



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

Weekly Report - Snowpack / Drought Monitor Update Date: December 6, 2007

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: During the past week, abundant snowfall occurred over the Southwest and Northwest (Figs. 1 and 1a). The storm in the Southwest helped temporarily boost the spring runoff forecasts by 20%. Whether this weather pattern persists during La Nina is still unknown but cooler than average temperatures will be needed in order for any snowpack to substantially increase. Despite snow-water equivalent values exceeding 10 inches in several locations across NW Oregon and SW Washington, much of it initially fell as snow but melted later as the precipitation changed over to rain. During the 2008 Water Year, the western snow-water equivalent is generally behind the long-term average because a lot of precipitation has fallen either as rain or existing snowpack has already melted to some degree (compare Figs. 1b and 3b).

Temperature: For the past seven days, temperatures departures ranged from 10 degrees F below normal over the Northern Rockies to 10 degrees F above normal over the Southern Rockies. Elsewhere, temperatures were within +/- 5 degrees of normal (Figs. 2 and 2a).

Precipitation: Record rains fell over parts of Oregon and Washington during the past week. Saddle Mountain had 12" over a 3 day period. Flooding was the worst since the 1996 flood in Southwest Washington and the northern coast of Oregon. Heavy precipitation also fell across the Southwest into Colorado (Figs. 3 and 3a). For the Water Year, total amounts are above normal across the Intermountain West and Wyoming Rockies) but severely below normal over the Sierras (Fig. 3b).

WESTERN DROUGHT STATUS

The West: Stormy conditions hammered both the Southwest and Northwest. Heavy rain arrived in the Southwest on the last day of November. Daily-record rainfall totals for November 30 included 1.23 inches in Phoenix, Arizona, and 2.00 inches in Vista, California. The storm boosted the year-to-date rainfall in Phoenix from 2.73 to 4.01 inches. Elsewhere in Arizona, Mount Lemmon (near Tucson) netted 4.80 inches of rain in a 24-hour period on November 30 - December 1. In Blythe, California, where 1.04 inches fell on November 30, the storm accounted for more than one-quarter of the normal annual rainfall of 4.02 inches. Farther north, 25 inches of snow blanketed Brian Head, in southwestern Utah. Improvements of up to one drought category were fairly common across the Southwest. For example, severe drought (D2) replaced the large area of extreme drought (D3) previously covering southern California and western Arizona. Drought was also scaled back elsewhere in the Southwest, particularly in Arizona, western Colorado, and southern portions of Nevada and Utah.

Farther north, the most intense effects of a series of Pacific storms were confined to non-drought areas of the Pacific Northwest. By November 29, however, heavy snow blanketed the interior Northwest, where both Pendleton, Oregon (5.7 inches), and Yakima, Washington (5.6 inches), received daily-record totals. From November 28 to December 1, Pendleton's 4-day snowfall reached 9.4 inches. Precipitation and flooding intensified across the Pacific Northwest on December 2-3, when significant moisture also reached the northern Rockies. Howling winds

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accompanied the storminess along the northern Pacific Coast, where gusts in Oregon included 129 m.p.h. in Bay City and 125 m.p.h. in Lincoln City. Reductions in the coverage of moderate to severe drought (D1 to D2) were noted in several Northwestern areas, particularly in northeastern Oregon, northern and central Idaho, western Montana, and northwestern Wyoming. Weekly precipitation totals were in excess of 2 inches in all of the aforementioned locations.

Author: [Brad Rippey, U.S. Department of Agriculture](#)

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, 4a, 4b, and 4c).

SOIL MOISTURE

Soil moisture (Figs.5 and 5a), 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).

OBSERVED FIRE DANGER CLASS

The National Interagency Coordination Center provides a variety of products that describe the current wildfire status for the U.S. - <http://www.nifc.gov/information.html>. The latest Observed Fire Danger Class is shown in Figs. 6 shows the current active wildfires across the West - <http://geomac.usgs.gov/>.

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

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/cgi-bin/bor.pl>. Additional

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information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/>

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/ NOLLER HERBERT
Director, Conservation Engineering Division

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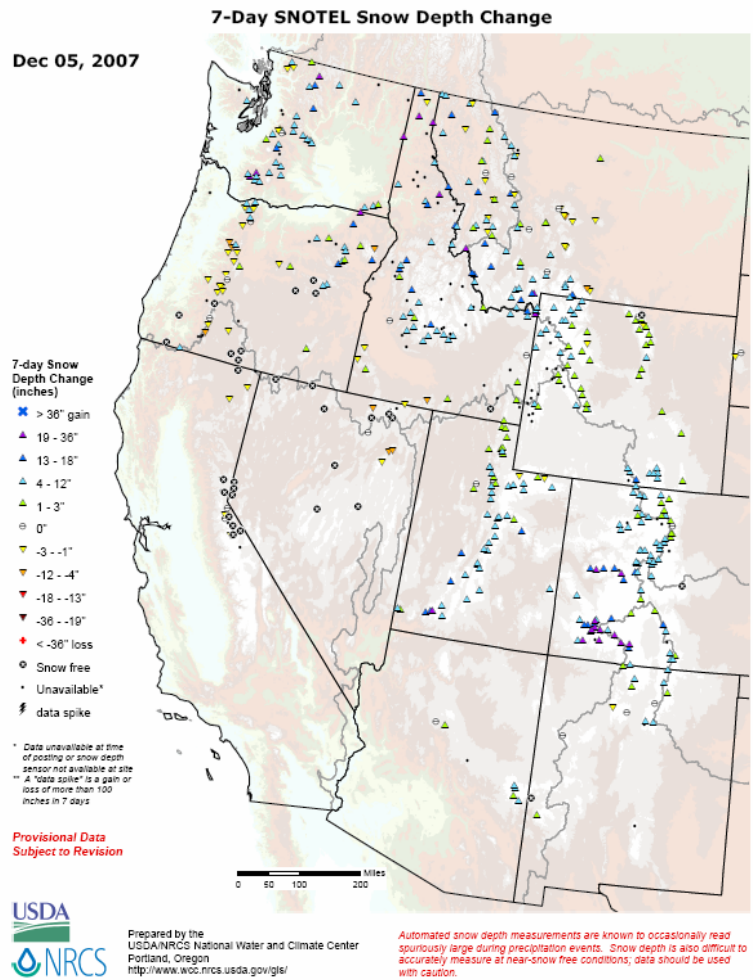
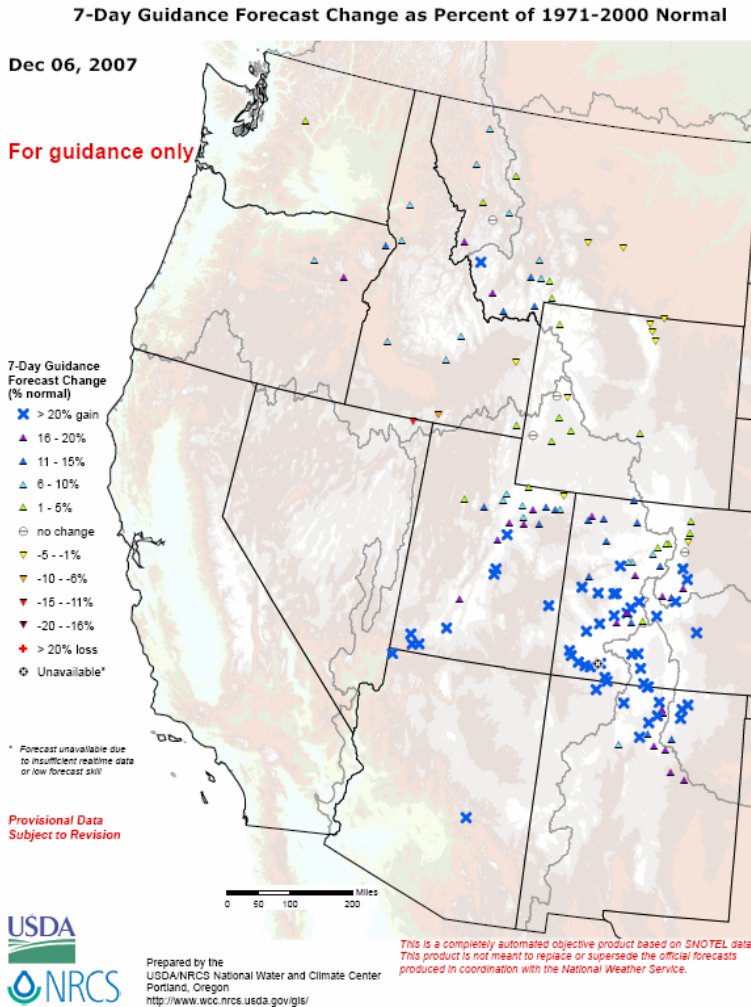


Fig. 1 and 1a. During the past week, snowfall accumulations over parts of Utah and Colorado have increased the spring runoff preliminary forecasts by more than 20 percent as snowfall depths increased by 1 to 3 feet over much of the Central Rockies. However, as noted in Fig 1b below, snow-water equivalent is still well below normal over much of the West.

Refs: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf
ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/daily_forecast/maps/west_dailyfcst_7daych.pdf

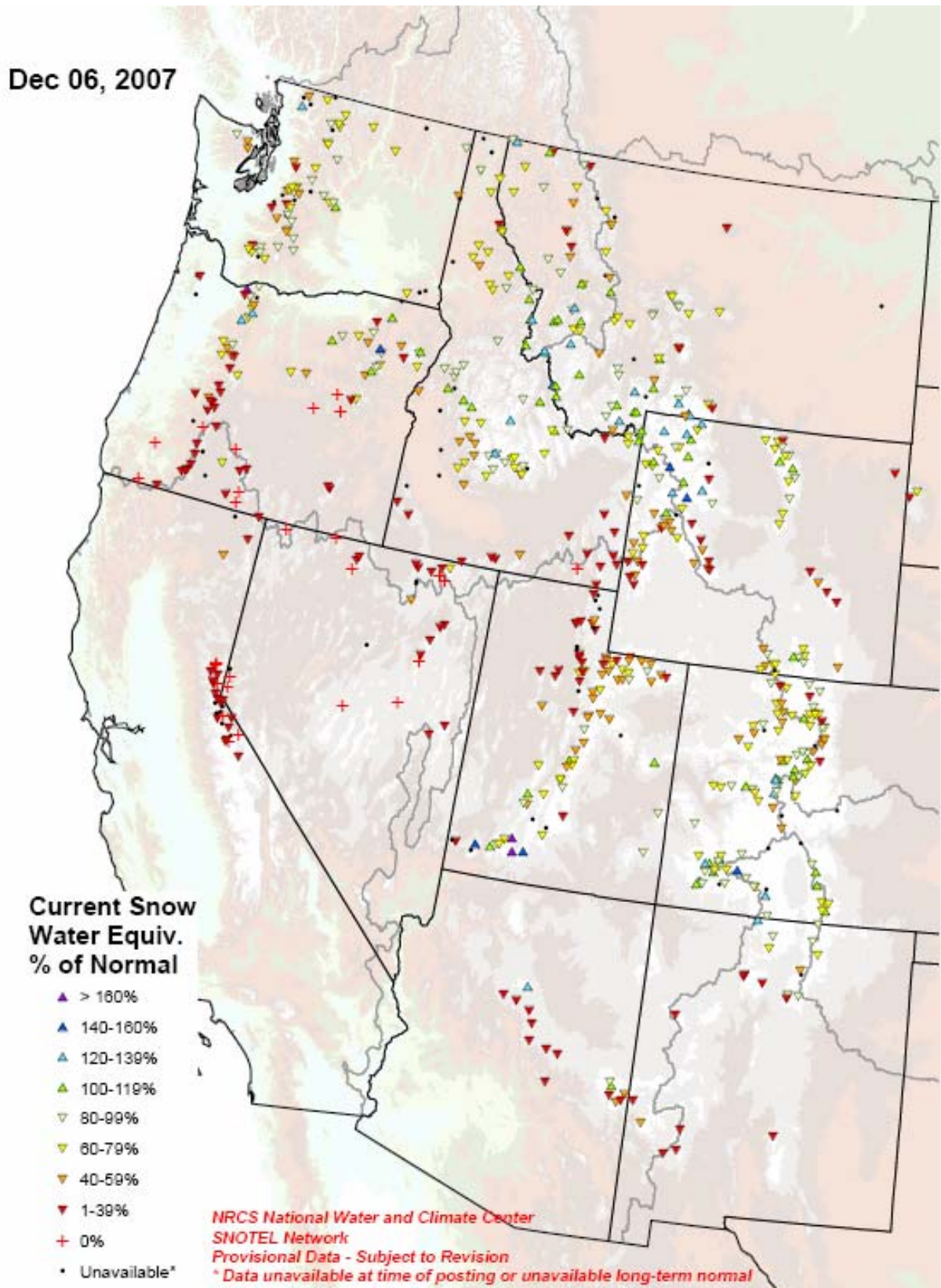


Fig. 1b. Seasonal snow-water equivalent percent of normal for the 2008 Water Year that began on October 1, 2007 shows few SNOTEL sites are at or above normal thus far.

Ref: <http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideSWEPercent.pdf>

Dec 05, 2007

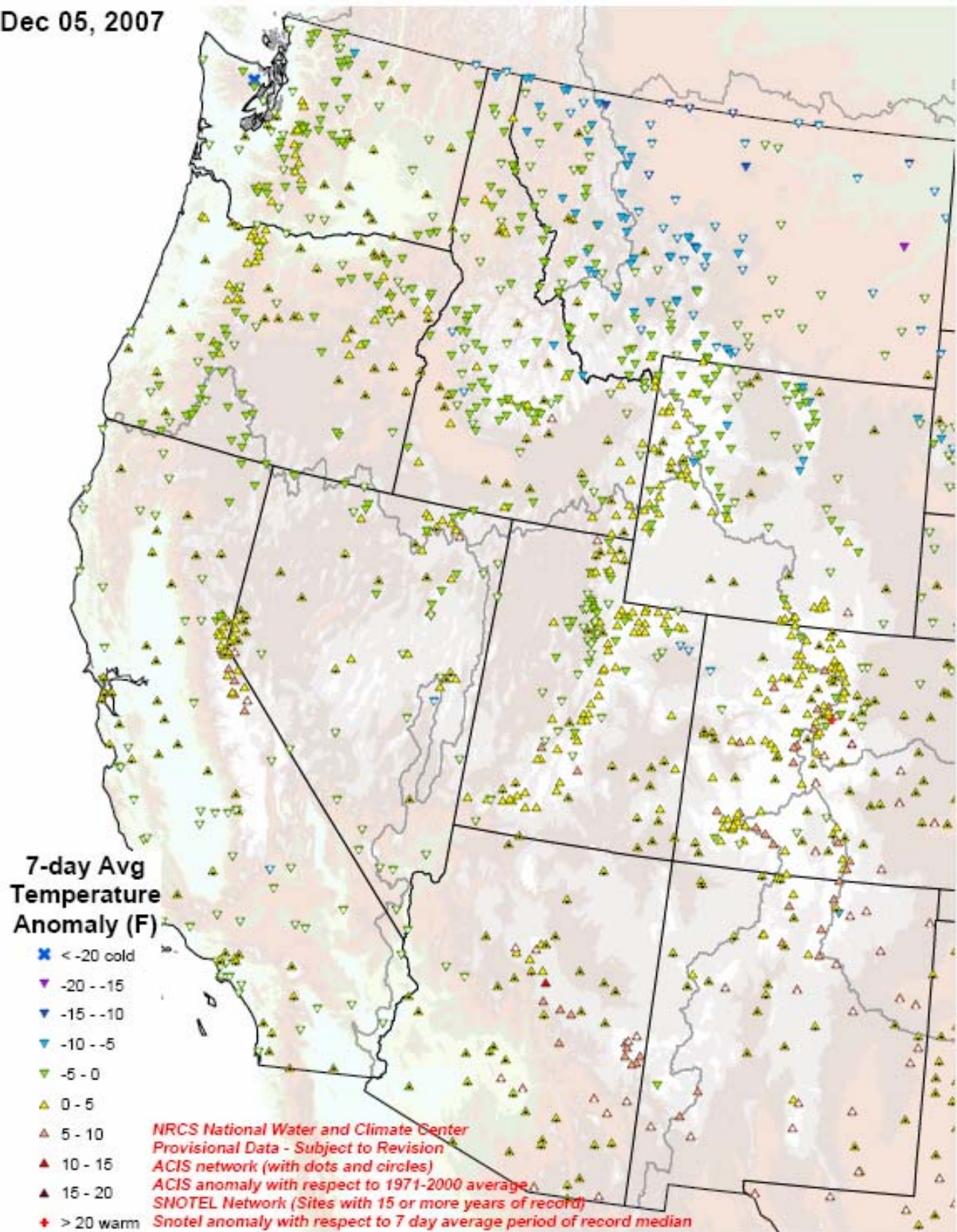
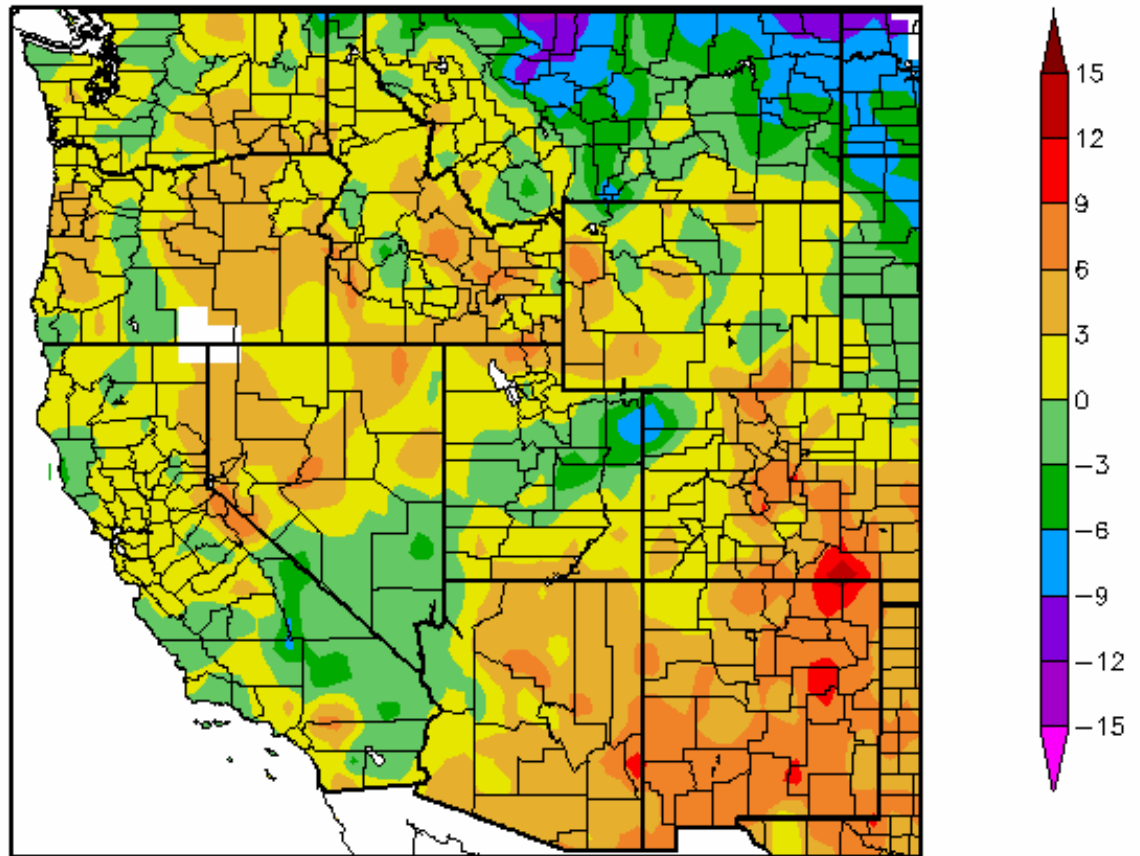


Fig. 2. SNOTEL & ACIS 7-stations daily average temperature anomaly shows near normal temperatures across much of the West with the exception of the eastern slope of the Northern Rockies where temperatures ran up to 10 degrees F below normal.

Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>.

Departure from Normal Temperature (F)
11/29/2007 – 12/5/2007



Generated 12/6/2007 at HPRCC using provisional data.

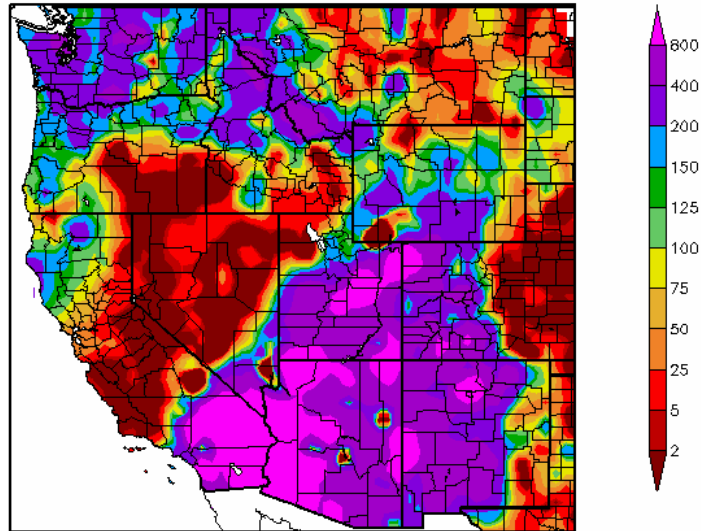
NOAA Regional Climate Centers

Fig. 2a. ACIS 7-day average temperature anomaly: Greatest negative temperature departures over the Northern Plains and greatest positive temperature departures over New Mexico.

Ref: http://www.hprcc.unl.edu/maps/index.php?action=update_region®ion=WRCC.

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Percent of Normal Precipitation (%)
11/29/2007 – 12/5/2007



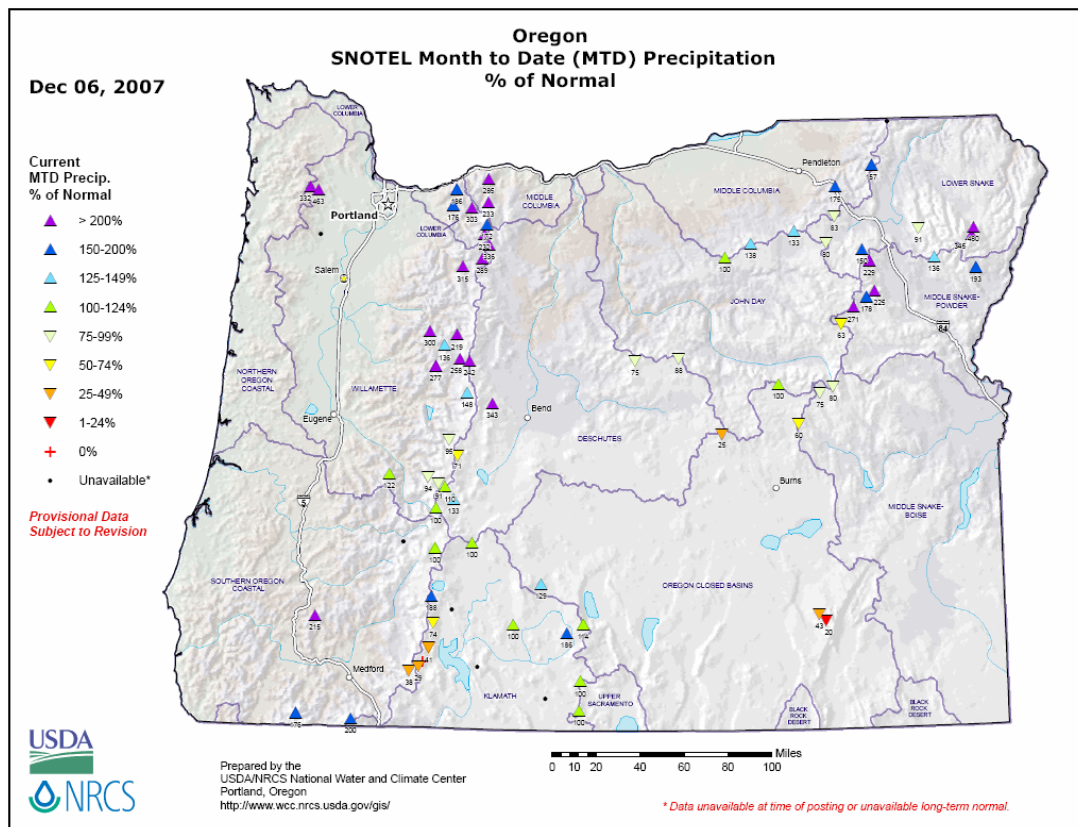
Generated 12/6/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 5 December shows significant precipitation across the Southwest and Northwest.

Ref: http://www.hprcc.unl.edu/maps/index.php?action=update_product&product=PNorm.

Fig. 3a. The map below shows Oregon's excessive precipitation over the northern half of the state thus far this month.



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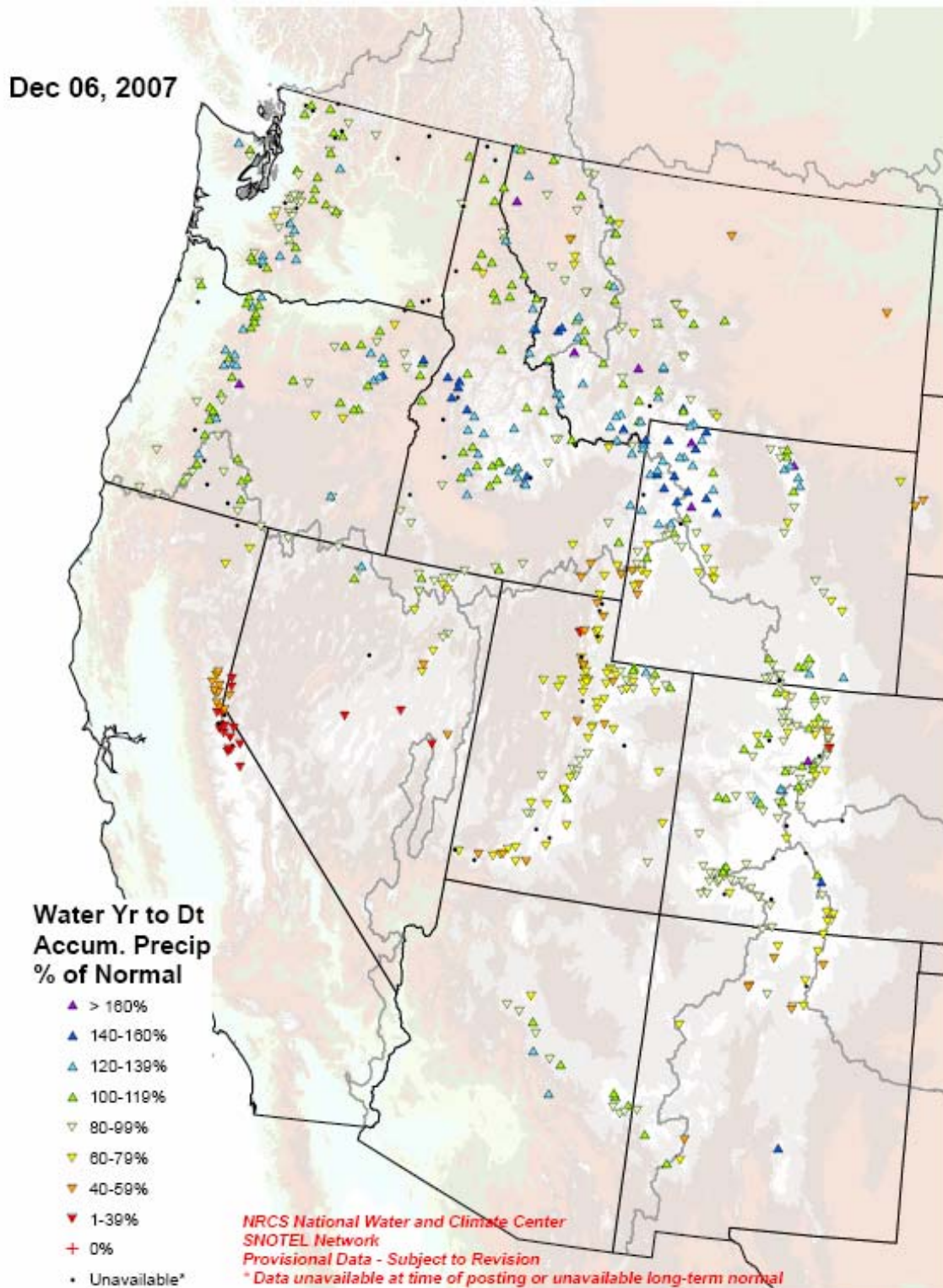


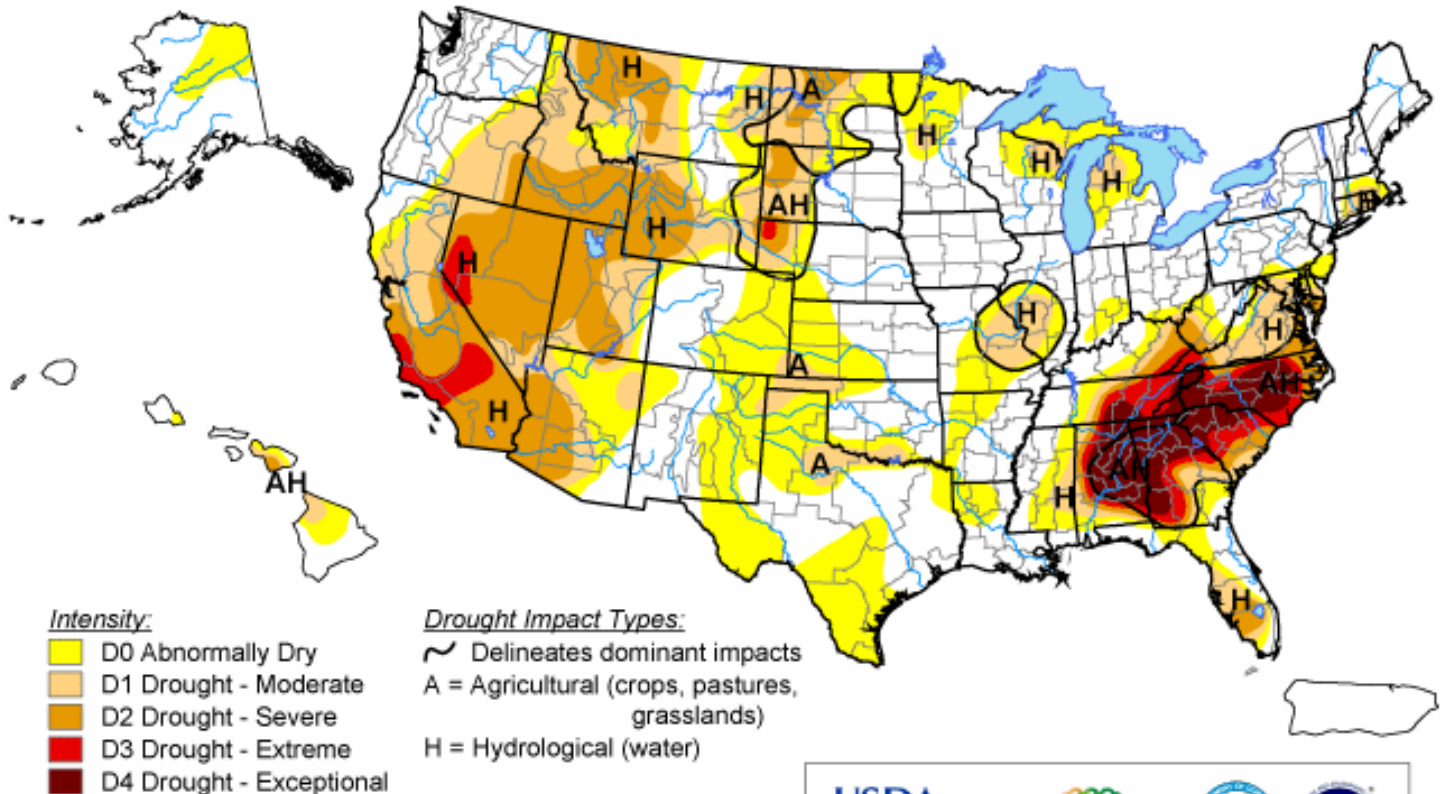
Fig 3b. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows increased percentages across much of the West excluding the Sierras since last week.

Ref: <http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideWYTDPrecipPercent.pdf>

U.S. Drought Monitor

December 4, 2007

Valid 7 a.m. EST



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

<http://drought.unl.edu/dm>



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Fig. 4. Current Drought Monitor weekly summary.

Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor

West

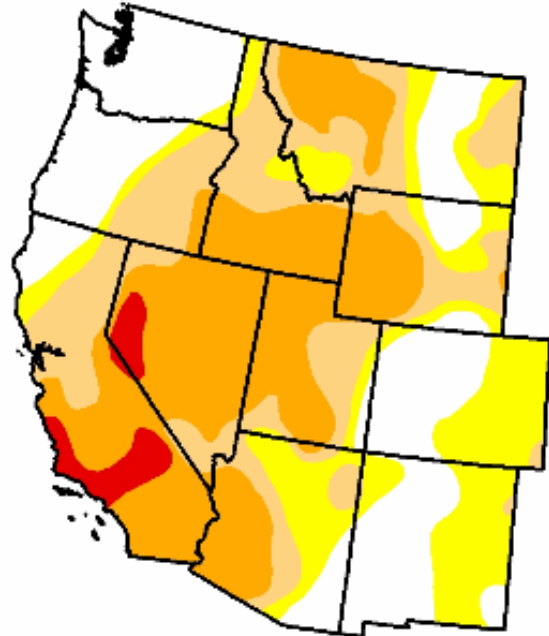
December 4, 2007

Valid 7 a.m. EST

| | Drought Conditions (Percent Area) | | | | | |
|---|-----------------------------------|-------|-------|-------|-------|-----|
| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
| Current | 26.1 | 73.9 | 54.8 | 32.8 | 2.7 | 0.0 |
| Last Week (11/27/2007 map) | 25.4 | 74.6 | 58.4 | 38.1 | 7.9 | 0.0 |
| 3 Months Ago (09/11/2007 map) | 21.4 | 78.6 | 63.9 | 49.4 | 12.2 | 0.0 |
| Start of Calendar Year (01/02/2007 map) | 51.2 | 48.8 | 25.8 | 9.4 | 4.0 | 0.0 |
| Start of Water Year (10/02/2007 map) | 22.0 | 78.0 | 62.3 | 44.7 | 12.4 | 0.0 |
| One Year Ago (12/05/2006 map) | 53.4 | 46.6 | 24.5 | 10.7 | 4.1 | 0.0 |

Intensity:

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



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<http://drought.unl.edu/dm>



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Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note some improvement in the D2-D4 intensities since last week.

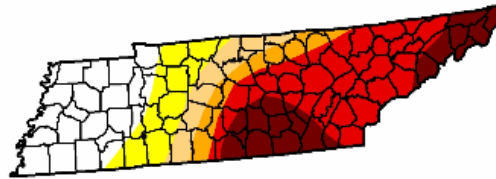
Ref: http://www.drought.unl.edu/dm/DM_west.htm

U.S. Drought Monitor

Tennessee

December 4, 2007
Valid 7 a.m. EST

| | Drought Conditions (Percent Area) | | | | | |
|---|-----------------------------------|-------|-------|-------|-------|------|
| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
| Current | 25.6 | 74.4 | 61.8 | 54.0 | 46.8 | 16.5 |
| Last Week (11/27/2007 map) | 25.6 | 74.4 | 61.8 | 54.5 | 46.6 | 16.5 |
| 3 Months Ago (09/11/2007 map) | 0.0 | 100.0 | 100.0 | 100.0 | 84.7 | 57.4 |
| Start of Calendar Year (01/02/2007 map) | 37.7 | 62.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Start of Water Year (10/02/2007 map) | 0.0 | 100.0 | 100.0 | 100.0 | 85.7 | 61.3 |
| One Year Ago (12/05/2006 map) | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



Intensity:



The Drought Monitor focuses on broad-scale conditions.
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for forecast statements

<http://drought.unl.edu/dm>



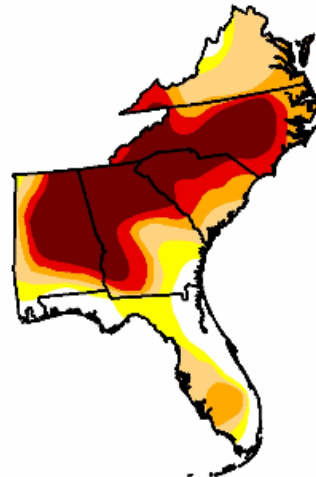
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U.S. Drought Monitor

Southeast

December 4, 2007
Valid 7 a.m. EST

| | Drought Conditions (Percent Area) | | | | | |
|---|-----------------------------------|-------|-------|-------|-------|------|
| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
| Current | 12.3 | 87.7 | 77.9 | 59.7 | 45.2 | 31.5 |
| Last Week (11/27/2007 map) | 13.0 | 87.0 | 76.2 | 58.0 | 43.5 | 27.8 |
| 3 Months Ago (09/11/2007 map) | 5.7 | 94.3 | 80.6 | 62.7 | 44.7 | 19.2 |
| Start of Calendar Year (01/02/2007 map) | 52.2 | 47.8 | 10.2 | 1.5 | 0.0 | 0.0 |
| Start of Water Year (10/02/2007 map) | 10.1 | 89.9 | 77.9 | 63.8 | 45.2 | 24.0 |
| One Year Ago (12/05/2006 map) | 75.3 | 24.7 | 8.6 | 1.7 | 0.0 | 0.0 |



Intensity:



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

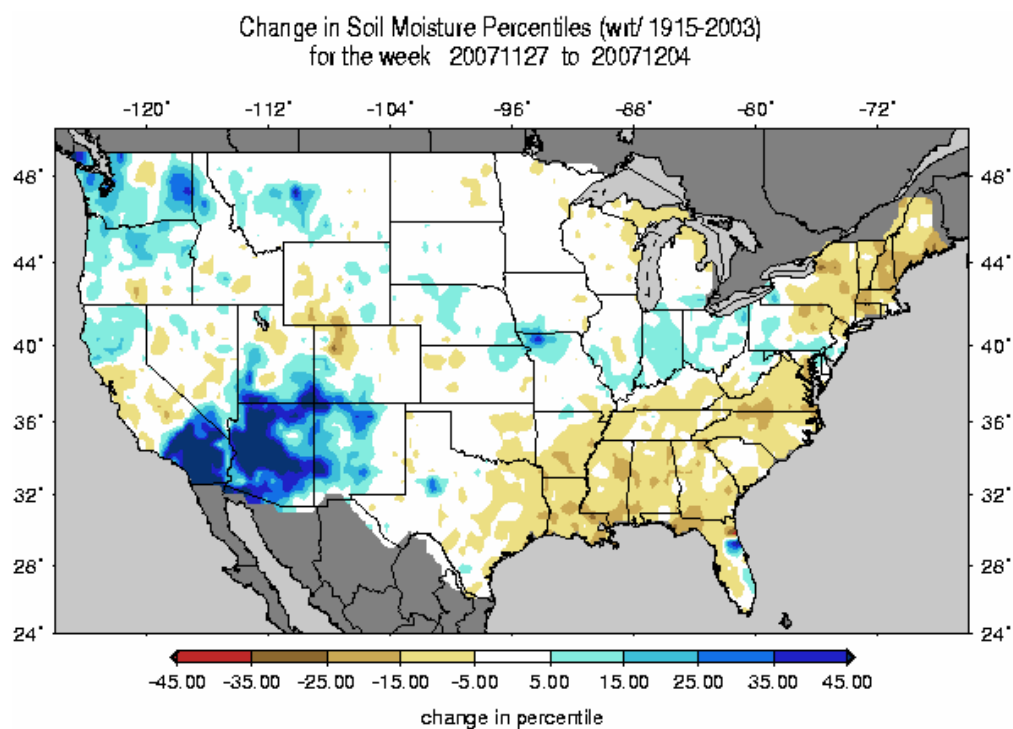
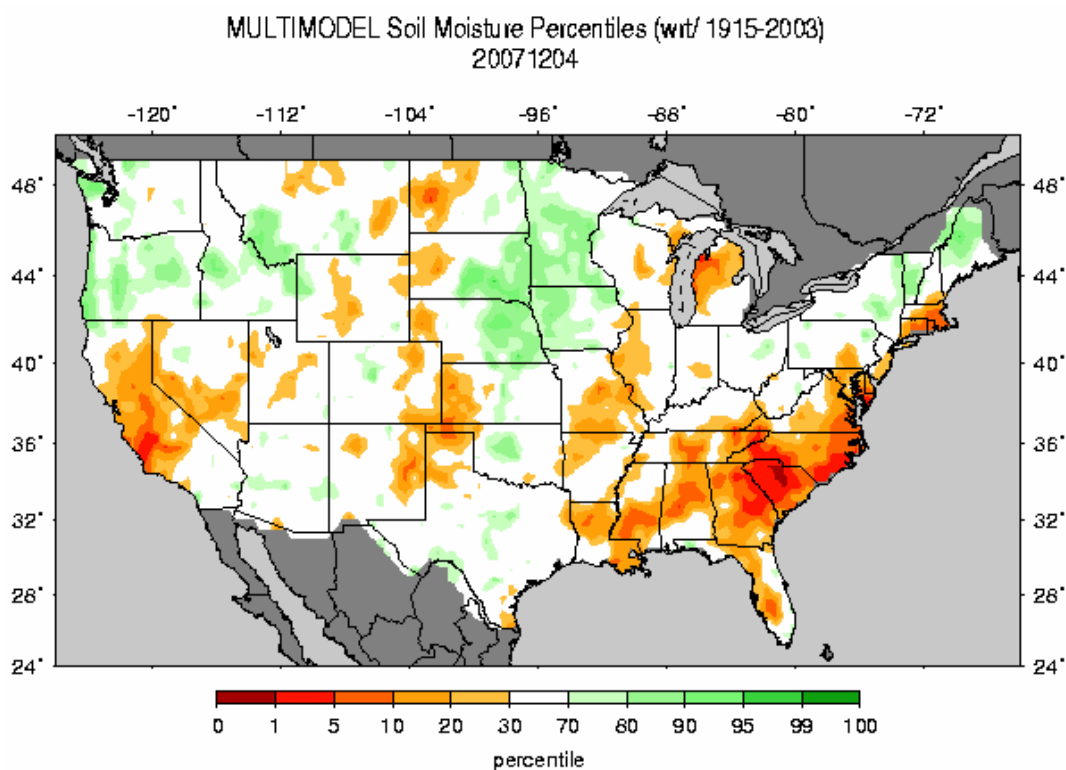
<http://drought.unl.edu/dm>



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Fig. 4b. Drought Monitor for Tennessee and the Southeastern States with statistics over various time periods shows some of the severest drought conditions in the US. Note no change for Tennessee and slight worsening over the Southeast during the past week. Ref: http://www.drought.unl.edu/dm/DM_southeast.htm

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Figs. 5 & 5a: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. Note deterioration over much of the Southeast, mid-Atlantic, and New England regions, and improvement over the Northwest and Southwest during the past week although extensive flooding did occur over western Oregon and Washington.

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.multimodel.sm_qnt.gif
http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_qnt.1wk.gif.

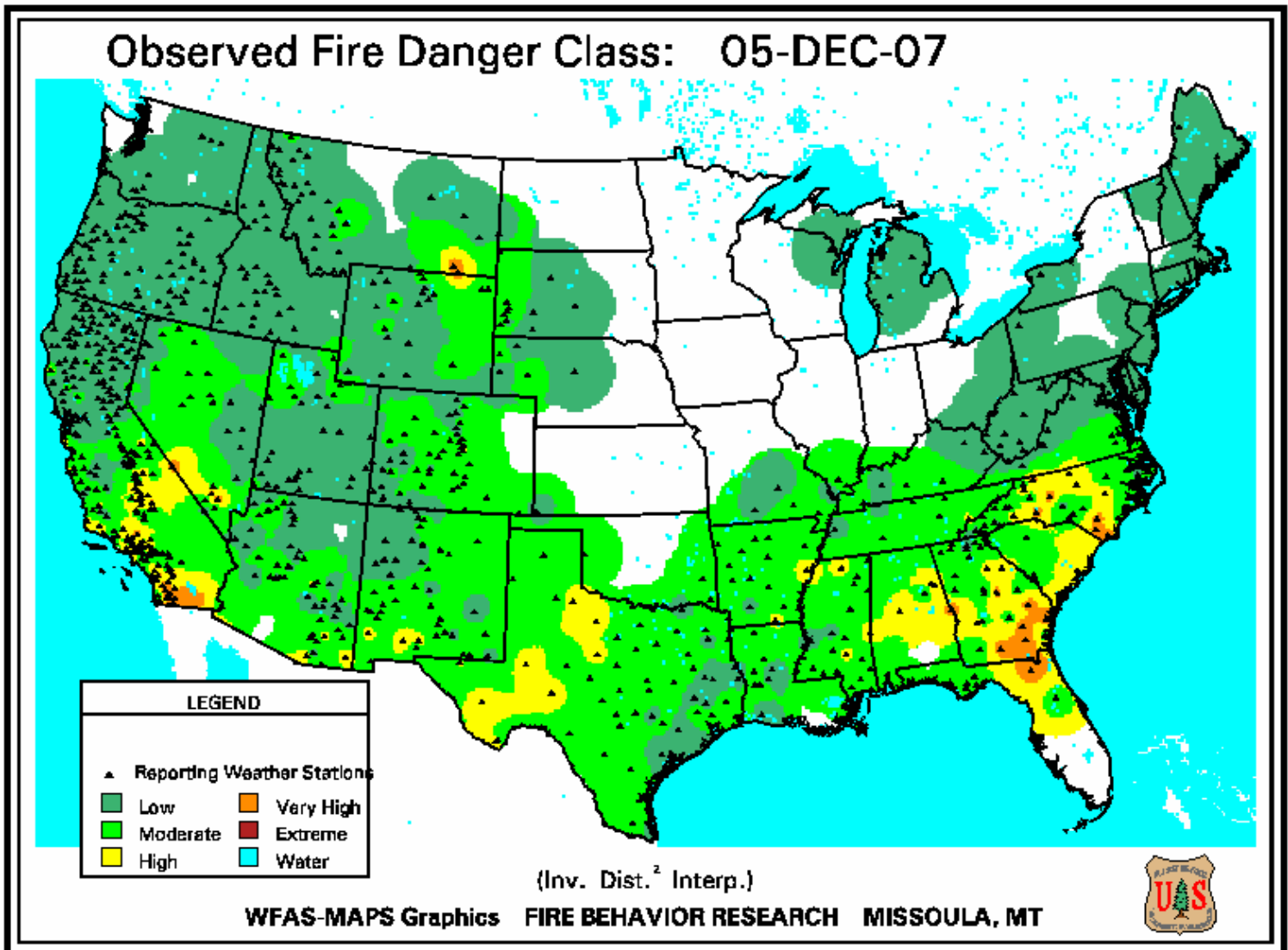


Fig. 6. Observed Fire Danger Class. Conditions have worsened over southern Georgia and northern Florida since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

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Wednesday, December 05, 2007

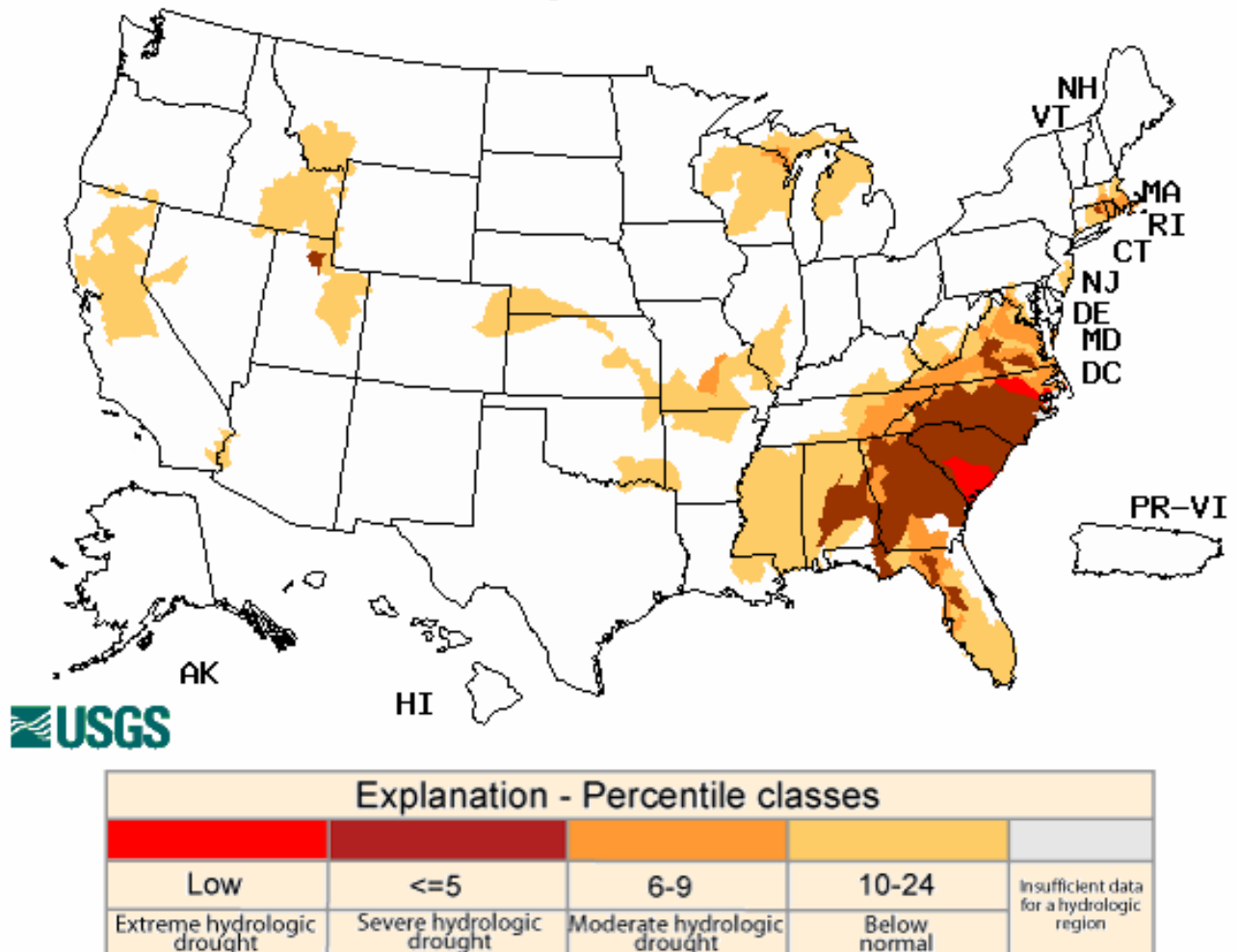


Fig. 7. This week's map shows continued severe to extreme conditions over portions of the Southeastern and Mid-Atlantic States but marked improvement across the West.

Ref: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

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National Drought Summary -- December 4, 2007

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/>.

The Southeastern and Mid-Atlantic States: Only light rain fell in drought-affected areas of the southeastern and mid-Atlantic states, resulting in only minor changes to the Drought Monitor depiction. In fact, worsening conditions were observed in parts of the southern Atlantic region, where record dryness for November was reported in locations such as Charleston, South Carolina (0.03 inch; previously, 0.16 inch in 1998), and Raleigh-Durham, North Carolina (0.48 inch; previously, 0.50 inch in 2001). In northern Georgia, the surface elevation of Lake Lanier continued to fall and set records on a daily basis. By December 4, Lake Lanier's level fell to 1051.60 feet. Since falling below the previous record (1052.66 feet on December 23, 1981) on November 19, Lake Lanier has fallen more than 1 foot. Information from the U.S. Army Corps of Engineers forecasts that Lanier, which originally filled in the late 1950s, will fall to 1047.8 feet by January 4, 2008.

Although hydrological impacts remained dominant in most drought-affected areas, some serious agricultural drought effects were still evident in the middle and southern Atlantic coastal plain. According to USDA, 69 percent of Georgia's pastures were rated in very poor to poor condition on December 2. Georgia's pastures have deteriorated since mid-October, when they were rated 55 percent very poor to poor. Winter wheat was also struggling in parts of Georgia, with 28 percent of the state's crop rated very poor to poor.

The Great Lakes and Ohio Valley: The first major winter storm of the season crossed the Midwest on December 1-2. Snow, sleet, freezing rain, and rain affected the region, with most of the wintry weather confined to the northern half of the Midwest. Precipitation resulted in some modest reductions in abnormal dryness (D0) and moderate drought (D1), particularly from Minnesota to Michigan and in the middle and lower Ohio Valley. A small area of severe drought (D2) lingered in the Ohio Valley at the Ohio-Kentucky-West Virginia triple point.

The Northeast: Another round of precipitation led to the removal of abnormal dryness (D0) from central Pennsylvania. However, low streamflows and precipitation deficits at various time scales continued to support abnormal dryness and moderate drought (D0 and D1) in parts of southern New England.

The Plains: Despite the passage of a winter storm, the High Plains remained mostly dry. Topsoil moisture shortages continued to take a toll on fall-sown crops. For example, 49 percent of the Texas winter wheat crop was rated very poor to poor, according to a December 2 report from USDA. Due to short-term dryness on the central and southern High Plains, abnormal drought and moderate drought (D0 and D1) continued to gradually expand. Interestingly, autumn dryness in the south-central U.S. followed record-setting wetness earlier in the year. In Texas, for example, San Antonio netted 44.61 inches of rain (207 percent of normal) during the first eight months of the year, followed by just 2.24 inches (24 percent) from September to

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November. Farther north, moderately heavy snow resulted in the elimination of abnormal dryness (D0) from a few areas in Minnesota and the eastern Dakotas.

The West: Stormy conditions hammered both the Southwest and Northwest. Heavy rain arrived in the Southwest on the last day of November. Daily-record rainfall totals for November 30 included 1.23 inches in Phoenix, Arizona, and 2.00 inches in Vista, California. The storm boosted the year-to-date rainfall in Phoenix from 2.73 to 4.01 inches. Elsewhere in Arizona, Mount Lemmon (near Tucson) netted 4.80 inches of rain in a 24-hour period on November 30 - December 1. In Blythe, California, where 1.04 inches fell on November 30, the storm accounted for more than one-quarter of the normal annual rainfall of 4.02 inches. Farther north, 25 inches of snow blanketed Brian Head, in southwestern Utah. Improvements of up to one drought category were fairly common across the Southwest. For example, severe drought (D2) replaced the large area of extreme drought (D3) previously covering southern California and western Arizona. Drought was also scaled back elsewhere in the Southwest, particularly in Arizona, western Colorado, and southern portions of Nevada and Utah.

Farther north, the most intense effects of a series of Pacific storms were confined to non-drought areas of the Pacific Northwest. By November 29, however, heavy snow blanketed the interior Northwest, where both Pendleton, Oregon (5.7 inches), and Yakima, Washington (5.6 inches), received daily-record totals. From November 28 to December 1, Pendleton's 4-day snowfall reached 9.4 inches. Precipitation and flooding intensified across the Pacific Northwest on December 2-3, when significant moisture also reached the northern Rockies. Howling winds accompanied the storminess along the northern Pacific Coast, where gusts in Oregon included 129 m.p.h. in Bay City and 125 m.p.h. in Lincoln City. Reductions in the coverage of moderate to severe drought (D1 to D2) were noted in several Northwestern areas, particularly in northeastern Oregon, northern and central Idaho, western Montana, and northwestern Wyoming. Weekly precipitation totals were in excess of 2 inches in all of the aforementioned locations.

Alaska, Hawaii, and Puerto Rico: Conditions did not warrant any changes to the depiction this week in Alaska, while Puerto Rico remains free of abnormal dryness and drought. In Hawaii, however, heavy rain led to the elimination of abnormal dryness (D0) on Kauai and Molokai. Meanwhile, moderate drought (D1) was removed from eastern Oahu. Elsewhere, some D0 was removed from the southeastern portion of the Big Island.

Looking Ahead: In Hawaii, a strong cold front crossing the islands December 4-6 will cause local flooding but should provide additional relief from dryness and lingering drought. Across the contiguous U.S., there will be an uncanny repeat of last week's weather, as another storm system will eject across the Southwest and into the nation's mid-section. However, one difference between this week's storm and last week's system will be the likelihood of significant precipitation spreading across California, including the parched Sierra Nevada, on December 6-7. Later, rain and snow will return to the Southwest on December 7 and linger into the following day. Some moisture may reach the southern High Plains during the weekend, but amounts are not expected to be heavy. More significant weekend precipitation will fall from the central Plains into the Midwest. Early next week, additional precipitation may develop from the Southwest to the Midwest. Elsewhere, a couple of bands of showers and thunderstorms will reach lower sections of the Ohio and Mississippi valleys during the early to middle portion of next week, but the storms will generally weaken while crossing the Southeast.

The outlook for December 13-19 calls for below-normal temperatures in Maine, the northern High Plains, and much of the West, while warmer-than-normal weather will prevail across the

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southern Plains, the lower Midwest, and the Southeast. Meanwhile, drier-than-normal conditions across the northern Plains and most of the Southeast will contrast with above-normal precipitation in the Southwest and in a broad area stretching from the southeastern Plains into the Great Lakes and Northeastern states.

Author: [Brad Rippey, U.S. Department of Agriculture](#)

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 6, 2007