



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

Weekly Report - Snowpack / Drought Monitor Update Date: 13 May 2010

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: SNOTEL Snow-Water Equivalent percent of normal values for 13 May 2010 shows marked increases (circles) across many areas of the West as a result of abnormally cool weather and a very active mid-spring snow storm that impacted much of northern Colorado to southern Montana (Fig. 1). The totals from the 11-12 May snow storm can be viewed in Figs. 1a and 1b.

Temperature: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over the New Mexico (>+3°F) and the greatest negative departure occurred over the Northern High Plains (<-15F) (Fig. 2).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 12 May shows the bulk of the heaviest precipitation fell over Wyoming (Fig. 3). In terms of percent of normal, much of the Pacific NW through to east Nevada and western South Dakota experienced two to four times the normal precipitation this week. Exceptions dominated over parts of the Northern Tier States and southern California to New Mexico (Fig 3a). For the 2010 Water-Year that began on 1 October 2009, Arizona and New Mexico have the largest surpluses while the northern interior Western States have the greatest deficits. Several river basins increased by one class bin (circles) in the past week (Fig. 3b).

WESTERN DROUGHT STATUS

The West: Storms dropped precipitation across much of the Northwest Coast, from northern California to western Washington, as well as through eastern Montana and much of Wyoming. This improved conditions in Montana with abnormal dryness (D0) disappearing from most of the eastern part of the state. Improvements in abnormal dryness (D0) and moderate drought (D1) were also evident in southwest Oregon and central and western Idaho. This area is still dominated by below normal streamflow and snowpack, and overall water-year precipitation deficits. Author: Michael Brewer, National Climatic Data Center, NOAA

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, and 4b).

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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/ NOLLER HERBERT
Director, Conservation Engineering Division

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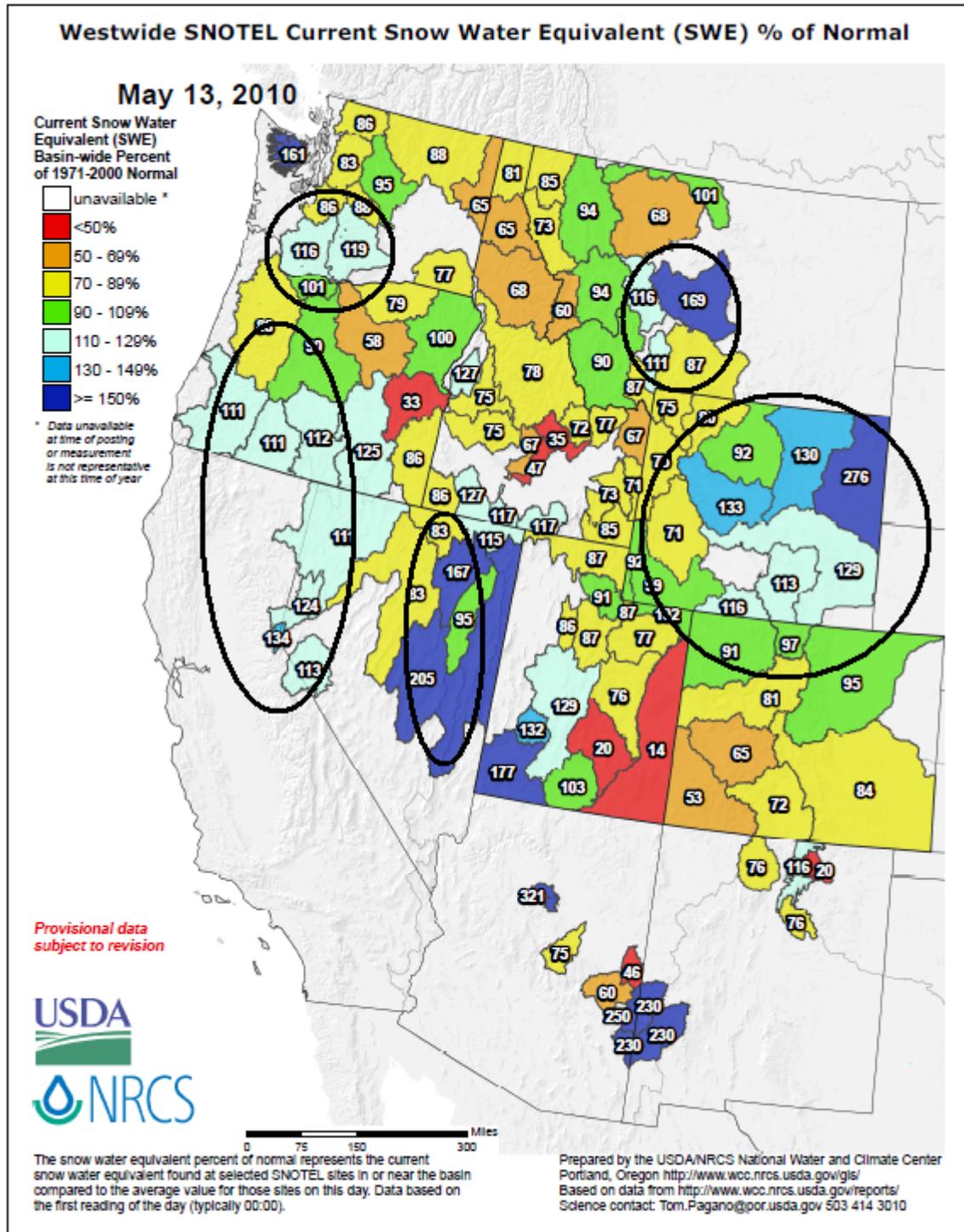


Fig. 1: SNOTEL Snow-Water Equivalent percent of normal values for 13 May 2010 shows marked increases (circles) across many areas of the West as a result of abnormally cool weather and a very active mid-spring snow storm that impacted much of northern Colorado to southern Montana.

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

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National Snow 2009-2010 Analysis 2010
NOHRSC

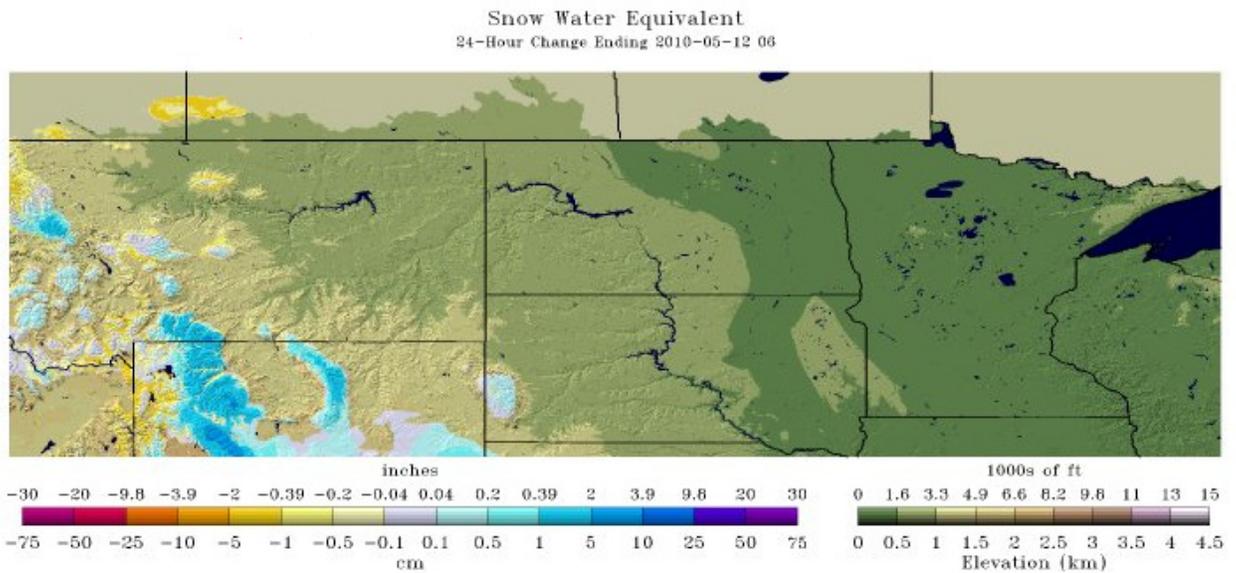
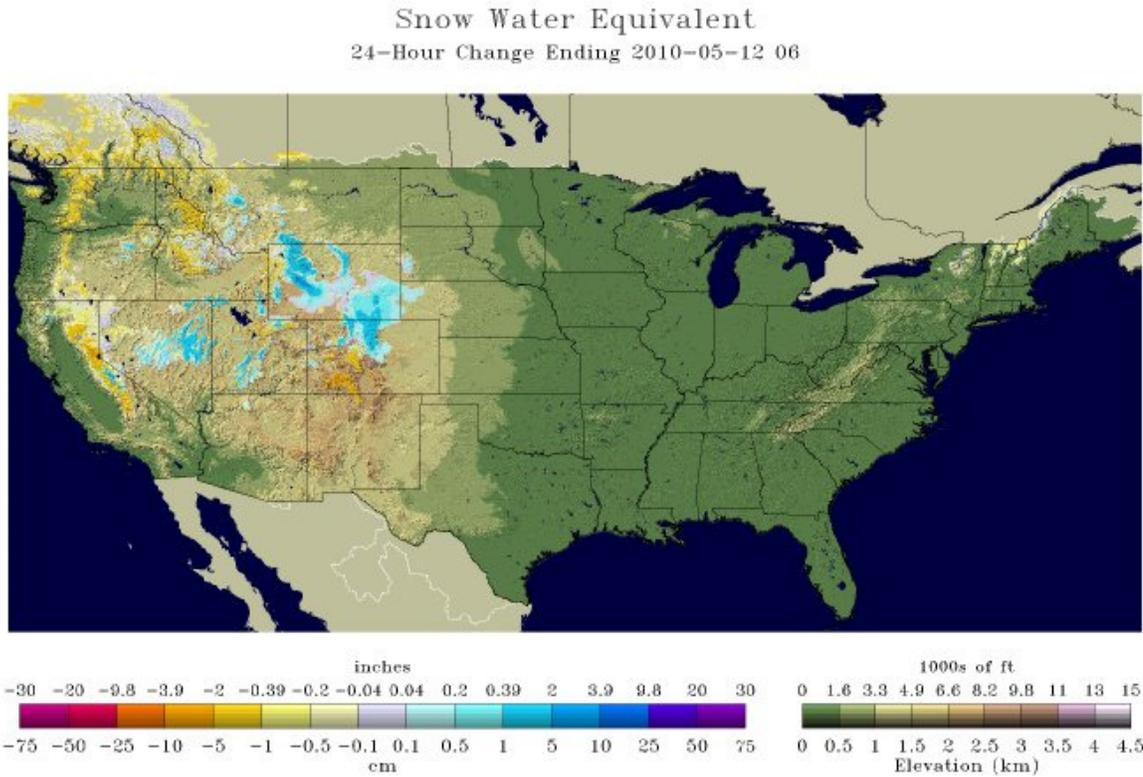


Fig. 1a: Results of the significant SWE gains from the mid-week snow storm that hit the North-Central Rockies. Ref: <http://www.nohrsc.nws.gov/nsa/index.html?region=National&year=2010&month=2&day=13&units=e> (National Operational Hydrologic Remote Sensing Center)

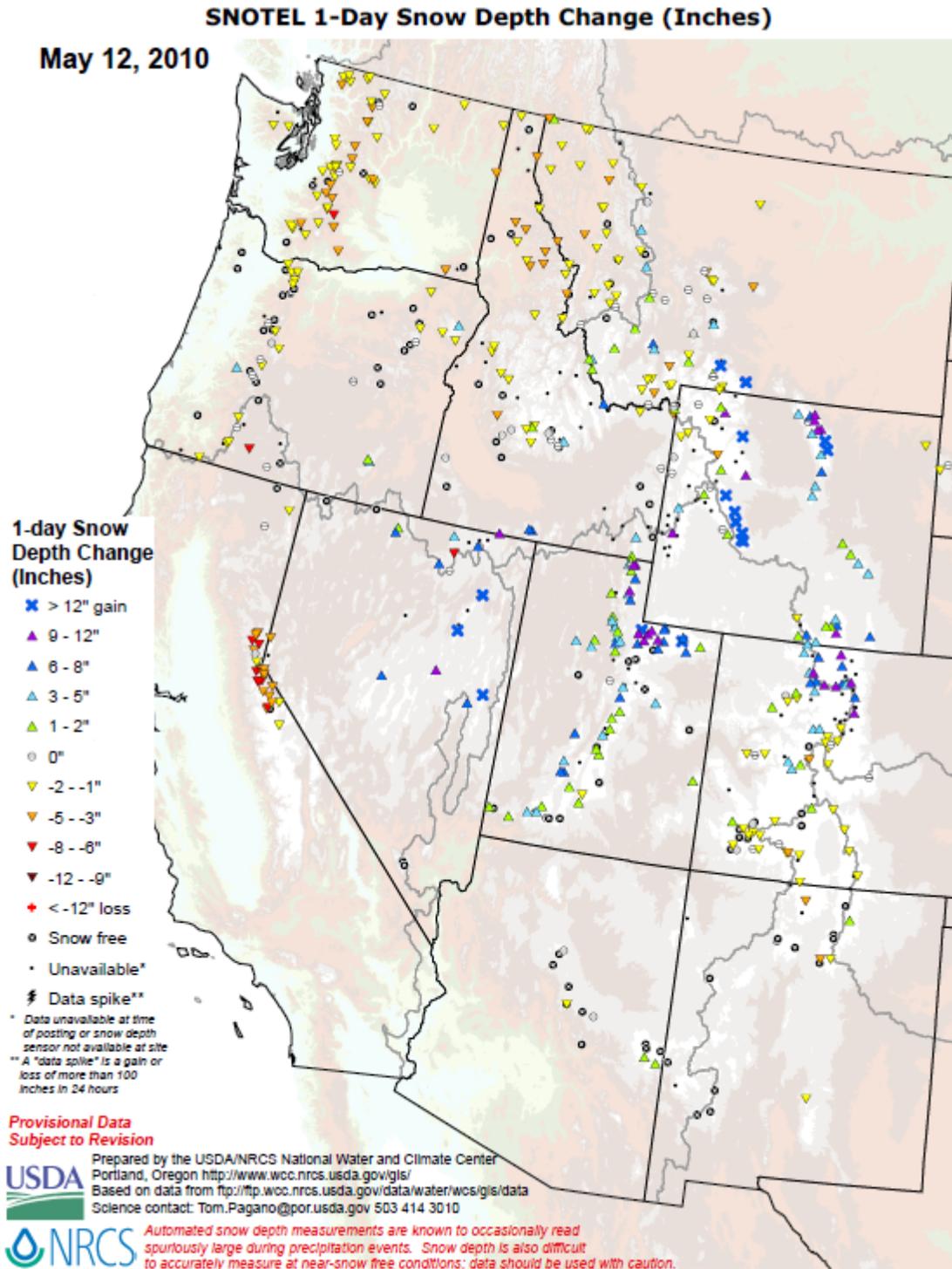
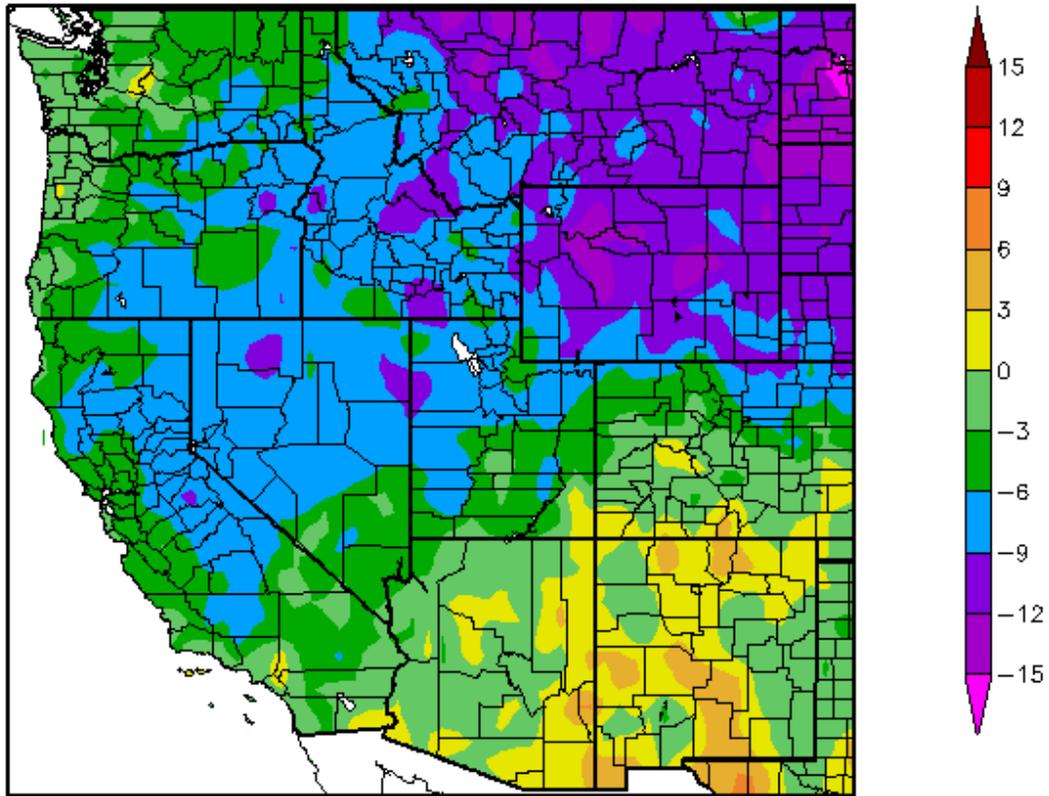


Fig. 1b: SNOTEL snow depth change for 12 May reveals significant increases across parts of the Rockies, Wasatch, and Great Basin regions of the West.

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)
5/6/2010 – 5/12/2010



Generated 5/13/2010 at HPRCC using provisional data.

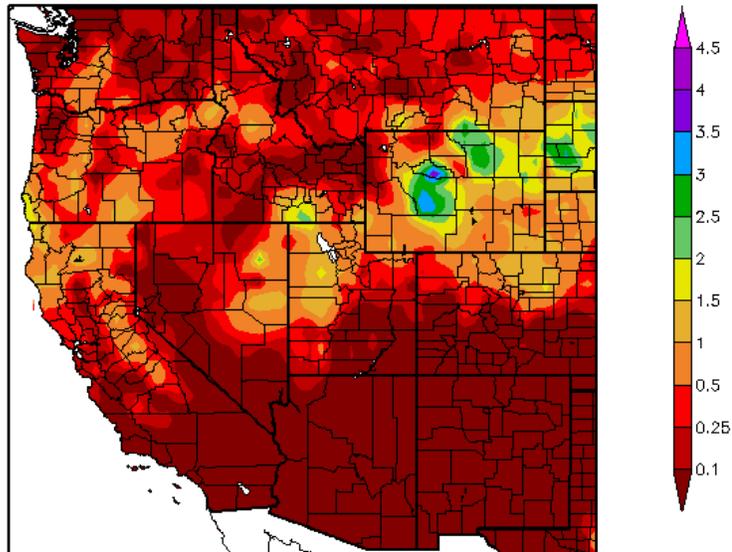
NOAA Regional Climate Centers

Fig. 2: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over the New Mexico (>+3°F) and the greatest negative departure occurred over the Northern High Plains (<-15F).

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

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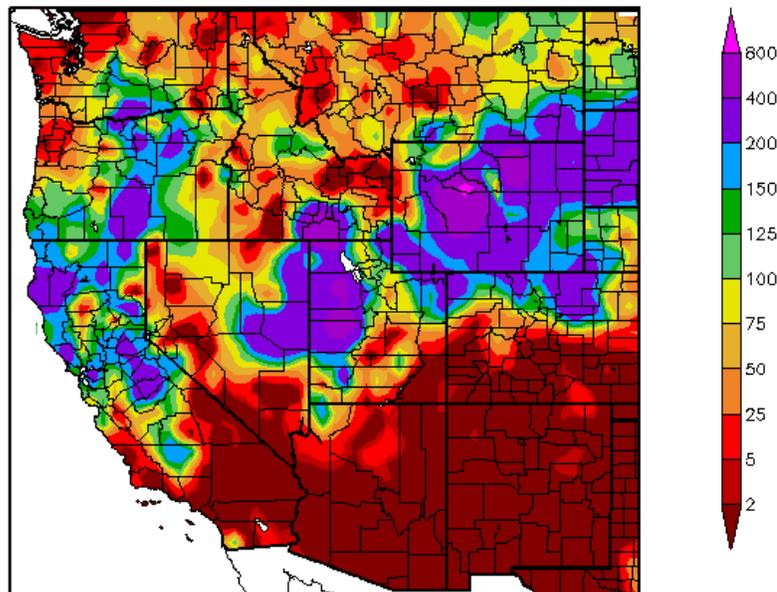
Precipitation (in)
5/6/2010 - 5/12/2010



Generated 5/13/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
5/6/2010 - 5/12/2010



Generated 5/13/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. and 3a: ACIS 7-day average precipitation amounts for the period ending 12 May shows the bulk of the heaviest precipitation fell over Wyoming. In terms of percent of normal, much of the Pacific NW through to east Nevada and western South Dakota experienced two to four times the normal precipitation this week. Exceptions dominated over parts of the Northern Tier States and southern California to New Mexico.

Ref: <http://www.hprcc.unl.edu/maps/current/>

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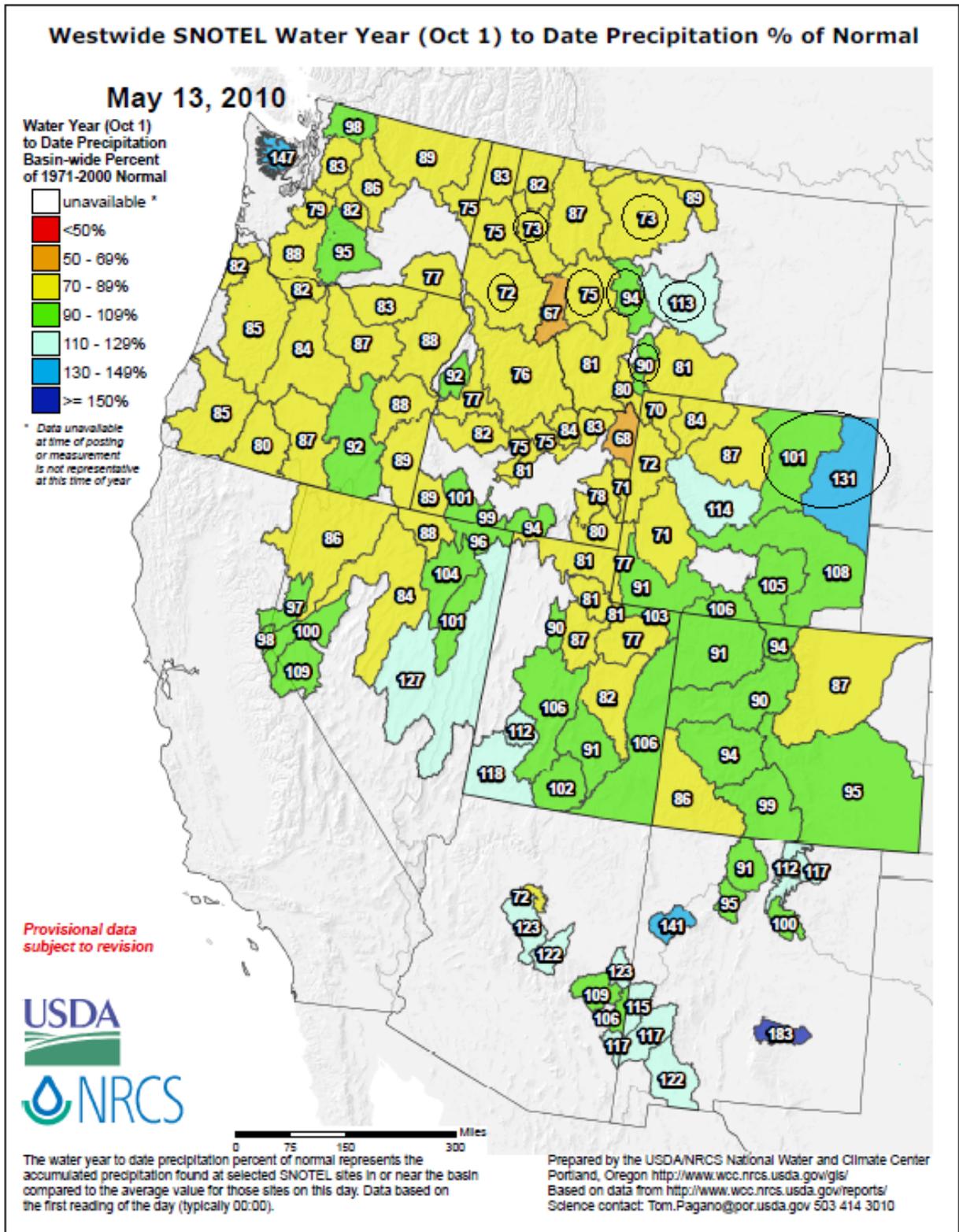
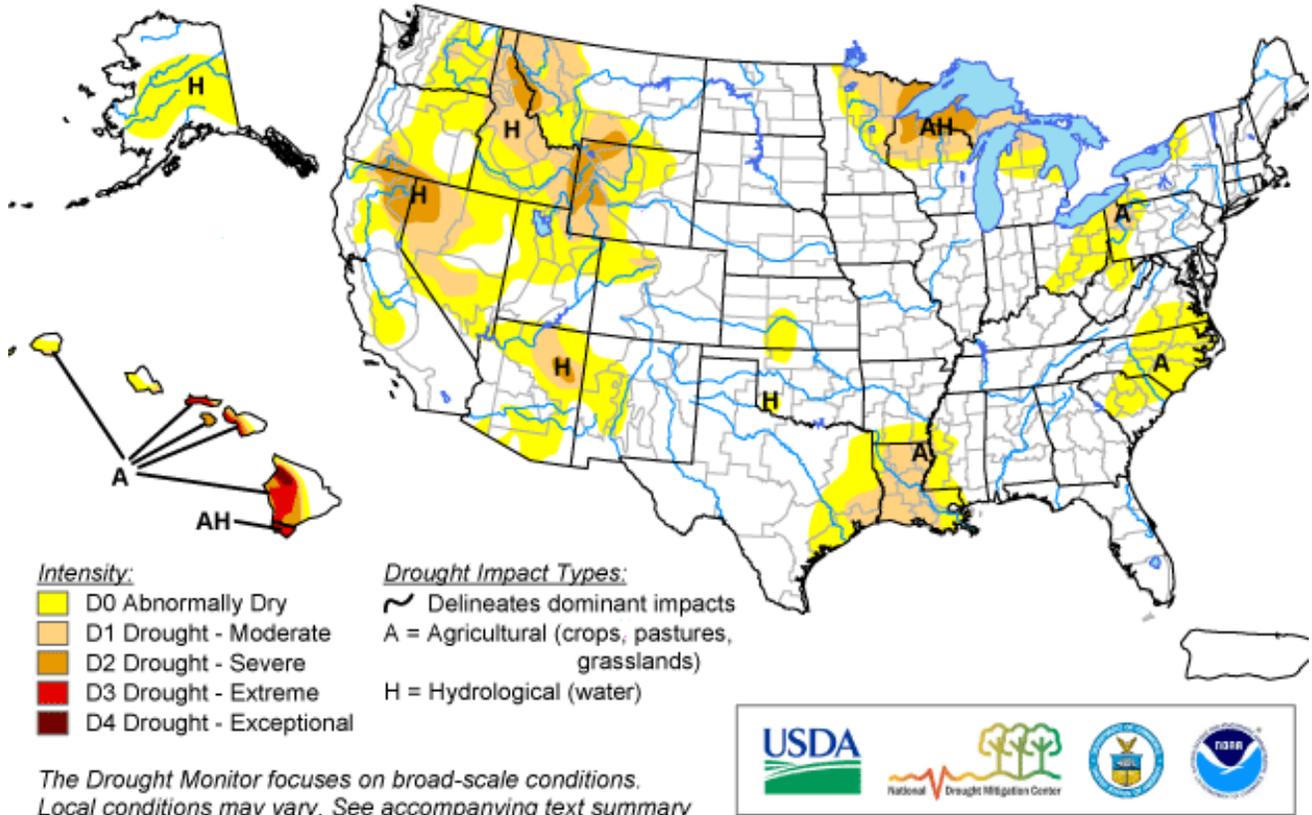


Fig 3b. For the 2010 Water-Year that began on 1 October 2009, Arizona and New Mexico have the largest surpluses while the northern interior Western States have the greatest deficits. Several river basins increased by one class bin (circles) in the past week.

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

U.S. Drought Monitor

May 11, 2010
Valid 8 a.m. EDT



Released Thursday, May 13, 2010

Author: Michael Brewer/Liz Love-Brotak, NOAA/NESDIS/NCDC

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

Fig. 4. Current Drought Monitor weekly summary. Note Hawaii is the only state that is in D4 Drought.
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

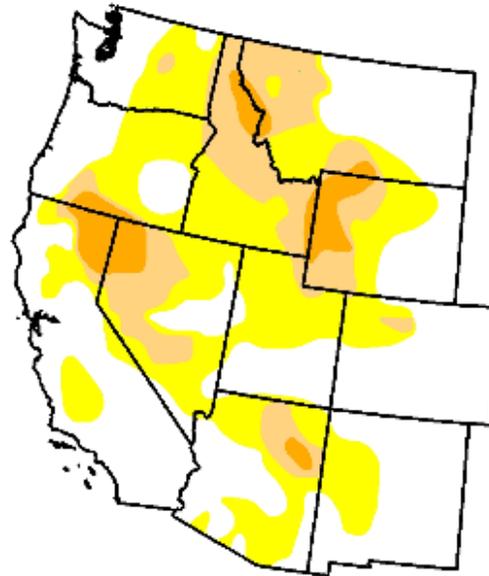
U.S. Drought Monitor

West

May 11, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	50.7	49.3	18.6	4.9	0.0	0.0
Last Week (05/04/2010 map)	47.5	52.5	19.4	4.9	0.0	0.0
3 Months Ago (02/16/2010 map)	33.2	66.8	21.0	3.6	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 (10/06/2009 map)	42.1	57.9	25.4	8.5	0.0	0.0
One Year Ago (05/12/2009 map)	43.3	56.7	26.2	7.3	0.0	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, May 13, 2010
Author: M. Brewer, NOAA/NCDC

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

Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there were no significant changes since last week.

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

Drought Monitor Classification Changes for Selected Time Periods

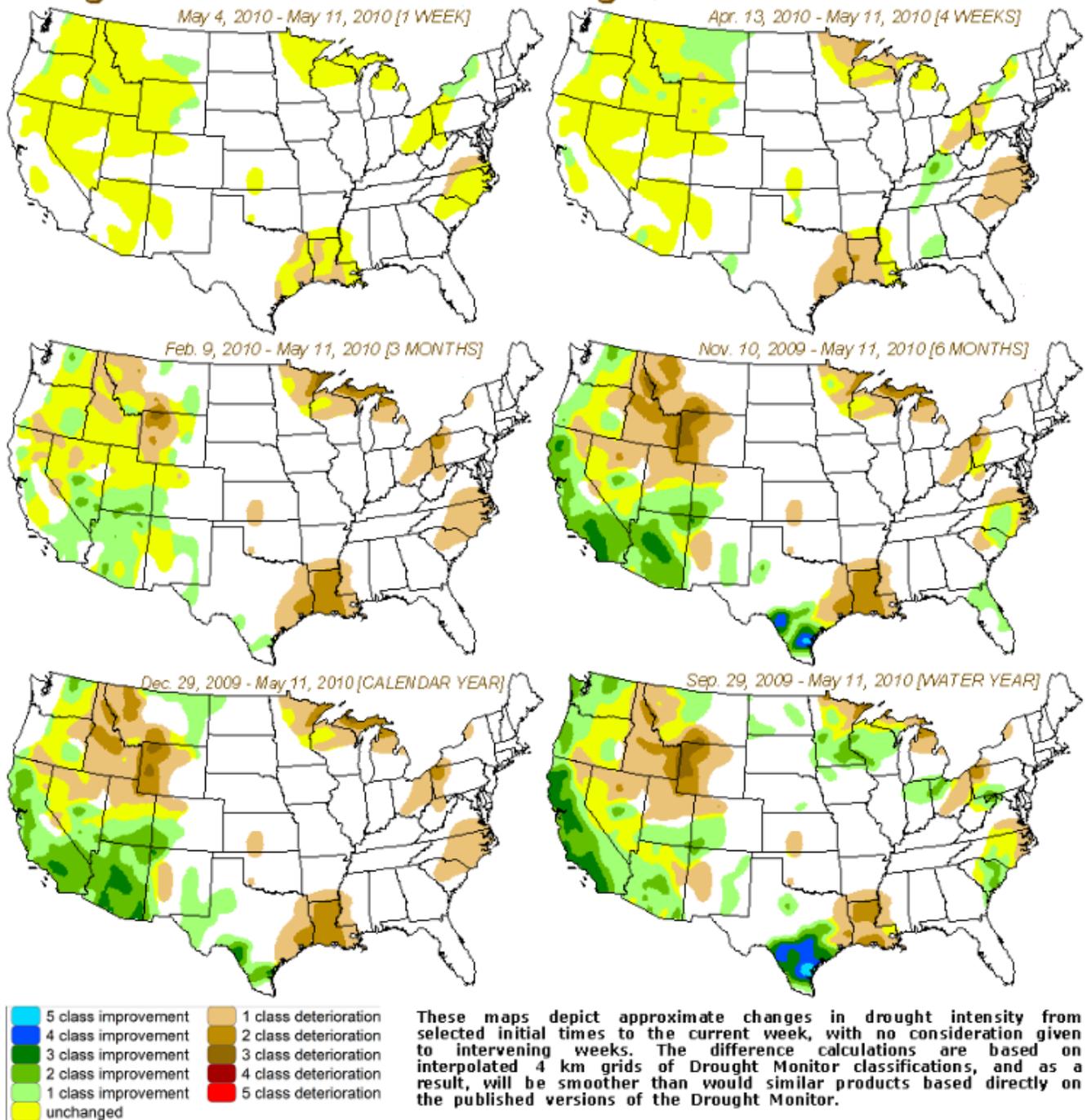
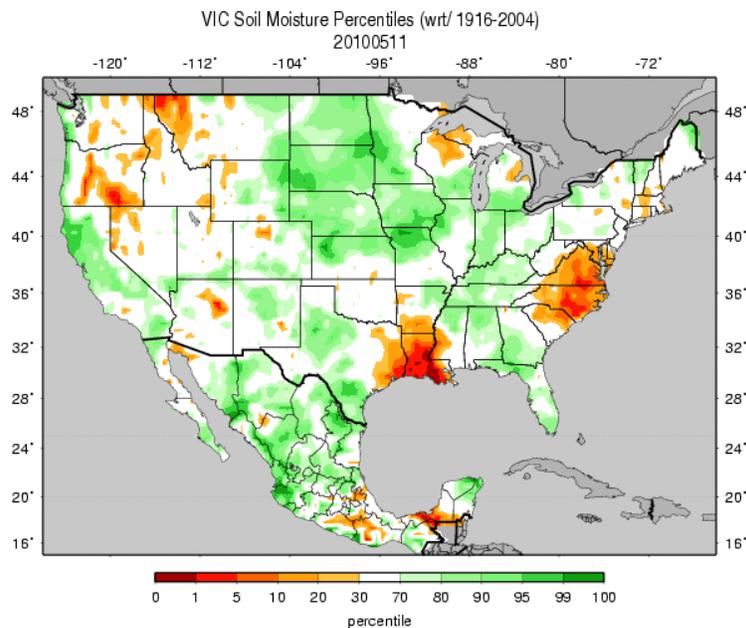


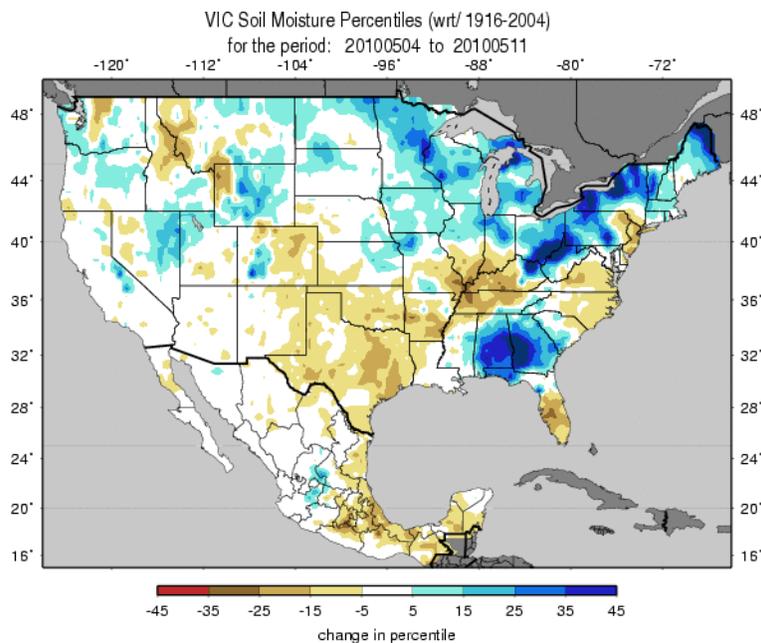
Fig. 4b: Drought Monitor classification changes for selected time periods reveals little change over the West during the past week but significant dryness over the Northern Rockies and Intermountain West during the 2010 Water Year. Note the abundant moisture (improvements) over Southern California and Arizona during 2010 as the influence of El Niño was very apparent. Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

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Figs. 5a: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 11 May. Excessive moisture and dryness patterns are generally mixed across the U.S with the worst conditions over Louisiana and the best over the Northern Plains.

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.gif

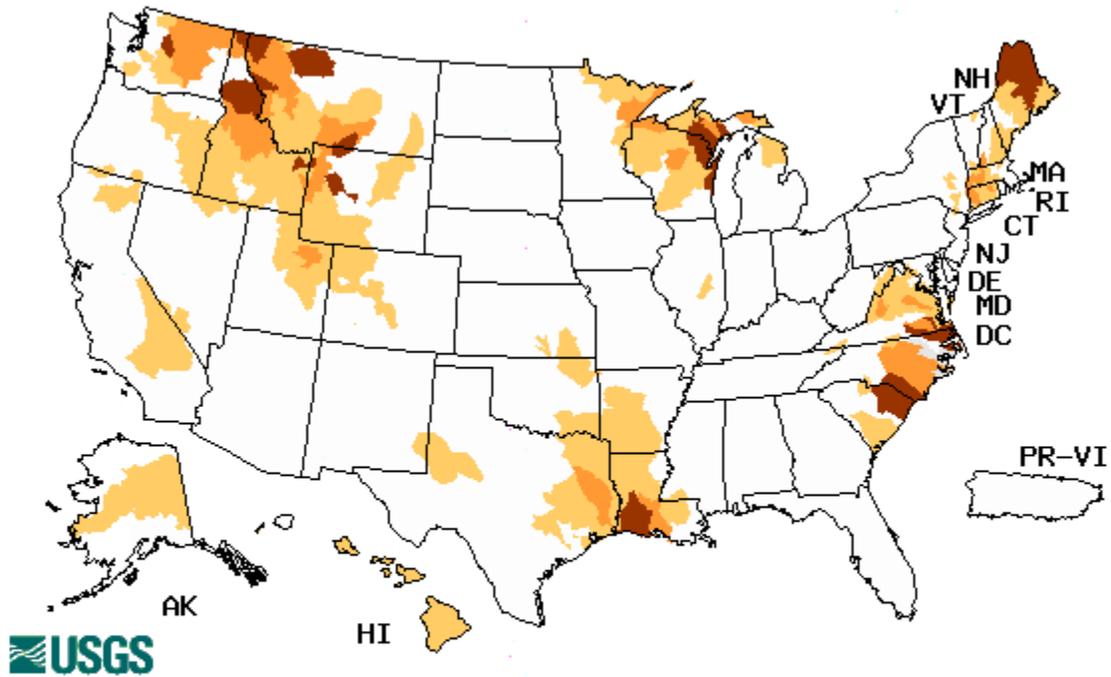


Figs. 5b: Soil Moisture change in percentile based on 1916-2004 climatology for the week shows extreme moistening over the Southeast, Midwest, Great Lakes, and New England.

Ref: <http://www.emc.ncep.noaa.gov/mmb/nldas/drought/> (very useful resource) and http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.1wk.gif

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Wednesday, May 12, 2010



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. 6. Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Significant worsening of conditions is noted over the Maine, the Carolinas, Louisiana, and the Northern Rockies. Alaska continues to show signs of worsening conditions despite peak snow melt. Ref: <http://waterwatch.usgs.gov/?m=dryw&r>

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National Drought Summary -- May 11, 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/>.

Precipitation this week fell mainly in the Southeast and in western New England. Much of the South, the West, and the mid-Atlantic were dry. A May 10 tornado outbreak impacted 16 counties in Oklahoma, including the Oklahoma City area, based on preliminary reports. Five people were killed in the storms. The tornadoes were accompanied by very large hail, in some locations reaching the size of softballs (about 4.25 inches in diameter).

The East: Precipitation across New York and into most parts of non-coastal New England alleviated moderate drought (D1) and abnormally dry (D0) conditions along the Great Lakes. The mid-Atlantic and much of the Southeast saw little precipitation. As a result, abnormal dryness (D0) increased through the Carolinas and extended up into southern Virginia. Areas of southern Alabama and Georgia, and northern Florida saw heavy rains with some areas receiving over six inches, or 800% of normal.

The Great Lakes Region: Some of the drought-affected areas of the region received beneficial precipitation this week. Precipitation fell in central and west-central Wisconsin and across northern Michigan. Some areas received upwards of two inches, which is 200 – 300 percent of normal. However, continued long-term deficits resulted in unchanged drought classifications in this region. Rains in the eastern Great Lakes, especially in New York, resulted in drought improvement.

The Plains: For the most part, the northern Plains experienced areas of normal to above normal precipitation while most of the central and southern Plains received below normal precipitation this week. Parts of extreme northwestern Missouri saw upwards of 3 inches of rain. Conversely, most of Louisiana and Texas saw little or no precipitation. This resulted in increases in the extent of abnormal dryness (D0) and moderate drought (D1), with moderate drought (D1) now covering most of Louisiana.

The West: Storms dropped precipitation across much of the Northwest Coast, from northern California to western Washington, as well as through eastern Montana and much of Wyoming. This improved conditions in Montana with abnormal dryness (D0) disappearing from most of the eastern part of the state. Improvements in abnormal dryness (D0) and moderate drought (D1) were also evident in southwest Oregon and central and western Idaho. This area is still dominated by below normal streamflow and snowpack, and overall water-year precipitation deficits.

Hawaii, Alaska and Puerto Rico: Drought conditions remained unchanged across Alaska and Puerto Rico this week. While parts of Alaska did receive 200 – 300 percent of their normal precipitation this week, that amounted to only a few tenths of an inch and had little impact on the larger deficits there. The lingering effects of the El Nino are still being felt in Hawaii. No changes were made except on Kauai where improved pasture conditions resulted in a slight pull-back of abnormal dryness (D0) and

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moderate drought (D1). Evergreen vegetation in the exceptional drought (D4) region of the Big Island has been described as looking like a Christmas tree on New Year's Day.

Looking Ahead: Precipitation is expected to move across the Midwest, into the Great Lakes, and across New England early in the May 13-17, 2010 time period. Later in the period, the South and Southeast may see areas of precipitation. The West is expected to be dry. Above normal temperatures will dominate much of the Southeast and areas of the Northwest during this time, while below normal temperatures are expected through the Plains, the Midwest, and into the Northeast. Hawaii can expect a mostly dry period with the exception of some light windward showers.

For the ensuing 5 days (May 18-22, 2010), the odds favor cooler-than-normal conditions in the Pacific Northwest and in the Northeast. Warmer-than-normal conditions are expected from the Rockies, across the central and northern Plains, and into the Midwest and parts of the Southeast. The odds of above-normal precipitation extend from the Pacific Northwest, across the northern Plains, through the Missouri and Mississippi River valleys and into the Southeast, extending to the Gulf of Mexico. Odds favor below-normal precipitation in the upper Midwest and into the mid-Atlantic and Northeast. Odds favor above normal temperatures and below normal precipitation in most of Alaska.

Author: [Michael Brewer, National Climatic Data Center, 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

A ... Agricultural

H ... Hydrological

Updated May 12, 2010