

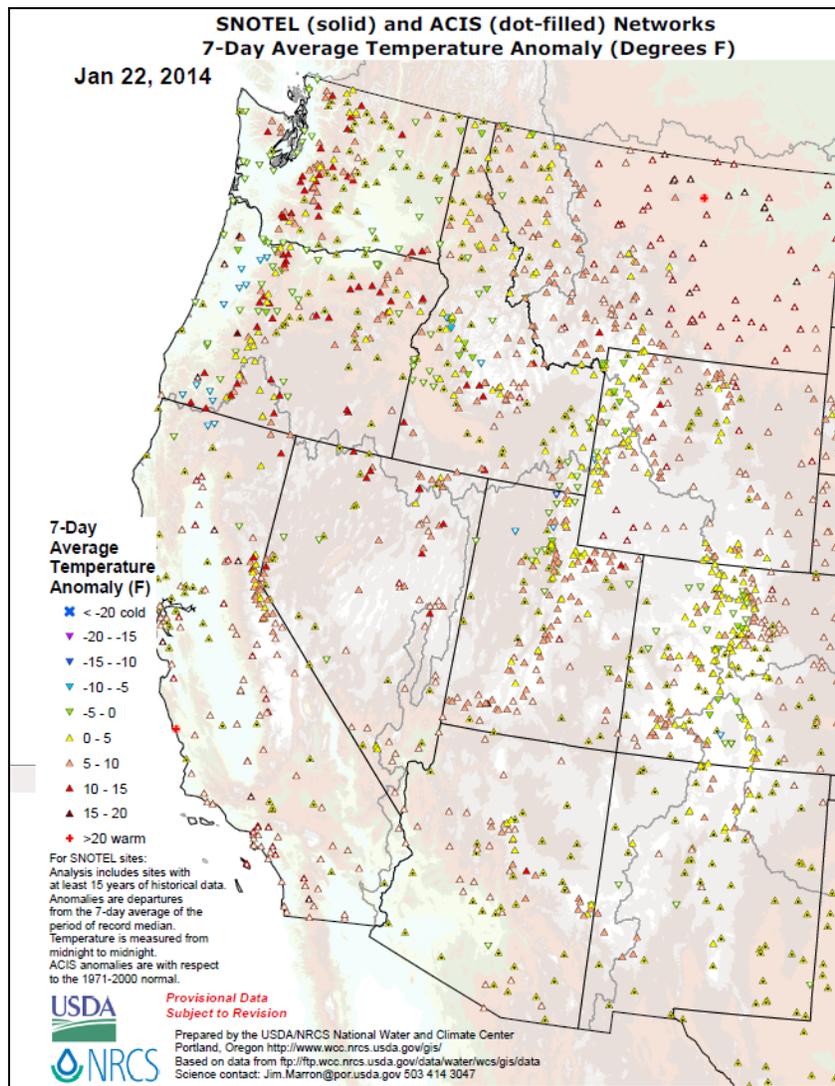


Natural Resources Conservation Service  
 P.O. Box 2890  
 Washington, D.C. 20013

## Weekly Snowpack / Drought Monitor Update January 23, 2014

Temperature.....	1	National Drought Summary for January 21, 2014.....	12
Precipitation.....	3	State Activities .....	13
Snow .....	6	More Information.....	13
Weather and Drought Summary .....	7	Drought Outlook.....	13
New Feature: Changes in Drought Monitor Categories .....	10	Supplemental Drought News.....	14
Soil Climate Analysis Network (SCAN) .....	11		

### Temperature



SNOTEL and ACIS [7-day temperature anomaly](#) map shows temperatures above normal across almost the entire West as strong high pressure continues to dominate the region.

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

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment

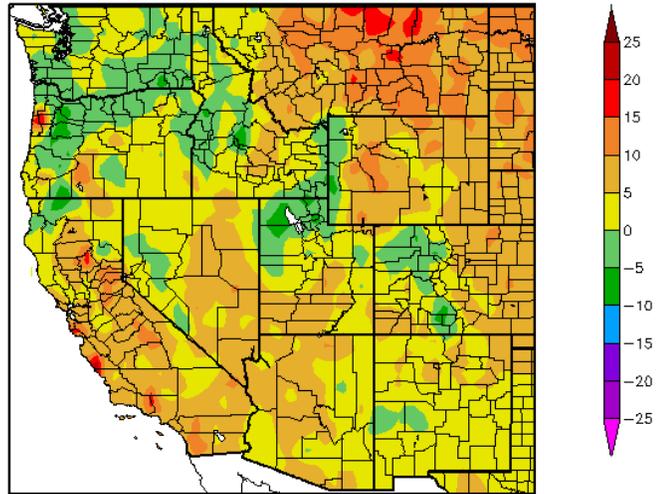
An Equal Opportunity Employer

## Weekly Snowpack and Drought Monitor Update Report

[ACIS](#) 7-day average temperature anomalies, ending January 22, show the greatest negative temperature departures over parts of northwestern Oregon, California, Utah, south-central Colorado, central Idaho, and western Wyoming (<-5°F). The greatest positive temperature departures occurred over northern Montana and over coastal southern California (>+15°F).

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

Departure from Normal Temperature (F)  
1/16/2014 - 1/22/2014



Generated 1/23/2014 at HPRCC using provisional data.

Regional Climate Centers

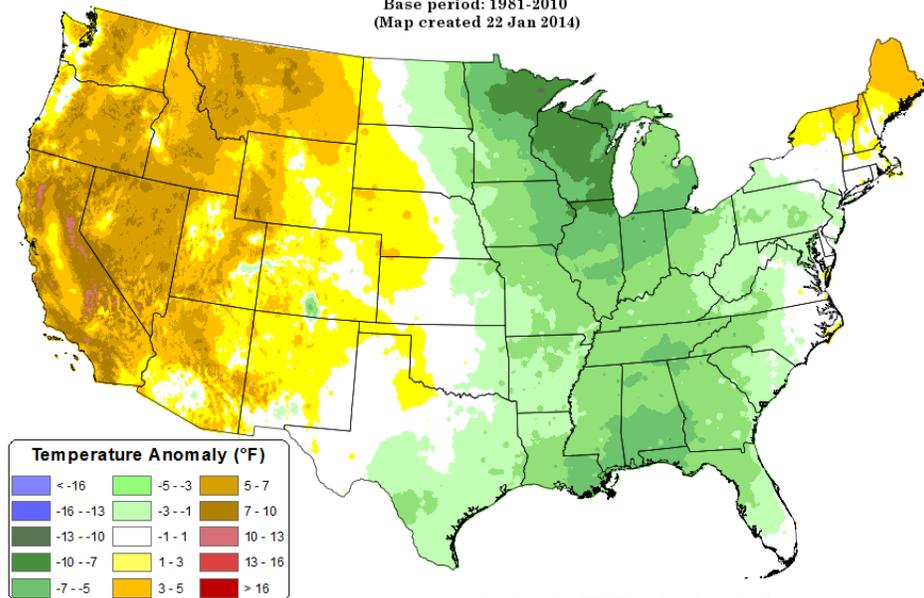
### Daily Mean Temperature Anomaly: 01 January 2014 - 21 January 2014

Period ending 7 AM EST 21 Jan 2014

Base period: 1981-2010

(Map created 22 Jan 2014)

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.



Copyright (c) 2014, PRISM Climate Group, Oregon State University

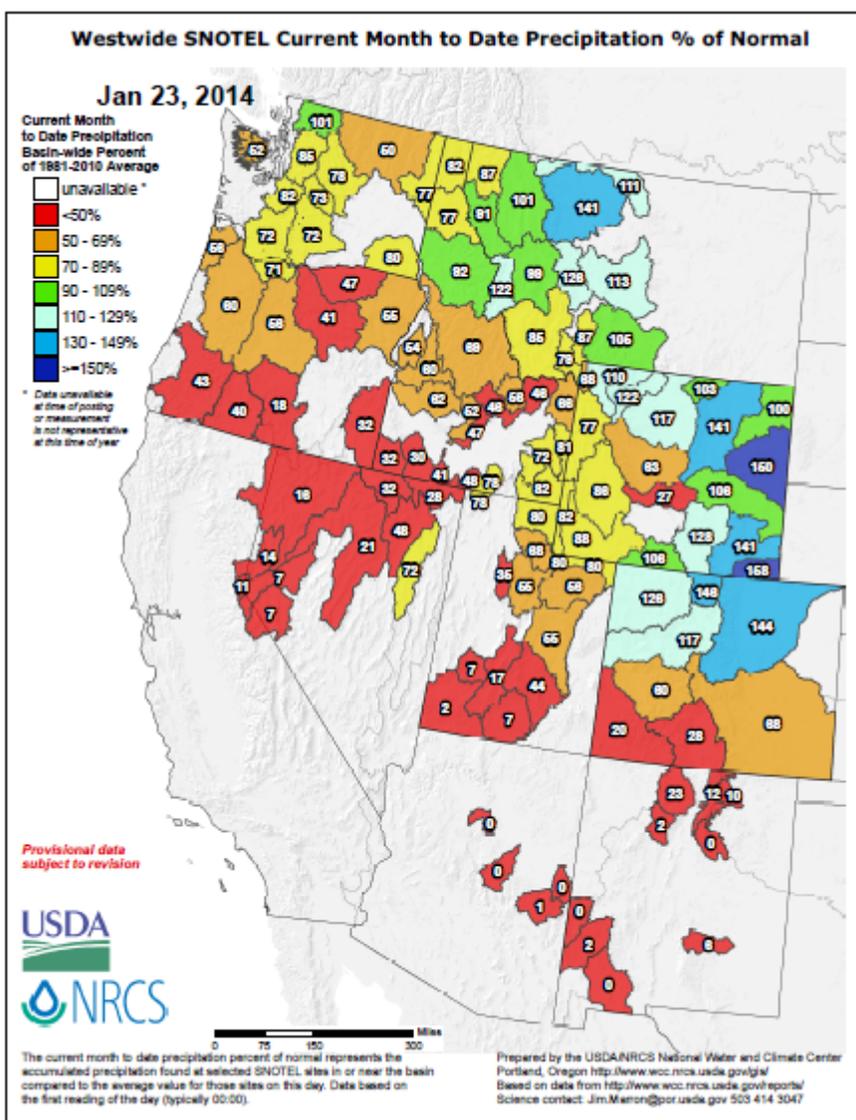
For the first three weeks of January, it has been very cold over the western Great Lakes (<-7°F departure). Warmer than normal temperatures have occurred over the western half of the western states.

# Weekly Snowpack and Drought Monitor Update Report

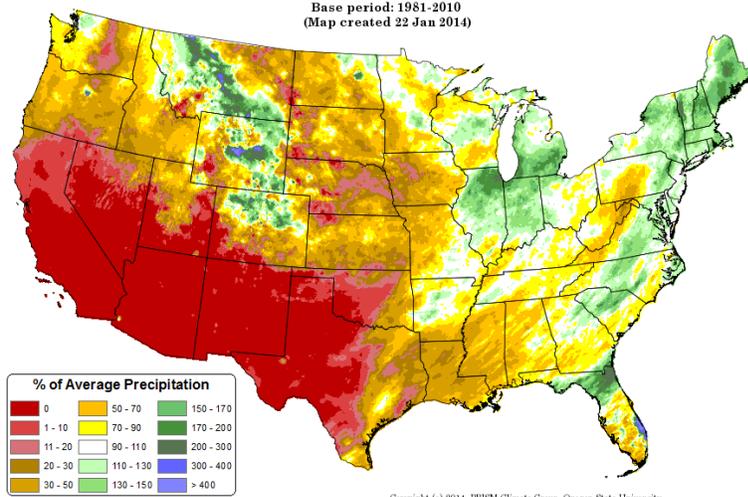
## Precipitation

SNOTEL [month to date](#) precipitation percent of normal shows that the central and northern Rockies have received abundant moisture. Significant deficits dominate the remainder of the West; especially over the southern Cascades, Sierra Nevada, Great Basin, Four Corners region, Arizona, and New Mexico.

Note that it takes only a few winter storms to help increase values to near normal over the Southwest, whereas it requires more storms to have the same impact over the Pacific Northwest.



**Total Precipitation Anomaly: 01 January 2014 - 21 January 2014**  
 Period ending 7 AM EST 21 Jan 2014  
 Base period: 1981-2010  
 (Map created 22 Jan 2014)



← Thus far, January precipitation continues to be a story of haves and have-nots. Moisture has favored New England, northern Florida, central Great Lakes, and the northern half of the Rockies. Elsewhere, with the exception of northwestern Washington, little precipitation has fallen; especially over the western and southwestern states into Texas and Oklahoma.

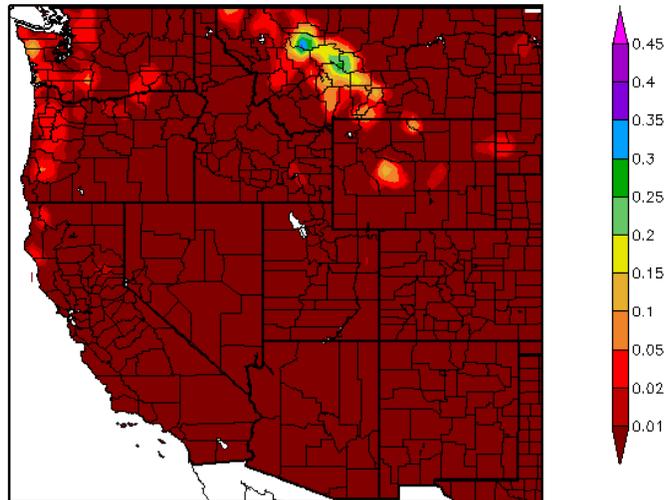
*This preliminary daily PRISM precipitation contains all available network data, and is updated periodically as additional data become available and are quality controlled.*

## Weekly Snowpack and Drought Monitor Update Report

[ACIS 7-day](#) average precipitation amounts show very limited precipitation falling across the West. Areas with the highest totals were in the Montana Rockies; however, amounts were less than a third of an inch. →

The effect of the strong high pressure ridge over the West has been evident during the past few weeks.

Precipitation (in)  
1/16/2014 - 1/22/2014



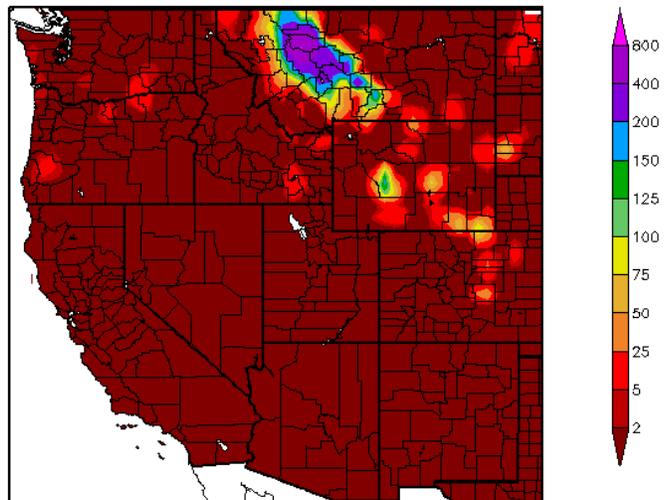
Generated 1/23/2014 at HPRCC using provisional data.

Regional Climate Centers

This [map](#) shows that the bulk of precipitation by percent of normal occurred across western Montana. Elsewhere, especially over the southern tier of the western states, no rainfall or snowfall occurred during the past week.

Note that these ACIS maps reflect only low-elevation stations, where precipitation is typically light this time of year.

Percent of Normal Precipitation (%)  
1/16/2014 - 1/22/2014



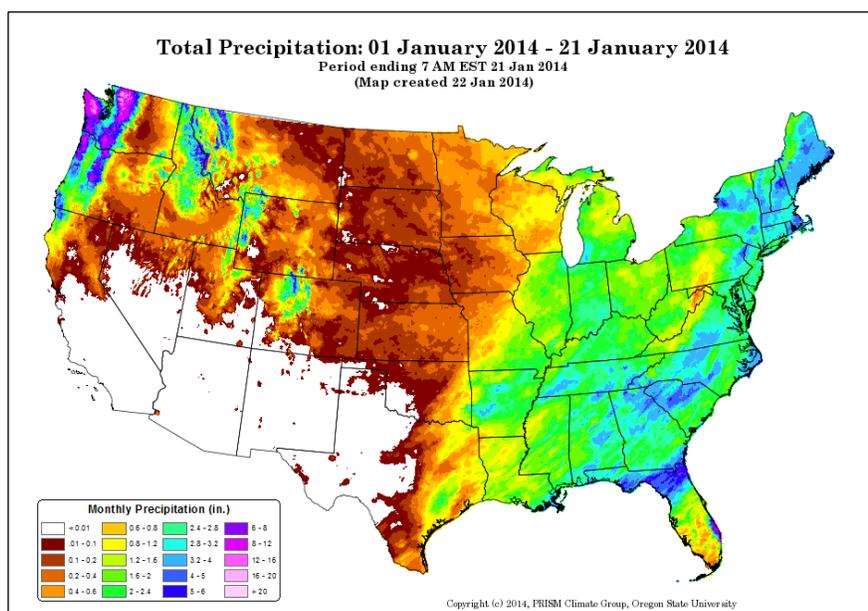
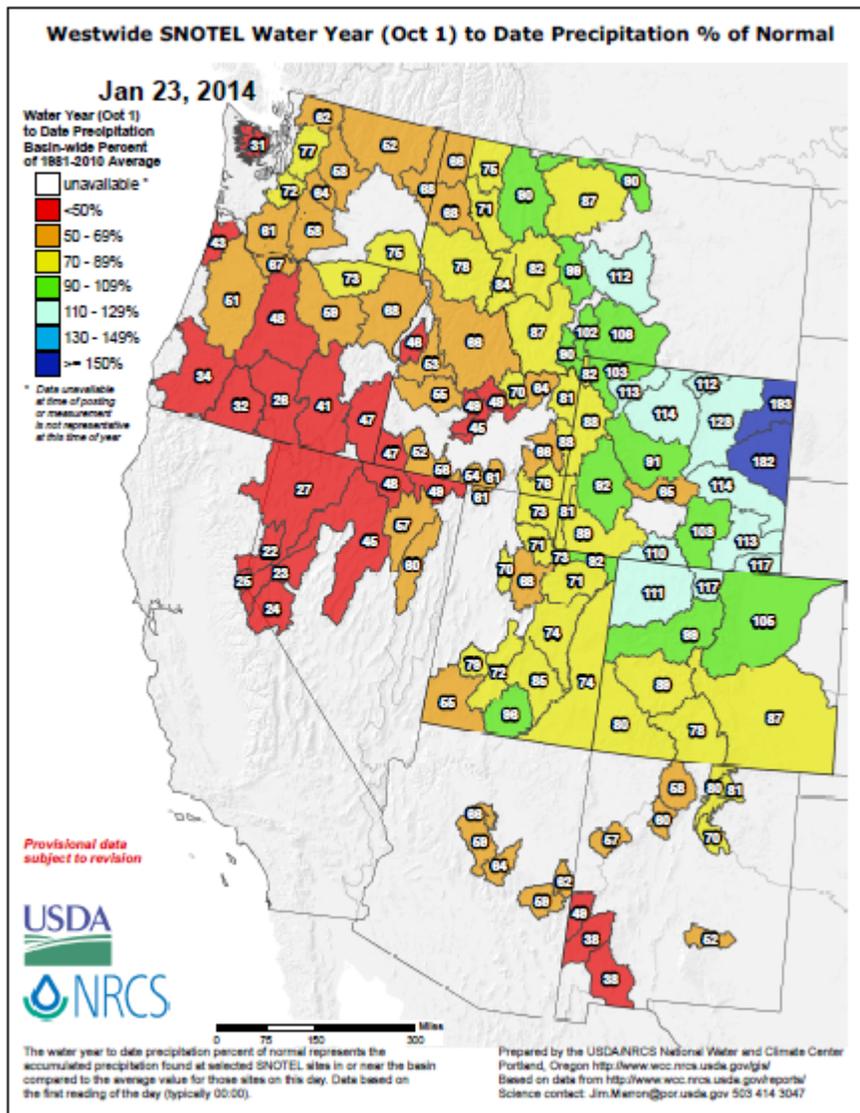
Generated 1/23/2014 at HPRCC using provisional data.

Regional Climate Centers

## Weekly Snowpack and Drought Monitor Update Report

For the [2014 Water Year](#) that began on October 1, 2013, the neutral ENSO pattern is quite dry over the western half of the West including Arizona and New Mexico. Most areas east of the Continental Divide have fared better.

- [After California's driest year on record, water experts push conservation](#) - Jan 5
- [Drought hurting county's cattle ranchers](#) - Jan 10
- [Drought impacting California cattle ranchers, farmers](#) - Jan 9
- [California may rely on more gas-fired generation due to drought](#) - Jan 10
- [Dry weather leads to fire restrictions on region's BLM-managed lands](#) - Jan 9
- [Brown meets with drought task force, pledges help](#) - Jan 9
- [Drought emergency declared in Mendocino County](#) - Jan 8
- [Catholic bishops pray to relieve dry California](#) - Jan 7
- [Local Religious Groups Pray for Rain](#) - Jan 9
- [Feeble snowfall leaves some resorts high and dry](#) - Jan 9
- [Drought prompts deep cuts in American River flows](#) - Jan 7
- [Water agency urges halt to outdoor watering](#) - Jan 10
- [State snow survey reveals low water content](#) - Jan 6

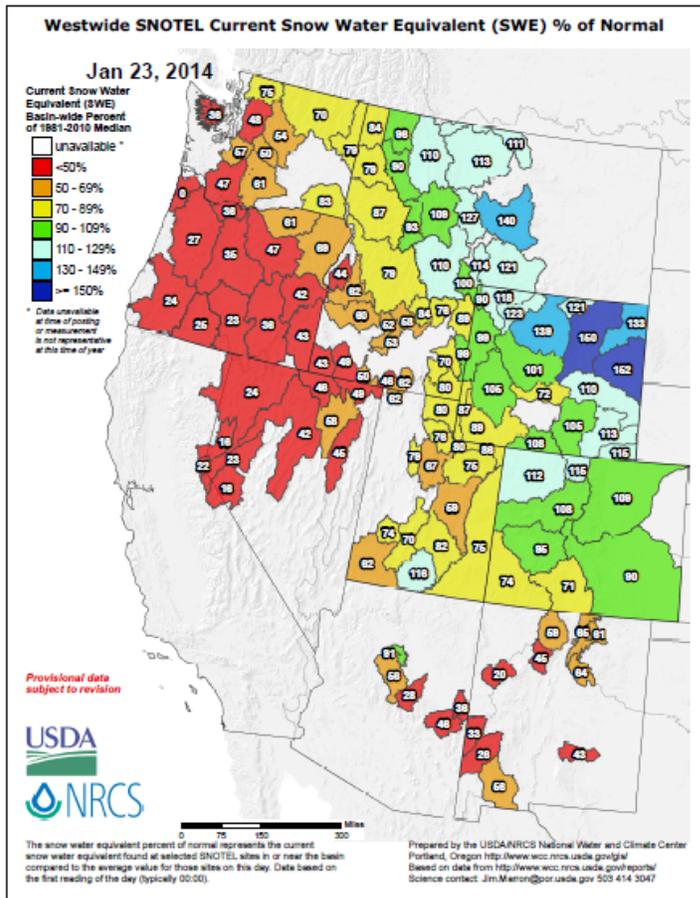


In this [PRISM](#) map, preliminary data show the **total precipitation** amount (rain and snow water equivalent) through the first three weeks of January. Resolution for this PRISM map is 4x4 km.

What is most striking about this map is the lack of precipitation across the southern half of the West. Despite what appears to be abundant moisture over the Washington coastal ranges and Cascades, these totals are actually below the long-term averages.

# Weekly Snowpack and Drought Monitor Update Report

## Snow

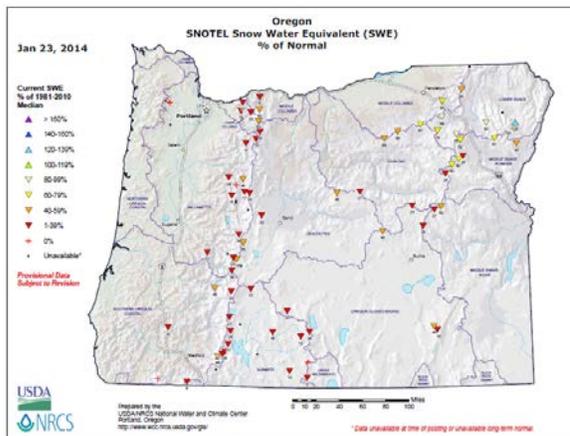


[Snow Water Equivalent](#) (SWE) values are increasing east of the Continental Divide.

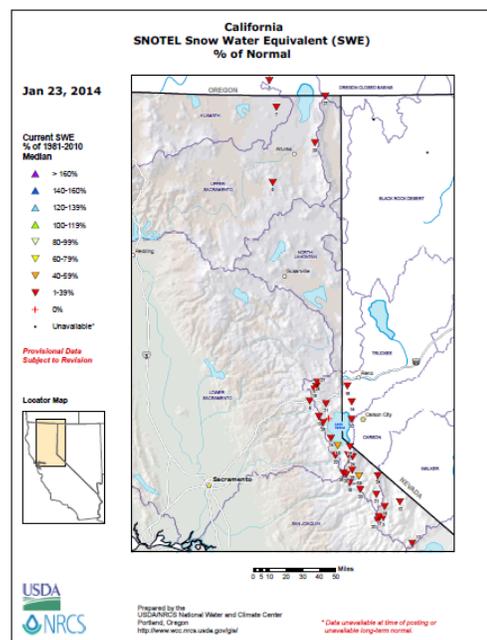
Conditions west of the Continental Divide and over the Southwest continue to deteriorate. **Values have decreased by 1% to 3% per day over the past week under mostly sunny, windy, and dry air.**

The all-important April 1 SWE date will best determine the water supply forecasts issued by the [National Water and Climate Center](#).

See latest [National Snow Analysis](#)



[Oregon](#) SWE map by station



[California](#) SWE map by station

SWE values in Oregon and California are the lowest values in the West. It has been more than one month since the last weather system brought moisture to this region. (Click maps to enlarge)

# Weekly Snowpack and Drought Monitor Update Report

## Weather and Drought Summary

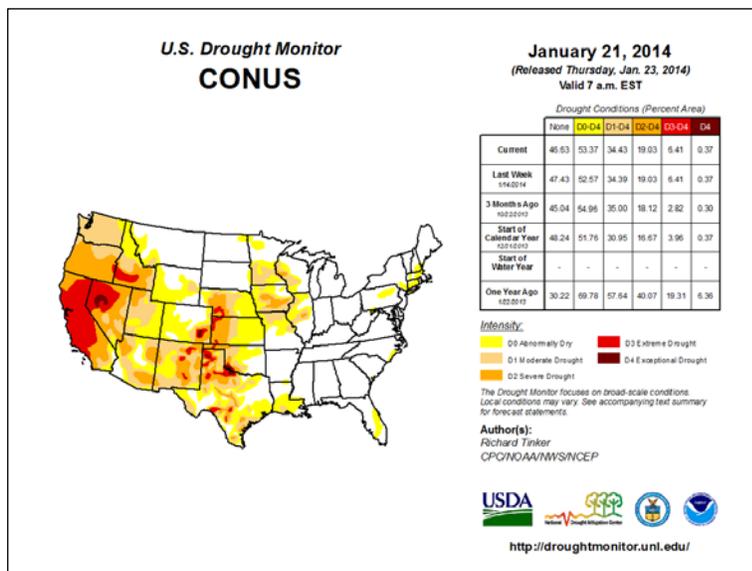
### National Drought Summary – January 21, 2014

The following **Weather and Drought Summary** is provided by this week's NDMC Drought Author: Richard Tinker, NOAA/NWS/NCEP/CPC

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

D-4 Exceptional drought only encompasses 0.31% of the U.S.

[Current Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are scattered across 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](#).

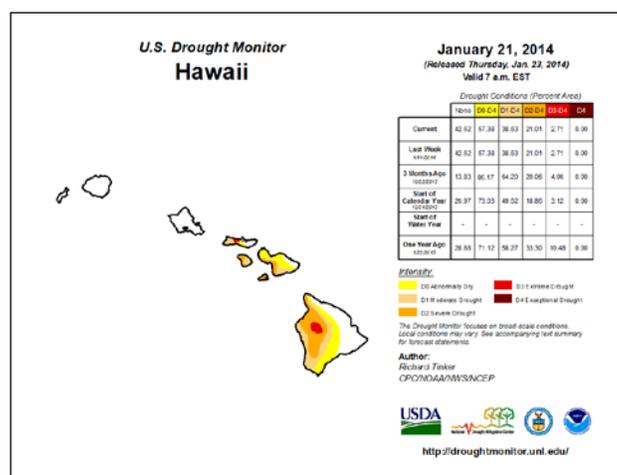
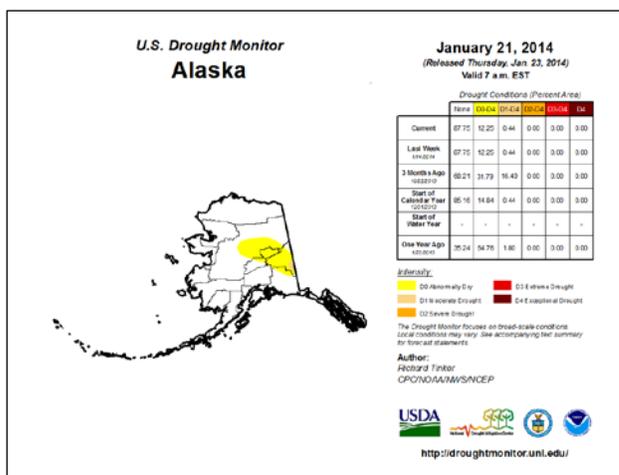
For more drought news, see [Drought Impact Reporter](#).

### Drought Management Resources (✓):

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

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

- [USDA report confirms larger corn, soybean crops](#) - Jan 15
- [Drought prompts disaster declarations in 11 states](#) - Jan 16



"The 49<sup>th</sup> and 50<sup>th</sup> States show benign drought conditions with the exception of the Big Island of Hawaii and leeward sides of the central island group of the state."

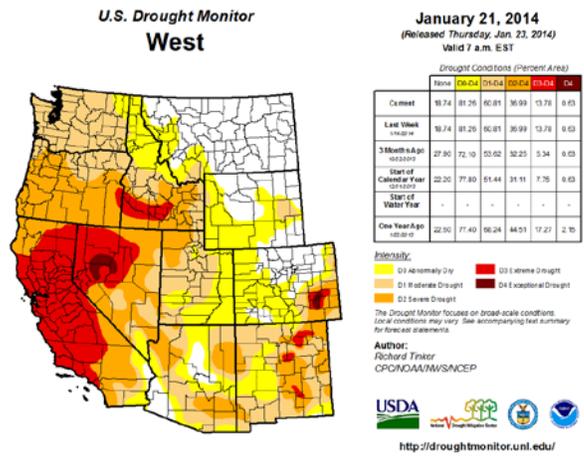
A comprehensive narrative describing drought conditions across other parts of the nation can be found toward the end of this document. For drought impacts definitions for the figures below, click [here](#).

# 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](#)

## California Drought News

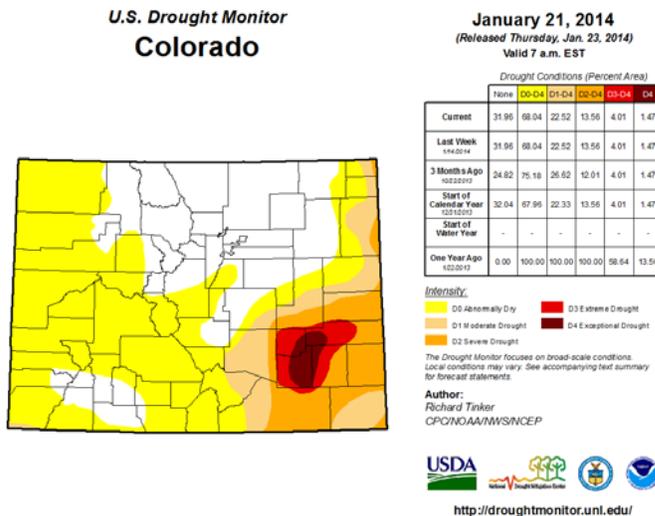
- [Drought fears mounting in Merced County](#) - Jan 12
- [Drought concerns seep into Auburn-area well-drilling business](#) - Jan 17
- [Bay Area in 'extreme drought' - might as well enjoy the sun](#) - Jan 17
- [Crews make progress on destructive California fire](#) - Jan 17
- [California drought? We're not there yet Too soon to use the 'D' word](#) - Jan 12
- [California drought: What's causing it?](#) - Jan 13
- [Drought imperils California salmon, steelhead](#) - Jan 14,
- [Gov. Jerry Brown declares drought emergency in California](#) - Jan 17
- [Bay Area drought](#) - Jan 16
- [Busloads of Valley residents staging water rally in Sacramento](#) - Jan 15
- [Brooktrails set to impose water rationing](#) - Jan 15
- [Dry conditions lead some on North Coast to store water](#) - Jan 12
- [Water officials worry that Lake Pillsbury tap may be shut off](#) - Jan 16
- [Willits faces water rationing with 100 days of water left](#) - Jan 16



**No changes have occurred during the past week. Click to enlarge**

## Drought News for other Western States

- [Flagstaff nears record for December-February precipitation-free days](#) - Jan 16, AZ
- [Hooked on garbage, Nevada bears quit hibernation](#) - Jan 14, NV
- [The rains came late, but snowpack's not a concern](#) - Jan 14, WA
- [Dry, but no drought — yet](#) - Jan 12, OR
- [Downstream states eye Flaming Gorge water](#) - Jan 13, WY
- [Idaho water watchers pray for snow amid drought](#) - Jan 10, ID
- [Total ABQ water use lowest in 30 years](#) - Jan 11, NM
- [Army Corps of Engineers to skip spring surges on Missouri River](#) - Jan 9, Missouri River Basin.



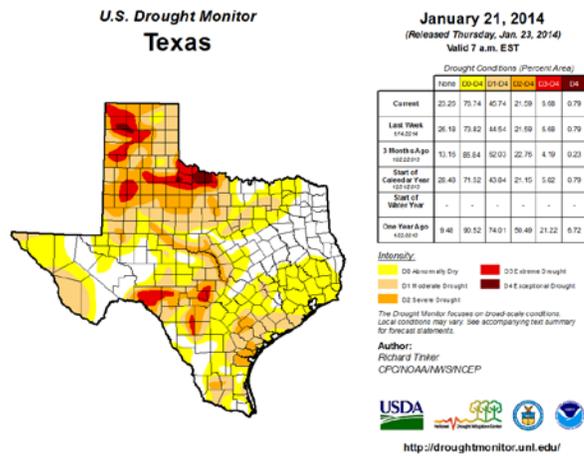
**No changes have occurred during the past week.**

## 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

- [Corps responds to low Lake Texoma levels](#) - Jan 17, Lake Texoma on the Oklahoma/Texas border
- [Drought puts Austin-area lakes near record lows](#) - Jan 16, Near Austin, Texas. [Video](#) of a flyover of the lakes.
- [A year of paltry rains leaves depleted Dallas area reservoirs lower still](#) - Jan 11, Texas

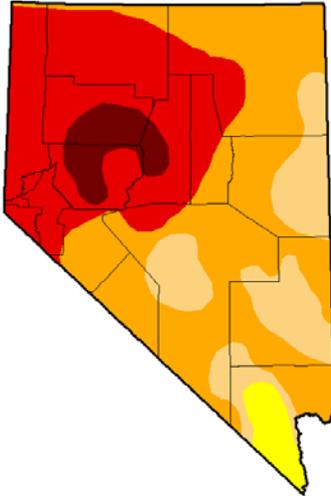


**No changes have occurred during the past week.**

# Weekly Snowpack and Drought Monitor Update Report

## State with D-4 Exceptional Drought

### U.S. Drought Monitor Nevada



**January 21, 2014**  
(Released Thursday, Jan. 23, 2014)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	96.80	80.30	38.17	5.37
Last Week 1/14/2014	0.00	100.00	96.80	80.30	38.17	5.37
3 Months Ago 10/22/2013	0.40	99.60	95.81	79.11	28.55	5.37
Start of Calendar Year 12/1/2013	0.39	99.61	95.81	77.65	28.55	5.37
Start of Water Year	-	-	-	-	-	-
One Year Ago 1/22/2013	0.11	99.89	93.71	56.05	9.20	0.00

**No changes have occurred during the past week.**

**Intensity:**  
■ D0 Abnormally Dry     ■ D3 Extreme Drought  
■ D1 Moderate Drought     ■ D4 Exceptional Drought  
■ D2 Severe Drought

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

**Author:**  
Richard Tinker  
CPC/NOAA/NWS/NCEP

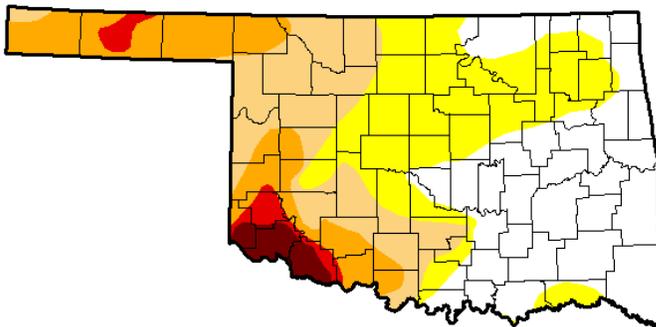


<http://droughtmonitor.unl.edu/>

## State with D-4 Exceptional Drought

### U.S. Drought Monitor Oklahoma

**No changes occurred during the past week.**



**January 21, 2014**  
(Released Thursday, Jan. 23, 2014)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	35.17	64.83	38.04	18.99	4.84	2.40
Last Week 1/14/2014	35.17	64.83	38.04	18.99	4.84	2.40
3 Months Ago 10/22/2013	43.05	56.95	34.58	15.51	4.42	1.47
Start of Calendar Year 12/1/2013	50.84	49.16	38.17	18.99	4.84	2.40
Start of Water Year	-	-	-	-	-	-
One Year Ago 1/22/2013	0.00	100.00	100.00	100.00	91.80	39.58

**Intensity:**  
■ D0 Abnormally Dry     ■ D3 Extreme Drought  
■ D1 Moderate Drought     ■ D4 Exceptional Drought  
■ D2 Severe Drought

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

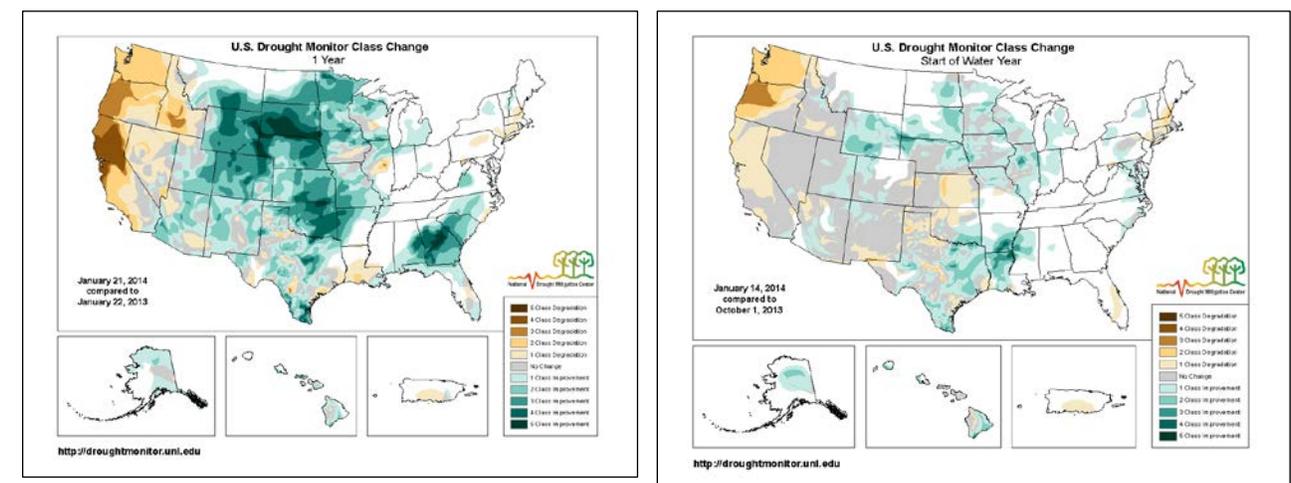
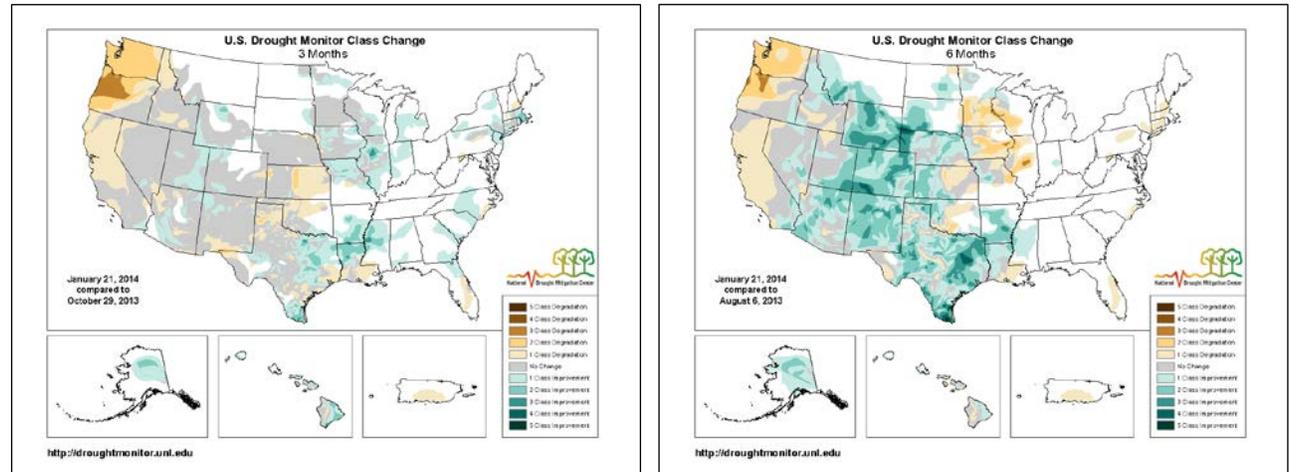
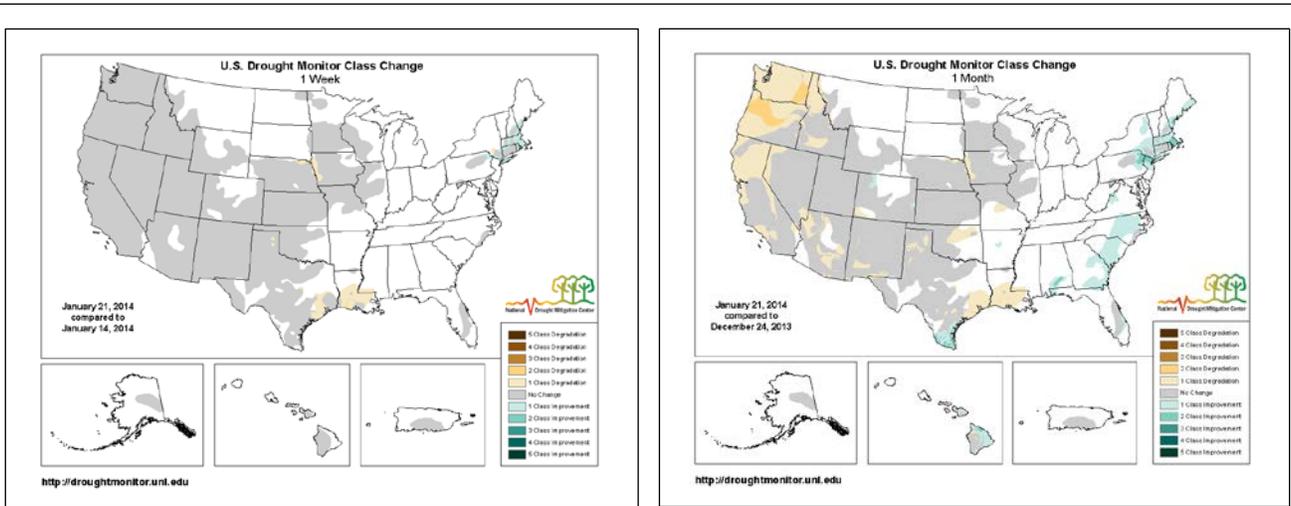
**Author:**  
Richard Tinker  
CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>

# Weekly Snowpack and Drought Monitor Update Report

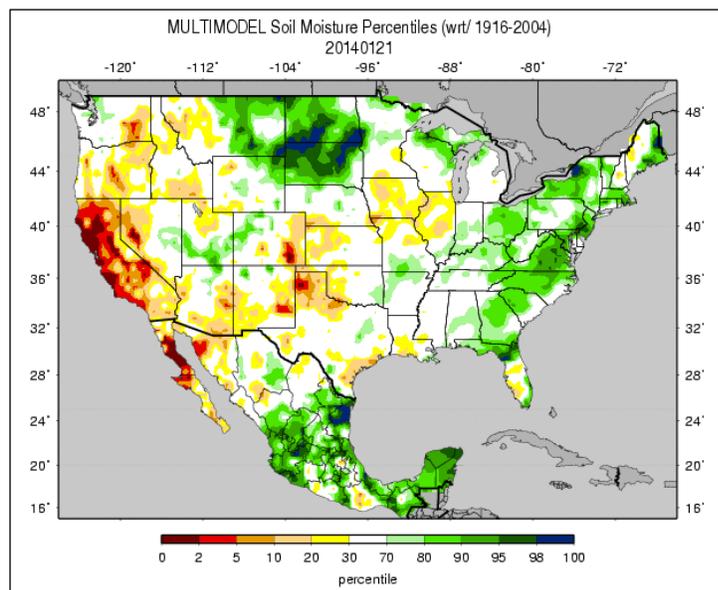
New Feature: [Changes in Drought Monitor Categories](#) (over various time periods)



Winter time changes to the drought monitor are usually minimal. However, over the past one to three months, drought conditions have significantly worsened over the Pacific Northwest.

# Weekly Snowpack and Drought Monitor Update Report

## Soil Moisture



Soil moisture ranking in [percentile](#) as of January 21 shows considerable dryness over California. Moist soils dominate the Northern Plains and many of the eastern states.

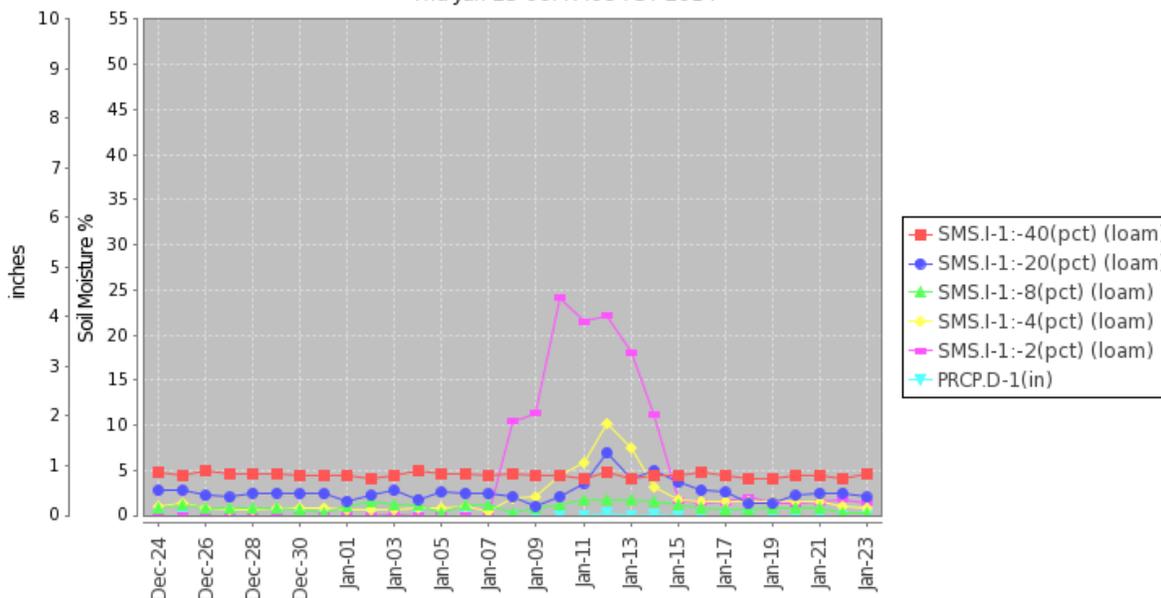
Useful Hydrological Links: [Crop Moisture Index](#); [Palmer Drought Severity Index](#); [Standardized Precipitation Index](#); [Surface Water Supply Index](#); [Weekly supplemental maps](#), [Minnesota Climate Working Group](#); [Experimental High Resolution Drought Trigger Tool](#); [NLDAS Drought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

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

**Note: As the ground freezes, accuracy of measured moisture decreases.**

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

Station (2192) MONTH=2013-12-24 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision Thu Jan 23 06:47:08 PST 2014



This NRCS resource shows soil moisture data at a SCAN site located in [northeastern California](#) with exceptionally dry soils. Note a temporary increase in topsoil moisture due to a brief but light precipitation event in mid-January.

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 January 21, 2014](#)

Author: Richard Tinker, NOAA/NWS/NCEP/CPC

#### **Hawaii, Alaska, and Puerto Rico**

“Through most of the dry areas in Alaska, Puerto Rico, and Hawaii, light to locally moderate precipitation fell. A small area in south-central Puerto Rico reported more than one inch of rain. Dryness and drought classifications were unchanged.

#### **The Northeast**

Moderate precipitation (generally 0.5 to locally 2.0 inches) dampened the areas of dryness and drought in this region. This resulted in the elimination of D1 in east-central New England and from part of the New York City metropolitan area and Long Island. In addition, D0 was trimmed out of part of northeast Pennsylvania, New Jersey, parts of Massachusetts, and small areas in the rest of New England. These areas received above-normal precipitation during the last 60 days, are near- to below-normal for the past 90 days, and significantly below-normal for the last 6-months. D0 was kept in areas classified as D1 last week and/or areas still with significant 180-day deficits of at least a few inches.

#### **The Rest of the Contiguous 48 States**

Very little if any precipitation fell. As a result, drought and dryness remained unchanged in most areas as moisture deficits crept upward on all relevant time scales (which varied depending on location). In a few areas it seemed appropriate to indicate one-classification deteriorations in the dryness and drought depiction. Specifically...

D0 was expanded into western Iowa and adjacent areas where 60-day precipitation totals were under half of normal.

A few areas in southeastern Texas and the Texas Panhandle worsened to D0 or D1 levels which were on the cusp of classifications last week.

D0 was downgraded to D1 in south-central Louisiana where 6-month precipitation totals were at least 9 inches below normal. In a larger surrounding area of central and southern Louisiana and adjacent Mississippi, D0 expanded into areas at least 4 inches below normal for the last 60 days and recording under 4 inches of precipitation since late December 2013.

#### ***Looking Ahead***

During January 23 – 27, 2014, between 0.25 and 0.75 inch of precipitation (with locally higher totals) is forecast in the dry areas of the Northeast, central Florida, and southern and southeastern Texas. Light precipitation is anticipated in areas adjacent to these and in most of the Rockies. No measurable precipitation is expected elsewhere. The pattern of above-normal temperatures in the western U.S. and below-normal temperatures farther east is expected to continue.

For January 28 – February 1, 2014, the odds favor above-normal precipitation in the central and northern Rockies and along the northern tier of states from the northern Rockies through the Great Lakes region. Above-normal precipitation is also favored in the dry areas of Alaska. There are enhanced chances of below-normal precipitation in the southern Rockies and in central and southern

## Weekly Snowpack and Drought Monitor Update Report

sections of the rest of the contiguous 48 states from the Appalachians and Piedmont westward to the Pacific coast, except Florida and southern Texas. Neither dryer- nor wetter-than-normal conditions are favored elsewhere. The pattern of above-normal temperatures in the West and below-normal temperatures farther east is expected to continue.”

\*\*\*\*\*

### 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.

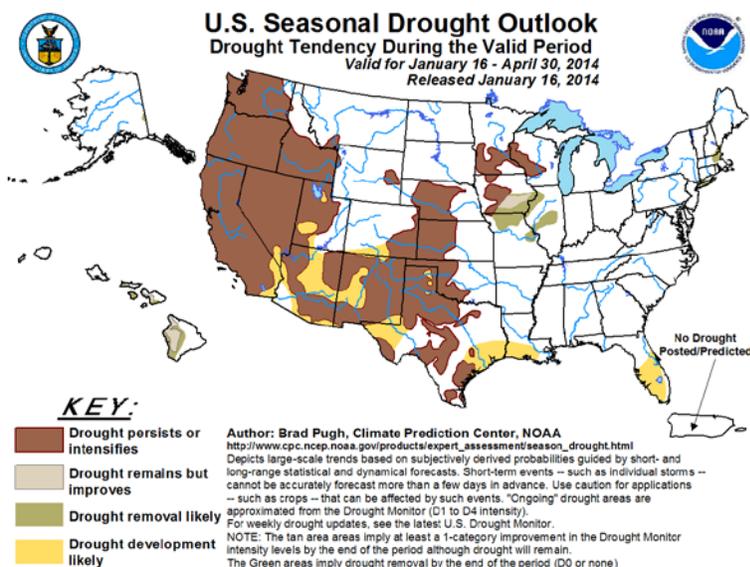
/s/

David W. Smith

Acting Deputy Chief, Soil Science and Resource Assessment

\*\*\*\*\*

### Drought Outlook

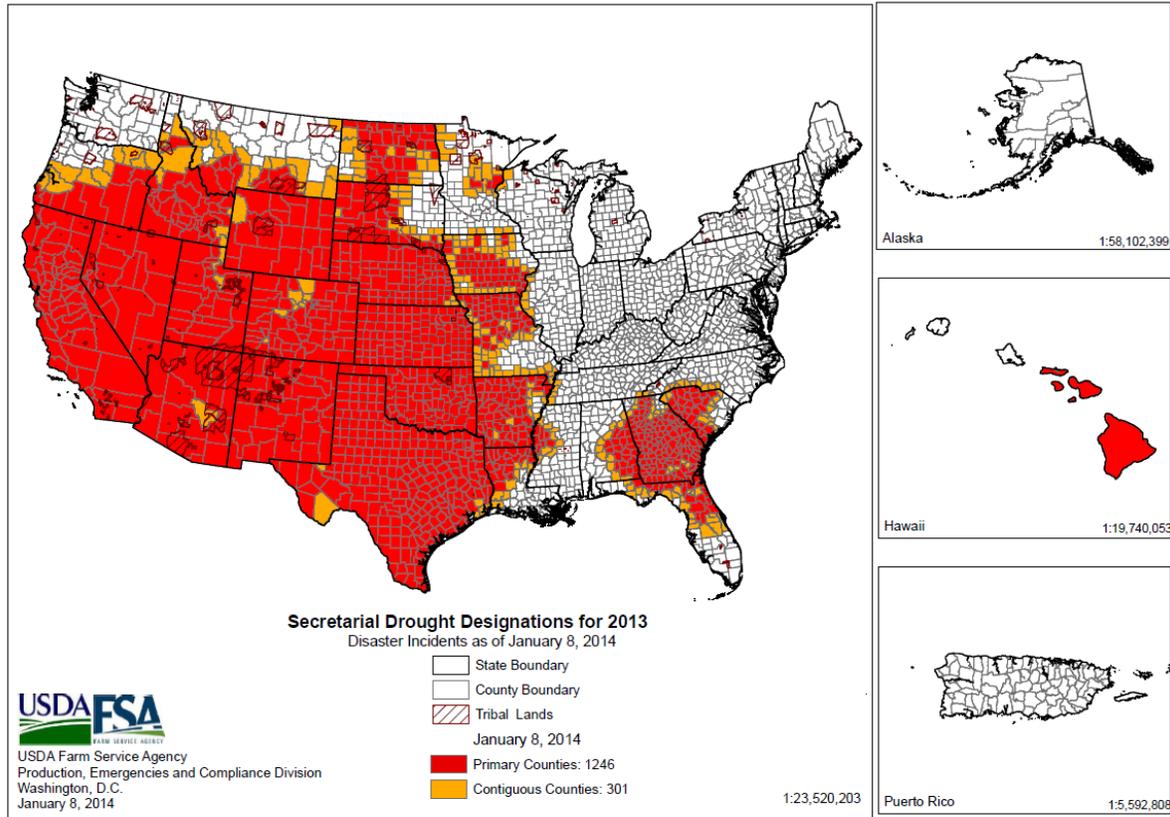


U.S. Seasonal Drought Outlook through the end of April shows:

- Drought is expected to improve over the upper Mississippi River Valley. Persistent or worsening drought is expected over much of the western half of the nation (including southern Florida, but excluding the northern half of the Rockies).
- ✓ 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.

## Weekly Snowpack and Drought Monitor Update Report

### 2013 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](#).

### Supplemental Drought News

This is a collection of drought-related news stories from the past week. 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.

#### California

It is official. Gov. Jerry Brown of California announced a drought emergency for the state this morning amid a dry stretch worse than any in the last 153 years. He urged residents to curb their water use by at least 20 percent voluntarily, although a mandatory water conservation order may be in the works. Dry conditions are forecast to continue, and average snowpack in the Sierra Nevada is about 20 percent.

#### Fire activity

More than 150 wildfires have burned in California, according to the state Department of Forestry and Fire Protection. The average number of wildfires for mid-January is about two dozen.

"It all has to do with the fact that things are critically dry," said Cal Fire spokesman Daniel Berlant. "It's definitely disconcerting for us to be three weeks into January and seeing conditions that we'd typically see in early summer." Cal Fire hired 150 seasonal firefighters in Northern California in January, hires it normally makes in the springtime. Year-round employees and engines were deployed to airbases not usually in use during January.

#### Wild fire, north of Glendora, California

A Santa Ana wind-driven wildfire north of Glendora was 30 percent contained after burning about 2 ½ square miles of very dry chaparral and 17 structures, five of which were homes, and forcing many evacuations. About 3,700 people from Glendora and Azusa were forced to flee. Residents of Glendora went home on the evening of Jan. 16, while roughly 2,000 people from Azusa were not yet allowed to return to their homes. The last time the vegetation above Glendora burned was 1968.

# Weekly Snowpack and Drought Monitor Update Report

## Water restrictions

The governor requested that all Californians trim their water use by at least 20 percent. Prior to the governor's request, numerous communities and water districts were enacting restrictions on water use and reducing flows from reservoirs to lessen the drain on water supplies.

## Texas water supplies

Water supplies in north Texas and the Austin area continue to recede without enough precipitation to replenish them. Lake Texoma on the Oklahoma/Texas border was at 67 percent of conservation pool; lakes in the Dallas area were about 10 percent lower than January 2013, and lakes Travis and Buchanan near Austin were nearing historical lows.

**Counties in 11 states received USDA disaster declarations this week due to drought.**

With all of the media attention focused on California, the state has the most impacts listed in the [Drought Impact Reporter](#) for the past 30 days.



\*\*\*\*\*

The "U.S. Crops in Drought" products are produced on a weekly basis, and can be viewed [here](#). Archived "U.S. Crops in Drought" files can be downloaded [here](#).

---

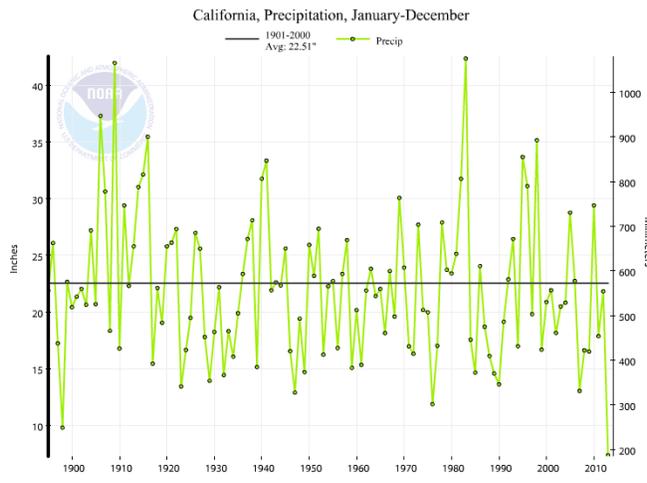
## Other Tea Cup reservoir depictions:

- <http://www.usbr.gov/uc/water/basin/> ← Upper Colorado
- [http://www.usbr.gov/uc/wcao/water/basin/tc\\_gr.html](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](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)

See westwide [water supply forecast tables](#)

# Weekly Snowpack and Drought Monitor Update Report

## California Records



← “California’s driest year on record featured an average of 7.37 inches of precipitation, 33 percent of normal.

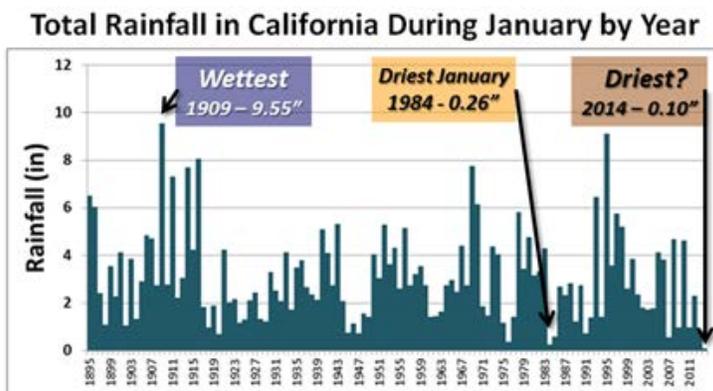
By comparison, 1976 was a “garden year,” with 11.87 inches (3<sup>rd</sup> driest on record). Number two was 1898, when California’s nearly 1.5 million residents (compared to some 40 million now) received an average of 9.80 inches.

On the flip side, an average of 42.33 inches fell in 1983.”

-Brad Rippey, USDA

**Special Report:** Provided by Paul M. Iñiguez, Operational Meteorologist/Science & Operations Officer, OAA/NWS San Joaquin Valley/Hanford, CA, 559.584.0583x224 - Weather.Gov/Hanford

“So far this month California has received 0.10” of precipitation (state-wide average). This is based on the [OSU PRISM](#) data; while these data are not official, they show a very high correlation to the NCDC data (0.95) and are more than adequate for this analysis. Plus, using just one data set makes it all apples-to-apples comparisons



With the forecast for the remainder of the month looking very dry, it is increasingly likely this will be the driest January on record for the Golden State, beating the previous record of 0.26” from 1984. Here are the Top 10 driest Januaries on record for California.

**Top 10 Driest Januaries in California**

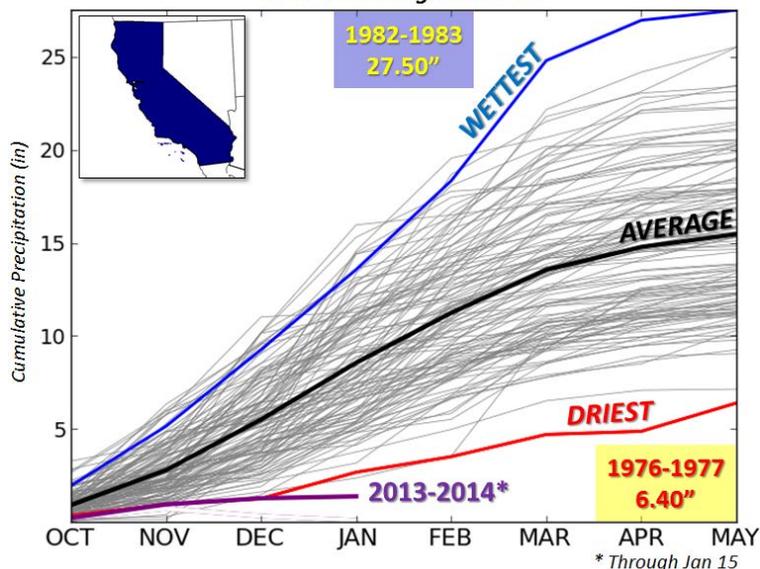
Rank	Year	Avg Rain
1	2014	0.10
2	1984	0.26
3	1976	0.37
4	2007	0.57
5	1985	0.60
6	1920	0.71
7	1947	0.73
8	1991	0.74
9	1945	0.75
10	2013	0.80

Expanding out to the Water Year, how does this year compare so far? Using the same data set, I made a plot with cumulative rainfall for all 118 years for the primary wet season (Oct-May). The wettest season was 1982-1983, the infamous El Niño year, with a state-wide average precipitation of 27.50”. The driest season, also infamous, was 1976-77 with a paltry 6.40”. Based on all previous years (excluding this one), the average is 15.47”. We are currently tracking below 1976-77.

## Weekly Snowpack and Drought Monitor Update Report

### Water Year Precipitation in California

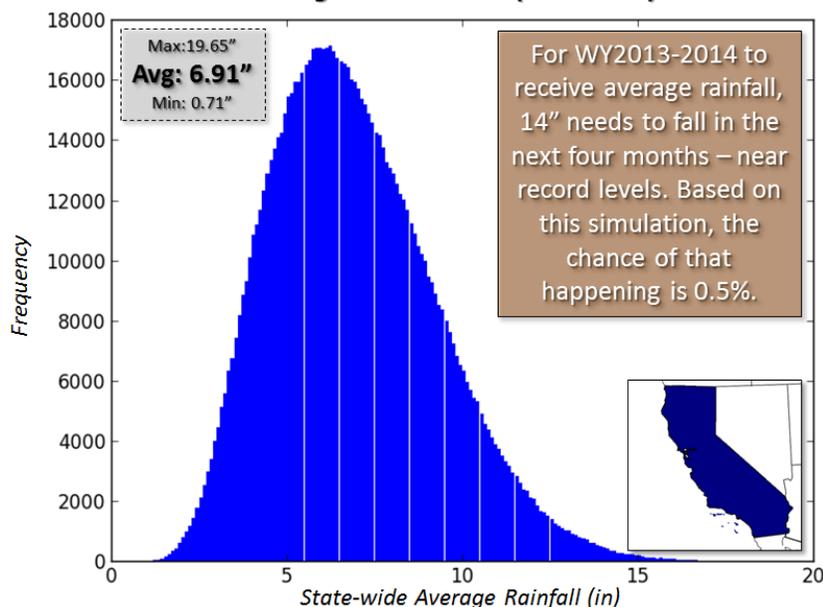
1895-96 through 2013-24



At this point, can we even have *average* precipitation in California for the WY as a whole? To answer that let's pull-up our bootstraps! I went through a process where, again using all the historical data, I randomly selected a precipitation value for February, randomly picked one for March, then April, and finally May. Add those together and you have a random cumulative rainfall total for the remainder of the wet season in California. Then I had the computer do that 1,000,000 times and make a histogram of all those values. The nice thing about the bootstrap method is that it'll generate values outside of the observed data set; giving you some idea of the extreme range that is maybe possible but never observed (it could randomly pick all the wettest months or all the driest months). Turns out the average precipitation for Feb-May with this method is 6.91" (exactly what it is in the observed data!). The wettest simulation was 19.65" (real world was 14.62") and the driest was 0.71" (real world was 2.26").

### Feb-May Rainfall in California Based on 1M Simulations

Using Historical Data (1895-2013)



Back to this year, with just 1.39" observed since Oct. 1, we would need an additional 14.08" to hit average. Based on the 1M simulations, the chance of getting 14" or more during Feb-May is 0.5% (far right tail). Basically, we've locked-in below average rainfall for the winter portion of the 2013-14 WY barring a February Frenzy, March Madness, *and* April Anarchy."