



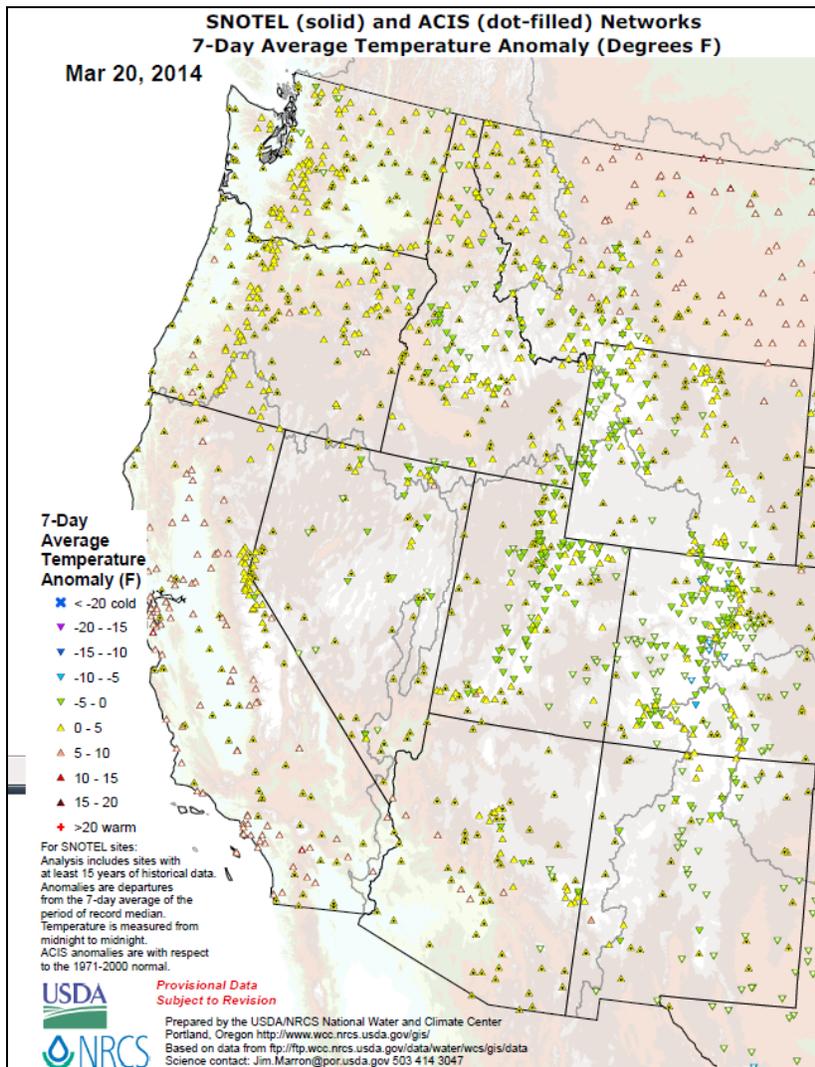
Natural Resources Conservation Service
 P.O. Box 2890
 Washington, D.C. 20013



Weekly Snowpack / Drought Monitor Update March 20, 2014

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Temperature



SNOTEL and ACIS [7-day temperature anomaly](#) shows temperatures below normal across the Interior West and Central Rockies. Elsewhere, temperatures were above normal; especially in California and Montana.

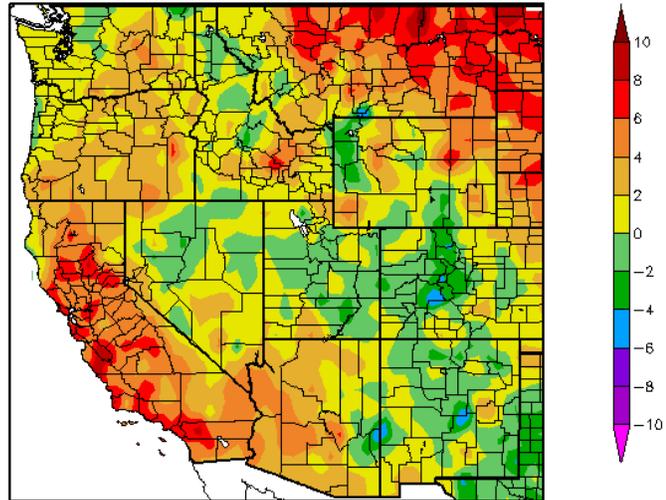
Click on most maps in this report to enlarge and see latest available update.

Weekly Snowpack and Drought Monitor Update Report

[ACIS](#) 7-day average temperature anomalies, ending March 19, show the greatest negative temperature departures over parts of the Rockies ($<-4^{\circ}\text{F}$). The greatest positive temperature departures occurred over parts of California, Montana, and the Dakotas ($>+8^{\circ}\text{F}$).

Also, see [Dashboard](#) and the [Westwide Drought Tracker](#).

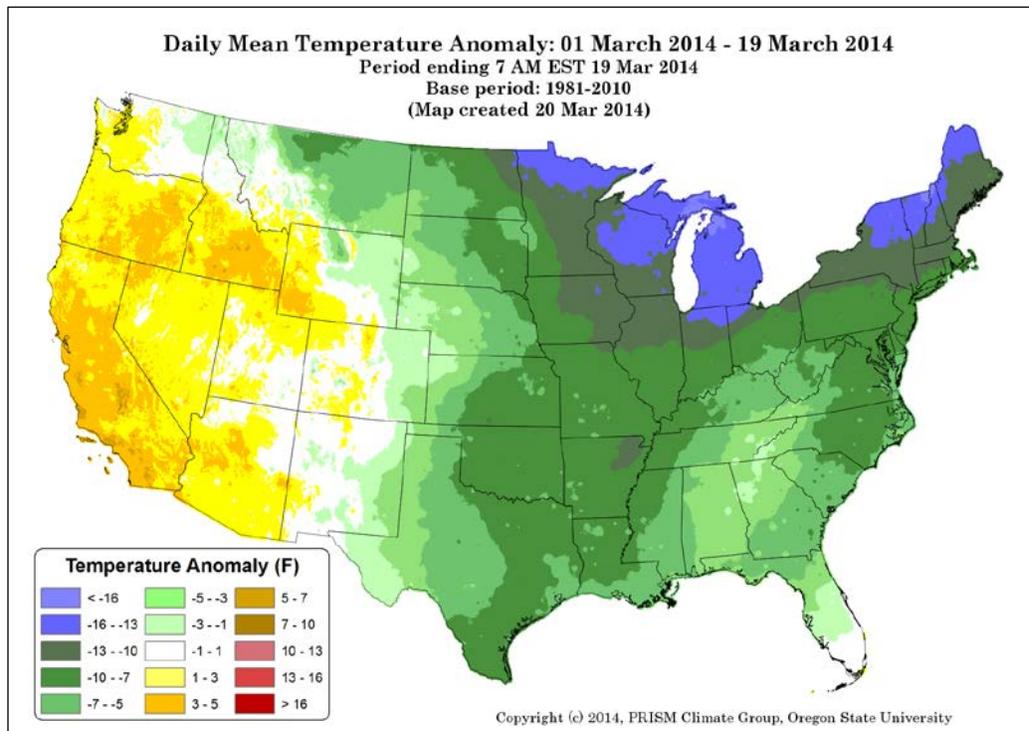
Departure from Normal Temperature (F)
3/13/2014 – 3/19/2014



Generated 3/20/2014 at HPRCC using provisional data.

Regional Climate Centers

This preliminary [PRISM](#) temperature map contains all available network data, including SNOTEL data, and will be updated periodically as additional data become available and are quality controlled.

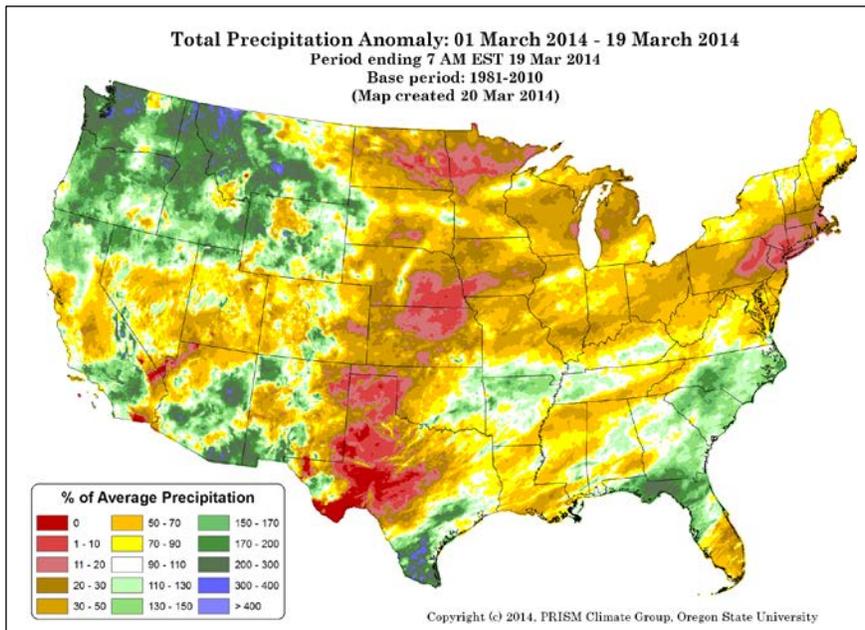
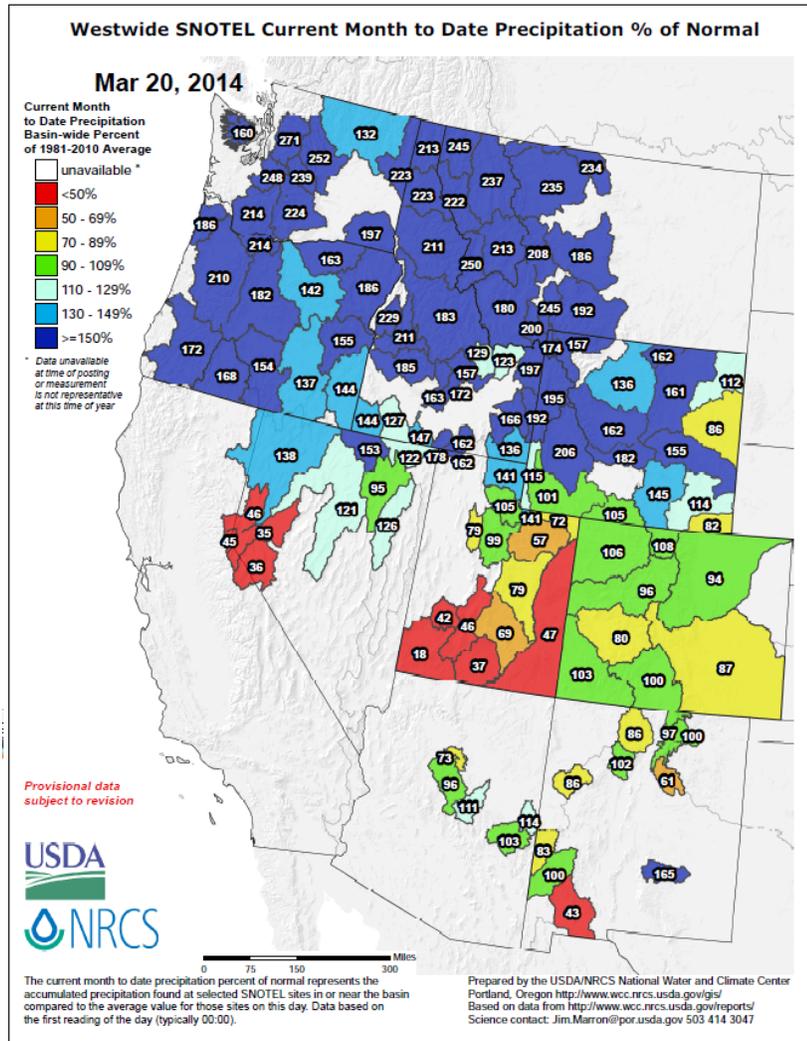


Thus far, March 2014 temperatures have been exceptionally cold over the northeastern interior of the nation ($<-13^{\circ}\text{F}$ departures). Significantly warmer than normal temperatures have been confined to California, Oregon, Idaho, northwestern Nevada, southwestern Wyoming and portions of Arizona ($>+5^{\circ}\text{F}$).

Weekly Snowpack and Drought Monitor Update Report

Precipitation

SNOTEL [month to date](#) precipitation percent of normal shows the northern tier states of the West with well above normal values. Minimal precipitation has fallen over the western Great Basin, the southern and eastern drainages of Utah, and southwestern New Mexico. Near average amounts dominate much of Colorado and Arizona.



← The [March](#) pattern has been interesting. Areas with above normal amounts have dominated the western third of the country, southern Texas, and the southeastern states. Below normal amounts have impacted the Great Plains, Ohio Valley, southern Florida, and southern New England. Near normal conditions are noted over the Tennessee Valley and Georgia.

This preliminary daily PRISM precipitation map contains all available network data, including SNOTEL data, and is updated periodically as additional data become available and are quality controlled.

Weekly Snowpack and Drought Monitor Update Report

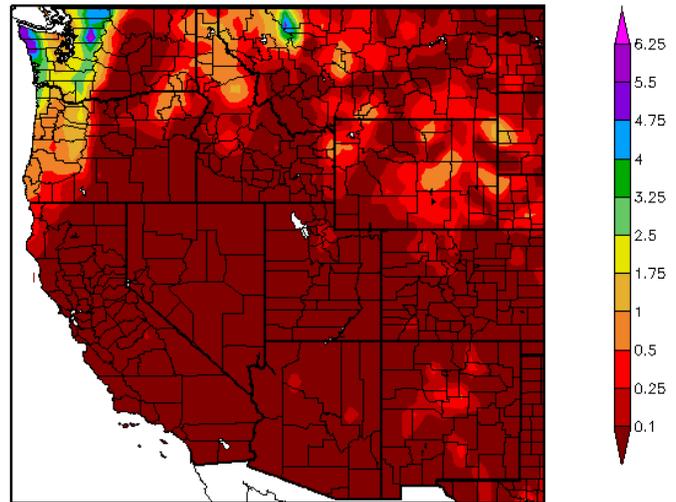
[ACIS 7-day](#) total precipitation amounts were greatest over the northern Cascades (five inches) and coastal mountains of northwestern Washington (six inches).

A secondary maximum area occurred over the northern Montana Rockies (four inches).

Elsewhere, where precipitation fell, amounts were generally less than one inch.

Large portions of the West had no measureable precipitation.

Precipitation (in)
3/13/2014 – 3/19/2014



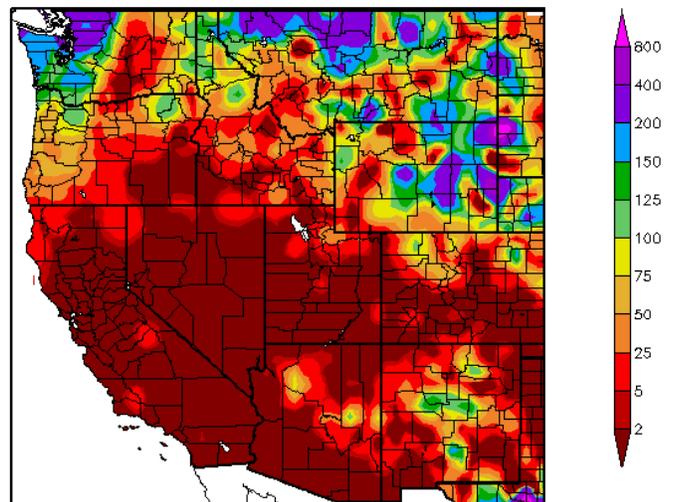
Generated 3/20/2014 at HPRCC using provisional data.

Regional Climate Centers

This [map](#) shows that several locales across the northern tier states of the West experienced surplus moisture. Also note that precipitation occurred over central New Mexico.

This week's map shows the continued La Niña precipitation pattern, with more precipitation falling generally at higher latitudes. →

Percent of Normal Precipitation (%)
3/13/2014 – 3/19/2014



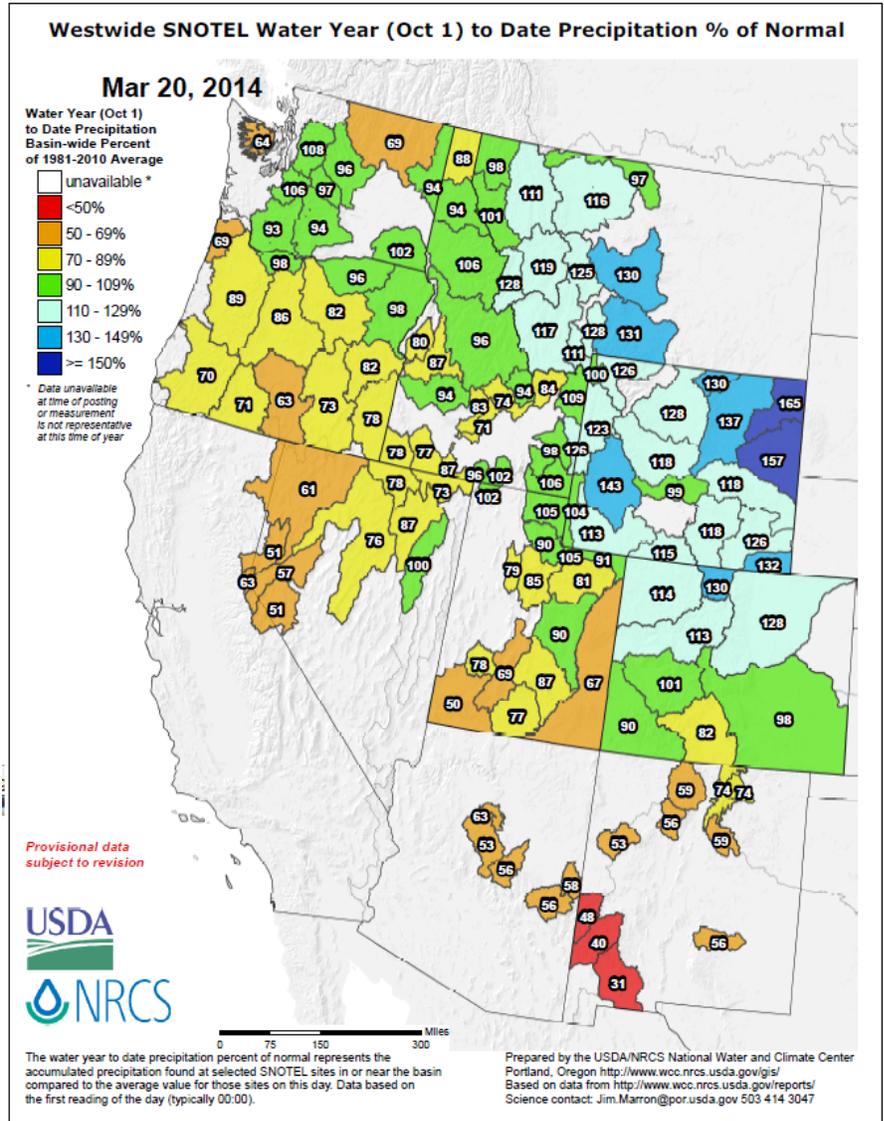
Generated 3/20/2014 at HPRCC using provisional data.

Regional Climate Centers

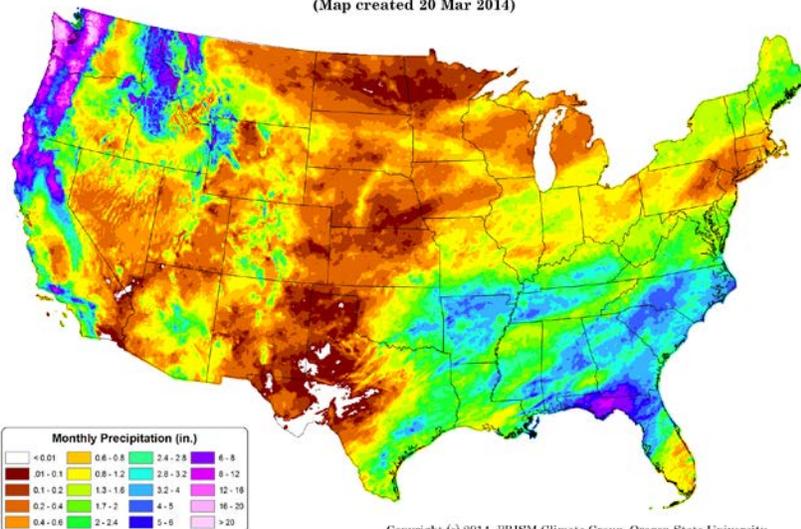
Weekly Snowpack and Drought Monitor Update Report

For the [2014 Water Year](#) that began on October 1, 2013, only central Montana, all of Wyoming, and northern Colorado are experiencing surpluses.

The largest deficits are located over northeastern Washington, southern Oregon, western Nevada, southern and eastern Utah, and much of Arizona and New Mexico.



Total Precipitation: 01 March 2014 - 19 March 2014
 Period ending 7 AM EST 19 Mar 2014
 (Map created 20 Mar 2014)



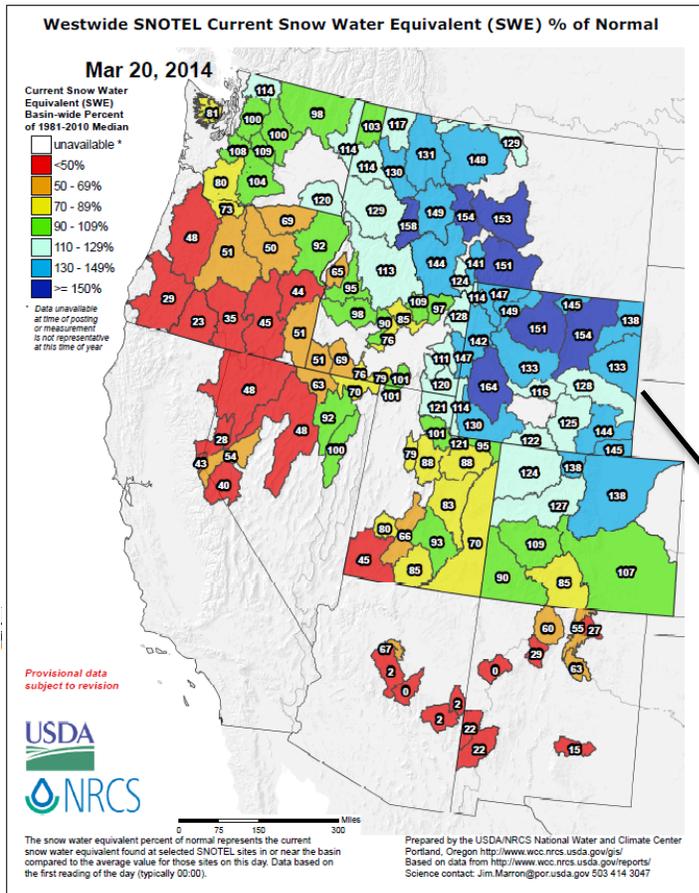
In this [PRISM](#) map, preliminary data show the **total precipitation** (rain and snow water equivalent) through March 19.

Note the large amounts of precipitation along the west coast states and northern Florida, with lesser amounts over the intermountain West, the Tennessee River Valley, and mid-Atlantic states.

Little, if any, precipitation has fallen over southwest-central Texas, central North Dakota, and southern Nevada.

Weekly Snowpack and Drought Monitor Update Report

Snow



Click to enlarge and update maps

Snow Water Equivalent (SWE) values are generally higher east of the Continental Divide, with the exception of New Mexico.

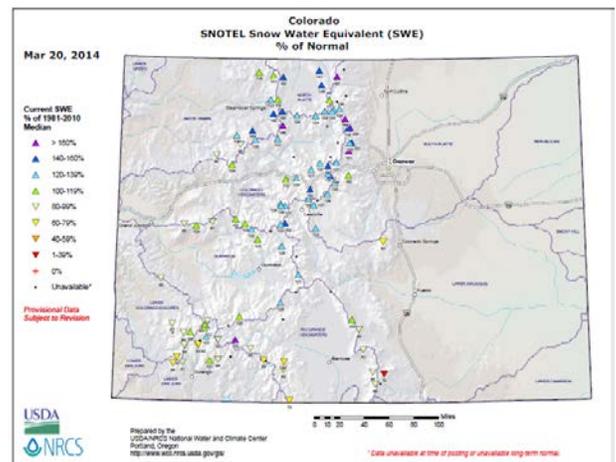
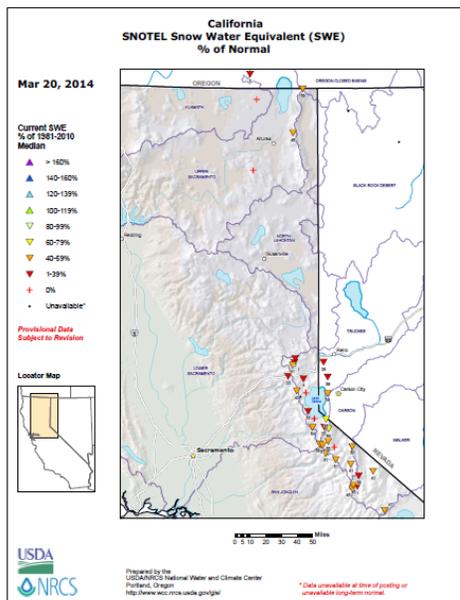
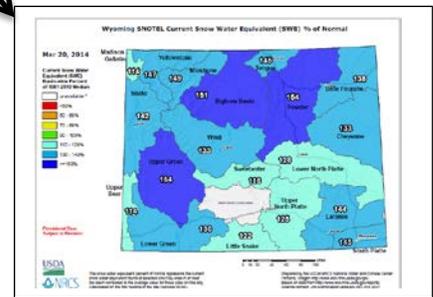
Snowpacks in the Sierra Nevada and southern half of the Cascades continue to be in severe deficits.

The all-important April 1 SWE date is quickly approaching and will be the best time to determine the water supply forecasts issued by the National Water and Climate Center for the spring and summer months.

See the latest:

- [National Snow Analysis](#)
- [West-Wide Water Supply Forecast Tables](#)

Wyoming's surplus SWE



Colorado SWE map by station.

See The Hard Work of Measuring Snowpack; and Evaluating snowpack's impact on water supply.

California-Nevada SWE map by station. Values continue to remain quite low for this late in the season.

Weekly Snowpack and Drought Monitor Update Report

Weather and Drought Summary

National Drought Summary – March 18, 2014

The following **Weather and Drought Summary** is provided by this week's NDMC Drought Author: Eric D. Luebehusen, Meteorologist, USDA - Office of the Chief Economist

USDM Map Services: (contains [archived maps](#))

For the contiguous 48 states, the U.S. Drought Monitor showed 37.48 percent of the area in moderate drought or worse, compared with 35.74 percent a week earlier. D4 stands at 1.64 percent.

For all 50 U.S. states and Puerto Rico, the U.S. Drought Monitor showed 31.34 percent of the area in moderate drought or worse, compared with 29.95 percent a week earlier.

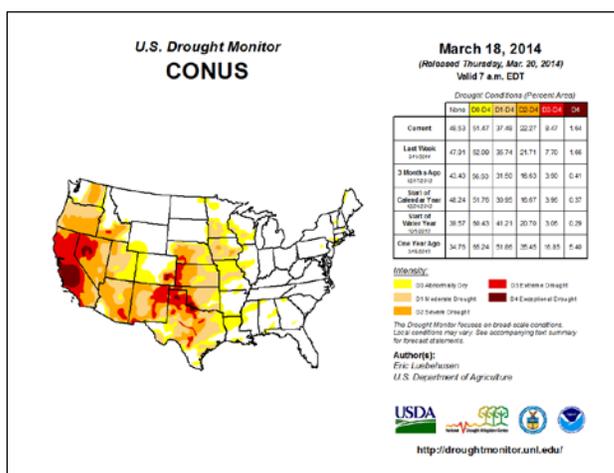
[Current Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are scattered across CA, NV, CO, TX, and OK.

The latest [drought indicator blend and component percentiles](#) spreadsheet is a great resource for climate division drought statistics. This link is for the latest [Drought Outlook](#) (forecast). See [climatological rankings](#).

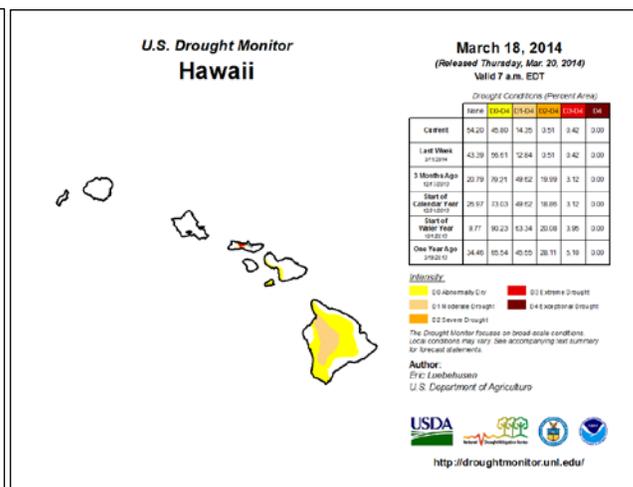
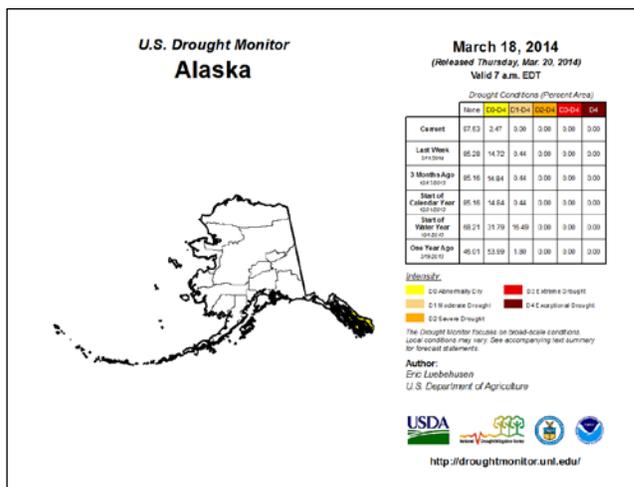
For more drought news, see [Drought Impact Reporter](#).

Drought Management Resources (✓):

- ✓ [Watch AgDay TV](#)
- ✓ [Drought Impacts Webinar Series](#)



See: Latest Drought [Impacts](#) during the past week.



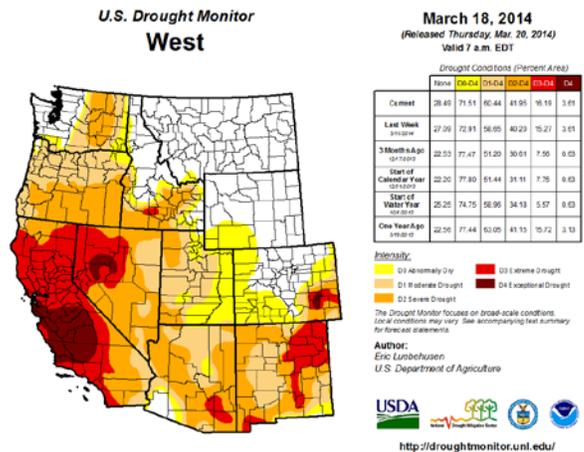
The 49th and 50th States show relatively benign drought conditions. Improvement is noted in Alaska and Hawaii in the lower D-categories this week.

A comprehensive narrative describing drought conditions across other parts of the nation can be found toward the end of this document. For drought impacts definitions for the figures that follow, click [here](#).

Weekly Snowpack and Drought Monitor Update Report

- ✓ Drought Monitor for the [Western States](#)
- ✓ Drought Impact Reporter for [New Mexico](#)
- ✓ [California Data Exchange Center & Flood Management](#)
- ✓ [Intermountain West Climate Dashboard](#)
- ✓ [Great Basin Dashboard](#)
- ✓ [CLIMAS January 2014 Climate Summary](#)
- ✓ [March Southwest Climate Podcast](#)

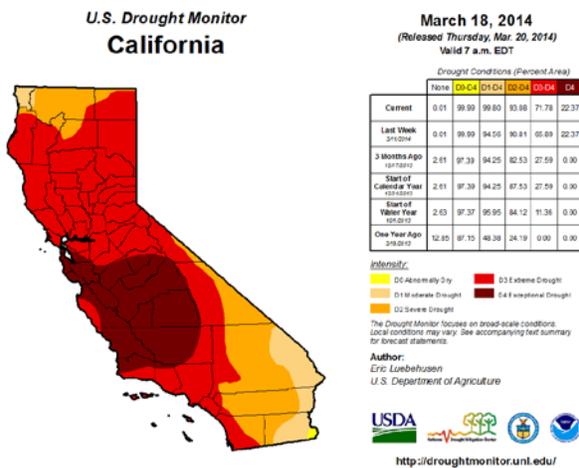
U.S. [Impacts](#) during the past week



No significant changes occurred this week.
Click to enlarge

State with D-4 Exceptional Drought

- ✓ [CA Drought Information Resources](#)



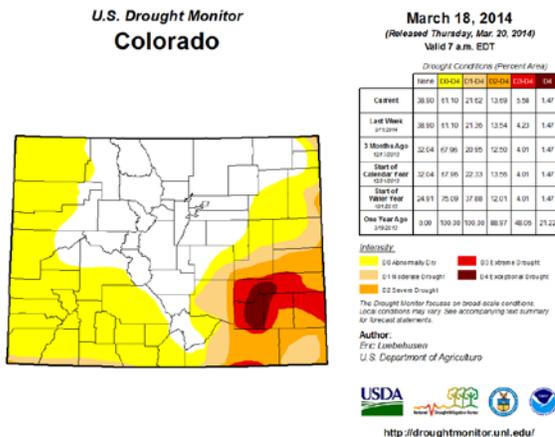
Deterioration in most D-categories occurred this week.

State with D-4 Exceptional Drought

Drought News from California

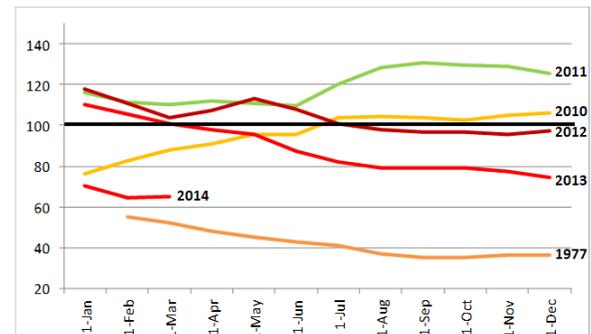
“Graphic below is updated to include 1977. Remember, 1975-76 was also very dry in California – the fourth-driest July-June period during the 120-year period of record — so when the third-driest year occurred in 1976-77, reservoirs were already reeling. Storage eventually fell to 7.5 million acre-feet by the end of October 1977 before the robust 1977-78 wet season saved the state from running out of water.

By comparison, 2011-12 and 2012-13 were California’s twelfth- and eleventh-driest July-June periods – not quite another 1975-77. But when you throw 2013-14 into the mix, you can easily see why it’s going to be a long, drought-dominated summer in the nation’s most populous and number-one agricultural state. BTW, California’s population topped 20 million in the early 1970s and didn’t reach 30 million until the early 1990s. The 2010 Census figure was 37.3 million.” – Brad Rippey, USDA



Some deterioration in D-3 occurred during the past week.

California Reservoir Storage, Percent of Normal, 1977 and 2010-14

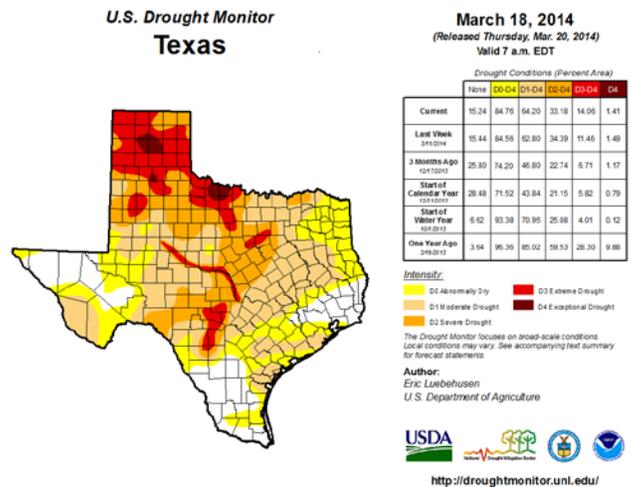


Weekly Snowpack and Drought Monitor Update Report

State with D-4 Exceptional Drought

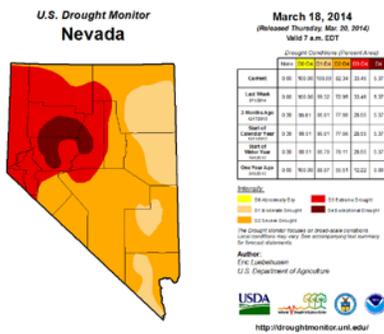
- ✓ Texas Drought [Website](#).
- ✓ [Texas Reservoirs](#).
- ✓ [Texas Drought Monitor Coordination Conference Call](#): on Monday's 2:00 PM - 3:00 PM CST

Texas [Impacts](#) during the past week



Deterioration in D3 occurred during the past week.

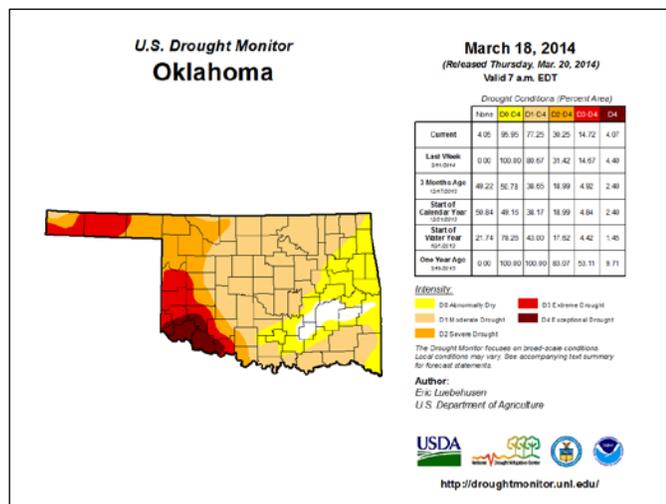
State with D-4 Exceptional Drought



10% deterioration in D2 has occurred during the past week.

State with D-4 Exceptional Drought

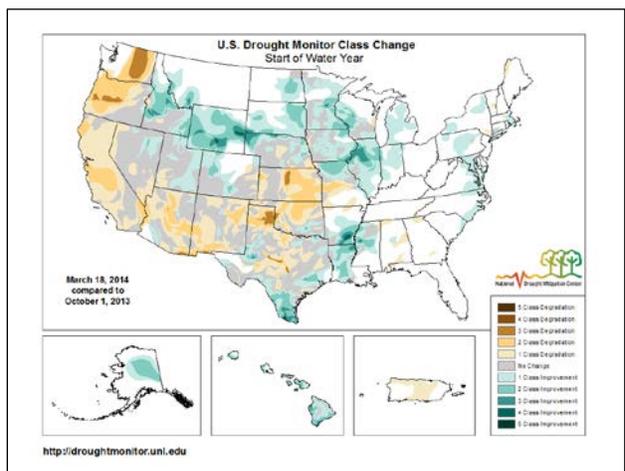
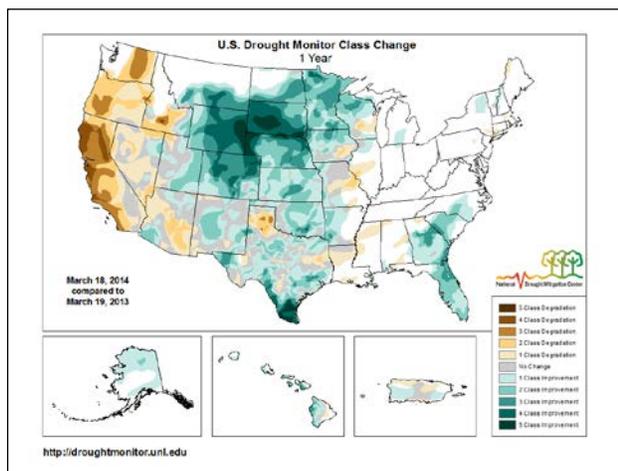
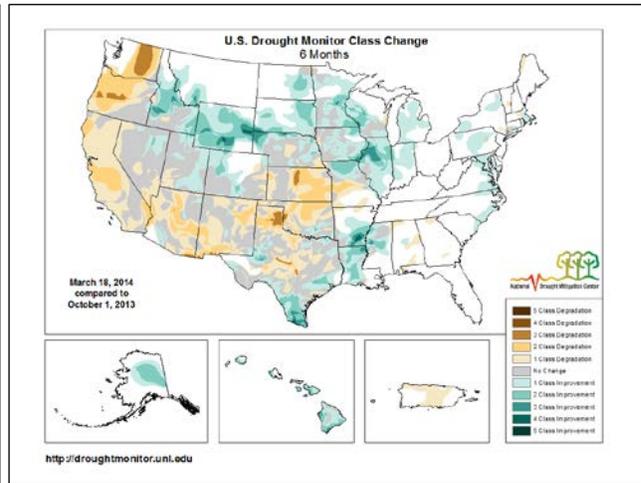
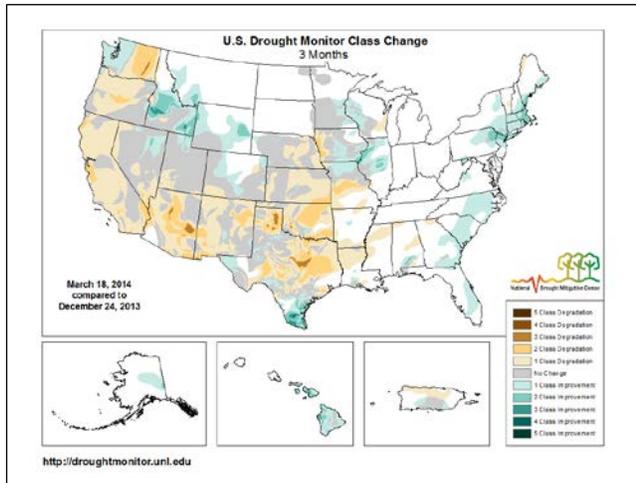
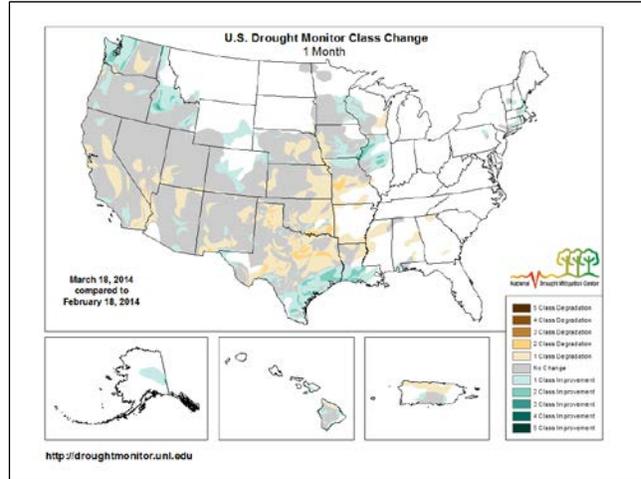
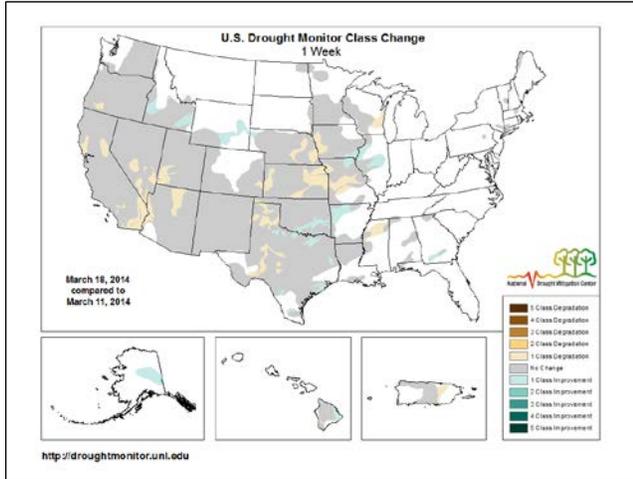
Deterioration has occurred in all categories this week with D4 increasing by 2 percent.



Improvement in all D-categories occurred during the past week

Weekly Snowpack and Drought Monitor Update Report

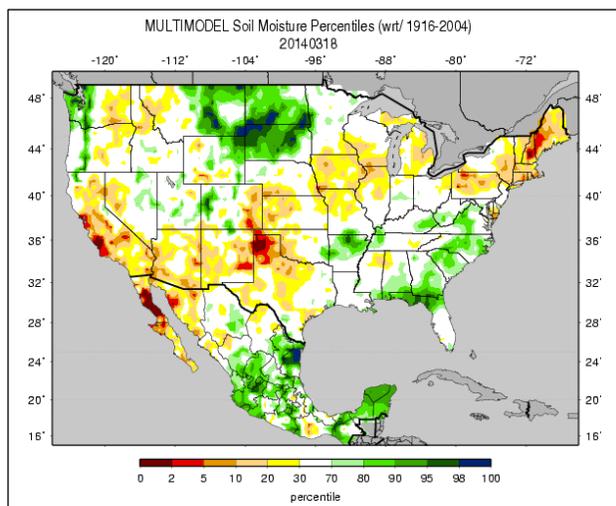
Changes in Drought Monitor Categories (over various time periods)



Winter time changes to the drought monitor are usually minimal. However, since the start of the 2014 Water Year (lower right map), the western drought conditions have worsened over the Pacific Northwest and improved over Wyoming and Idaho. Conditions have also improved over the Mississippi River Valley, but have worsened from Kansas to northern Texas.

Weekly Snowpack and Drought Monitor Update Report

Soil Moisture



Note: With frozen ground, accuracy of measured moisture become increasingly suspect.

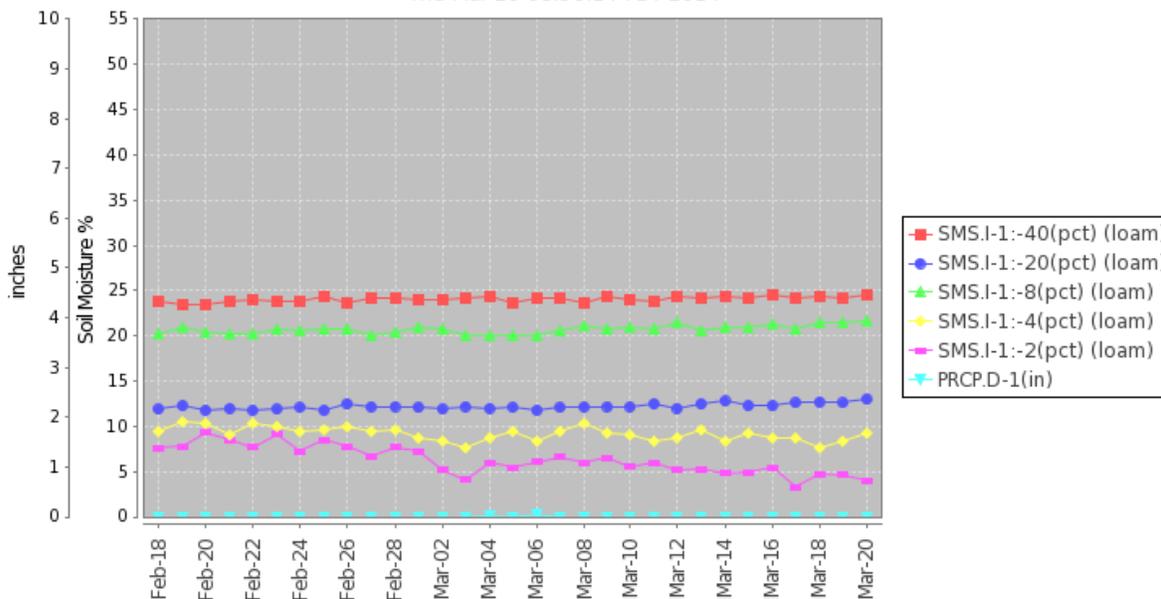
Soil moisture ranking in [percentile](#) as of March 18 shows dryness over central California, eastern New Mexico, the southwestern Great Plains (i.e., northern Texas), and parts of New England. Moist soils dominate the northern Great Plains. With abundant snowpack in Montana, concern is mounting about potential Missouri River flooding this spring.

Useful Hydrological Links: [Crop Moisture Index](#); [Palmer Drought Severity Index](#); [Standardized Precipitation Index](#); [Surface Water Supply Index](#); [Weekly supplemental maps](#); [Minnesota Climate Working Group](#); [Experimental High Resolution Drought Trigger Tool](#); [NLDAS Drought Monitor](#); [Soil Moisture](#).

[Soil Health-unlock your farm's potential](#)

Soil Climate Analysis Network ([SCAN](#))

Station (2006) MONTH=2014-02-18 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Mar 20 08:36:14 PDT 2014



This NRCS resource shows soil moisture data at a SCAN site located in [northern Texas](#). Moist soils reside in the lower depths.

Useful Agriculture Links: [Vegetation Drought Response Index](#); [Evaporative Stress Index](#); [Vegetation Health Index](#); [NDVI Greenness Map](#); [GRACE-Based Surface Soil Moisture](#); [North American Soil Moisture Network](#). [Monthly Wild Fire Forecast Report](#).

Weekly Snowpack and Drought Monitor Update Report

[National Drought Summary for March 18, 2014](#)

Prepared by: Drought Monitor Author: Eric D. Luebehusen, Meteorologist, USDA - Office of the Chief Economist

Summary

“During the drought-monitoring period, precipitation was mainly confined to the drought-free areas of the eastern U.S, although localized drought relief was noted across south-central portions of the nation. Meanwhile, drought persisted or intensified across the west, where alarmingly low water-year precipitation and meager mountain snowpacks continued.

Alaska, Hawaii, and Puerto Rico

In Alaska, updated SNOTEL data indicated the Snow Water Equivalent (SWE) were now near to above normal across interior portions of the state, facilitating the removal of Abnormal Dryness (D0) and Moderate Drought (D1). Across Hawaii, D0 was reduced along the lower windward elevations of the Big Island due to favorable rainfall over the past 7 to 10 days and above average rainfall so far this month. In the Caribbean, rain mostly bypassed Puerto Rico’s D0 area, with light to moderate showers (0.50 to 2.50 inches) confined to western portions of the island. D0 was expanded northeast (north of Caguas) to account for 90-day precipitation totals that are less than 70 percent of normal.

Central Plains

Warm, dry weather prevailed on the central Plains, intensifying drought while accelerating winter crops out of dormancy. The unseasonably warm conditions (weekly average temperatures up to 11°F above normal) rapidly increased crop-water demands, while strong, occasionally severe winds rapidly dried topsoils and caused blowing dust. Consequently, Extreme Drought (D3) was expanded from southeastern Colorado into western Kansas, while the drought-impact type was changed from “L” (Long-Term) to “SL” (Both Short- and Long-Term) to account for greening winter crops as well as blowing dust and increased fire danger.

Mid-Atlantic and Northeast

Widespread precipitation, including a relatively rare mid-March snow storm in the southern Mid-Atlantic, maintained mostly favorable soil moisture reserves for spring growth. However, drier-than-normal conditions over the past 30 days coupled with lingering longer-term deficits (locally less than 50 percent of normal over the past 180 days) from northeastern Pennsylvania into southern New England warranted a continuation of the current localized Abnormal Dryness (D0), despite the lack of notable impacts.

Midwest

Colder- and drier-than-normal conditions prevailed across much of the Midwest during the monitoring period, although a fresh snowfall provided localized moisture recharge in western Illinois and southeastern Iowa. The overall drying trend was most notable across central Missouri and southeastern Wisconsin (less than 50 percent of normal precipitation over the past 90 days), where Moderate Drought (D1) and Abnormal Dryness (D0) were expanded, respectively. Increasingly dry conditions were also noted in central and eastern Nebraska as well as western Iowa, where Moderate Drought (D1) was introduced to account for 90-day precipitation totals less than 30 percent of normal. Overall, the region remains in a holding pattern with respect to drought as producers await the onset of warmer weather to melt the region’s snowpack and ease winter crops out of dormancy.

Weekly Snowpack and Drought Monitor Update Report

Southeast and Delta

Widespread, locally heavy rainfall soaked much of the Southeast as well as northwestern portions of the Delta, while drier-than-normal conditions intensified from the northeastern Delta into the Tennessee Valley. In Georgia, locally more than 4 inches of rain eased Abnormal Dryness (D0) in southern portions of the state, while rain farther north staved off expansion of D0. The rain was insufficient to ease D0 in Alabama, although additional assessment may warrant some reductions over the upcoming weeks should streamflows remain elevated. Likewise, 2 to 3 inches (locally more) of rain eased Abnormal Dryness in northwestern Arkansas. In contrast, drier-than-normal conditions intensified in northern Mississippi, where precipitation has tallied less than 60 percent of normal over the past 90 days.

Southern Plains and Texas

Intensifying drought across the southern Plains and western Texas contrasted with localized drought relief in eastern portions of the region. A developing late winter storm generated widespread rain from northeastern Texas into eastern Oklahoma, with totals topping 2 to 3 inches in the wettest locations. Consequently, some drought reduction was noted, particularly where rain was heaviest. On the back side of the storm, strong, gusty winds coupled with parched soils maintained or worsened drought from western Oklahoma into central and western Texas. Several large dust storms heightened the drought's impacts, with notable increases in Extreme Drought (D3) and Exceptional Drought (D4) over the panhandles of Texas and Oklahoma. Soil moisture in these locales is virtually non-existent, with rainfall over the past 90 days locally less than 10 percent of normal.

Western U.S.

Unsettled conditions in the north contrasted with intensifying drought elsewhere. The benefits of the February and early-March precipitation rapidly diminished across California and the Southwest as unseasonable warmth and dryness increased water demands and depleted snowpacks.

In northern portions of the region, an influx of Pacific moisture generated rain and mountain snow from the Cascades into the northern Rockies. Precipitation totals were highly variable, with 2- to 5-inch totals (liquid equivalent) in the northern Cascades contrasting with amounts generally less than 1 inch over southern portions of the range. Most of the heavy precipitation fell outside of the region's drought areas, with totals in southwestern Oregon averaging up to 2 inches below the weekly norm. Farther east, however, recent heavy snow eased Moderate Drought (D1) in southern Idaho and eliminated Abnormal Dryness (D0) in southeastern Wyoming and the northwestern tip of Nebraska.

Farther south, a disappointing water year continued, with warm, dry weather quickly negating the benefits of the precipitation from February and early March across California and the Great Basin. Most notably, Extreme Drought (D3) returned to coastal areas north of San Francisco as well as the Sierra Nevada; over the past two weeks, precipitation deficits in these areas have averaged two inches or more. Water-year (Since October 1, 2013) precipitation has averaged less than half of normal over most of California, and locally less than 30 percent of normal in the state's D4 (Exceptional Drought) area. Severe Drought (D2) expanded across southern Nevada, where water-year precipitation has averaged 40 to 60 percent of normal.

In the Four Corners region, changes to this week's drought depiction were confined to western portions of the region. Across western Arizona, Severe Drought (D2) expanded as water-year precipitation totals continued to drop well below half of normal (locally less than 30 percent of normal). In northern Arizona, precipitation over the past 90 days has averaged less than 25 percent of normal. Meanwhile, SNOTEL

Weekly Snowpack and Drought Monitor Update Report

data from southwestern Utah indicated the Snow Water Equivalent (SWE) is currently in the 12th percentile or lower, with water-year precipitation totals averaging 25 to 40 percent of normal; this data was used to depict the newly-expanded D2 in the southwestern quarter of the state.

Looking Ahead

Little — if any — drought relief is expected from the Pacific Coast to the Great Plains, with precipitation during the upcoming monitoring period mostly confined to the Northeast and Gulf Coast. An area of low pressure will produce snow in northern New England on Thursday, while warmer conditions briefly develop in the storm's wake from the middle Mississippi Valley to the central and southern Atlantic Coast. Toward week's end, another disturbance will produce some additional snow across the nation's northern tier. Over the weekend, cold air will surge into the Midwest and Northeast, while rain will develop across the South. Dry weather will persist, however, from California to the southern High Plains. In addition, unusually warm weather will continue to plague California. The NWS 6- to 10-day outlook for March 25-29 calls for below-normal temperatures from the Plains to the East Coast, while warmer-than-normal weather will prevail in the West. Meanwhile, near- to above-normal precipitation across the majority of the U.S. will contrast with drier-than-normal conditions from southern California to the southern High Plains."

State Activities

[State government drought activities](#) can be tracked through their drought plans. NRCS Snow Survey and Water Supply Forecasting (SSWSF) Program State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate [SSWSF information](#). Additional information describing the [tools](#) available from the Drought Monitor can also be found at the [U.S. Drought Portal](#).

More Information

The National Water and Climate Center (NWCC) [Homepage](#) provides the latest available snowpack and water supply information. This document is available [weekly](#). CONUS Snowpack and Drought Reports from 2007 are available online. Reports from 2001-2006 are available on request.

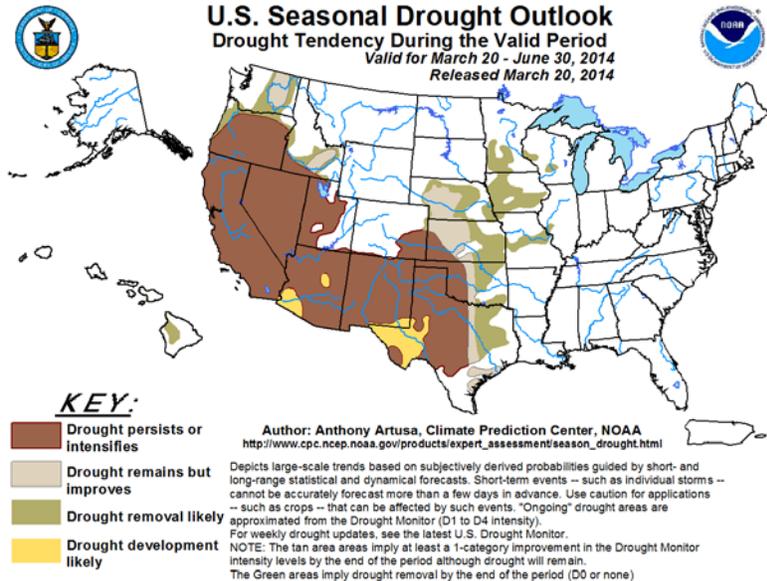
This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/

David W. Smith
Acting Deputy Chief, Soil Science and Resource Assessment

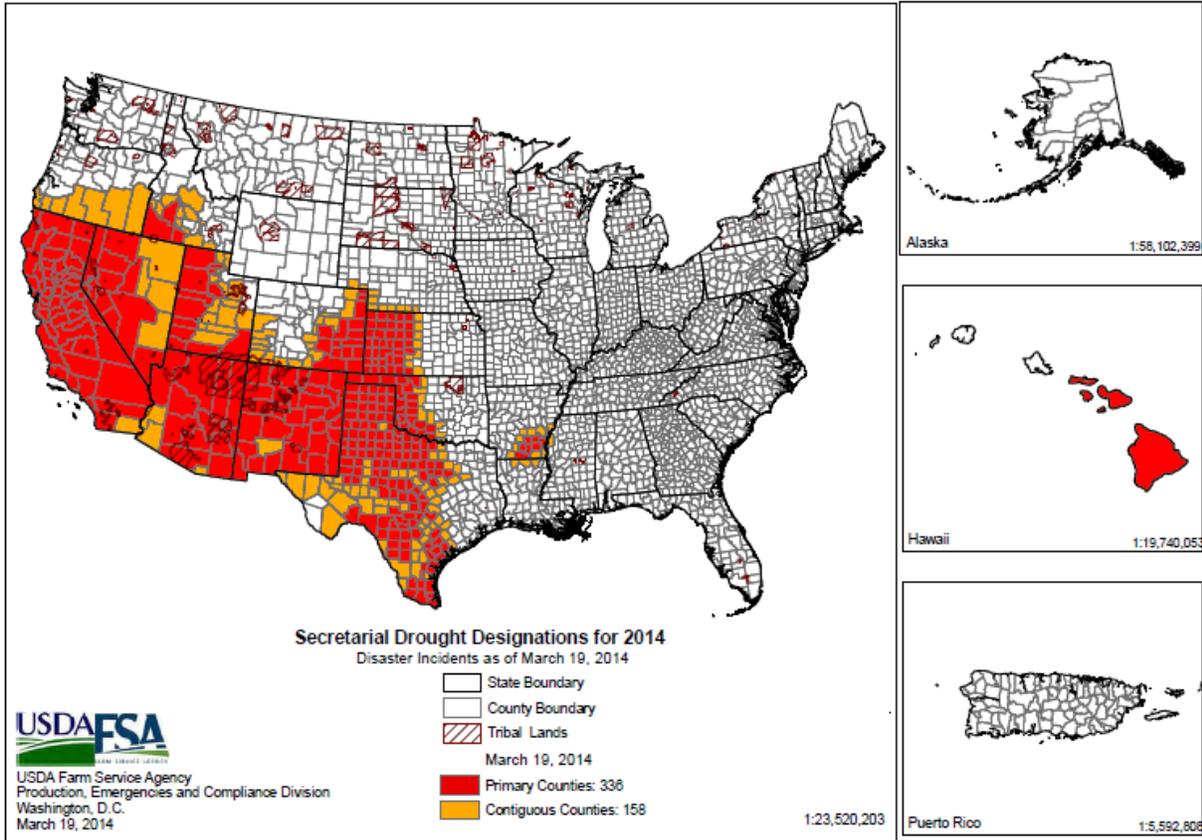
Weekly Snowpack and Drought Monitor Update Report

[Drought Outlook](#) ← (20 March – 30 June)



- Drought is expected to deteriorate over parts southern Arizona and southwest Texas. Much of the West and south-central Great Plains are expected to have persistent drought. Improvement is suggested over the Pacific Northwest and upper Mississippi River valley.
- ✓ Also see: [National Significant Wildland Fire Potential Outlook](#) (updated on the first of each month) contains a content summary of the previous month's conditions.

2014 Secretarial Drought Designations - All Drought



Refer to the USDA Drought Assistance [website](#) and [National Sustainable Agriculture Information Service](#). Read about the new [USDA Regional Climate Hubs](#).

Weekly Snowpack and Drought Monitor Update Report

Supplemental Drought News (provided by Brad Rippey, USDA Meteorologist)

<http://www.usda.gov/oce/weather/Drought/AgInDrought.pdf>

Download archived "U.S. Crops in Drought" files here:

<http://drought.unl.edu/Planning/Impacts/USAginDroughtArchive.aspx>.

This following a collection of drought-related news stories from the past seven days or so. Impact information from these articles is entered into the [Drought Impact Reporter](#). A number of these articles will also be posted on the [Drought Headlines](#) page at the NDMC website. The list is compiled by Denise D. Gutzmer, Drought Impact Specialist, National Drought Mitigation Center

Tea Cup reservoir depictions:

- <http://www.usbr.gov/uc/water/basin/> ← Upper Colorado
- http://www.usbr.gov/uc/wcao/water/basin/tc_gr.html; ← Upper Snake
- <http://www.usbr.gov/pn/hydromet/burtea.html> ← Upper Colorado
- http://www.usbr.gov/uc/water/basin/tc_cr.html ← Upper Colorado
- <http://www.usbr.gov/pn/hydromet/select.html> ← Pacific Northwest
- <http://www.sevierriver.org/reservoirs/teacup-diagram-of-reservoirs/> ← Sevier River Water (UT)

NWCC's Surface Water Supply Index (SWSI) maps found at: <http://www.wcc.nrcs.usda.gov/wsf/swsi.html>