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

Weekly Report - Snowpack / Drought Monitor Update **Date: 14 October 2010**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: **SNOTEL** 7-day average temperature departure from normal map shows temperatures generally within 5°F from the long-term average for this time of year (Fig. 1). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts of the Northwestern High Plains (>+10°F) and the greatest negative departures occurred over western Arizona (<-4°F) (Fig. 1a).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 13 October shows the bulk of the heaviest precipitation confined to the extreme Pacific Northwest (Fig. 2). In terms of percent of normal, heavier precipitation fell over parts of the Pacific Northwest and east of the Continental Divide over Wyoming and Colorado (Fig. 2a). For the new 2011 Water-Year that began on 1 October 2010, statistics are skewed to the extreme as noted by exceptionally large and small percentages. These values will be more meaningful in the coming weeks. Use this figure with caution (Fig. 2b).

WESTERN DROUGHT STATUS

West: A string of days of significant precipitation offered short-term relief to northeastern California, western Nevada and northwestern Arizona over the last seven to ten days. Precipitation totals for the month of October are already being watched for monthly records. One category improvements were made from south of Lake Tahoe to the Oregon border in Nevada, in reflection of storm totals in the range of 1.5 to 2 inches across the region. Similarly in Alturas, CA, triple the normal precipitation for October has already fallen. Long-term drought continues across much of this area, however, as multiple years of below normal precipitation has had its impact on groundwater and water supply, particularly in the agricultural sector.

In northwestern Arizona, anywhere from two to more than four inches of rain has fallen over the last two weeks. The extent of moderate drought was reduced to exclude Mohave and part of Coconino counties as a reflection of short term relief.

Elsewhere, abnormally dry conditions expanded around the Boise, ID region due to precipitation deficits that have accrued over the last several months. Lake County, Colorado is depicted in abnormally dry conditions to reflect consistency with neighboring counties.

Author: Laura Edwards, Western Regional Climate Center

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. 3 and 3a).

SOIL MOISTURE

Soil moisture (Figs. 4a and 4b), 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. 5) 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

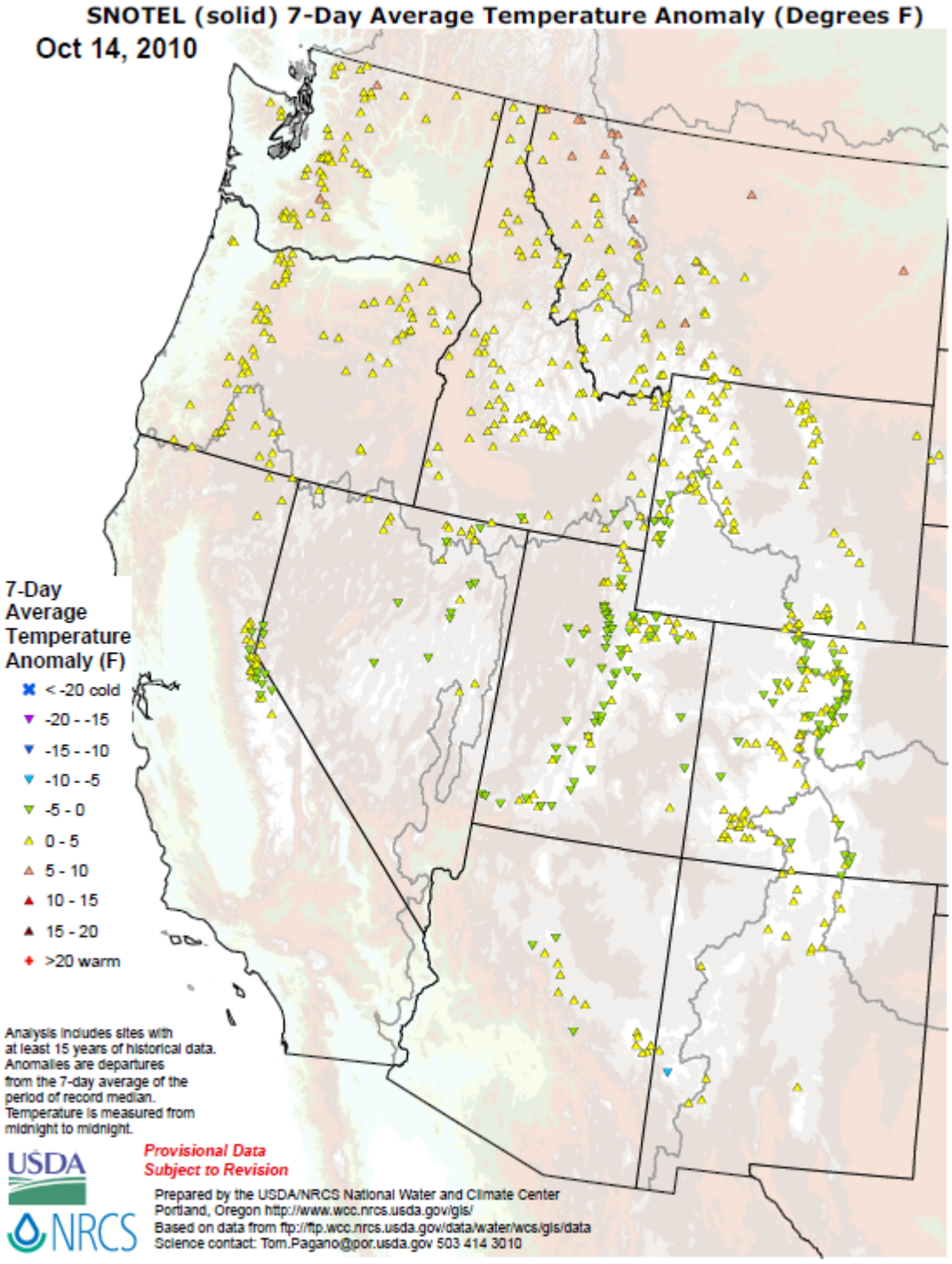


Fig. 1: SNOTEL 7-day average temperature departure from normal map shows temperatures generally within 5°F from the long-term average for this time of year.
Ref: http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf

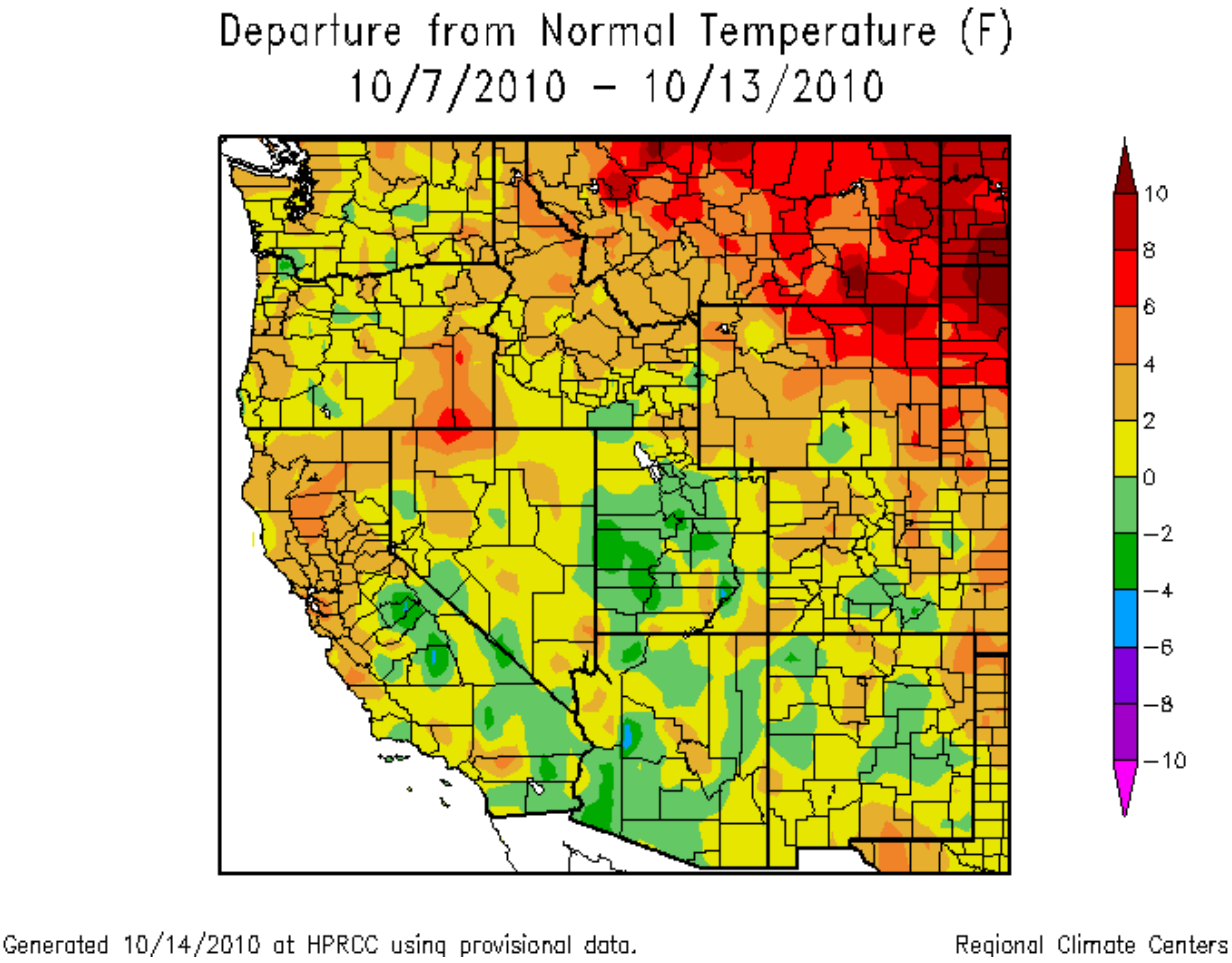
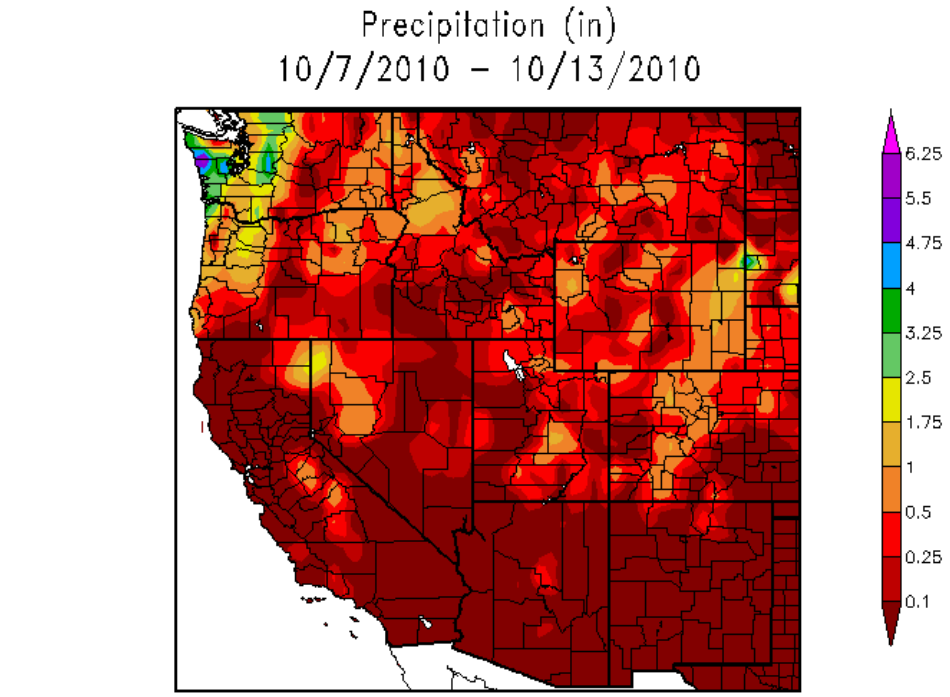


Fig. 1a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts of the Northwestern High Plains (>+10°F) and the greatest negative departures occurred over western Arizona (<-4°F).

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



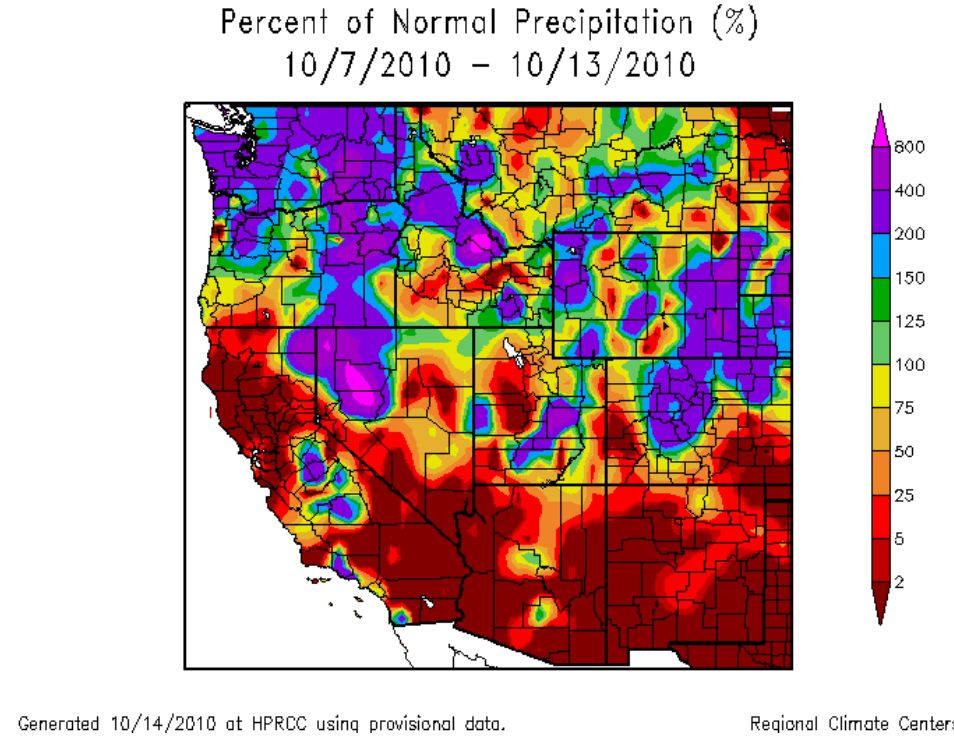


Fig. 2 and 2a: ACIS 7-day average precipitation amounts for the period ending 13 October shows the bulk of the heaviest precipitation confined to the extreme Pacific Northwest (Fig. 2). In terms of percent of normal, heavier precipitation fell over parts of the Pacific Northwest and east of the Continental Divide over Wyoming and Colorado (Fig. 2a).

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

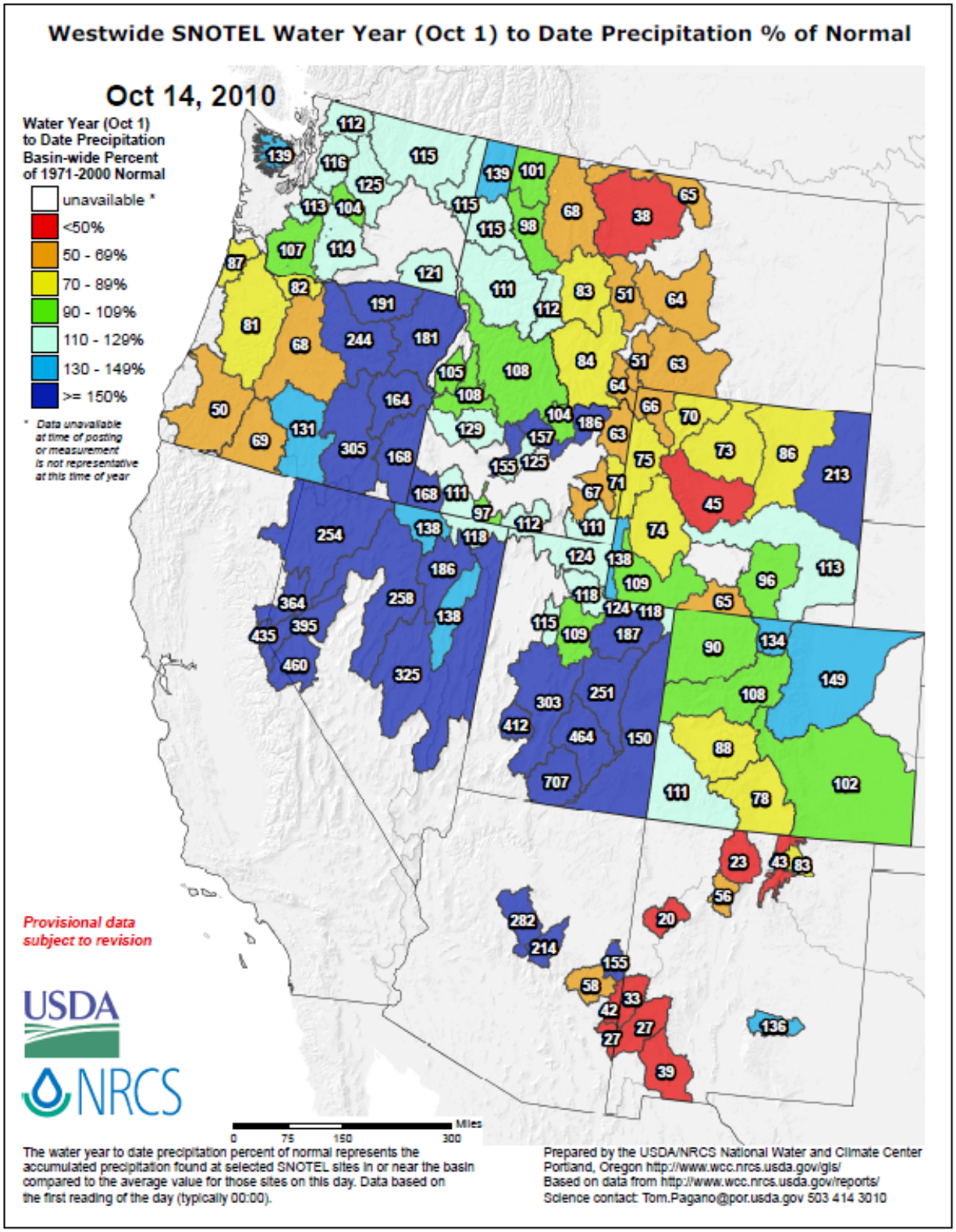


Fig 2b: For the new 2011 Water-Year that began on 1 October 2010, statistics are skewed to the extreme as noted by exceptionally large and small percentages. These values will be more meaningful in the coming weeks. Use this figure with caution!

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

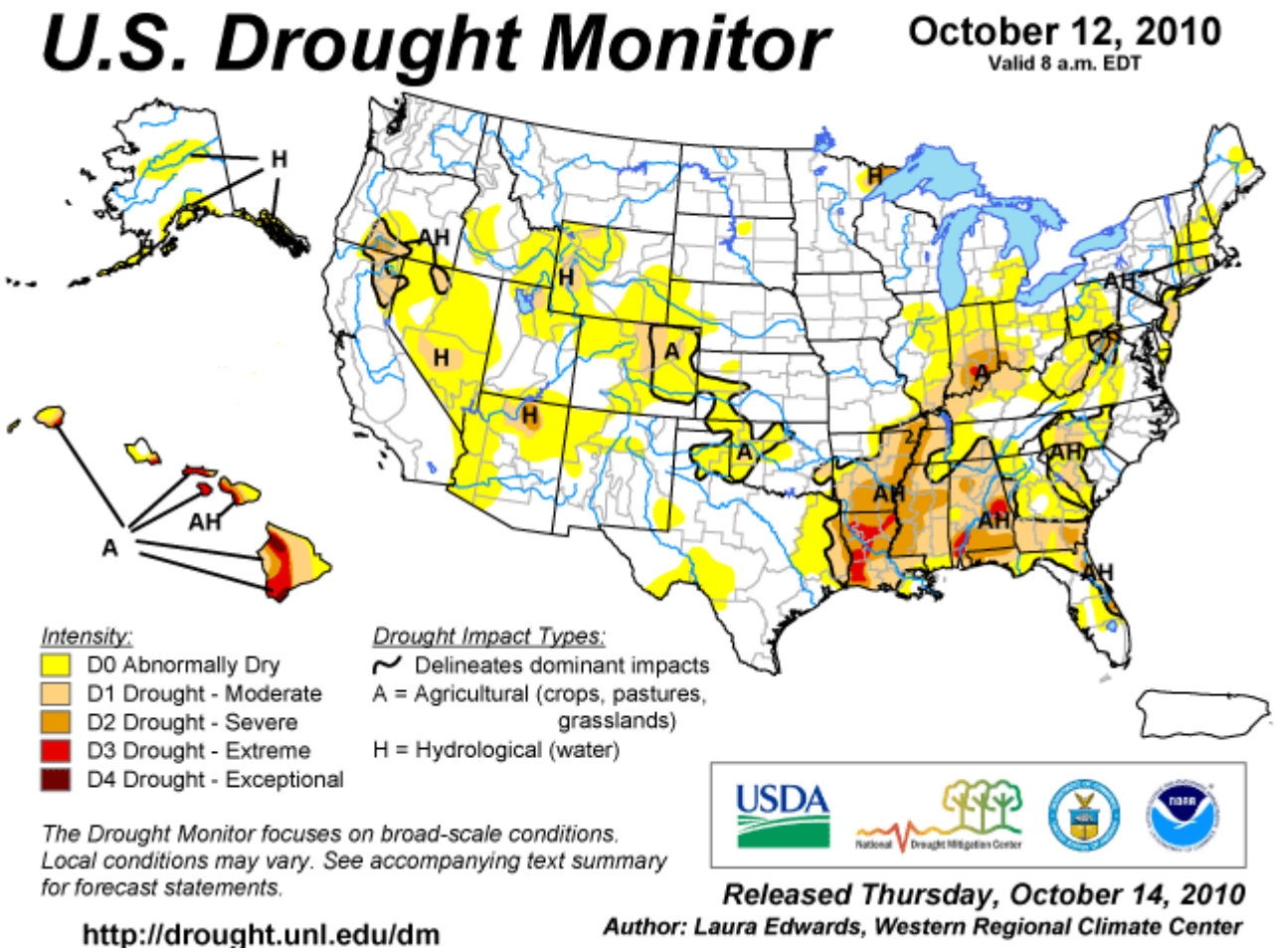


Fig. 3: Current Drought Monitor weekly summary. Hawaii is only state that has a D4 drought level. D3 levels dominate northern Louisiana and southeastern Alabama.

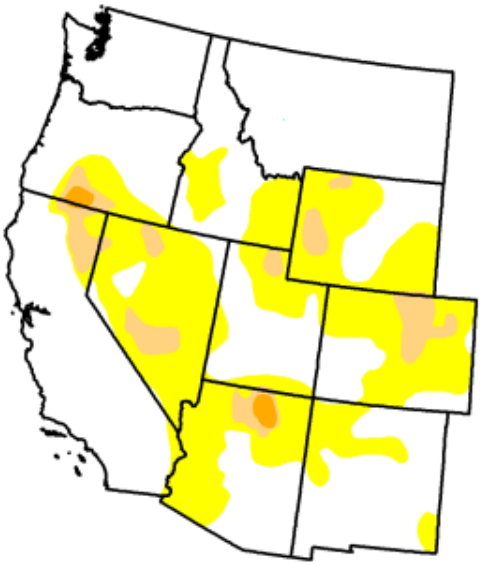
Ref: http://www.drought.unl.edu/dm/monitor.html

U.S. Drought Monitor
West

October 12, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	62.5	37.5	5.5	0.6	0.0	0.0
Last Week (10/05/2010 map)	62.5	37.5	8.4	0.6	0.0	0.0
3 Months Ago (07/20/2010 map)	69.0	31.0	9.6	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 (10/13/2009 map)	41.8	58.2	26.5	13.1	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

http://drought.unl.edu/dm

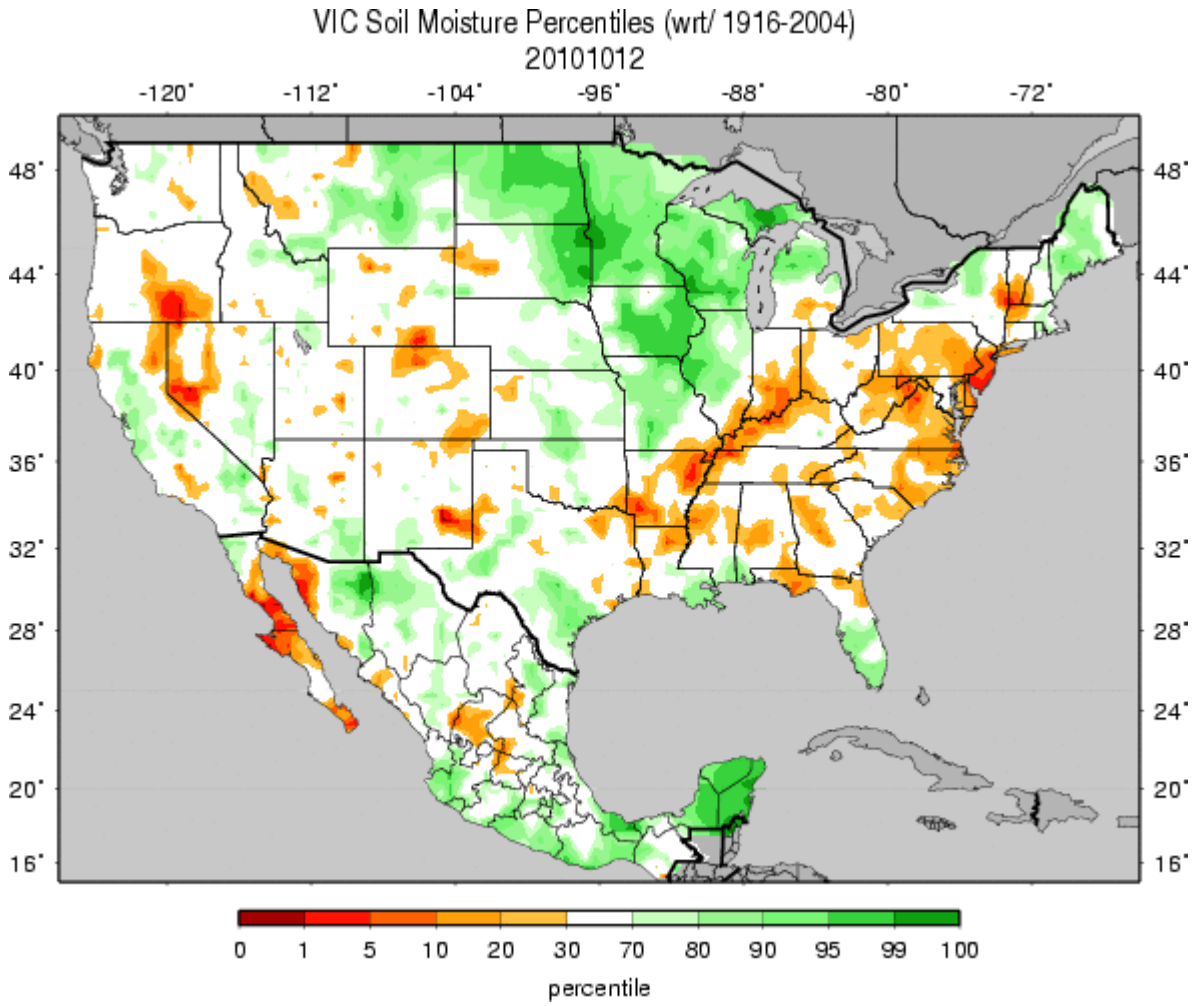
USDA National Drought Mitigation Center

Released Thursday, October 14, 2010

Author: Laura Edwards, Western Regional Climate Center

Fig. 3a: **Drought Monitor for the Western States with statistics over various time periods. Regionally there some improvement in the D1 level of drought this week.**

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



Figs. 4a: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 12 October. Excessive moisture dominates over the Northern High Plains. Dry soils are scattered across the eastern third of the nation and Western Great Basin (OR, NV).
Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.gif

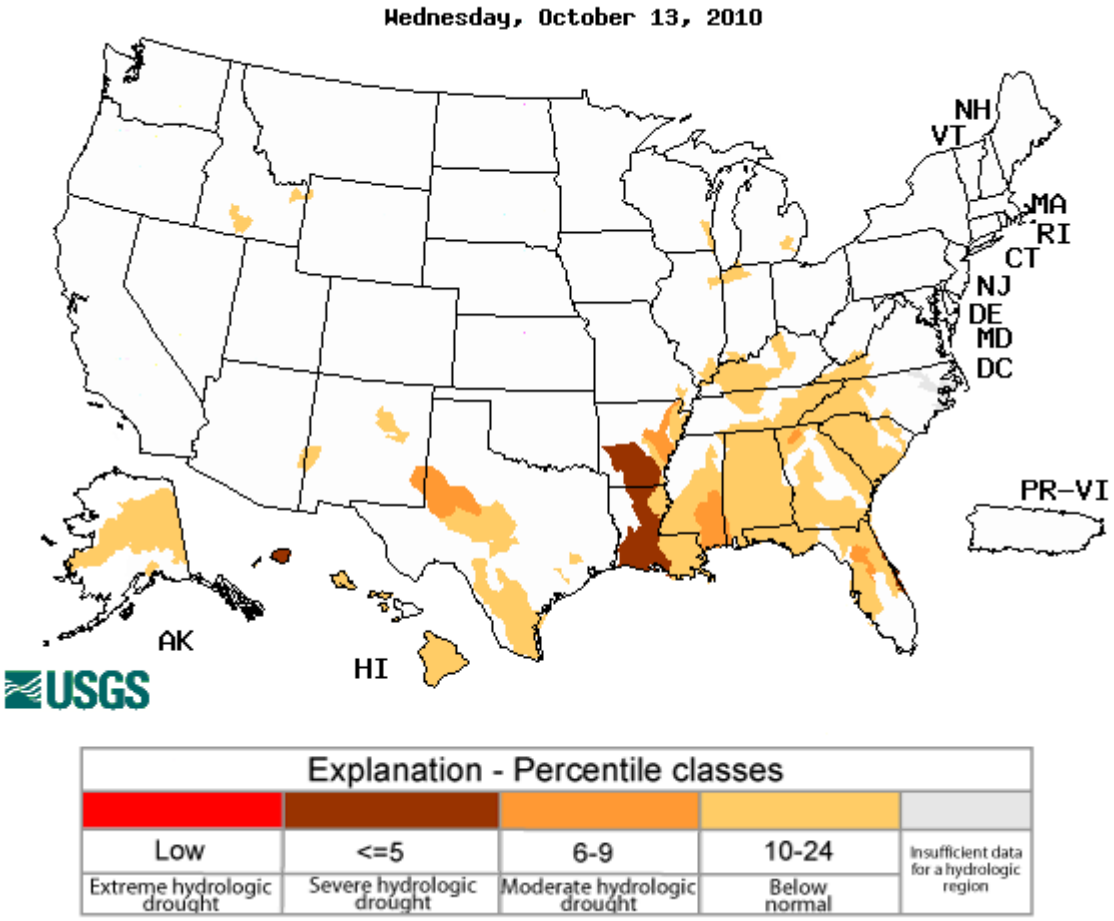


Fig. 5: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Clearly, the Lower Mississippi River region is experiencing the severest flows this week. Ref: http://waterwatch.usgs.gov/?m=dryw&r

National Drought Summary -- October 12, 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/.

Summary: Drought worsened in the southern Gulf States with continued dry and warm conditions. Multiple days of significant precipitation over the last ten days brought some short-term relief to areas suffering from extended drought in parts of Nevada and Arizona. The Great Lake states of Illinois and Indiana reported agricultural impacts worthy of expansion in their drought areas and severity.

Northeast and Mid-Atlantic: Following last week's major changes in the wake of Tropical Storm Nicole, this week was relatively benign. A small area of abnormally dry conditions was introduced in York County, Maine, and northwestern Pennsylvania to reflect growing deficits of precipitation. A one-category improvement was made in central Maine, including removal of moderate drought.

In North Carolina, an expansion of moderate drought (D1) is depicted on the map in the Broad River basin. There is increasing concern in this region over water availability and lack of precipitation during the last 30 to 90 days. Elsewhere in the mid-Atlantic remained the same, although the relief offered by Tropical Storm Nicole may be short-lived unless more rain comes soon. Streamflow and soil moisture appears to have recovered quickly and is slowly drying out again, demonstrating the need for rain.

South: Many regions of the Gulf States are experiencing significant impacts from the lack of tropical storm-like precipitation this hurricane season. Fire bans are widespread and vegetation is being affected. Degradations were made in areas of east Texas, Louisiana, Arkansas, Mississippi, Alabama and Florida.

In east Texas and Louisiana, precipitation deficits are mounting. Some counties in east Texas have received just an inch or less of rain over the last 10 weeks. A warmer than average August has also created increased natural water demand by evaporation and plants. Some reservoirs are much lower than normal for this time of year, to levels that have not been seen in a decade in some areas. A westward expansion of abnormally dry conditions, as well as D1 and D2 along the Louisiana border, are depicted on this week's map. Extreme drought conditions are evident in the Lake Charles area, reflecting low rainfall since August 1st, with shortfalls of upwards of 15 inches over the last six months. This amounts to the fifth driest year on record since 1930, and the driest year since 1976. A long-term drought here is combining with extreme short-term drought. Streamflow in southwestern Louisiana is in the lowest 5 percentile at many gauges. Locations in southeastern Louisiana remain drought-free however.

An eastward extension of severe drought was made this week across central Mississippi, in addition to an expansion across the Mississippi River into Tennessee. Hydrological impacts are significant, with an extended period of below normal precipitation for the last few months.

Tropical Storm Hermine, about a month ago, brought some much needed precipitation to northern Arkansas, but the rest of the state hasn't been as lucky. Increasing severity of drought is shown on this week's map, with D0, D1 and D2 areas all expanding toward the north and northwest. Wildfire danger is extremely high, and less than a tenth of an inch of rain has fallen in Little Rock over the last month.

In Alabama, fire danger has become acute. Last year during a four-week period from August to September, just 6 fires were reported. This year, for the month ending on October 12, 806 fires had been reported. Another week with little to no precipitation offered no relief and conditions worsened, with one category degradations made everywhere except east central and southeastern parts of the state.

Growing shortages of rainfall this wet season contributed to introduction of abnormally dry conditions in the Tampa and Sarasota area of Florida. An expansion of D0 is also depicted this week, inland from the Atlantic coast towards Orlando and south to Lake Okeechobee.

Midwest: Illinois and Indiana are both experiencing deteriorating conditions across most of their states. In Illinois, the area of D0, or abnormally dry conditions, has expanded to include much of the northern counties. Crop and rangeland reports demonstrate a shortage of water available to vegetation, which is supported by the latest monthly soil moisture summary. Deficits of up to four to six inches of rain in this area have built over the last 90 days. D1, moderate drought, is creeping in the southern reaches of Illinois as well.

Extreme drought, D3, was introduced in the Hoosier state for areas in and around Jackson County. Significant agricultural impacts are being felt in this region, with little soil moisture in the top few feet of soil. One-category degradations are shown for most of the state, with every part of Indiana in some stage of dryness.

High Plains: Minor adjustments in the depiction of drought were made this week in Nebraska and South Dakota as a result of some heavy precipitation. An area of abnormal dryness was removed this week in most of southwestern South Dakota, and in Cherry and Sheridan counties, Nebraska. In Oklahoma, an area of abnormally dry conditions, D0, was expanded to include Canadian, Oklahoma and Lincoln counties. Reports of low water in storage and reports of impacts on rangelands are increasing. Rainfall is needed in this state to prevent further deterioration in the agricultural sector.

West: A string of days of significant precipitation offered short-term relief to northeastern California, western Nevada and northwestern Arizona over the last seven to ten days. Precipitation totals for the month of October are already being watched for monthly records. One category improvements were made from south of Lake Tahoe to the Oregon border in Nevada, in reflection of storm totals in the range of 1.5 to 2 inches across the region. Similarly in Alturas, CA, triple the normal precipitation for October has already fallen. Long-term drought continues across much of this area, however, as multiple years of below normal precipitation has had its impact on groundwater and water supply, particularly in the agricultural sector.

In northwestern Arizona, anywhere from two to more than four inches of rain has fallen over the last two weeks. The extent of moderate drought was reduced to exclude Mohave and part of Coconino counties as a reflection of short term relief.

Elsewhere, abnormally dry conditions expanded around the Boise, ID region due to precipitation deficits that have accrued over the last several months. Lake County, Colorado is depicted in abnormally dry conditions to reflect consistency with neighboring counties.

Hawaii, Alaska and Puerto Rico: Exceptional drought was introduced in southwestern Maui this week in response to reports of 90 percent pasture losses and herd culling exceeds 30 percent in areas.

D0 refinements across Alaska were made in response to a reassessment of precipitation over the last 30 to 90 days. Drought free conditions are now in the Fairbanks and in the Tongass National Forest from Sitka south to Ketchikan. Dryness is persisting north of Anchorage toward the Alaska Range, so abnormally dry category is shown.

Looking Ahead: A low pressure system will slowly move off of the East Coast in the next couple of days, while much of the remainder of the contiguous United States will remain dry. This could exacerbate drought conditions even further in the southern states that are suffering from extreme drought and lack of precipitation from any tropical system this hurricane season.

In the six to ten day outlook, temperatures are projected to be above normal for most of Alaska and the western U.S. For the Gulf States and Eastern Seaboard, below normal temperatures may help alleviate the water demand by vegetation. For the same period, above average precipitation is expected along the Alaskan peninsula to the panhandle, as well as from Arizona to Texas in the southwest, south Florida, and the far northeast. Below normal precipitation for the period of six to ten days from now is projected to be in a large area from west to east across the contiguous U.S.

Author: Laura Edwards, Western Regional Climate 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 October 13, 2010