

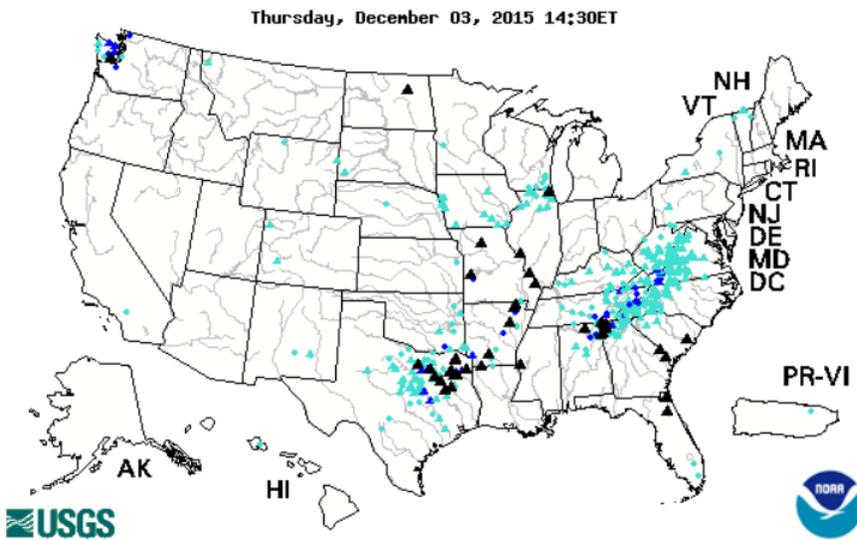
# Water and Climate Update

December 3, 2015

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.....	1	Drought.....	10
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## Weekly Highlight: Heavy precipitation produces flooding in the Midwest and Southeast.



Heavy precipitation produces high [Streamflow](#) in the Midwest, lower Mississippi River Valley, and the Southeast. Flooding is occurring at many stations in the Midwest and from Texas to South Carolina.

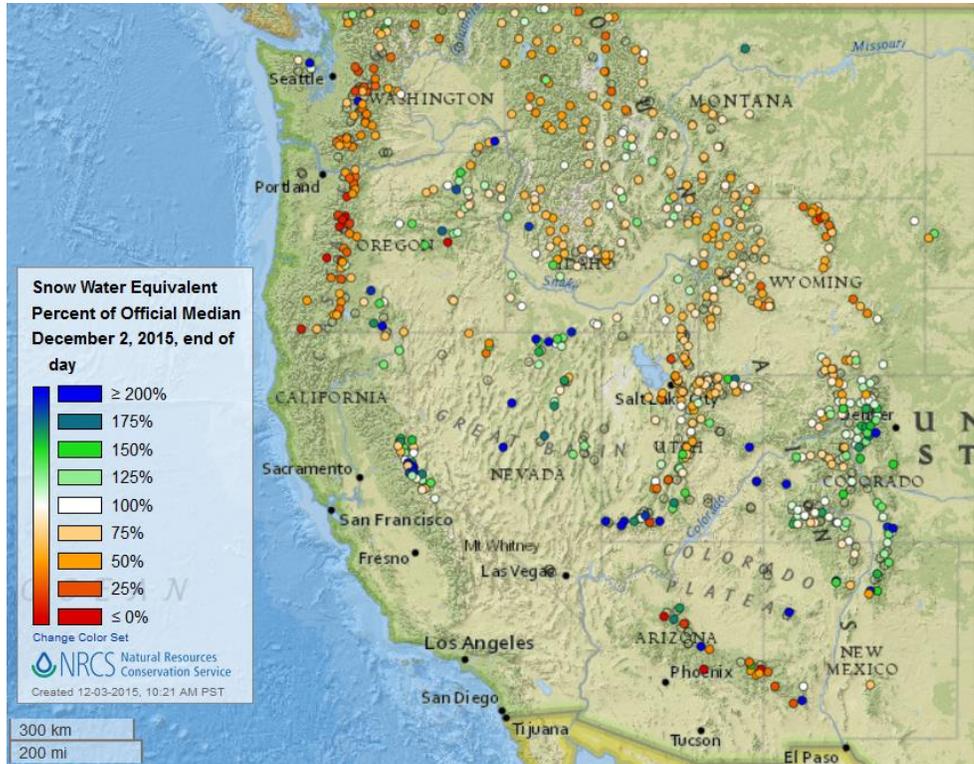
Choose a data retrieval option and select a location on the map  
 List of all stations in state,  State map, or  Nearest stations

Explanation - Percentile classes		
95-98	>= 99	River above flood stage
△ Streamgage with flood stage	○ Streamgage without flood stage	

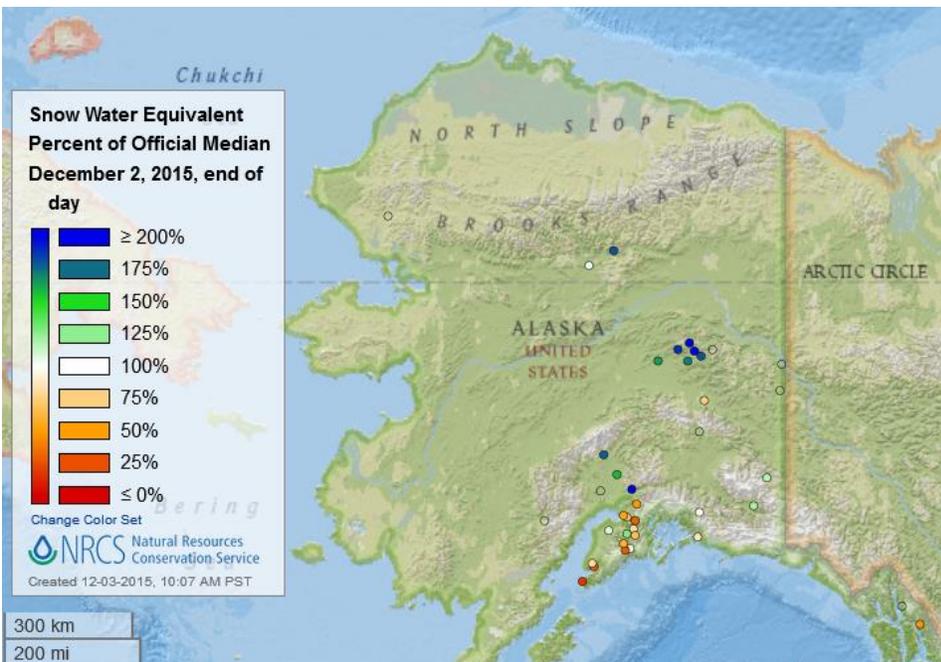
Snow

Current Snow Water Equivalent, Western Mountain Sites (NRCS SNOTEL Network)

The current [snow water equivalent percent of median](#) map shows many areas where snow has begun its winter accumulation. Primary patterns of snow accumulation are near to less than median in most of the northern region, while the southern areas have received median to above median snow. Some stations do not fit this general pattern. The percent of median value can be misleading at this time of year, as medians are very small.

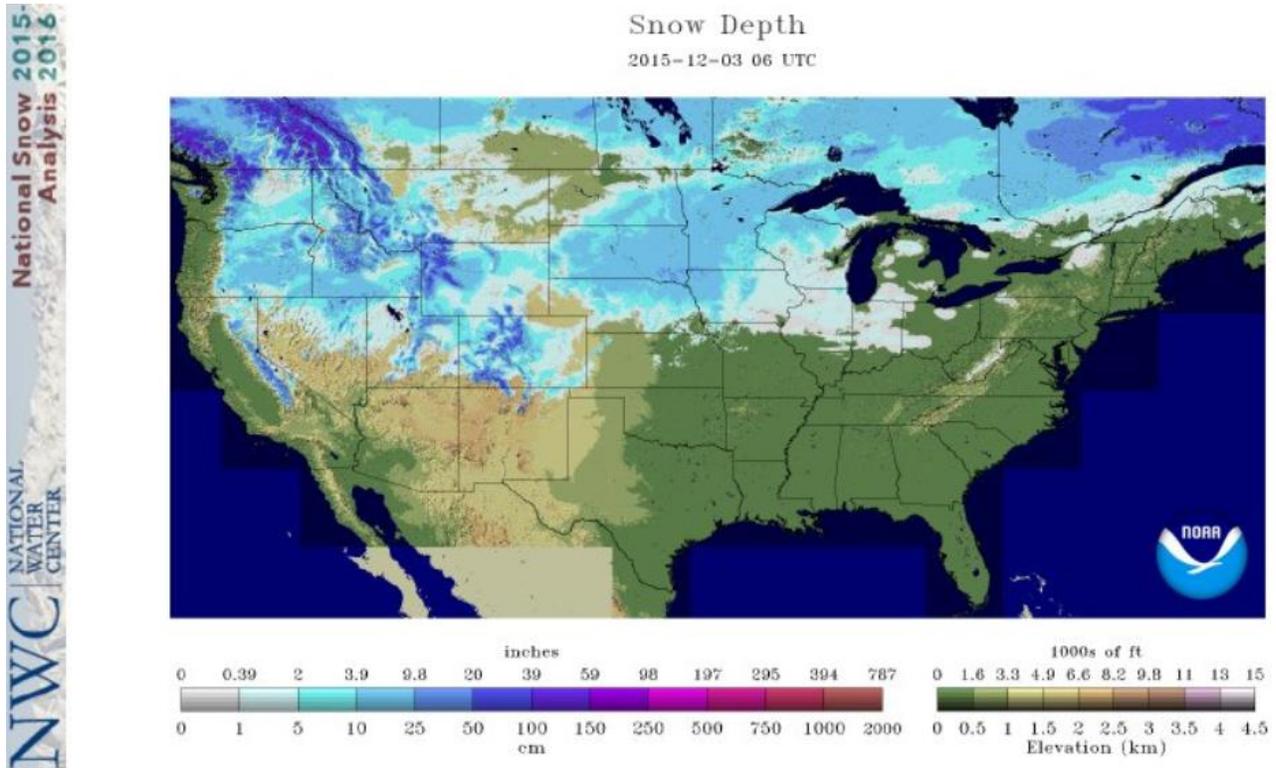


Current Snow Water Equivalent, NRCS SNOTEL Network



The current [snow water equivalent percent of median](#) map for Alaska shows median to above median snowpack in the Interior and near to below median in the southern region.

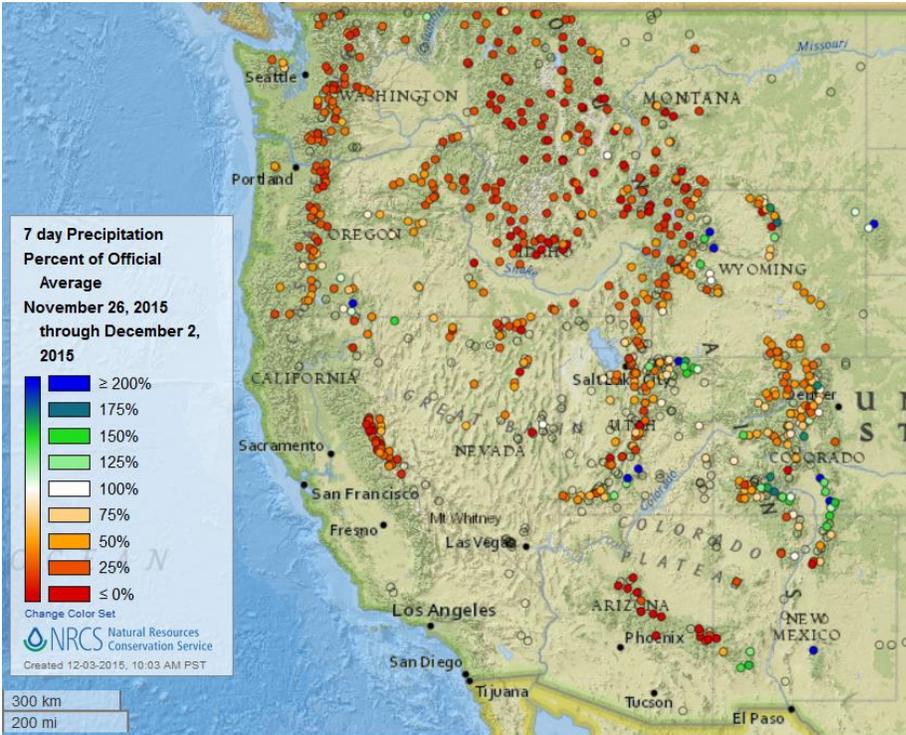
Current Snow Depth, National Weather Service (NWS) Networks



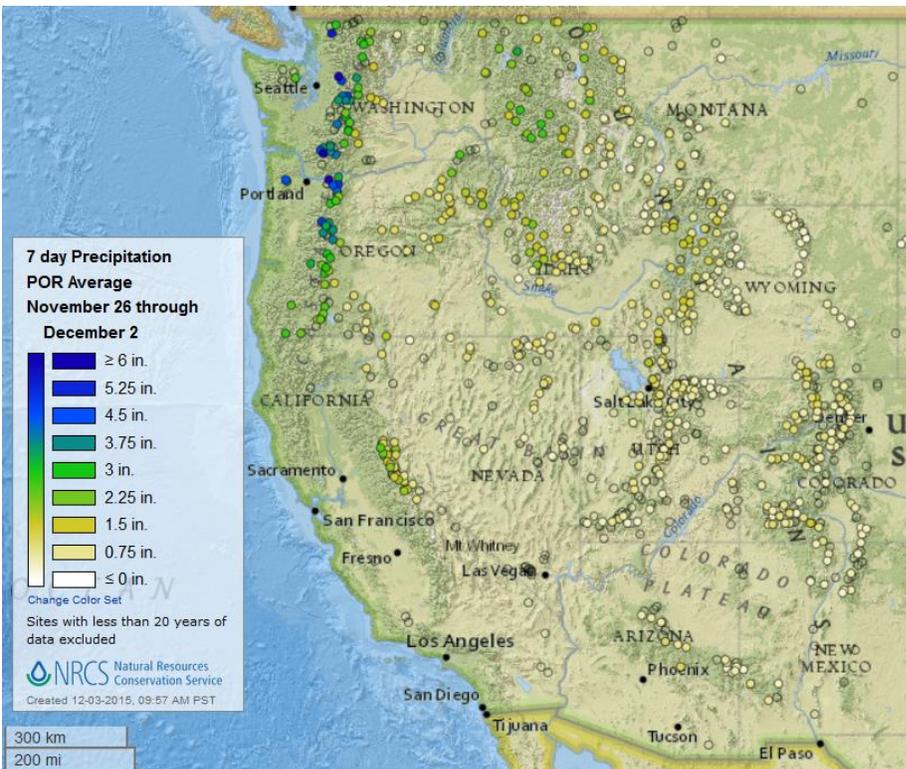
The National Water Center's current [snow depth](#) map for the continental U.S. shows several areas of significant snow accumulation from the Cascades east across the Pacific Northwest, Sierra Nevada, and the Rockies. Snow also extends from the Rockies to much of the northern Plains east to the Great Lakes, parts of the Appalachian Mountains, northern New York, and northern Maine.

## Precipitation

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

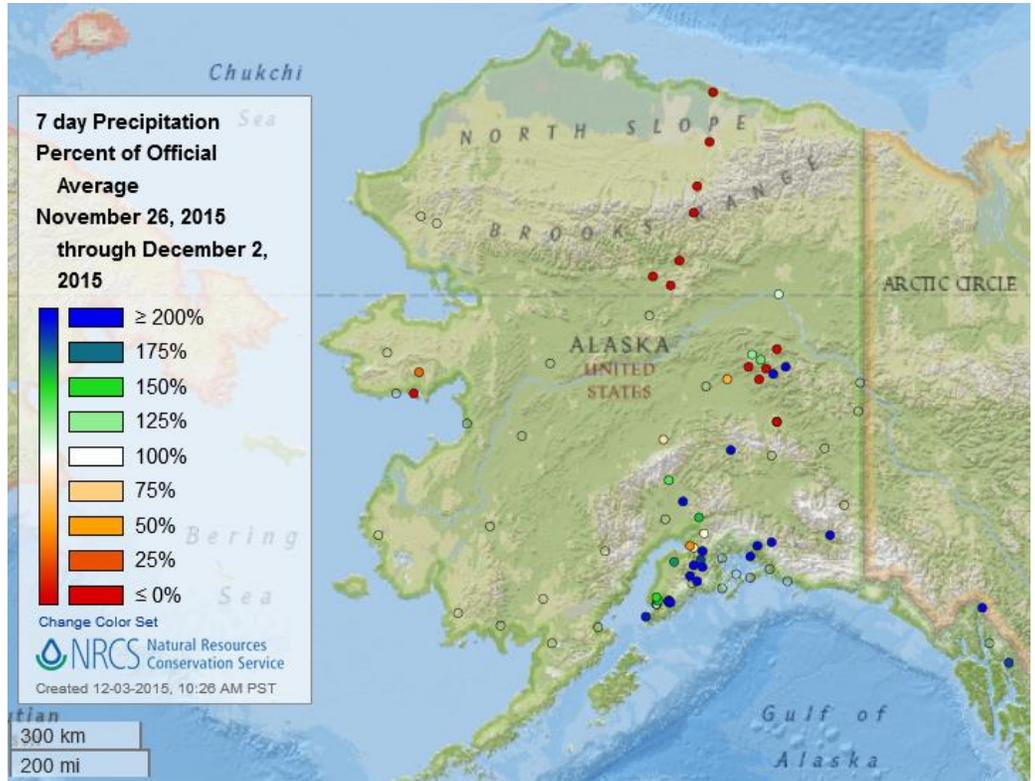


The 7-day [precipitation percent of average](#) map shows primarily below average to average conditions in much of the West. Above average precipitation was reported in southern Colorado and a few other isolated above average precipitation events were reported elsewhere.

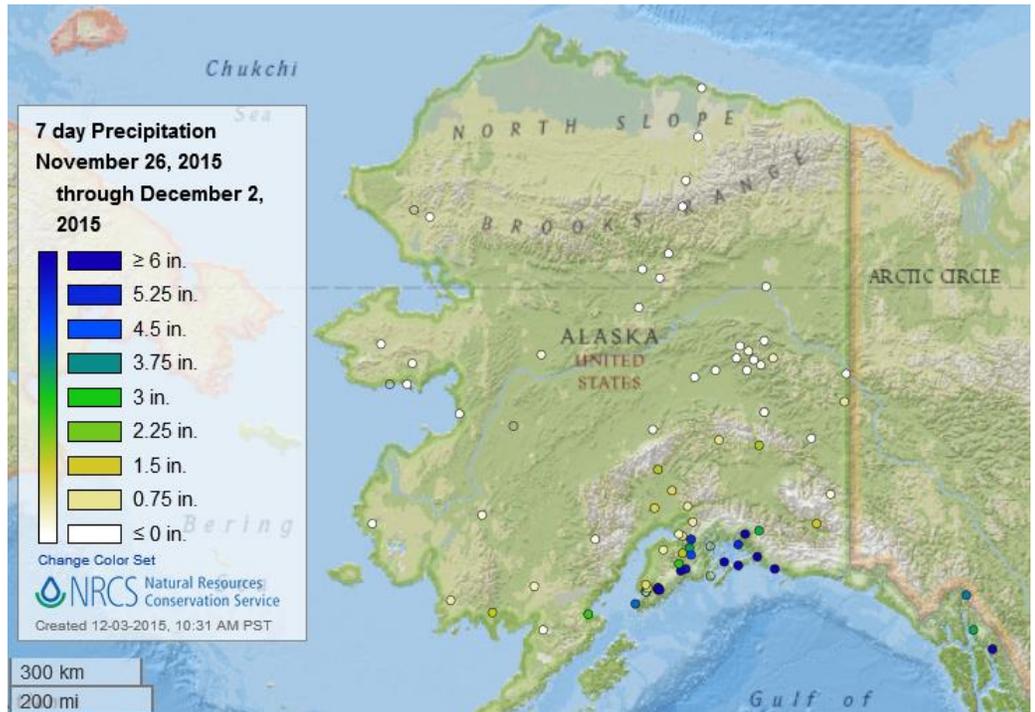


The [total precipitation](#) map shows the largest amount of precipitation was received in the Cascades of Oregon and Washington where above 3 to greater than 6 inches fell. A few stations in the northern Rockies also reported nearly 3 inches. Much of the rest of the West reported near or less than 1 inch for the week.

The Alaska [precipitation percent of average](#) map for the last seven days shows central and northern Alaska had little to no precipitation while many stations in the central and southern part of the state were above average to greater than 200 percent.



The Alaska 7 Day [total precipitation](#) map shows that amounts were mostly near zero for the week for most interior stations. Several stations across the southern and southeast region of the state received 3.5 to more than 6 inches of precipitation.



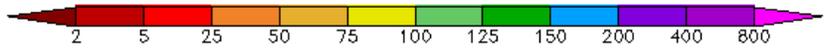
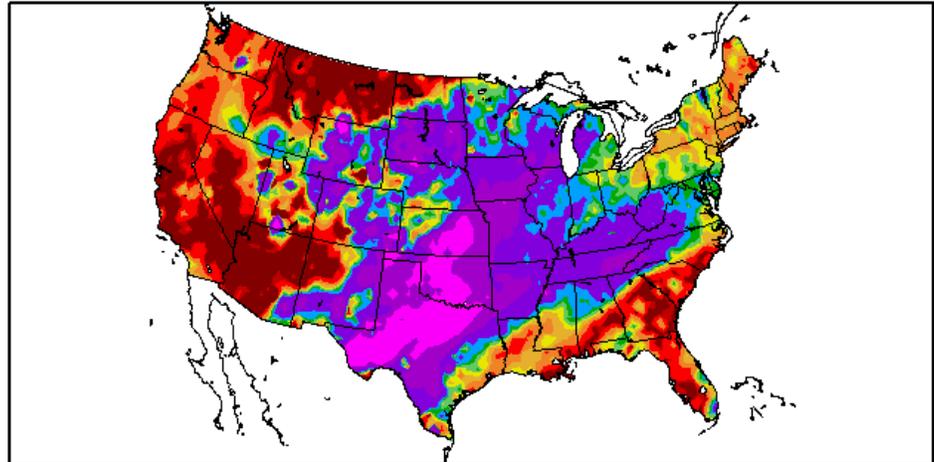
Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

The [percent of normal precipitation](#) map shows well above normal precipitation throughout the entire midsection of the country.

Noticeably dry areas are across California to the Southwest, the Northwest into the northern Great Plains, the Northeast, and in the Southeast.

Percent of Normal Precipitation (%)  
11/26/2015 – 12/2/2015

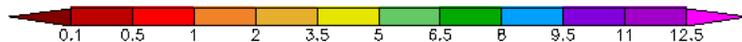
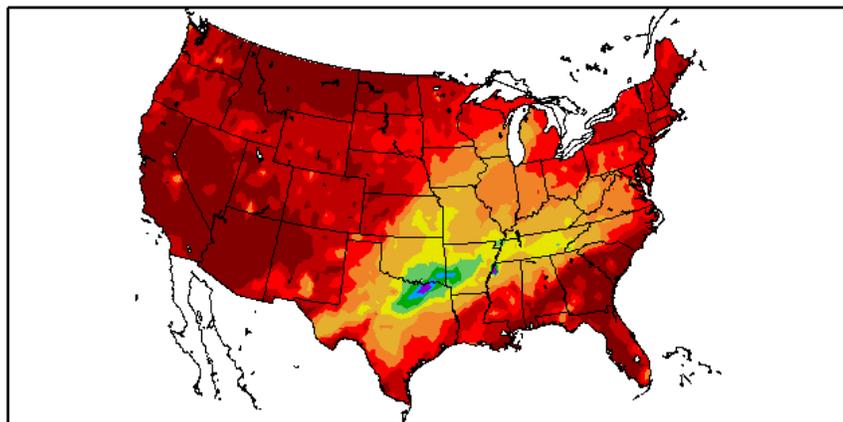


Generated 12/3/2015 at HPRCC using provisional data.

Regional Climate Centers

The [7-day total precipitation](#) map prominently shows the highest amounts of precipitation in a bullseye with a center of over 12 inches in northeast Texas. Lesser but significant amounts fell in southern Oklahoma and into Arkansas, while the storm effects of over an inch was widespread in the central U.S. Much of the rest of the country has less than an inch for the week.

Precipitation (in)  
11/26/2015 – 12/2/2015



Generated 12/3/2015 at HPRCC using provisional data.

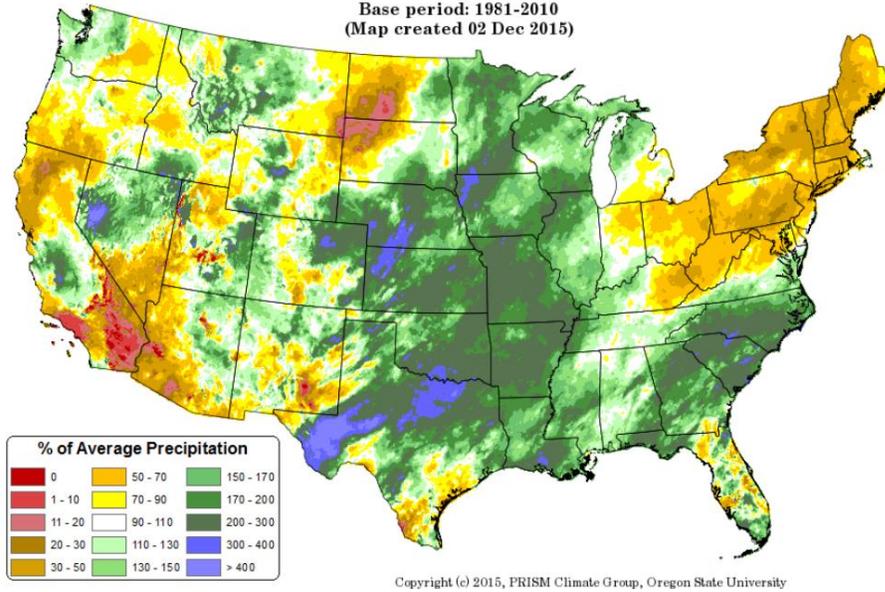
Regional Climate Centers

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

Source: PRISM

**Total Precipitation Anomaly: November 2015**

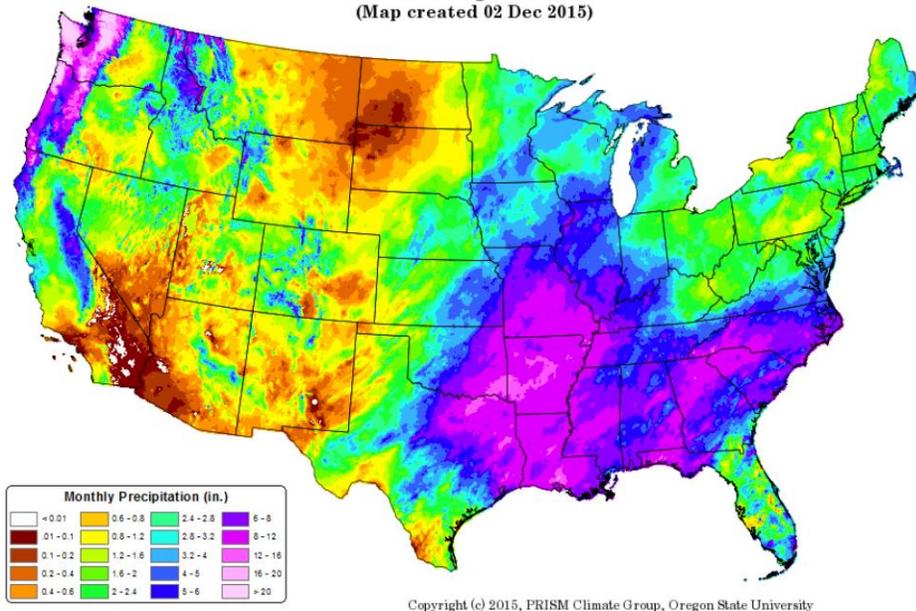
Period ending 30 Nov 2015  
Base period: 1981-2010  
(Map created 02 Dec 2015)



For the month of November, the national [precipitation percent of average](#) map shows the heaviest amounts of precipitation in Texas and much of the Midwest, the Southeast and western Nevada. The rest of the country received less than average precipitation, and southern California and a smaller area in the Northern Plains had little to no precipitation.

**Total Precipitation: November 2015**

Period ending 30 Nov 2015  
(Map created 02 Dec 2015)

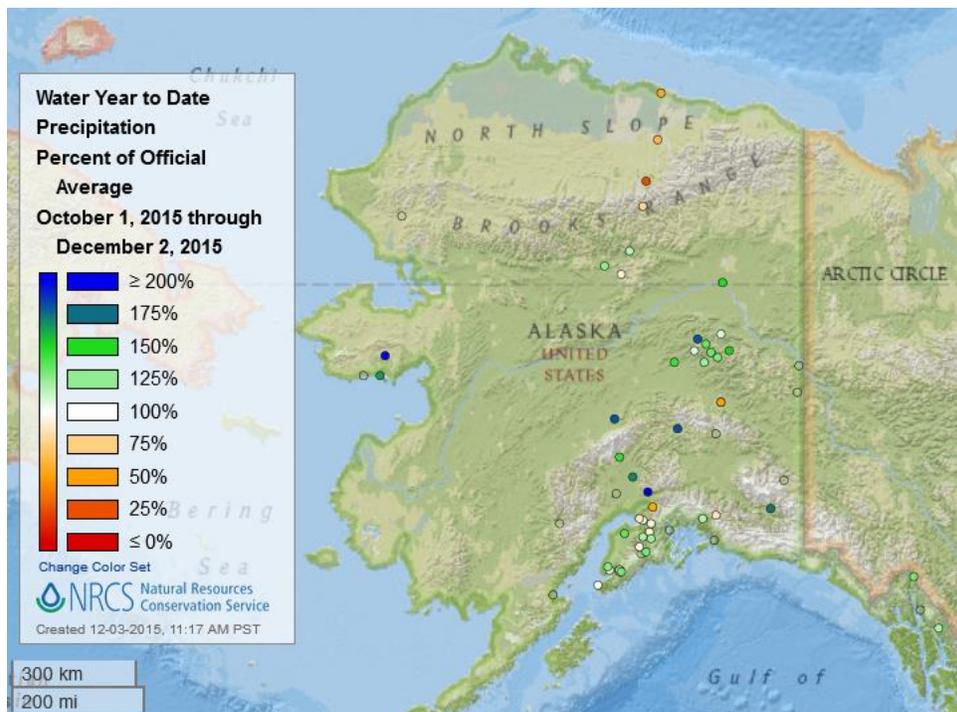
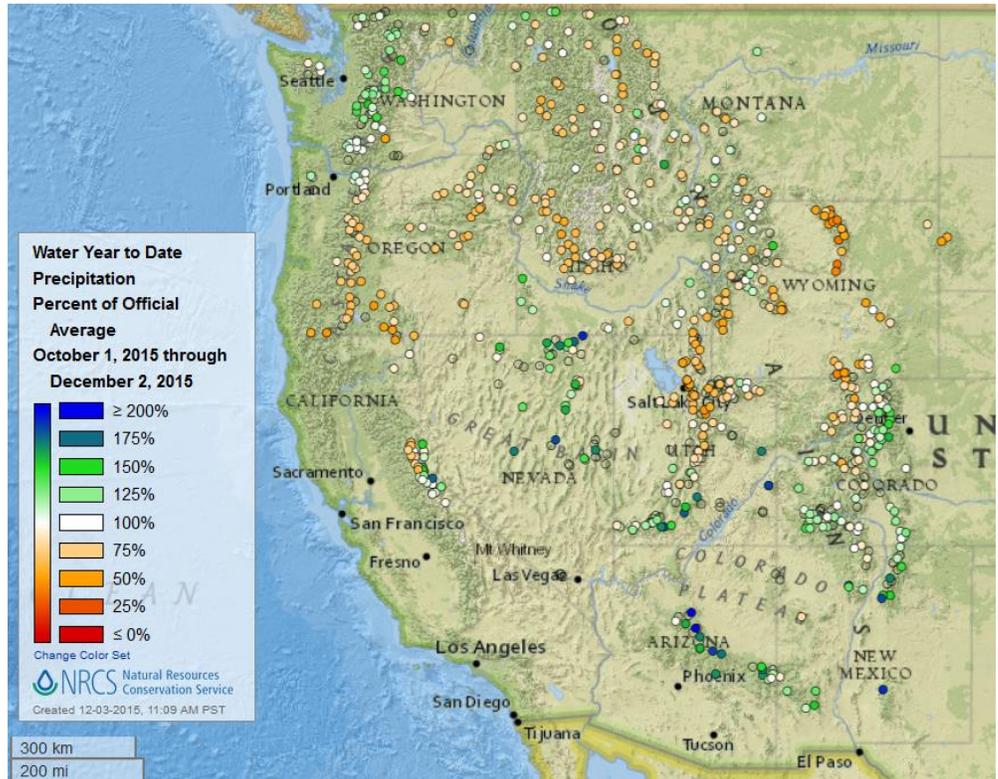


For November, the month-to-date [total precipitation map](#) shows very heavy precipitation across the Southeast as well as the Pacific Northeast. The driest areas this month were in the northern Great Plains, southern California and parts of the Southwest.

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

For the [2016 Water Year](#) that began on October 1, 2015, the southern areas are predominantly above average. Most of the rest of the West is near to below average with the exception of the Pacific Northwest.

During this early part of the water year, the station percent of averages can change rapidly.



The Alaska water year-to-date [precipitation percent of average](#) map shows a mix of above, near, and below average sites throughout the state.

During this early part of the water year, the station percent of averages can change rapidly.

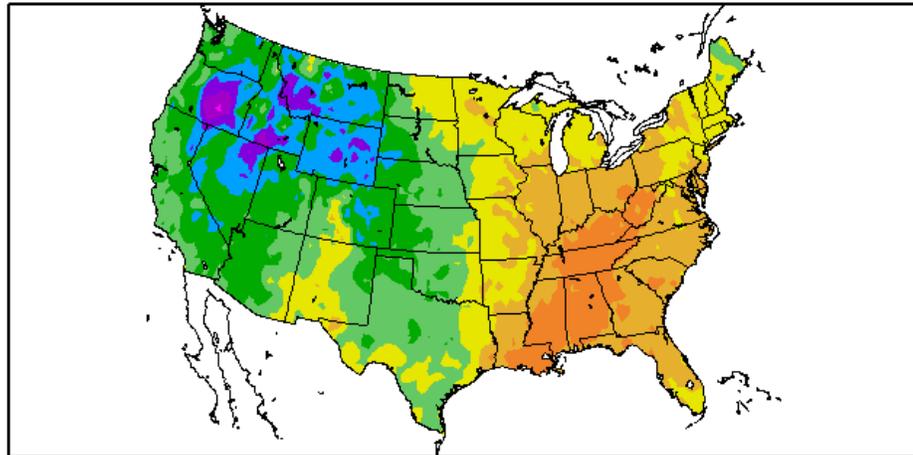
## Temperature

Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

The map of the [average temperature anomalies](#) for the past week shows a pattern of a warm temperatures in the East and a cool to cold temperatures in the West. The coolest temperatures were reported in eastern Oregon with anomalies greater than 25 degrees.

Departure from Normal Temperature (F)  
11/26/2015 – 12/2/2015



Generated 12/3/2015 at HPRCC using provisional data.

Regional Climate Centers

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

Source: PRISM

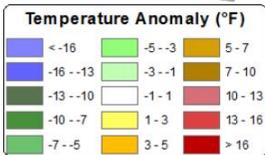
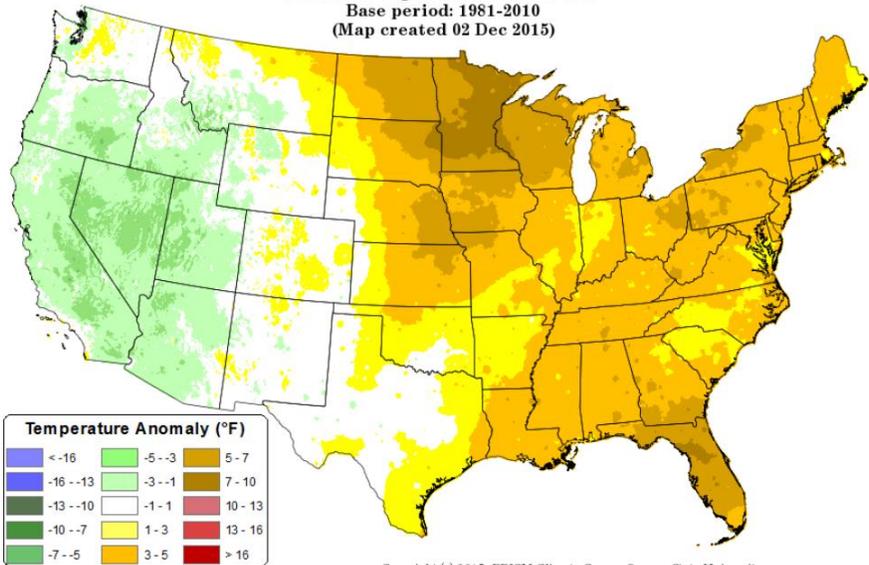
For November 2015, the national [daily mean temperature anomaly](#) map shows well above normal temperatures in the East. Slightly cooler than normal conditions were reported in much of the West.

Daily Mean Temperature Anomaly: November 2015

Period ending 7 AM EST 30 Nov 2015

Base period: 1981-2010

(Map created 02 Dec 2015)

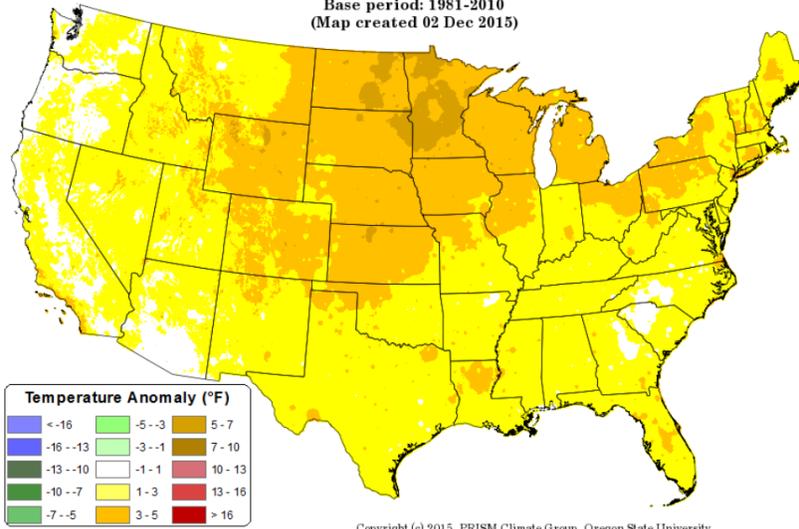


Copyright (c) 2015, PRISM Climate Group, Oregon State University

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

Source: PRISM

Daily Mean Temperature Anomaly: September 2015 - November 2015  
 Period ending 7 AM EST 30 Nov 2015  
 Base period: 1981-2010  
 (Map created 02 Dec 2015)



The September through November national [daily mean temperature anomaly](#) map shows most of the country reporting conditions slightly above average. The largest warm anomaly for the past 3 months was in the upper Midwest, centered in Minnesota.

Copyright (c) 2015, PRISM Climate Group, Oregon State University

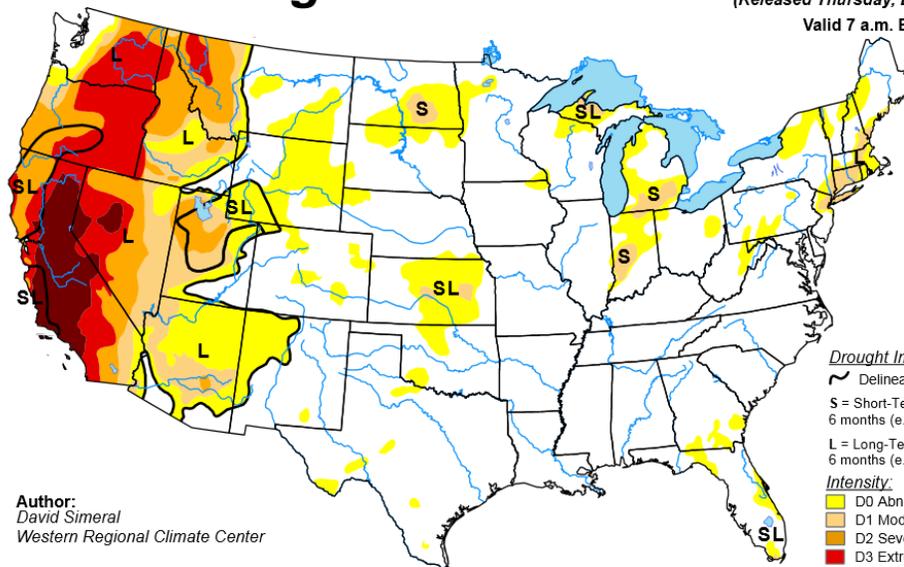
## Drought

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

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

## U.S. Drought Monitor

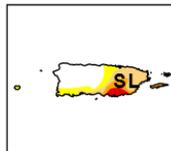
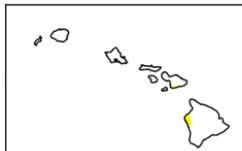
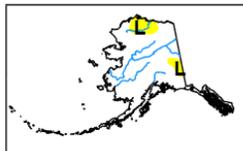
December 1, 2015  
 (Released Thursday, Dec. 3, 2015)  
 Valid 7 a.m. EST



Author:  
 David Simeral  
 Western Regional Climate Center

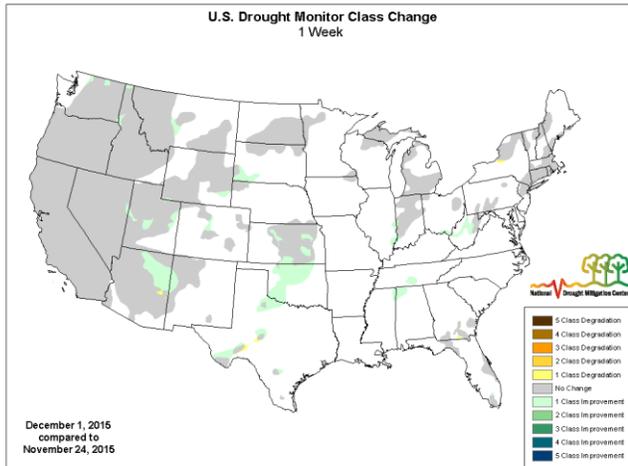
**Drought Impact Types:**  
 ~ Delineates dominant impacts  
 S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)  
 L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)  
**Intensity:**  
 D0 Abnormally Dry  
 D1 Moderate Drought  
 D2 Severe Drought  
 D3 Extreme Drought  
 D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

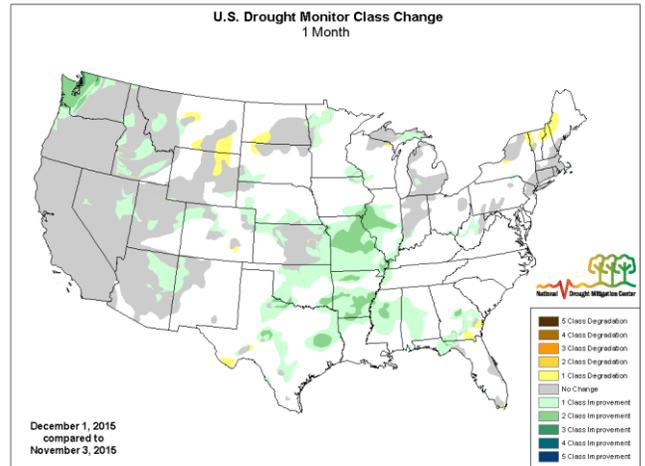


USDA  
 National Drought Mitigation Center  
<http://droughtmonitor.unl.edu/>

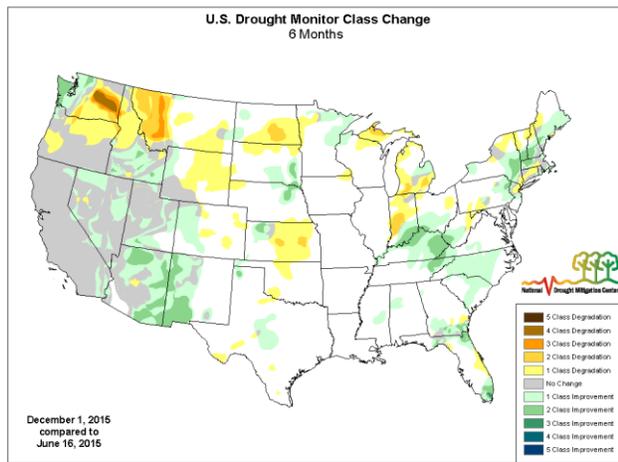
## Changes in Drought Monitor Categories over Time



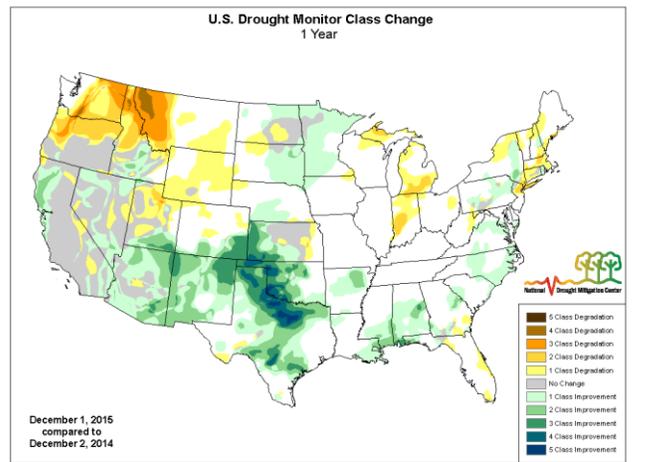
<http://droughtmonitor.unl.edu>



<http://droughtmonitor.unl.edu>



<http://droughtmonitor.unl.edu>



<http://droughtmonitor.unl.edu>

**Drought conditions** have improved in much of the country, especially in the south-central U.S. The West has shown some recent improvement, but long-term drought persists.

### Current National [Drought Summary](#), December 1, 2015

Author: David Simeral, Western Regional Climate Center

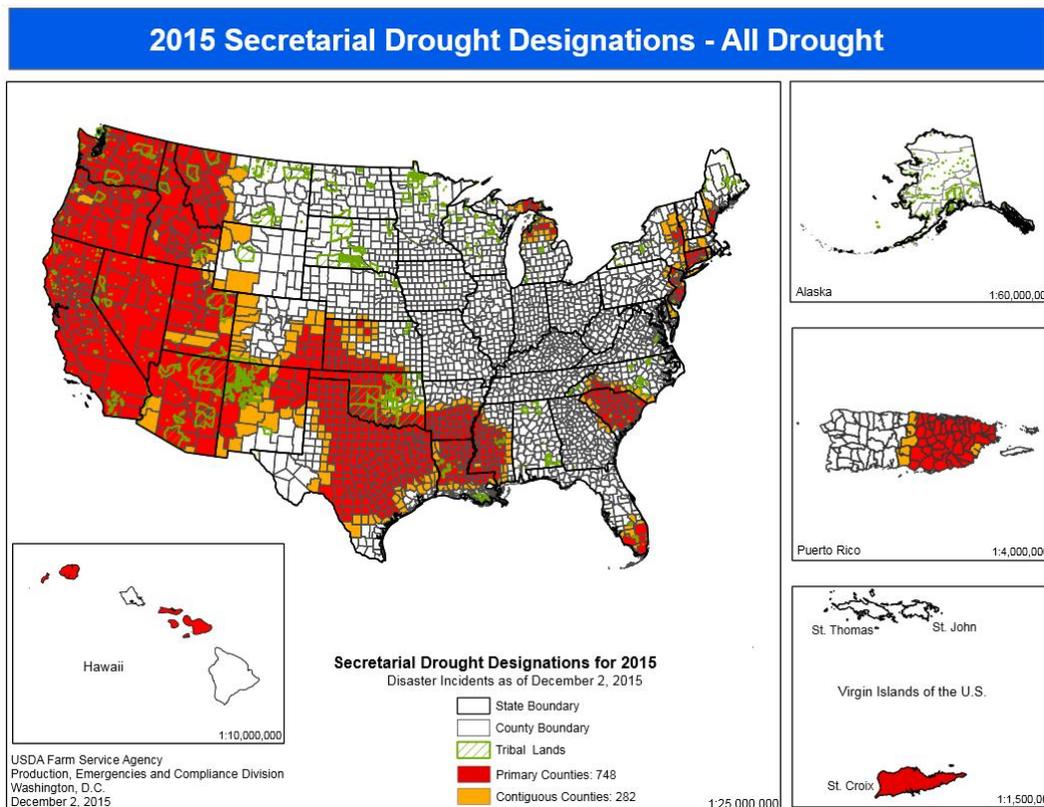
“This U.S. Drought Monitor week saw improvements in drought conditions across parts of the Midwest, South, Southern Plains, and portions of the West. Starting late last week, a broad, slow-moving frontal system impacted the Central and Southern Plains as well as Texas. The system delivered mixed precipitation (freezing rain, sleet) including locally heavy rainfall accumulations (two-to-eight plus inches) to portions of Oklahoma and Texas – thus, eliminating remaining areas of drought on the map in both states. Moving northward, areas of the Northern Plains and portions of the Upper Midwest received locally heavy snowfall accumulations (six-to-ten inches) including eastern South Dakota while portions of Minnesota received two-to-eight inches of snow. In the West, conditions have steadily improved during the past twelve months in the desert Southwest leading to removal of remaining areas of drought on the map in northwestern New Mexico as well as continued improvement in northeastern Arizona. Removal of the remaining areas of drought in New Mexico marked the first time since November 23, 2010 that New Mexico was drought-free on the map. Despite overall improvements in the region, lingering longer-term hydrologic impacts remain in the managed reservoir systems including Arizona’s Salt and Verde River as well as the Lower Rio Grande of New Mexico.

## Water and Climate Update

Elsewhere in the West, cold temperatures dominated during the past week with temperatures plummeting from five-to-twenty degrees below normal across the Far West, Great Basin, Northern Rockies, and western portions of the Southwest. In California and Nevada, the snow season has begun favorably with Natural Resource Conservation Service (NRCS) SNOTEL stations in the Central Sierras, Ruby Mountains, and the headwater region of the Humboldt River Basin in northeastern Nevada currently reporting average to above average snowpack conditions. In the Cascades of Oregon and Washington and the Northern Rockies, snowpack conditions are below normal.”

Detailed regional drought narratives for the week are [here](#).

## 2015 USDA Drought Designations



[Drought Designations as of November 25, 2015](#)

[USDA Disaster and Drought Information](#)

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

## Highlighted Drought Resources

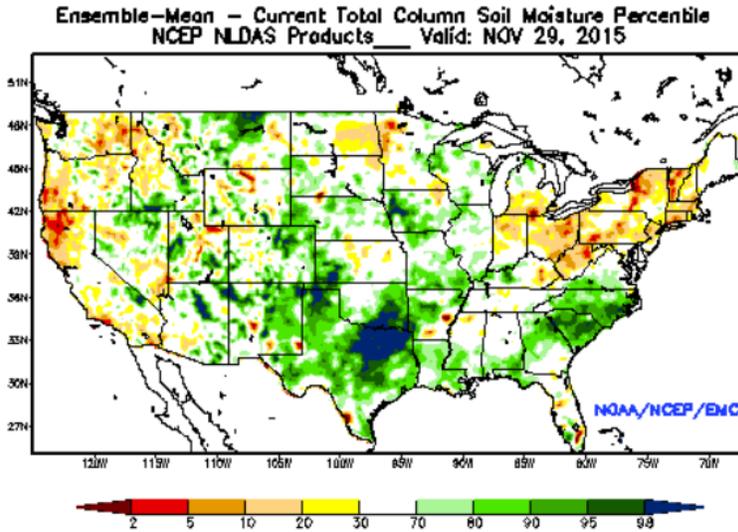
[Drought Impact Reporter](#)

[Quarterly Regional Climate Impacts and Outlook](#)

[U.S. Drought Portal Indicators and Monitoring](#)

## Other Climatic and Water Supply Indicators

### Soil Moisture

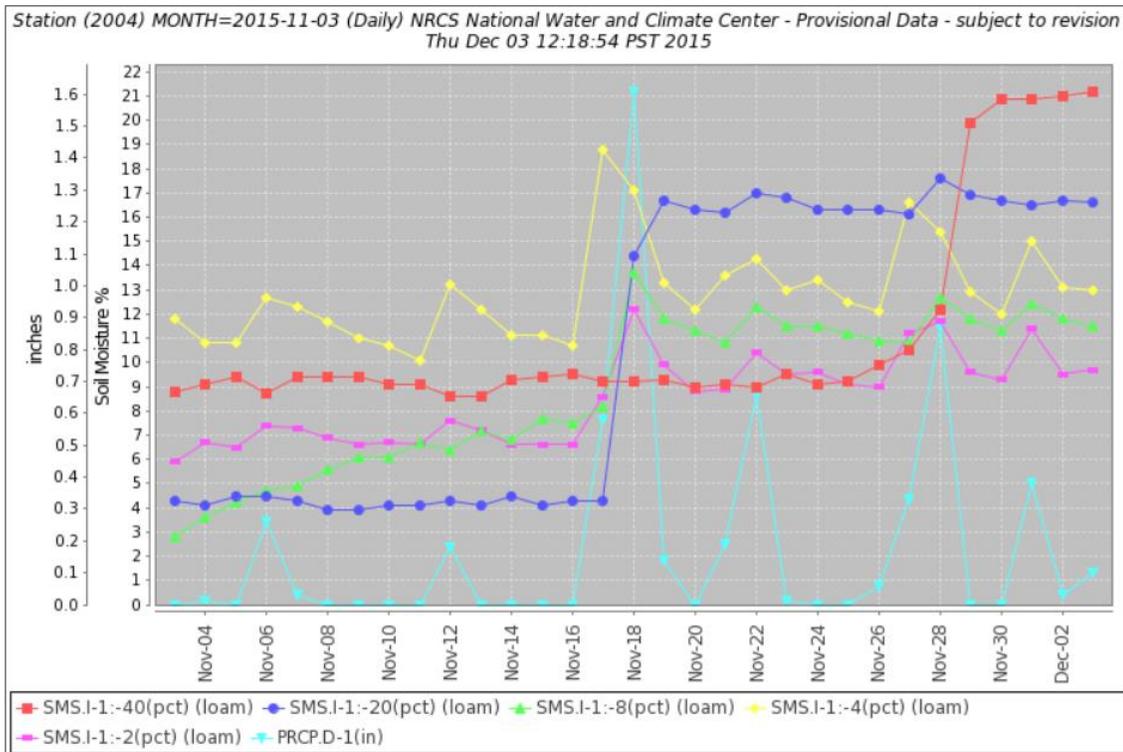


The modeled [soil moisture percentiles](#) as of November 20, 2015 show scattered areas of dryness in the far West, the upper Midwest, New England, and Florida.

Above average soil moisture was modeled in Texas, the Gulf Coast, and the Southeast. The area with the wettest conditions was in the Carolinas.

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

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



This graph shows soil moisture (at 2-, 4-, 8-, 20-, and 40-inch depths) and precipitation for the last 30 days at the [Mason #1 \(2004\)](#) SCAN site in Illinois. Soil moisture response to the many precipitation events is noticeable at all depths for the storm events earlier in the month, and it is notable that the 40 inch depth response was a delayed from the accumulated precipitation.

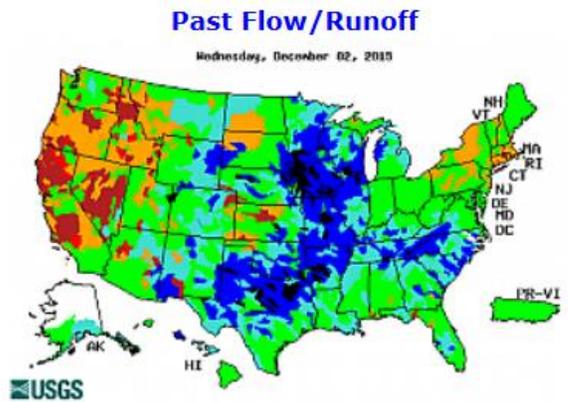
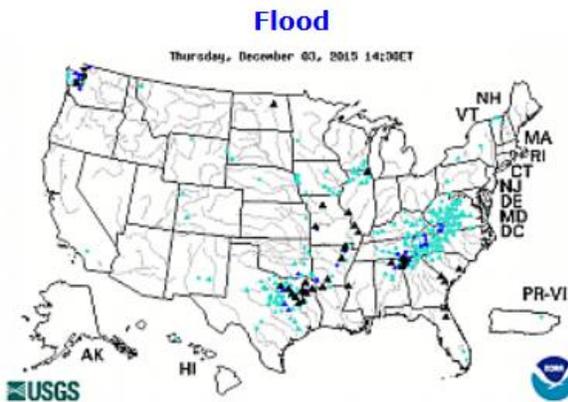
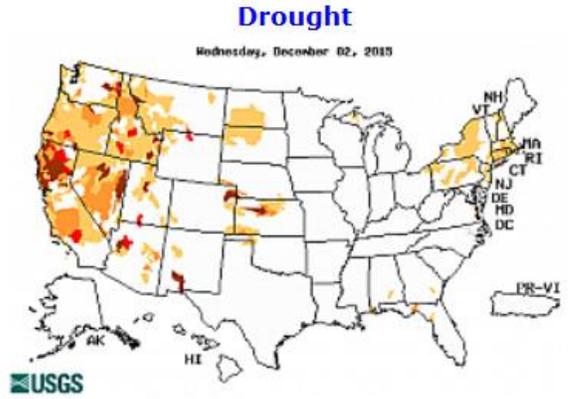
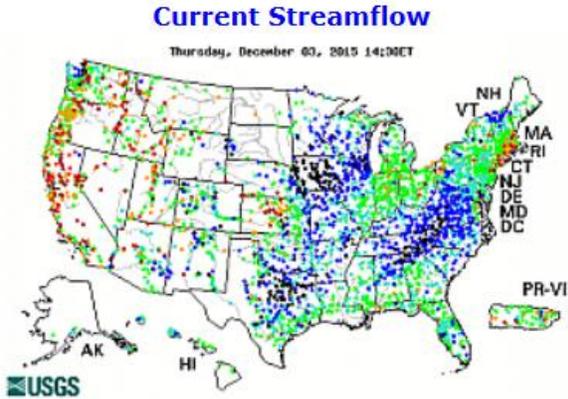
**Soil Moisture Data Portals**

[CRN Soil Moisture](#)

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

**Streamflow**

Source: USGS



**Streamflow** is notably high in the Midwest, lower Mississippi River Valley, and the Southeast. Flooding is occurring at many stations in the Midwest and from Texas to South Carolina.

Select any individual map to enlarge and display a legend.

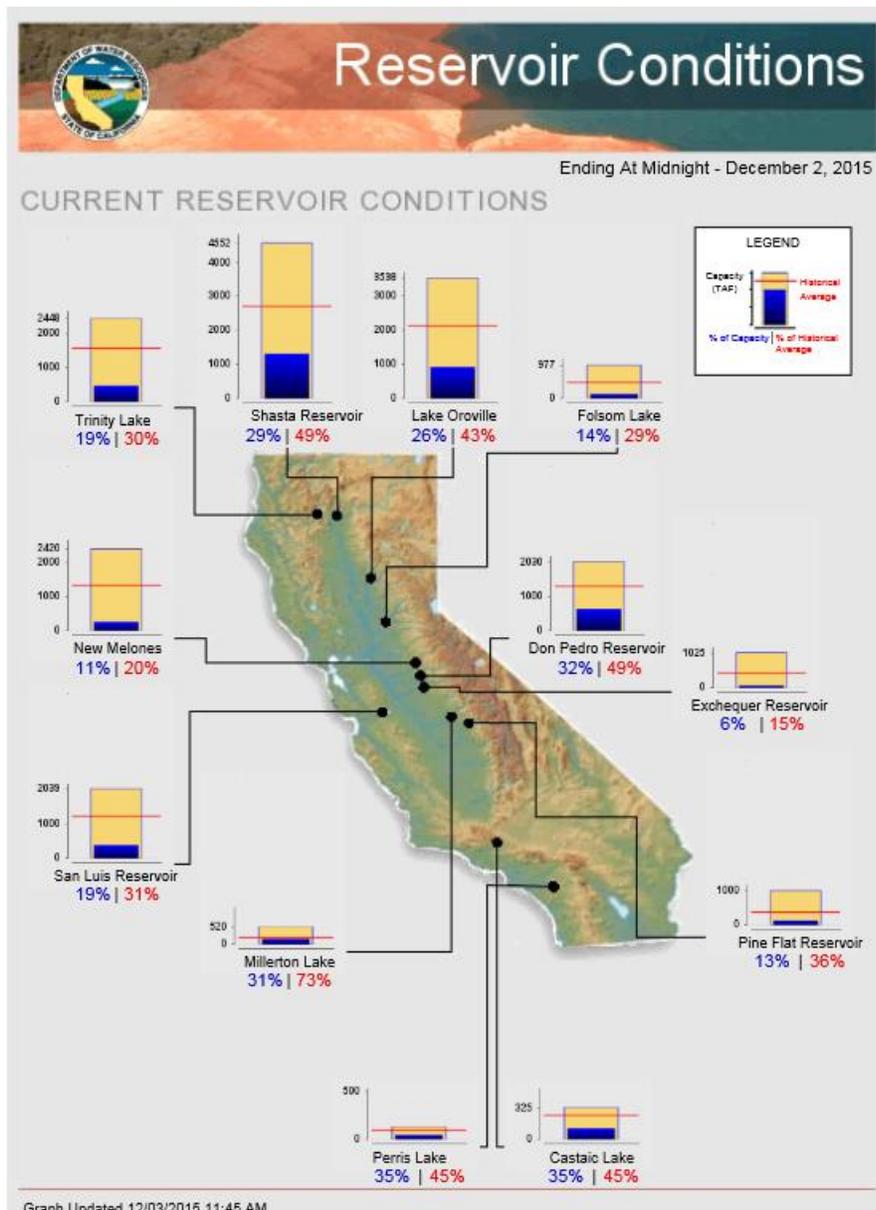
## Current Reservoir Storage

### [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

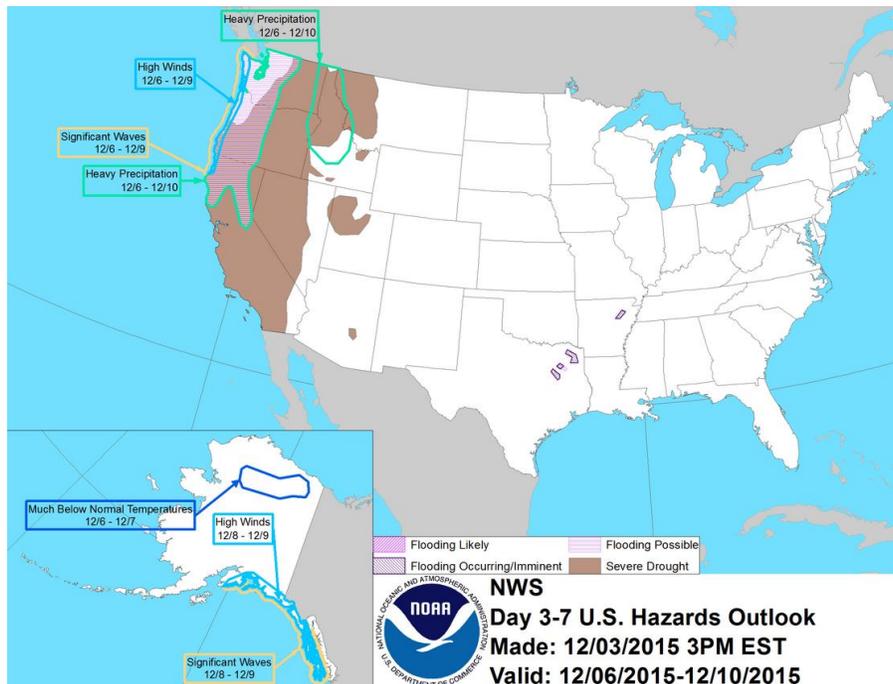
Author: Brad Rippey, Agricultural Meteorologist, USDA/OCE/WAOB

**National Outlook, December 3, 2015:** “During the next several days, dry weather will cover much of the U.S., accompanied by a warming trend. The warmest weather, relative to normal, will stretch from the northern Plains into the Northeast. Meanwhile, showers will linger for several days across southern Florida, where 5-day rainfall totals could reach 2 to 5 inches. By early next week, rain may begin to spread northward along the Atlantic Coast. Elsewhere, stormy weather will persist in the Northwest. Five-day totals of 4 to 12 inches or more can be expected along and near the Pacific Coast as far south as northwestern California. Drought-easing Northwestern precipitation should spread as far inland as the northern Rockies. The NWS 6- to 10-day outlook for December 8 – 12 calls for above-normal temperatures nationwide, with the greatest likelihood of warmer-than-normal weather covering the Great Lakes region. Meanwhile, near- to above-normal precipitation across most of the U.S. will contrast with drier-than-normal conditions in the lower Great Lakes region. The Northwest has the greatest odds of experiencing wet weather.”

### National Weather Hazards

The outlook for [weather hazards](#) over the next week includes heavy rain in the Pacific Northwest with accompanied high wind and significant waves and areas of likely and possible flooding (12/6-9). An additional area of heavy precipitation is expected in the northern Rockies (12/6-10). Areas of occurring flooding are identified in Texas and Arkansas.

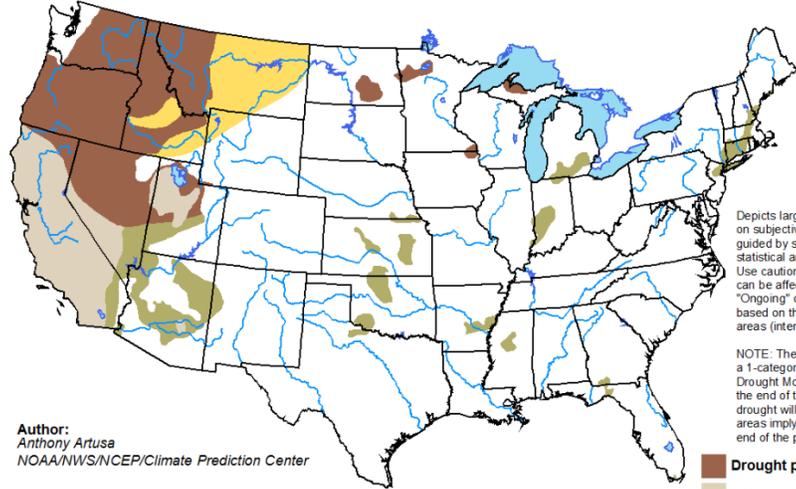
In Alaska, high winds and significant waves are expected in Southeast (12/8-9) and cold temperatures in the north (12/6-7).



**Seasonal Drought Outlook**

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

**U.S. Seasonal Drought Outlook** Valid for November 19 - February 29, 2016  
Drought Tendency During the Valid Period  
Released November 19, 2015



Author:  
Anthony Artusa  
NOAA/NWS/NCEP/Climate Prediction Center

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).

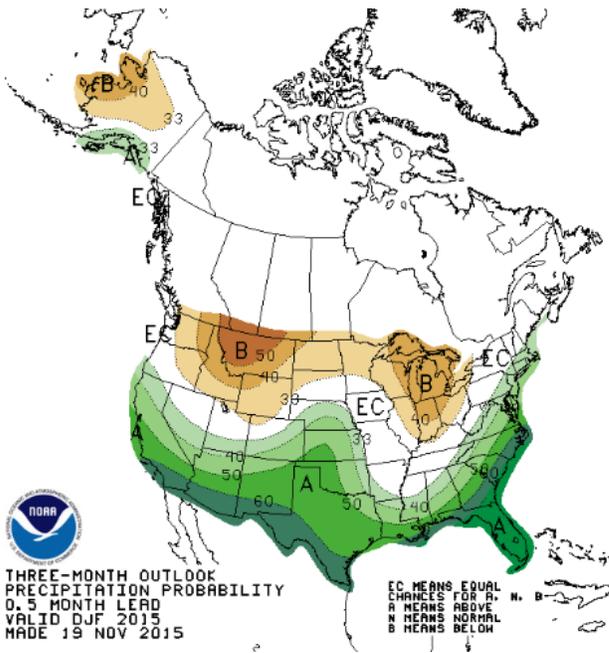
- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



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

**NWS Climate Prediction Center 3-Month Outlook**

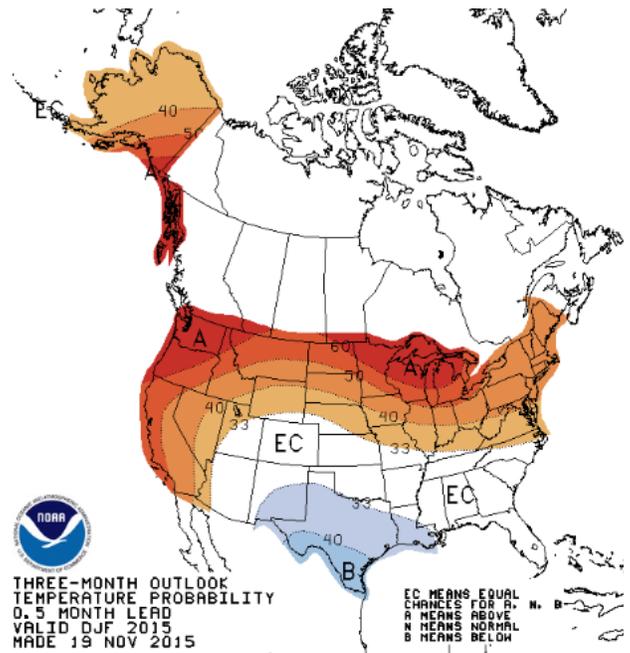
Precipitation



THREE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0.5 MONTH LEAD  
VALID DJF 2015  
MADE 19 NOV 2015

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

Temperature



THREE-MONTH OUTLOOK  
TEMPERATURE PROBABILITY  
0.5 MONTH LEAD  
VALID DJF 2015  
MADE 19 NOV 2015

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

### Outlook Summary

NWS Climate Prediction Center:

“[The December-January-February \(DJF\) 2015-2016 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 Southeast, central/southern Plains, Gulf Coast states, and parts of the east coast. Higher probabilities (above 50 percent) are shifted north across California from the previous outlook due to the strength of the ongoing El Niño. The highest probabilities (above 70 percent) for above-median precipitation are forecast across the Florida peninsula and DJF 2015-16 through JFM 2016 which typically has the strongest wet signal during El Niño. 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 across the Ohio Valley typically peaks during the JFM 2016 season during El Niño.”

“[The December-January-February \(DJF\) 2015-2016 temperature outlook](#). The largest change in the temperature outlook from the previous one released on October 15 is the expectation that below-normal temperatures are slightly less likely for the Southeast from DJF 2015-16 through MAM 2016. Although statistical models such as the CA, CCA, and SMLR continue to favor below-normal temperatures across the Southeast, especially during JFM 2016, the latest dynamical models have a notable warming trend since last month across the Southeast. The NMME temperature forecast is a good compromise and the official outlook for DJF 2015-16 and JFM 2016 is generally similar to its guidance across the southern tier of the continental U.S. Due to the strength of the current El Niño, above-normal temperatures are no longer favored for the Aleutians during DJF 2015-16 and JFM 2016. 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 during DJF 2015-16. 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](#).