



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 6 December 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 6 December shows much warmer than average conditions dominating in the West; especially over the Central Rockies and Interior West (Fig. 1). [ACIS 7-day](#) average temperature anomalies show the greatest positive temperature departures scattered over the Northern Rockies and northwestern High Plains ($>+16^{\circ}\text{F}$). The greatest negative departure occurred over northeastern and southwestern California ($<+4^{\circ}\text{F}$) (Fig. 1a). It is very unusual to have the entire West with above normal temperatures during a 7-day period in winter.

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows extremely heavy amounts of precipitation over the Northern Sierra and North Coastal California (Fig. 2). In terms of percent of normal, most of the West Coast States and Northern Rockies exceeded 400 percent of the typical weekly amounts while hardly any precipitation fell east of the Continental Divide, Arizona and western New Mexico (Fig. 2a). [SNOTEL month to date](#) precipitation percent of normal shows many basins over the Pacific Northwest, Northern Rockies, and especially the Northern Sierra exceeding their monthly or semi-monthly totals in just the first week of the month. As for the remainder of the West, especially the southern half of Utah and areas east of the Continental Divide, deficits are striking in comparison. This pattern of moisture continues the La Niña-like pattern we experienced in October and November (Fig. 2b). For the Water Year that began on 1 October 2012, statistics continue to favor the Northern Tier States with surplus moisture (Fig. 2c) but *not necessarily* snowpack.

Snow: [Snow depths](#) for the week increased significantly over the Northern Cascades, Sierra, southern mountains in Idaho, and in Yellowstone National Park (Fig. 3). As for [snow water equivalent](#), early season snowfall over the West continues to show significant deficits with the exception of the Olympic Mountains, the northernmost Cascades, the Tahoe Basin, and central Idaho. Timing of significant precipitation events, in many cases, has been associated with mild temperatures (Fig. 3a).

Summary: An intense storm moved inland from the Pacific Ocean this week, bringing widespread heavy precipitation to central and northern California, the Pacific Northwest, the northern Intermountain West, and parts of the northwestern Rockies. Totals of 1 to 2 feet (liquid equivalent) were fairly common in the higher elevations and in some areas near the coast. In contrast, mild and dry weather prevailed across the rest of the country. Most locations reported less than 0.25 inch of precipitation for the week, with totals of 0.5 to 2.0 inches restricted to portions of northwestern New England, northern New York, the Lower Peninsula of Michigan, areas in and adjacent to central and southwestern Missouri, the central Ohio Valley, and part of the Southeast.

The West: A powerful, slow-moving storm system brought widespread heavy precipitation to the Pacific Northwest, the northern Intermountain West, the northwestern Rockies, the western Great Basin, central and northern California, and parts of coastal California as far south as Los

Weekly Snowpack and Drought Monitor Update Report

Angeles County. Storm total precipitation reached as high as 1 to 2 feet in the northern half of the Sierra Nevada, the southern Cascades, coastal sections of northwestern California and southwestern Oregon, and across the Olympic Range and its windward west-facing slopes in northwestern Washington. Scattered totals exceeding 12 inches were also reported along parts of the California coast from Monterrey County northward, and at a few locations near the coast in northwestern Oregon and western Washington. Meanwhile, 4 to locally 10 inches fell on the mountains in central and northeastern Idaho, the windward slopes of the Cascades, and the rest of California west of the mountains from the Sacramento Valley northward. More than an inch of precipitation fell along the California Coast as far south as Los Angeles County. In other parts of the West, away from the influence of this storm, little or no precipitation fell.

Substantial drought relief was effected by the potent storm system. D0 to D2 conditions were all suppressed southward in western Montana, central Idaho, east-central Oregon, and the northern two-thirds of California. In addition, D2-D3 conditions pulled eastward away from the eastern side of the central and northern Sierra Nevada, including the Lake Tahoe region. The dry weather in the rest of the West brought little change to the widespread areas of dryness and drought, though some deterioration was identified in the eastern half of Colorado. Author: Rich Tinker, Climate Prediction Center/NCEP/NWS/NOAA.

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

Soil Moisture

Soil moisture (Fig. 5), 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

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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>.

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
Deputy Chief, Soil Survey and Resource Assessment

Weekly Snowpack and Drought Monitor Update Report

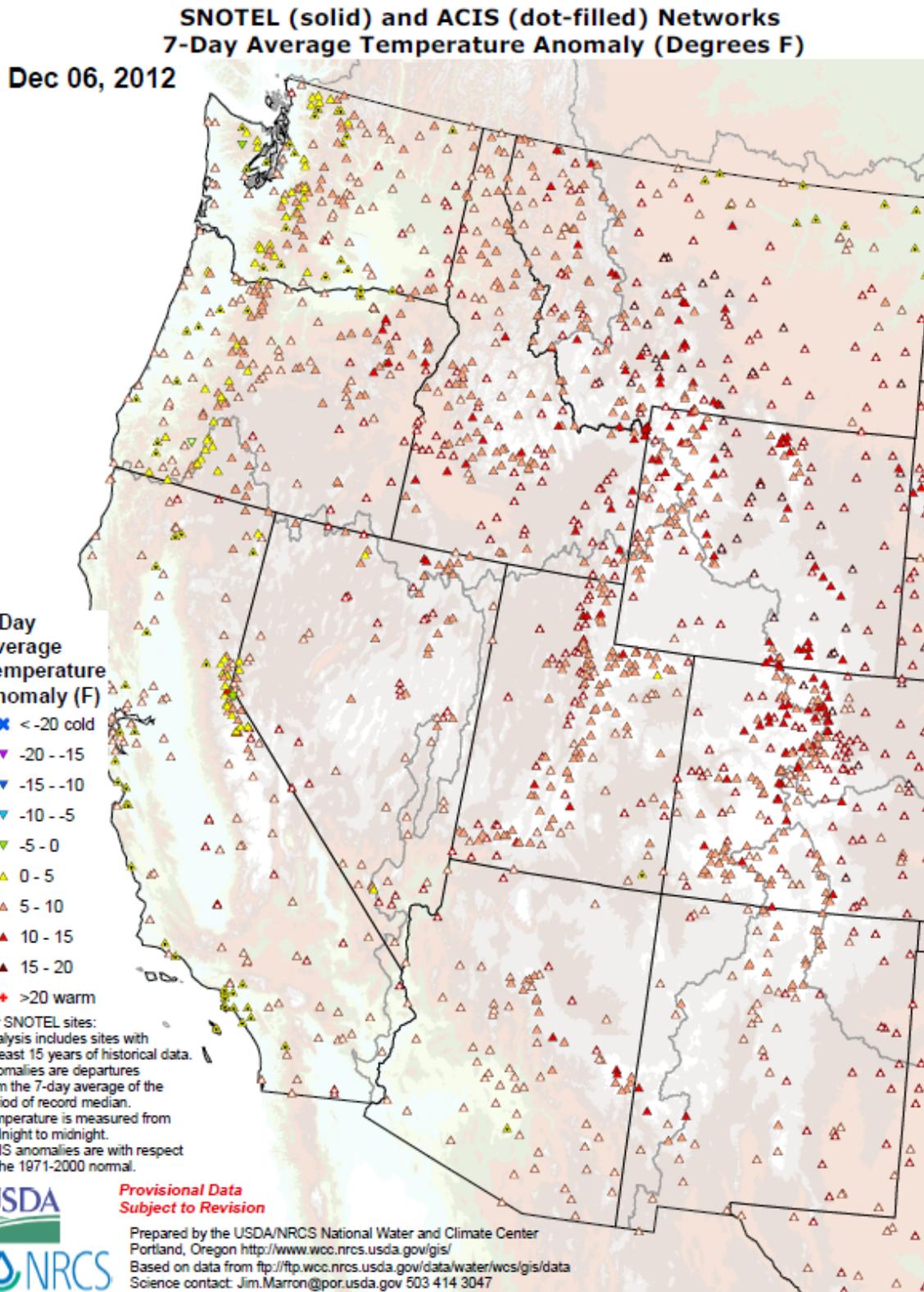
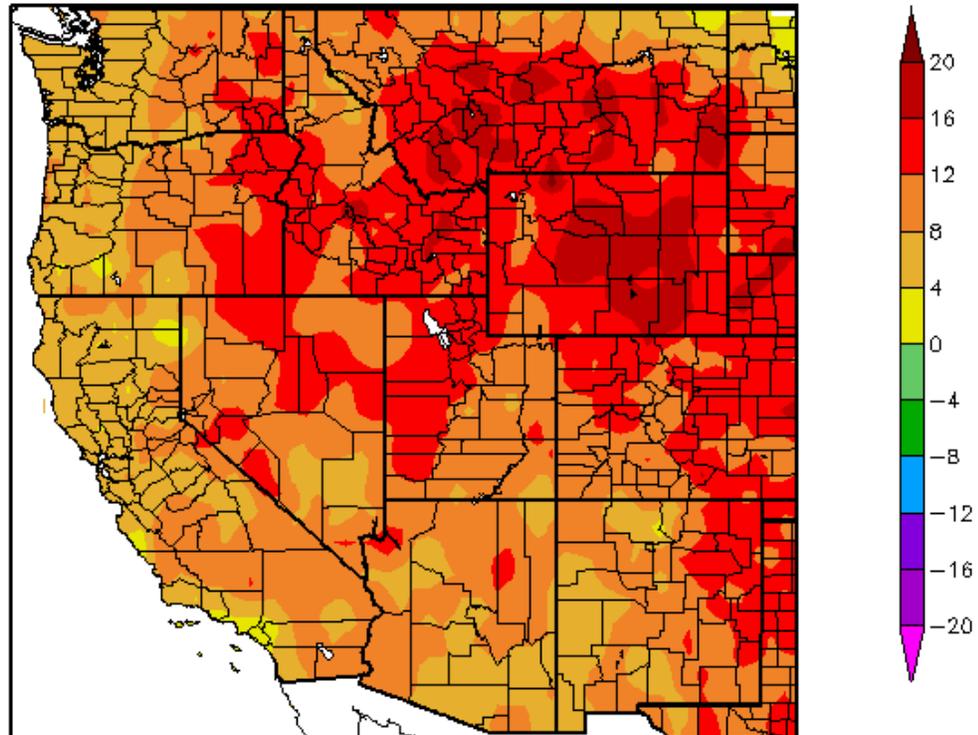


Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 6 December shows much warmer than average conditions dominated the West; especially over the Central Rockies and Interior West.

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Departure from Normal Temperature (F) 11/29/2012 – 12/5/2012



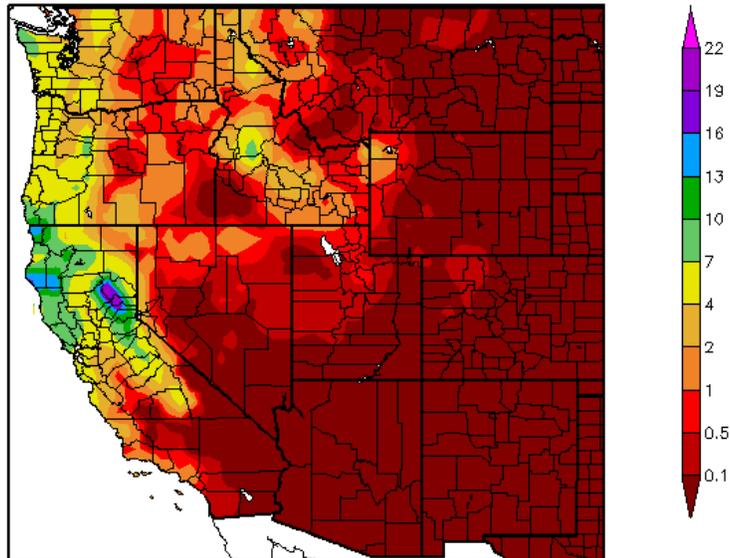
Generated 12/6/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures scattered over the Northern Rockies and northwestern High Plains (>+16°F). The greatest negative departure occurred over northeastern and southwestern California (<+4°F). It is very unusual to have the entire West with above normal temperatures during a 7-day period in winter.

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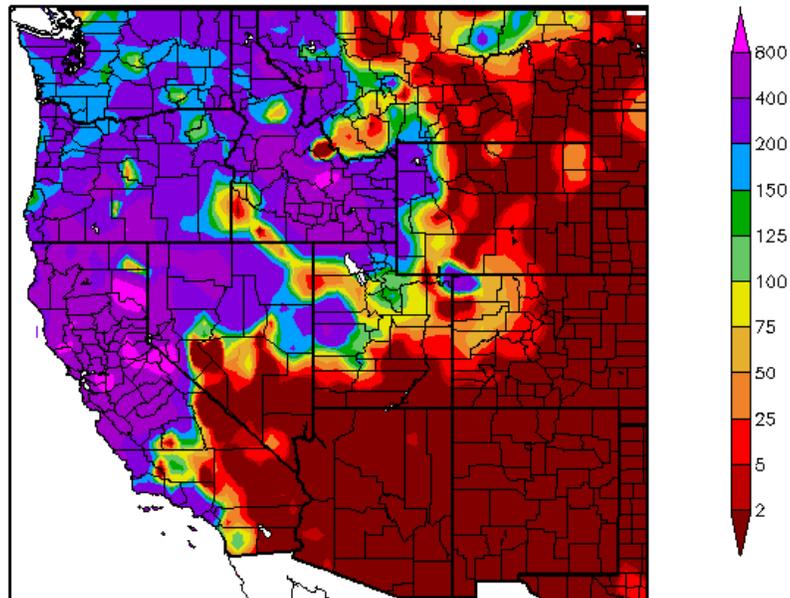
Precipitation (in)
11/29/2012 – 12/5/2012



Generated 12/6/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
11/29/2012 – 12/5/2012



Generated 12/6/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2 and 2a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows extremely heavy amounts of precipitation over the Northern Sierra and North Coastal California (top). In terms of percent of normal, most of the West Coast States and Northern Rockies exceeded 400 percent of the typical weekly amounts while hardly any precipitation fell east of the Continental Divide, Arizona and western New Mexico (bottom).

Weekly Snowpack and Drought Monitor Update Report

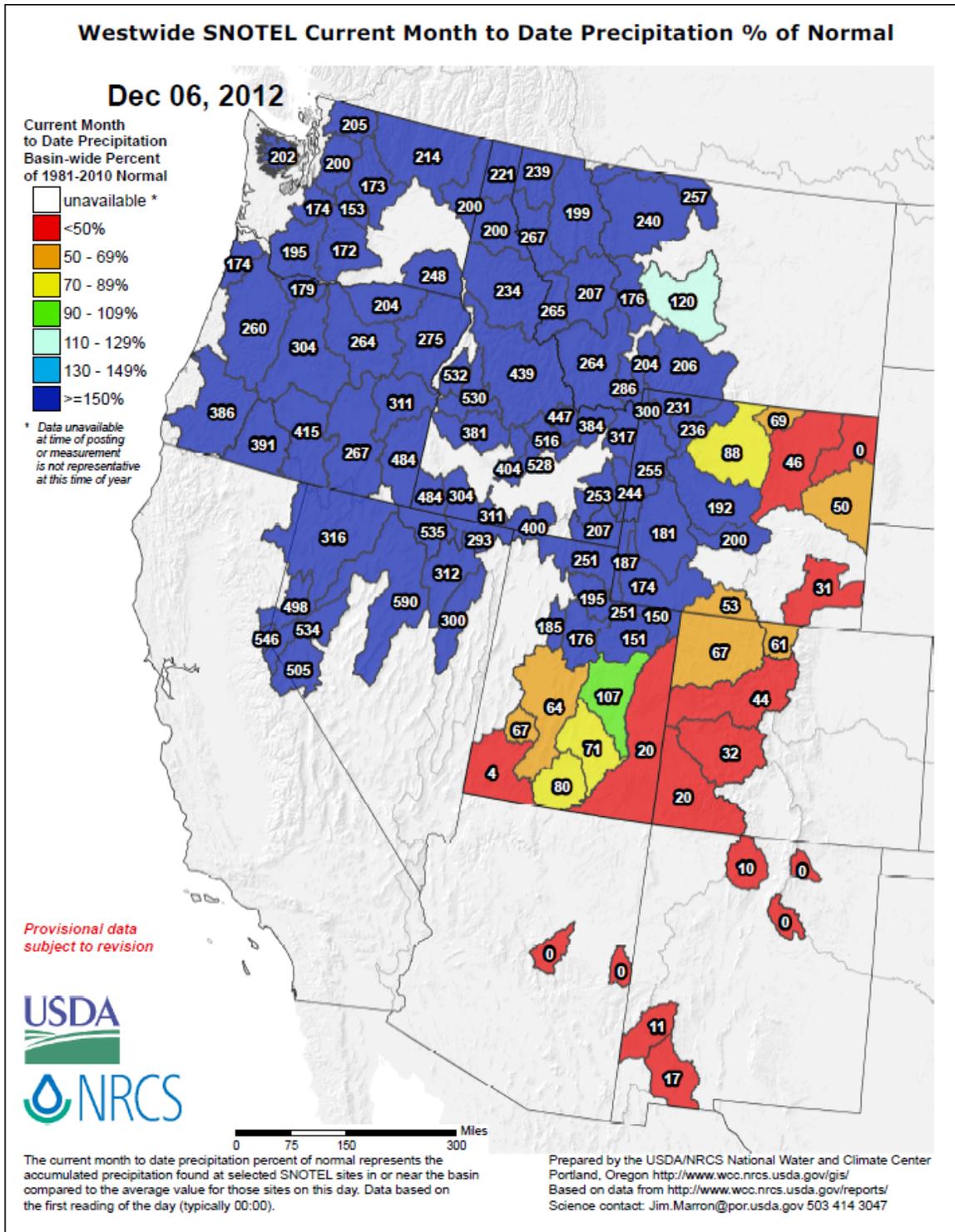


Fig. 2b: SNOTEL month to date precipitation percent of normal shows many basins over the Pacific Northwest, Northern Rockies, and especially the Northern Sierra exceeding their monthly or semi-monthly totals in just the first week of the month. As for the remainder of the West, especially the southern half of Utah and areas east of the Continental Divide, deficits are striking in comparison. This pattern of moisture continues the La Niña-like pattern we experienced in October and November.

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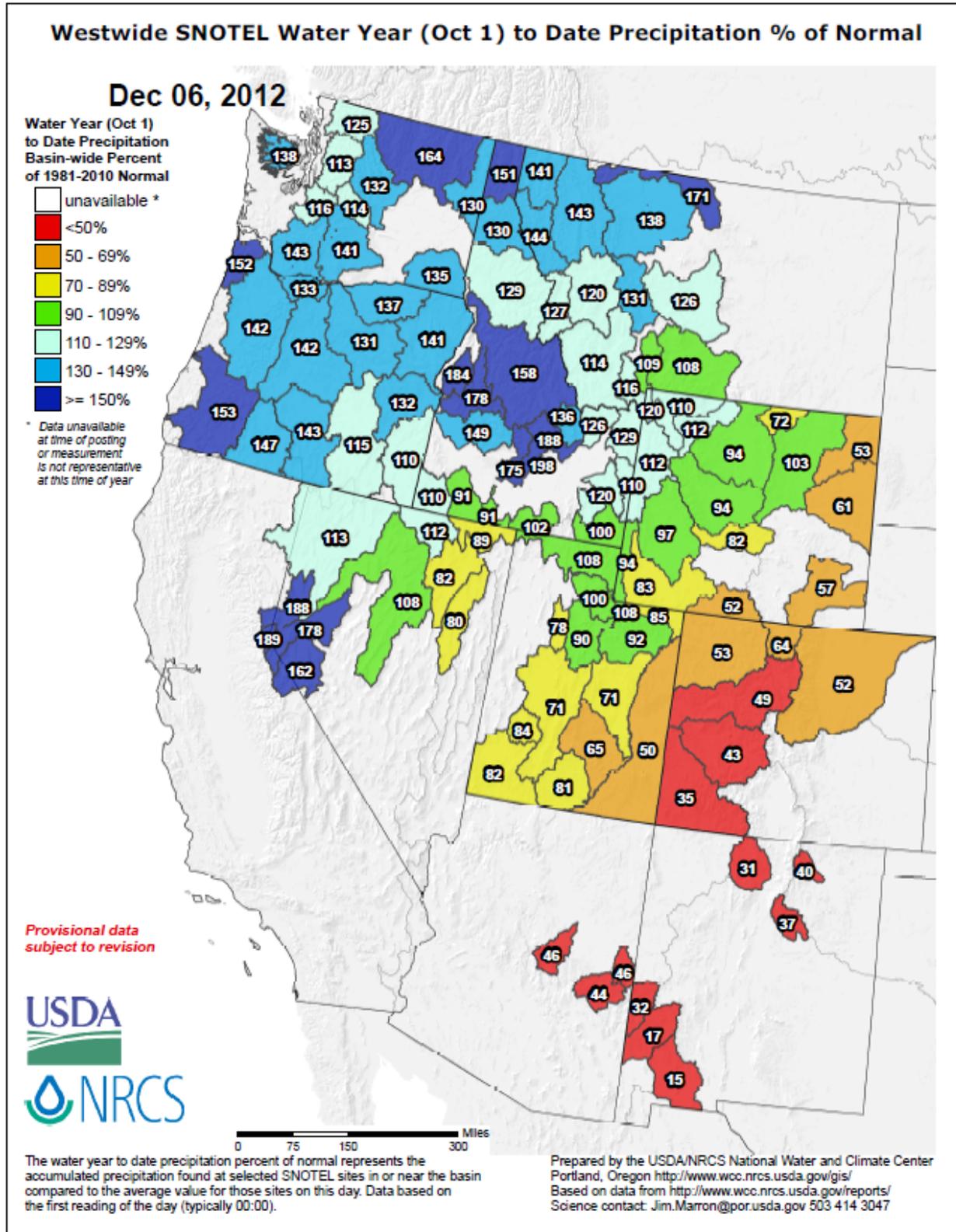


Fig. 2c: For the [2013 Water-Year](#) that began on 1 October 2012, statistics continue to favor the Northern Tier States with surplus moisture but *not necessarily* snowpack as noted in Fig. 3 below.

Weekly Snowpack and Drought Monitor Update Report

SNOTEL 7-Day Snow Depth Change (Inches)

Dec 06, 2012

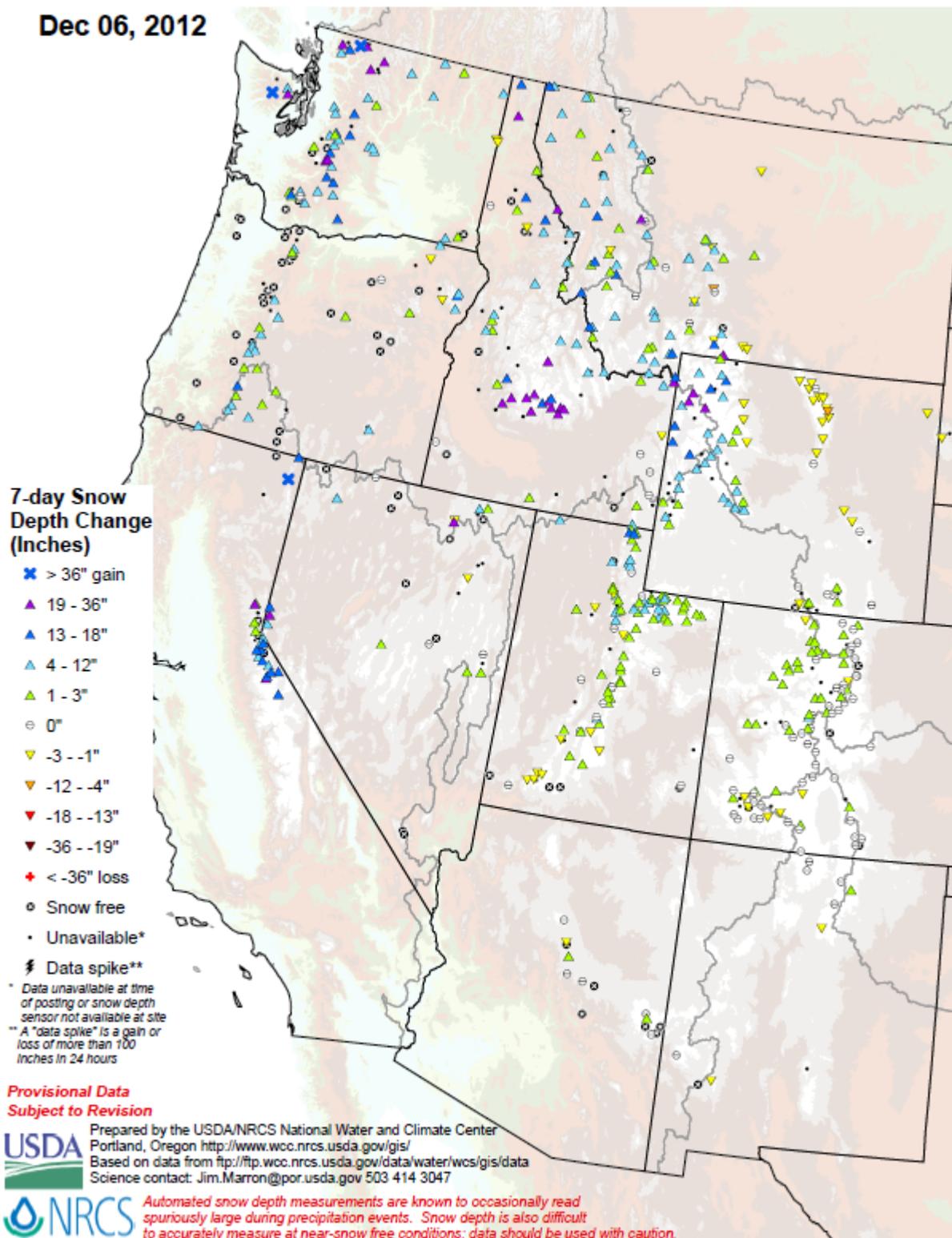


Fig. 3: [Snow depths](#) for the week increased significantly over the Northern Cascades, Sierra, southern mountains in Idaho, and in Yellowstone National Park.

Weekly Snowpack and Drought Monitor Update Report

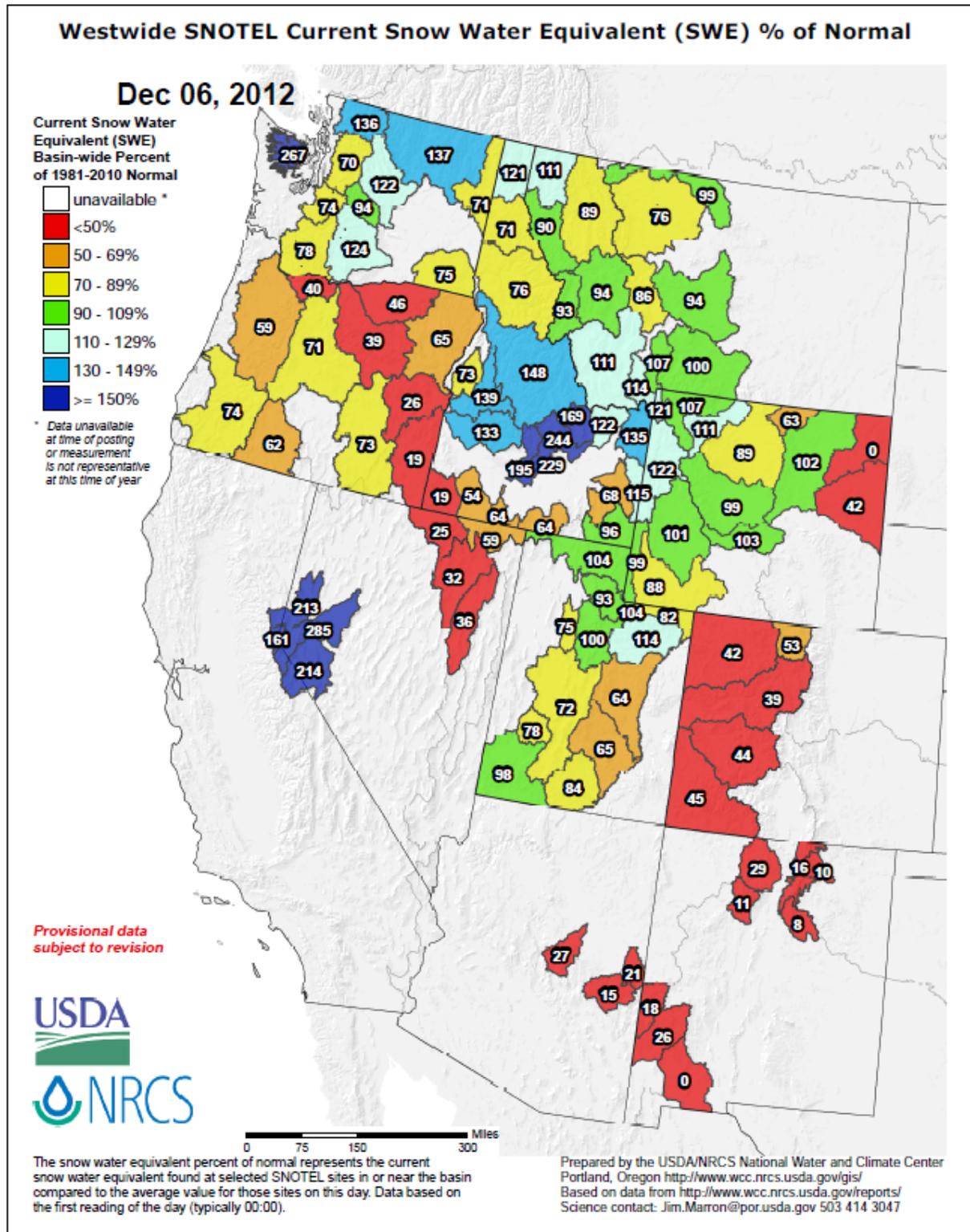


Fig. 3a: Snow Water-Equivalent: Early season snowfall over the West continues to show significant deficits with the exception of the Olympic Mountains, the northernmost Cascades, the Tahoe Basin and central Idaho. Timing of significant precipitation events, in many cases, has been associated with mild temperatures.

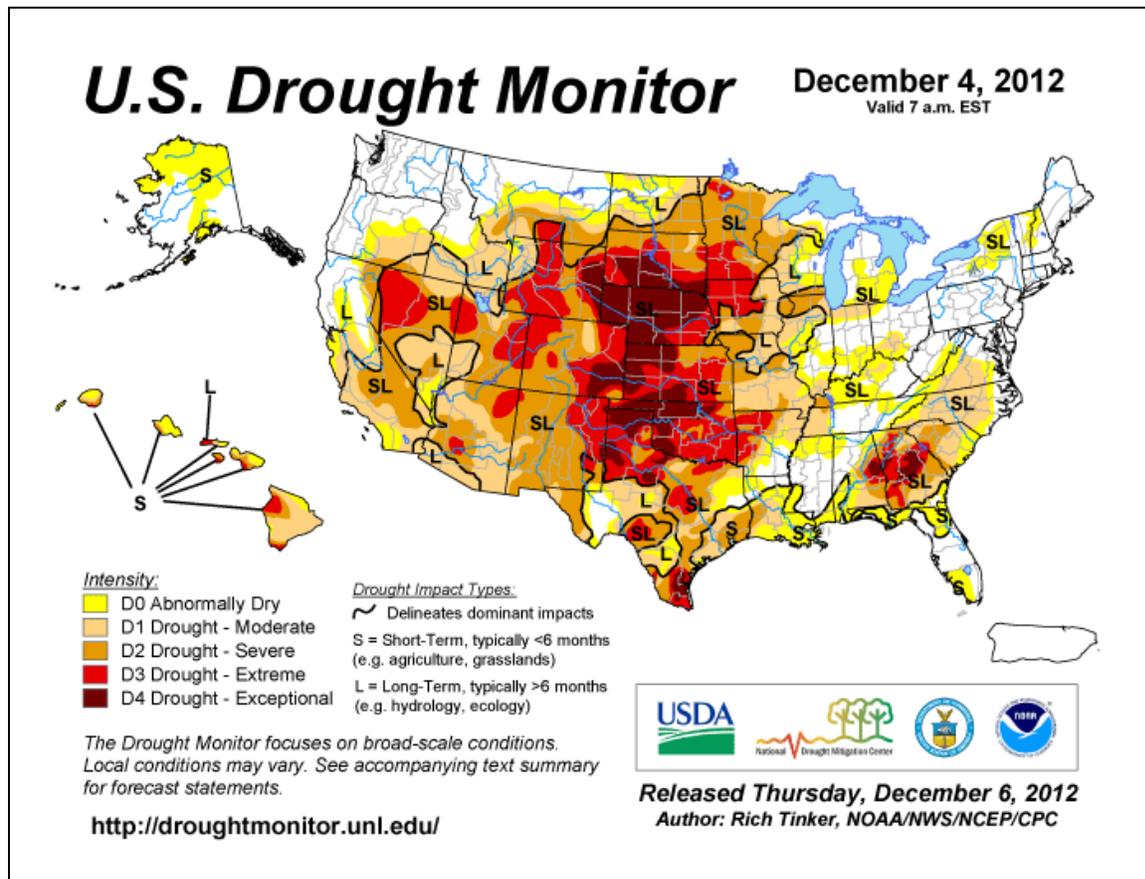


Fig. 4: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia, Alabama, and scattered across the western corn belt of the Plains into Colorado and Wyoming. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California Reservoirs](#). The late November [drought indicator blend and component percentiles spreadsheet](#) is a great resource for climate division drought statistics. See Fig. 8 for the latest [Drought Outlook](#) (Forecast).

Agriculture Headlines

- [Driest six months since 1895 damaging wheat in Great Plains](#) - Nov 28, **Nebraska, Kansas and Oklahoma.**
- [Drought losses in Oklahoma top \\$400 million for 2012](#) - Nov 29, **Oklahoma.**
- [Dry fall makes farmers dread winter drought](#) - Nov 27, **Texas.**
- [Emerged, non-irrigated wheat 'going backwards'](#) - Nov 28, **Texas.**
- [Forecasters: Chances slim for winter moisture in New Mexico](#) - Nov 19, **New Mexico.**
- [Missouri farmers sell corn stalks for cattle feed](#) - Nov 22, **Missouri.**
- [San Angelo cotton suffering this harvest](#) - Nov 26, **Texas.**
- [Summer drought causes hay shortage](#) - Nov 25, **Michigan.**
- [UPDATE 2-US pork supplies at all time high amid record slaughter](#) - Nov 23, **U.S.**

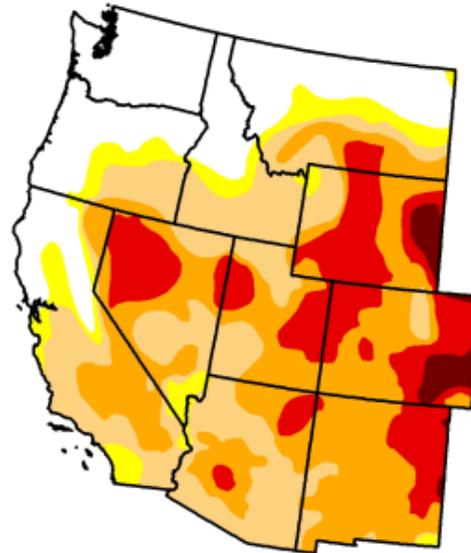
U.S. Drought Monitor

West

December 4, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	22.41	77.59	70.26	46.06	17.85	2.12
Last Week (11/27/2012 map)	18.70	81.30	72.70	46.27	17.45	2.03
3 Months Ago (09/04/2012 map)	15.09	84.91	76.86	46.33	17.26	1.49
Start of Calendar Year (12/27/2011 map)	48.49	51.51	20.05	12.22	2.67	0.78
Start of Water Year (09/25/2012 map)	15.12	84.88	77.15	43.65	16.85	1.77
One Year Ago (11/29/2011 map)	72.29	27.71	18.55	14.99	9.48	1.96



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, December 6, 2012
Richard Tinker, NOAA/CPC

<http://droughtmonitor.unl.edu>

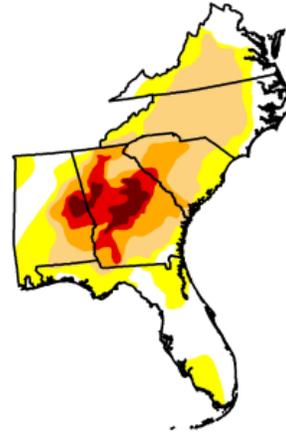
Fig. 4a: Drought Monitor for the [Western States](#) with statistics over various time periods. Some improvement is noted this week over California. See latest [Climate Assessment for the Southwest Report](#). See latest [Western Water Assessment Report](#).

Weekly Snowpack and Drought Monitor Update Report

U.S. Drought Monitor
Southeast

December 4, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.29	75.71	49.33	21.27	9.79	3.43
Last Week (11/27/2012 map)	31.74	68.26	46.75	19.13	8.87	3.43
3 Months Ago (09/04/2012 map)	65.39	34.61	17.90	11.57	8.47	3.46
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/25/2012 map)	66.49	33.51	17.18	11.50	8.53	3.52
One Year Ago (11/29/2011 map)	46.23	53.77	42.25	30.92	19.10	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.

<http://droughtmonitor.unl.edu>



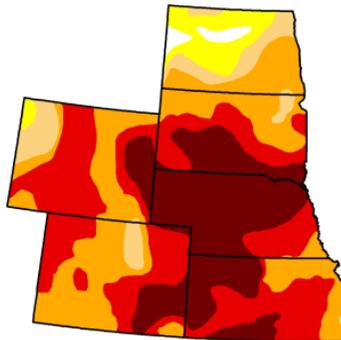
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Fig. 4b: Note Georgia's drought statistics over various time periods. D4 conditions are also noted over eastern Alabama. See the Weekly GridSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

U.S. Drought Monitor
High Plains

December 4, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.20	98.80	93.40	86.41	58.39	26.91
Last Week (11/27/2012 map)	1.20	98.80	93.69	85.96	57.89	26.72
3 Months Ago (09/04/2012 map)	0.94	99.06	92.43	81.84	61.01	24.54
Start of Calendar Year (12/27/2011 map)	61.66	38.34	18.12	7.22	2.07	0.04
Start of Water Year (09/25/2012 map)	0.00	100.00	98.91	83.80	61.28	24.35
One Year Ago (11/29/2011 map)	60.93	39.07	22.63	11.00	3.18	0.53



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.

<http://droughtmonitor.unl.edu>



Released Thursday, December 6, 2012
Richard Tinker, NOAA/CPC

Fig. 4c: Drought Monitor for the High Plains with statistics over various time periods. Conditions remain unchanged this week. See the latest Kansas Drought Report.

At North Platte (with records to 1875), after having the driest (2.65") summer on record http://www.crh.noaa.gov/lbf/?n=seasonal_cli_summer, we managed the driest (0.43") fall on record http://www.crh.noaa.gov/lbf/?n=seasonal_cli_fall. Current year to date total is 9.67 inches. If we do not record 0.34 during December (normal is 0.41) we will break 1931 driest year on record of 10.01 inches.

Other interesting stats from Western and North Central Nebraska (ASOS data):

North Platte --- May to Nov ---- Total Precip 3.82" ---- Normal 15.66" ---- Short 11.84" (#2 - 1931 with 6.01")

Valentine ----- May to Nov ---- Total Precip 4.63" ---- Normal 15.62" ---- Short 10.99" (#2 - 1894 with 5.39")

Broken Bow --- May to Nov ---- *Total Precip 1.48" ---- Normal 18.12" ---- Short 16.64"

Imperial ----- May to Nov ---- Total Precip 5.85" ---- Normal 15.02" ---- Short 9.17"

*Yes Broken Bow is not a typo. The ASOS only recorded 1.48" in 7 months.

Matt Masek
WFO North Platte, NE

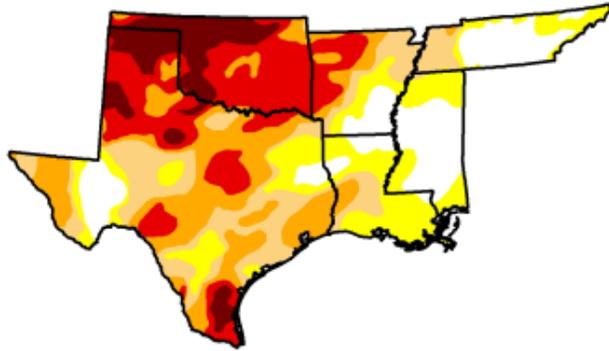
U.S. Drought Monitor

South

December 4, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	15.98	84.02	65.41	48.19	28.30	8.87
Last Week (11/27/2012 map)	20.96	79.04	63.53	45.32	26.83	8.44
3 Months Ago (09/04/2012 map)	24.35	75.65	64.56	45.89	30.09	8.46
Start of Calendar Year (12/27/2011 map)	26.47	73.53	69.01	54.81	39.11	17.15
Start of Water Year (09/25/2012 map)	24.13	75.87	66.61	51.50	29.86	9.11
One Year Ago (11/29/2011 map)	22.62	77.38	72.37	60.69	51.13	29.43



Intensity:

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- D1 Drought - Moderate
- D2 Drought - Severe
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The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

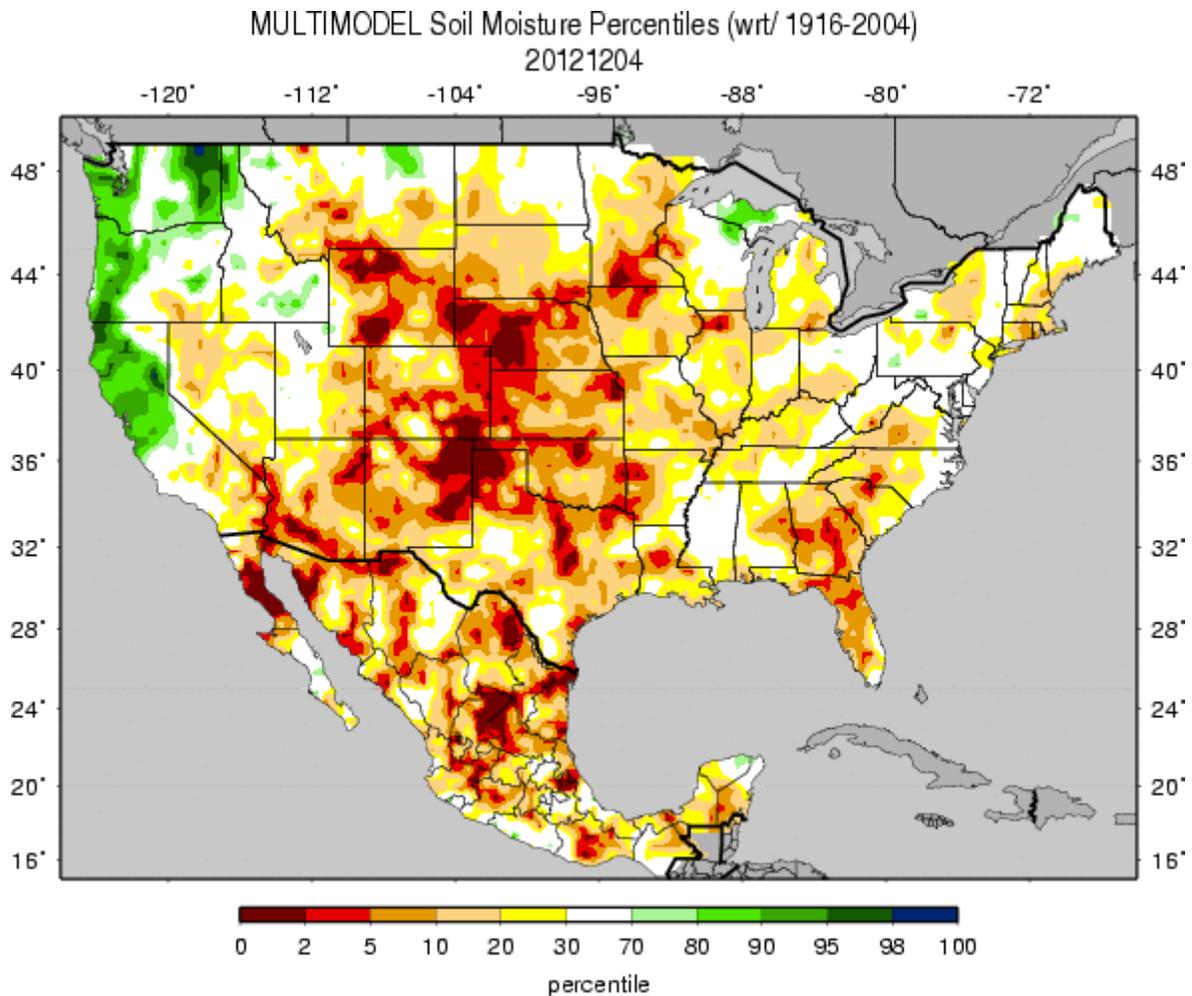


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Richard Tinker, NOAA/CPC

<http://droughtmonitor.unl.edu>

Fig. 4d: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note increased deterioration in all categories this week. D2-D4 increased by >2.5%. Check out the Texas Drought [Website](#).

Weekly Snowpack and Drought Monitor Update Report



Figs. 5: Soil Moisture ranking in [percentile](#) as of 4 December shows dryness scattered across the Plains, Rockies, and Southwest. Wetness dominates from northern California to eastern Washington.

Useful Hydrological Links:

USDA western U.S. mountain snow water content anomaly map.

USGS (U.S. Geological Service) [observed streamflow](#); NOAA Climate Prediction Center (CPC) modeled runoff [anomalies](#) and [percentiles](#); VIC (University of Washington Variable Infiltration Capacity macro scale hydrologic model) [1-](#), [2-](#), [3-](#), and [6-](#)month and [water year-to-date](#) runoff percentiles; NLDAS (North American Land Data Assimilation System) modeled streamflow [anomalies](#) and [percentiles](#); NLDAS model runoff [anomalies](#) and [percentiles](#); USGS groundwater observations ([real-time network](#), [climate response network](#), [total active network](#)); USDA snow water content observations for the West (SNOTEL station [percentiles](#) and [percent of normal](#), SNOTEL basin [percent of normal](#) and [percent of average](#)) and Alaska ([SNOTEL station percent of normal](#), [SNOTEL basin percent of normal](#)); USDA reservoir storage as [percent of capacity](#).

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

Station (2021) MONTH=2012-11-06 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Dec 06 08:01:27 PST 2012

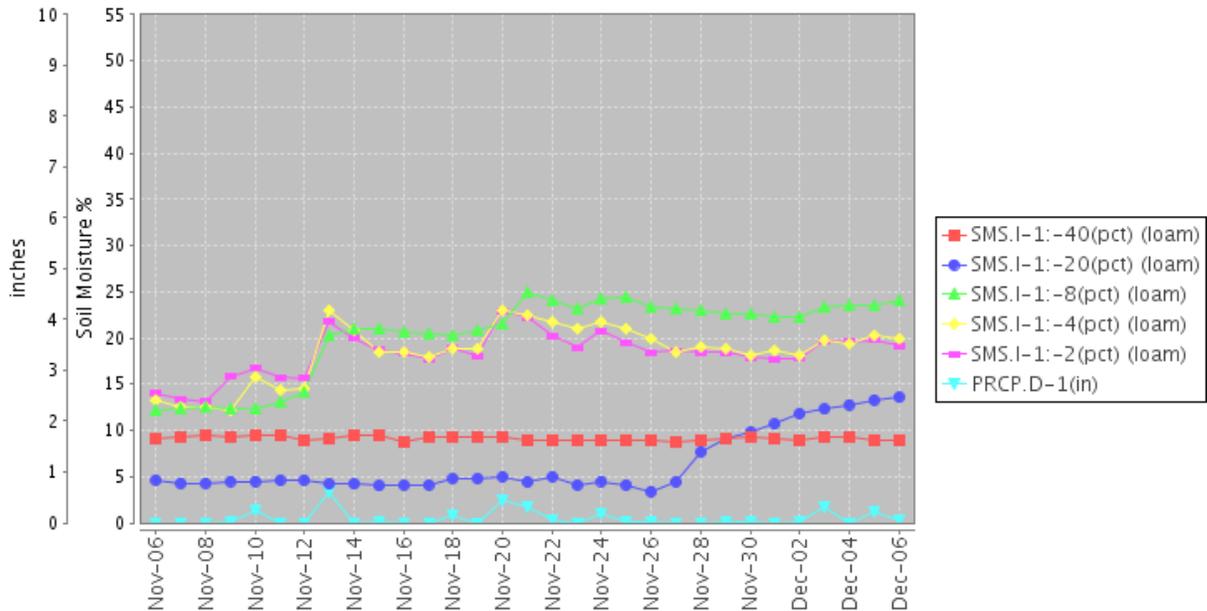


Fig. 6: This NRCS resource shows a site over [eastern Washington](#) with soil moisture increasing dramatically at 20 inch depth due to recent precipitation. Note the delaying effect as the moisture slowly penetrates downward.

Useful Agriculture Links:

USDA (U.S. Department of Agriculture) [observed soil moisture conditions](#), [departures and percentiles](#), and comparison to [5-year average](#) and [10-year average](#); the Palmer [Crop Moisture Index \(CMI\)](#), which intensified during the month in the West and Lower to Mid-Mississippi Valley (weeks [1](#), [2](#), [3](#), [4](#), [5](#)); CPC modeled soil moisture [anomalies](#) and [percentiles](#) for end of May, and [soil moisture anomaly change](#) compared to previous month; CPC's Leaky Bucket model [soil moisture percentiles](#); NLDAS modeled soil moisture percentiles for the [top soil layer](#) and [total soil layer](#); VIC modeled [soil moisture percentiles](#), and [soil moisture percentile change](#) compared to previous month; USDA observed [pasture and rangeland conditions](#); [Vegetation Drought Response Index \(VegDRI\)](#); the NOAA/NESDIS satellite-based [Vegetation Health Index \(VHI\)](#); the USGS agro-hydrologic model ([Soil Water Index](#), [Water Requirement Satisfaction Index](#)); Selected SNOTEL Sites (measured [2"](#), [4"](#), [8"](#), [20"](#), and [40"](#) soil moisture depths).

Weekly Snowpack and Drought Monitor Update Report

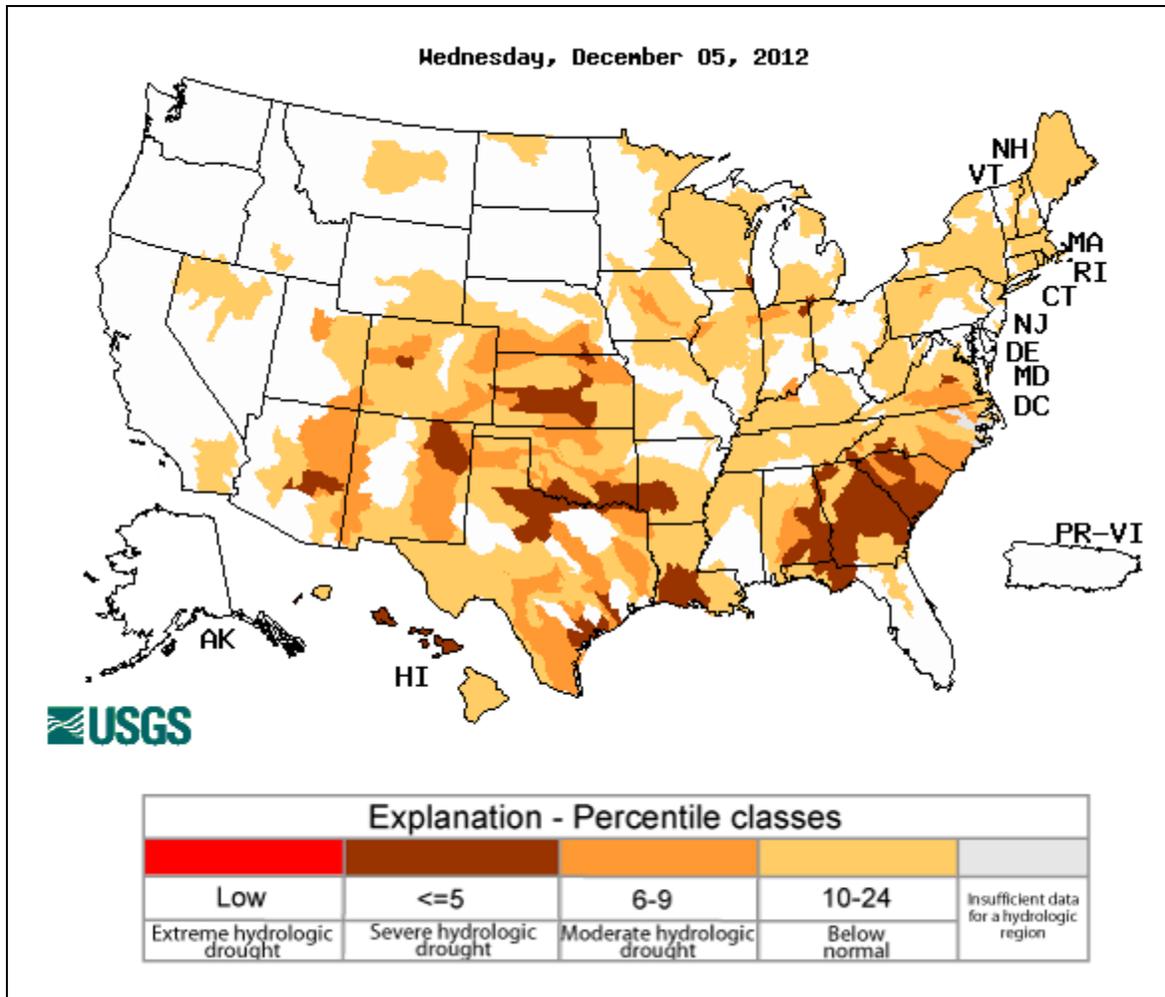


Fig. 7: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of Arizona, northeast New Mexico, western Colorado, the Central and Southern Plains, southeast Texas, southwest Louisiana, and Southeast. See the USGS [National Water Information System Mapper](#).

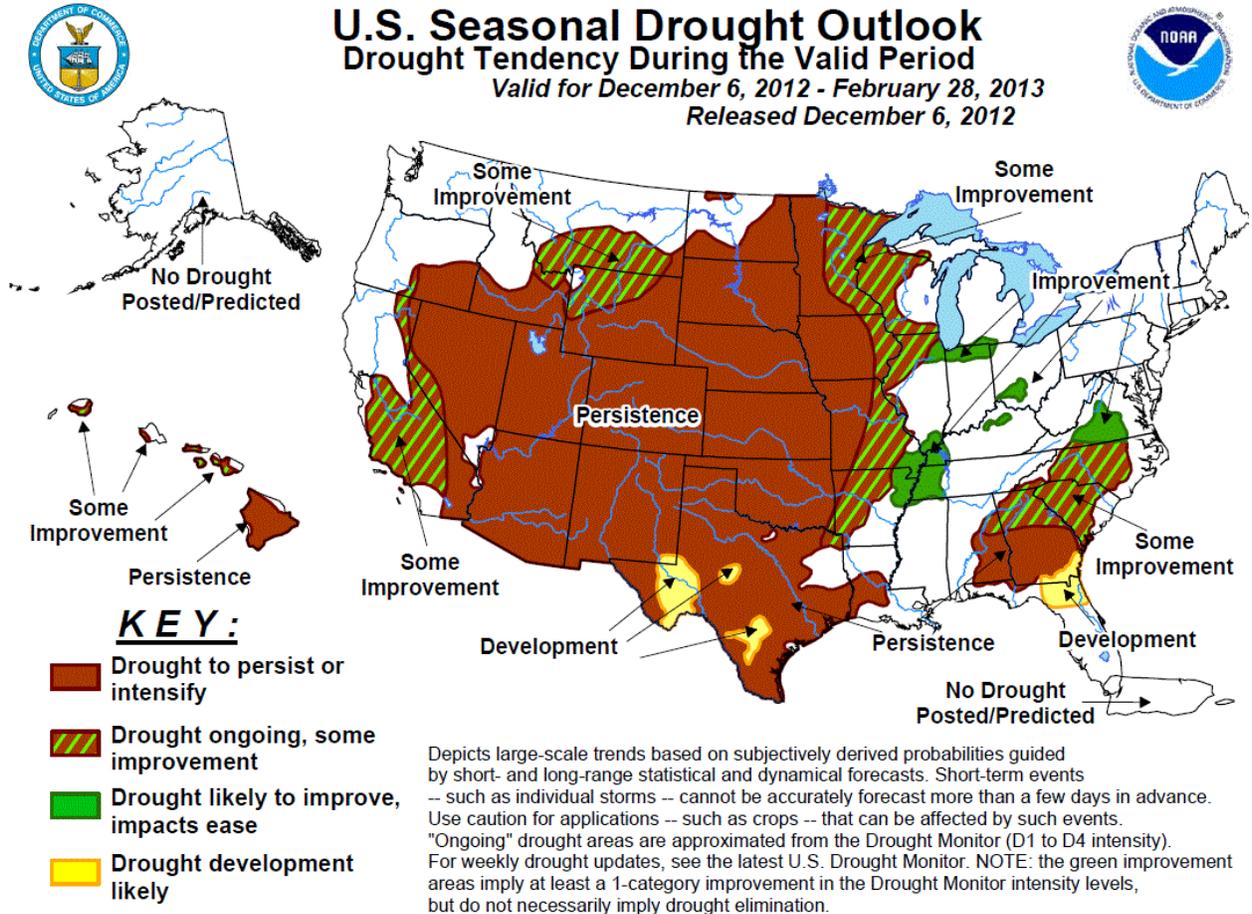


Fig. 8: [U.S. seasonal Drought Outlook](#) released today 2012.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- December 4, 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/>.

An intense storm moved inland from the Pacific Ocean this week, bringing widespread heavy precipitation to central and northern California, the Pacific Northwest, the northern Intermountain West, and parts of the northwestern Rockies. Totals of 1 to 2 feet (liquid equivalent) were fairly common in the higher elevations and in some areas near the coast. In contrast, mild and dry weather prevailed across the rest of the country. Most locations reported less than 0.25 inch of precipitation for the week, with totals of 0.5 to 2.0 inches restricted to portions of northwestern New England, northern New York, the Lower Peninsula of Michigan, areas in and adjacent to central and southwestern Missouri, the central Ohio Valley, and part of the Southeast.

The Northeast: Light precipitation left D0 conditions unchanged in northern sections of New York, Vermont, and New Hampshire. In the past 90 days, precipitation amounts were 2 to 8 inches below normal, with most locations reporting 4- to 6-inch deficits for the period.

The Southeast: Dry and warm weather dominated areas from the Ohio and lower Mississippi Valleys eastward to the Atlantic Seaboard. Only the middle Ohio Valley and a swath from the Louisiana Delta northeastward through southeastern South Carolina received more than 0.25 inch of precipitation for the week. A few isolated sites picked up as much as an inch of rain. Widespread below-normal precipitation has been observed for at least the last 60 days throughout the region. Precipitation totals were 2 or more inches below normal almost everywhere in the region, and deficits of 4 to locally 8 inches accrued across most of Mississippi, Alabama, the Florida Panhandle, and the south Atlantic states away from the immediate coast.

As a result, dryness and drought intensified through portions of the region. D0 was introduced along the central Gulf Coast and across parts of the Appalachians. In addition, following ample summer and early autumn precipitation, less than 0.5 inch of rain has fallen on the Florida Peninsula since the beginning of November, prompting the introduction of D0 (short-term) in the driest areas on the southwestern side of the Peninsula. Elsewhere, D1 expanded to cover larger sections of southern Virginia, the Carolinas, and eastern Alabama while the areas of D2 to D4 in South Carolina and Georgia also increased in size. Over the last 6 months, precipitation shortfalls of 12 to 20 inches have accumulated in east-central Alabama and at scattered locations in Georgia and the Carolinas.

The Great Lakes Region: Light to moderate precipitation fell on most of Michigan and northwestern Indiana last week, with amounts reaching 1 to 2 inches in a swath across the central Lower Peninsula. Relief, however, did not seem sufficient to change the D0 or D1 conditions existing where the rain fell. Elsewhere in the region, little or no precipitation fell,

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leading to some D1 expansion south of Chicago, IL. The depiction is unchanged elsewhere.

The Plains and Mississippi Valley: Precipitation for the week totaled less than 0.25 inch throughout the region, save for a small swath from the Arkansas/Missouri/Oklahoma triple point northeastward through parts of the St. Louis, MO area, where amounts reached 2 inches in a couple of isolated locations. Areas of dryness and drought remained unchanged for most of the region, given the cooler and drier time of year. However, areas of deterioration were identified across various parts of Texas, central Louisiana, east-central Missouri, eastern Kansas, and the Panhandles of Texas and Oklahoma. From southeastern Texas through central Louisiana, D1 and D2 expanded to cover areas where precipitation deficits for the last 90 days ranged from 8 to 14 inches. In the Panhandles region, D4 coverage increased as dryland wheat conditions deteriorated. Dalhart, TX received 6.04 inches of rain in 2011 and 6.35 inches to date in 2012. Both of these totals are more than 2 inches below the driest year on record for the previous 62 years (1949-2010; record low for this period was 8.37 inches in 1955).

Mississippi River flow continued to decline, and it may be necessary to close parts of the river to barge and shipping traffic at some point. The U.S. Army Corps of Engineers is undertaking dredging and blasting operations in an effort to keep as much of the river navigable for as long as possible.

The West: A powerful, slow-moving storm system brought widespread heavy precipitation to the Pacific Northwest, the northern Intermountain West, the northwestern Rockies, the western Great Basin, central and northern California, and parts of coastal California as far south as Los Angeles County. Storm total precipitation reached as high as 1 to 2 feet in the northern half of the Sierra Nevada, the southern Cascades, coastal sections of northwestern California and southwestern Oregon, and across the Olympic Range and its windward west-facing slopes in northwestern Washington. Scattered totals exceeding 12 inches were also reported along parts of the California coast from Monterey County northward, and at a few locations near the coast in northwestern Oregon and western Washington. Meanwhile, 4 to locally 10 inches fell on the mountains in central and northeastern Idaho, the windward slopes of the Cascades, and the rest of California west of the mountains from the Sacramento Valley northward. More than an inch of precipitation fell along the California Coast as far south as Los Angeles County. In other parts of the West, away from the influence of this storm, little or no precipitation fell.

Substantial drought relief was effected by the potent storm system. D0 to D2 conditions were all suppressed southward in western Montana, central Idaho, east-central Oregon, and the northern two-thirds of California. In addition, D2-D3 conditions pulled eastward away from the eastern side of the central and northern Sierra Nevada, including the Lake Tahoe region. The dry weather in the rest of the West brought little change to the widespread areas of dryness and drought, though some deterioration was identified in the eastern half of Colorado.

Hawaii, Alaska, and Puerto Rico: Dryness intensified on much of the Big Island of Hawaii, with D1 expanding to cover most of the island. Water recently stopped flowing over Rainbow Falls near Hilo, HI, a rare but not unprecedented occurrence. Meanwhile, rainfall improved conditions from D3 to D2 along a small stretch near central Maui. Elsewhere, the depiction was not changed.

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No change was made in Alaska as the ground has frozen for the season. Conditions will be assessed during the late spring thaw. There is no dryness or drought in Puerto Rico.

Looking Ahead: During the next 5 days (December 6 – 10, 2012), a storm system is forecast to traverse the Ohio and lower Mississippi Valleys, bringing at least an inch of rain to a broad area from parts of Mississippi and Arkansas near the Mississippi River northeastward through the Ohio Valley, parts of the southeastern Great Lakes Region, and the northern Appalachians. Amounts of 2 to 4 inches are possible from near the Mississippi/Ohio confluence northeastward through part of western New York. Farther west, light to moderate precipitation is expected across the central and northern Rockies, the central and northern Intermountain West and the Pacific Northwest, with totals of 1 to 3 inches possible in some higher elevations. Elsewhere, moderate precipitation totals of 0.5 to 1.0 inch are forecast for the central Great Lakes Region, the eastern side of the Mississippi Valley south of Wisconsin, southern Florida, and much of the upper Southeast and interior Northeast. Light precipitation is expected across the Plains outside of Texas, along the southern Atlantic Seaboard, and in portions of the Great Basin and central California. Little or none is expected elsewhere. Temperatures should average near or above normal throughout the contiguous 48 states, with average daily highs expected to be 9 to 12 degrees F above normal from the upper Ohio Valley and adjacent Appalachians southwestward into the lower Mississippi Valley.

For the 6-10 day outlook (December 11 – 15, 2012), odds favor above-normal precipitation along the northern tier of states, and from southeastern Texas, the lower Mississippi Valley, the Ohio Valley, and the Great Lakes Region eastward to the Atlantic Coast. Below-normal precipitation is favored across roughly the southwestern quarter of the contiguous 48 states and in the central Great Plains. Warmer than normal weather should continue across the northeastern quarter of the contiguous 48 states and in the south-central Plains.

Author: [Rich Tinker, Climate Prediction Center/NCEP/NWS/NOAA](#)

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

Drought or Dryness Types

S ... Short-Term, typically <6 months (e.g. agricultural, grasslands)

L ... Long-Term, typically >6 months (e.g. hydrology, ecology)

Updated December 5, 2012

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Western Governors Say Quick Action on Wildfire Needed

FOR IMMEDIATE RELEASE

December 1, 2012

PHOENIX, Ariz. -- Western governors meeting here today discussed and identified several actions that could be taken quickly by the states in conjunction with the U.S. Forest Service to reduce the risks of massive wildfires that destroyed more than nine million acres nationally this year alone.

The Western Governors' Association and multiple stakeholders were integral in developing recommendations included in a new report, *Phase III Western Region Science-Based Risk Analysis*. The recommendations call for enhanced collaborative efforts that will result in improved wildfire response, the creation of fire adapted communities, and the restoration of landscapes that are resilient to wildfire.

"It is critical that the federal government and states work collaboratively on active-management plans that will thin overgrown Western forests to a more natural condition," said Arizona Governor Jan Brewer prior to the plenary session. "By restoring forests, increasing federal and state fire-suppression capabilities and encouraging proper land management by homeowners living in the urban interface, we can lessen the likelihood of the kinds of massive fires that have threatened lives and property across the West in recent years."

The governors met today with Harris Sherman, Under Secretary for Natural Resources and Environment, USDA, to discuss actions that can be taken immediately by Western states and the U.S. Forest Service under existing environmental protection authorities to reduce hazardous fuel conditions across the West.

"Wildfires pose a serious threat to people, property and water throughout the West--especially in the forested areas near communities," said Colorado Governor John Hickenlooper. "The federal government and the states need to work together to manage forest health and pool all available resources to reduce catastrophic wildfires before they start and fight the fires once they occur. We need to spend scarce resources wisely to achieve these goals of healthier forests and firefighting detection and suppression tools."

Also this year, more than 2.5 million acres of habitat for Greater Sage-Grouse have burned. The grouse is currently listed on the Federal Endangered Species List as "warranted but precluded."

Impacts to habitat from wildfire could adversely affect an ESA listing decision to be made in 2015. Western states are working closely with the U.S. Fish and Wildlife service and other federal agencies to ensure the Greater Sage-Grouse does not warrant full listing.

A copy of the letter the governors sent to Congress on the wildfire issue can be found at <http://www.westgov.org/letters-testimony>.

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Western Governors' report examines role water transfers can play in meeting new demands

FOR IMMEDIATE RELEASE

December 3, 2012

DENVER -- The Western Governors today released a report, [Water Transfers in the West](#), which provides an overview on how the region can help meet growing demands for water with voluntary market-based sales and leases of water rights.

"Voluntary water transfers have occurred for decades," said Governor Gary R. Herbert (Utah), Chairman of the Western Governors' Association. "But with so many new citizens and industries settling in the water-scarce West, now is the time to evaluate how we use transfers in our approach to providing water."

A water transfer, as defined in this report, is a voluntary agreement that results in a change in the type, time or place of use of a water right. Water transfers can take the form of a sale, lease or donation and they can move water among agricultural, municipal, industrial energy and environmental uses.

Water transfers are one component of a suite of tools Western water managers can use to meet new demands from changes in farming practices, energy development, and urbanization. States can also develop new infrastructure and storage (such as dams), conservation and efficiency, and water reuse projects.

"There is no magic wand or silver bullet when it comes to meeting water supply, only well-informed decision making," said Jennifer Gimbel, Director of the Colorado Water Conservation Board. "This report will help states learn from each other's experiences with water transfers in order to make the best decisions for each state's water future."

Water transfers offer a means to "re-purpose" existing water resources for new uses. Since farmers hold many of the West's senior water rights, [the Governors passed a policy in 2011](#) advocating that states "identify and promote innovative ways to allow water transfers from other uses ... while avoiding or mitigating damages to agricultural economies and communities." The report also addresses ways to mitigate impacts to the environment.

The report is a product of a year-long project in partnership with the Western States Water Council (WSWC), a group of top water administrators in the Western states. The Western Governors' Association and WSWC [convened three stakeholder workshops](#) with more than 100 participants from July to December of 2011. The meetings drew state administrators, environmental organizations, farmers, academics, and water resource professionals from across the West, providing diverse perspectives on water transfers.

"The balanced approach to water transfers advocated for in the WSWC report is the same philosophy that must be advanced on an even larger scale here in the West," said Patrick O'Toole, President of the Family Farm Alliance and a workshop participant. "Transfers are a way of meeting short-term water challenges, but they are only one instrument in a much broader suite of tools that also must include water conservation and modern infrastructure to store and move water."

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Rather than providing a "one-size-fits-all" blueprint for states to follow, [Water Transfers in the West](#) highlights successful transfers and innovative practices to allow Western states to learn from their collective experiences and take advantage of the "lessons learned." The report also recognizes that each state's individual circumstances will determine how it should address transfers. It addresses only transfers within states, and not interstate transfers.

"Transfers are already occurring in all of the Western states, and many state water administrators say that transfers will continue to play a vital role in the way they meet demands," said Tony Willardson, Executive Director of the [Western States Water Council \(WSWC\)](#). "WSWC and WGA will continue to provide states with information on how to take advantage of the decentralized and flexible nature of transfers while avoiding or mitigating any negative effects of transfers."

WGA and WSWC will continue their work on water transfers following the release of the report.

The report, titled [Water Transfers in the West: Projects, Trends, and Leading Practices in Voluntary Water Trading](#) is available for download online at westgov.org/water. Information from [past stakeholder workshops](#) and [stakeholder perspectives](#) on transfers are also available online.