



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 3 December 2010

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: SNOTEL Snow-Water Equivalent percent of normal values for 3 December 2010 shows quite a bit of improvement over eastern Oregon this week. Conditions are still below normal over the Washington Cascades (Fig 1). SNOTEL 7-day snow depth changes show considerably less accumulation across most of the West as compared to the previous 7-day period (Fig. 1a).

Temperature: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were scattered across the Eastern Plains of Colorado and New Mexico ($>+1^{\circ}\text{F}$) and the greatest negative departures occurred over southwest Utah and northwest New Mexico ($<-15^{\circ}\text{F}$) (Fig. 2).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 2 December shows the bulk of the heaviest precipitation confined to Northwest Coast and Cascades (Fig. 3). In terms of percent of normal, a very wet week dominated parts of Idaho, Montana, and Northwest Wyoming (Fig. 3a). For the 2011 Water-Year that began on 1 October 2010, precipitation has been much greater than the long term average over much of the central interior West. Exceptions exist over eastern Arizona and all of New Mexico as would be expected during La Niña. A few river basins over Washington, Montana, Wyoming, and Colorado are also running behind in moisture (Fig. 3b).

Rockies to the Pacific Coast: Generally light precipitation was reported in areas covered by dryness and drought, with totals exceeding an inch in some of the higher elevations across the northern half of the region. However, a re-assessment of conditions led to the elimination of abnormal dryness in north-central and northeastern Nevada while some limited expansion of dryness occurred in small sections of western Arizona and in southeastern California near the southwestern Nevada border. Author: Rich Tinker, NOAA/NWS/NCEP/CPC

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

DROUGHT IMPACTS DEFINITIONS (<http://drought.unl.edu/dm/classify.htm>)

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 and 4a).

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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/>.

U.S. HISTORICAL STREAMFLOW

http://water.usgs.gov/cgi-bin/waterwatch?state=us&map_type=dryw&web_type=map.

This map, (Fig. 6) 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://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>

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

/s/ JEFF GOEBEL

Acting Director, Resource Inventory Division

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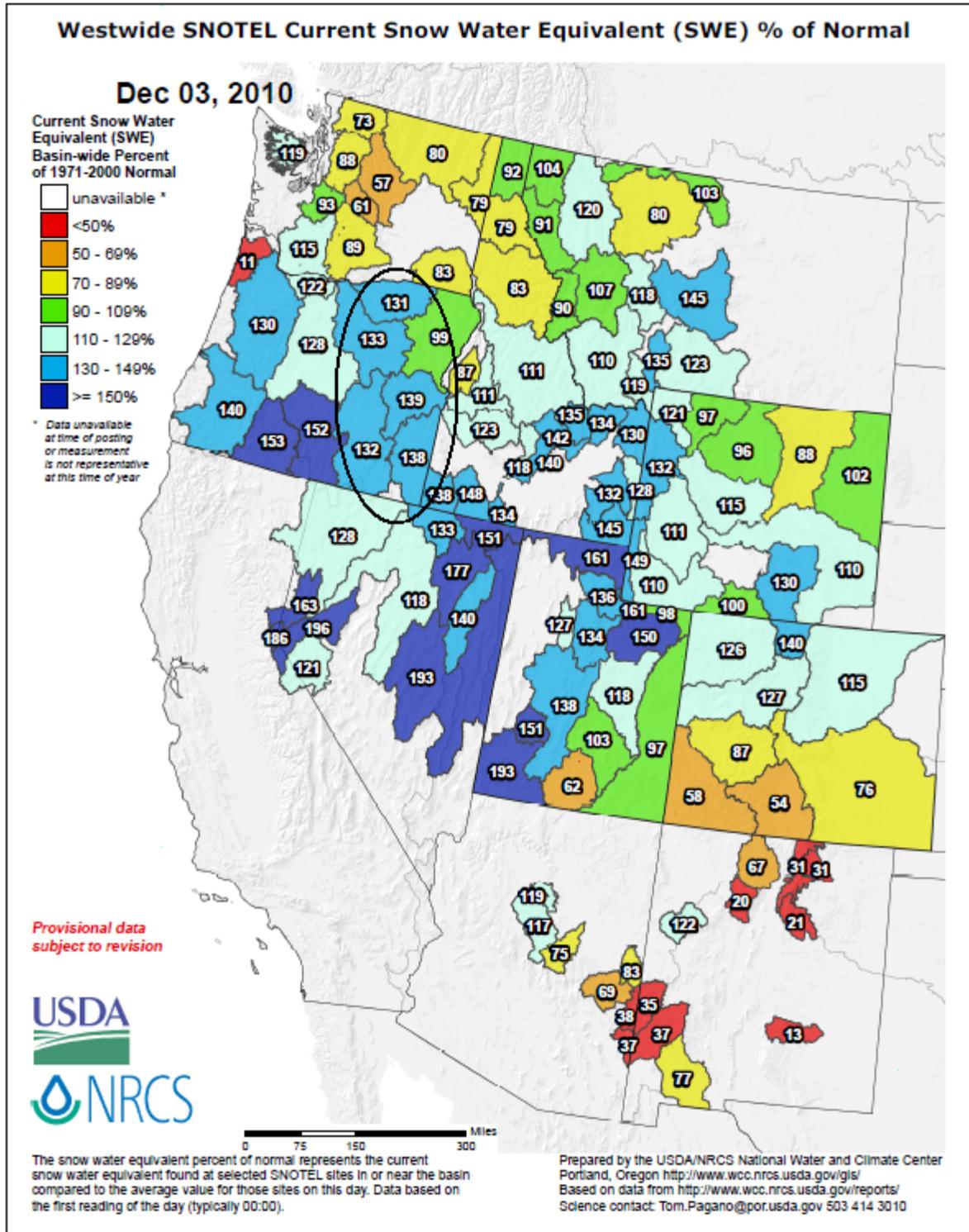


Fig 1. SNOTEL Snow-Water Equivalent percent of normal values for 3 December 2010 shows quite a bit of improvement over eastern Oregon this week. Conditions are still below normal over the Washington Cascades.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_swepctnormal_update.pdf

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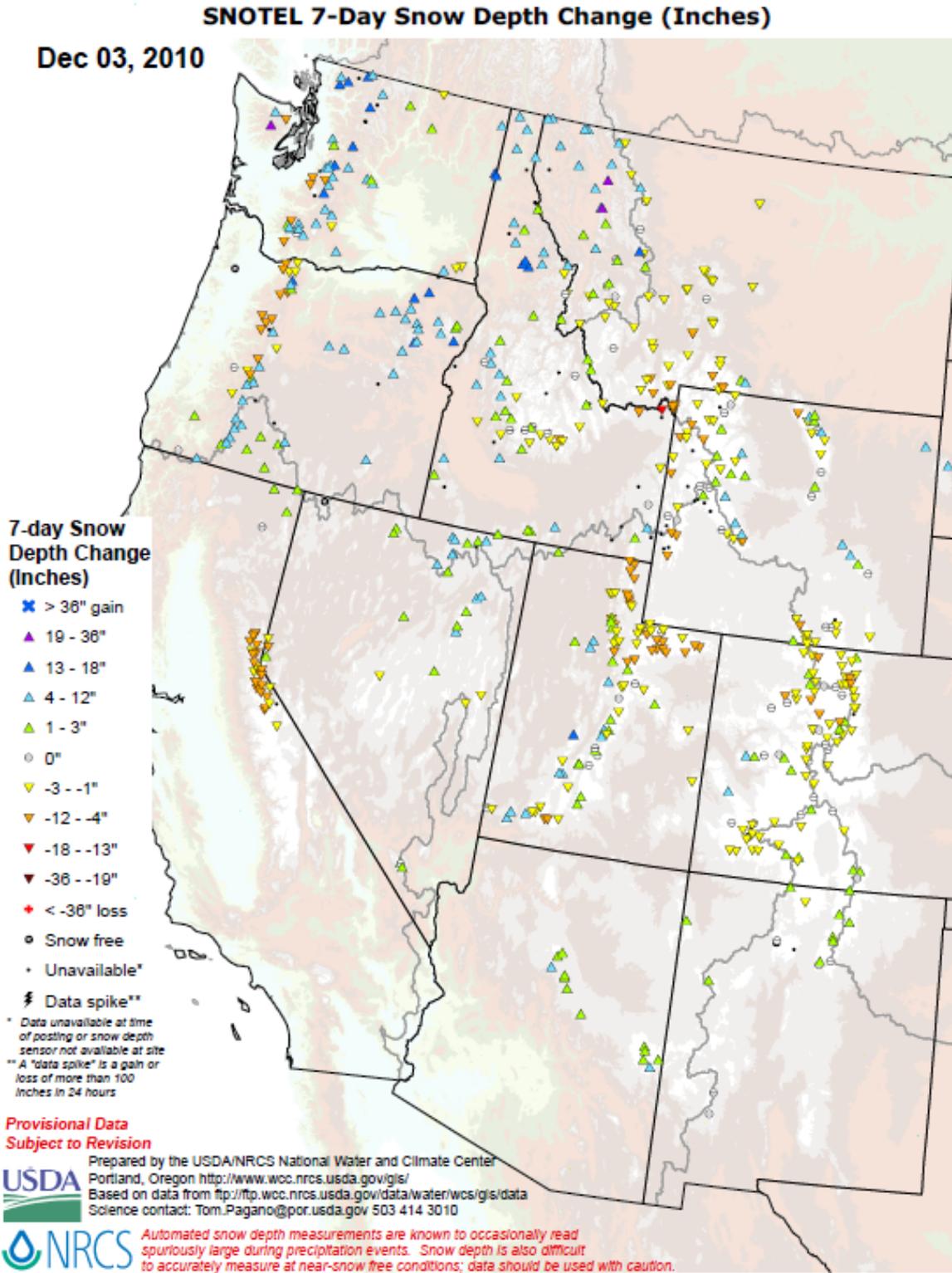
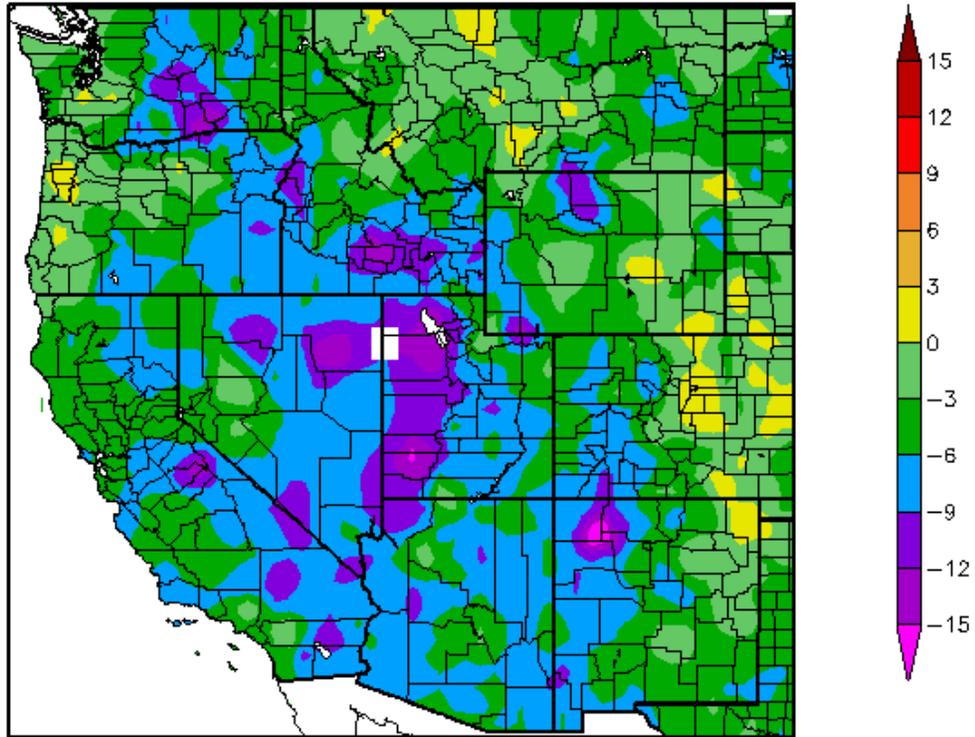


Fig 1a. SNOTEL 7-day snow depth changes show considerably less accumulation across most of the West as compared to the previous 7-day period.

Ref: http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf.

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Departure from Normal Temperature (F)
11/26/2010 – 12/2/2010



Generated 12/3/2010 at HPRCC using provisional data.

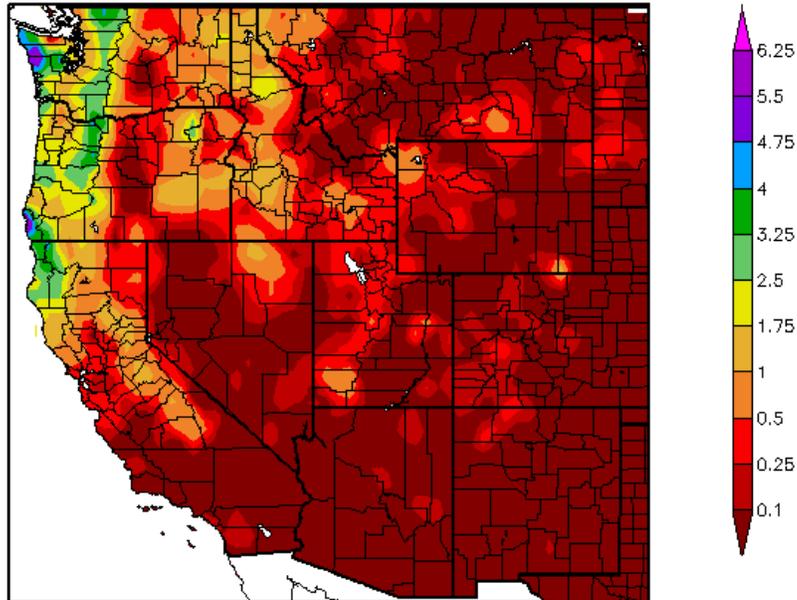
Regional Climate Centers

Fig. 2: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were scattered across the Eastern Plains of Colorado and New Mexico (>+1°F) and the greatest negative departures occurred over southwest Utah and northwest New Mexico (<-15°F).

Ref: http://www.hprcc.unl.edu/maps/current/index.php?action=update_daterange&daterange=7d

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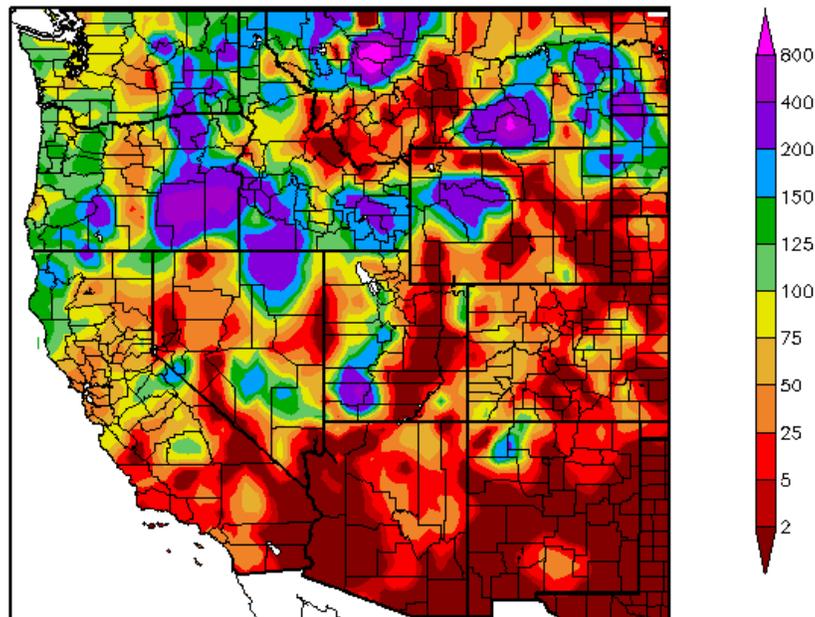
Precipitation (in)
11/26/2010 – 12/2/2010



Generated 12/3/2010 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
11/26/2010 – 12/2/2010



Generated 12/3/2010 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: ACIS 7-day average precipitation amounts for the period ending 2 December shows the bulk of the heaviest precipitation confined to Northwest Coast and Cascades (Fig. 3). In terms of percent of normal, a very wet week dominated parts of Idaho, Montana, and Northwest Wyoming (Fig. 3a). Ref: <http://www.hprcc.unl.edu/maps/current/>

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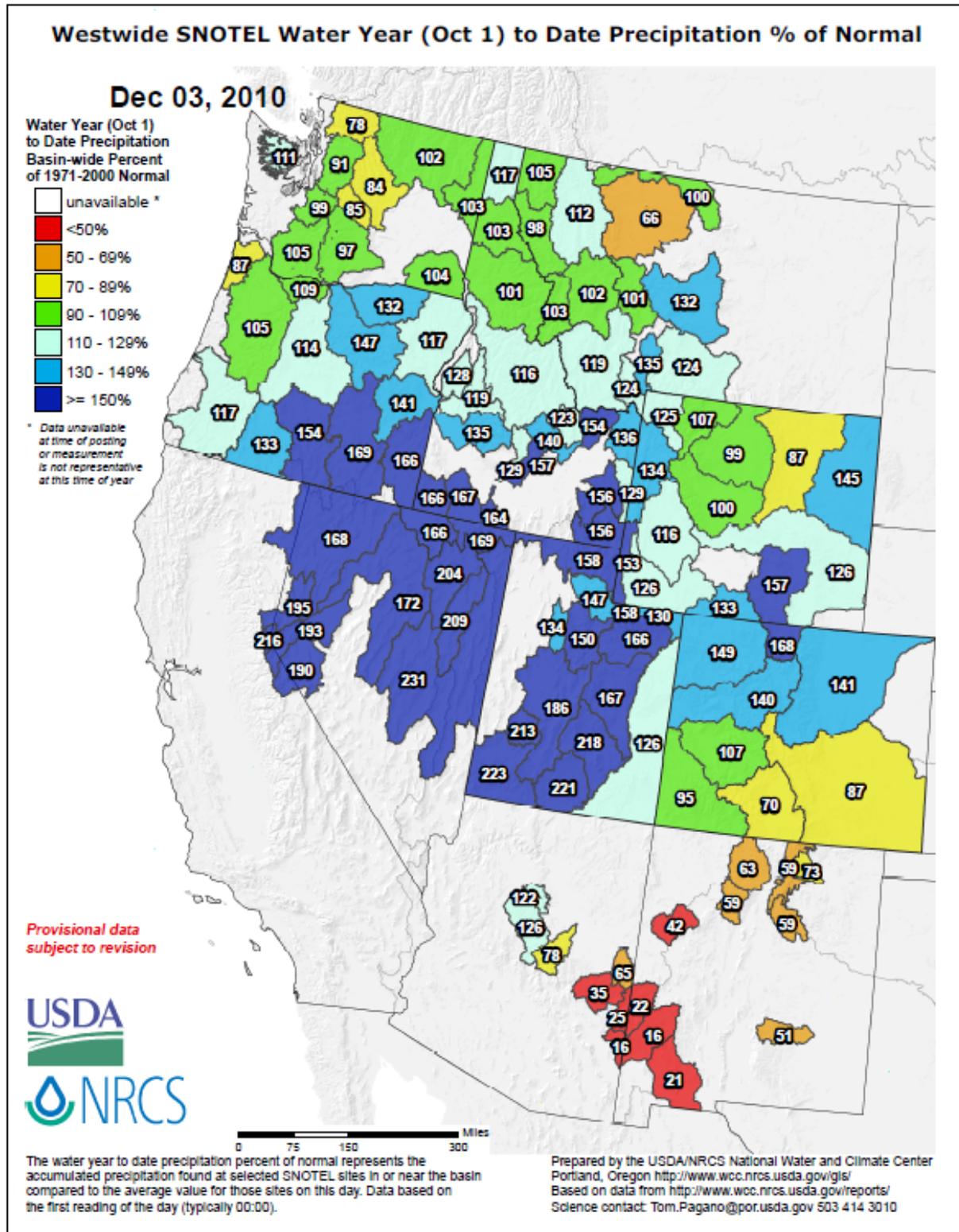


Fig 3b: For the 2011 Water-Year that began on 1 October 2010, precipitation has been much greater than the long term average over much of the central interior West. Exceptions exist over eastern Arizona and all of New Mexico as would be expected during La Niña. A few river basins over Washington, Montana, Wyoming, and Colorado are also running behind in moisture. Ref: [ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf](http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf)

U.S. Drought Monitor

November 30, 2010

Valid 7 a.m. EST

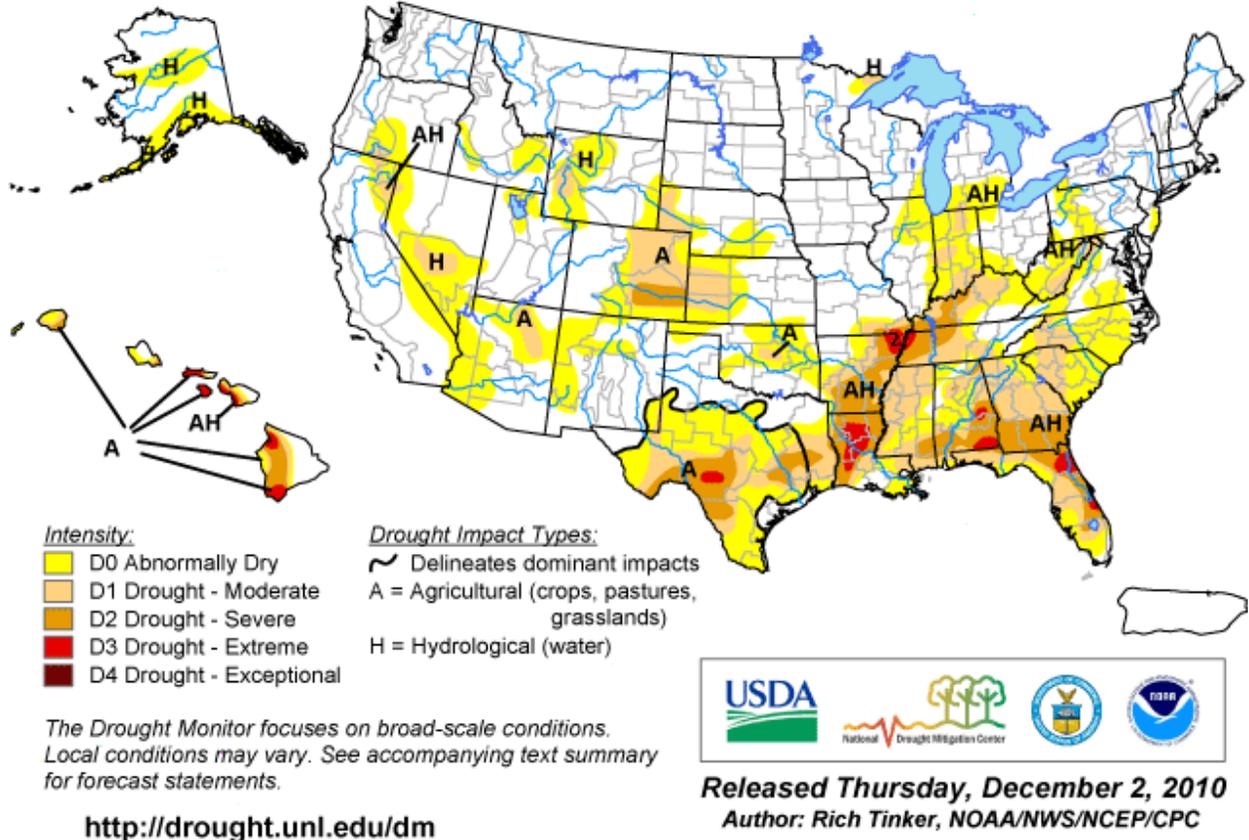


Fig. 4: Current Drought Monitor weekly summary. The severest D3 levels of drought dominate Hawaii, the Lower Mississippi and Tennessee River Valleys, and Tennessee, and northern Florida.

Ref: <http://www.drought.unl.edu/dm/monitor.html>

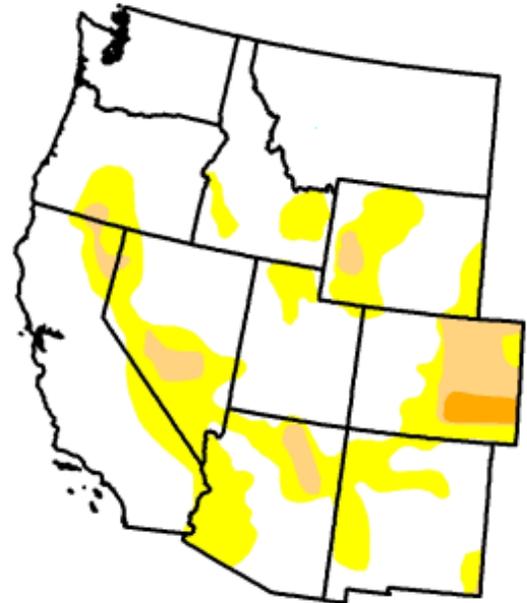
U.S. Drought Monitor

West

November 30, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	72.8	27.2	5.8	0.9	0.0	0.0
Last Week (11/23/2010 map)	71.9	28.1	5.7	0.0	0.0	0.0
3 Months Ago (09/07/2010 map)	73.5	26.5	6.3	0.6	0.0	0.0
Start of Calendar Year (01/05/2010 map)	40.1	59.9	30.6	9.9	0.5	0.0
Start of Water Year (10/05/2010 map)	62.5	37.5	8.4	0.6	0.0	0.0
One Year Ago (12/01/2009 map)	46.8	53.2	28.7	11.6	0.5	0.0



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://drought.unl.edu/dm>

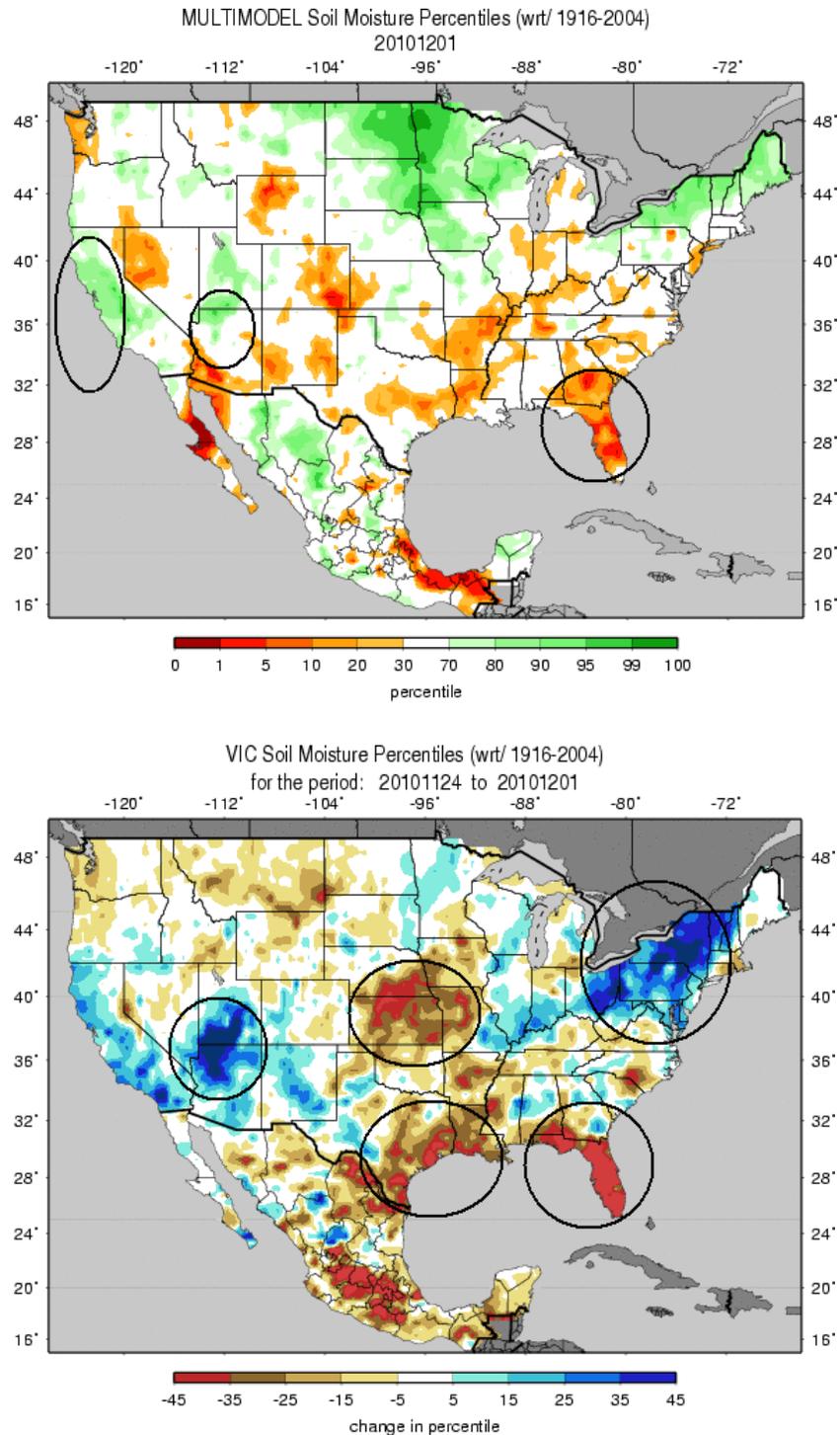


Released Thursday, December 2, 2010
Author: R. Tinker, CPC/NOAA

Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was no significant change during the past week.

Ref: http://www.drought.unl.edu/dm/DM_west.htm

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Figs. 5a and 5b: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 1 December. Circled areas show significant improvements (CA and AZ) and deterioration (FL and GA) (Fig. 5a). During the past week, circled areas showed a complete reversal in moisture content from the week before last (Fig. 5b). Weather variability is common during La Niña.

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/main_sm.multimodel.shtml

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Thursday, December 02, 2010

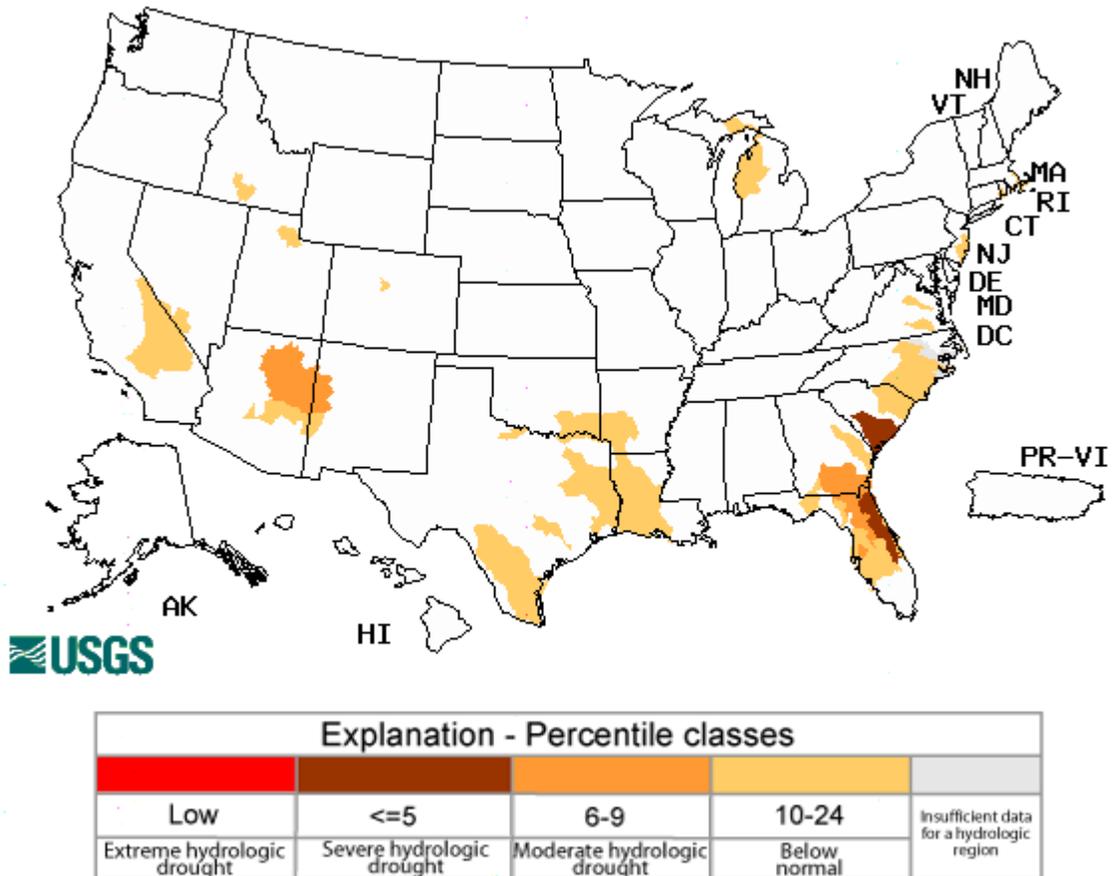


Fig. 6: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Clearly, the southeast coast of SC and FL are experiencing the severest flows this week. As winter approaches, northern site gauges will become less accurate as rivers and streams freeze. Ref: <http://waterwatch.usgs.gov/?m=dryw&r>

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National Drought Summary -- November 30, 2010

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/>.

From Tuesday morning, November 30, through Wednesday morning, December 1, widespread heavy precipitation totaling 1 to 4 inches fell from the southern Alabama and the Florida Panhandle northeastward through central and western Pennsylvania and far western New York. Moderate amounts fell from northwestern Alabama northeastward through southern and eastern Ohio, and along the Piedmont and parts of the Coastal Plains from southern Georgia northward through eastern Pennsylvania and most of upstate New York. However, this precipitation fell after the valid Drought Monitor period, which ended Tuesday morning, November 30, and thus was not considered in this week's Drought Monitor.

Eastern Seaboard: Two to locally five inches fell on a small area along the upstate South Carolina / North Carolina border into extreme northeastern Georgia, but significantly drier conditions prevailed elsewhere. The eastern slopes of the Appalachians recorded 0.5 to 2.0 inches of precipitation with isolated higher amounts while only a few tenths of an inch fell from the Piedmont areas to the Atlantic Coast. As a result, dryness and drought remained unchanged in most areas, with some expansion of D0 conditions into southeastern Virginia and eastern sections of the Carolinas. Areas of southern Georgia and the western half of South Carolina received 4 to locally 8 inches less precipitation than normal during the last 90 days while other areas of dryness and drought date back 30 to 60 days.

Florida: After another week of little to no rainfall, D0 conditions have expanded to cover all but extreme southeastern sections of the state, and severe to extreme drought now exists across eastern sections of the northern and eastern Panhandle. Over the last 90 days, parts of northeastern and east-central Florida recorded 8 to locally over 12 inches less precipitation than normal while deficits of 4 to 8 inches covered most other portions of central and northern Florida as dryness and, in some areas, serious drought conditions continued to develop and expand.

Central Gulf Coast: Generally dry conditions were experienced along the immediate coast, with precipitation amounts generally increasing with latitude. Scattered precipitation totals of 2 to 4 inches reached as far south as central Louisiana, and southwestern Mississippi. Increasing precipitation deficits led to D0 and D1 expansion into the Louisiana Delta, but heavier precipitation led to some improvement farther north across central Louisiana and non-coastal southern Mississippi. Still, precipitation shortfalls over the last 90 days exceeded 6 inches across southeastern Mississippi, southeastern Louisiana, and central and southwestern Louisiana.

Ohio, Tennessee, and Lower Mississippi Valleys: Widespread heavy precipitation induced significant relief for areas of dryness and drought, with 2 category improvements brought into areas where the heaviest precipitation fell and significantly reduced or eliminated 90-day

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precipitation deficits. Widespread totals exceeding 5 inches were reported near the Ohio River in Indiana, and 3 to 5 inch amounts were common elsewhere, with only a few isolated to small areas reporting lesser totals. Sweeping reductions were introduced from northern Louisiana, central and northern Mississippi, and northwestern Alabama northward through eastern Arkansas, southeastern Missouri, most of Tennessee, central and eastern Kentucky, southern Illinois, central and southern Indiana, and much of Ohio. Only a few areas of moderate drought now exist across Indiana, and severe to locally extreme drought was substantially curtailed to cover only parts of western Kentucky, western Tennessee, eastern and southern Arkansas, and (still) through most of northern Louisiana.

Southern and Central Plains: Light to moderate precipitation fell on parts of eastern Texas and Oklahoma while little or none fell elsewhere. Growing deficits led to a significant increase in D2 coverage in eastern Texas, with lesser areas of D0 and D1 expansion in this region. Farther south and west, D0 expanded to cover all of southern and southeastern Texas while D0 to D3 coverage in central and western Texas spread into larger sections of this area. Although traditional drought indicators don't appear particularly serious at first glance through southern and western Texas, county agricultural reports highlighted sharply increasing short-term deficits and frequently windy conditions that enhanced surface moisture depletion. Some impacts on crops, grasslands, and livestock upkeep have been reported, and burn bans have been mandated in a number of counties in this region. In addition, moderate drought extended northward through the eastern Big Bend region of Texas and pushed into adjacent southeastern New Mexico.

Farther north, dryness expanded into the Oklahoma and northern Texas Panhandles while conditions broadly deteriorated in eastern Colorado and the western half of Kansas. Moderate drought expanded toward central Kansas, and severe drought developed through the Arkansas River Valley in southeastern Colorado.

Rockies to the Pacific Coast: Generally light precipitation was reported in areas covered by dryness and drought, with totals exceeding an inch in some of the higher elevations across the northern half of the region. However, a re-assessment of conditions led to the elimination of abnormal dryness in north-central and northeastern Nevada while some limited expansion of dryness occurred in small sections of western Arizona and in southeastern California near the southwestern Nevada border.

Alaska and Hawaii: A few tenths of an inch of precipitation fell on the dry area in central Alaska and through most of the dry area covering southern coastal Alaska, except through south-central Alaska, where 1 to 3 inches fell, and across the Panhandle, where totals of 2 to 5 inches were common. Precipitation deficits on all time scales have eroded over the past several weeks, but no change in the areas assessed as abnormally dry seemed prudent at this time.

Light to moderate precipitation fell on most of Hawaii, with amounts reaching 1 to 4 inches in some windward areas. At this time, however, no changes were made to the drought assessment here pending assessments of how this precipitation changed observed impacts, if at all.

Looking Ahead: The next two weeks can be summed up as abnormally cold across the eastern half of the country outside New England, extending through northern portions of the West early in the period, while warmer than normal conditions cover the southwestern quarter of the United States. In the wake of the recent storm that swept through the East during the first

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day of this period, near to above normal precipitation is anticipated in the Northwest and New England while below normal precipitation seems likely across a broad section of the country covering the Southwest, the central and southern Rockies, the central and southern Plains states, and in areas along and south of the central Mississippi Valley, the lower Ohio Valley, and the mid-Atlantic states.

Author: [Rich Tinker, NOAA/NWS/NCEP/CPC](#)

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

A ... Agricultural

H ... Hydrological

Updated December 1, 2010