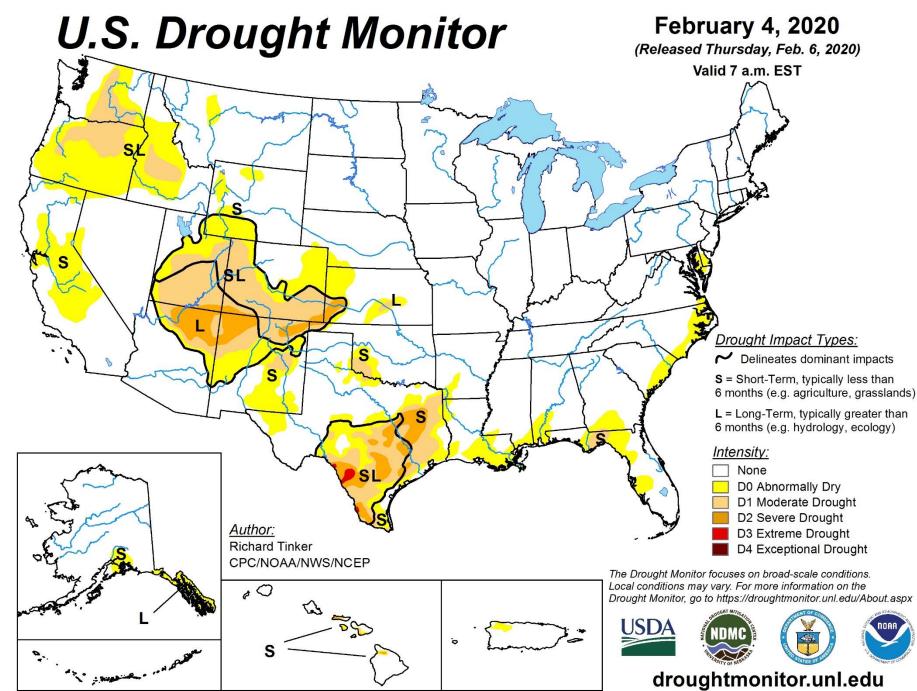


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- SWE moderately up to moderately down across the west

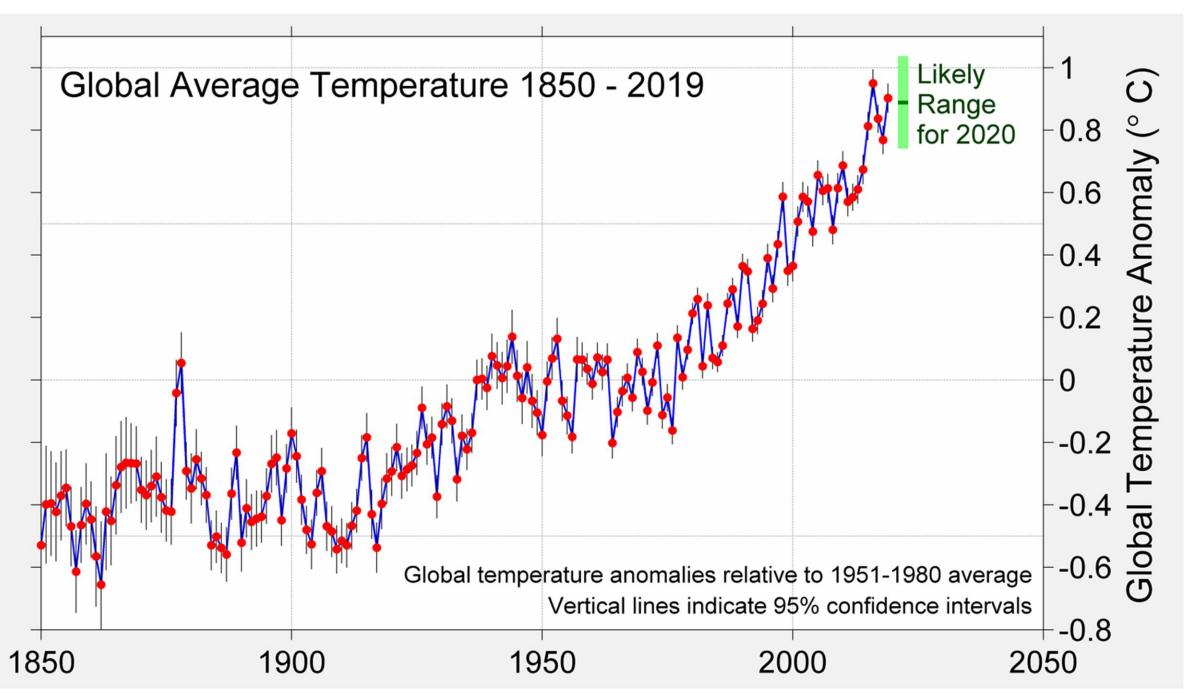




- Relatively low drought footprint nationwide
- Four Corners & TX most extreme and long-lived
- PNW seeing moderate drought
- Early winter inputs have temporarily lowered CA drought concerns



- Substantial variability in weather/climate factors globally and regionally in 2017-2019
- Persistence in the global climate system points to continued warming

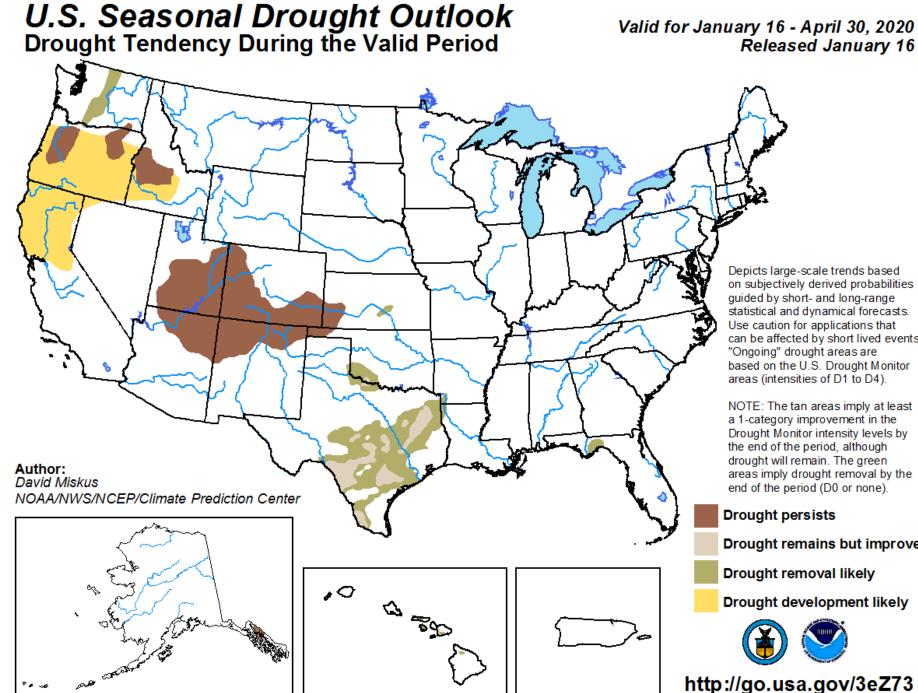


Data from Berkeley Earth (www.BerkeleyEarth.org)

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- Persistence in the global climate system points to continued warming
- One wild card ... the Taal volcanic eruption could mute global temperatures in 2020

- Substantial variability in weather/climate factors globally and regionally in 2017-2019
- Persistence in the global climate system points to continued warming
- One wild card ... the Taal volcanic eruption could mute global temperatures in 2020
- Weather/Climate extremes will likely continue near record numbers in the US, especially across the northern Plains and southern tier of states

- Spatial extent of drought in the US has declined, especially in California, but snowpack development in the west is still a concern
- Warming Arctic continuing to produce strong midlatitude variability, especially in central NA
- Warm North Pacific should continue to drive higher humidity levels and Tmin over the western US



Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range

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

Spring/Summer 2020 Forecast Summary

- Tropical SST conditions are are wavering around neutral ENSO (no clear signal at this time)
- North Pacific SST conditions continue quite warm, coastal upwelling along the west coast less than usual
- Circulation over the Pacific and NA has not changed much
- Taken together the conditions tilt the odds in favor of;
 - PNW near average late winter transitioning to cool, wet spring
 - California warm, dry late winter transitioning to cool, wet spring

Spring/Summer 2020 Forecast Summary

- Spring frost frequency and severity over the entire west tends to be higher in years with these conditions (probability increases northward and inland)
- Growing seasons tend be warmer in these type of conditions, and persistence in the climate system tilts the odds to 2020 being near the average of 2012-2019
- Drought conditions in the PNW and forecast for late season decline in snowpack additions over much of the western US are a concern



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