



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 12 January 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: [Snow Water-Equivalent](#): Many Basins continue to slowly decline in snowpack as high pressure dominated with wide spread dry weather across the West this week (Fig. 1). [7-Day Snow Depth Change](#) ending this morning shows generally light accumulation over most of the West. The Cascades and Southwest Mountains experienced some decline in SW (Fig. 1a).

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly shows a rather mild to extremely warm conditions across much of the West. [Record high temperatures](#) were experienced across Montana and the Northern Plains as denoted by the red crosses (Fig. 2). [ACIS](#) 7-day average temperature anomalies show the greatest positive temperature departures over northern Montana (**>+25°F**); 3rd week in a row, and the greatest negative departures over parts of Coastal Oregon and Northern California (**<-10°F**). This pattern of warmth continues to impact the development of snowpack (Fig. 2a). *[A special report summarizing the snow conditions across the West can be found at the end of this week's report.](#)*

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the greatest amounts over northwestern Washington (Fig. 3). However, in terms of percent of normal, only widely scattered areas received above normal precipitation for the week (Fig 3a). Thus far, since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has favored the Southwest while the Great Basin, Cascades, and Western Slope of the Rockies have seen significant deficits. However, surplus moisture over the Southwest is on the decline (Fig. 3b).

Summary: For all but the southern states, it was another mild weather week as drought conditions continued across much of the west, north and east. A broad expansion of dry conditions is depicted over much of the West, from Idaho to Colorado to California. Improvements are seen in Texas and some nearby states as a system late in the week brought some heavy precipitation over a two-day period.

The West: Continued dry conditions are prompting introduction of Moderate drought in the central plains of Washington and northern Oregon. Seasonal precipitation totals are dismal, with 50 percent or less of normal for the last 90 days. Very little snowfall all across the western states is causing further degradation in the Sierra Nevada to short-term Severe Drought, as impacts to forage conditions in rangeland areas are significant. Wildland fire awareness is increasing in California as well. A large area of D0, Abnormally Dry, was expanded over San Bernardino county, California, and Clark county, Nevada. Bartow-Daggett area of California had its 10th driest year on record in 2011, and Las Vegas and Mt. Charleston, NV both ranked in the top 15 driest on record.

In the Great Basin and headwaters of the Colorado River, D0 is introduced this week to reflect lack of snowfall thus far in the typically wet season. Ski resorts are suffering due to warm and dry conditions, even though water supply reservoirs continue to hold storage from the last wet year.

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In the southwestern states, an impact line was drawn to separate the short-term and long-term nature of drought between the northern and southern states. Author: Laura Edwards, Western Regional Climate Center and South Dakota State University.

A comprehensive narrative describing drought conditions for the nation can be found at the end of this document.

Drought Impacts Definitions

The possible impacts associated with **D4 (H, A)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (H, A)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (H, A)** drought are focused on water shortages common and water restrictions imposed and crop or pasture losses likely. The possible impacts associated with **D1 (H, A)** drought are focused on water shortages developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs. 4 through 4b).

Soil Moisture

Soil moisture (Figs. 5a and 5b), is simulated by the [VIC macroscale hydrologic model](#). The detailed, physically-based VIC model is driven by observed daily precipitation and temperature maxima and minima from approximately 2130 stations, selected for reporting reliably in real-time and for having records of longer than 45 years (and various other criteria). Another good resource can be found at: <http://www.emc.ncep.noaa.gov/mmb/nldas/drought/>.

Soil Climate Analysis Network (SCAN)

Figure 6 provides supplemental data on soil conditions (moisture and temperatures at various depths from 2 inches to 80 inches. For more information about SCAN see ([brochure](#)).

U.S. Historical Streamflow

This map, (Fig. 7) shows the 7-day average streamflow conditions in hydrologic units of the United States and Puerto Rico for the day of year. The colors represent 7-day average streamflow percentiles based on historical streamflow for the day of the year. Thus, the map shows conditions adjusted for this time of the year. Only stations having at least 30 years of record are used. Sub-regions shaded gray indicate that insufficient data were available to compute a reliable 7-day average streamflow value. During winter months, this situation frequently arises due to ice effects. The data used to produce this map are provisional and have not been reviewed or edited. They may be subject to significant change.

State Activities

State government drought activities can be tracked at the following URL: <http://drought.unl.edu/mitigate/mitigate.htm>. NRCS SS/WSF State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SS/WSF information - <http://www.wcc.nrcs.usda.gov/cgibin/bor.pl>. Additional information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/> and <http://www.drought.gov>.

Weekly Snowpack and Drought Monitor Update Report

For More Information

The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>. Reports from 2007 are available on-line while ones from 2001-2006 can be acquired upon request.

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

/s/

Micheal L. Golden

Acting Deputy Chief, Soil Survey and Resource Assessment

Weekly Snowpack and Drought Monitor Update Report

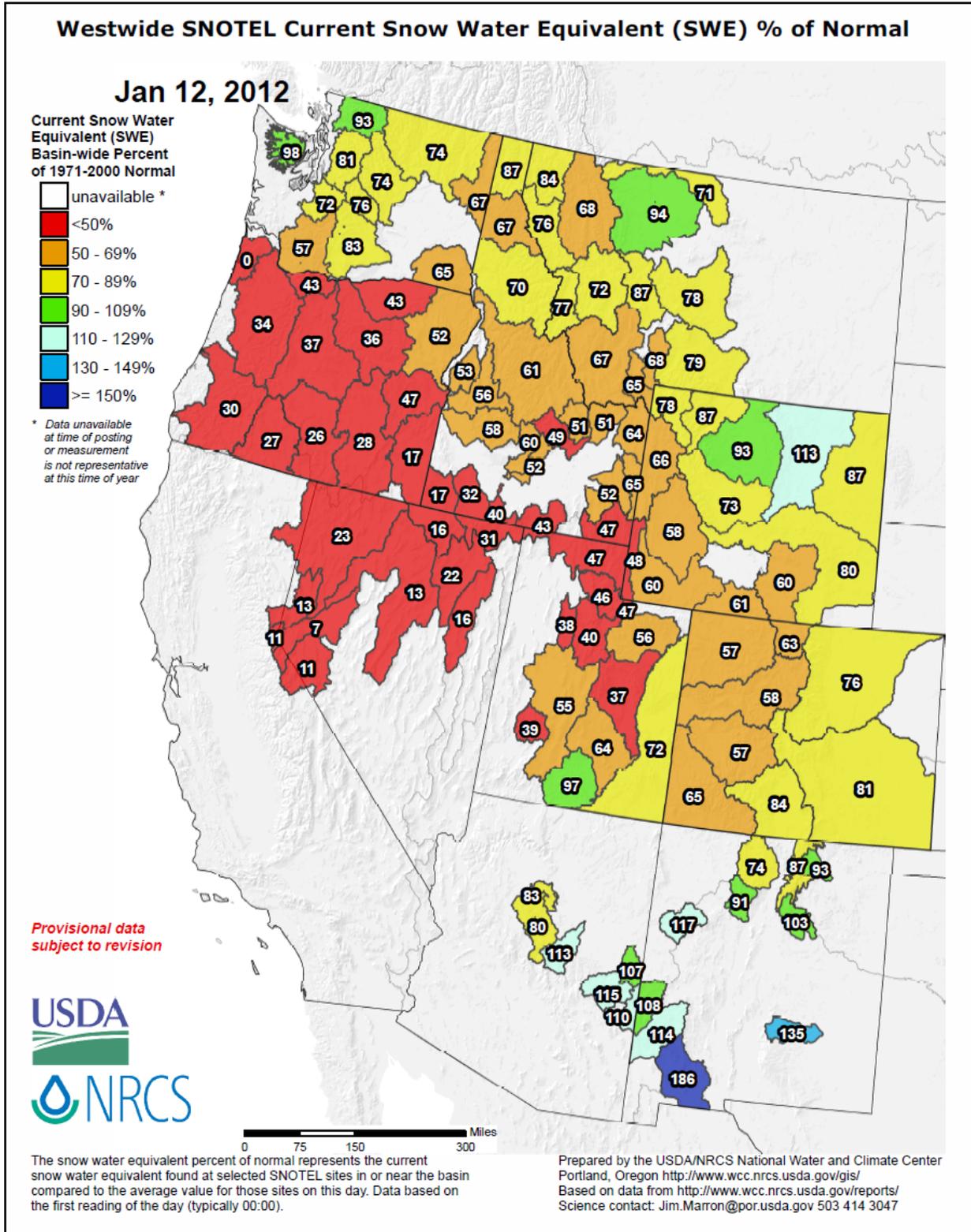


Fig. 1: Snow Water-Equivalent : Many Basins continue to slowly decline in snowpack as high pressure dominated with wide spread dry weather across the West this week.

SNOTEL 7-Day Snow Depth Change (Inches)

Jan 12, 2012

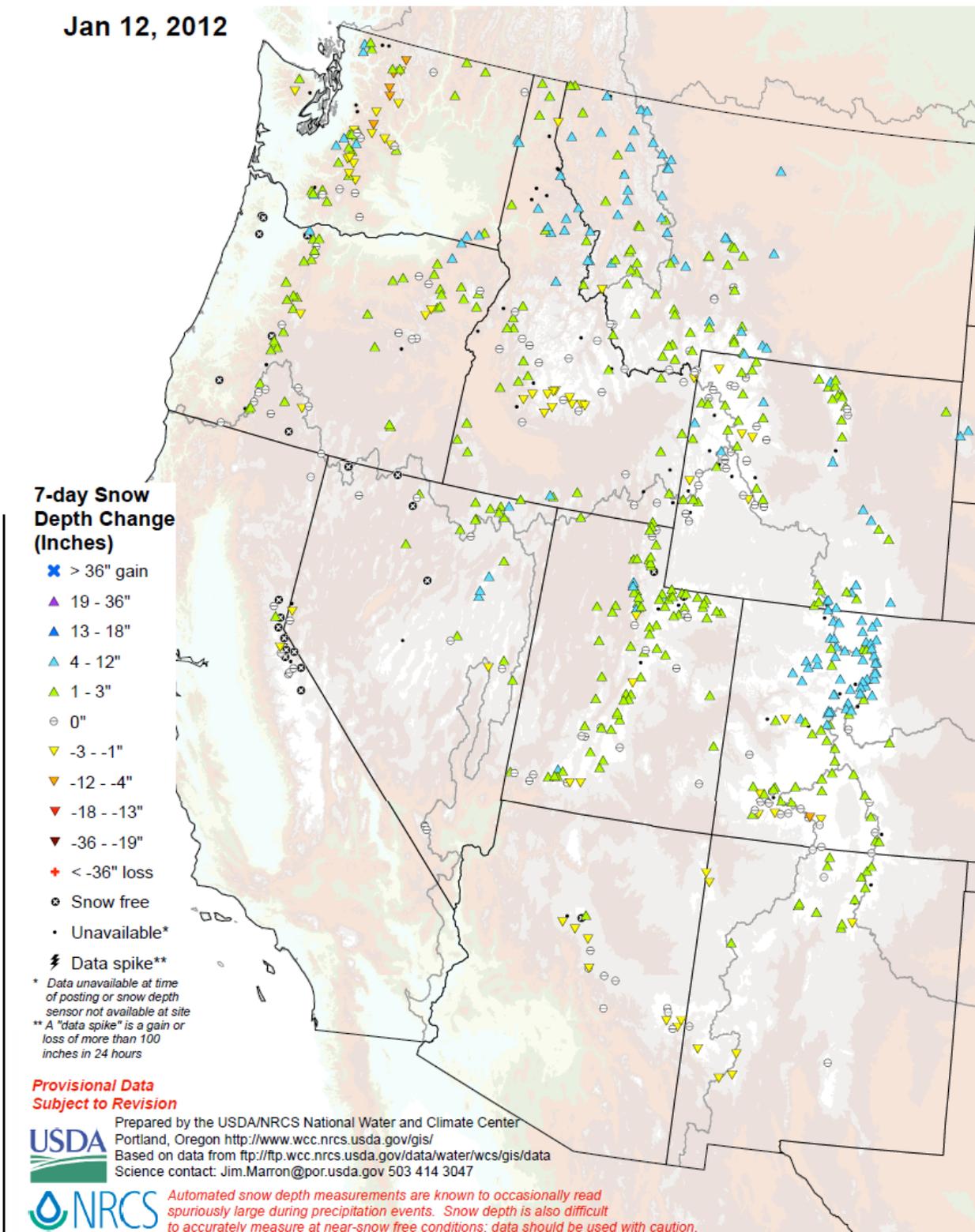


Fig. 1a: **7-Day Snow Depth Change** ending this morning shows generally light accumulation over most of the West. The Cascades and Southwest Mountains experienced some decline in SWE.

Weekly Snowpack and Drought Monitor Update Report

SNOTEL (solid) and ACIS (dot-filled) Networks 7-Day Average Temperature Anomaly (Degrees F)

Jan 12, 2012

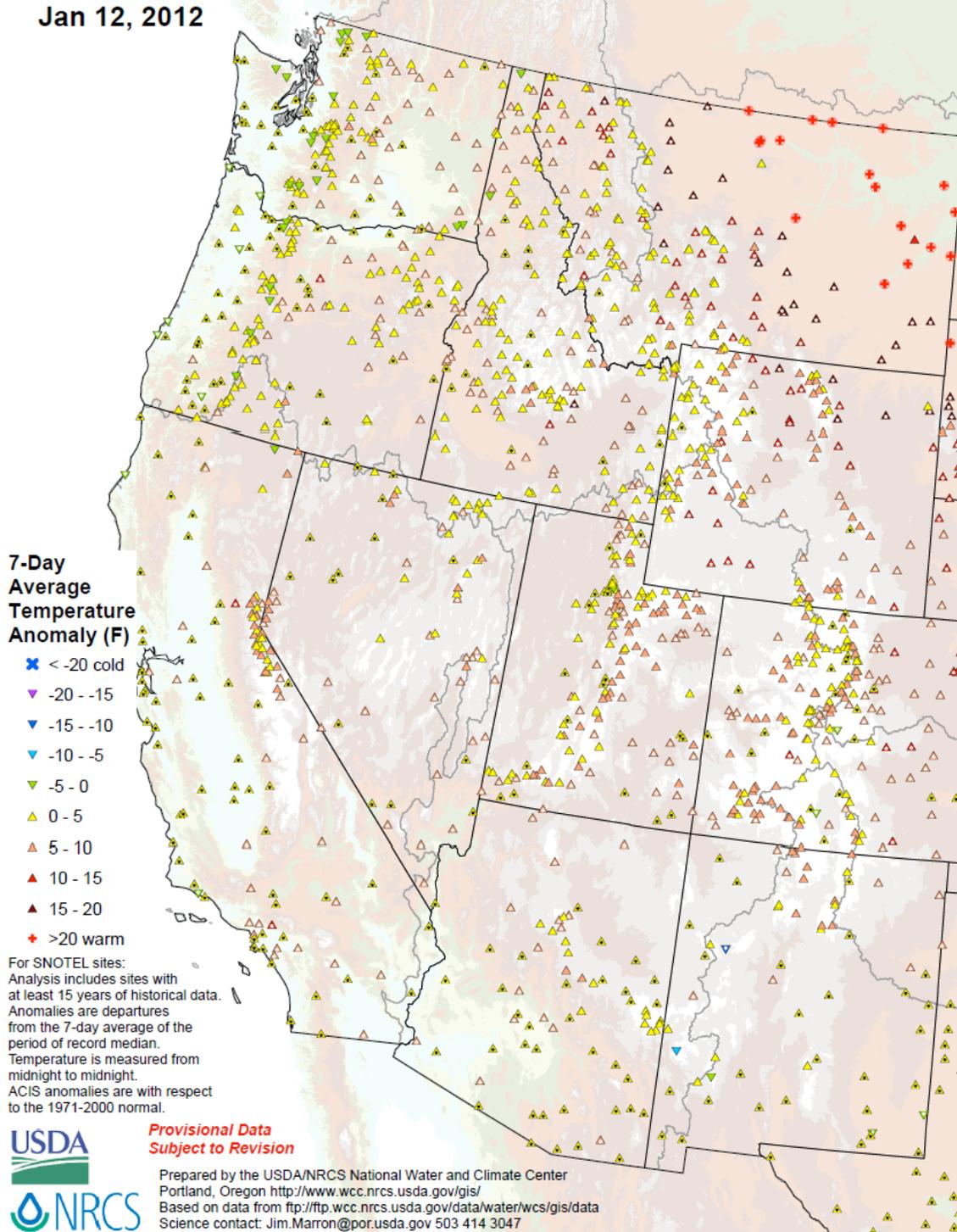
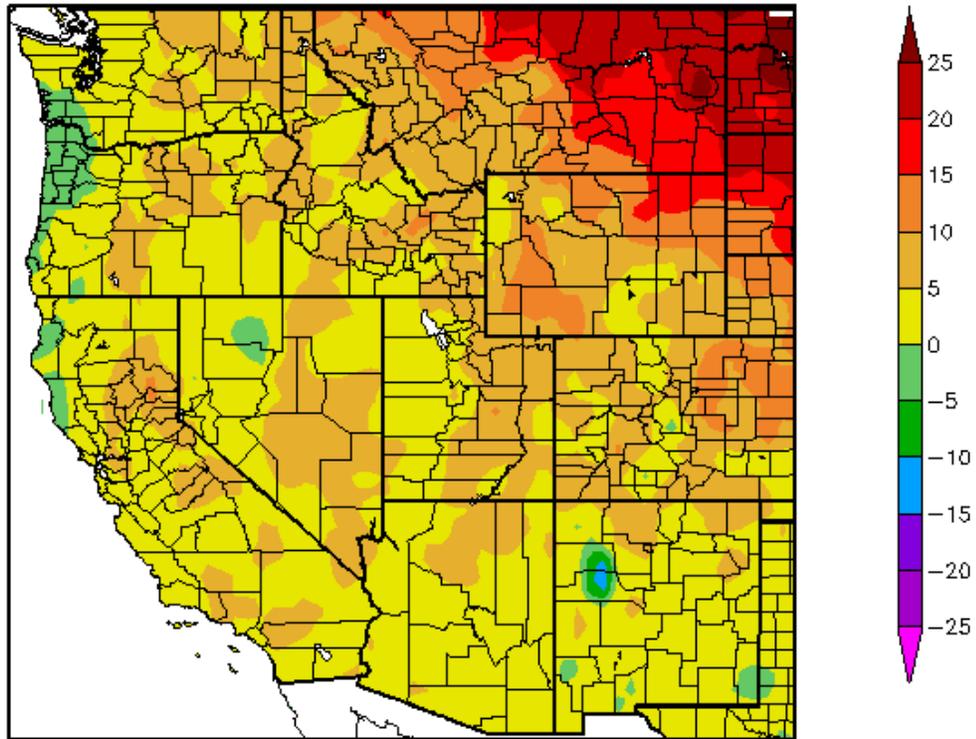


Fig. 2: SNOTEL and ACIS 7-day temperature anomaly shows a rather mild to extremely warm conditions across much of the West. Record high temperatures were experienced across Montana and the Northern Plains as denoted by the red crosses.

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Departure from Normal Temperature (F)
1/5/2012 – 1/11/2012



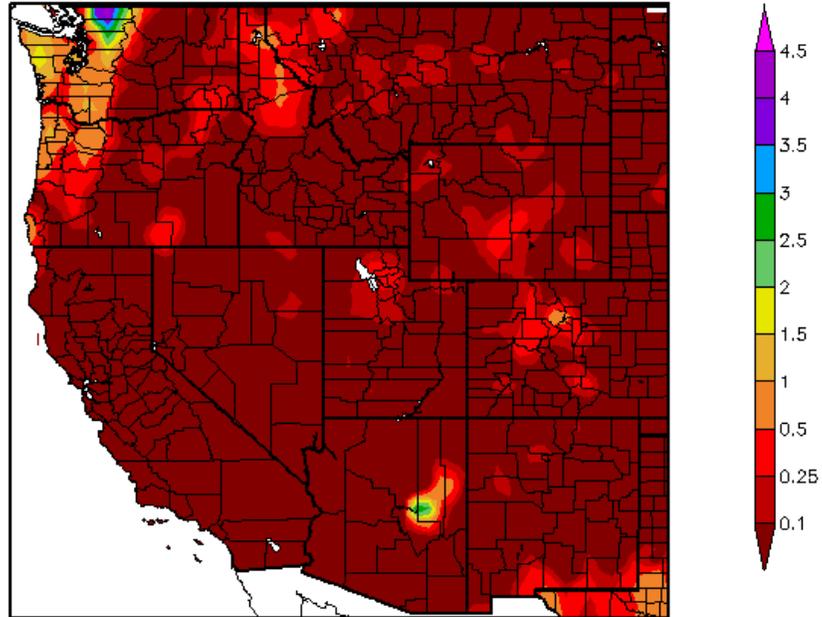
Generated 1/12/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2a: [ACIS](#) 7-day average temperature anomalies show the greatest positive temperature departures over northern Montana (>+25°F); 3rd week in a row, and the greatest negative departures over parts Coastal Oregon and Northern California (<-10°F). This pattern of warmth continues to impact the development of snowpack. *A special report summarizing the snow conditions across the West can be found at the end of this week's report.*

Weekly Snowpack and Drought Monitor Update Report

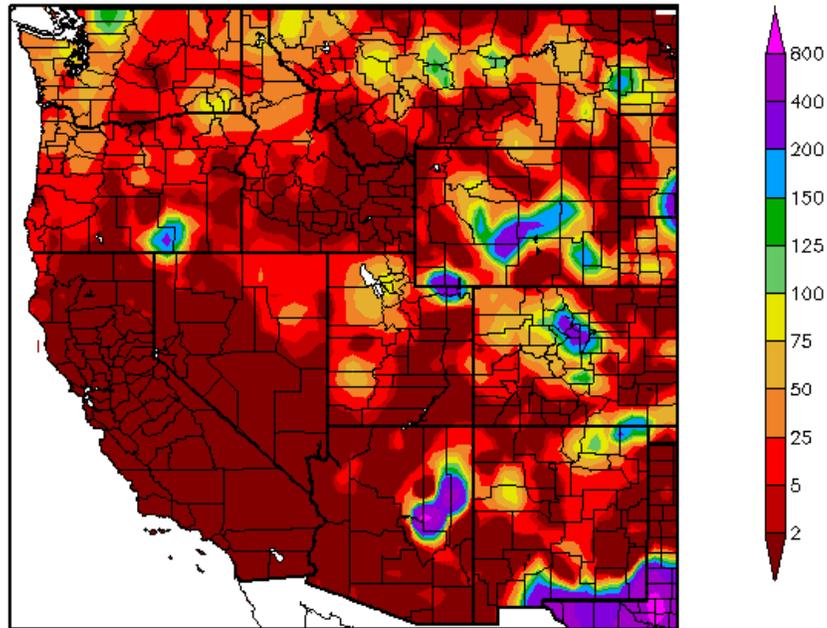
Precipitation (in)
1/5/2012 - 1/11/2012



Generated 1/12/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
1/5/2012 - 1/11/2012



Generated 1/12/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the greatest amounts over northwestern Washington (Fig. 3). However, in terms of percent of normal, only widely scattered areas received above normal precipitation for the week (Fig 3a).

Weekly Snowpack and Drought Monitor Update Report

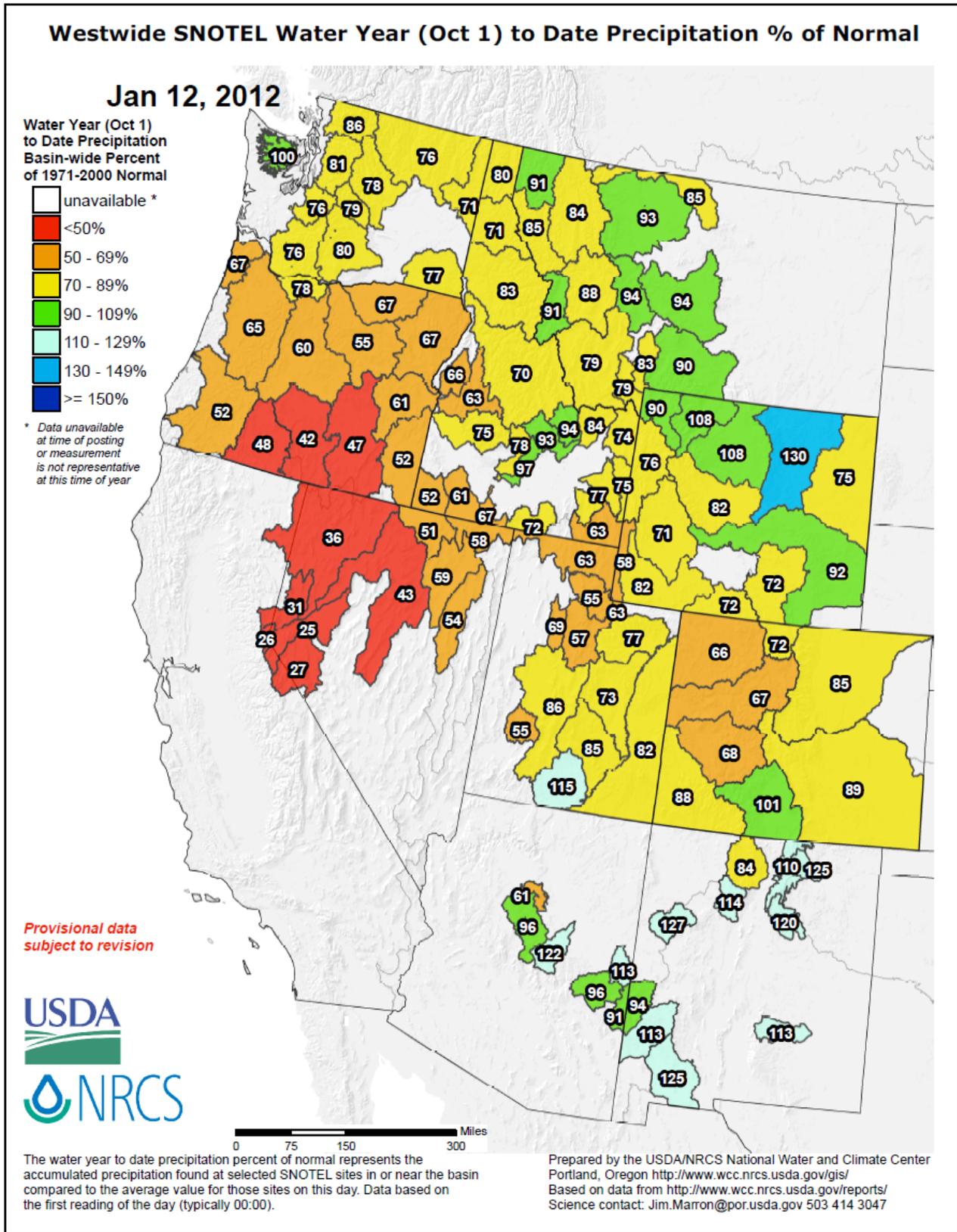


Fig 3b: Thus far, since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has favored the Southwest while the Great Basin, Cascades, and Western Slope of the Rockies have seen significant deficits. However, surplus moisture over the Southwest is on the decline.

U.S. Drought Monitor

January 10, 2012
Valid 7 a.m. EST

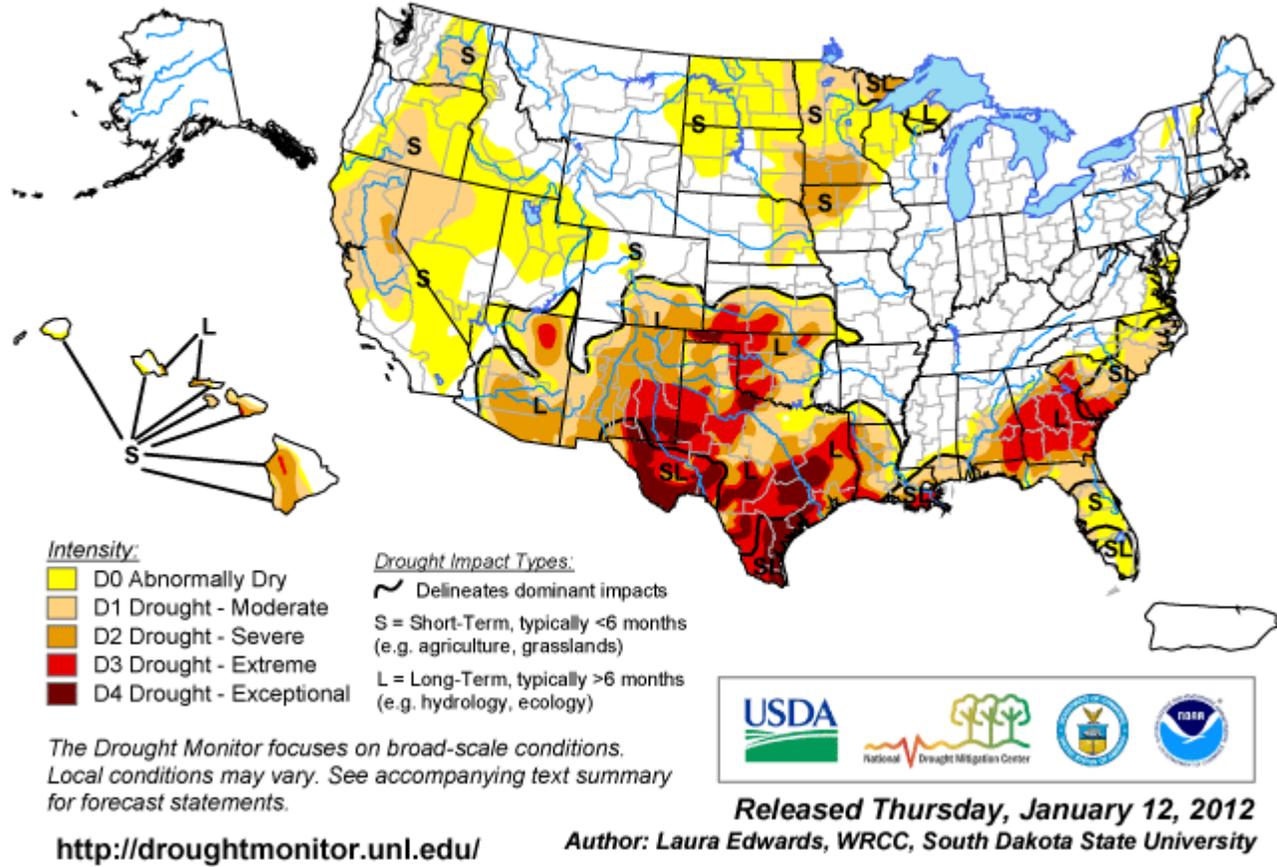


Fig. 4: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over southeastern New Mexico, mostly southern Texas, and the Panhandle of Oklahoma. For more drought news see: [Drought Impact Reporter](#).

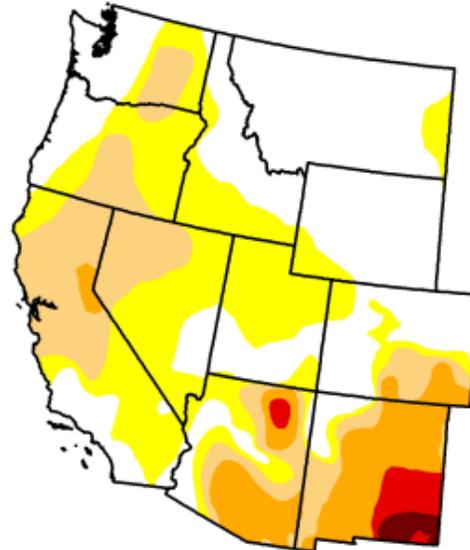
U.S. Drought Monitor

West

January 10, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.89	58.11	29.50	12.26	2.67	0.77
Last Week (01/03/2012 map)	50.20	49.80	28.05	11.84	2.67	0.78
3 Months Ago (10/11/2011 map)	74.02	25.98	18.63	14.79	8.48	2.87
Start of Calendar Year (12/27/2011 map)	48.49	51.51	20.05	12.22	2.67	0.78
Start of Water Year (09/27/2011 map)	66.72	33.28	19.04	14.99	9.30	3.81
One Year Ago (01/04/2011 map)	74.72	25.28	11.69	0.89	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

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



Released Thursday, January 12, 2012

<http://droughtmonitor.unl.edu>

Laura Edwards, Western Regional Climate Center and South Dakota S

Fig. 4a: Drought Monitor for the [Western States](#) with statistics over various time periods. No significant changed noted this week.

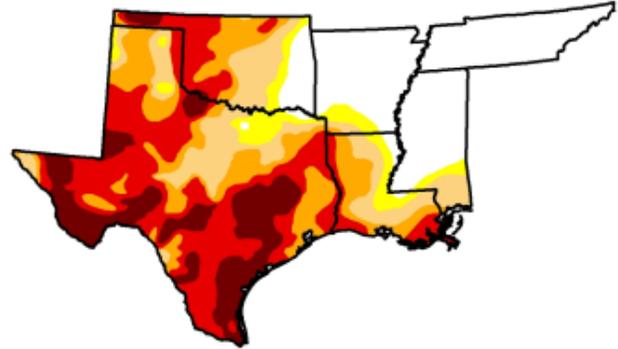
U.S. Drought Monitor

South

January 10, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.24	72.76	66.99	53.30	37.37	13.27
Last Week (01/03/2012 map)	26.47	73.53	69.01	54.98	40.06	17.24
3 Months Ago (10/11/2011 map)	13.64	86.36	78.80	70.71	62.22	47.03
Start of Calendar Year (12/27/2011 map)	26.47	73.53	69.01	54.81	39.11	17.15
Start of Water Year (09/27/2011 map)	18.34	81.66	76.26	70.61	63.67	53.77
One Year Ago (01/04/2011 map)	12.28	87.72	58.95	31.71	11.37	0.00



Intensity:

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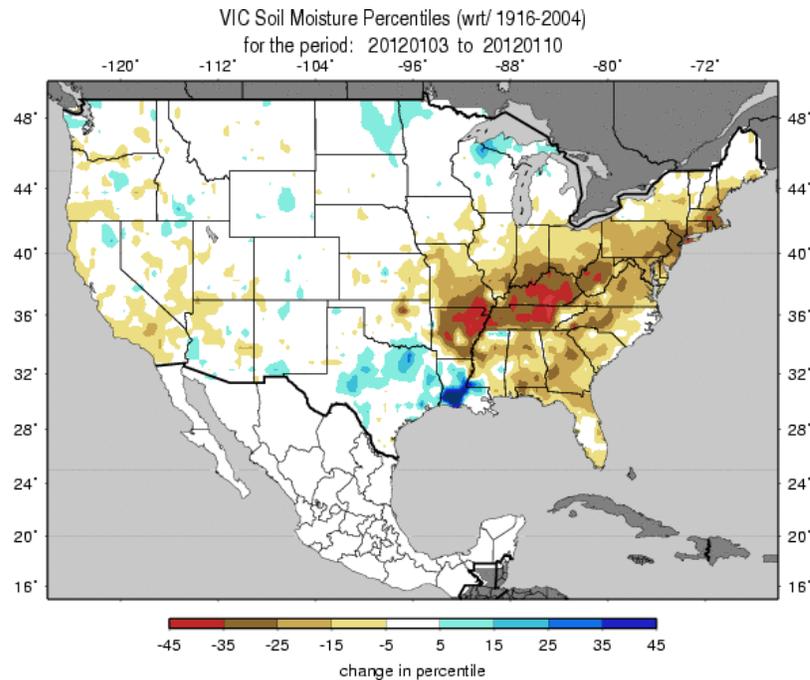
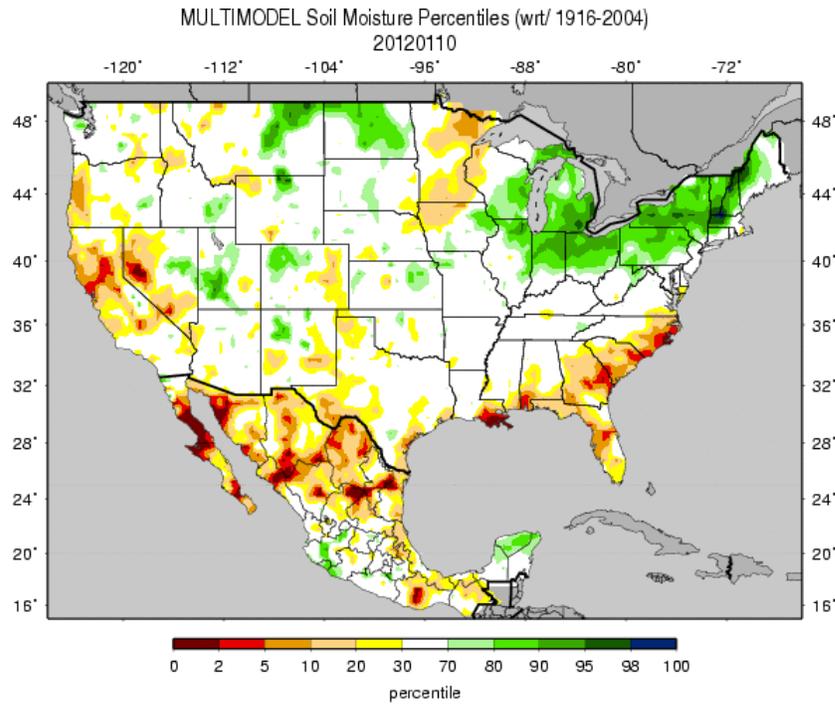
Released Thursday, January 12, 2012

<http://droughtmonitor.unl.edu>

Laura Edwards, Western Regional Climate Center and South Dakota S

Fig. 4b: Drought Monitor for the [South-Central States](#) with statistics over various time periods. Note a 4% improvement in D4 this week.

Weekly Snowpack and Drought Monitor Update Report



Figs. 5a and 5b: Soil Moisture ranking in [percentile](#) as of 10 January (top) shows a wet Ohio Valley to New England pattern continuing. Dryness is noted northern California and western Nevada. [During the week](#), moisture decreased dramatically over the Tennessee Valley. Note: Soil moisture measurements become more suspect in winter with frozen ground.

Weekly Snowpack and Drought Monitor Update Report

Soil Climate Analysis Network (SCAN)

Station (2075) MONTH=2011-12-13 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Jan 12 08:36:46 PST 2012

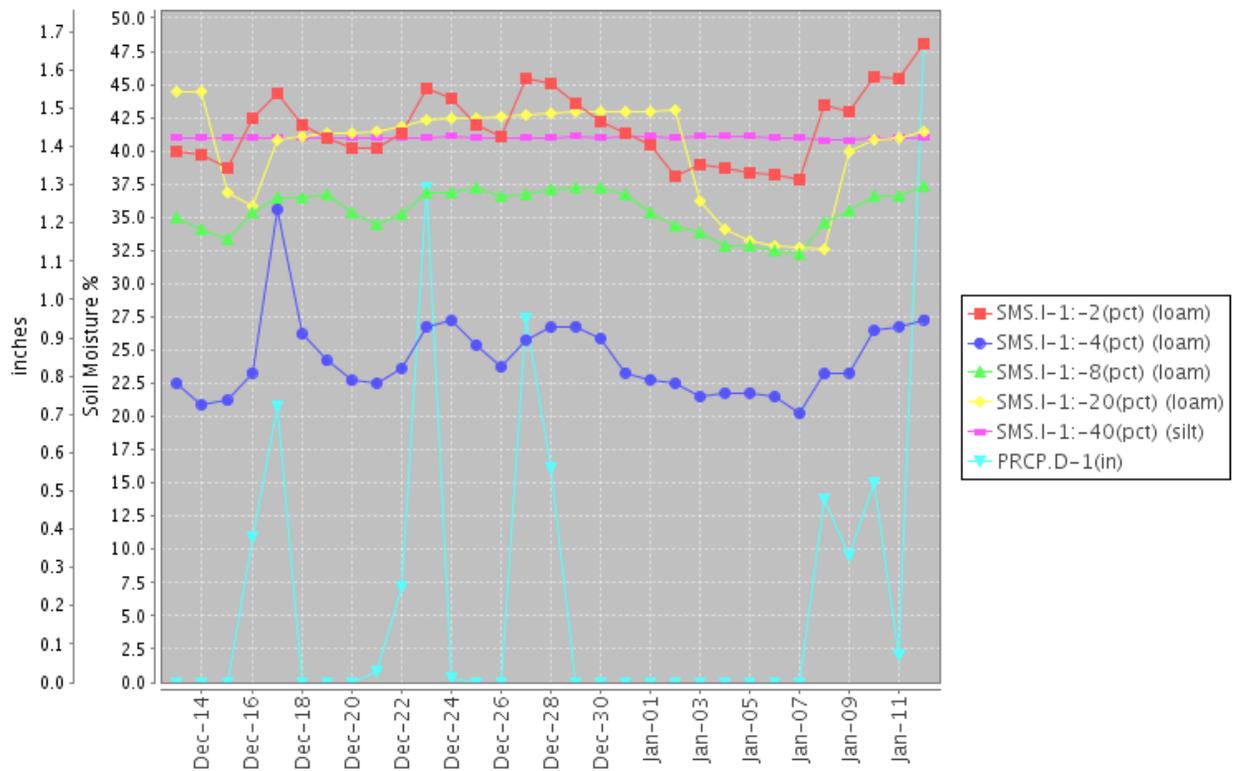


Fig. 6: This NRCS resource shows a site over [Southern Tennessee](#) moist conditions responding to precipitation events.

Weekly Snowpack and Drought Monitor Update Report

Wednesday, January 11, 2012

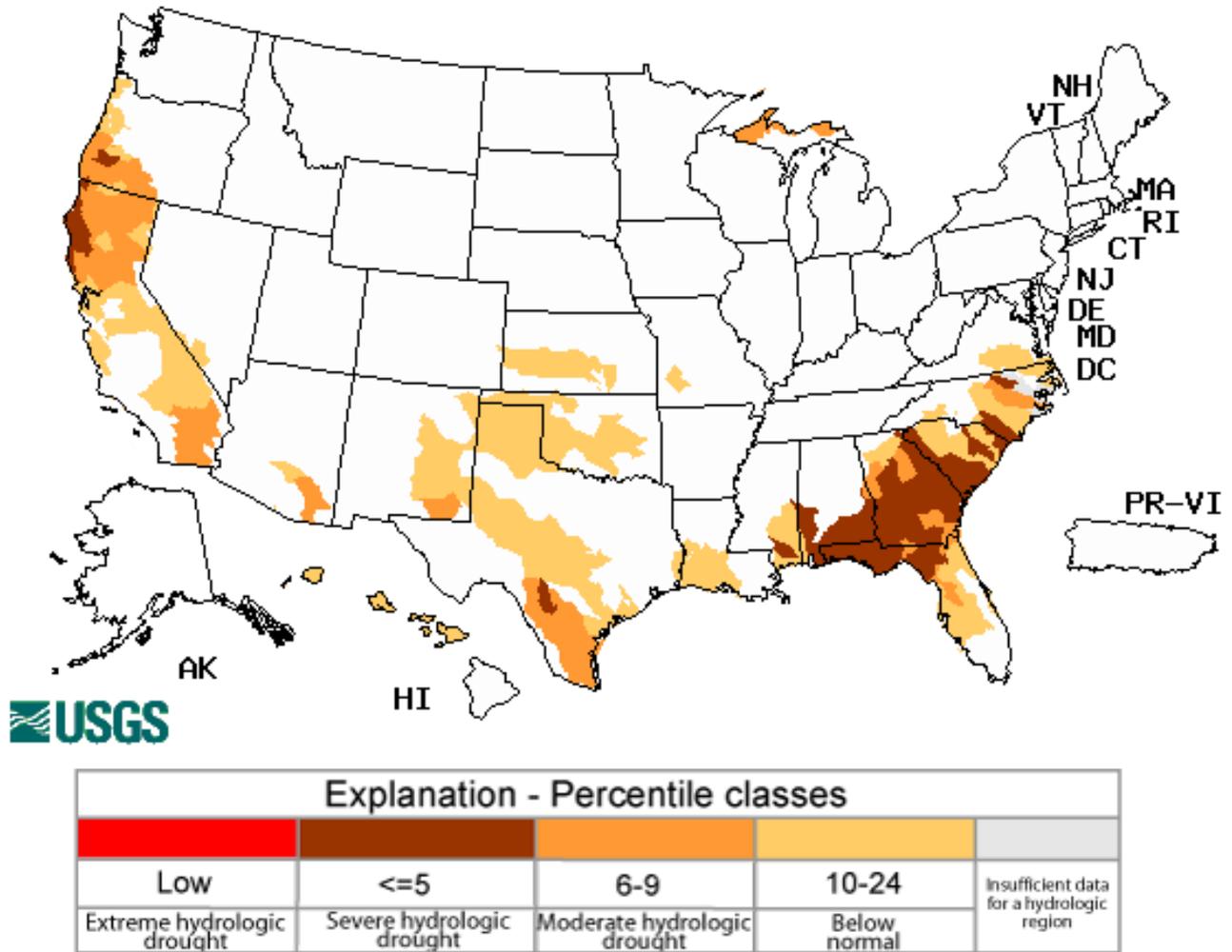


Fig. 7: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. Severe conditions exist over the Southeast, Northern California, and south-central Texas.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- January 10, 2012

The discussion in the Looking Ahead section is simply a description of what the official national guidance from the National Weather Service (NWS) National Centers for Environmental Prediction is depicting for current areas of dryness and drought. The NWS forecast products utilized include the HPC 5-day QPF and 5-day Mean Temperature progs, the 6-10 Day Outlooks of Temperature and Precipitation Probability, and the 8-14 Day Outlooks of Temperature and Precipitation Probability, valid as of late Wednesday afternoon of the USDM release week. The NWS forecast web page used for this section is:

<http://www.cpc.ncep.noaa.gov/products/forecasts/>.

For all but the southern states, it was another mild weather week as drought conditions continued across much of the west, north and east. A broad expansion of dry conditions is depicted over much of the West, from Idaho to Colorado to California. Improvements are seen in Texas and some nearby states as a system late in the week brought some heavy precipitation over a two-day period.

The West: Continued dry conditions are prompting introduction of Moderate drought in the central plains of Washington and northern Oregon. Seasonal precipitation totals are dismal, with 50 percent or less of normal for the last 90 days. Very little snowfall all across the western states is causing further degradation in the Sierra Nevada to short-term Severe Drought, as impacts to forage conditions in rangeland areas are significant. Wildland fire awareness is increasing in California as well. A large area of D0, Abnormally Dry, was expanded over San Bernardino county, California, and Clark county, Nevada. Bartow-Daggett area of California had its 10th driest year on record in 2011, and Las Vegas and Mt. Charleston, NV both ranked in the top 15 driest on record.

In the Great Basin and headwaters of the Colorado River, D0 is introduced this week to reflect lack of snowfall thus far in the typically wet season. Ski resorts are suffering due to warm and dry conditions, even though water supply reservoirs continue to hold storage from the last wet year.

In the southwestern states, an impact line was drawn to separate the short-term and long-term nature of drought between the northern and southern states.

Northern Plains and Midwest: Record high temperatures in the 60s in South Dakota, Nebraska, and nearby areas were reported on January 5. The warm streak continued over the weekend, and snowfall remained absent. An expansion of Abnormally Dry conditions is shown in western South Dakota, near Wessington Springs, SD in the east, and in southeastern Nebraska. Warm temperatures have increased natural water demand on the top soil layers, resulting in reports of topsoil dryness although there is moisture found deeper in the soil. The mild temperatures have not had much effect on winter wheat, but have led to reduced hardiness in woody vegetation to survive the winter.

Southern and Central Plains: A couple of strong systems plowed through Texas, Oklahoma and Louisiana to bring relief during this U.S. Drought Monitor period. One-category improvements were made across much of Texas, and impact lines were shifted to better reflect the short- and long-term nature of drought in the state. Snowfall totals upwards of more than ten inches were reported in panhandle region of Texas. As much as three or more inches of

Weekly Snowpack and Drought Monitor Update Report

rain fell along the Gulf coast from Galveston, TX to Lake Charles, LA, over a two-day period earlier this week. This warranted removal of Exceptional drought in southwestern Louisiana, and one-category improvements are depicted in this broad area. Low reservoir levels and other impacts remain, however, and an Extreme Drought situation continues.

One area of worsening conditions is shown in Osage county in northeastern Oklahoma, as a result of slow reservoir response to recent precipitation in the area.

The Southeast and Mid-Atlantic: Drought continues its hold on the Southeastern states, as Moderate drought reaches further into Florida this week. The Gulf coast around Tampa and the northern counties around Gainesville are experiencing significant shortages of precipitation for this time of year. Gainesville has recorded their third driest 365 day period on record, with a mere 32.40 inches of rain. In South Carolina, a one-category degradation to D2 and D3 was made from south central South Carolina to the coast. North Carolina remains wet in the west and dry in the east, as Abnormally Dry conditions are expanding to the central and northern reaches of the state, and further north into Virginia and the Delmarva Peninsula. Widespread development of dry conditions are becoming apparent in the region.

Alaska, Hawaii and Puerto Rico: No changes were made in Alaska, as they are experiencing heavy snow across much of the state this winter. Record snowfalls over the last couple of weeks have staved off the development of any dry conditions.

In Hawaii, an expansion of D0 is depicted this week on the southwestern slopes of Kauai.

There are no changes made to the map of Puerto Rico.

Looking Ahead: A wetter pattern is welcome in the northern states where the lack of rain and snow has begun to take its toll. **For the next U.S. Drought Monitor period, the outlooks show a potential for above normal precipitation in the northern states, from the Pacific Northwest to the Great Lakes and Midwest.** Below normal precipitation for the week is forecast in the southern states, primarily from Arizona to Texas and north to Nebraska, and across the southern tip of Florida. This could exacerbate, or at least maintain, much of the drought in that region. Temperatures from Washington State to Michigan are projected to be below normal. Warmer than average conditions will likely prevail across much of the rest of the nation, from Nevada to Maine and southward to the Gulf coast. Alaska will be colder than normal over the next several days, with below normal precipitation likely. **Author:** [Laura Edwards, Western Regional Climate Center and South Dakota State University](#)

Dryness Categories

D0 ... Abnormally Dry ... used for areas showing dryness but not yet in drought, or for areas recovering from drought.

Drought Intensity Categories

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

Weekly Snowpack and Drought Monitor Update Report

SPECIAL SUMMARY

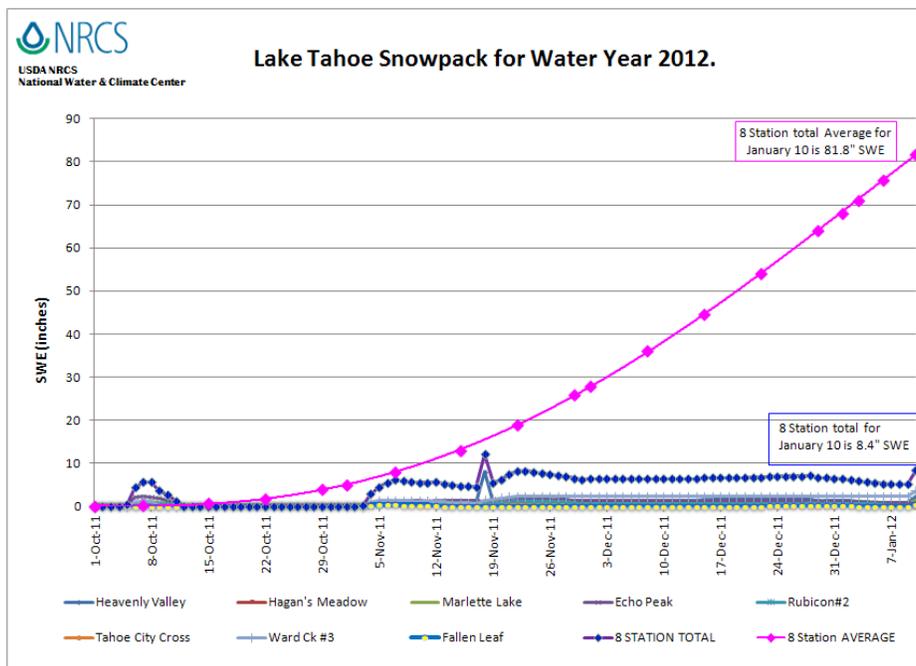
WESTERN SNOWPACK, PRECIPITATION, AND WATER SUPPLY CONDITIONS FOR JANUARY 1, 2012

COLUMBIA BASIN

Even though we're just beginning a new calendar year, the water year has been under way since October 1, 2011. Fall precipitation, in the form of both rain and snow, starts to build mountain snowpack and improve soil moisture conditions in the western states. While the water year started out with well above average precipitation in the Columbia River basin, November and December provided meager contributions and as of January 1st, snowpack conditions ranged from below normal to well below normal for most of the basin. While the Canadian portion of the Columbia basin is showing slightly above average conditions, the US portions of the upper reaches of the Columbia basin are below average. As one moves south and west along the main stem of the Columbia River, conditions deteriorate rather quickly. Eastern, central and southern Oregon have snowpack measuring less than 50% of normal for this time of year. Water supply forecasts for the coming irrigation season are indicating correspondingly low water availability conditions. While we are less than half way through the snow accumulation season, we will need a steady supply of moisture inputs in the Columbia River basin to achieve average runoff for the coming summer.

GREAT BASIN

The snowpack in the Sierra Nevada has been the worst overall on record. The world renowned ski areas are all making snow to support skiing where little to no natural snow exists. The Tahoe basin snowpack is reporting 10 percent of average with half of the stations in the area reporting no snow up to 7700 feet in elevation. Water supply forecasts reflect this lack of snow projecting a very low runoff season to this point. Elsewhere in the Great Basin, the snowpack in Nevada basins range from 14 to 32% of average and basins in western Utah range from 40 to 61% of average. While the next few weeks are forecasted to be dry, area residents are pinning their hopes on a possible return to winter by the end of the month.



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MISSOURI & ARKANSAS BASINS

For the start of 2012, mountain snow in the Missouri River Basin is, on the whole, average to below average and is much lower than last year's record setting snowpack. To date, the current La Nina has not produced the overall wetter-than-average conditions that were initially expected. The highest snowpack, somewhat of an anomaly compared to the rest of the Missouri Basin, is in the Big Horn Mountains. SNOTEL sites in the Big Horns are indicating above to much above average snowpack.

Streamflow forecasts for the main stem Missouri River and its tributaries are generally below normal, with near normal forecasts over the northern portion of the basin into Alberta. Seasonal streamflow forecasts for the Yellowstone River call for slightly above normal runoff this spring and summer, with below normal forecasts in the Wind River and above normal forecasts in the lower Bighorn River tributaries.

For the North and South Platte River Basins in Wyoming and Colorado, the snowpack is generally below average with a scattering of above average snow sites near the Colorado/Wyoming border. Most runoff forecasts in the Platte Basin call for below average flow volumes this spring and summer.

Moving out of the large Missouri River system to the southern front range of the Rockies, SNOTEL sites in the mountains of the upper Arkansas and Canadian River Basins are reporting mixed conditions from below average over the main stem Arkansas, to above average snowpack over the southern tributaries. Assessing areal snow coverage from these point measurements which show such disparity makes for a truly challenging forecast! Streamflow forecasts for these areas of SE Colorado and NE New Mexico range from below average in the headwaters to near average volume runoff from the tributaries.

COLORADO & RIO GRANDE BASINS

Upper Colorado

Coming off a year with above average to record runoff across the Upper Colorado Basin in 2011, this water supply season is shaping up much differently. An extremely dry December has left all of the Upper Colorado River Basin with a well below average snowpack. Many NRCS SNOTEL stations show record to near record low snowpack for this time of year across north and central Colorado, areas that typically produce roughly half of the average runoff into Lake Powell. January 1 water supply forecasts are accordingly well below average, with many streams and rivers forecast to see less than 80% of average runoff. The San Juan River Basin is currently in the best shape, with most streamflow forecasts ranging from 80-90% of average. However, a continued moderate La Nina is driving a dry outlook for the rest of the snow accumulation season across the southern portion of the basin.

Lower Colorado

The river basins of Arizona, southwest Utah, and western New Mexico are typically treated to very dry conditions during La Nina years. This season, dominant high pressure over the northern half of the west has allowed significant moisture to reach the central Arizona and western New Mexico. Well above average snowpack conditions currently exist across central Arizona with near record conditions in the Upper Gila River Basin in western New Mexico. Despite the good start to the 2012 water year, a dry outlook for the Lower Colorado for the rest of the winter has left water supply forecasts below their historic 30-year normal. The Virgin River Basin in southwestern Utah has missed much of the early season moisture, resulting in well below average snowpack conditions and water supply forecasts.

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Rio Grande

The Rio Grande is a relative bright spot across a very dry western United States. Early season storms delivered significant snow to both the headwaters area in the San Juan Mountains of Colorado as well as the Sangre de Cristo Range to the east in Colorado and New Mexico. The high country in southern New Mexico also received abundant snowfall in December. This was a welcome beginning following a very dry water supply season in 2011. With much of the accumulation season remaining, and a generally dry outlook due to continuing La Nina conditions, current water supply forecasts are near to slightly below average across the basin.

Updated January 11, 2012