



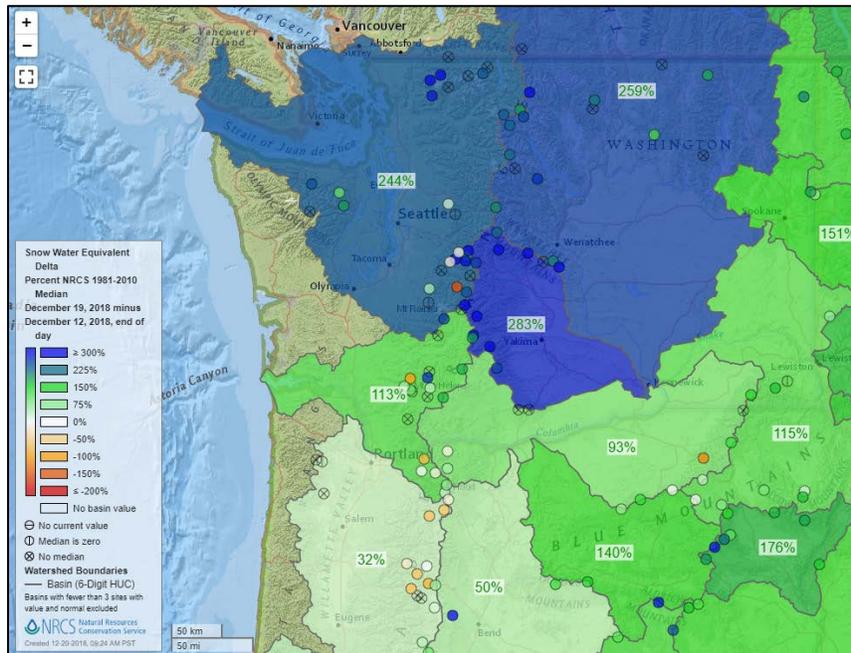
Water and Climate Update

December 20, 2018

The Natural Resources Conservation Service produces this weekly report using data and products from the [National Water and Climate Center](#) and other agencies. The report focuses on seasonal snowpack, precipitation, temperature, and drought conditions in the U.S.

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Rain, snow, and wind target the Pacific Northwest



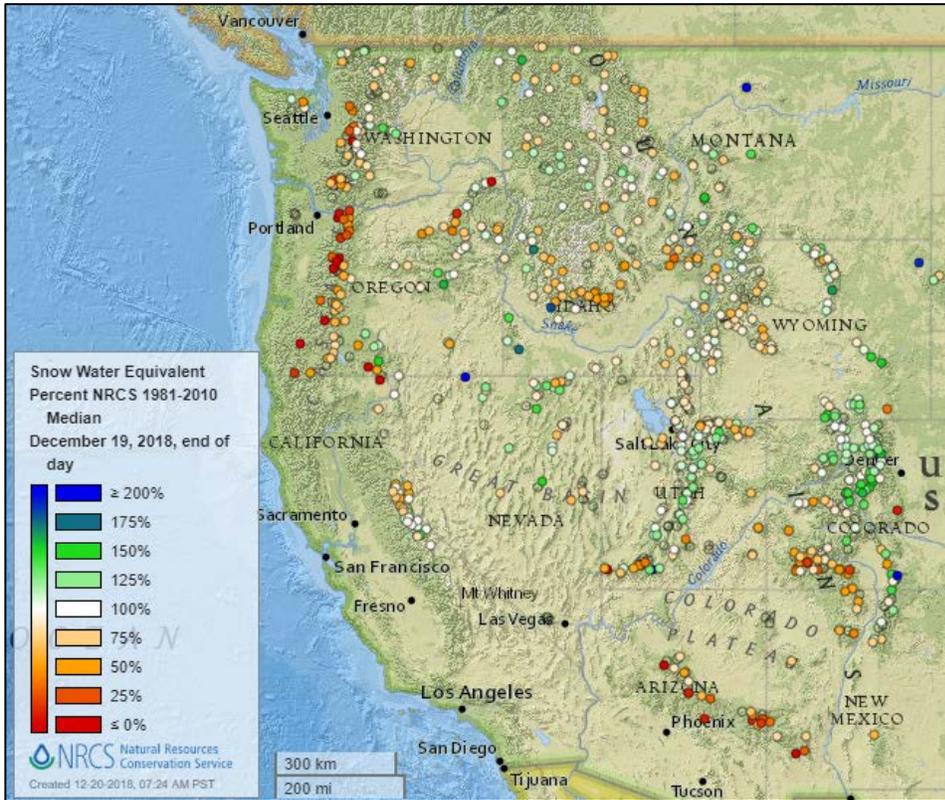
A powerful winter storm moved through Washington and Oregon this week, producing widespread dangerous conditions. Temperatures during this storm were warmer than normal, causing several low-elevation SNOTEL sites to lose snow. Overall, however, the basins received over 200% of normal snow for the week. Wind with gusts up to 90mph and waves battered the Northwest coast, with high surf warnings issued and some beaches closed. Rain was heaviest along the coast with totals topping 5.7 inches in 24 hours. Up to 24 inches of snow fell along the Cascade Mountains, with cities across the region reporting power outages and minor flooding. A rare tornado touched down in Port Orchard, Washington, damaging over 400 homes, with no serious injuries.

Related:

- [Washington storms dump snow on mountain passes; rain, wind continues](#) – MyNorthwest (WA)
- [Tornado touches down near Port Orchard, rips roofs off homes](#) – The Seattle Times (WA)
- [400+ homes damaged in 'chaos' of Port Orchard tornado](#) – Q13Fox (WA)
- [Avalanche danger is high in the Cascades](#) – K5 News (WA)
- [Wind, rain, and waves batter Oregon coast: 'We tell people to stay off the beaches'](#) – KVAL (OR)
- [Very wet, windy storm blows into Pacific Northwest](#) – KTVZ.com (OR)

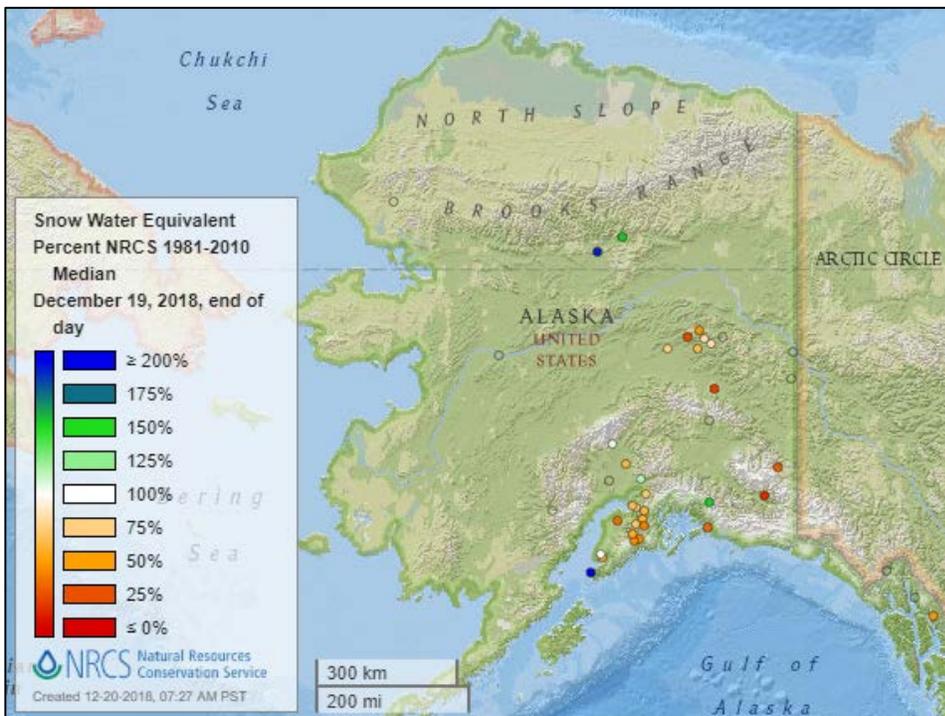
Snow

Current Snow Water Equivalent, NRCS SNOTEL Network



[Snow water equivalent percent of median map](#)

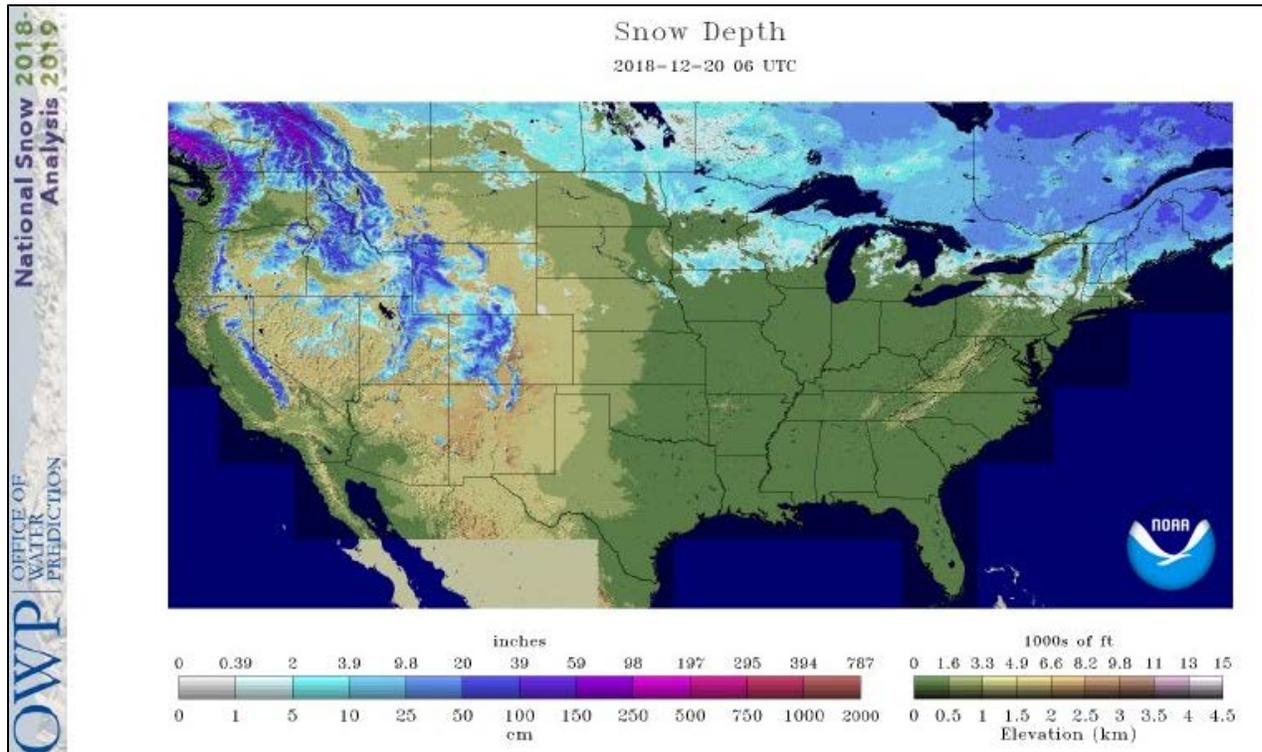
See also:
[Snow water equivalent values \(inches\) map](#)



[Alaska snow water equivalent percent of median map](#)

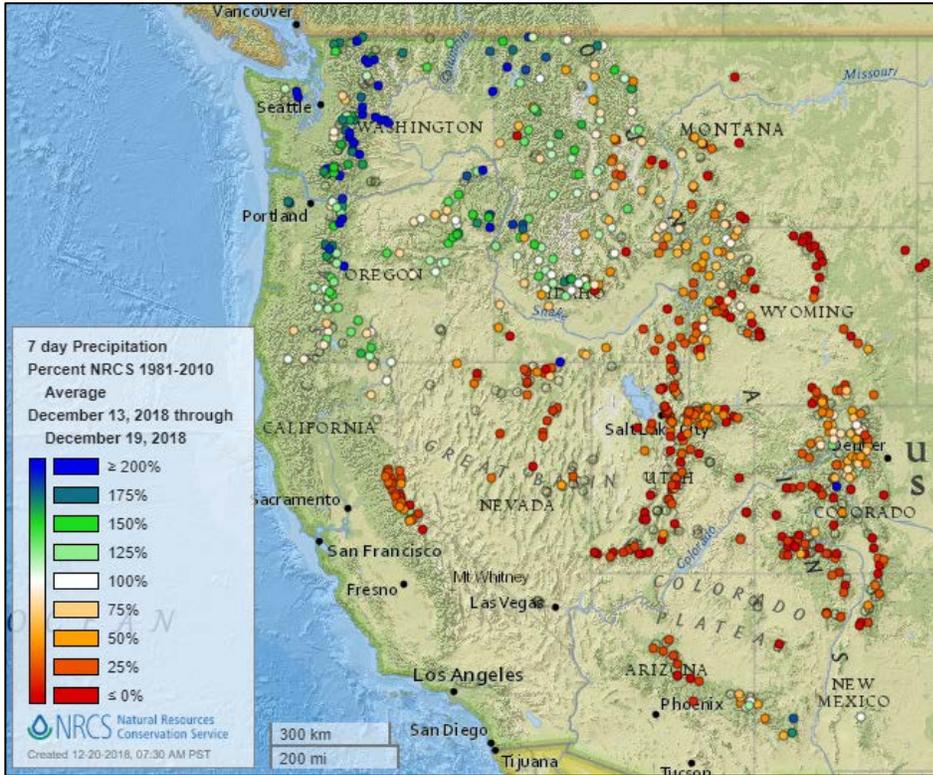
See also:
[Alaska snow water equivalent values \(inches\) map](#)

[Current Snow Depth](#), National Weather Service Snow Analysis



Precipitation

Last 7 Days, NRCS SNOTEL Network

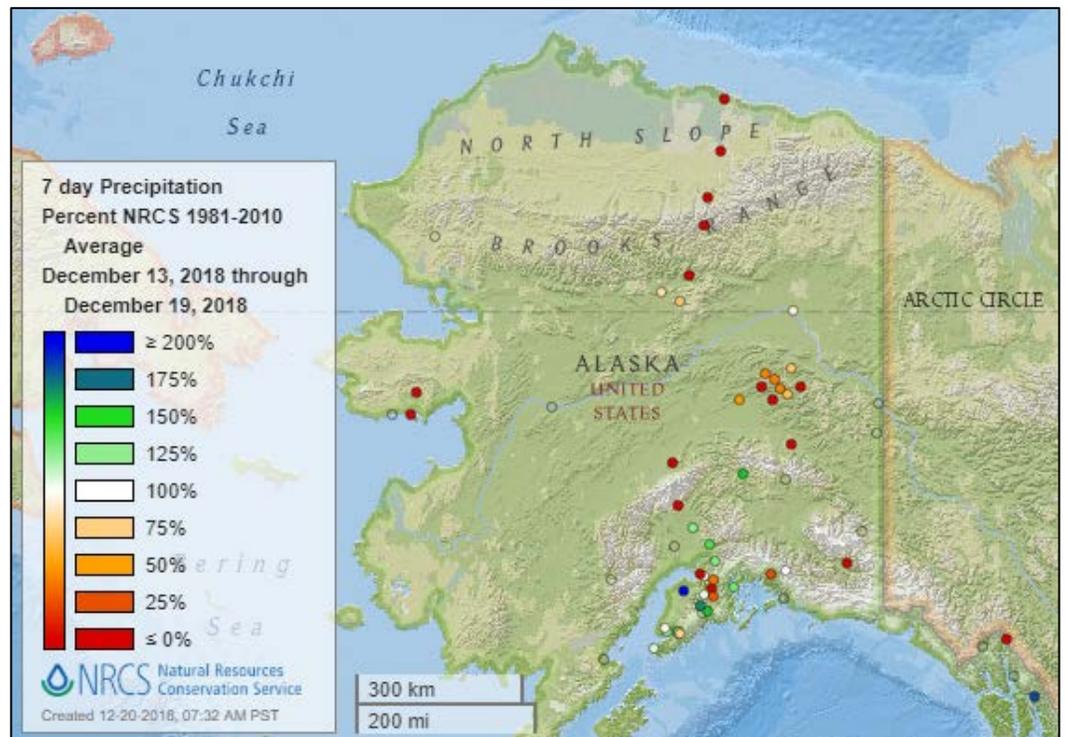


[7-day precipitation percent of average map](#)

See also:
[7-day total precipitation values \(inches\) map](#)

[Alaska 7-day precipitation percent of average map](#)

See also:
[Alaska 7-day total precipitation values \(inches\) map](#)



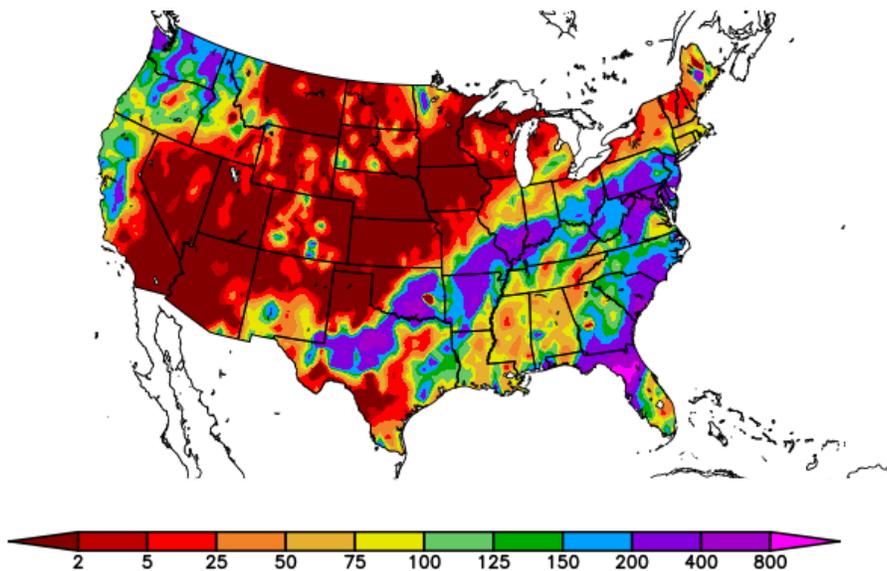
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

[7-day precipitation percent of normal map](#) for the continental U.S.

See also: [7-day total precipitation values \(inches\) map](#)

Percent of Normal Precipitation (%)
12/13/2018 – 12/19/2018



Generated 12/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

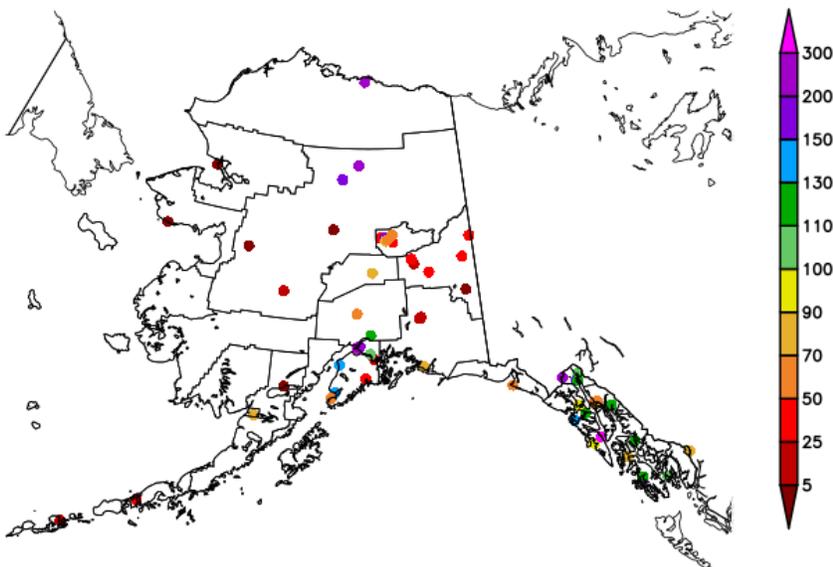
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

[7-day precipitation anomaly map](#) for Alaska.

See also: [7-day total precipitation values \(inches\) map](#)

Percent of Normal Precipitation (%)
12/13/2018 – 12/19/2018



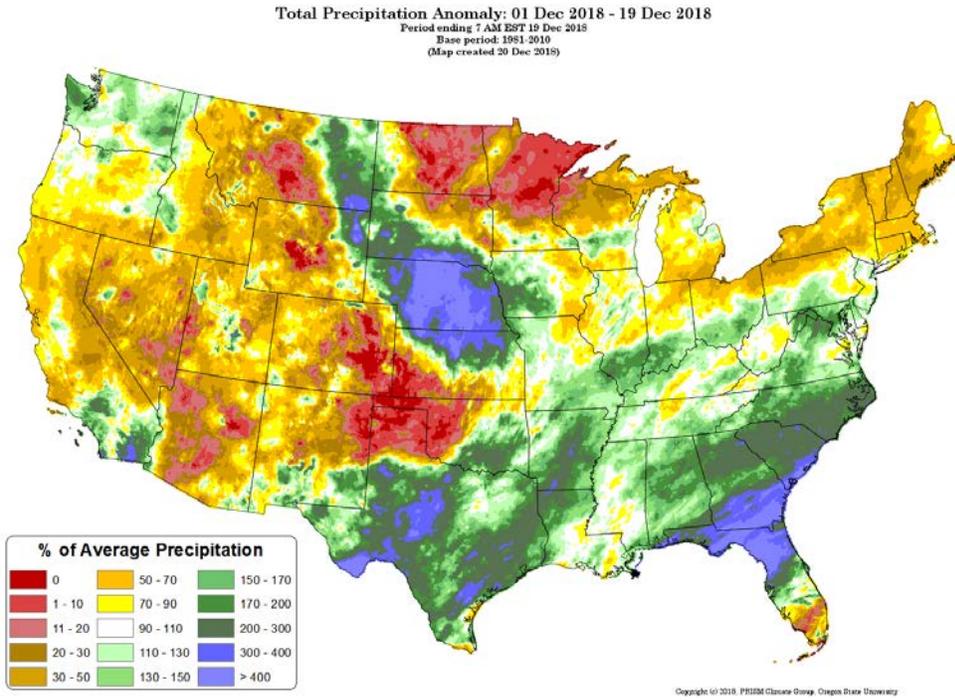
Generated 12/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

Water and Climate Update

Month-to-Date, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

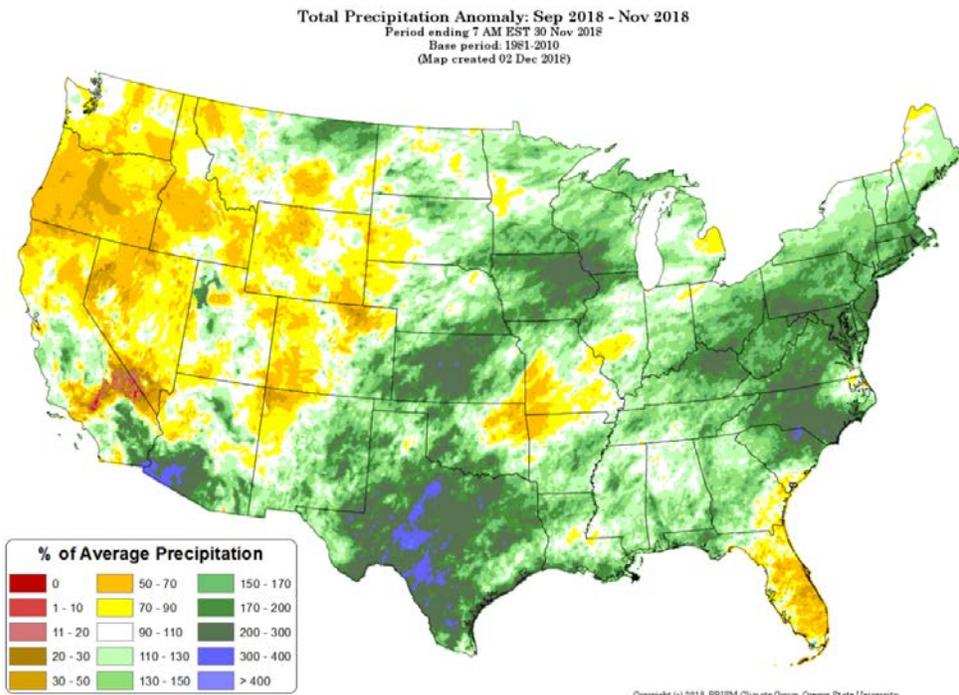


[Month-to-date national total precipitation percent of average map](#)

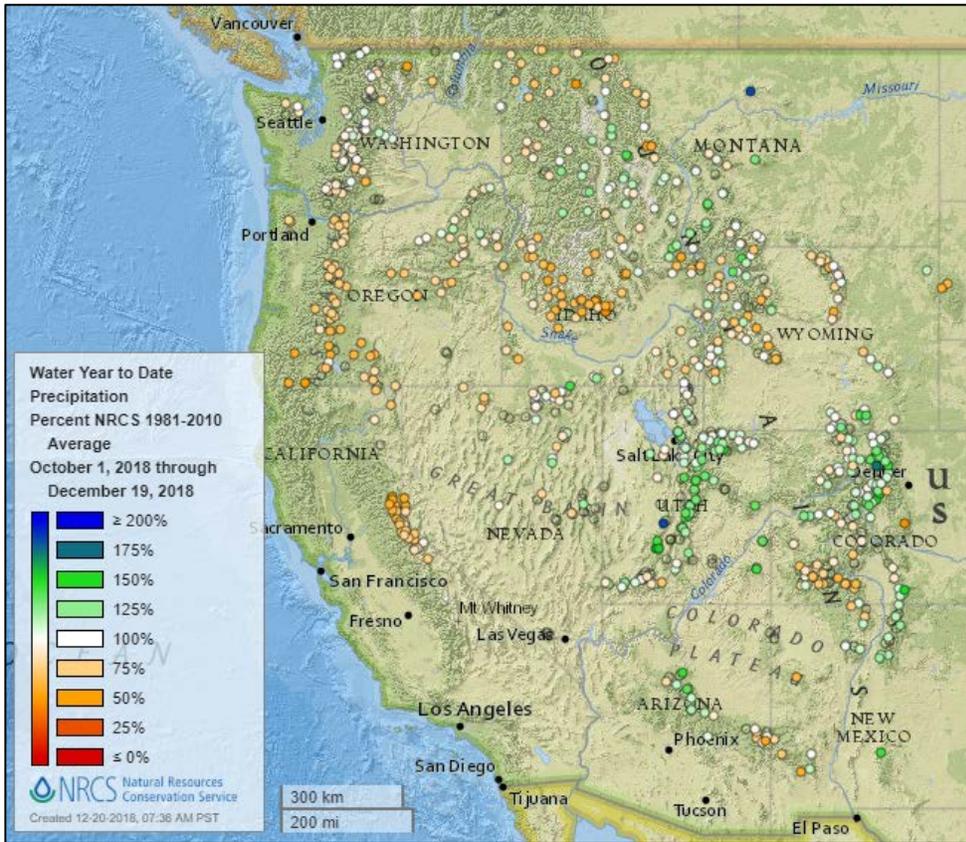
Last 3 Months, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

[September through November 2018 total precipitation percent of average map](#)

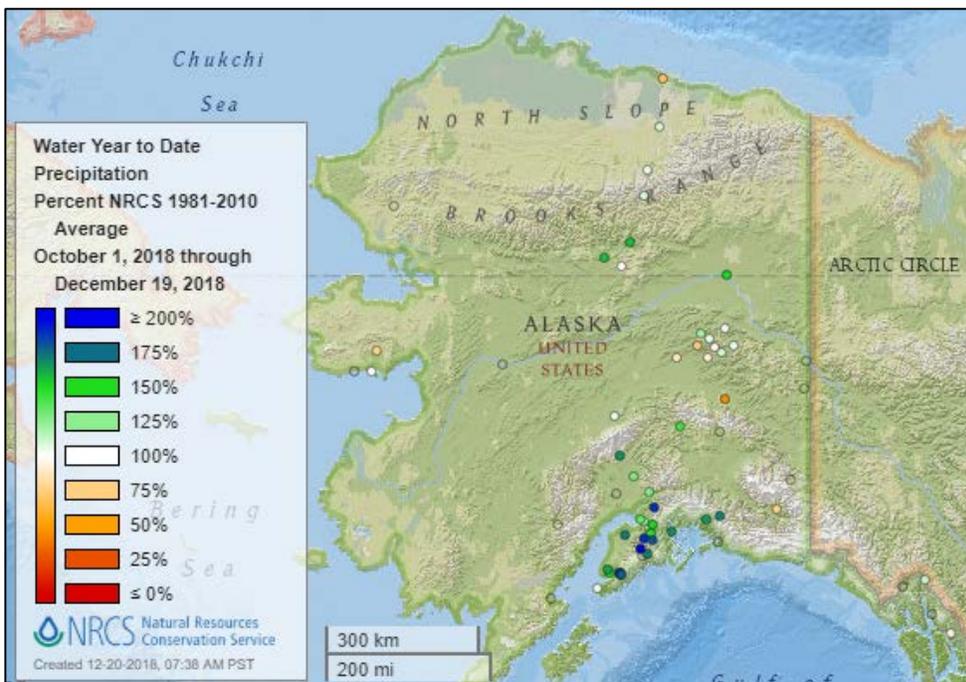


Water Year-to-Date, NRCS SNOTEL Network



[2019 water year-to-date precipitation percent of average map](#)

See also:
[2019 water year-to-date precipitation values \(inches\) map](#)



[Alaska 2019 water year-to-date precipitation percent of average map](#)

See also: [Alaska 2019 water year-to-date precipitation values \(inches\) map](#)

Temperature

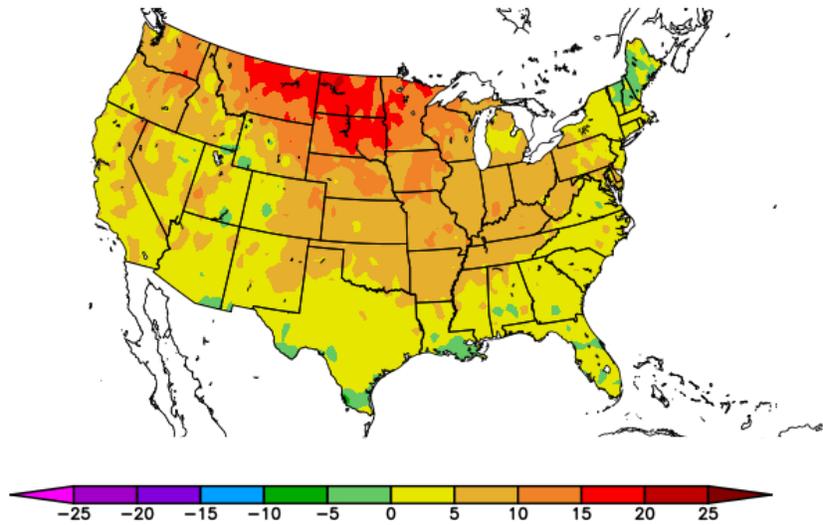
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

[7-day temperature anomaly map](#) for the contiguous U.S.

See also: [7-day temperature \(° F\) map](#)

Departure from Normal Temperature (F)
12/13/2018 – 12/19/2018



Generated 12/20/2018 at HPRCC using provisional data.

NOAA Regional Climate Centers

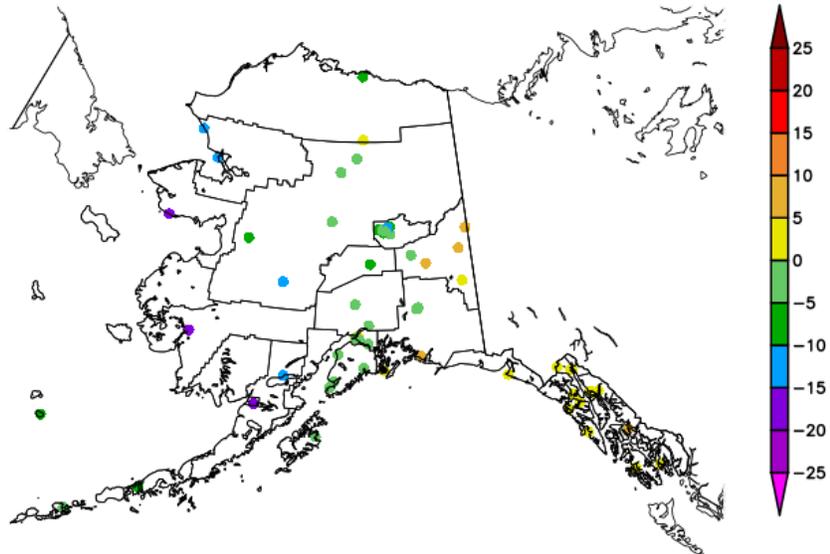
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

[7-day temperature anomaly map](#) for Alaska.

See also: [7-day temperature \(° F\) map](#)

Departure from Normal Temperature (F)
12/13/2018 – 12/19/2018



Generated 12/20/2018 at HPRCC using provisional data.

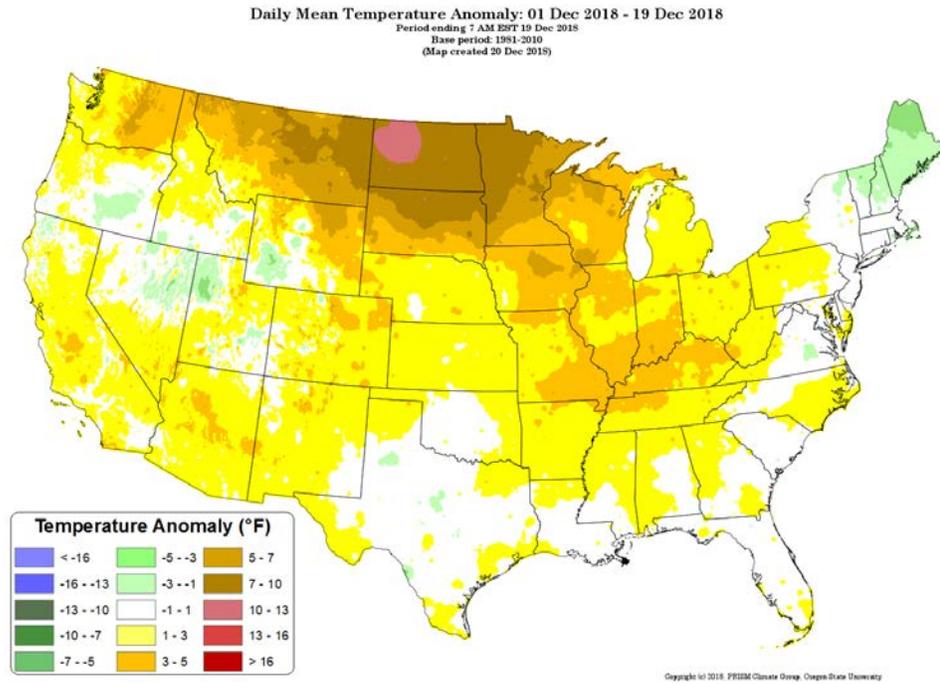
NOAA Regional Climate Centers

Water and Climate Update

Month-to-Date, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

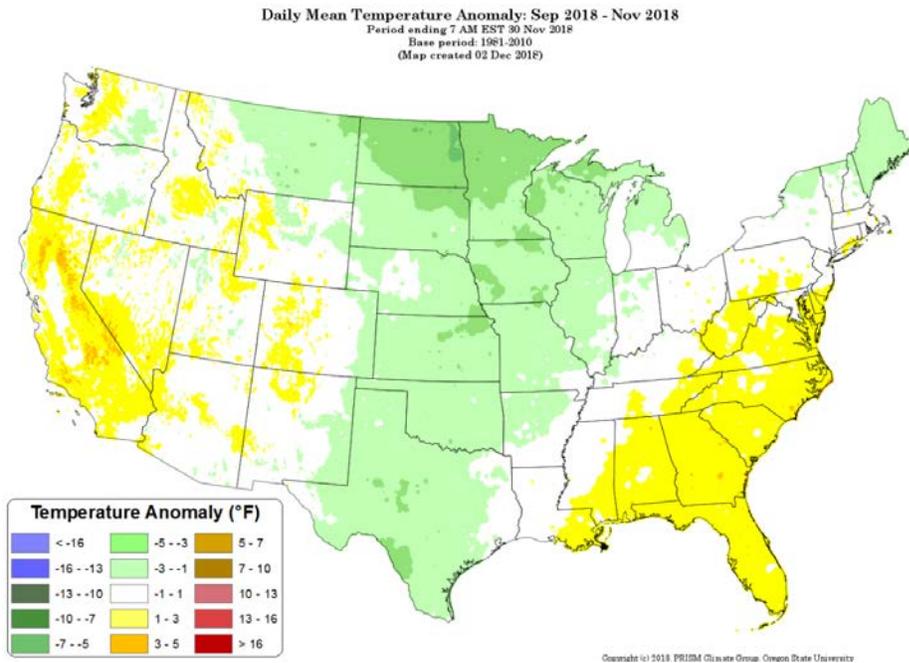
[Month-to-date national daily mean temperature anomaly map](#)



Last 3 Months, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

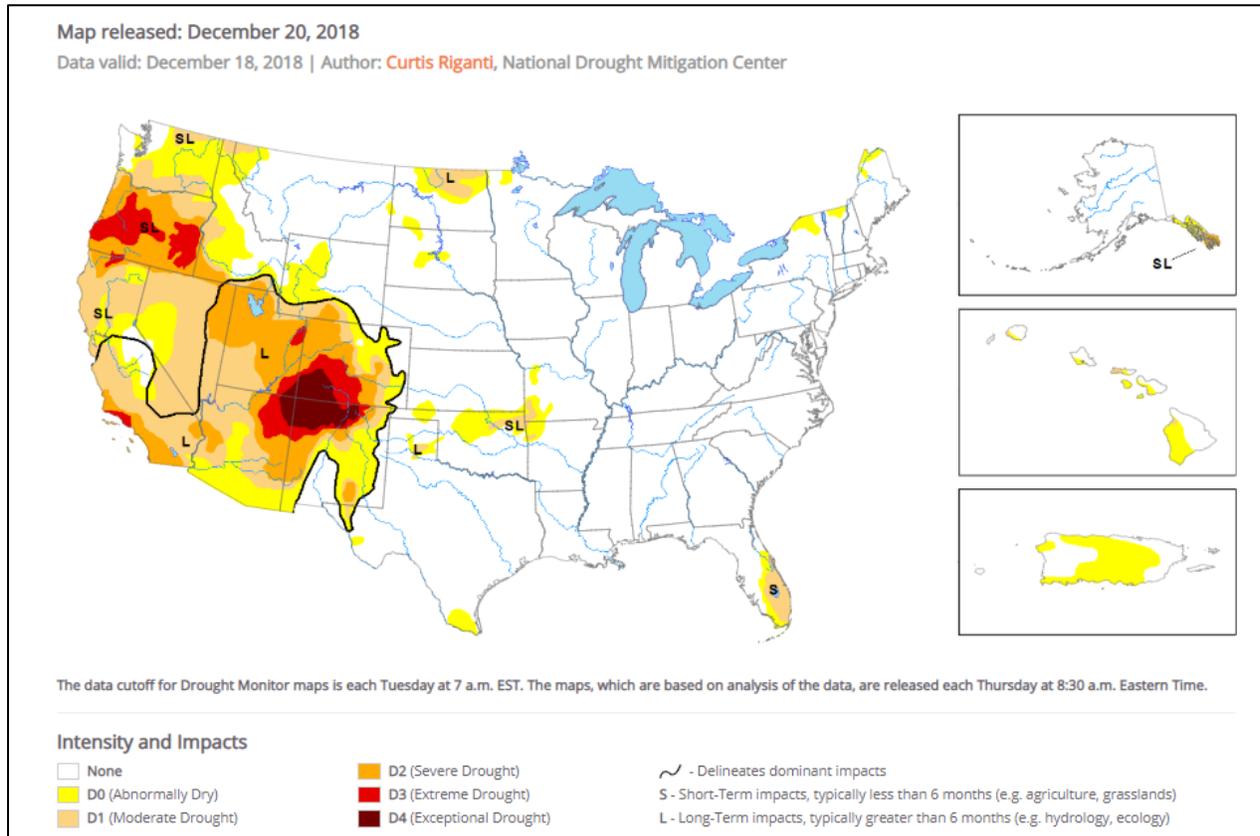
[September through November 2018 daily mean temperature anomaly map](#)



Drought

[U.S. Drought Monitor](#) Select map below.

[U.S. Drought Portal](#) Comprehensive drought resource.

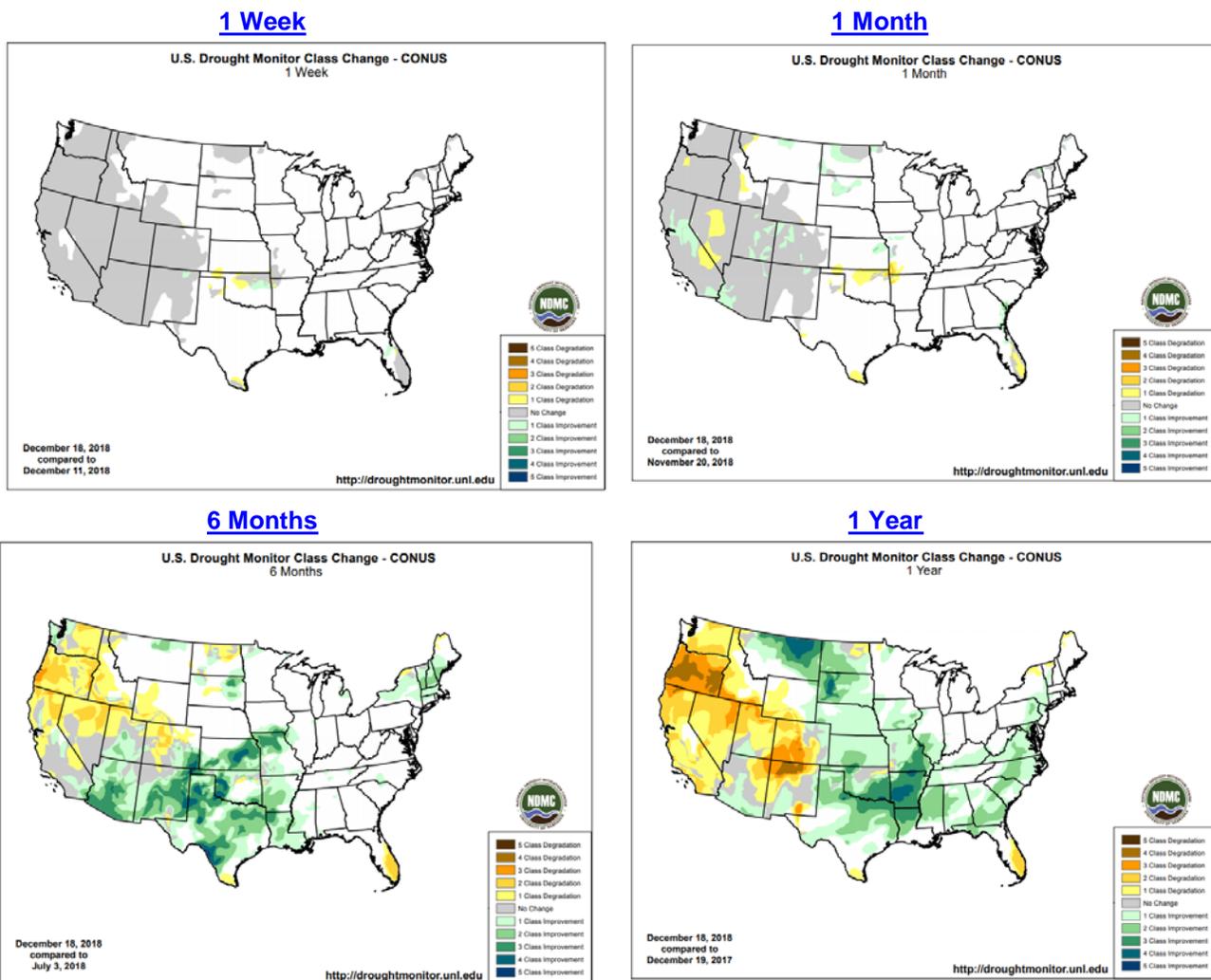


Current [National Drought Summary](#), December 20, 2018

Author: Curtis Riganti, National Drought Mitigation Center

“This week, another strong storm system crossed the southern continental United States, delivering moderate to heavy precipitation from parts of Texas and Oklahoma east and northeastward through the Ohio Valley and Southeast to the Atlantic Coast. Moderate to heavy precipitation also occurred from the central California coastline northward to the Canadian border, and in the interior northwest in northeast Oregon, eastern Washington, and the Idaho Panhandle. Elsewhere, little to no precipitation fell. With the exception of southern Texas, Louisiana, Mississippi, Alabama, Florida, northern New England, and a few pockets in the Intermountain West, most of the continental United States experienced warmer than normal weather this week. The warmest conditions with respect to normal occurred in the central and northern Plains and Upper Midwest. Relatively minor changes were made to the drought depiction this week. Abnormal dryness expanded over much of the southern Plains in response to increased short-term precipitation deficits and windy conditions. Areas of the South and Southeast that were in drought were adjusted in response to where the moderate to heavy rain fell and missed this week. Any changes to the map in the Northwest have been deferred to next week, when the effects of recent precipitation on meteorological and hydrological drought in the region can be more thoroughly evaluated. Moderate drought was added to the leeward sides of some of the Hawaiian Islands, where short-term dryness and windiness led to agricultural impacts. Abnormal dryness expanded in Puerto Rico, where soil moisture, streamflow, and short-term precipitation deficits worsened. Precipitation in the Alaska Panhandle this week was insufficient to improve any of the areas experiencing short- and long-term drought or abnormal dryness.”

Changes in Drought Monitor Categories over Time

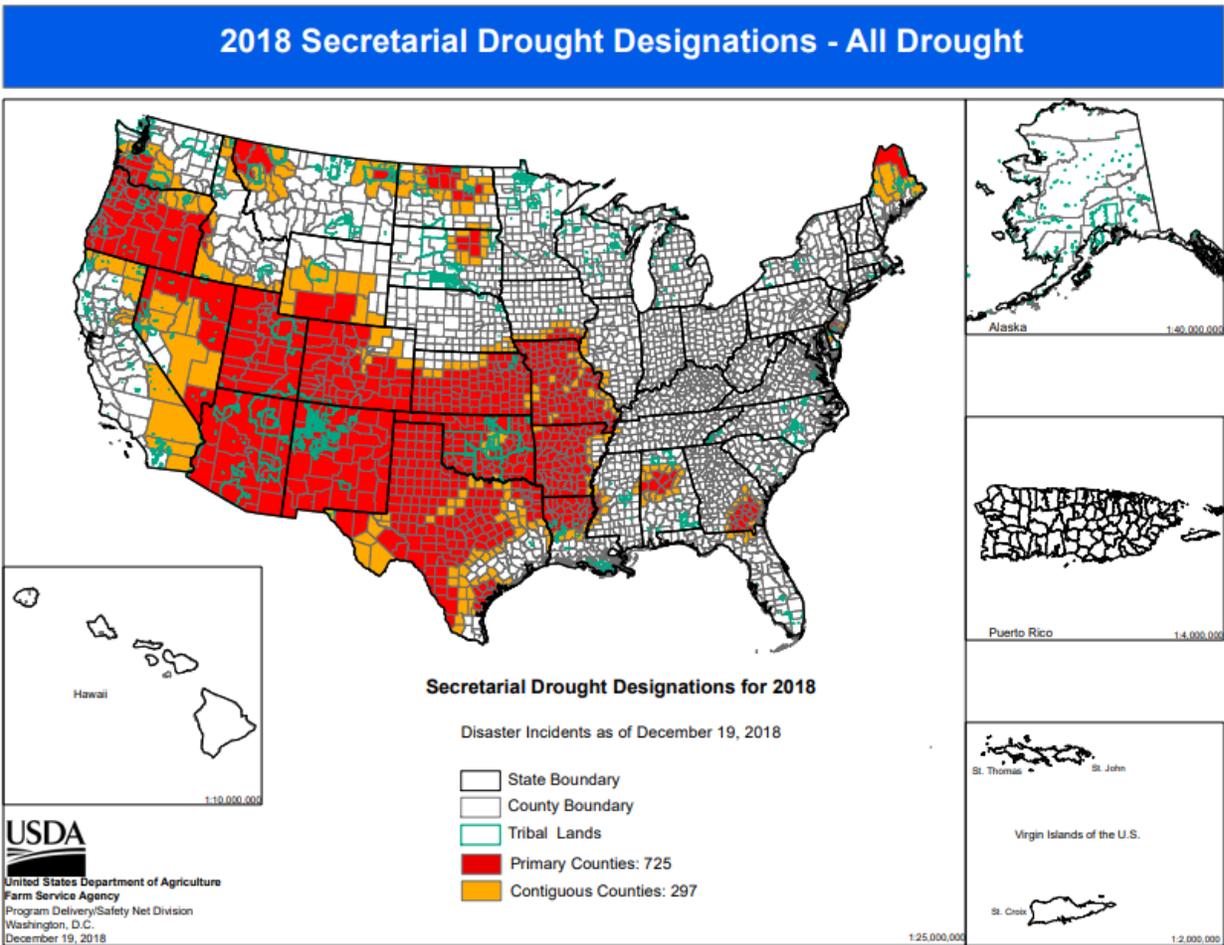


Changes in drought conditions over the last 12 months

Highlighted Drought Resources

- [Drought Impact Reporter](#)
- [Quarterly Regional Climate Impacts and Outlook](#)
- [U.S. Drought Portal Indicators and Monitoring](#)
- [U.S. Population in Drought, Weekly Comparison](#)
- [USDA Disaster and Drought Information](#)

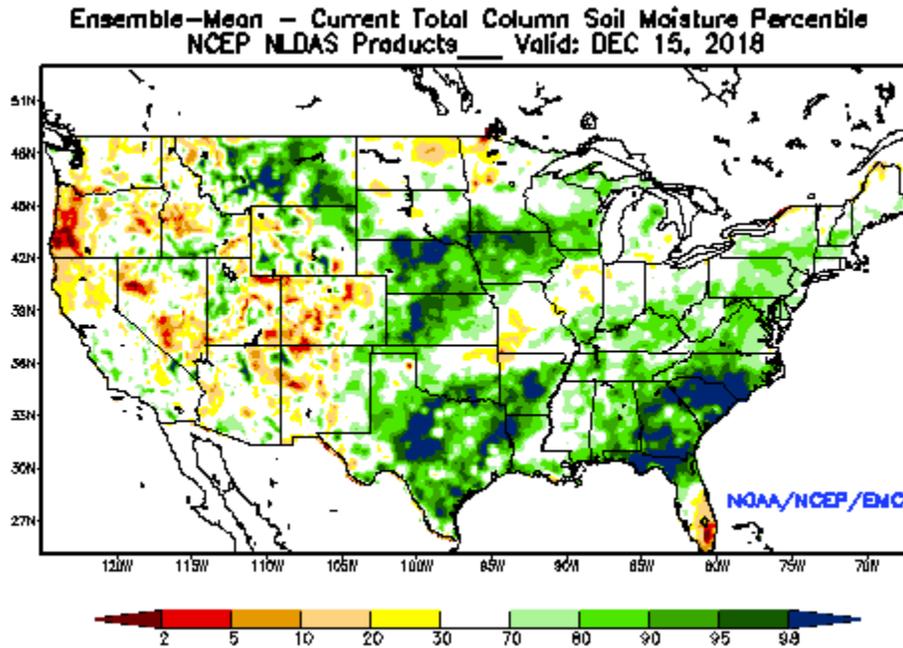
USDA 2018 Secretarial [Drought Designations](#)



Other Climatic and Water Supply Indicators

Soil Moisture

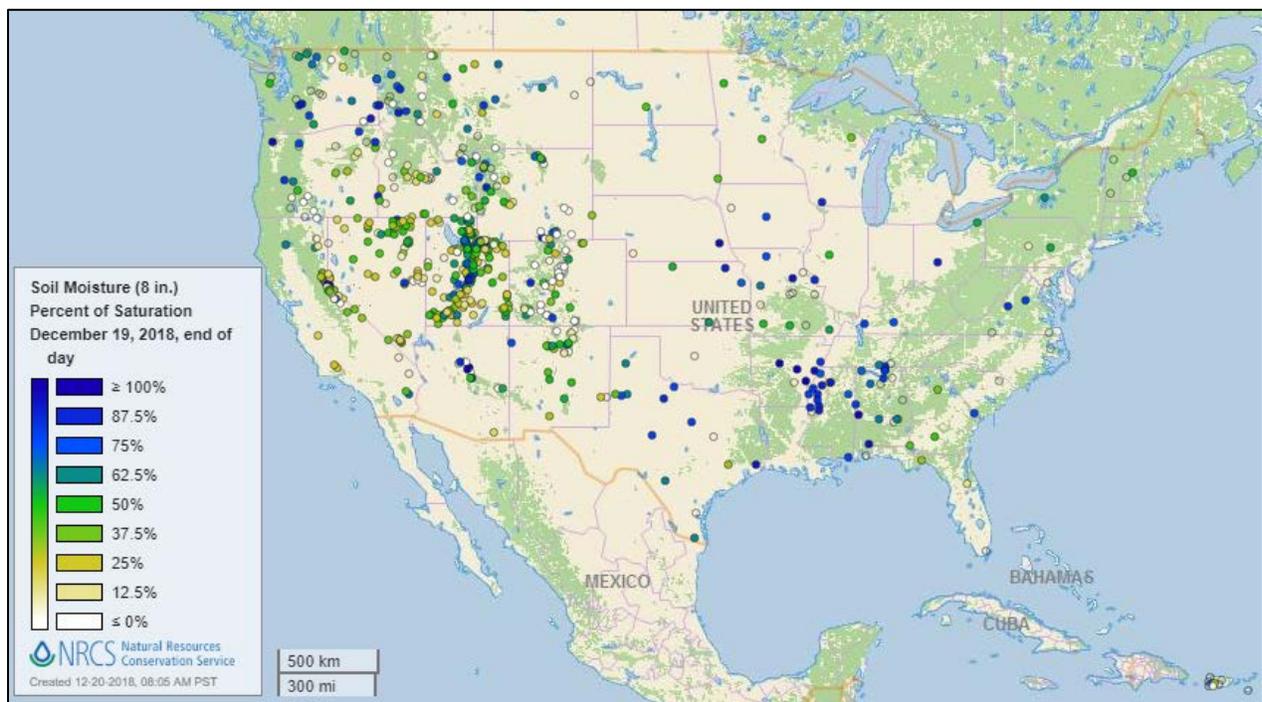
Source: NOAA National Centers for Environmental Prediction



[Modeled soil moisture percentiles](#) as of December 15, 2018

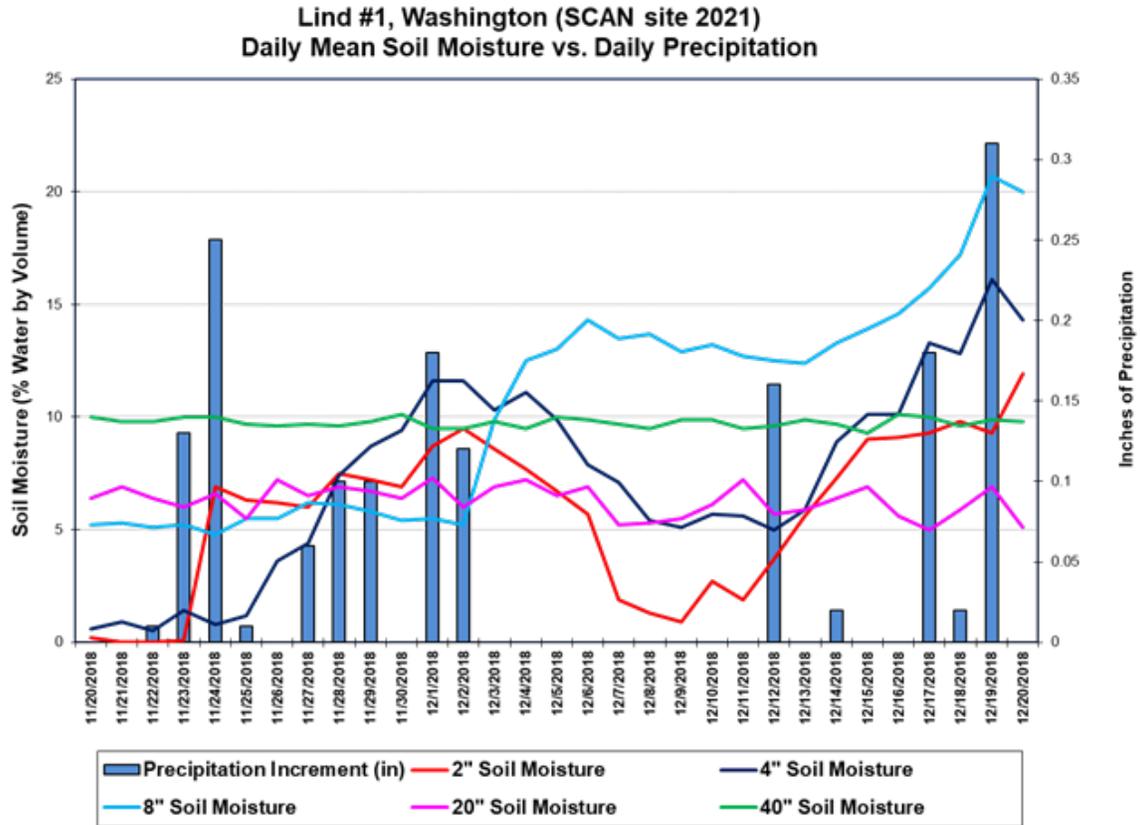
NEW! Soil Moisture Percent of Saturation

Source: NRCS SNOTEL and [Soil Climate Analysis Network \(SCAN\)](#)



Soil Moisture Data

Source: NRCS [Soil Climate Analysis Network](#) (SCAN)



This chart shows precipitation and soil moisture during the last 30 days at the [Lind #1 SCAN site](#) in eastern Washington. On December 19, the accumulated precipitation totaled 0.31 inches. Recent precipitation increased the soil moisture at the 4-, 8-, and 20-inch sensors, whereas the 2-inch sensor had a delayed response and the 40-inch sensor showed little change.

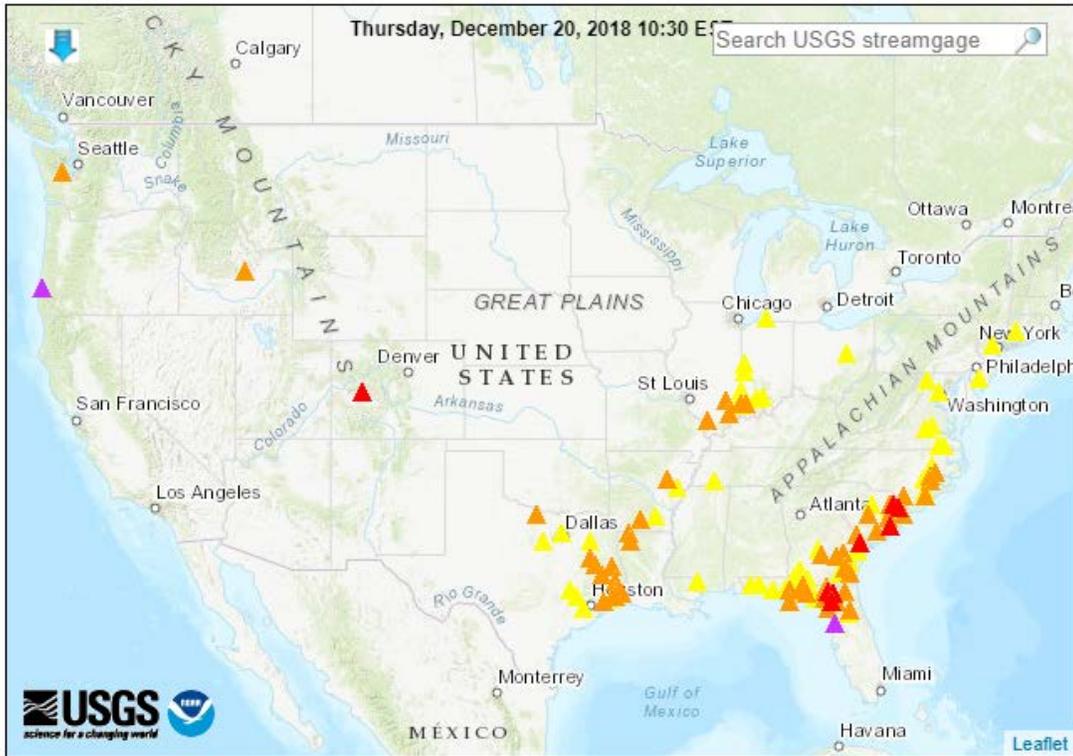
Soil Moisture Data Portals

- [CRN Soil Moisture](#)
- [Texas A&M University North American Soil Moisture Database](#)
- [University of Washington Experimental Modeled Soil Moisture](#)

Streamflow

Source: U.S. Geological Survey

Map of flood and high flow conditions



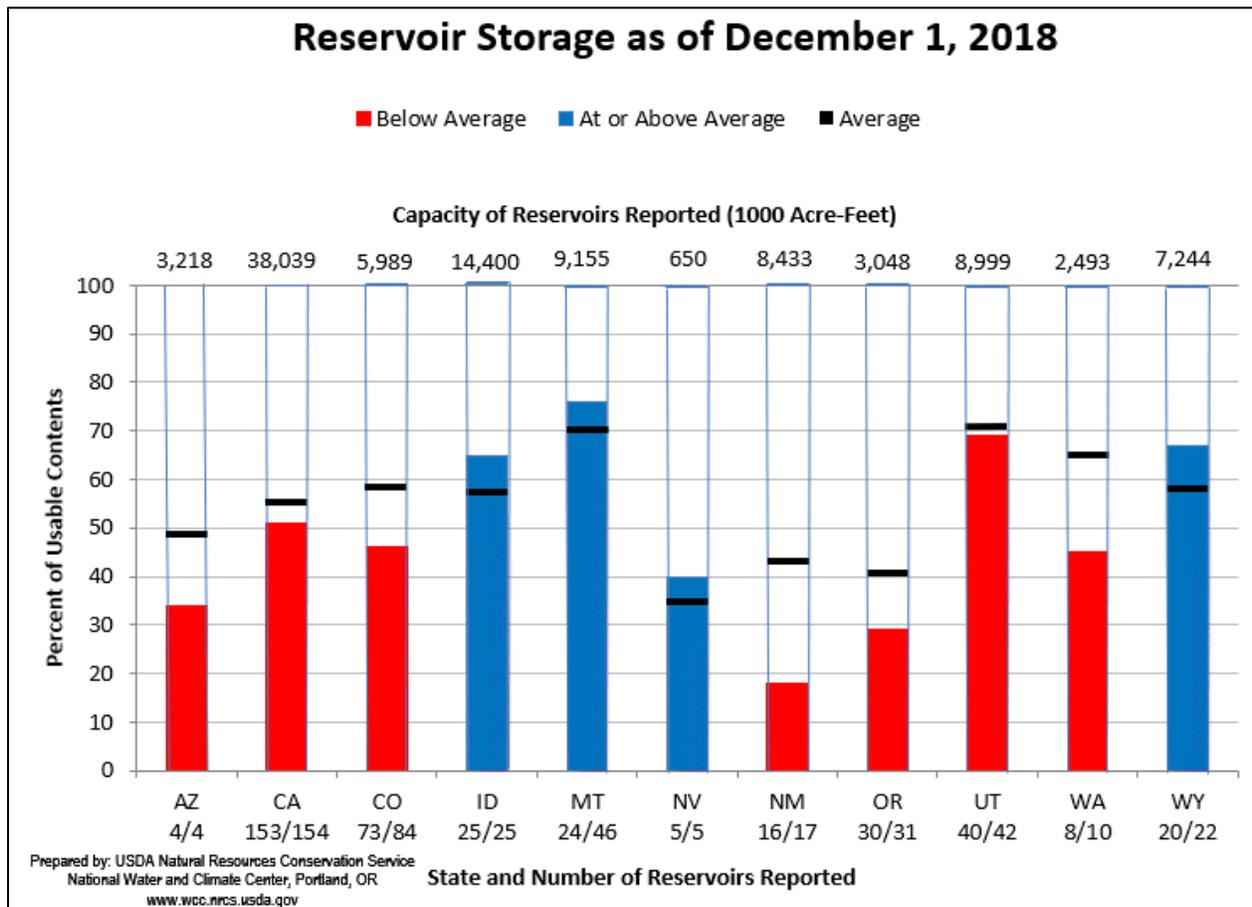
Explanation - Percentile classes						
<95	95-98	>= 99	Above action stage	Above flood stage	Above moderate flood stage	Above major flood stage
			△ Streamgage with flood stage	○ Streamgage without flood stage		

[WaterWatch: Streamflow, drought, flood, and runoff conditions](#)

Reservoir Storage

Western States Reservoir Storage

Source: NRCS National Water and Climate Center



December 1, 2018 Reservoir Storage: [Chart](#) | [Dataset](#)

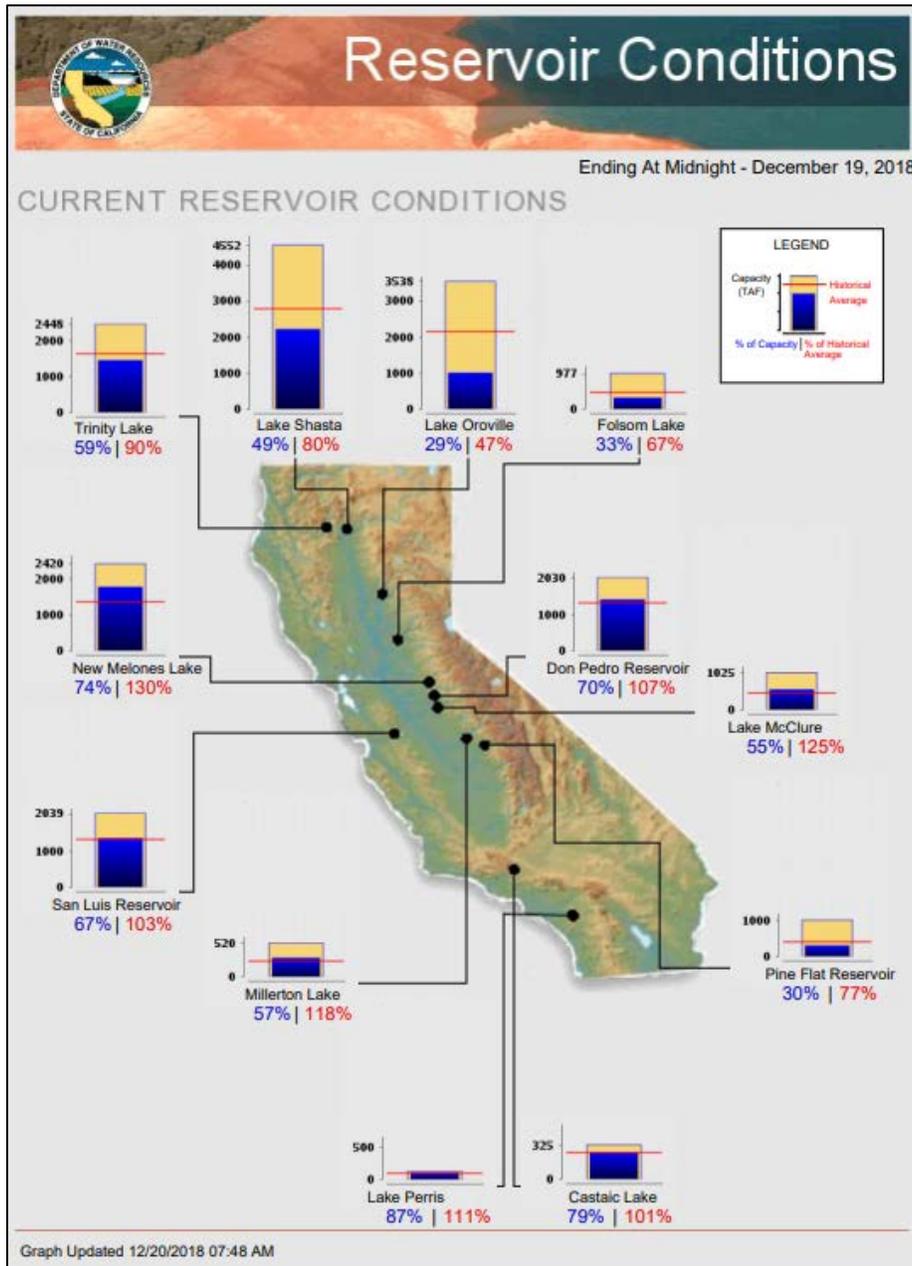
Hydromet Tea Cup Reservoir Depictions

Source: U.S. Bureau of Reclamation

- [Upper Colorado](#)
- [Pacific Northwest/Snake/Columbia](#)
- [Sevier River Water, Utah](#)
- [Upper Missouri, Kansas, Oklahoma, Texas](#)

Current California Reservoir Conditions

Source: California Department of Water Resources



[Current California Reservoir Conditions](#)

Short- and Long-Range Outlooks

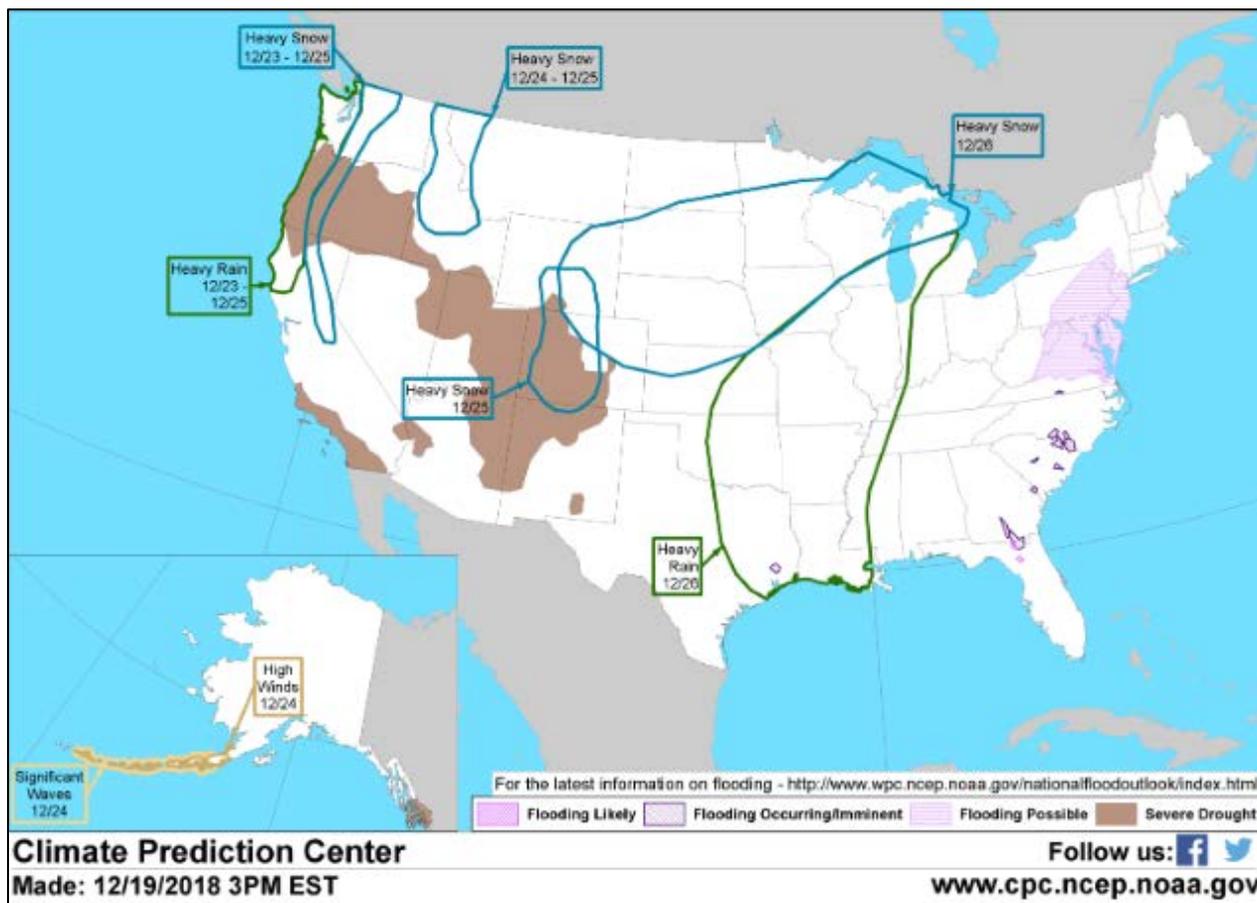
Agricultural Weather Highlights

Author: Brad Rippey, Agricultural Meteorologist, USDA/OCE/WAOB

National Outlook, Thursday, December 20: “A developing storm system over the eastern U.S. will move northward, reaching eastern Canada during the weekend. Storm-total rainfall of 1 to 3 inches, falling on already saturated soils, could lead to widespread flooding in the Atlantic Coast States. Some freezing rain may occur in northern New England, and—as the storm departs—snow will develop in the Appalachians and downwind of the Great Lakes. Meanwhile, periods of rain and high-elevation snow will continue in the Northwest, but mild, mostly dry weather will prevail from southern California to the High Plains. The NWS 6- to 10-day outlook for December 25 – 29 calls for above-normal temperatures in most areas along and east of a line from Texas to Minnesota, while colder-than-normal conditions will prevail in the West. Meanwhile, wetter-than-normal weather will occur nearly nationwide, particularly from the central Plains into the Mississippi Valley.”

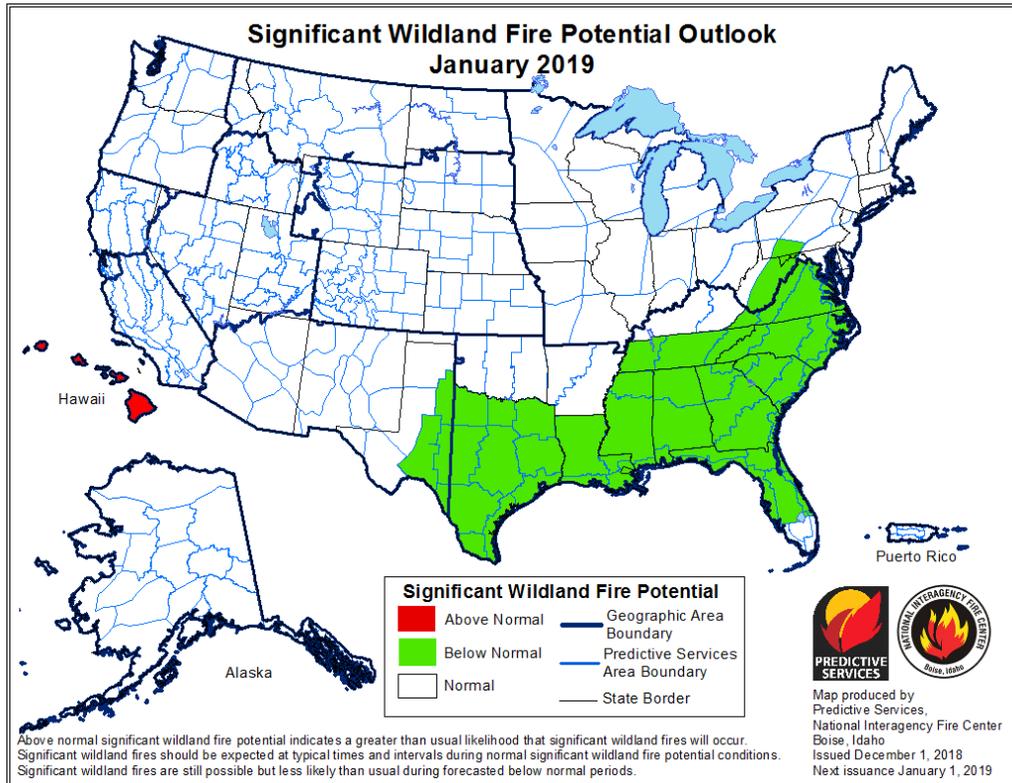
Weather Hazards Outlook December 22 – 26, 2018

Source: Climate Prediction Center



Significant Wildland [Fire Potential Outlook](#)

Source: National Interagency Fire Center

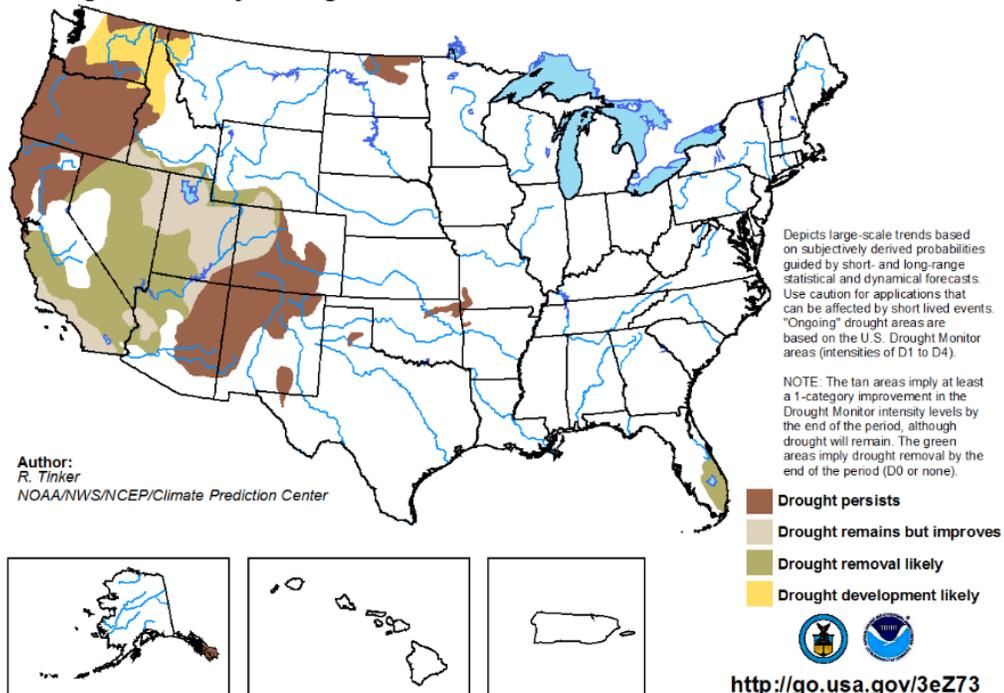


Seasonal Drought Outlook: [December 20, 2018 – March 31, 2019](#)

Source: National Weather Service

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

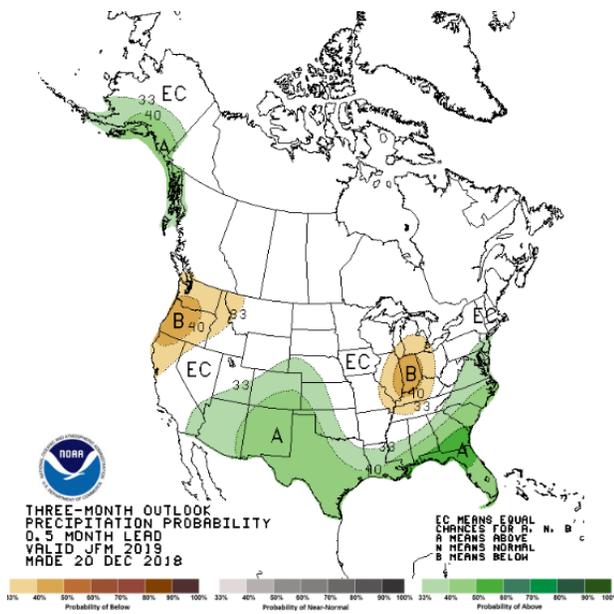
Valid for December 20, 2018 - March 31, 2019
Released December 20, 2018



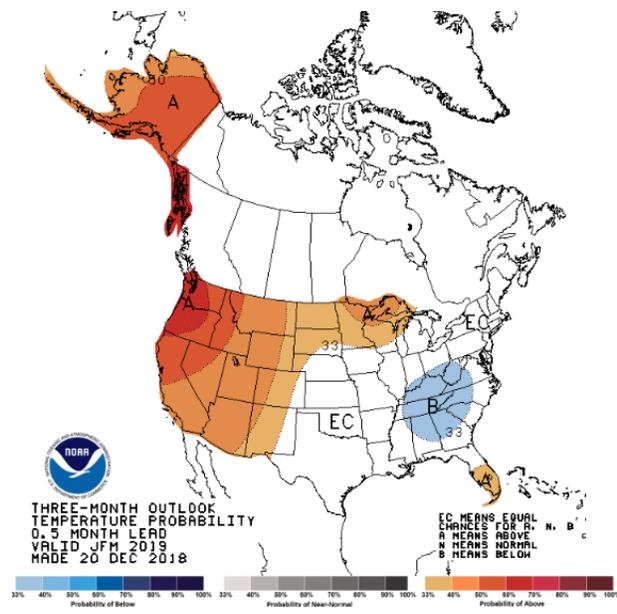
Climate Prediction Center 3-Month Outlook

Source: National Weather Service

Precipitation



Temperature



[January-February-March \(JFM\) 2019 precipitation and temperature outlook summaries](#)

More Information

The NRCS [National Water and Climate Center](#) publishes this weekly report. We welcome your feedback. If you have questions or comments, please [contact us](#).