

Water and Climate Update

January 21, 2016

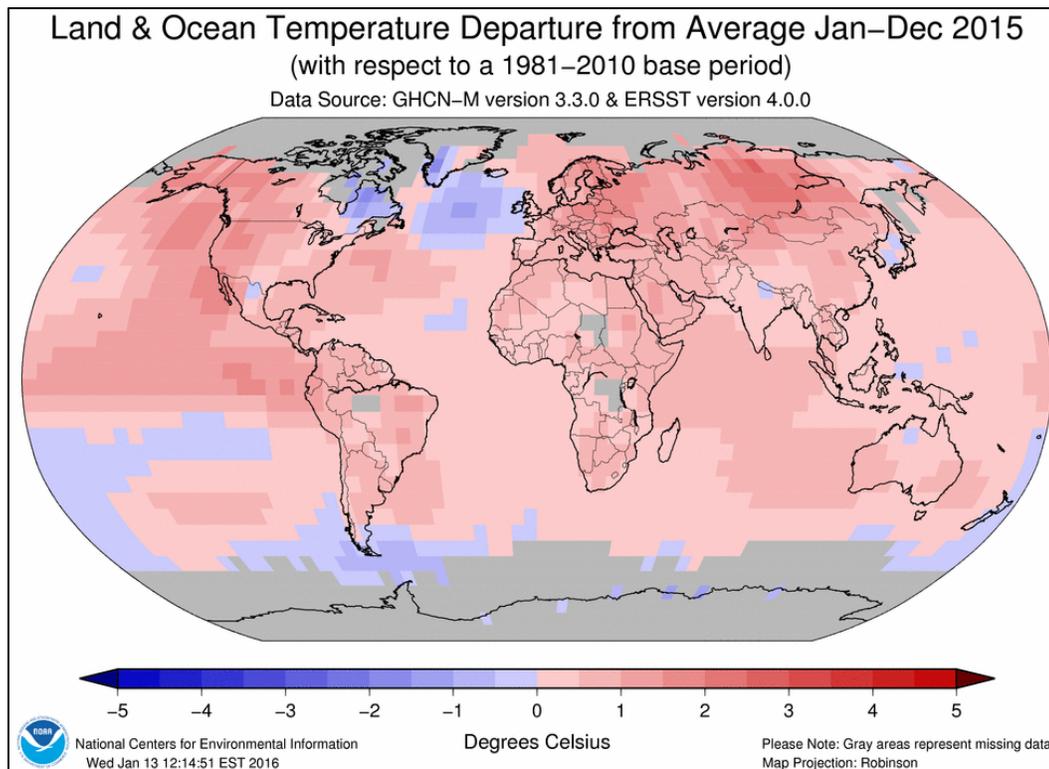
The Natural Resources Conservation Service produces this weekly report using data and products from the National Water and Climate Center and other agencies. The report focuses on seasonal snowpack, precipitation, temperature, and drought conditions in the U.S.

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Weekly Highlight: 2015 is By Far the Warmest Year on Record

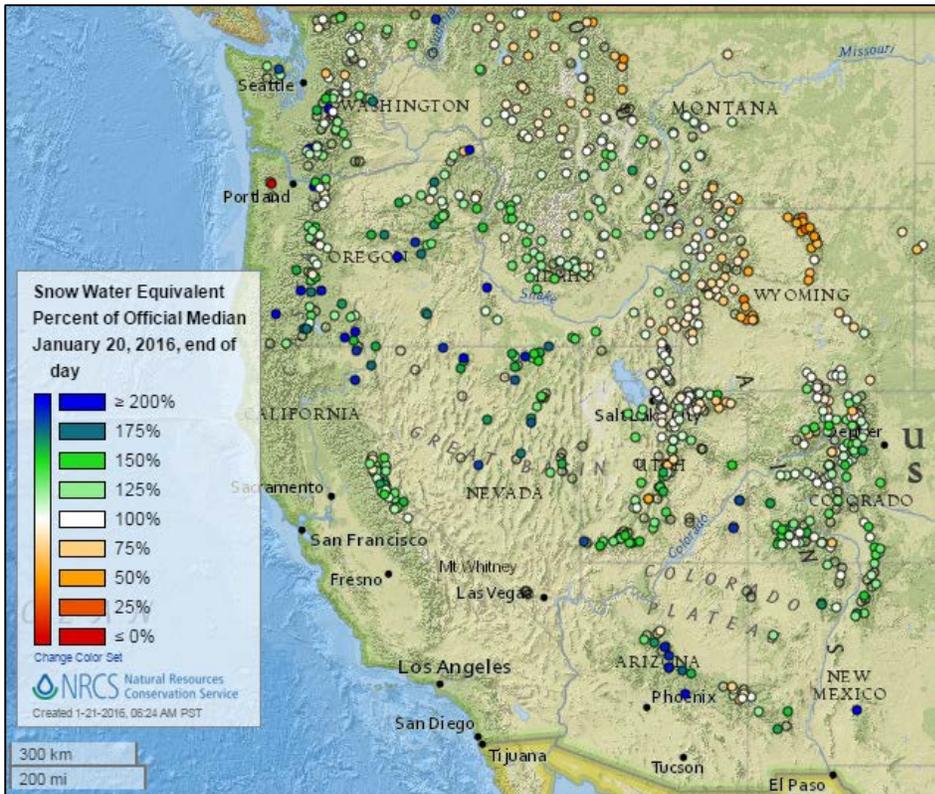
[From the National Oceanic and Atmospheric Administration](#): The [January–December](#) map of temperature anomalies shows that warmer-than-average temperatures occurred across the vast majority of the globe during 2015, combining to bring overall record warmth for 2015, at 0.90°C (1.62°F) above the 20th century average. This easily surpasses the previous record set just last year by 0.16°C (0.29°F). The global temperatures were strongly influenced by the strong El Niño conditions that developed during the year. The 2015 temperature also marks the largest margin by which an annual temperature record has been broken. Prior to this year, the largest margin occurred in 1998, when the annual temperature surpassed the record set in 1997 by 0.12°C (0.22°F). Incidentally, 1997 and 1998 were the last years in which a similarly strong El Niño was occurring. The annual temperature anomalies for 1997 and 1998 were 0.51°C (0.92°F) and 0.63°C (1.13°F), respectively, above the 20th century average, both much lower than the 2015 temperature.

Related story from NASA: [NASA, NOAA Analyses Reveal Record-Shattering Global Warm Temperatures in 2015](#)

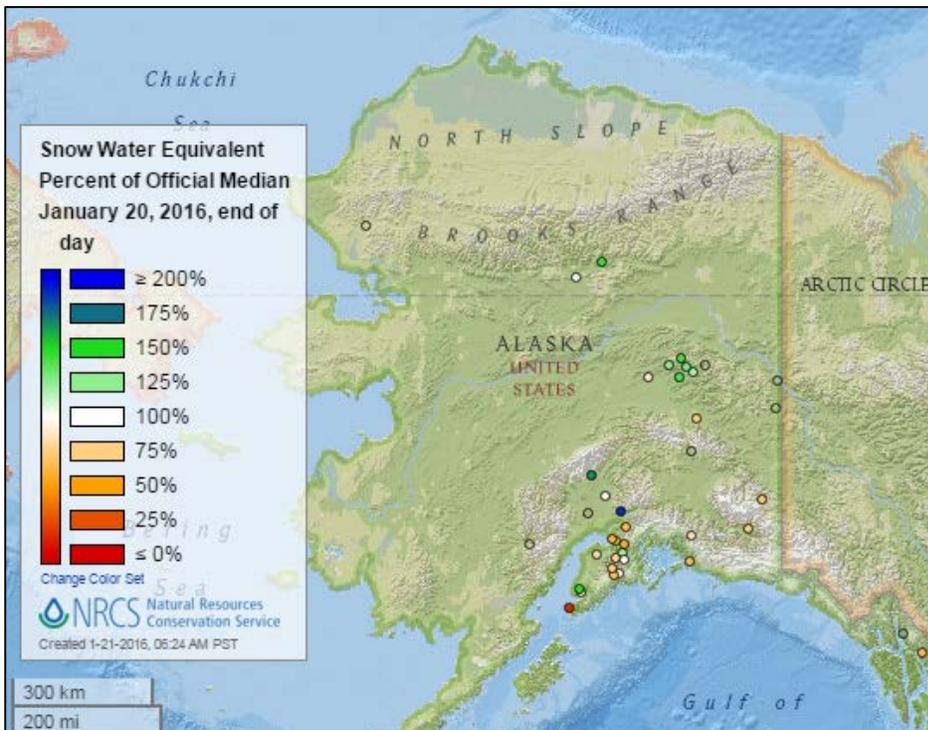


Snow

Current Snow Water Equivalent, NRCS SNOTEL Network

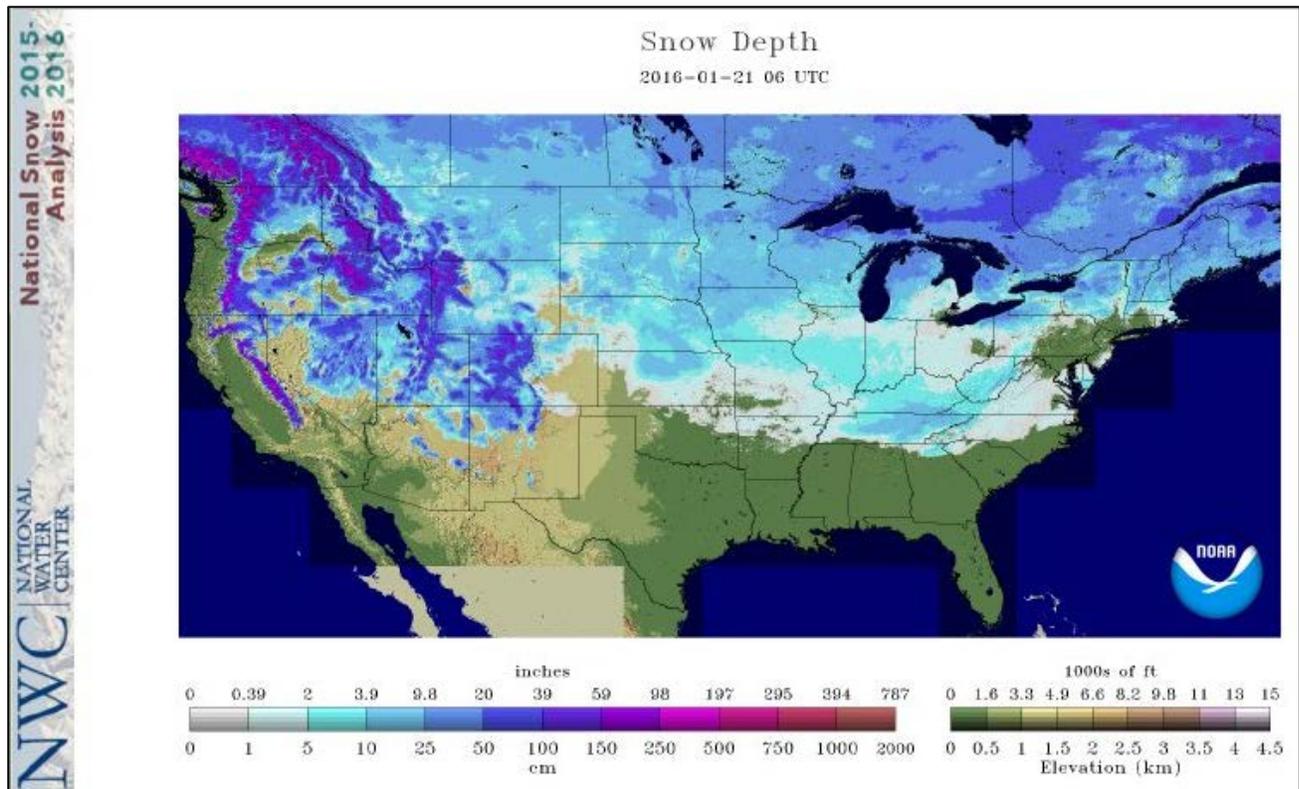


The current [snow water equivalent percent of median](#) map is very similar to last week, with snowpack at or above median over most areas of the West. The main exceptions to this pattern are in Wyoming, northwestern Montana, and northern Idaho, which are below median.



The current [snow water equivalent percent of median](#) map for Alaska is also similar to last week. Snowpack is near or above median in the Interior and below median in the south and southeast.

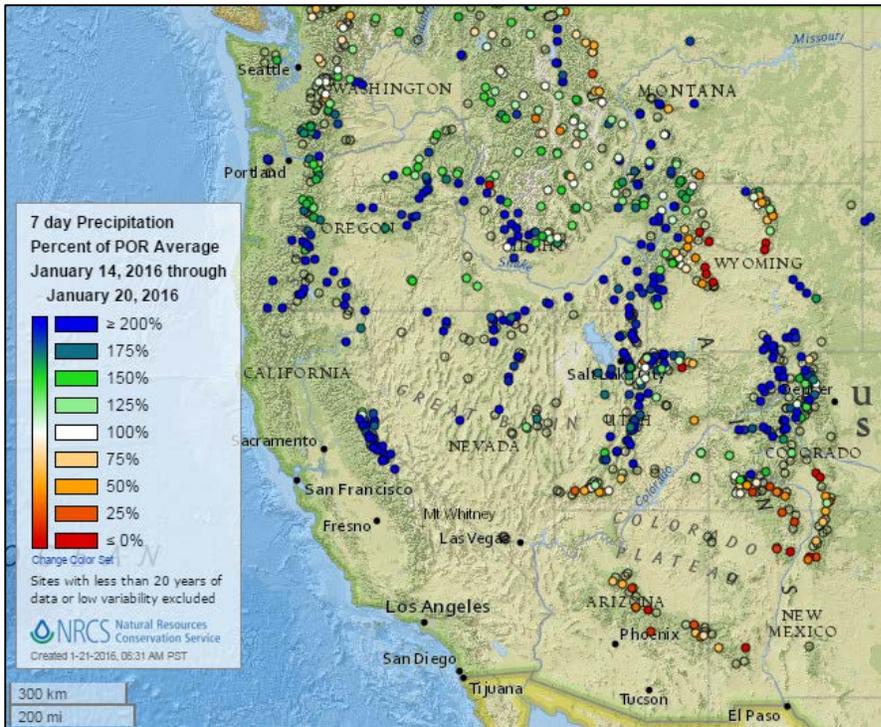
Current Snow Depth, National Weather Service (NWS) Networks



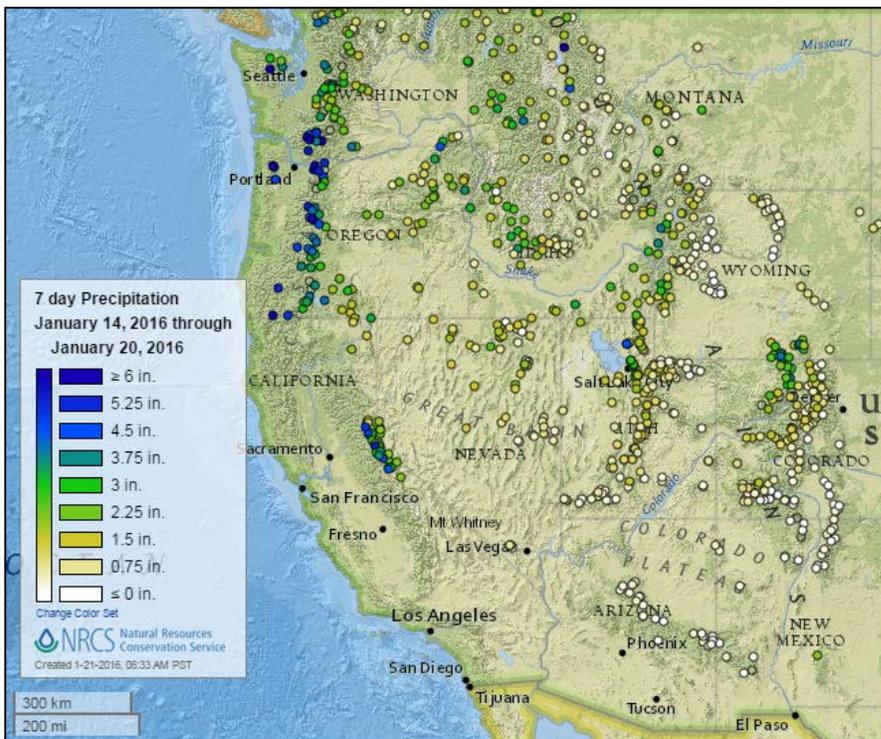
The NOAA National Water Center's current [snow depth](#) map shows a significant expansion of snow-covered area toward the south since last week throughout the continental US east of the Rocky Mountains. West of the Rockies, snow cover retreated somewhat in desert areas of Oregon, Nevada, Arizona, and New Mexico.

Precipitation

Last 7 Days, Western Mountain Sites (NRCS SNOTEL Network)

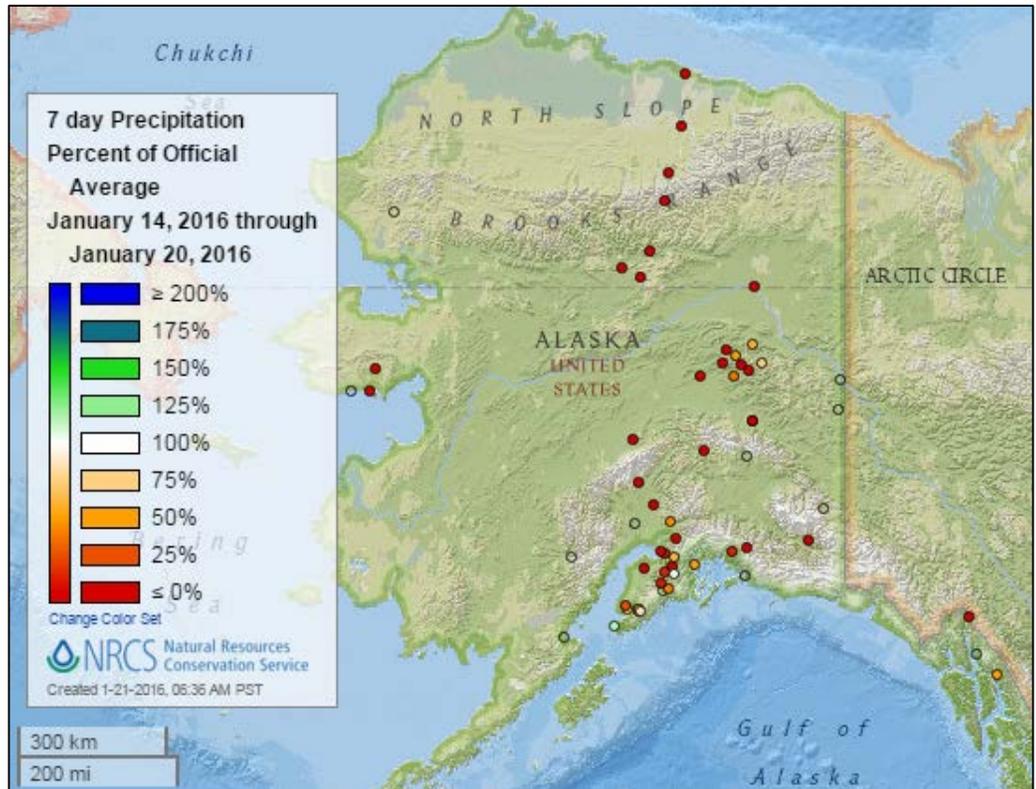


The 7-day [precipitation percent of average](#) map this week is nearly the opposite of last week: dry areas last week were wet this week and vice versa. Most of the midsection of the West received well above normal precipitation except for parts of northern and western Wyoming, which were dry. Northerly areas were mostly near normal except northwestern Montana east of the Continental Divide, which was somewhat drier. Southern areas -- Arizona, New Mexico, and southern Colorado -- were generally very dry.

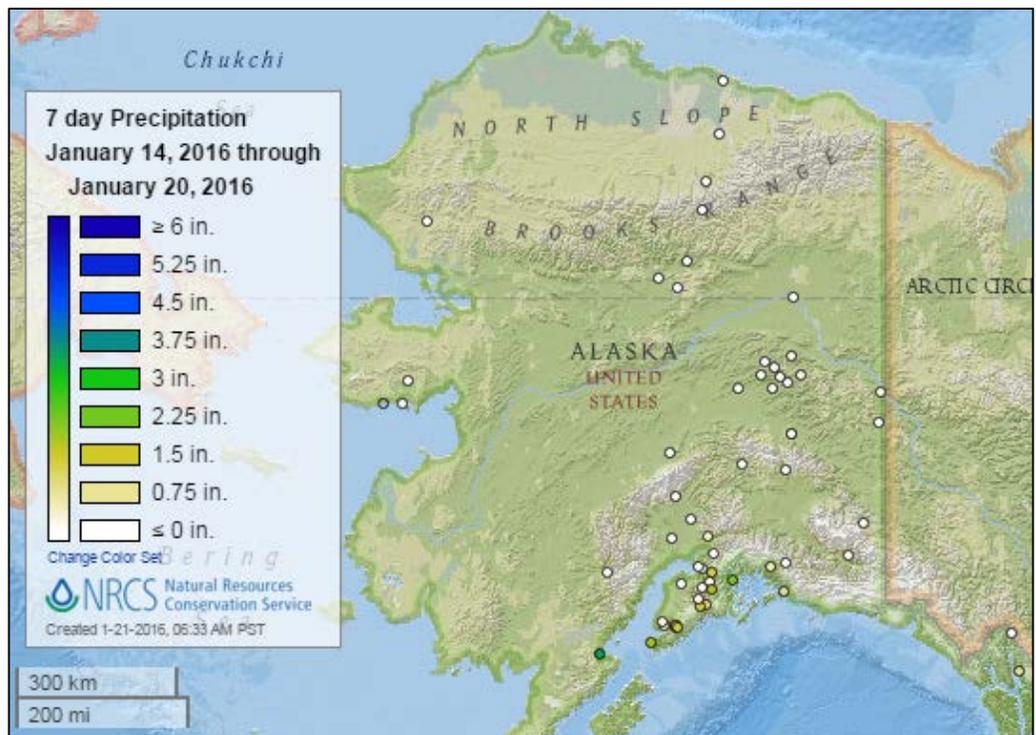


The 7-day [total precipitation](#) map shows large amounts of precipitation -- 4 inches or more -- in the Oregon Cascades and in the Sierra. Other wet areas (as noted in the map above) received about 1-3 inches. Many of the data sites in the dry areas received no precipitation this week.

The 7-day [precipitation percent of average](#) map for Alaska shows practically the entire state being very dry.



The 7-day [total precipitation](#) map for Alaska shows almost all stations with no precipitation. A few scattered sites along the south coast, however, did receive an inch or two.

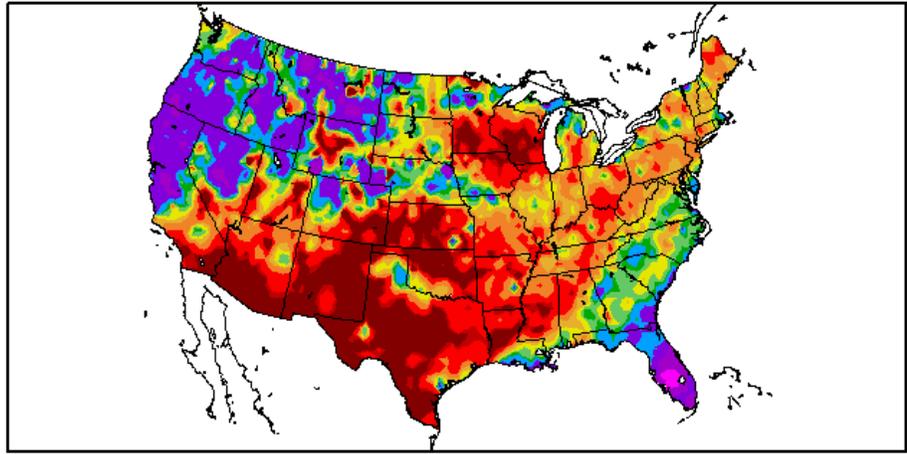


Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

Percent of Normal Precipitation (%)
1/14/2016 - 1/20/2016

The [percent of normal precipitation](#) map shows well above average precipitation in the northwest quadrant of the country and in Florida, with a wide, southwest-to-northeast swath of dryness, extending from southern California eastward through Texas and northward into the upper Midwest and the Northeast.

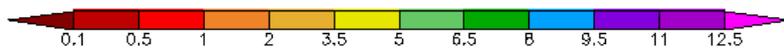
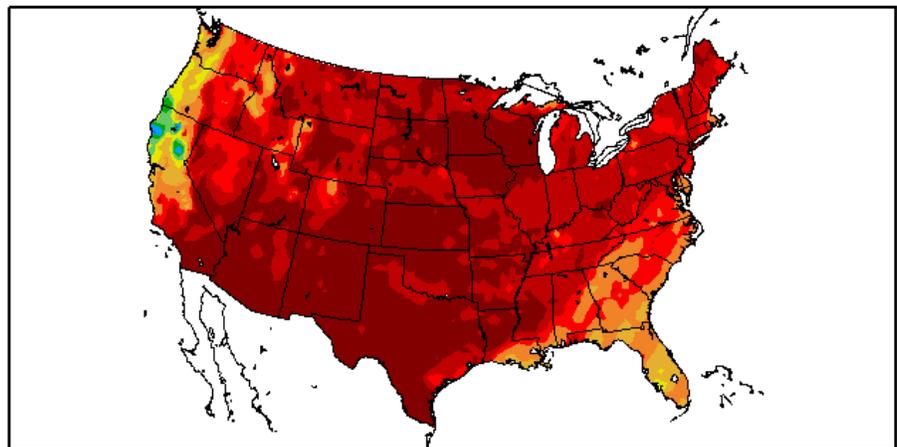


Generated 1/21/2016 at HPRCC using provisional data.

Regional Climate Centers

Precipitation (in)
1/14/2016 - 1/20/2016

The [7-day total precipitation](#) map shows amounts of several inches along the northern West Coast and in the Southeast. In the areas of the interior West with above normal precipitation (see map above), amounts were generally two inches or less. Elsewhere in the country, precipitation was zero or less than an inch.



Generated 1/21/2016 at HPRCC using provisional data.

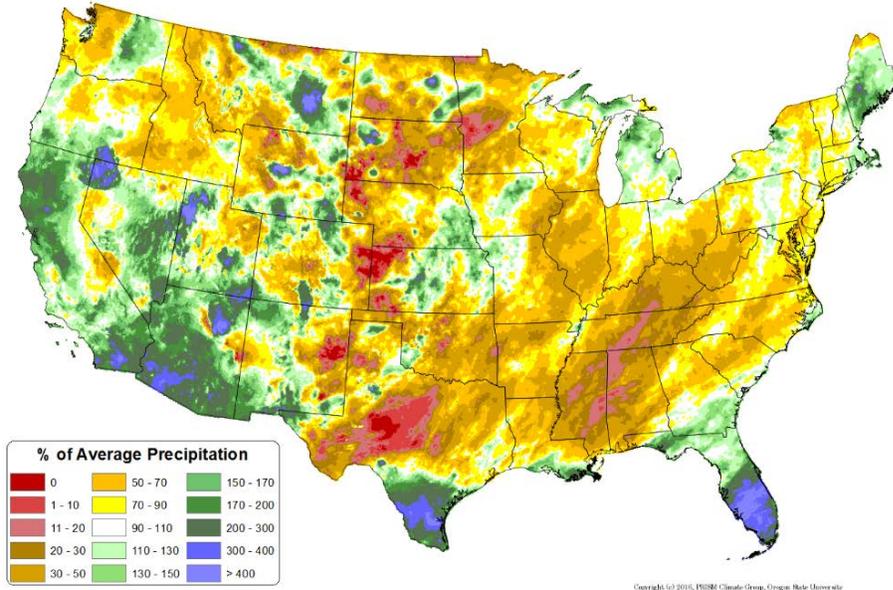
Regional Climate Centers

Water and Climate Update

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

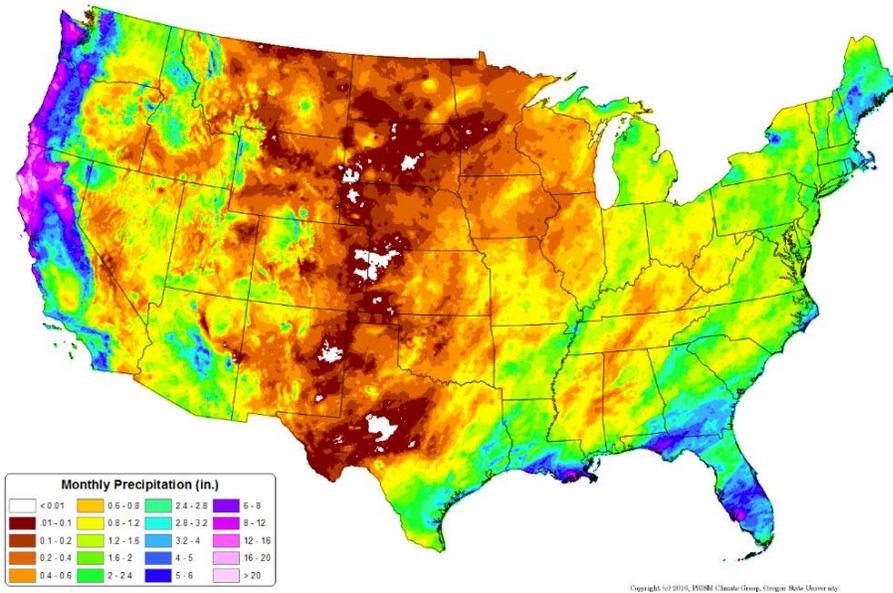
Source: PRISM

Total Precipitation Anomaly: 01 January 2016 - 19 January 2016
 Period ending 7 AM EST 19 Jan 2016
 Base period: 1981-2010
 (Map created 20 Jan 2016)



For January to date, the national [precipitation percent of average](#) map shows a patchy distribution of areas with above normal precipitation, including Maine, southern Florida, the southern tip of Texas, Arizona, and northern California. Most of the rest of the country, with a few isolated exceptions, remains below normal for the month.

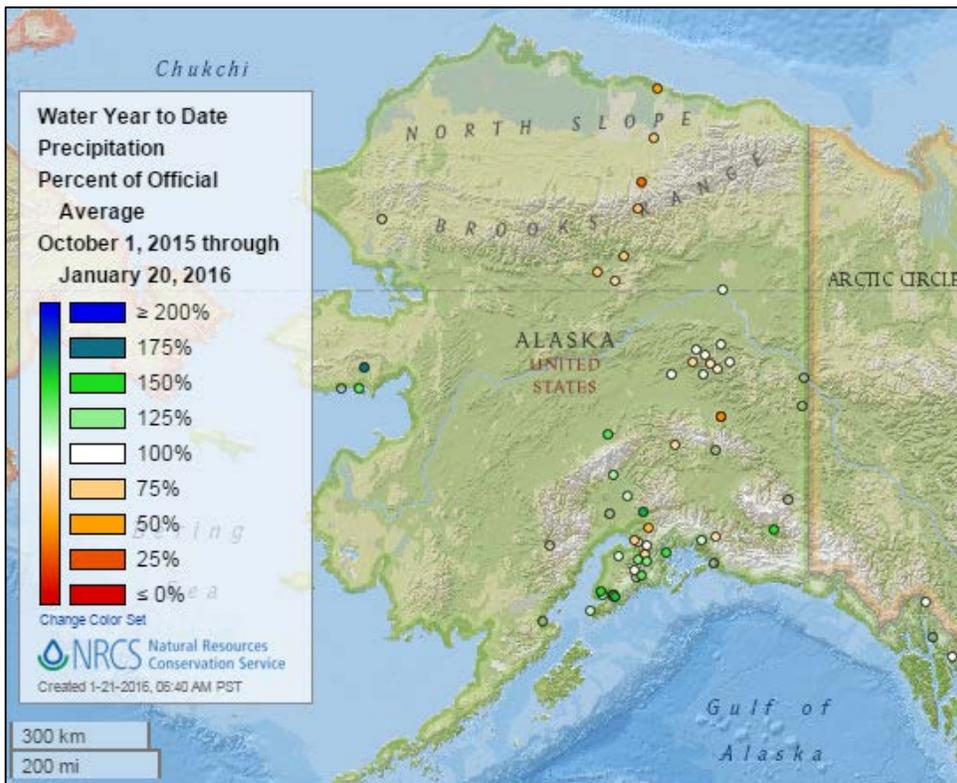
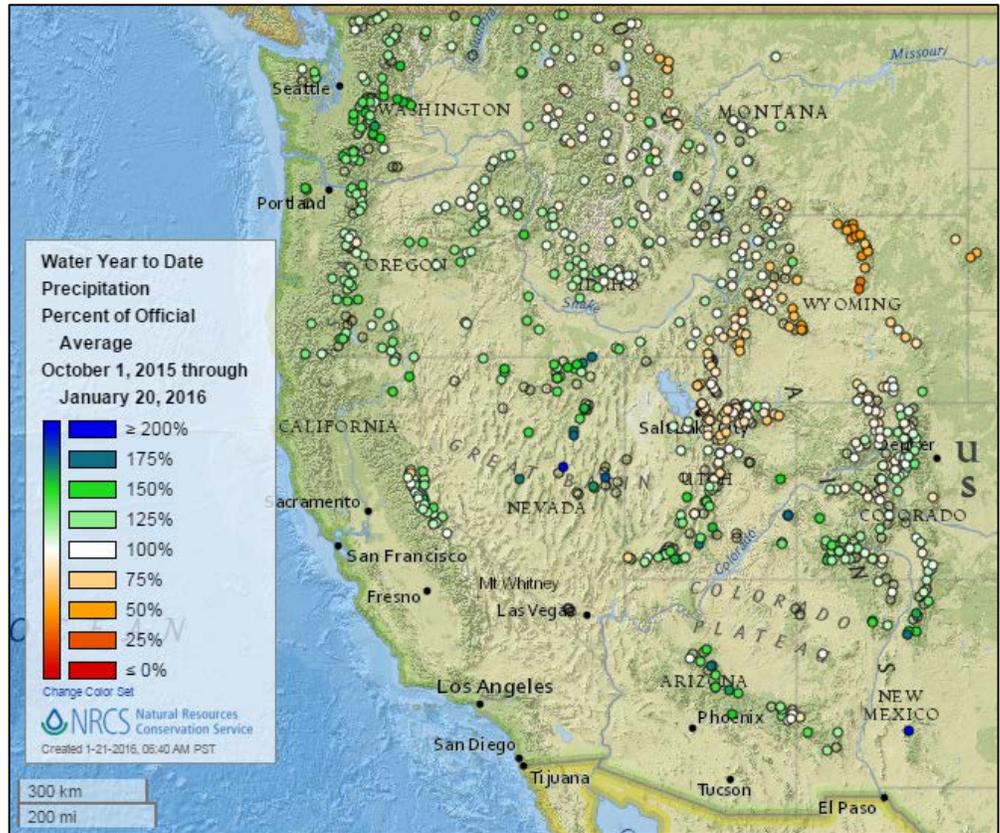
Total Precipitation: 01 January 2016 - 19 January 2016
 Period ending 7 AM EST 19 Jan 2016
 (Map created 20 Jan 2016)



The January month-to-date [total precipitation](#) map shows that the largest amounts are in the coastal areas, particularly the West Coast. The entire Great Plains area has been particularly dry.

Water Year-to-Date, Western Mountain Sites (NRCS SNOTEL Network)

The [2016 water year to date precipitation percent of average](#) map shows most of the West with average or above average precipitation. The only below average areas are in Wyoming, northern Utah, and a small zone in northwestern Montana.



The Alaska 2016 [water year to date precipitation percent of average](#) map shows generally near or below average in the Interior and north and above average in the south.

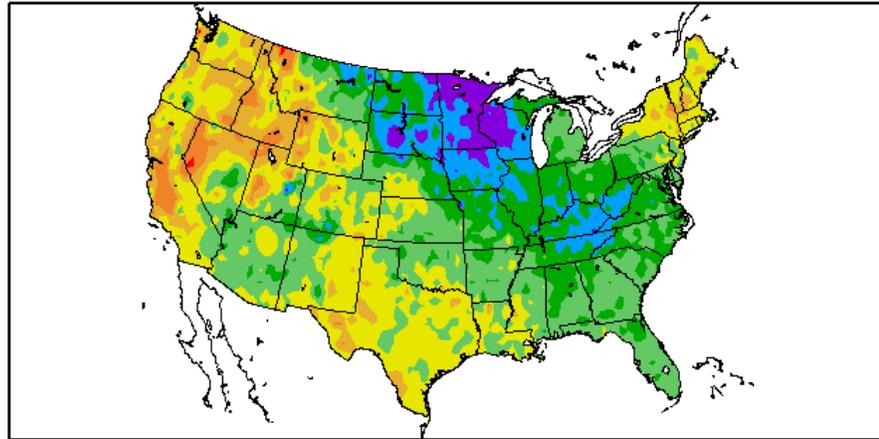
Temperature

Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

The map of the [average temperature anomalies](#) for the past week shows warmer than normal temperatures in the Northwest, northern Nevada, and most of California, as well as southern Texas and in the Northeast. Elsewhere, temperatures were cooler than normal, especially in the upper Midwest, which was very cold.

Departure from Normal Temperature (F)
1/14/2016 - 1/20/2016



Generated 1/21/2016 at HPRCC using provisional data.

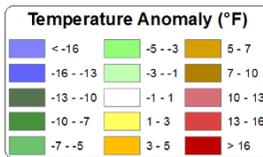
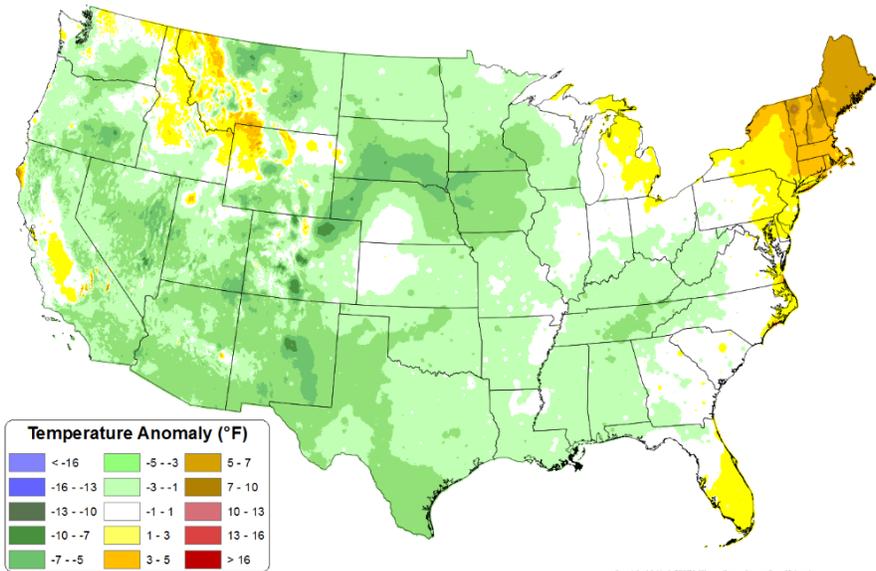
Regional Climate Centers

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

Source: PRISM

For January 2016 to date, the national [daily mean temperature anomaly](#) map shows cooler than normal temperatures over much of the country. Warmer than normal temperatures are found in only a few scattered areas, including the northern Rocky Mountains in Montana and Idaho, Michigan, the Northeast, and southern Florida.

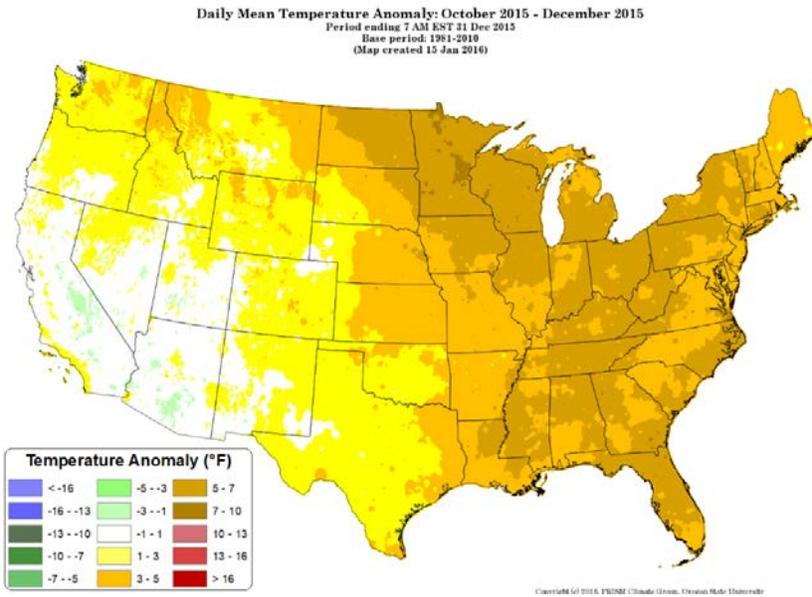
Daily Mean Temperature Anomaly: 01 January 2016 - 19 January 2016
Period ending 7 AM EST 19-Jan-2016
Base period: 1981-2010
(Map created 20-Jan-2016)



Copyright © 2016, PRISM Climate Group, Oregon State University

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

Source: PRISM



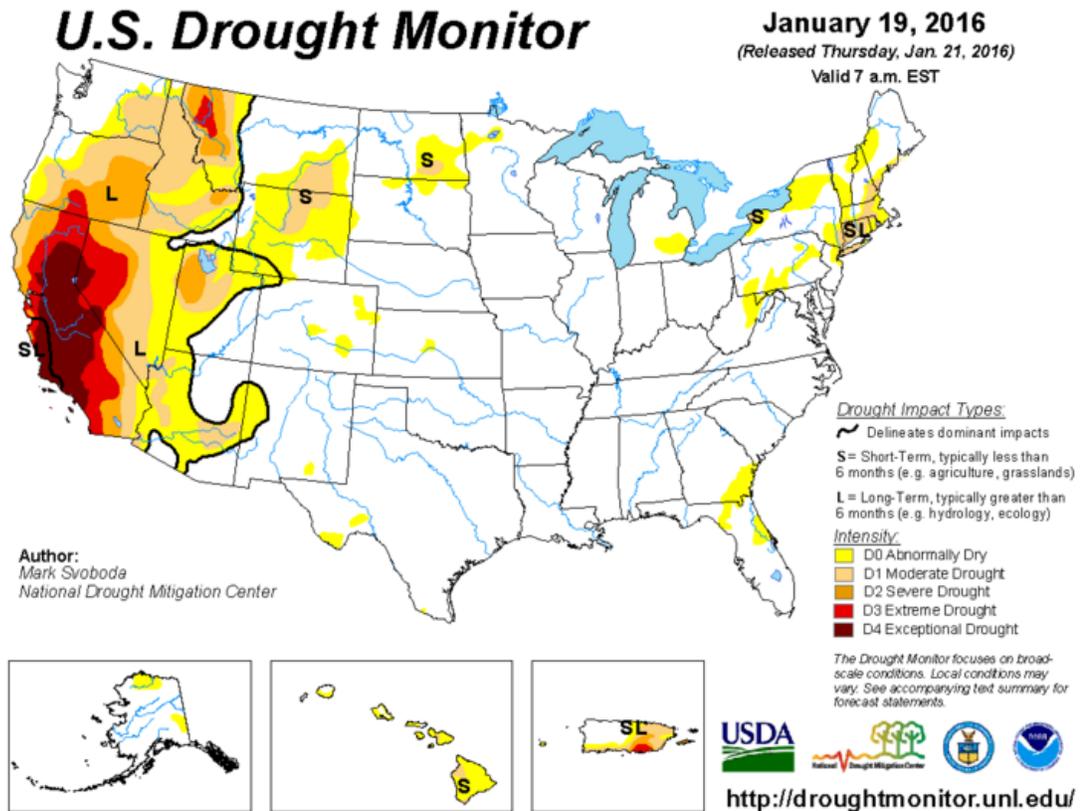
The October through December national **daily mean temperature anomaly** map shows most of the country reporting above average conditions. The largest warm anomaly for the past three months was in the upper Midwest, centered in Minnesota.

The southwestern part of the country and most of the West was near normal for this time.

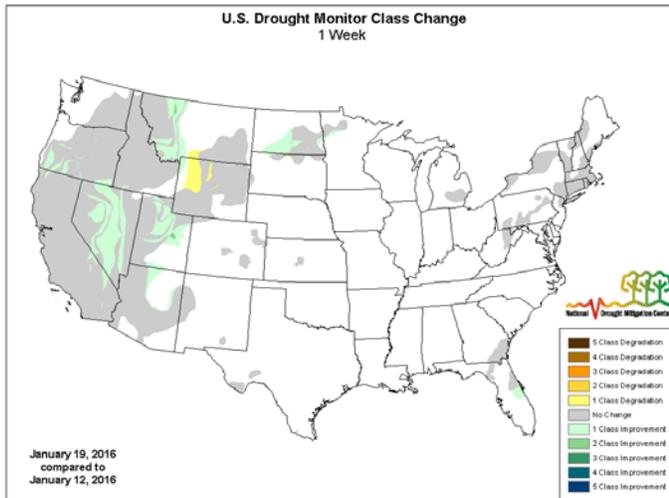
Drought

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

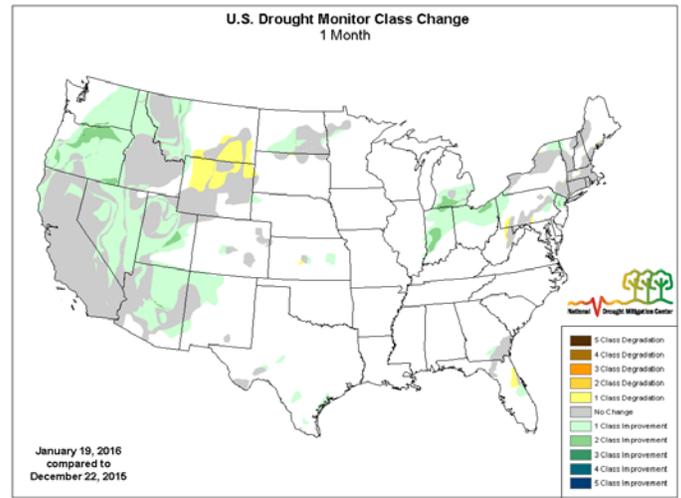
[U.S. Drought Monitor](#) See map below. Drought conditions continue in the Western states, including the exceptional drought in California and Nevada.



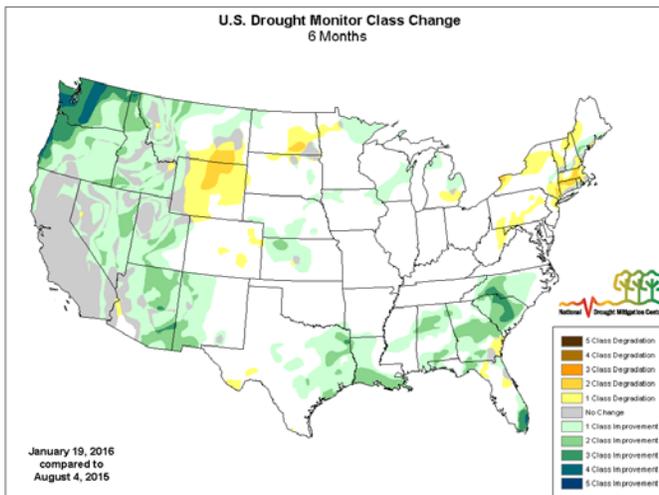
Changes in Drought Monitor Categories over Time



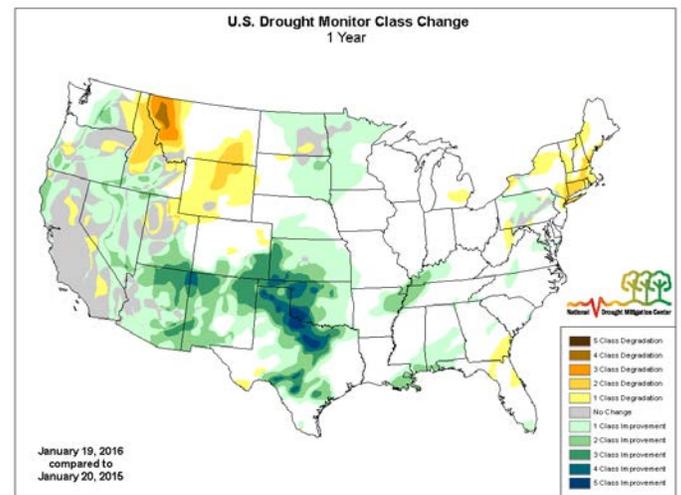
<http://droughtmonitor.unl.edu>



<http://droughtmonitor.unl.edu>



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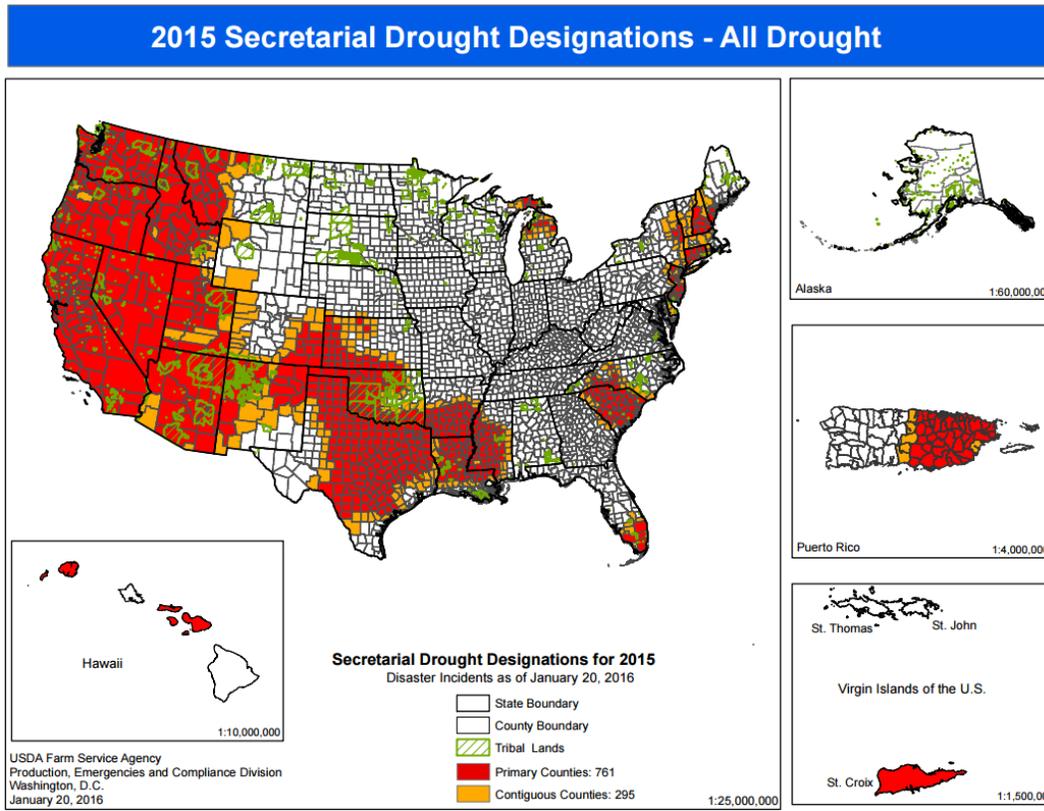
Drought conditions have improved in much of the country, especially in the south-central U.S. and the Pacific Northwest. The remainder of the West has shown improvement, but long-term drought persists in California.

Current National [Drought Summary](#), January 19, 2016

Author: Mark Svoboda, National Drought Mitigation Center

“Outside of the coastal ranges from northern California up to the Olympic Peninsula (along with the Sierra-Nevada), much of the rest of the Lower 48 states had a dry week. Temperatures were also much above-normal in the West and Pacific NW along with the New England region. In addition, even as the El Niño begins to weaken, its influence continues to bring more dryness and drought to the eastern islands of Hawaii.”

USDA Drought Designations



[Drought Designations as of January 20, 2016](#)

[USDA Disaster and Drought Information](#)

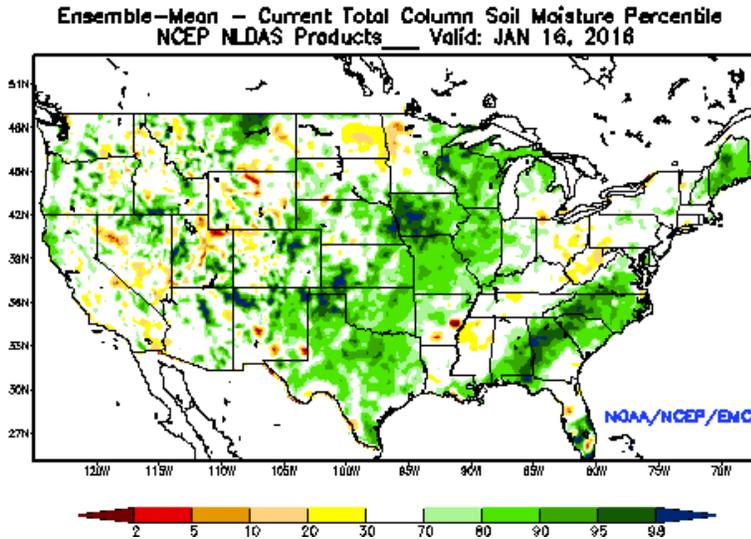
[U.S. Population in Drought, Weekly Comparison](#)

Highlighted Drought Resources

- [Drought Impact Reporter](#)
- [Quarterly Regional Climate Impacts and Outlook](#)
- [U.S. Drought Portal Indicators and Monitoring](#)

Other Climatic and Water Supply Indicators

Soil Moisture

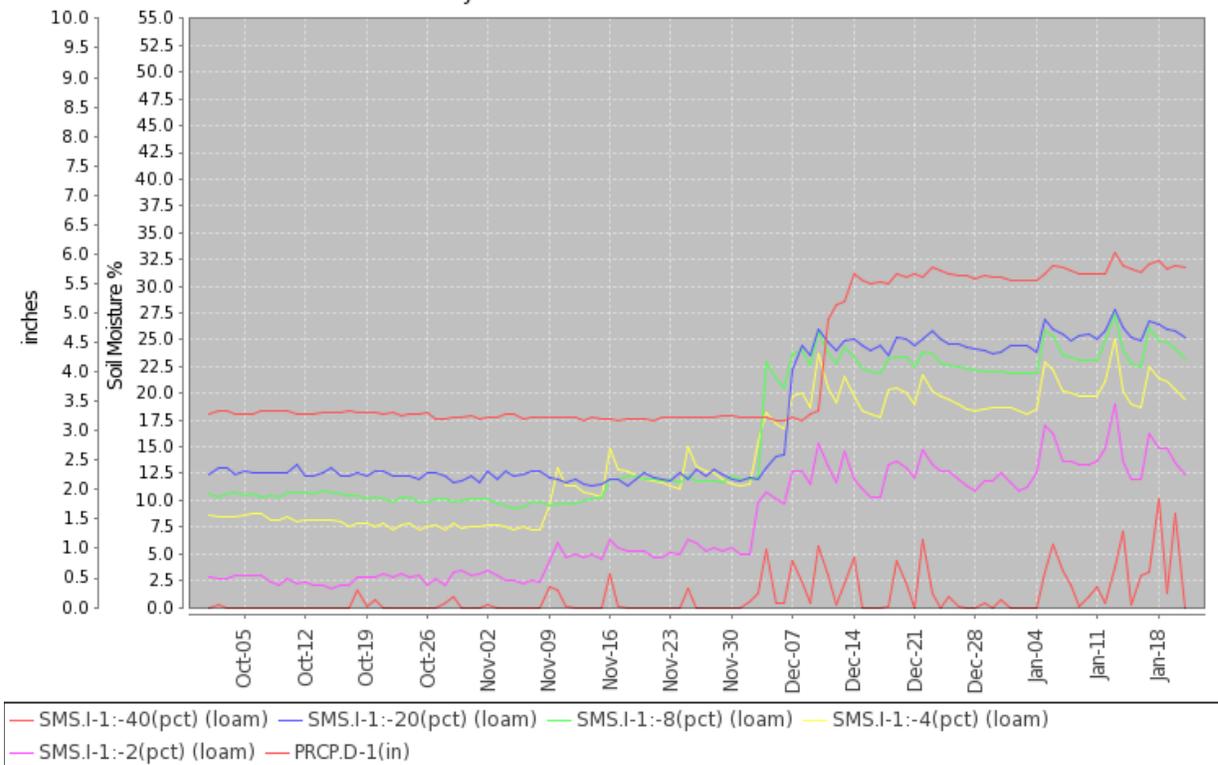


The modeled [soil moisture percentiles](#) as of January 16, 2016 show primarily above average conditions throughout the country. There are only a few scattered areas of dryness, primarily in the West and the northern Great Plains.

[University of Washington Experimental Modeled Soil Moisture](#)

Soil Moisture Data: NRCS [Soil Climate Analysis Network \(SCAN\)](#)

Station (2218) WATERYEAR=2016 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Jan 21 06:52:36 GMT-08:00 2016



This graph shows soil moisture (at 2-, 4-, 8-, 20-, and 40-inch depths) and precipitation for the 2016 water year to date at the [French Gulch SCAN site #2218](#) in northern California. A major soil moisture increase at all depths in response to a series of storms in the first half of December is particularly noticeable.

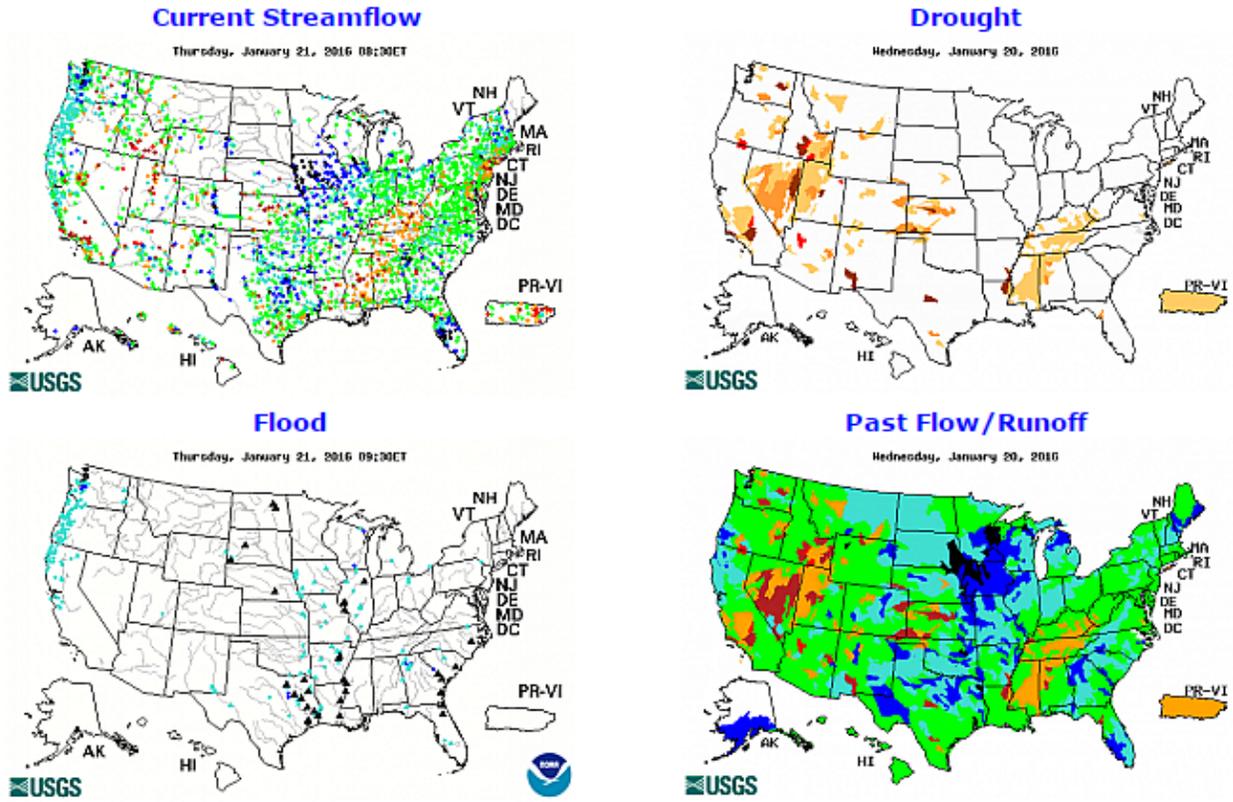
Soil Moisture Data Portals

[CRN Soil Moisture](#)

[Texas A&M University North American Soil Moisture Database](#)

Streamflow

Source: USGS



Streamflow is currently high in many areas of the country, most notably in western Washington, the Midwest, eastern Texas, and southern Florida.

Select any individual map to enlarge and display a legend.

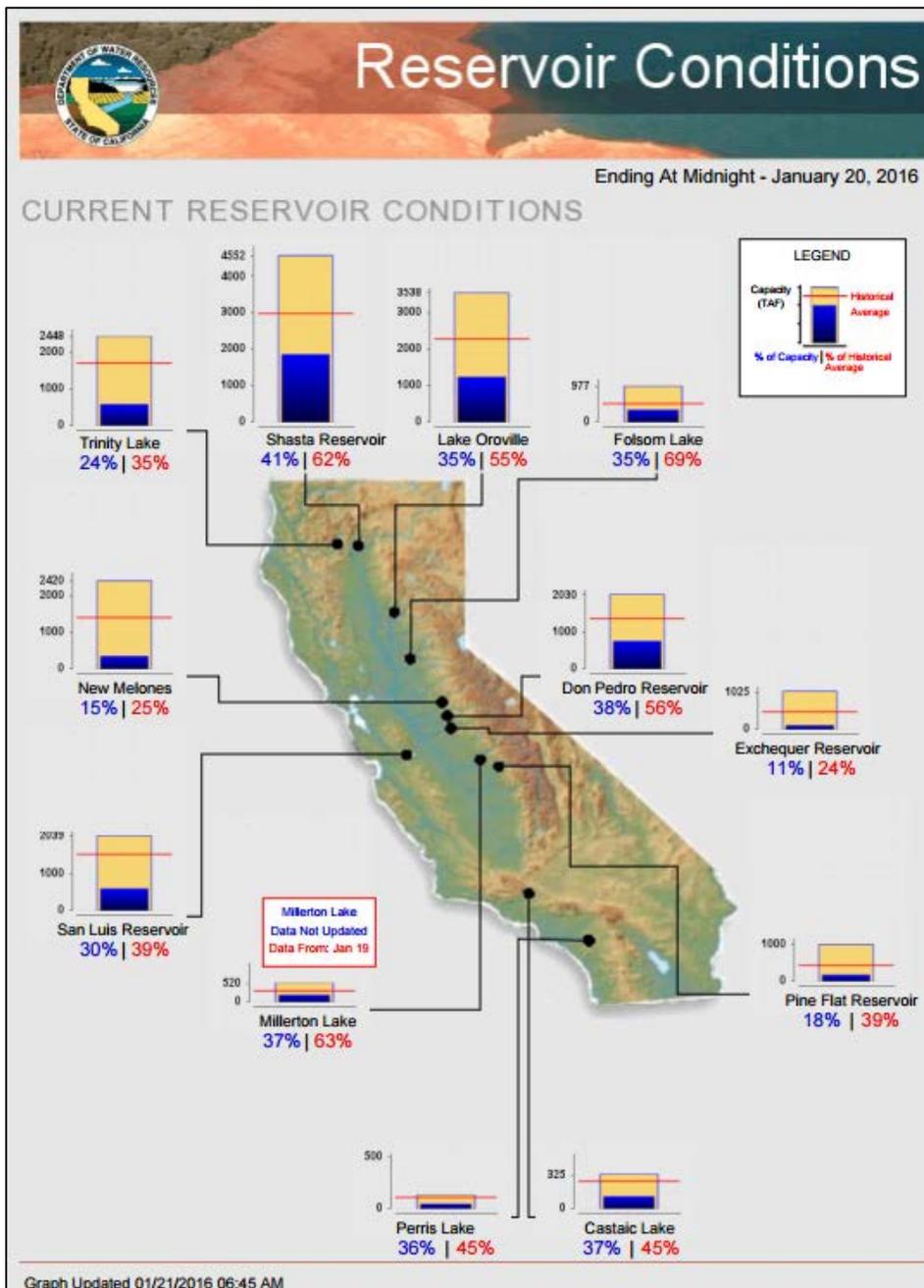
Current Reservoir Storage

[National Water and Climate Center Reservoir Data](#)

U.S. Bureau of Reclamation Hydromet Tea Cup Reservoir Depictions:

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

California Reservoir Conditions



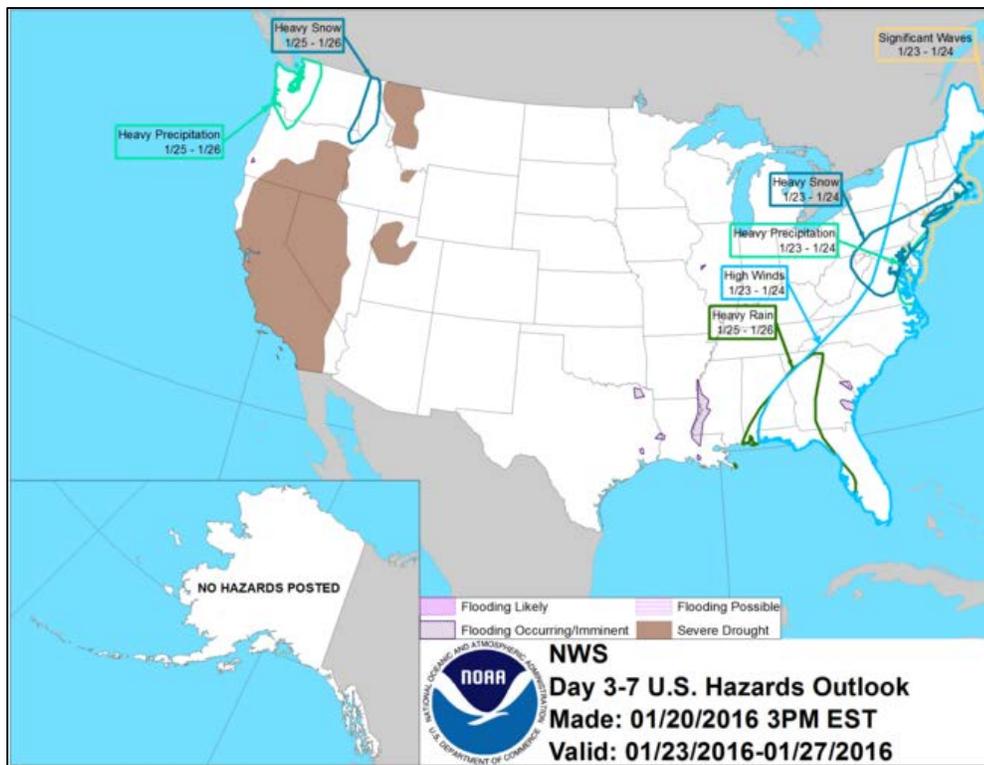
Short- and Long-Range Outlooks

Agricultural Weather Highlights

Author: Eric Luebehusen, Agricultural Meteorologist, USDA/OCE/WAOB

National Outlook, January 21, 2016: “A large, complex, potent winter storm currently taking shape over the central and southeastern Plains will produce increasingly heavy rain from the Delta into the Southeast, with severe thunderstorms possible near the Gulf Coast. In contrast, snow will diminish over the northern Plains and western Corn Belt as the storm redevelops and intensifies along the central Atlantic Coast. Over the weekend, heavy, wind-swept snow — which could top 2 feet in some places — will impact areas from the southern Appalachians and lower Ohio Valley across the Mid-Atlantic States, perhaps reaching as far north as southern New England. Heavy sleet and freezing rain are also possible from the Carolinas into coastal New England. Out west, another in a succession of Pacific storms will generate additional rain and mountain snow from central and northern California and the Pacific Northwest to the Rockies, reaching the High Plains by early next week. The NWS 6- to 10-day outlook for January 20-26 calls for near- to above-normal temperatures nationwide. Meanwhile, near- to above-normal precipitation over much of the West and Southeast will contrast with drier-than-normal conditions from central portions of the Plains and Corn Belt southward into Texas and the lower Southwest.”

National Weather Hazards



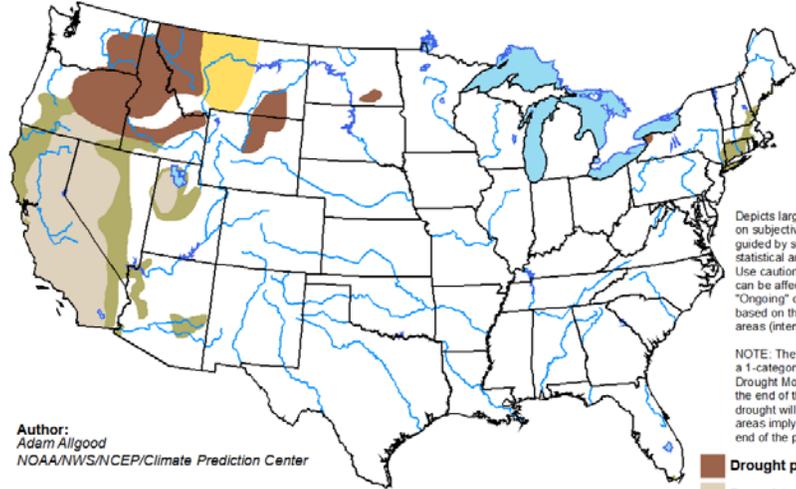
The outlook for [weather hazards](#) over the next week indicates heavy precipitation and snow in the northwest and northeast corners of the country, along with heavy rain and wind in the Southeast.

Seasonal Drought Outlook

During the next three months, **drought** will persist in the Northwest and may develop in eastern Montana and in Hawaii. Elsewhere, most drought designations are expected to improve.

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

Valid for January 21 - April 30, 2016
Released January 21, 2016



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:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center

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



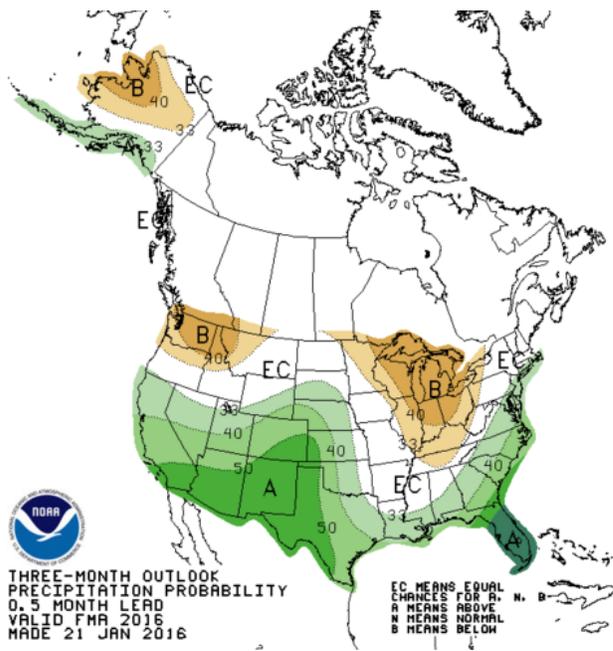
<http://go.usa.gov/3eZ73>



NWS Climate Prediction Center 3-Month Outlook

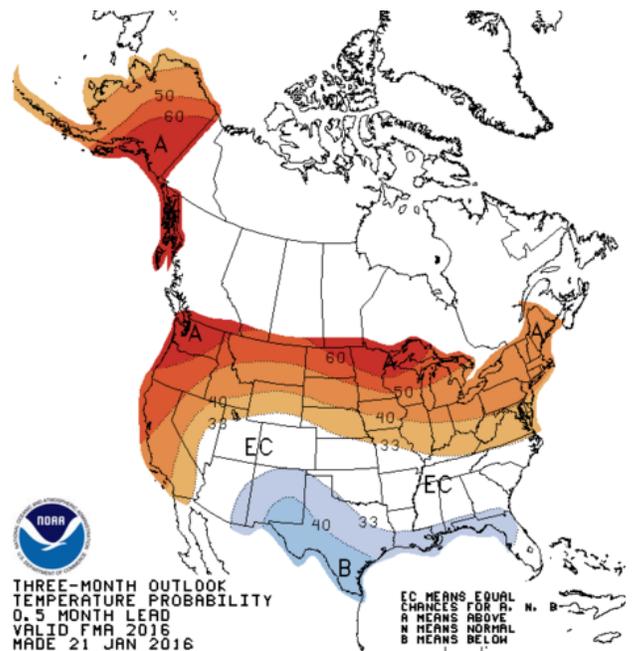
Precipitation

Temperature



THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID FMA 2016
MADE 21 JAN 2016

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID FMA 2016
MADE 21 JAN 2016

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

Outlook Summary

NWS Climate Prediction Center:

[The February-March-April \(FMA\) 2016 precipitation outlook:](#) “The FMA 2016 precipitation outlook through the early spring continues to favor a pattern that is typically associated with El Niño. Enhanced odds for above-median precipitation are forecast across California, the Southwest, central/southern Great Plains, Gulf Coast states, and parts of the east coast. The highest probabilities (above 60 percent) for above-median precipitation are forecast across the Florida peninsula for FMA 2016 which typically has the strongest wet signal during El Niño. Compared to last month’s outlook for FMA 2016, odds for above-median precipitation are slightly decreased over northern California and slightly increased over the central plains and Florida, where model guidance has the strongest signal and where the response to El Niño is the strongest. Below-median precipitation is favored through the early spring across the northern Rockies, parts of the northern Great Plains, Great Lakes, and the Ohio Valley. The dry signal in the Ohio Valley is slightly reduced in coverage due to the record tying strength of the ongoing El Niño event. This dry signal slowly weakens with time through late spring and early summer.”

[The February-March-April \(FMA\) 2016 temperature outlook:](#) “The early lead (FMA through AMJ) temperature outlooks are changed very little as they rely heavily on the low-frequency ENSO response, evident among all the current dynamical and statistical guidance. Statistical guidance is generally colder than the dynamical guidance across the southeast, where a very slight shift toward colder temperatures is indicated near the gulf coast. Dynamical guidance is warmer across much of North America when compared to last month. All temperature tools continue to strongly favor above-normal temperatures across the northern half of the continental U.S. through the early spring, which is consistent with a strong El Niño. Also, above-normal SSTs along the west coast contribute to the enhanced odds for above-normal temperatures in early leads. Below-normal temperatures favored for the southern high plains during the 2016 spring are partly related to the expectation of abnormally moist topsoil at that lead time.”

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](#).