




Water and Climate Update

December 22, 2022

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.

Snow	2	Drought	10
Precipitation	4	Other Climatic and Water Supply Indicators	14
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Arctic air brings bitter cold temperatures to the U.S.



Current Temps (°F)			
Elk Park	-50	Lincoln RAWS	-48
Red Rock RAWS	-44	Hebgen Lake	-43
St Mary RAWS	-41	South Fork Judith RAWS	-41
Dearborn RAWS	-40	Bozeman Airport	-38
Sieben Flat	-37	Brenner RAWS	-37
Bowmans Corner	-37	Whitehall RAWS	-36
Helena Valley RAWS	-36	Ennis Airport	-36
Raynolds Pass	-35	Porphory Peak	-35
Homestake Pass	-35	Gleason RAWS	-35

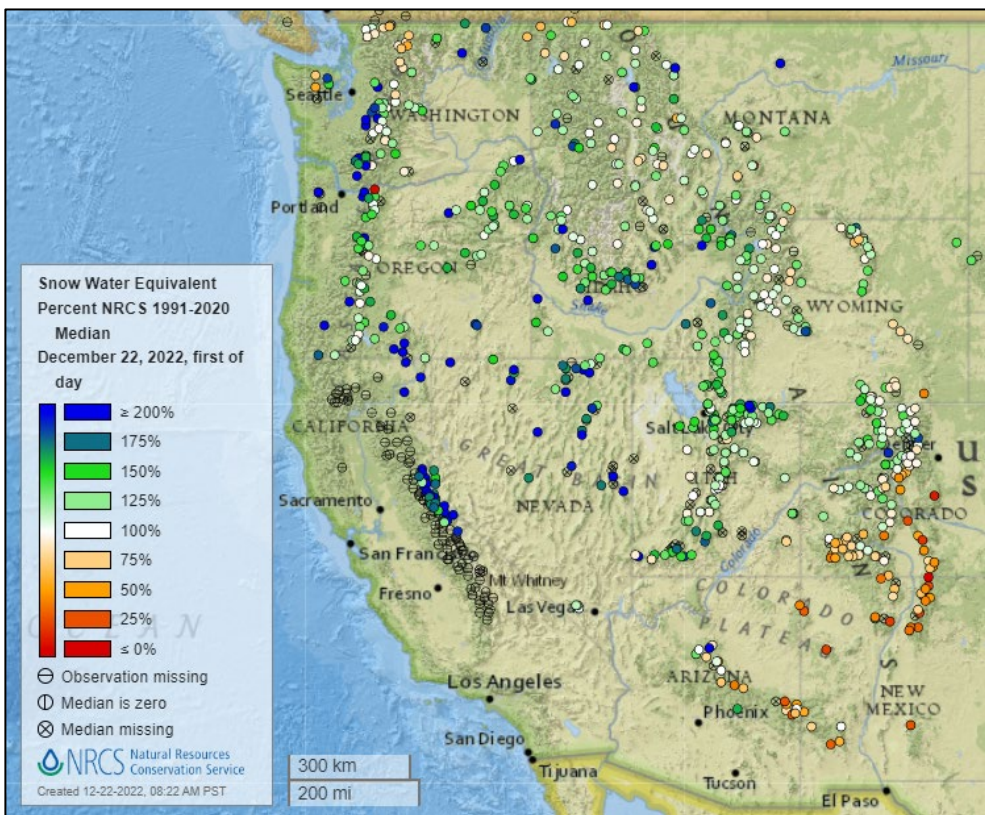
valid as of Thu Dec 22nd 07:28 am - NWS Great Falls

An extremely cold arctic air mass sent temperatures plummeting throughout parts of the U.S., and the trend is expected to continue as the powerful frontal system is forecasted to move southward. Locations such as the central high Plains saw temperatures drop 50°F within a few hours, and are contending with dangerously cold wind chills. Some areas have declared a state of emergency as they face the coldest temperatures in decades. The arctic air mass is expected to evolve and impact different regions of the U.S. over the next few days, ranging from the Canadian border to Alabama.

Related:

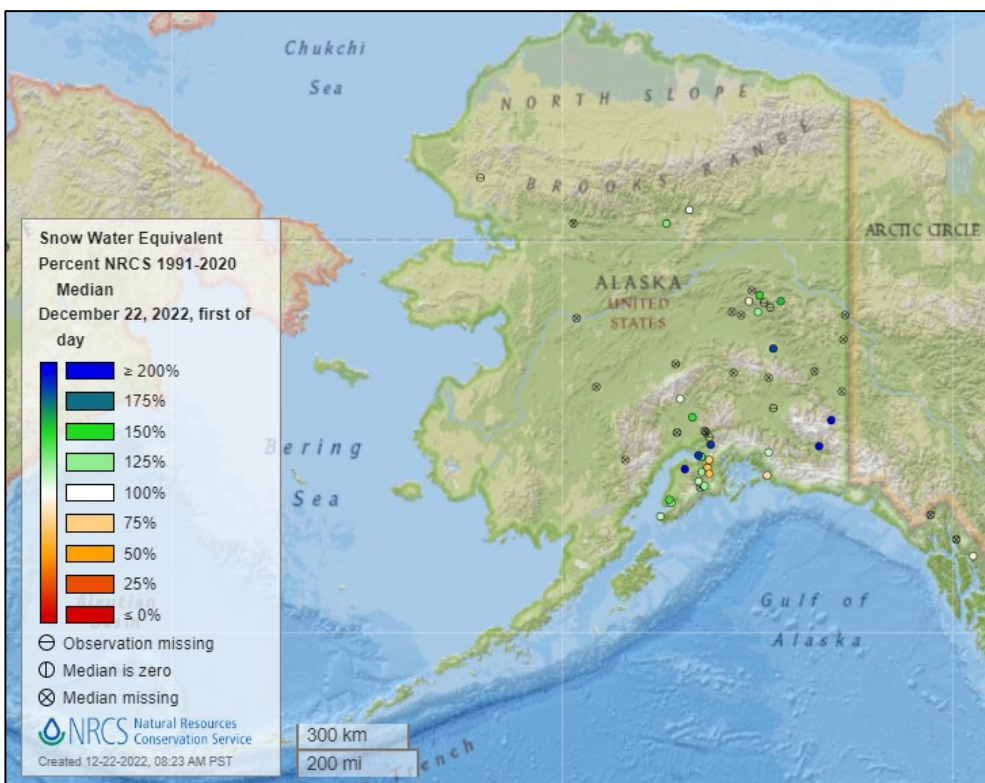
- [A 'once in a generation' winter storm will impact nearly every state and cripple Christmas travel](#) - CNN
- [A severe arctic storm could threaten holiday travel across the U.S.](#) - NPR
- [OK Gov. Stitt declares state of emergency as cold front approaches](#) - KTBS Oklahoma
- [Major winter storm expected to hit much of US before Christmas](#) - The Guardian
- ['Potential blockbuster' snowstorm brewing in central, eastern states ahead of Christmas](#) - USA Today
- [Arctic air mass leads to daily record cold temps in Great Falls, state](#) - Great Falls Tribune Montana
- [This Christmas in Hawaii Includes Hail And Snow!](#) - Beat of Hawaii

Snow



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

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

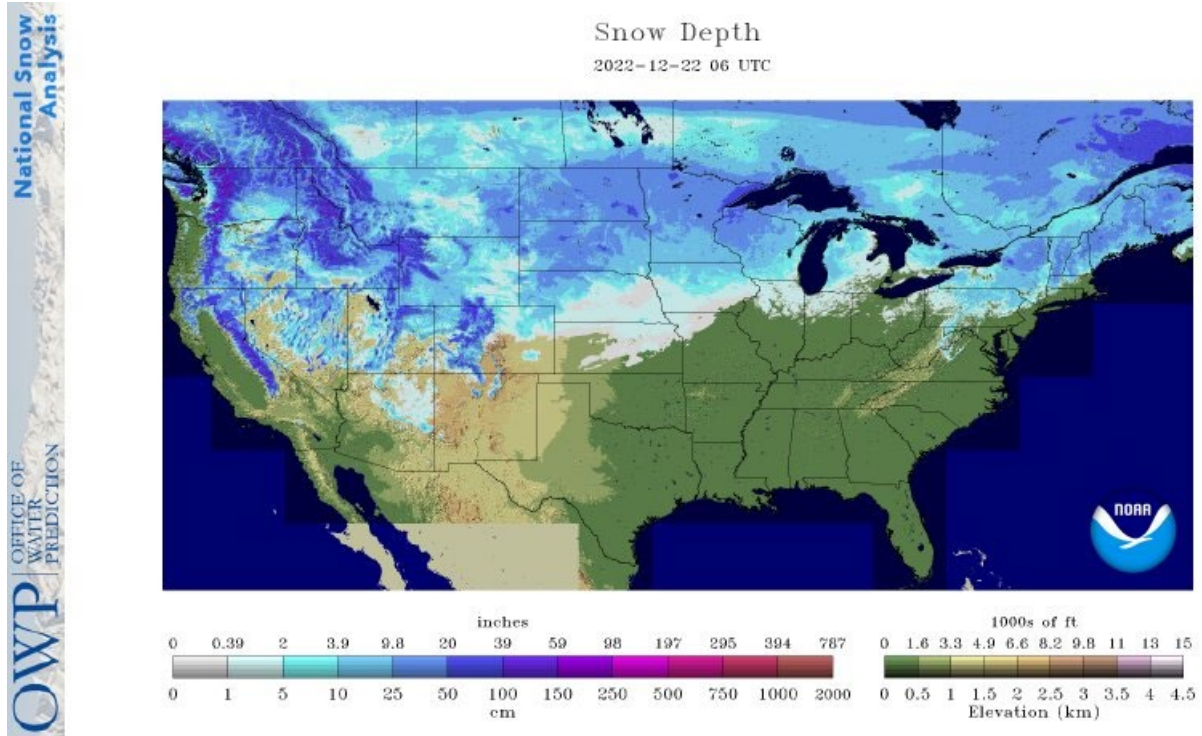


[Alaska snow water equivalent percent of median map](#)

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

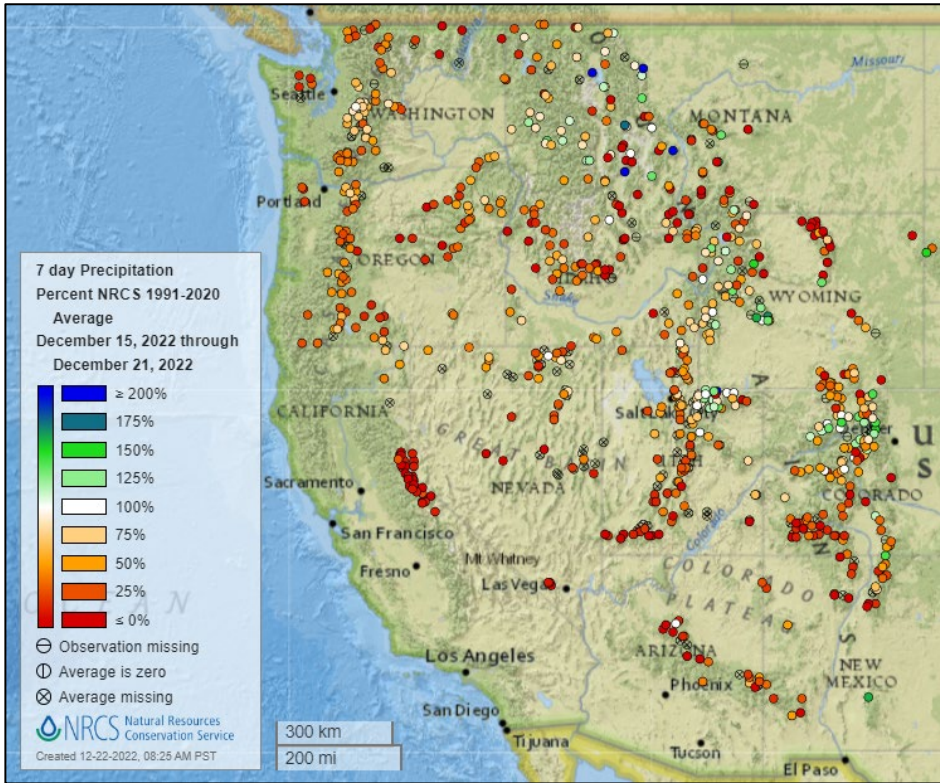
Current Snow Depth, National Weather Service Snow Analysis

Source: NOAA NWS National Operational Hydrologic Remote Sensing Center



Precipitation

Last 7 Days, NRCS SNOTEL Network

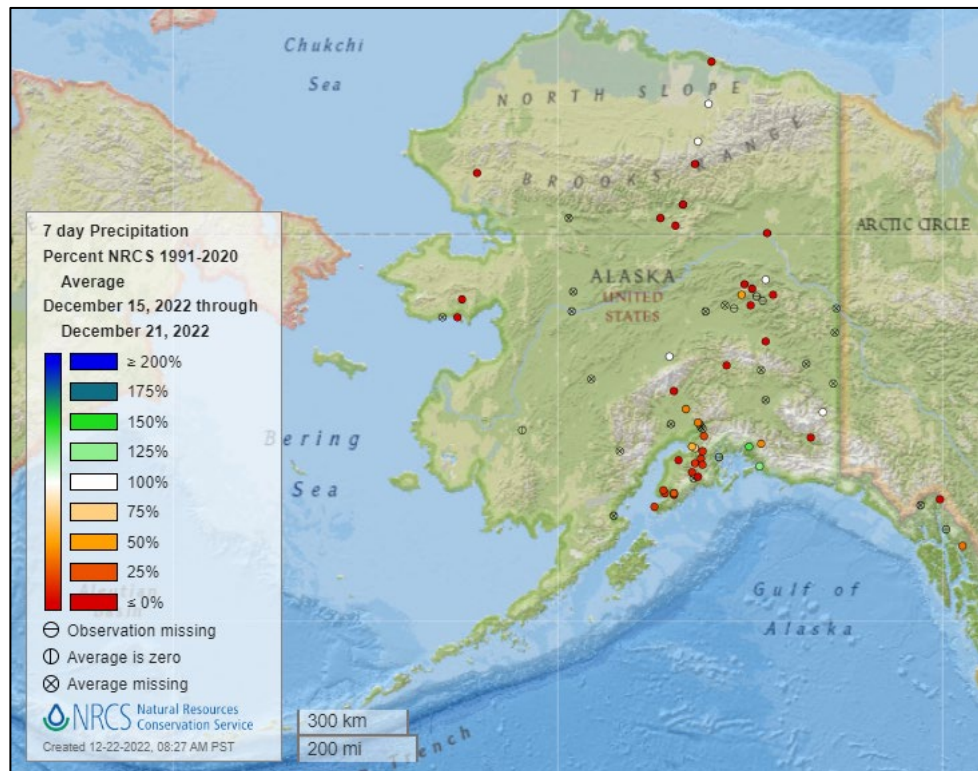


[7-day precipitation percent of average map](#)

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](#)



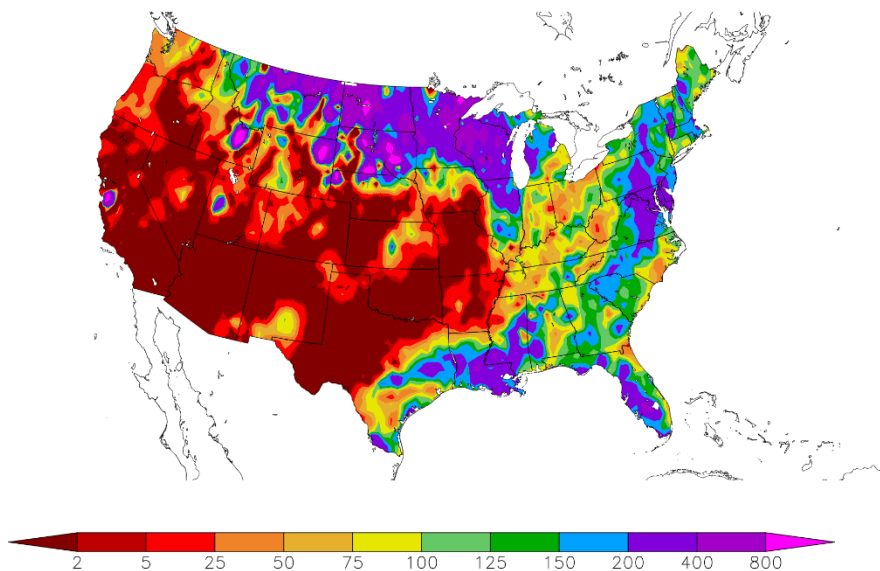
Last 7 Days, National Weather Service (NWS) Networks

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 (%)
12/15/2022 – 12/21/2022



Generated 12/22/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

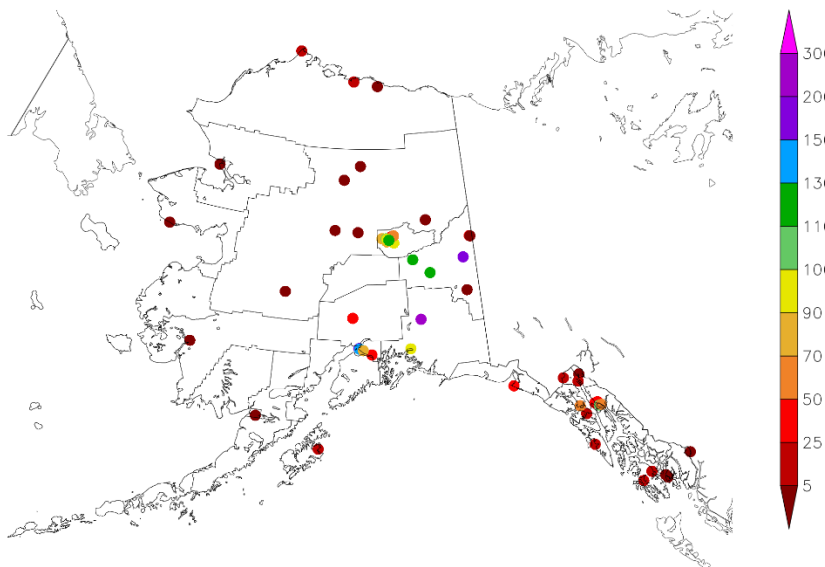
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

[7-day precipitation percent of normal map](#) for Alaska.

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

Percent of Normal Precipitation (%)
12/15/2022 – 12/21/2022



Generated 12/22/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

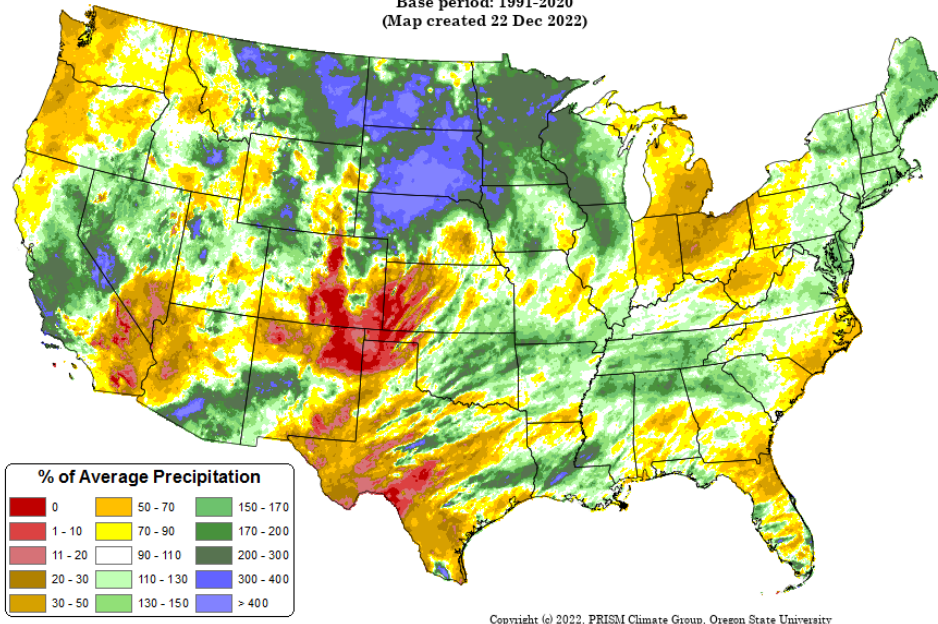
Month-to-Date, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

Total Precipitation Anomaly: 01 Dec 2022 - 21 Dec 2022

Period ending 7 AM EST 21 Dec 2022
Base period: 1991-2020
(Map created 22 Dec 2022)

[Month-to-date national total precipitation anomaly map](#)



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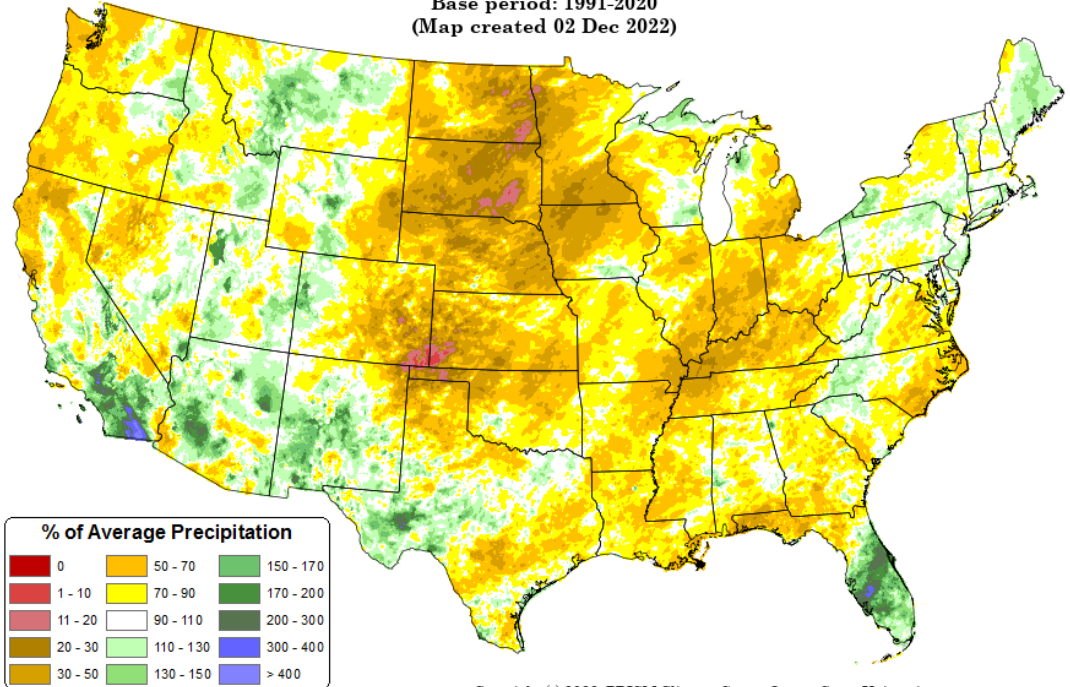
Last 3 Months, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

[September through November 2022 precipitation anomaly map](#)

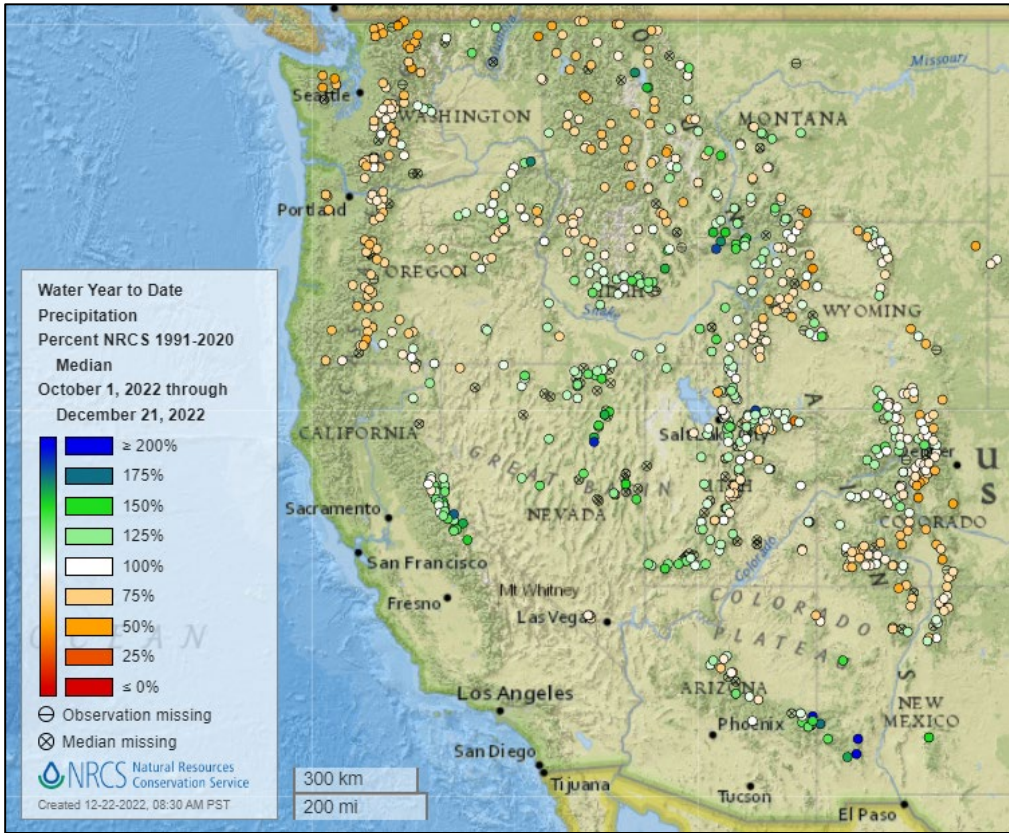
Total Precipitation Anomaly: Sep 2022 - Nov 2022

Period ending 7 AM EST 30 Nov 2022
Base period: 1991-2020
(Map created 02 Dec 2022)



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Water Year-to-Date, NRCS SNOTEL Network

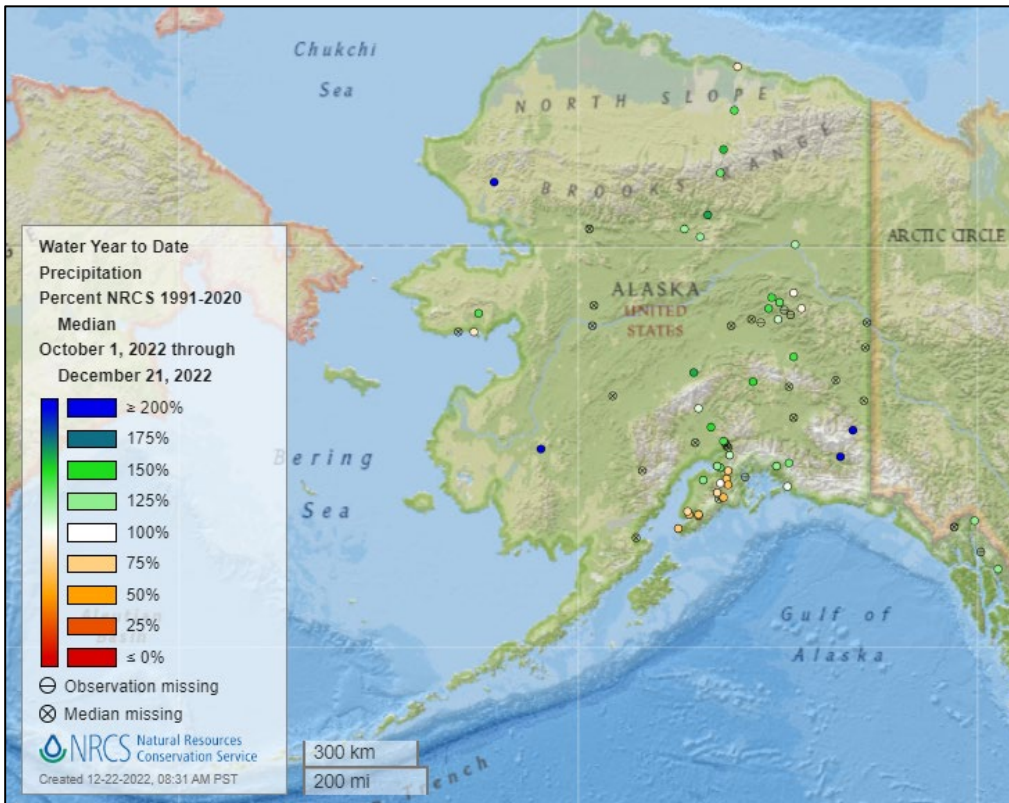


[2023 water year-to-date precipitation percent of median map](#)

See also:

[2023 water year-to-date precipitation percent of average map](#)

[2023 water year-to-date precipitation values \(inches\) map](#)



[Alaska 2023 water year-to-date precipitation percent of median map](#)

See also:

[Alaska 2023 water year-to-date precipitation percent of average map](#)

[Alaska 2023 water year-to-date precipitation values \(inches\) map](#)

Temperature

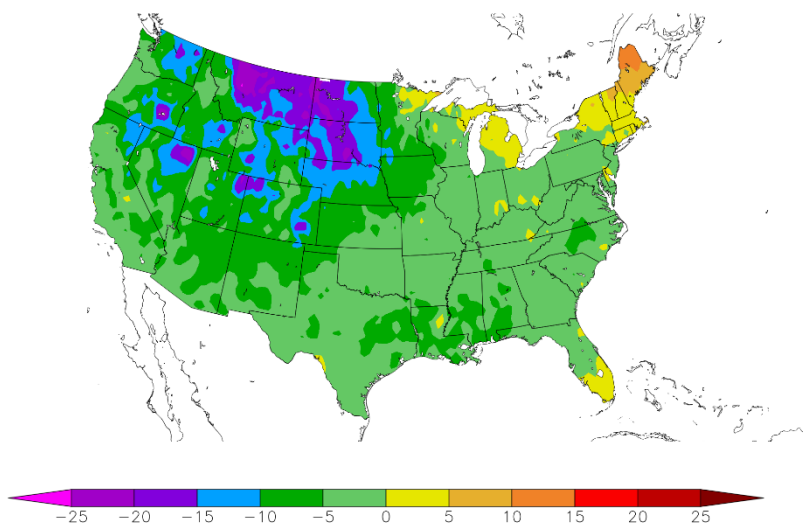
Last 7 Days, National Weather Service (NWS) Networks

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)
12/15/2022 – 12/21/2022



Generated 12/22/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

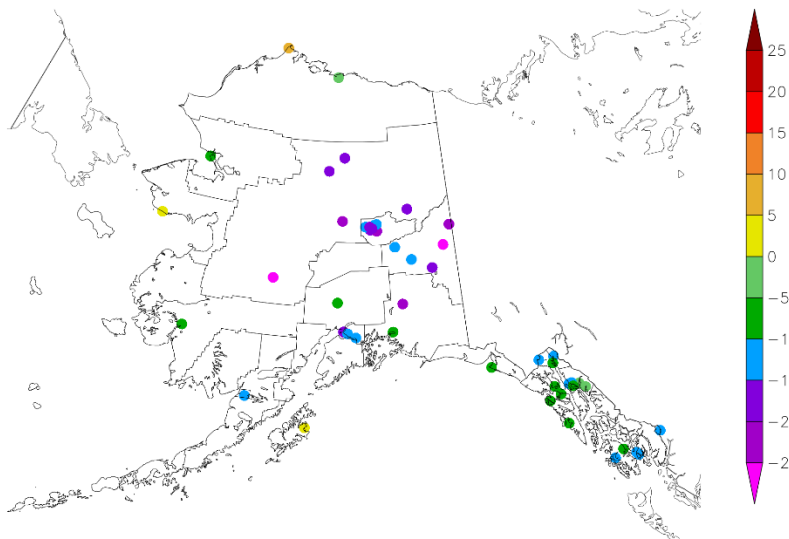
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

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

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

Departure from Normal Temperature (F)
12/15/2022 – 12/21/2022



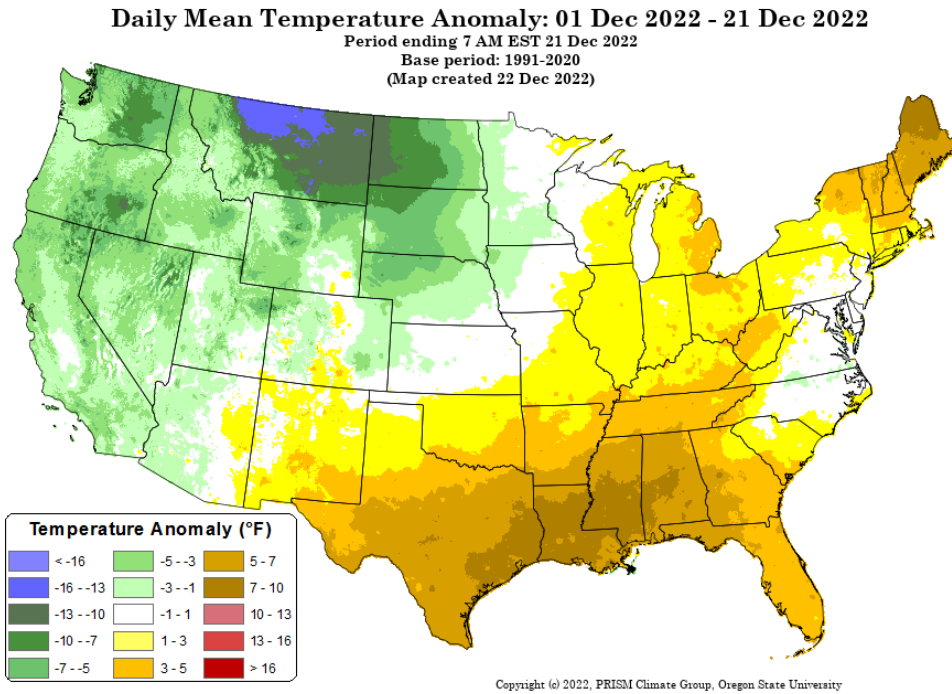
Generated 12/22/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Source: PRISM

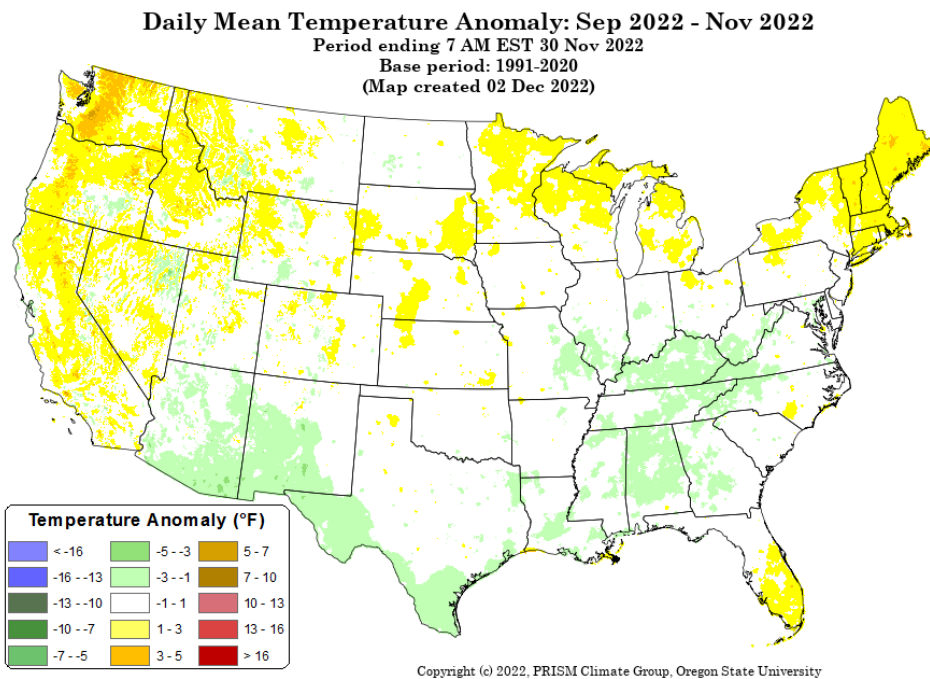
[Month-to-date national daily mean temperature anomaly map](#)



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

Source: PRISM

[September through November 2022 daily mean temperature anomaly map](#)



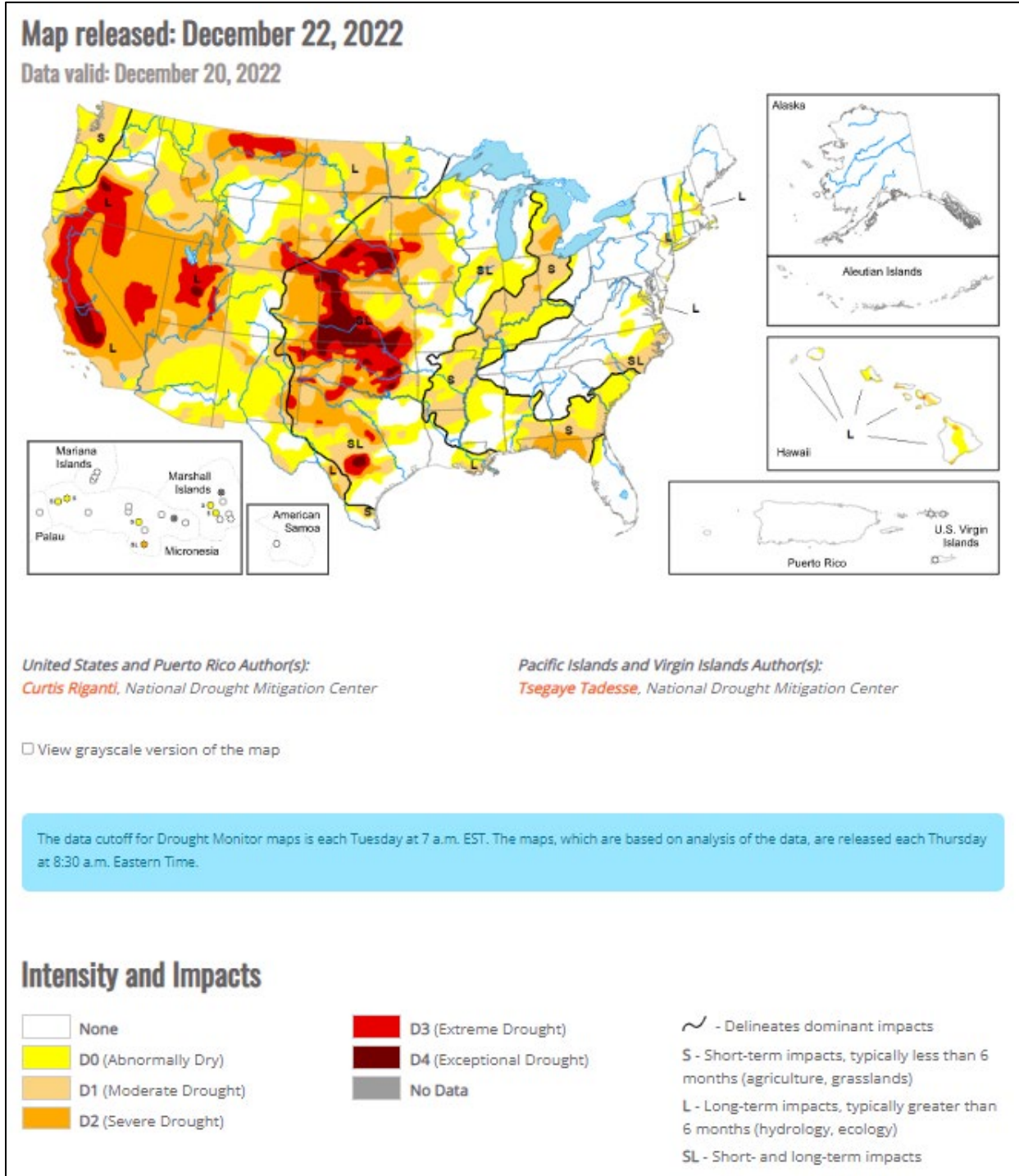
Drought

[U.S. Drought Monitor](#)

Source: National Drought Mitigation Center

[U.S. Drought Portal](#)

Source: NOAA



Current [National Drought Summary](#), December 20, 2022

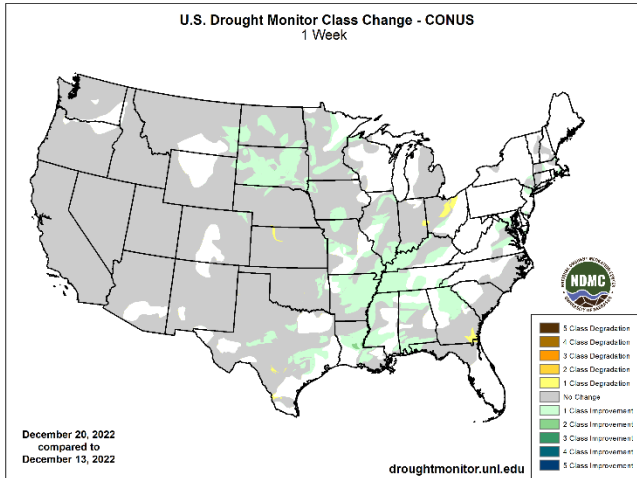
Source: National Drought Mitigation Center

“This week, moderate to heavy precipitation fell over the northern Great Plains, parts of the Upper Midwest and much of the south-central and northeast U.S. This led to widespread improvements in drought conditions and abnormal dryness in these areas, as precipitation deficits lessened and soil moisture and groundwater and streamflow improved. Meanwhile, the West region was much drier this week than the last few, so few changes were made there, and mostly long-term drought and abnormal dryness continued across much of the region. A Kona low affected the Hawaiian islands this week, dumping heavy amounts of precipitation in the form of thunderstorms and high mountain snows on the Big Island, which led to improvements over most of the islands.”

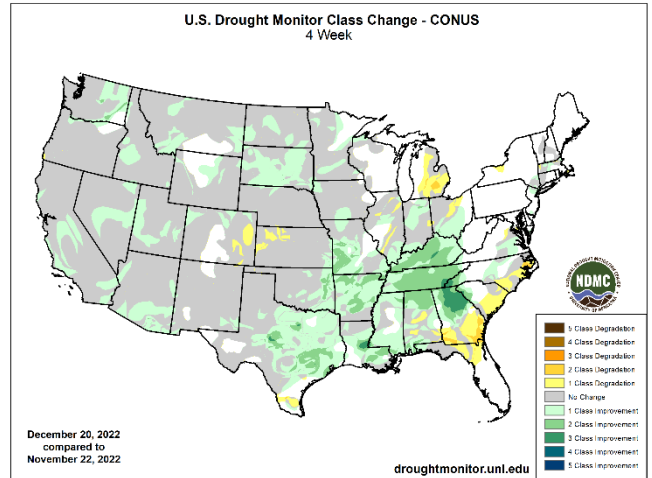
Changes in Drought Monitor Categories over Time

Source: National Drought Mitigation Center

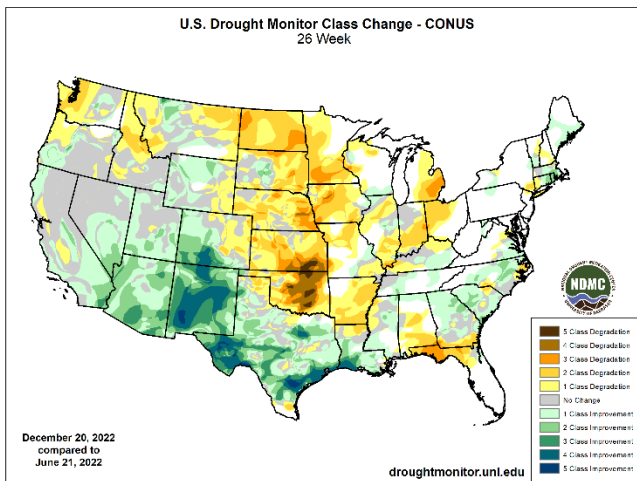
1 Week



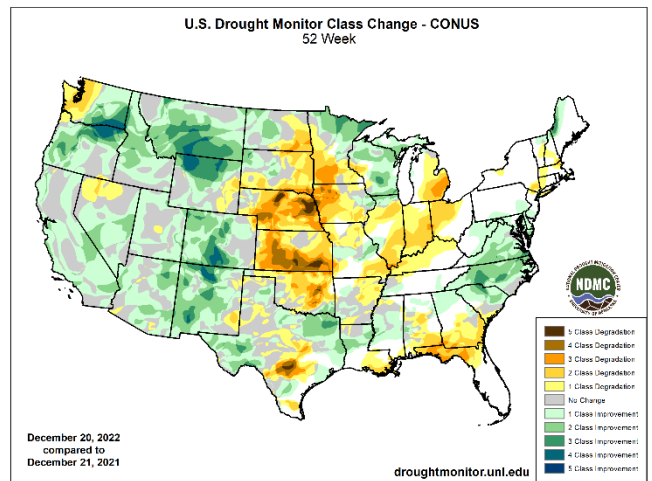
1 Month



6 Months



1 Year



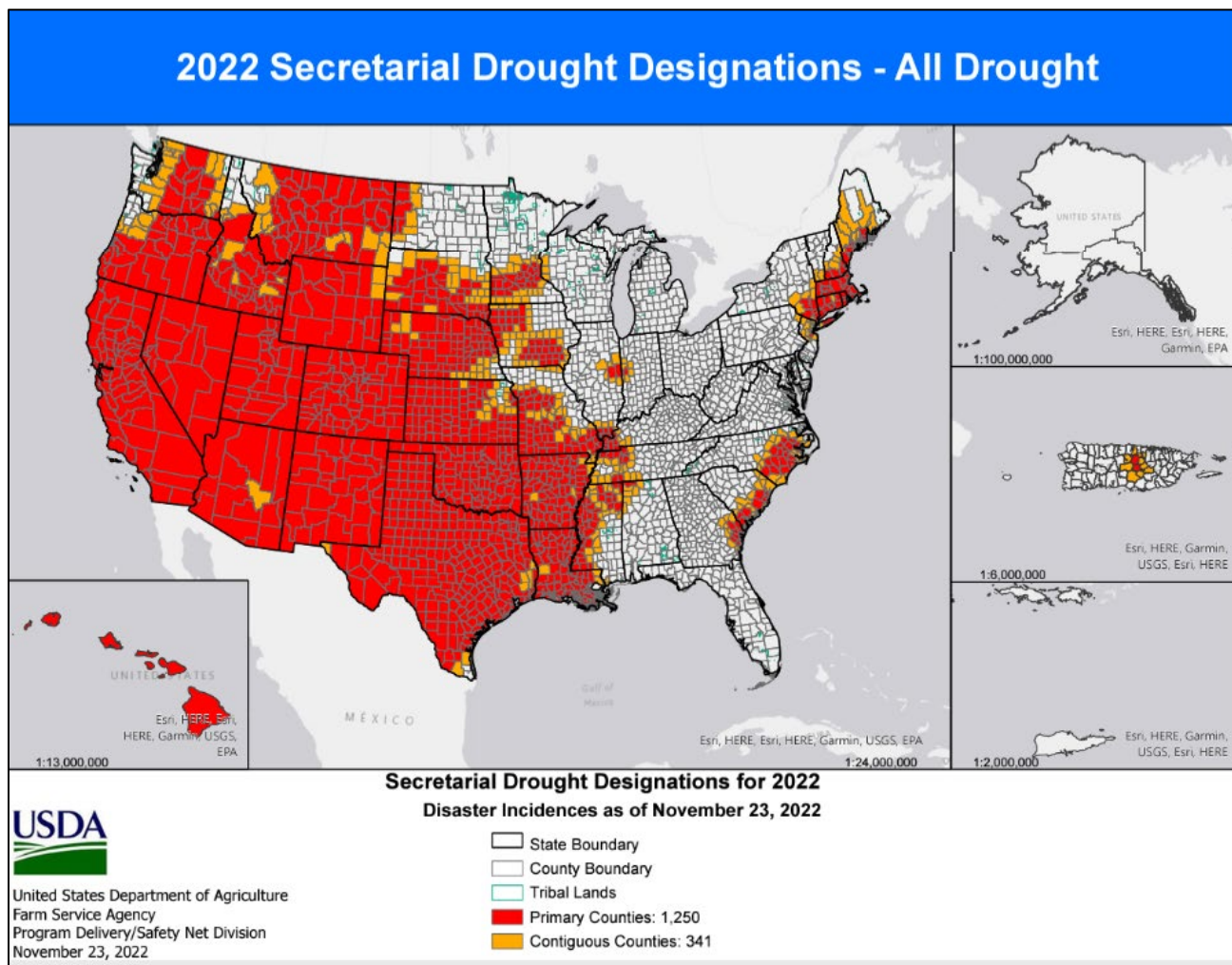
[Changes in drought conditions over the last 12 months for the contiguous U.S.](#)

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 Secretarial [Drought Designations](#)

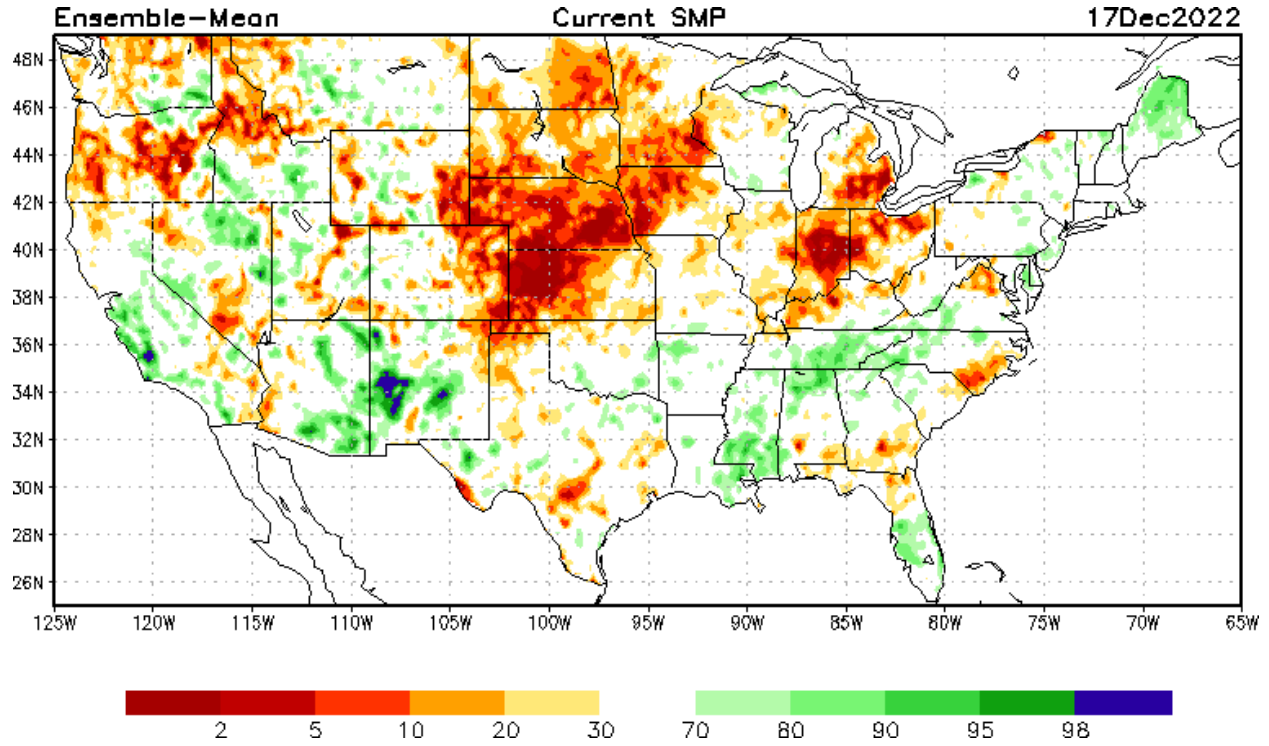
Source: USDA Farm Service Agency



Other Climatic and Water Supply Indicators

Soil Moisture

Source: NOAA National Centers for Environmental Prediction

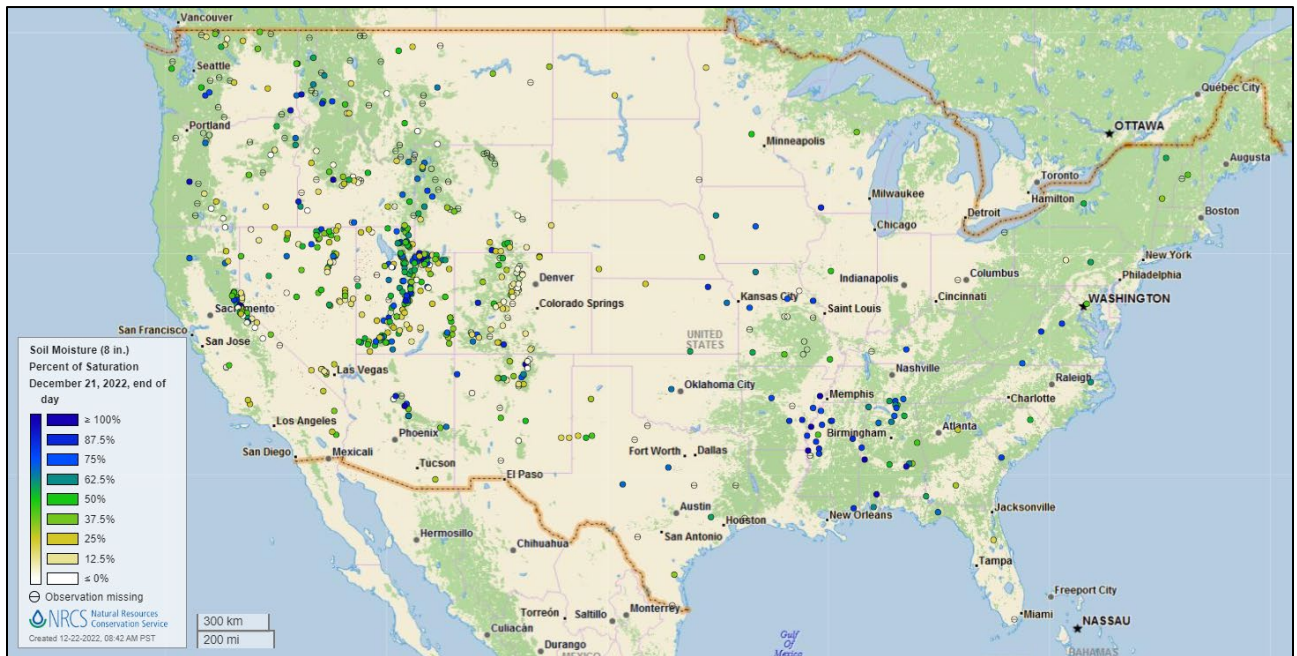


[Modeled soil moisture percentiles](#) as of December 17, 2022

Soil Moisture Percent of Saturation

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

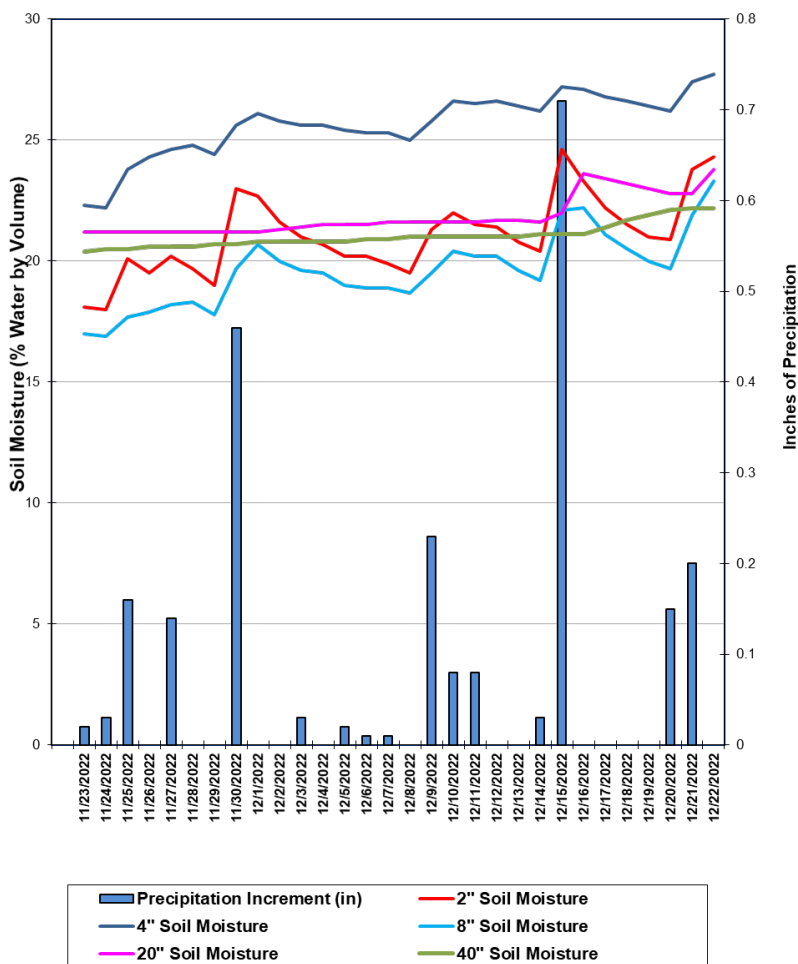
[U.S. soil moisture map at 8-inch depth:](#)



Soil Moisture

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

**Pee Dee SC (SCAN site 2037)
Daily Mean Soil Moisture vs. Daily Precipitation**



This chart shows the precipitation and soil moisture for the last 30 days at the [Pee Dee](#) SCAN site in South Carolina. Storm activity from December 14-15 brought 0.74 inches of precipitation to the station with all soil sensors reporting an increase in soil moisture. Total precipitation for the 30-day period was 2.36 inches.

Soil Moisture Data Portals

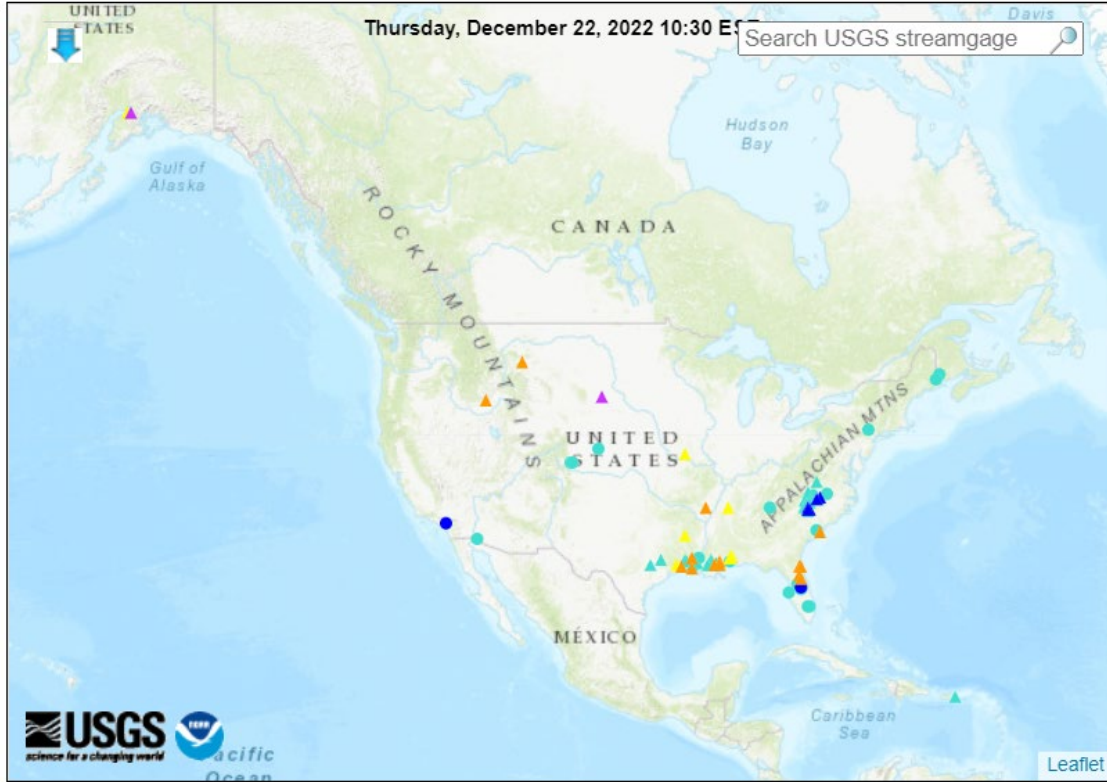
- [USCRN Soil Moisture](#)
- [National Soil Moisture Network](#)
- [NOAA Climate Prediction Center Soil Moisture](#)
- [NASA Grace](#)

Streamflow, Drought, Flood, and Runoff

Source: U.S. Geological Survey [WaterWatch Streamflow Map](#)

Map of flood and high flow conditions

(16 in floods [major: 2, minor: 14], 9 in near-flood)



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

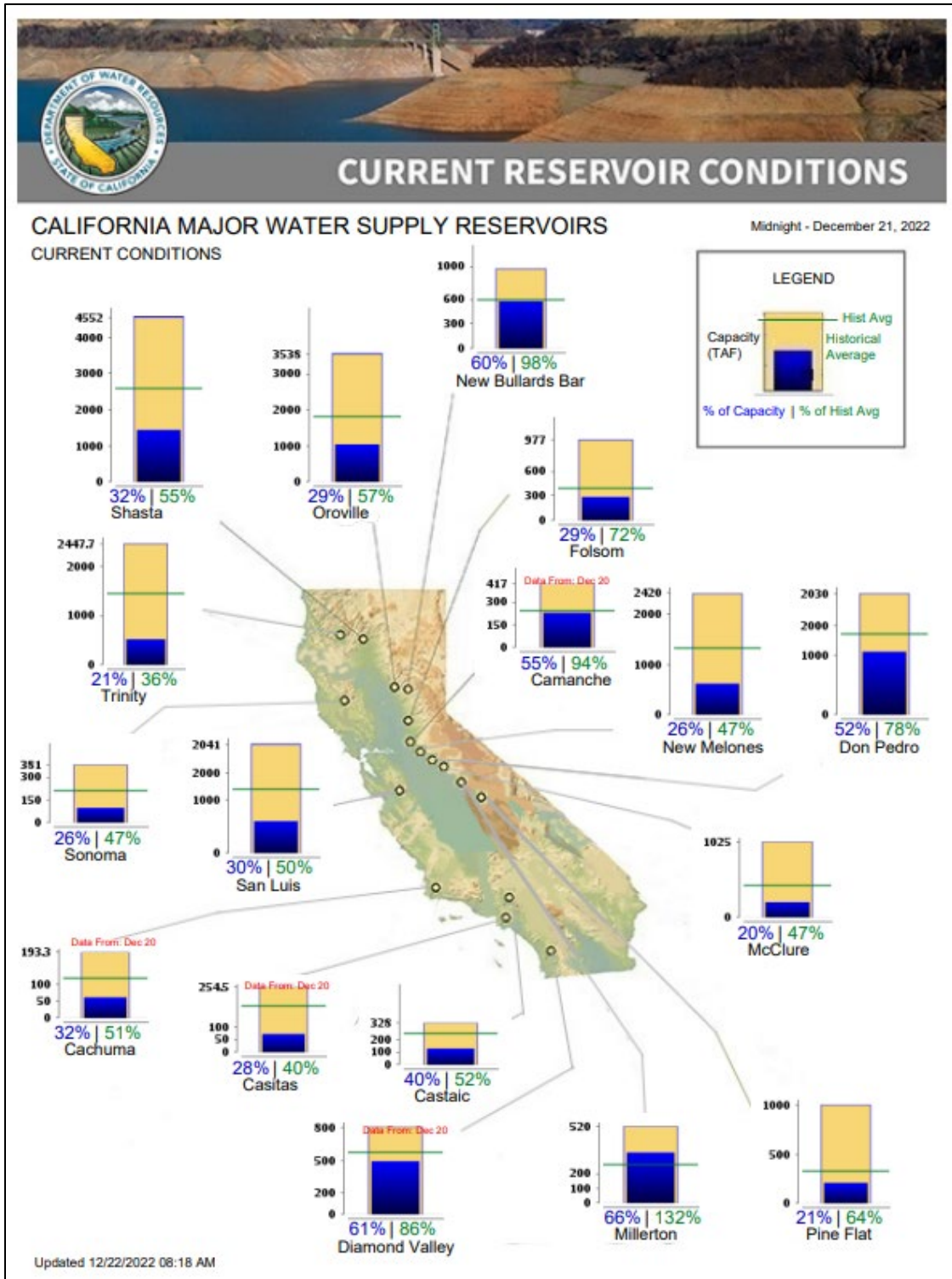
Hydromet Teacup Reservoir Depictions

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](#)

Agricultural Weather Highlights

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

National Outlook, Thursday December 22, 2022: “A short-lived but severe Arctic outbreak will continue through the holiday weekend in most areas from the Rockies eastward. By Friday morning, sub-zero temperatures should occur along and north of a line from Texas’ northern panhandle to the central Appalachians, while freezes will cover the western and central Gulf Coast States. In fact, Deep South Texas will likely endure a 3-day freeze (December 23-25), with possible adverse impacts on citrus and sugarcane. In addition, producers in southern Louisiana will be monitoring unharvested sugarcane. Although most of Florida’s citrus belt should escape major freezes, protective measures may be needed in some northern orchards. Concurrently, a major winter storm will evolve across the Midwest, with wind-driven snow and bitterly cold conditions resulting in major travel disruptions, as well as an increase in livestock stress. In the Great Lakes region, storm-related impacts should linger through Christmas Day. The NWS 6- to 10-day outlook for December 27 – 31 calls for the likelihood of warmer-than-normal weather nationwide, with lingering near- or below-normal temperatures confined to the southern Atlantic States. Meanwhile, drier-than-normal conditions in New England and central and southern Texas should contrast with above-normal precipitation across the remainder of the country.”

Weather Hazards Outlook: [December 24 – 28, 2022](#)

Source: NOAA Weather Prediction Center

U.S. Day 3-7 Hazards Outlook

[About the Hazards Outlook](#)

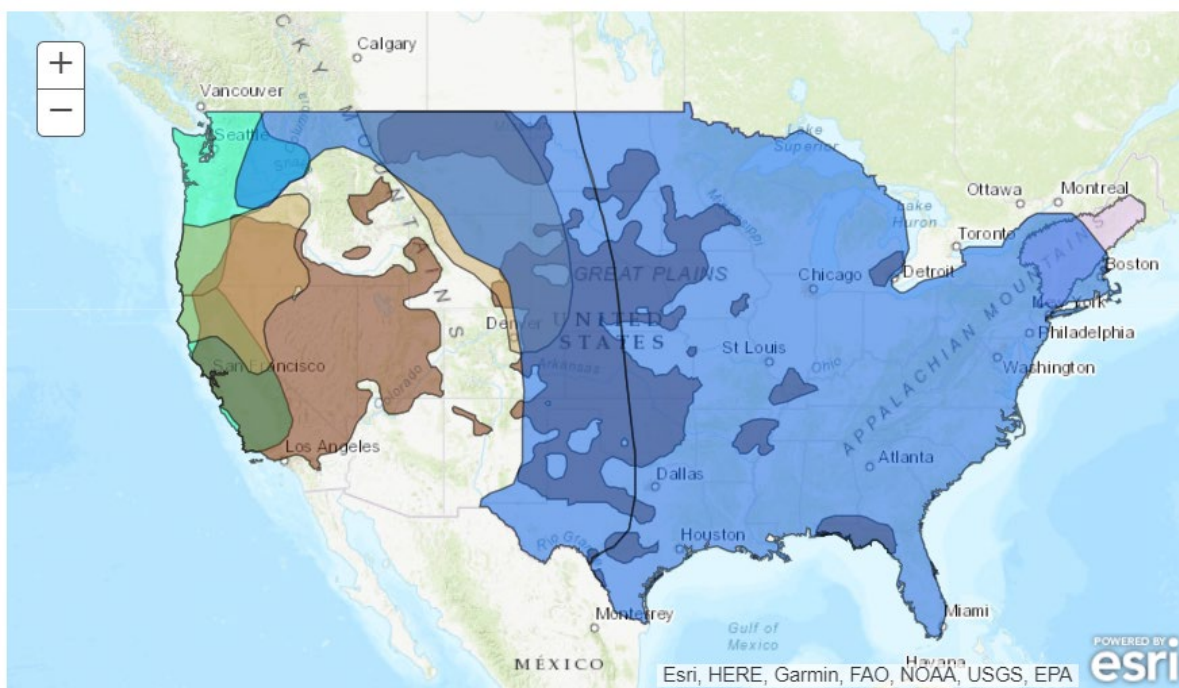
Created December 21, 2022

NOTE: These products are only created Monday through Friday. Please exercise caution using this outlook during the weekend.

Precipitation	<input checked="" type="checkbox"/>
Temperature	<input checked="" type="checkbox"/>
Soils	<input checked="" type="checkbox"/>

Legend			
	Flooding Likely		Excessive Heat
	Flooding Occurring or Imminent		High Winds
	Flooding Possible		Much Above Normal Temperatures
	Freezing Rain		Much Below Normal Temperatures
	Heavy Ice		Significant Waves
	Heavy Precipitation		Enhanced Wildfire Risk
	Heavy Rain		Severe Drought
	Heavy Snow		Severe Weather
	Severe Weather		

Valid December 24, 2022 - December 28, 2022

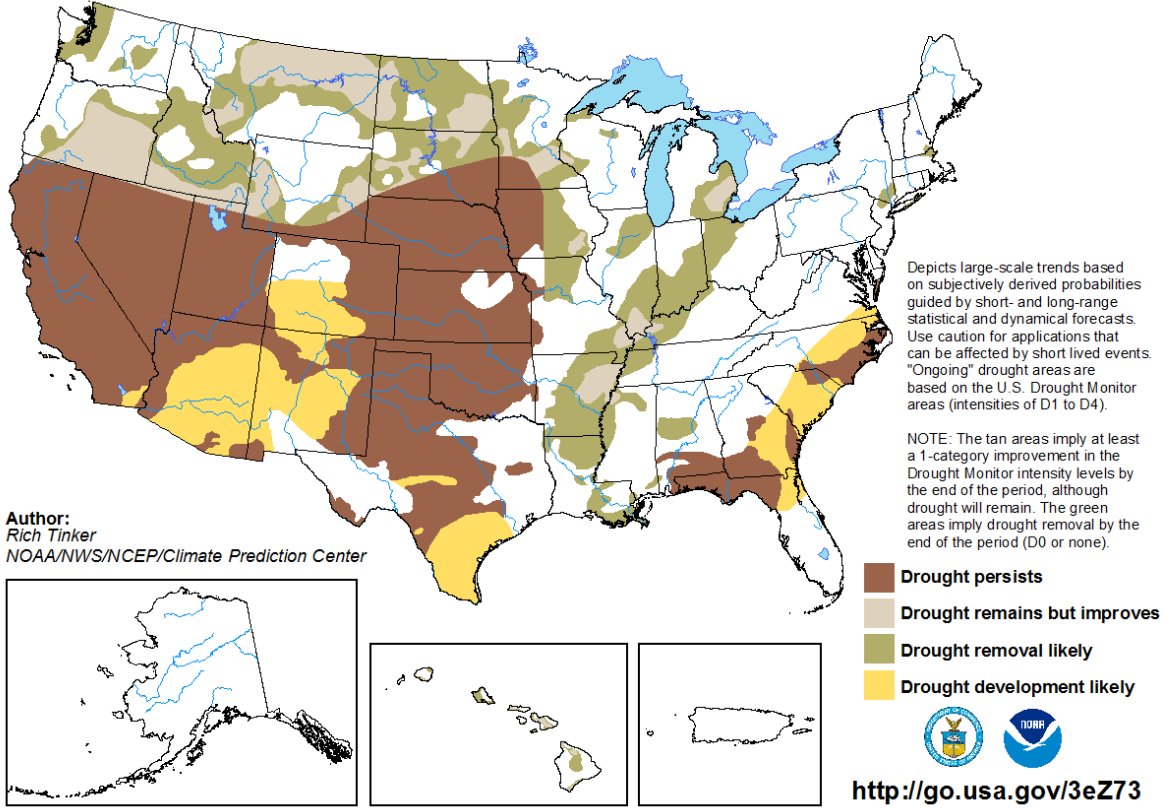


Seasonal Drought Outlook: [December 15, 2022 – March 31, 2023](#)

Source: National Weather Service

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

Valid for December 15, 2022 - March 31, 2023
Released December 15, 2022

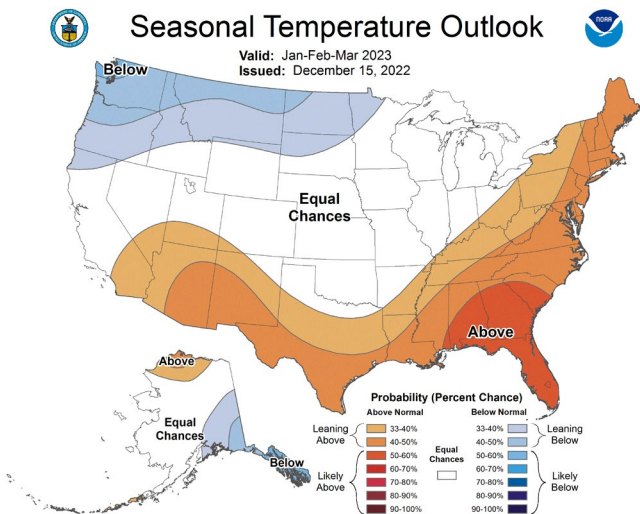
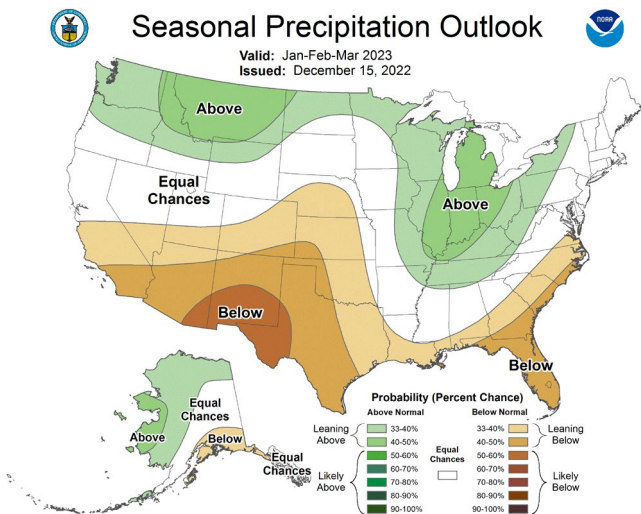


Climate Prediction Center Three-month Outlook

Source: National Weather Service

[Precipitation](#)

[Temperature](#)



[January-February-March 2023 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](#).