



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

Weekly Report - Snowpack / Drought Monitor Update **Date: 6 November, 2008**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: During the past seven days, snowfall accumulations were up significantly as the snow season began in earnest (Fig. 1). Snow-water equivalent percent to date shows a complete reversal in snow loss especially over the Pacific Northwest since last week (Fig. 1a). The Central and Southern Rockies are still behind in snow accumulation but we are still pretty early into the winter season.

Temperature: SNOTEL and ACIS-day station average temperature anomalies were significantly above normal over much of the Rockies and somewhat below normal over California during the past week (Fig. 2). Specifically, the greatest positive temperature departures occurred over Colorado (>+12F) and the greatest negative departures occurred over the north-central California (<-1F) (Fig. 2a).

Precipitation: Preliminary ACIS 7-day average precipitation anomaly for the period ending 5 November shows significant amounts falling from southwestern California to northeastern Montana. Mostly dry conditions prevailed over Arizona, New Mexico, eastern Colorado, and much of Wyoming (Fig. 3). Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2009 Water Year that began on October 1, 2008 shows below normal totals across the northern most stretches of Rockies and over much of the Central and Southern Rockies. Above normal amounts are noted over the Great Basin, Snake River Drainage, southern Cascades, and the Northern Sierra (Fig. 3a). For precipitation totals, departures, and percent of normal for several time periods see: <http://water.weather.gov/> and <http://cig.mesonet.org/~derek/public/droughtmonitoring/>.

WESTERN DROUGHT STATUS

The West: Over October 31-November 4, two strong systems off the West Coast pushed into northern California, bringing some punch in the form of heavy precipitation (2-5 inches liquid, more in some areas) and cooler air before moving into the Great Basin, where totals fell off. Although it is still early in the wet season, these storms brought significant rain and snow, which were a welcomed sight. That said, longer-term recovery is still needed in both rains and snows this winter in order to recharge soils and surface storage/flows and help aid in the recovery to pasture/rangeland, which took some major hits earlier this year. These can take awhile to bounce back even though we are off to a good start on the young Water Year, which only began a month ago. Thus, the changes to this week's map are found in the reduction of D2 to D1 conditions along the coastal ranges of northern California and into the southern Cascades and much of the Sierra Nevada mountains as well. In general, the lower elevation locations in and around the Sacramento Valley region only saw around 2 inches or less; thus this area stays at D2 this week. Author: Mark Svoboda, National Drought Mitigation Center.

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

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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. 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).

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://activefiremaps.fs.fed.us/lq_fire2.php. 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/cqibin/bor.pl>. Additional 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

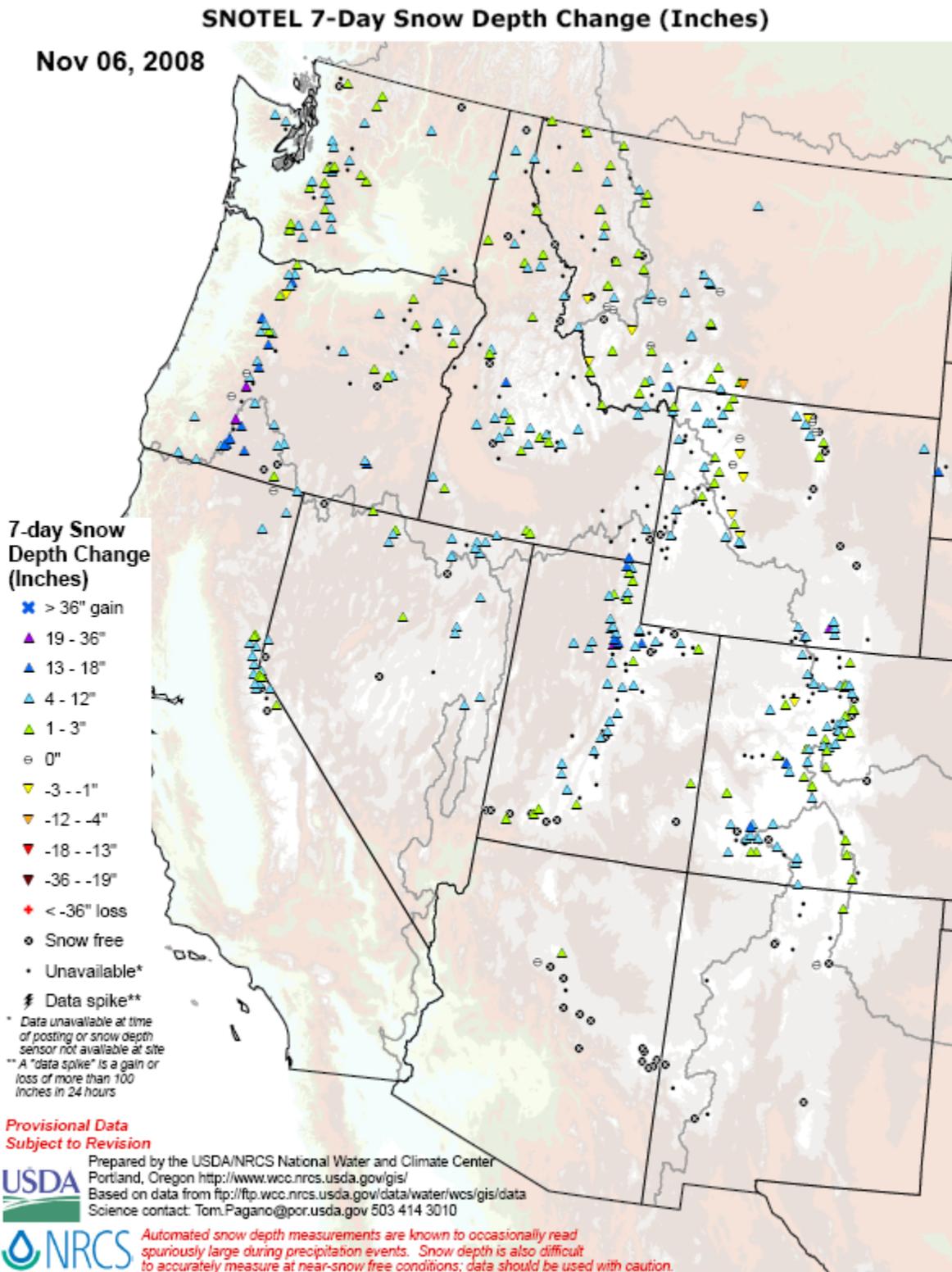


Fig. 1. During the past seven days, snowfall accumulations were up significantly as the snow season began in earnest.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_snowdepth_7delta.pdf

Weekly Snowpack and Drought Monitor Update Report

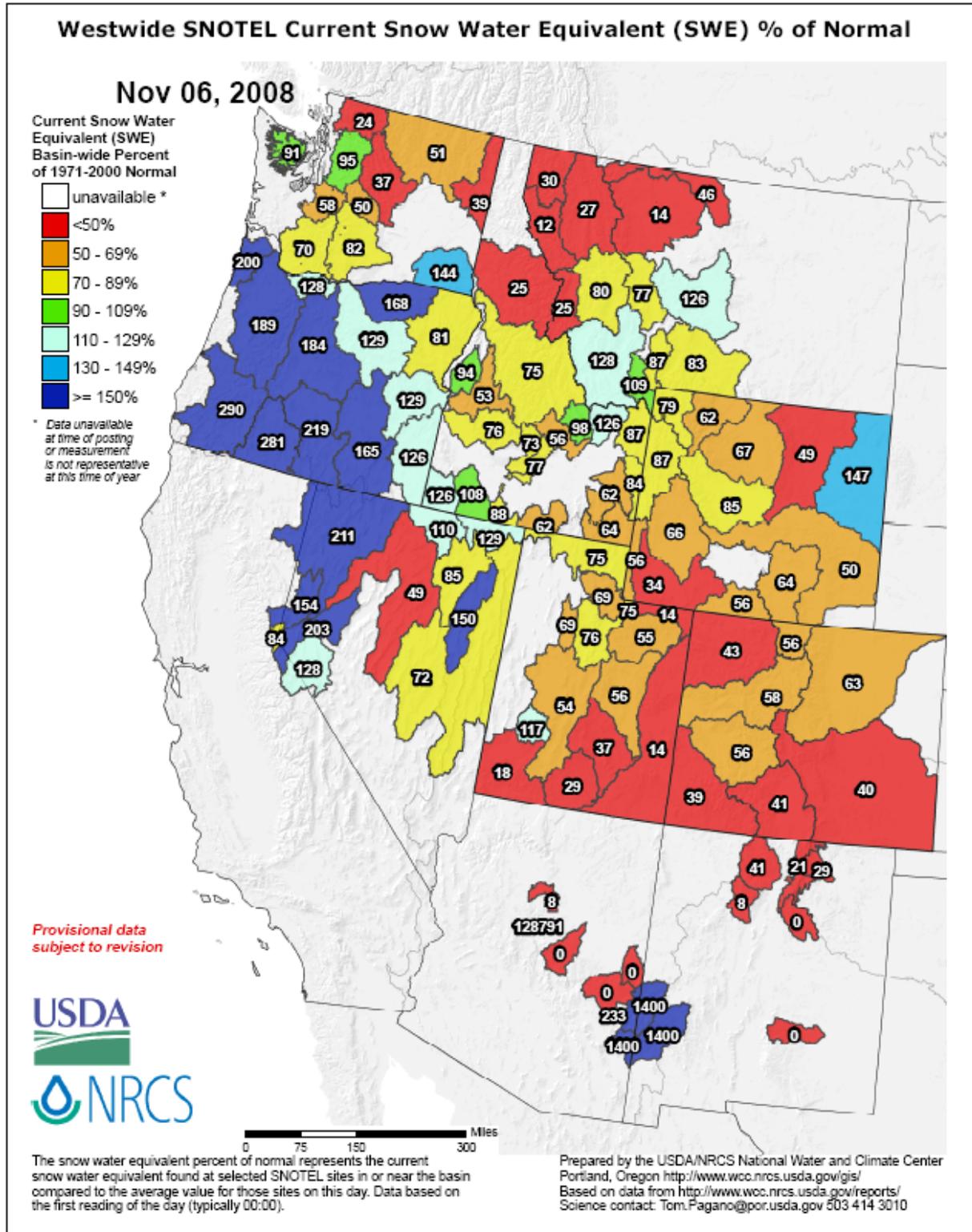


Fig. 1a. Snow-water equivalent percent to date shows a complete reversal in snow loss especially over the Pacific Northwest since last week. The high values over the Arizona-New Mexico region are subject to early season statistical anomalies that have little relationship to the longer term seasonal averages. The Central and Southern Rockies are still behind in snow accumulation but we are still pretty early into the winter season.

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

Weekly Snowpack and Drought Monitor Update Report

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

Nov 06, 2008

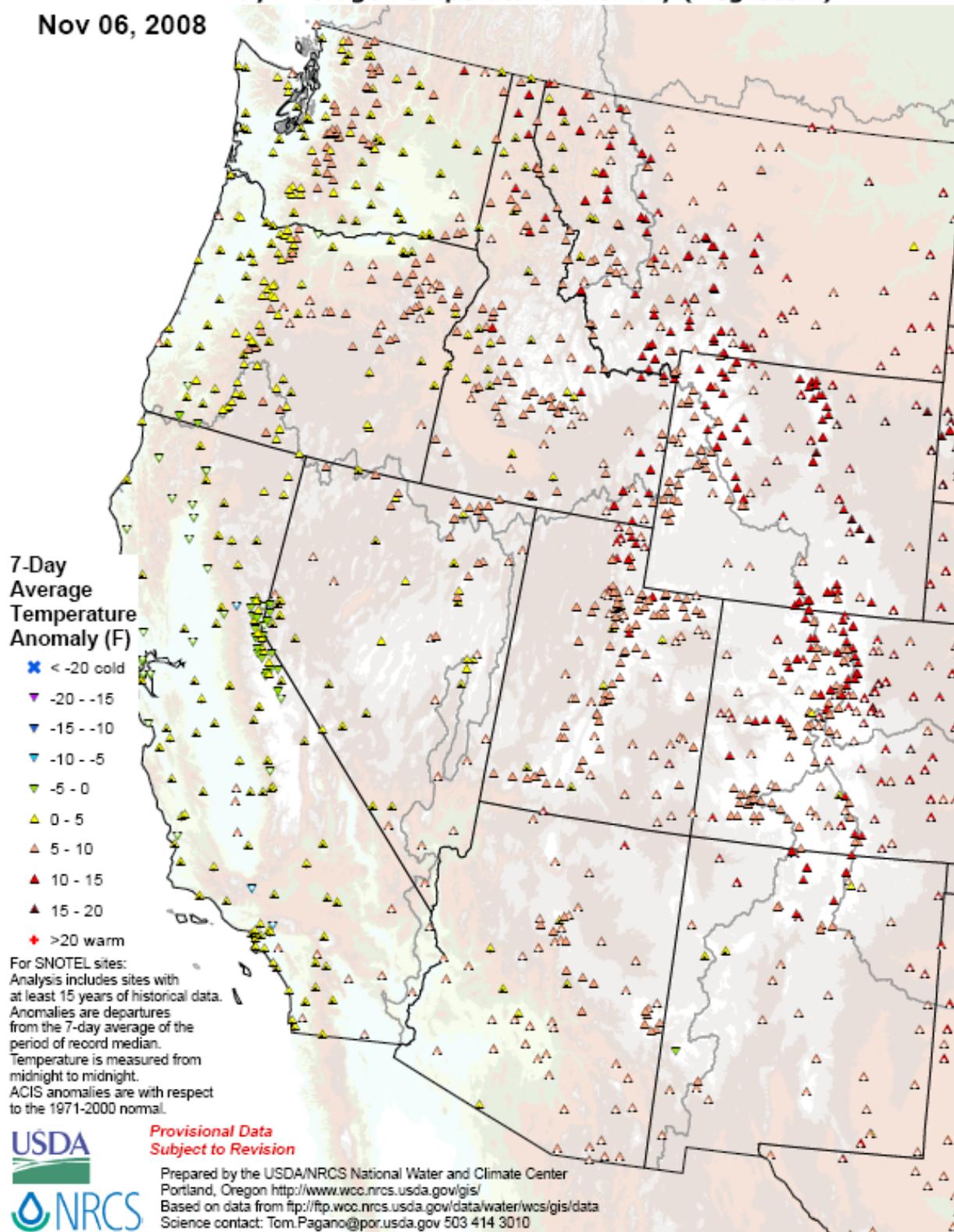
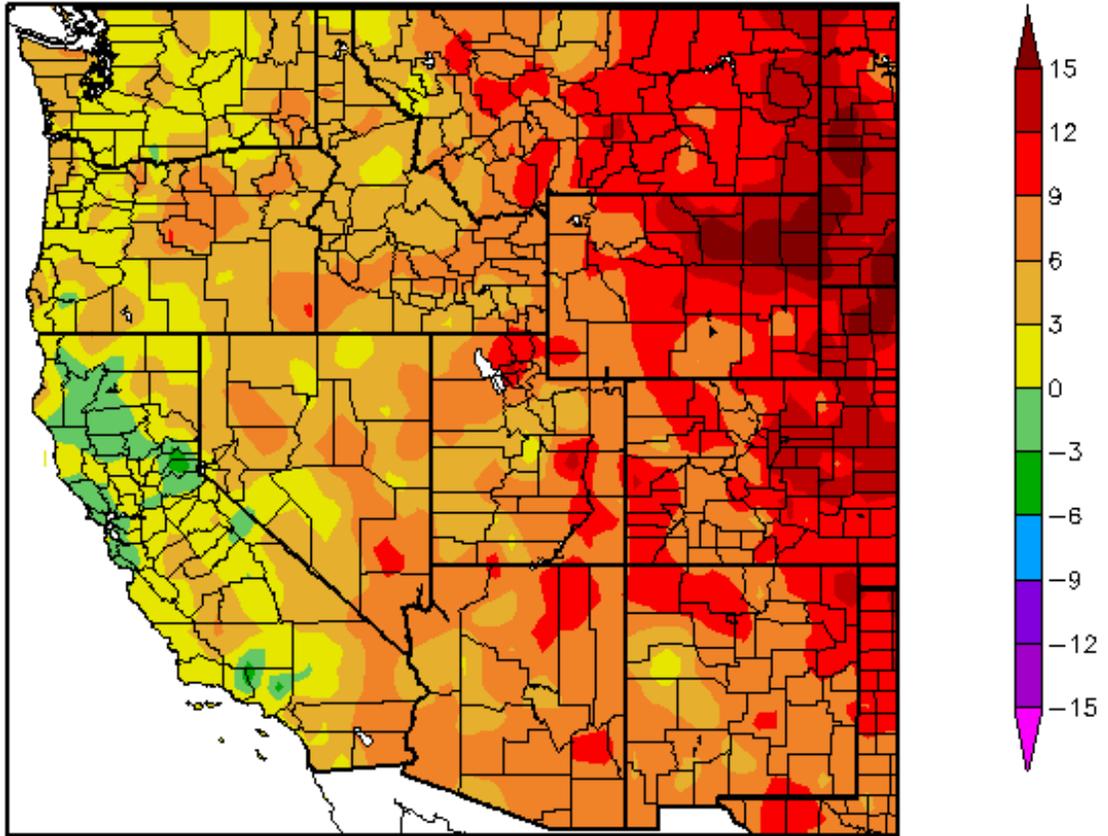


Fig. 2. SNOTEL and ACIS-day station average temperature anomalies were significantly above normal over much of the Rockies and somewhat below normal over California during the past week.

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

Departure from Normal Temperature (F)
10/30/2008 – 11/5/2008



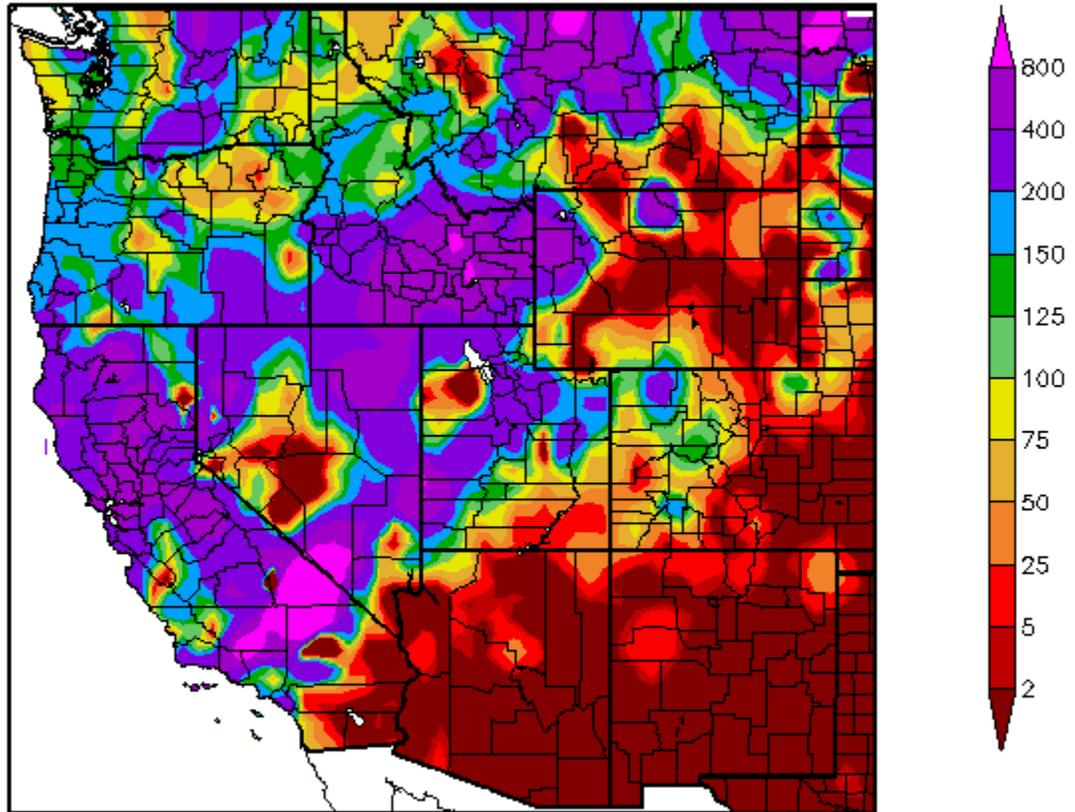
Generated 11/6/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2a. ACIS 7-day average temperature anomalies: Greatest positive temperature departures occurred over Colorado (>+12F) and greatest negative departures occurred over the north-central California (<-1F).

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

Percent of Normal Precipitation (%)
10/30/2008 – 11/5/2008



Generated 11/6/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. ACIS 7-day average precipitation anomaly for the period ending 5 November shows significant amounts falling from southwestern California to northeastern Montana. Mostly dry conditions prevailed over Arizona, New Mexico, eastern Colorado, and much of Wyoming.

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

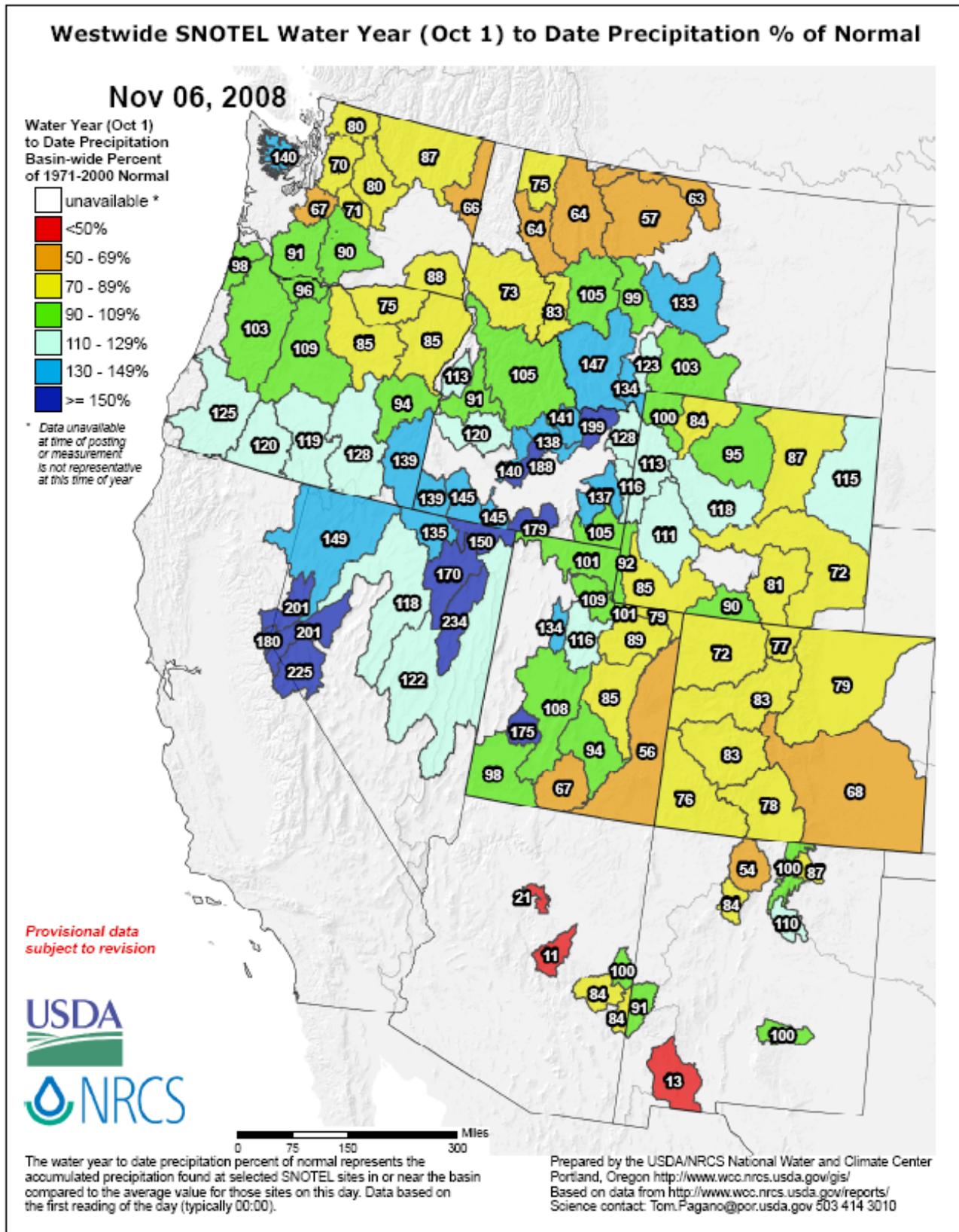
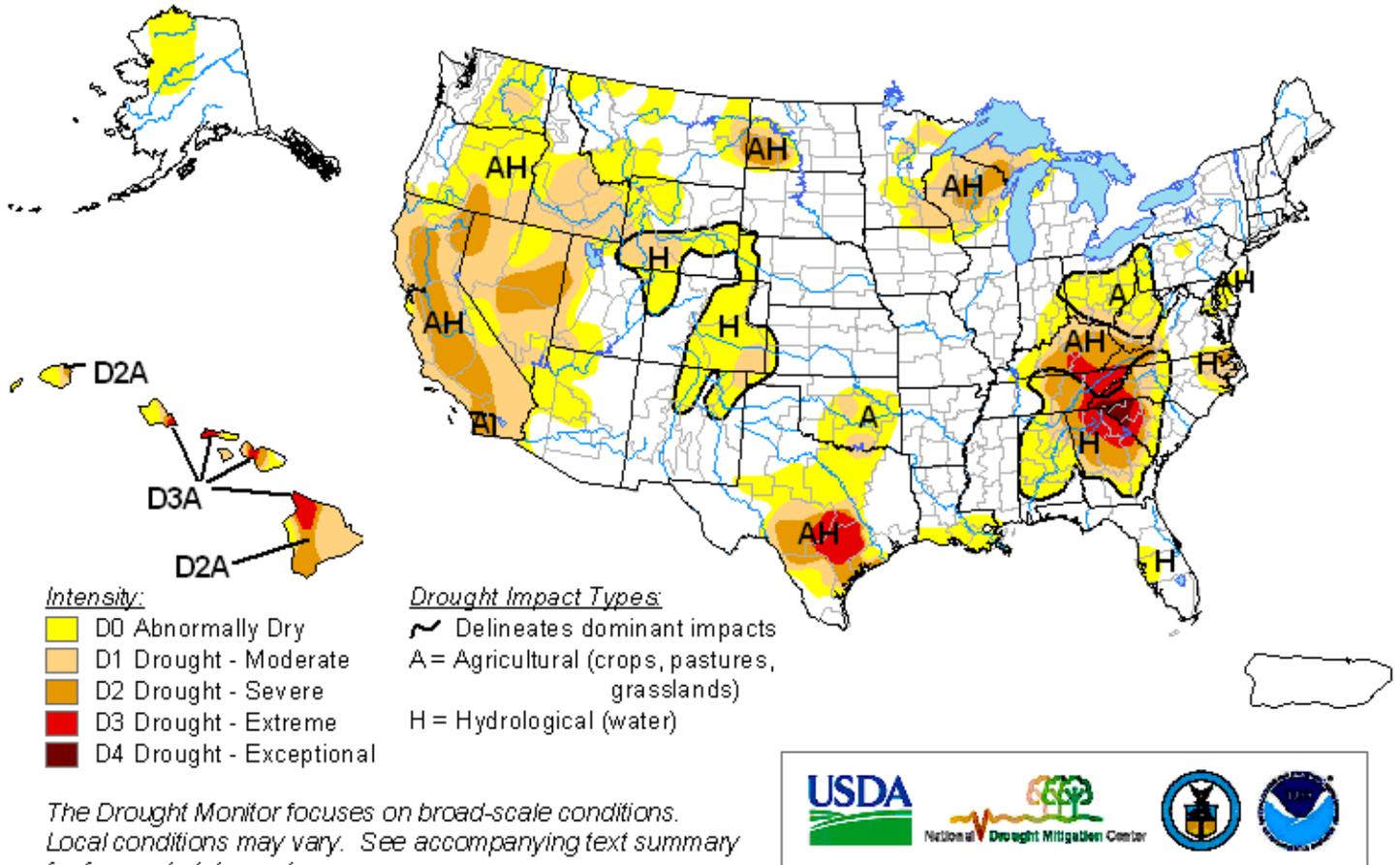


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2009 Water Year that began on October 1, 2008 shows below normal totals across the northern most stretches of Rockies and Central and Southern Rockies. Above normal amounts are noted over the Great Basin, Snake River Drainage, southern Cascades, and the Northern Sierra.

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

U.S. Drought Monitor

November 4, 2008
Valid 8 a.m. EST



Released Thursday, November 6, 2008

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

Author: Mark Svoboda, National Drought Mitigation Center

Fig. 4. Current Drought Monitor weekly summary.

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

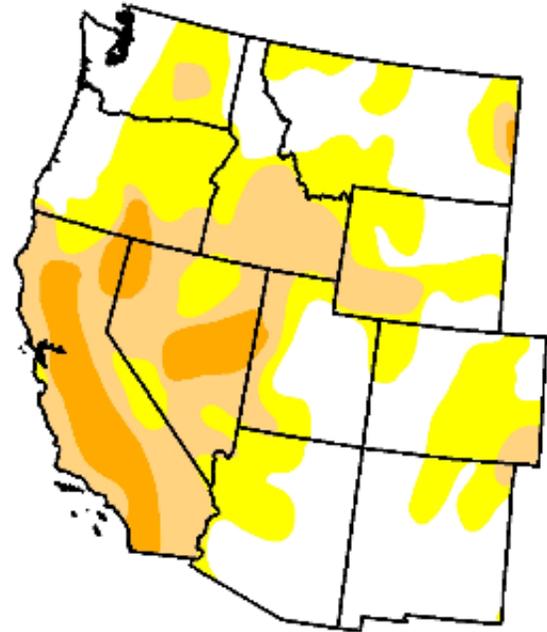
U.S. Drought Monitor

West

November 4, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	39.9	60.1	29.6	8.5	0.0	0.0
Last Week (10/28/2008 map)	39.9	60.1	30.0	10.4	0.0	0.0
3 Months Ago (08/12/2008 map)	32.7	67.3	31.2	10.0	0.7	0.0
Start of Calendar Year (01/01/2008 map)	26.3	73.7	54.7	33.1	2.7	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (11/06/2007 map)	27.3	72.7	57.5	41.5	10.0	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



Released Thursday, November 6, 2008

Author: Mark Svoboda, National Drought Mitigation Center

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

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note slight improvement (D2-D4) since last week. Ref: http://www.drought.unl.edu/dm/DM_west.htm

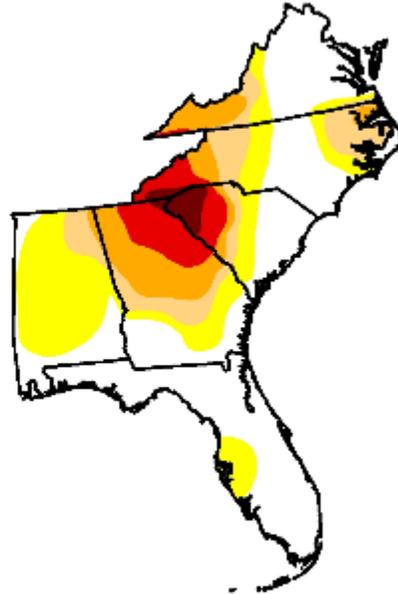
U.S. Drought Monitor

Southeast

November 4, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.3	52.7	30.0	19.1	8.8	2.0
Last Week (10/28/2008 map)	48.8	51.2	30.0	19.1	8.8	1.3
3 Months Ago (08/12/2008 map)	18.4	81.6	62.7	38.8	15.4	6.3
Start of Calendar Year (01/01/2008 map)	9.6	90.4	74.3	58.5	41.0	22.0
Start of Water Year (10/07/2008 map)	35.2	64.8	41.8	20.8	9.4	1.9
One Year Ago (11/06/2007 map)	13.8	86.2	67.7	48.6	32.7	20.4



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
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- 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>



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Fig. 4b: Drought Monitor for the Southeastern shows some improvement since last week. A small area of D4 continues over NW South Carolina and southwest North Carolina.

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

Drought Monitor Classification Changes for Selected Time Periods

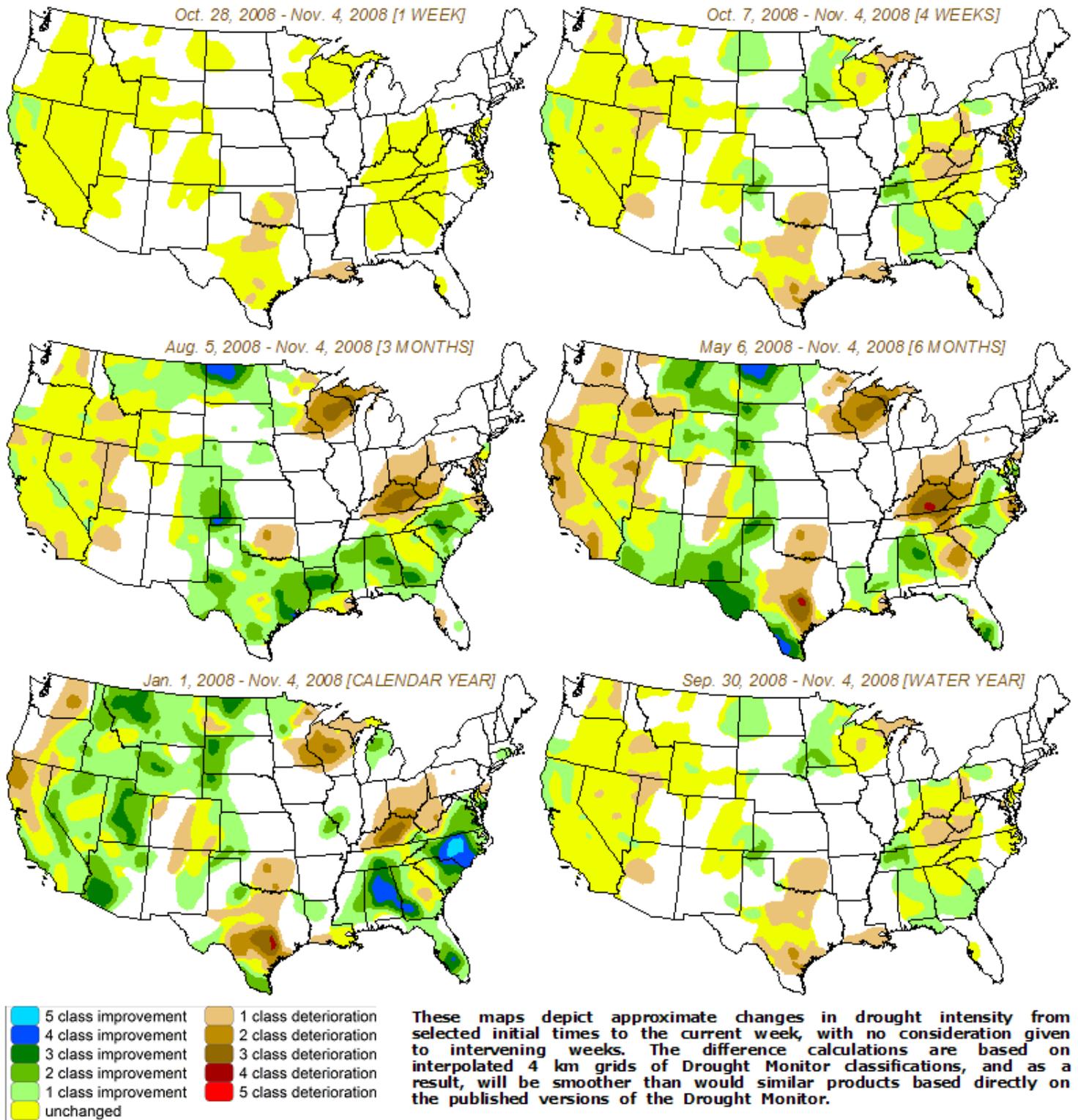
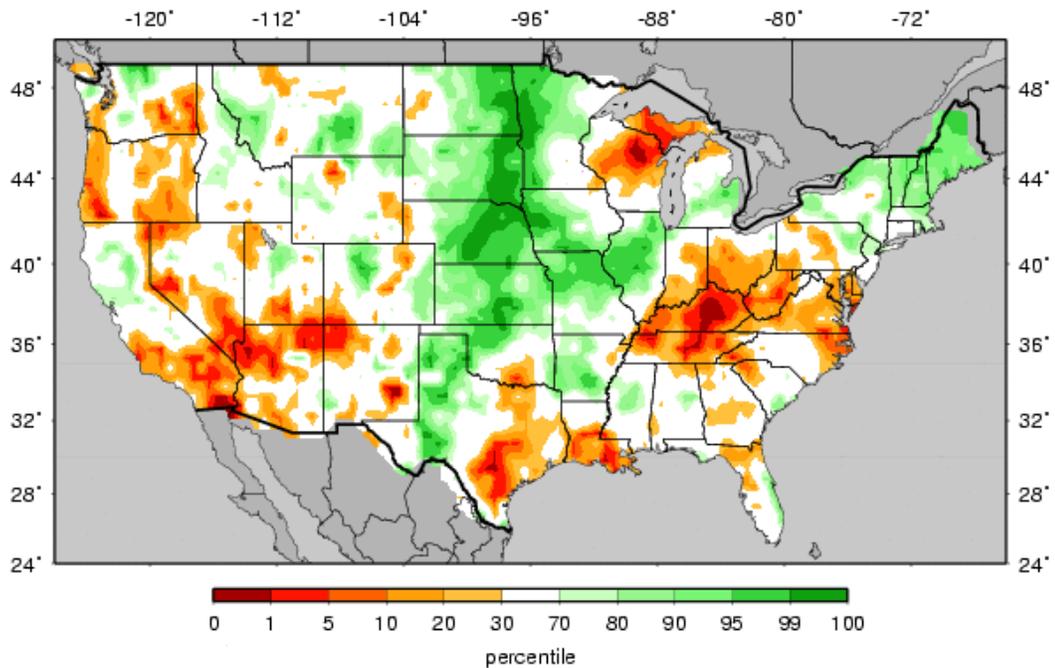


Fig. 4c: Drought Monitor Classification Changes for Selected Time Periods.

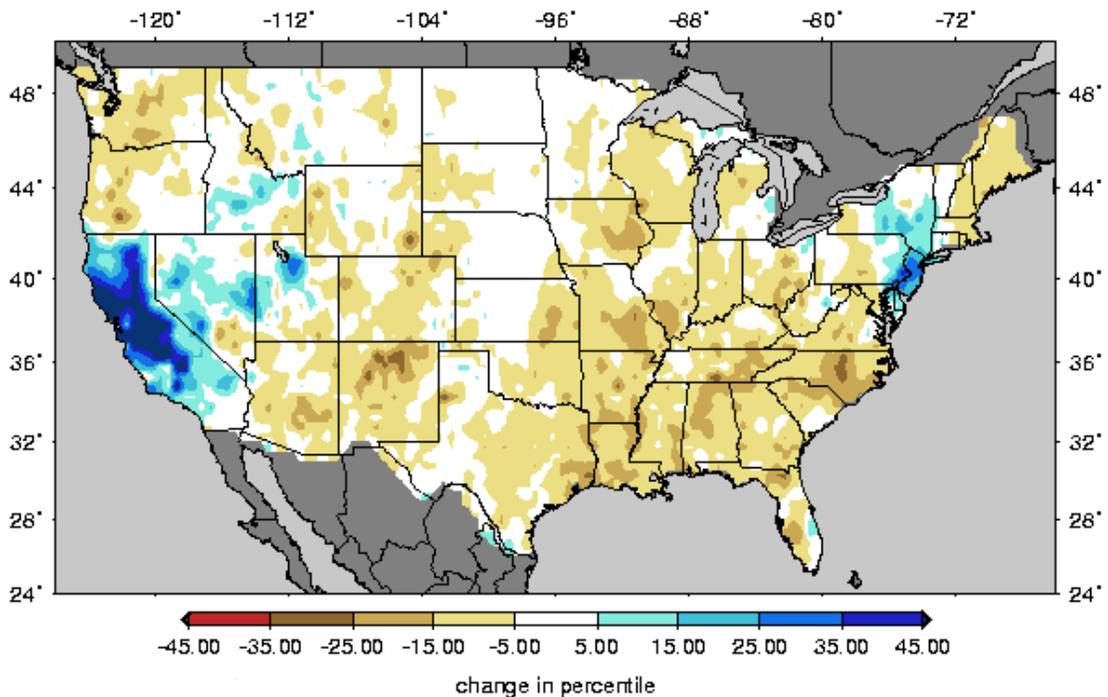
Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

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MULTIMODEL Soil Moisture Percentiles (wrt/ 1920-2003)
20081104



Change in Soil Moisture Percentiles (wrt/ 1915-2003)
for the week 20081028 to 20081104



Figs. 5a & 5b: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. The only significant change since last week has been an improvement over California (Fig. 5a). This is clearly reflected in Fig 5b. Also, much of the eastern half of the Nation has dried out considerable since last week.

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

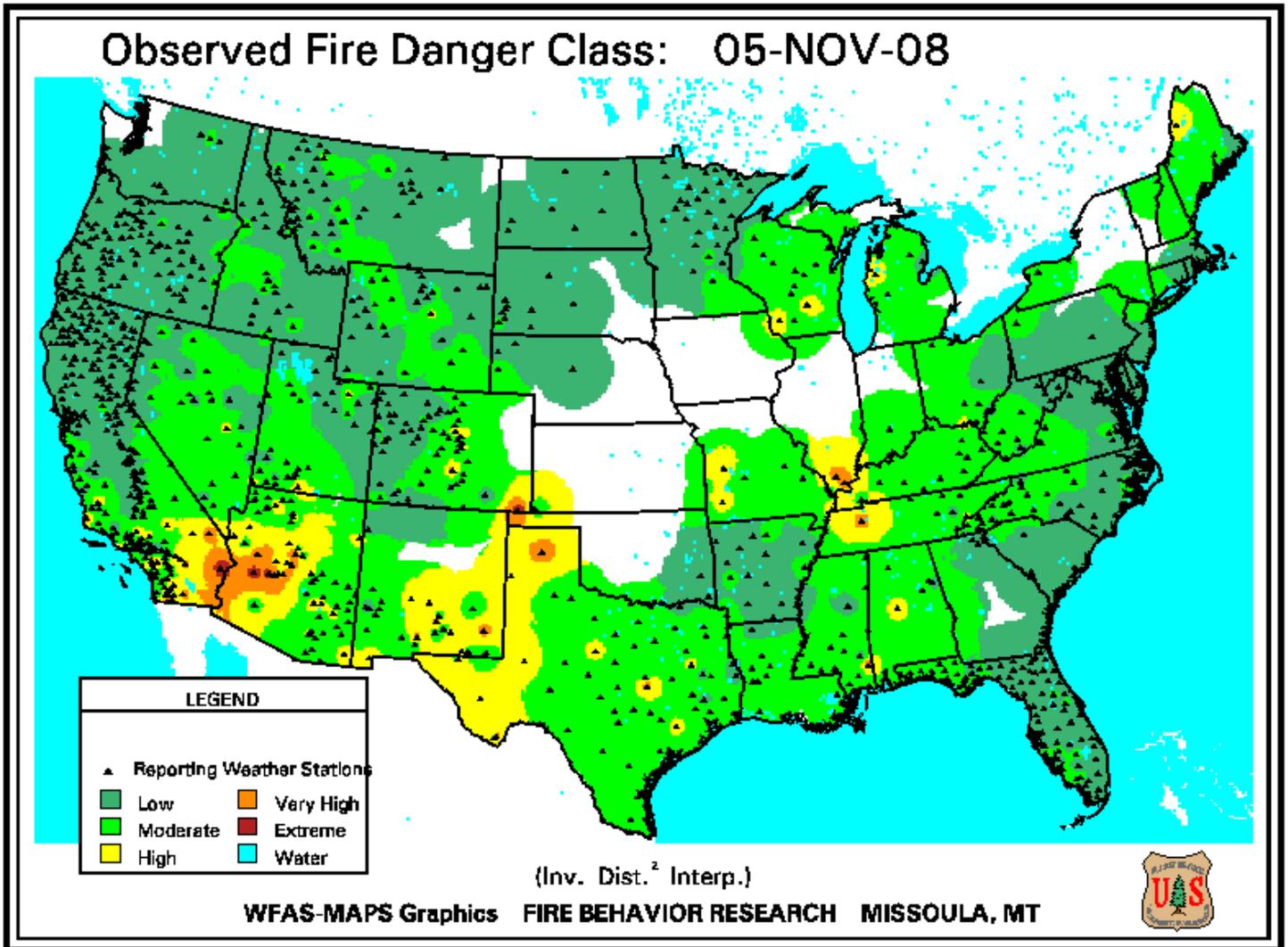
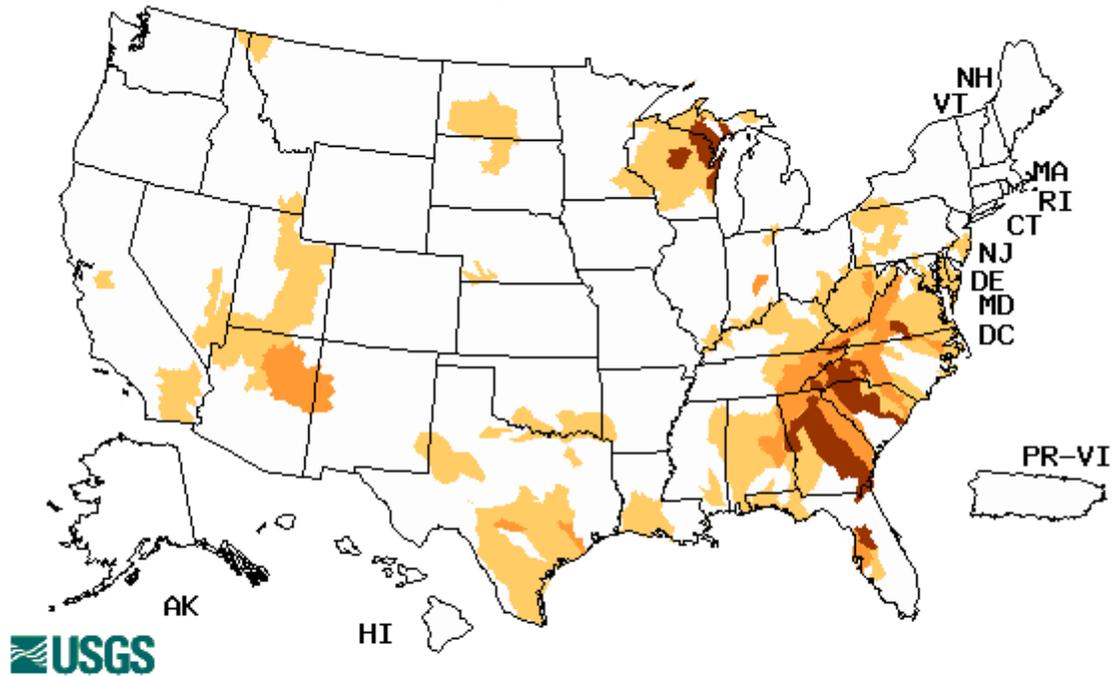


Fig. 6. Observed Fire Danger Class. Note high fire threat persists over southern California-southwest Arizona while improving conditions have developed over much of the Rockies since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

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

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Wednesday, November 05, 2008



Explanation - Percentile classes				
Low	≤5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Fig. 7. Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Note persistent low flows over the Southeastern States, and Wisconsin-Upper Peninsula of Michigan.

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

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary – November 4, 2008

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 Southeast, Tennessee and Ohio valleys, and mid-Atlantic Coast: For all but parts of the coastal Carolinas and the Northeast, it was a pretty quiet week precipitation-wise. The bigger story has been the return to dryness the past 30-60 days in these regions. As such, the core region of the drought in the Southeast has begun to expand outward again with the movement of the D4 core pushing across extreme northeast Georgia and into extreme southwest North Carolina. The majority of the streamflow readings in this core area are running at, or near, record lows. The cooler temperatures and low-demand season are helping to the degree they can, but some serious winter recharge will be needed before next year's heat and demands surely return. Along the Gulf Coast, an absence of moisture over the past 30-90 days has led to the introduction of D0 in southern Louisiana.

Great Lakes Region and upper Midwest: Most of this region enjoyed a warmer than normal week that didn't feature much in the way of rainfall except in eastern Michigan. Conditions here remain unchanged this week after some modest improvement last week. In general, it hasn't been a good start to the off-season recharge period in these areas. Time of year and lower demand are keeping impacts in check for the most part.

The Plains: After some pretty heavy rains for many parts of the region last week, this week saw mostly well above normal temperatures, but didn't see any precipitation from North Dakota all the way down to the Gulf Coast in Texas. Year-to-date deficits are really starting to pile up in the D1-D3 core found in Texas, and this week is marked by some expansion of D0-D1 in Oklahoma and north-central Texas along with growth of the D1-D3 core to the south and west in southern Texas. Streamflows and soil moisture are lagging significantly in south-central Oklahoma and across most of central Texas as well.

The West: Over October 31-November 4, two strong systems off the West Coast pushed into northern California, bringing some punch in the form of heavy precipitation (2-5 inches liquid, more in some areas) and cooler air before moving into the Great Basin, where totals fell off. Although it is still early in the wet season, these storms brought significant rain and snow, which were a welcomed sight. That said, longer-term recovery is still needed in both rains and snows this winter in order to recharge soils and surface storage/flows and help aid in the recovery to pasture/rangeland, which took some major hits earlier this year. These can take awhile to bounce back even though we are off to a good start on the young Water Year, which only began a month ago. Thus, the changes to this week's map are found in the reduction of D2 to D1 conditions along the coastal ranges of northern California and into the southern Cascades and much of the Sierra Nevada mountains as well. In general, the lower elevation locations in and around the Sacramento Valley region only saw around 2 inches or less; thus this area stays at D2 this week.

Alaska and Hawaii: No changes are noted in the drought depiction this week within Alaska or Hawaii.

Looking Ahead: During the next 5 days, (November 6-10), temperatures are generally expected to be above normal in the West, East, and southern Plains while below-normal

Weekly Snowpack and Drought Monitor Update Report

readings can be expected in the Rockies and northern Plains states and into northern Minnesota and Wisconsin, where they could use it. The better chance for precipitation over this period is expected in the Pacific Northwest coastal regions and in the northern Plains. Eastern Oklahoma may get a share of the tail end of this precipitation.

The CPC 6-10 day forecast (November 11-15) calls for better chances of warmer temperatures returning to much of the far West along with a large cooler air mass encroaching over most of the eastern United States, save for Florida and New England. Alaska looks to be cooler than normal as well. As for precipitation, the odds are tilted toward below-normal amounts in Alaska and much of California, Nevada, and western Arizona. Much of the country east of the Mississippi River is potentially looking at above-normal precipitation, with the best chance being situated over the Mid-Atlantic region.

Author: Mark Svoboda, National Drought Mitigation Center.

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 14 November 2008